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Agricultural Management Strategies in a Changing Economy



Gabriel Popescu and Andrei Jean-Vasile



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Agricultural Management Strategies in a Changing Economy

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Simona Bara, Bucharest Academy of Economic Studies, Romania

Initially, the Romanian development regions created in 1998 had as a main objective the insurance, from the statistic point of view a relatively territorial equilibrated development; they were set up in accordance with the level NUTS-II from the EU. According to the Romanian legislation on force, the regions do not have an administrative status and they do not have legal personality. The analysis of the rural space highlights significant regional disparities, phenomena that have influence to the spending of the EU funds and their degree of absorption. This chapter proposes a method for multi-criteria analysis in order to identify the agricultural and rural territorial disparities and to establish the regional disparities in implementing the National Plan of Rural Development (NPRD) during 2007-2013. The NPRD was put under multi-criteria analysis: the main 13 measures implemented by Romania during 2007-2013 periods.

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Geographical brands are one of the most relevant competitive levers in the agro-food industry, given the predominance of small and medium enterprises, with corporate brand salience closely linked to the origin of the business, the inputs, and the production process. They are one of the most significant attributes affecting the product evaluation by the consumer. This chapter aims to contribute to the understanding of the effects of geographical indications on demand side and on supply side. It summarizes the main findings highlighted by scholars about the impact of geographical indications on consumers' choice and on business and territorial strategies. It also examines the interconnections between geographical indications, agro-food products, and territorial reputation by analyzing four case studies. Best practices are linked to the communication of intangible elements related to the typical product, such as credibility, authenticity, warranty, and preservation of social and economic values.

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Agriculture represents without any debate a fundamental economic sector, with significant implication in achieving not only the food safety standards for a growing population, but also in promoting rural communities' cultural values and providing good living standards and revenues for farmers and rural population. In this context the evolution of agricultural production structures represent a major concern for all decision-makers involved in this sector. Achieving competitive results in valuing the agricultural potential impose a great convergence between inland agricultural policies and the Common Agricultural Policy in order to integrate the best measures in designing an economically efficient agricultural structure. The chapter aims to analyze the evolution of some of the agricultural production structures under the Common Agricultural Policy reform and the pressure to adapt and achieve the most functional decision in a better valorization of the inland agricultural potential.

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Stevan Čanak, State University of Novi Pazar, Serbia

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In the Serbian fishing industry, carp breeding in pond is the most important activity. Analysis has shown that breeding may be organized in a two-level semi-intensive system, or in a fully intensive breeding system. Carp farms in Serbia cover any area of around 10,000 ha, with an annual restocking of young fish at around 8,600 ha. Species usually bred include carp, bighead carp, silver carp, grass carp, catfish, pike, and perch. By the level of production of edible fish in carp ponds, with an average production level of 5,000-7,000 tons of fish annually, Serbia takes an important place in Europe. In the chapter, the authors calculate several performance indicators of production for all carp farms, and the results show that by the production intensity Serbia is highly positioned in Europe.

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Gheorghe H. Popescu, Dimitrie Cantemir Christian University, Romania

The main objective of this chapter is to explore and describe the EU's management of the economic and financial crisis, the leading role of the European Council in economic governance, the governmental and parliamentary institutions involved in EU economic governance, and the democratic character of the new system of economic governance. Applying new conceptual and methodological approaches, this study advances to the next level research on the political relevance of EU-level coordination in the area

of economic governance, the new governance of fiscal discipline, the dynamic of building sovereignty at the EU level, and the economic governance of the Euro area. This chapter discusses the major trends in scholarship about the evolution of EU economic governance, the changing decision-making agenda of EU economic governance, the deficiencies in EU economic governance exposed by the crisis, and the slowness of the European measures on the regulation and governance of finance. The authors is specifically interested in how previous research investigated the categorization and exercise of EU competences, the economic government of the Euro area, supranational modes of policymaking, and the tendency of EU economic governance towards intergovernmental policy coordination.

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Vladimir Filipović, Institute for Medicinal Plants Research “Dr Josif Pančić”, Serbia

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On small production lots on which medicinal plants are grown, irrigation systems of a smaller capacity (“drip, drip” and “sprinkling” systems) are mainly used. The water for irrigation should be in keeping with the national and the potential European quality standards, and should be as “free” as possible of potential pollutants, such as feces, heavy metals, pesticides, and toxicologically hazardous matters. Therefore, in this chapter, several priority MAPs are selected according to their importance for this sector, and their needs are analyzed in drought and irrigation conditions. In this group of plants, the authors included the following: marshmallow (*Althaea officinalis* L.), peppermint (*Mentha piperita* L.), valerian (*Valeriana officinalis* L.), lovage (*Levisticum officinale* Koch), lemon balm (*Melissa officinalis* L.), ribwort plantain (*Plantago lanceolata* L.), marigold (*Calendula officinalis* L.), and basil (*Ocimum basilicum* L.).

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Tourism, in all its activities, is dependent on the environment, and by exploiting its resources, products are created, creating a significant added value. But all this must take into account the rational use of natural resources with risk of depletion or degradation and the ability to achieve a decent standard of living for future generations, with an equitable distribution of general or specific revenue. Based on these considerations, the aim of this chapter is to assess the evolution of touristic infrastructure both in time and in terms of regional distribution. To estimate the tourism supply of Romanian rural tourism accommodation, the main statistical indicators used were the number of agro tourist boarding houses, the existing accommodation capacity, and the accommodation capacity in operation, their territorial concentration, and the way in which the results are strategic levers in the regional development of Romania.

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*Alexandra Tătaru, The National Institute of Economic Research “Costin C. Kiritescu”,
Romania*

Adrian Nedelcu, Petroleum-Gas University of Ploiesti, Romania

Vrancea County is a predominantly rural area in which natural components are harmoniously combined in three major relief steps, which require a specific functional zoning from the economy point of view. Given the fact that mineral resources are found in limited quantities, the solution to the economic development of local communities in rural areas is the rational use of land resources and agriculture and zootechnic sector development, to which it can be also added the tourist resources, so as to exceed the subsistence level and to add extra value to the local area. This chapter focuses on the analysis of qualitative and quantitative indicators that reflect the current state of the resources of the land and agricultural background, their evolution over time, but also try to explain as more realistic the current status of the Vrancea motherland in a county and regional context.

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Violeta Sima, Petroleum-Gas University of Ploiești, Romania

Ileana Georgiana Gheorghe, Petroleum-Gas University of Ploiești, Romania

This chapter has considered the recent changes occurring in consumer habits, aiming to highlight the link between them and the transition to a green economy. In the first part, after a brief introduction, the authors perform a review of the literature in the field, starting from the presentation of the concept of sustainable consumption. They start with the major changes in the social current economic environment and their impact on changes of the consumption patterns; they continue with the presentation of the changes of the consumption pattern in the European Union and the specific aspects of the current changes of the consumption patterns in Romania. Thus, the authors aim to identify the key features of the New European Consumer.

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*Luísa Margarida Cagica Carvalho, Open University – Lisbon, Portugal & University of
Évora, Portugal*

This chapter aims to relate a case of rural entrepreneurship developed in Portuguese small-scale farms promoted through the European Project PROVE. The Project PROVE appears in 2007 inside European Program EQUAL; several local partners and development agencies work together with small farms to solve a problem. Parts of these farms do not have enough scale to sell large quantities in markets or to arrange agreement with national and international distributors. However, they have agricultural surplus and difficulties in selling their entire surplus in the local markets. Parts of the first farms are also in urban regions and suffer urban pressures, are familiar explorations, and the number of women is relevant. This entrepreneurial solution was spread to different regions in Portugal and also in other European countries and endures beyond the end of the European project.

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Solar Energy Potential as Support for Sustainable Development of Romanian Economy 225

Dorel Dusmanescu, Petroleum-Gas University of Ploiesti, Romania

Energetic resources represent one of the most important factors in the process of consolidation of competitive market economy, having also a very important role in assuring the functionality of the economic system components. The decline of oil and gas production imposes the necessity to identify and implement new energy sources. Another reason to identify new energy sources is the pollution that is generated by the fossil fuel burn. The chapter presents a methodology about the solar energy potential evaluation for Romania. As a result of the tax incentives that are offered to investors in renewable energy, many projects were developed in Romania in the recent years, especially about wind and solar energy. But many projects have been done without a realistic assessment of potential wind or solar energy, as the consulting firms had presented an exaggerated image of the financial potential of these investments.

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Adrian Stancu, Petroleum-Gas University of Ploiesti, Romania

The population issue is one of the most complex subjects to analyze since all the science dimensions are related to it in varied proportions. In this chapter, population is analyzed according to consumer income and expenditure. Both the dynamics and disparities among countries regarding population, income, and expenditure are studied and multiple analyses from different views are undertaken. Given the numerous categories of consumer expenditure, only the food and non-alcoholic beverage consumer expenditure category is researched, in this chapter, both from a general perspective and from a narrower viewpoint restricted to each class. Several forecasts of the consequences of increasing the rice, wheat, corn, and coffee consumption are made.

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Donatella Privitera, University of Catania, Italy

The aim of this chapter is to understand the dynamic of agritourism in Italy to evaluate the possible local impacts. The realization of synergies between tourism and agriculture is actually looking at the impacts of rural restructuring, and new geographies of consumption, production, service, and rural culture. Organic agriculture is the reflection of a high demand for healthy foods, which presume the existence of high quality standards and a limitation of chemical substance usage. At the same time, it is proof that organic agriculture is tightly connected to the agritourism and tourism activities. Much of the discussion is focused on the manner in which creating linkages between organic agricultural production and tourism consumption, of both food and rural place, can create interest for farmers and the agricultural sector as a whole.

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Mihaela Badea, Petroleum-Gas University of Ploiești, Romania

This chapter presents an overview of the Romanian rural education system with an emphasis on the projects implemented in the rural areas, foreign language teaching being a major part of these projects in this sector which, among other shortcomings, is affected by a serious shortage of qualified teaching staff. It examines the recent developments in the educational rural process highlighting the education policies adopted by the Romanian government as part of the intergration program in the European Union. As well as describing the present state of this educational component, it proposes a number of solutions to the identified issues that could be put into practice for the benefit of the system.

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Elvira Nica, Bucharest University of Economic Studies, Romania

The analysis presented in this chapter contributes to research on alleviation and adjustment costs to climate change and requisite investments, the negative influence of agriculture on the environment, and the intricate character of the connections between development, poverty, and environment. In this chapter, the author is particularly interested in exploring the function of trade in bringing forward a green economy, the economic advantage of cutting down environmental externalities, and the sources of sustainable development. This study is grounded in the considerable body of scholarship examining the positive connections between trade and the green economy, effects of climate change and ecosystem deterioration, and the entailments of degenerated environments for the poor. The results of the current study converge with prior research on the sound performance of the Earth's ecosystems, the function of non-state participants in the climate regime, and the necessity for policies to attain greener growth.

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Vesna Popović, Institute of Agricultural Economics, Serbia

Vladan Ugrenović, Agricultural Extension Service Institute Tamiš, Serbia

Studying the future of food and farming, scientists have called for sustainable intensification to simultaneously raise yields and increase efficiency in the use of inputs and reduce the negative environmental effects of food production. Sustainable intensification requires sustainable agricultural techniques such as improved water management practices that result in higher, stabilized, and diversified agricultural production, and greater resilience to climate change without the deterioration of natural resources and the environment. This chapter is devoted to the role of irrigation development in Serbian agriculture and its contribution to the development of the green economy in the Republic of Serbia.

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Andreea Paul, Bucharest Academy of Economic Studies, Romania

This chapter attempts to contribute to a better understanding of the operation of the local action groups in Romania, having in view that little has been written about this so far and that it represents a new strategy of local management in the rural environment. Romania also urgently needs to elaborate and implement a national agenda for change, which should respect and overtake the regulations and the criteria of the LEADER program. The Local Action Groups (LAGs) represent a strong driving engine of progress in the rural areas, and the involvement of all factors that are part of LAG is essential for a good development. This study analyses the factors that could contribute to a harmonious development and comes with recommendations for other LAGs wishing to access the available funds through the LEADER program, starting from the case studies of LAG Tara Oltului and LAG Tara Oasului.

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Preface

Recent changes in the management of the agricultural holdings and their connection to the business environment as a result of changes in the current policies' trends raised questions about evolution of the ownership structures, agricultural exploitation, and production in agriculture. The content of this volume is the result of an original research project. The focus is to evaluate agriculture's responsiveness to the policy instruments in the context of the green economy constraints as well as to suggest new lines of future development, for a functional development

As a result of the post-communist Romania's inclusion in the European Union, the need to adapt to the existent economic and social European structures constituted in a significant challenge for the Romanian agriculture. Thus, to the existing targets for the Romanian agriculture—consolidating the land ownership, improving farmers' living conditions, and improving performance in production and economy—were added new ones, like enhancing market relationship and increasing the satisfaction of the Romanian consumers.

The Romanian agriculture is centered on two organizational structures. These are the so-called “small, family farms” and the “big, commercial farms” (Popescu, 2013, 2014).

The small family farms with 3.5 hectares per holding own around 55% of the entire arable land and represent over 3.7 million units. The historical becoming of these farms overlapped the Romanian economic industrialization; this process started one-and-a-half centuries ago and is ongoing. During this period five reforms happen in which the land ownership transfer from the big farms, of landowning or commercial farm type and cooperatist or state owned type, towards the small peasant property (Popescu 2014).

These small farms are known in the scientific literature under its historic name peasant-household. In these entities, the traditional agriculture system was dominant, the production rationale being insuring the self-consumption of farmer's family. In these circumstances, the production efficiency is not one of economic nature, because the social issues are predominant. The most important problem for these entities is their ability to ensure the food for entire family unit. Through this structure, the peasant households proved their strength over time, going through all the historical stages and political regimes, from state establishment of our country in the year 1859 (Popescu 2013).

The second category, big commercial farms, are over 31 thousand units, each of them with 264 hectares per unit as medium size and account for 45% of the entire arable land of the country (INS, 2011). Starting with 2014, the medium size of this entity moved up constantly because it intensified the purchase of agricultural land from the small landowners. This category of farms recorded an accelerated dynamic concerning all criteria that characterize them: medium size, the weight in the arable land at national level, number of new entities, results, respectively performance in returns, production, and profitability.

Preface

For adjustment of the Romanian agriculture to intensive or ecological systems, it is necessary to apply a superior management to the small holdings, in terms of performance in production and efficiency. Furthermore, by the Common Agricultural Policy are sustained investments especially for this type of farms, because they have the capacity to develop the most modern production techniques and technologies. But in Romania, both types of farms, mentioned above, small and big ones, have common problems, which make their management even more important, in increasing their performance processes.

The first category of common problems, concerns the consolidation of land ownership, referring to land register, land books, land market, land consolidation, land economic evaluation and others.

Land register and land books, as defining structural parts of land publicity or real estate, represent major shortcomings, with deep historical roots, relevant in the field of Romanian agricultural management. It is recognize that presently, in the land books, less than 50% of the arable land is found (Popescu, 2013). Obviously, this major shortcoming draws other social and economic risk factors and even extra policies on the stability and economic growth, within the branch.

Concerns and attitudes in the field of agrarian policies are several, aimed at towards promptly solving in national interest and particularly for the farmers, of these issues, have been numerous and multiple solving solution. It is recognized that land register works, but also those of effectively writing in the land books are expensive in terms of finances. In fact, it exceeds the capacity of the landowners, especially those from small and mediums farms to support from their own pocket these costs. Financing solutions for the land register and land book, identified by law, were not able to solve this issue.

Related to the issue regarding the land plot consolidation, it is important that the scientific level realized the necessity to identify concrete measures to increase the size of the land plots. The consolidation is an action with deep implications on the production performance plan, but also in the related economic, social, and even political issues. The severity problem is very big! In the Romanian agriculture, there are over 15 million land plots, which means up to 5 plots per farm (INS,2011), with a very small medium size, respectively of 4500 square meters! It is a high fragmentation of agricultural land that positions Romania on the bottom second place in EU28 (Popescu, 2013).

In this moment, solving solutions must exceed the competence of agricultural administrative structures. As such, the process demands a democratic approach, bottom up, in which landowner decisions should be placed in the core mechanism of concentration of countryside. So any interference in landowner decisions should be categorically eliminated. Regarding the land market, the sale actions are essential; through them, the agrarian structures will be redefined, as size: the small ones, as the main exponents of the land supply, and the great ones, which will define the demand for this economic good. But in this moment the land market is restricted in its operating processes and its enhancing is due to lack of register book and of land book. Also, to these realities on can add the excessive fragmentation and extremely low average size of existing land plots.

The book aims to provide both theoretical frameworks and the latest applied and empirical research findings in the area of agricultural and landowner structures, of holdings and agricultural production, with highly and competitive findings in order to improve the general information about Romania. It provides a full platform debate with several points of view and it try to explain some limits and delivers argue, sometimes avoided to be clearly presented in such approaches.

It intends to join in a new manner all these aspects. Having as contributor personalities in this field, heads of research institutes and departments, and practitioners, it provides both international visibility of this issue and a real and well-documented analysis. This book presents the new perceptions in the field of agricultural economy, well-debated matters, and some practical case studies form emerging economies.

The main aim of the book is to develop a new approach in understanding the evolution of the agricultural management strategies in a changing economy, by revealing the major axis of evolutions in connection with restrictions regarding sustainable development. It developed an integrated strategy in acquiring the chapters' contribution in order to set up a scientific content and a practical involvement.

The book starts with a major analysis regarding a multi-criteria approach of the regional development disparities in agriculture and rural development, where is stated in a very intuitive manner the importance of a phenomena that have influence to the spending of the EU funds received by Romania during 2007-2013 and their degree of absorption. The first chapter is written by Popescu and Bara.

The second chapter of the book is dedicated to an analysis regarding the territorial-based marketing strategies for emblematic agro-food products in order to raise some of the best practices linked to the communication of intangible concepts as of the representative product, such as credibility, authenticity, warranty, and preservation of social and economic values. Authors of this chapter Begalli, Capitello, and Agnoli have large capability in this field.

The third chapter is concerning about the influence of Common Agricultural Policy (CAP) on development of the agricultural production structures in Romania and EU28 and represents a good way of explaining some of the major discrepancies taking into account that Romania represents the seventh major country in the European Union. The authors (Andrei, Mihai, and Smoleanu) put in evidence, on the one hand, the importance of farms as a very important links in valorization of agricultural potential for European area and for national one and, on the other hand, their economic models with wider cultural influences.

The fourth chapter contains a significant analysis regarding the Current state of fish production on carp farms in Serbia, starting from the premise that the fish production in a such specialized ponds has the most important place within the Serbian sector. The authors (Čanak, Subić, Jeločnik) compute several performance indicators of production for all carp farms, and the analysis carried out shows that by the point of view of intensity concerning this individual production, Serbia is well positioned in Europe.

Chapter 5 contains a straight analysis regarding the reform of EU Economic Governance, by Popescu, who argues that his objective are to explore and describe the EU's management of the economic and financial crisis, the leading role of the European Council in economic governance, the governmental and parliamentary institutions involved in EU28 economic governance, and presentation of democratic nature induced by the new economic governance system, by applying innovative conceptual and methodological approaches.

Chapter 6 is dedicated to the influence of the soil moisture as one of the limiting factors in the production of therapeutic plants. The authors of this chapter have analyzed some of the most important medicinal plants (marshmallow - *Althaea officinalis* L., peppermint - *Mentha Piperita* L., valerian - *Valeriana Officinalis* L., lovage - *Levisticum Officinale* Koch, lemon balm - *Melissa Officinalis* L., ribwort plantain - *Plantago Lanceolata* L., marigold - *Calendula Officinalis* L. and basil - *Ocimum Basilicum* L.) taking into accounts their importance for production sector, and their needs in different circumstances: drought and irrigation.

Chapter 7 contains an analysis regarding the Romanian Rural Tourism in the Context of Sustainable Development. The authors (Zaharia, Gogonea, Enachescu) have as aim of their research to assess the evolutions of touristic infrastructure in time and in terms of regional distribution. To view to estimate the tourism supply the authors use as statistical indicators the number of agro tourist houses, the existing accommodation capacity and the ones in function, the territorial concentration of agro tourist houses, and the way in which the main results of rural tourism can be used as strategic tools in Romanian regional development.

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Chapter 8, written by Tataru, Alexandra, and Nedelcu, is focused on the analysis of qualitative and quantitative indicators that reflect the current state of land resources and their evolution. The authors try to explain how the current status of the land resources from Vrancea County influenced the progress of the local economy.

Chapter 9 studies the changing consumption patterns in the conditions of green economy expanding. The authors (Sima and Gheorghe) have analyzed the recent changes occurring in consumer behavior, aiming to highlight the main issues appeared during transition to green economy, respectively to the new models of consumption.

Chapter 10 presented a case of rural entrepreneurship developed in Portuguese small-scale farms which was promoted through the European Project PROVE. This entrepreneurial solution was spread to different regions in Portugal and also in other Member States and remains as positive reference beyond the end of the European project.

Chapter 11 analyzed the solar energy potential as support for the future sustainable development of Romanian economy. The author, Dusmanescu, presents a methodology regarding the evaluation of the solar energy potential in Romania. In the context of accession to the EU, Romania adopted the EU directives for environmental protection and reduction of the emitted quantities of CO². Main conclusion of the author is that for Romania the solar energy can be a viable alternative for a partial reduction of fossil fuels, in conditions of technical progress applying.

Chapter 12 is called “Population Number and Consumer Income and Expenditure Dynamics: An Analysis of World Countries.” The author (Stancu) analyzes the population according to consumer income and expenditure. The dynamics and disparities among countries regarding population, income, and expenditure were studied from different points of view. One main conclusion is that, in the near future and on medium-term, the biggest danger for world food consumption will come from China and India.

Chapter 13 is dedicated to a very interesting issue, combining organic agriculture and recreation – evidence from Italy. In this chapter, Privitera argues that its aim is to understand the dynamic of agro-tourism in Italy, to evaluate the local impacts. Much of debate is focused on the manner in which one can build linkages between organic agricultural production and tourism consumption, of both food and rural location, and how one can generate interest for farmers and for agricultural sector as a whole.

Chapter 14 contains an analysis of the Romanian rural education: an issue of the reform and foreign language teaching. It is written by Presada and Badea. This chapter is a summary of the Romanian rural education system with emphasis on the projects put into practice in the rural areas, foreign language teaching being a major part of these projects. It analyzes different shortcomings including the negative influence of a lack of qualified teaching staff.

In Chapter 15, Nica makes an analysis regarding the correlation between green economy and sustainable development. The author presents its research on alleviation and adjustment costs to climate change and necessary investments, the negative influence of agriculture on the environment, and the complex character of the connections between development, poverty, and environment. The results of the current study converge with prior research on the sound performance of the Earth’s ecosystems, and sustain the necessity for policies that encourage a greener growth.

Chapter 16 shows how in studying the future of food and farming scientists have called for sustainable intensification to simultaneously raise yields and increase efficiency in the use of inputs and reduce the negative environmental effects of food production. Sustainable intensification requires sustainable agricultural techniques such as improved water management practices that result in higher, stabilized, and diversified agricultural production, and greater resilience to climate change without the deterioration

of natural resources and the environment. This chapter is devoted to the role of irrigation development in Serbian agriculture and its contribution to the development of the green economy in the Republic of Serbia.

Chapter 17 written by Paul and presents a comparative study of two Romanian Local Action Groups (LAG), having in view that this subject was not much more presented till now, and this issue represents a new instrument for the local management in the rural environment. It is also argued that LAGs represent a strong driving engine for progress in the rural areas, and the strong involvement of all LAG responsible factors is essential for a good and authentic local development.

The book *Agricultural Management Strategies in a Changing Economy* represents by itself an important scientific step in providing some answers to a complex problem regarding the current evolutions of the Romania agriculture. In the context of the global concern for sustainable economic development, agriculture in every country constitutes a major player. As the Romanian economy has undergone significant changes in a short timeframe, articulating functional agricultural management strategies both at a theoretical and at a practical level can provide an integrative approach of environmental issues and enhance the future research in the field.

The evolution of the agricultural structures in the context of a fast transition from the state to market economy including specific examples concerning the Romanian context, with a highlight of the goods and the bad practices in financing policy, farm management practices holding agricultural policies, reflect both general and specific treats of the European space and builds this book, in the general context of the already similar ones published by IGI Global as a significant reference.

This book has the advantage that it includes not only a wide variety of practical approaches of the domain but it is interconnected with different theoretical aspects based on the experiences of contributors, and this represents an authentic asset.

We hope that this volume will become a reference for this field and it will bring a new performance in understanding the evolution of agricultural production structure, of landowner's behavior, of agricultural policy, and of other related themes concerning the European area in the years 2000.

The main topics of this volume are widely recognized in the domain and were centered on the following issues:

- Agricultural economics and production;
- Agriculture and energy;
- Agriculture and environmental policy;
- Environmental economics and sustainable development;
- Farm management and agricultural business;
- Management of production structures;
- Natural resources management;
- Rural and agricultural economics.

Aiming at filling a gap between the research and the practical understanding of policy concepts as solutions, this book is useful to both researchers and professionals. University teachers and students also can benefit of the wide range of examples regarding specific issues in the green economy and sustainable policies matters.

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The editors are confident that this volume will stir a scientific interest for understanding the complex European rural space diversity through chapters highlighting similarities and differences for specific issues.

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Chapter 1

Regional Development Disparities in Romanian Agriculture and Rural Development: A Multi-Criteria Approach

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ABSTRACT

Initially, the Romanian development regions created in 1998 had as a main objective the insurance, from the statistic point of view a relatively territorial equilibrated development; they were set up in accordance with the level NUTS-II from the EU. According to the Romanian legislation on force, the regions do not have an administrative status and they do not have legal personality. The analysis of the rural space highlights significant regional disparities, phenomena that have influence to the spending of the EU funds and their degree of absorption. This chapter proposes a method for multi-criteria analysis in order to identify the agricultural and rural territorial disparities and to establish the regional disparities in implementing the National Plan of Rural Development (NPRD) during 2007-2013. The NPRD was put under multi-criteria analysis: the main 13 measures implemented by Romania during 2007-2013 periods.

INTRODUCTION

The Romanian experience in managing the post-accession funds reflects, with acuteness, the necessity of introduce some changes regarding

the methods and techniques of financial allocation/evaluation of public funds (International, Europeans and domestic ones), with the reason of reformulating and re-dimensioning some territorial decisions.

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Evaluating the Romanian socio-economic development disparities, with accent on the agriculture and rural area, by multi-criteria analyze decision makers can improve the efficiency use of the public funds which will be allocated during the next periods.

The present paper has as main objectives:

1. A short presentation of the multi-criteria analysis method adjusted to the main scope proposed;
2. The analysis of aggregate indexes and the regional discrepancies from agriculture and rural space using the multi-criteria diagnostic method; in this context were analyzed the following issues: land resources; human resources and their quality; cultivated agricultural surface; livestock; animal production; value of agricultural production; equipments used in agriculture - tractors and other machines; harvested wood volume; regional economic strength; regional infrastructure - providing the localities with public roads, sewerage and water; the state of poverty in rural areas; existing the local managerial capacity; entrepreneurship state;
3. The calculation of the territorial disparities related to 13 measures selected from the National Programme for Rural Development in Romania for the period 2007-2013; using the multi-criteria analysis method were calculated aggregate index and regional disparities for the following NPRD measures: Measure no.112 "Establishment of young farmers"; Measure no.121 "Modernization of agricultural holdings"; Measure no.122 "Improving the economic value of forests"; Measure no.123 "Increasing the added value to the agricultural and forestry products"; Measure no.125 "Improving and developing the infrastructure related to the development and adaptation of agriculture and forestry"; Measure no.141 "Support for semi-subsistence farms"; Measure no.142 "Starting up producer groups"; Measure no.143 "Providing services of counseling and advice for farmers"; Measure no.221 "First afforestation of agricultural land"; Measure no.431 - sub-measure 431.1 "Building public - private partnerships"; Measure no.312 "Support for the creation and development of micro-enterprises"; Measure no.313 "Encouragement of tourism activities"; Measure no.322 "Village renewal and development, improving basic services for the rural economy and rural population and enhancement of the rural heritage";
4. The comparative issues regarding existing socio-economic territorial development disparities from agriculture and in rural areas versus the financial allocations in the case of promoted measures developed by the NPRD during 2007-2013. It is necessary to mention that: the data and information used to assess the NPRD territorial disparities covers the implementation period of January 1st 2007 - December 31st, 2012; on used official data and information from National Institute of Statistics and Ministry of Agriculture and Rural Development.

BACKGROUND

Romania is an emerging country with socio-economic structures undergoing on a dynamic process of development and on adjustment to European Union structures to which it access since 2007. Romanian legislation in force concerning regions was adopted 15 years ago (Law no.151 / 1998 on Regional Development in Romania). The purpose of Law 151/ 1998 was: configuration of balanced territorial structures in terms of socio-economic development; to set-up regional structures which fulfill requirements for statistical issues and compatible with EU territorial units type NUTS 2. It should be noted that in Romania this territorial structures are the result of the freely agreement

expressed amongst the county councils and local ones, so that they have only an administrative status, they are not local administrative units with legal personality. However, it appears that, in time, within Romania the Socio-Economic Development Regions are led to the emergence of some local disparities, a phenomenon with influence on both the spending of public funds (the international funds, including the EU funds, and domestic ones) and the level of resources absorption, all of which affect the ultimately, the living standards of the regional population.

This chapter presents, on the one hand, an estimate of territorial disparities using a selection of aggregate statistical indicators and, on the other hand, few cause of regional disparities performance of agriculture and rural space in accordance with National Plan of Rural Development 2007-2013, highlighting the capacity to response of local allocations of public grants focus on 13 of the measures implemented. This issue can be used as a tool for in designing future strategies for local/ regional development, also.

MULTI-CRITERIA ANALYSIS METHOD: SHORT PRESENTATION

A better allocation of the public funds, promoting some projects that have a connection with the real needs of the community and also avoiding the overlaps and the redundant measures, in one word paradigm shift, have on basis complex analysis which take into consideration the results of harmonization of multitudes of socio-economic indicators that lead, ultimately, to decisions fundamentation in which the qualitative argument becomes dominant. Such an approach (Iancu, 2008; Bara, 1996) has the purpose to influence both the substantiation mode of the future Romanian development strategy and the re-allocation process of the resources, in territorial profile, especially for the intermediary evaluation moment of the European programs, respectively of re-correlation

of the Community public funds with the socio-economic general state from the regional level.

The method adopted for evaluating the development stage in territorial profile of an activity allows the quantification of the socio-economic context, depending on its real parameters of manifestation, which are expressed by a diversity of specific techno-economic indicators doubled by dates and information of qualitative nature. The analysis model utilized (Bara, 1996) supposes realizing a succession of ascendants steps through which it is quantified the relevance of some relatively known dimensions. Each indicator reflects only a part of the analyzed process. By successive evaluations and re-evaluation, according to the quality or relevance of the main categories of socio-economic programs/targets it is obtained a global and characterization of the analyzed object that has as form of expression "Index Aggregate of the Socio-Economic Framework for Agricultural and Rural Space". In the case of evaluation the regional disparities corresponding to NPRD 2007-2013 the results indicators identified in the "Intermediary Evaluation Report" of the Management Authority within Ministry of Agriculture and Rural Development, in 2013 – there were put under the same model of analysis, with the mention that the synthesis was expressed through the "aggregate index of intermediary absorption of the Community funds" (European Commission, 2011).

Multi-Criteria Analysis Method, proposed in this study, considers the following stages (Bara, 1996; Inacu, 2008; Trasca et al., 2013):

1. Insuring, normalization and processing dates and primary information's regarding both the general economic-social state of agriculture and Romanian rural space and also the selected measures from NPRD 2007-2013
2. Identifying and determining the content of the main socio-economic problems/typologies/ measures selected from the NPDR. We mention that the primary indicators system

proposed for each problem category is of nature to reflect: the way in which the approach is made (from inside-out or vice versa); the degree of profoundness of the analysis; the interest direction, etc. Simultaneously, we specified that by utilizing this method it is attributed to each indicator respectively to each group of indicators the role and functionality of the appreciation criteria of the analysis phenomena/process;

3. In order to set up the group of indicators on the problems / categories identified in the previous stage it must be considered the following aspects:
 - a. The proposed analysis directions; these have a flexible character reason for which from one and the same primary indicators group on can be structured different groups/typologies/targets/analysis categories – according to the objectives that we proposed;
 - b. The groups realized by the socio-economic problems assigned as being of interest are those who influences, in a significant measure, the final objectives of the analysis; it must be specified that the method allows corresponding to the final objective proposed to be realized change of the typologies or of the initial evaluation scales;
4. Analyzing the sequential and respectively global level of the stage of the development of branch/ measure selected from the program, it constitutes a premise of the formulation of some suggestions and future proposals of the analyzed activity field.
 - a. Characterizing the level of regional development of the agriculture and rural space and also the selected measures from the NPRD 2007-2013 implementation stage have into consideration approximately 2,000 primary indicators. Those may be assimilated to the same several “criteria” according

to which it was followed establishing the degree of territorial development at a certain moment/ achieving specific results indicators previewed within the NPRD 2007-2013, compared to the country average.

In the present case for applying the Multi-Criteria Method the primary indicators for characterizing the general socio-economic state of agriculture and rural space were concentrated in 13 groups or typologies or categories of socio-economic problems or analysis directions, as follows: financial resources; human resources; quality of human resources in territorial profile; cultivated agricultural area; livestock; animal agricultural production, in territorial profile; value of agricultural production; equipments for agriculture - agricultural tractors and machines; economic strength of regions; providing the localities with public roads, sewerage and water; state of population poverty; managerial capacity existing in the field; state of entrepreneurship.

Likewise, each of the 13 measures selected from NPRD 2007-2013 – and that we intend to analyze - were assimilated to groups and/or typologies and/or categories of general socio-economic problems identified above. Thereby, for each of the measures selected from NPRD 2007-2013 were determined sets of aggregated indicators concerning intermediate absorption of Community funds in order to evaluate them with the territorial socio-economic disparities regarding the general socio-economic state of the agriculture and rural space.

The primary elements, indicators which characterize each category/group/measure, after it is identified and put under analysis as follows (Bara, 1996):

1. Establishing the place/rank of each primary indicator compared to its Regional Average; for ranking were given in ascending order notes from 1 to 9 (1- the lowest level of a

primary indicator; 9 - the highest level). Through this procedure it is determined “the rank” (place) of each primary indicator compared to the Regional Average on considered issues / groups.

- a. By comparing the rank of each primary indicator with the Regional Average level it can be established the “rank variation”. To each indicator group is attached “a Complex Index” (Aggregated Index); these can be established as arithmetic average criteria ranking or by correlating the place (rank) hold with “importance” and/or role which was agreed to be granted for each of the indicators belonging to groups for the characterization of the general development level of the branch and /or for the implementation of measures from NPRD 2007-2013.
2. For establishing the role of indicators find in each analyzed issue (group) were allocated “Importance Coefficients” which have decreasing values, as follows: maximum score for the very important indicators which in

the case of non-achievement induce extremely serious consequences at the level of the branch/field or even of the economy; medium score for the indicators considered to be of major importance and which in the case of their non-achievement of its level induce serious consequences at the branch level, but specially on some activities inside it; minimum score for the cases in which the degree of importance of the indicators is appreciated as being secondary, given the relatively low influence exerted both on the branch, overall, and on different activities.

Practically, to each indicator from a group it's attached an “Importance Coefficient” which will conduct to re-evaluate the human action.

The variation scale size of Importance Coefficients is lower or higher depending on content, degree of homogeneity and relevance of the primary indicators series utilized for characterizing each field/ criteria/category. For the study necessity compared to the variation scale of the importance coefficients was established between 1 and 15 (Table 1).

Table 1. Variation scale of the main Importance Coefficients attribute to primary indicators used for determining the aggregated indexes of the development level of the agriculture and respectively to the absorption of the Community funds

Degree of The Indicator Importance	Consequences for Failure to Fulfill the Criterion Established	Value of Importance Coefficient	Observations
Very important	Extremely serious at the branch level and furthermore at the economic level	15-10	<i>Maximum score</i> for very important indicators which in the failure to fulfill case may have extremely serious consequences at the branch level and even at the economy level
Major	Serious but only at the level of branch or of some activities within it	9-5	<i>Medium Score</i> for indicators considered by the analyst of major importance and which in in the fulfill failure case may have serious consequence at the branch level but especially on some activities within it
Secondary	Effects with lower influence, sometimes even isolated effects	4-0	<i>Minimum score</i> for the cases in which the degree of the importance of the indicators is appreciated as secondary, given the relatively low influence exerted both on the branch, overall, and on different activities

Source: according to (Bara, 1996)

The calculation formula for determining the Aggregate Index (IAG) for each criteria group (indicators group/problems categories/ measures) which allows to quantify the place of agriculture and rural space from a region compared to others, respectively a territorial measures from the program is the following:

$$IAG_i = \frac{\sum_{i=1}^n R_i \times k_i}{\sum_i k_i}$$

where: IAG_i – Aggregated Index for characterizing the indicators/measures of the program of determining the regional level of development; this is a complex indicator; 1 – Number of indicator groups/ problems categories/ measures from the program used to quantify the level of territorial development (in this chapter is equal with 13); R_i – Rank of the primary indicator at territorial level compared with the others, according to the size included in the analysis; receive to each regional primary indicator will correspond to a certain rank; k_i – Importance Coefficient is assigned to each indicator (criteria) of evaluation stage of territorial development; i – Scale of values of the importance coefficients which in the present case may get values from 1 to 15.

3. The gaps between aggregates indicators related to each indicators group and regions, respectively the discrepancies of category/ group/measures of the program compared to the average regional level; simultaneously, this indicator also highlights the ratio in which are the territorial units, respectively the development regions from Romania.

4. Determination of global indicator of entities performance which is to be analyzed, respectively the development regions from Romania, it is based on the correlation of the Aggregate Indexes of the Socio-Economic Framework for Agriculture and Rural Development with the Specific Weight concerning the Adopted Criteria, which takes into consideration the influence that they have on the studied phenomena/process.

The calculation formula for establishing the size of overall performance estimator of regional agriculture/measures of the program is the following:

$$EstGL = \sum IAG_i \times G_{sl} \text{ and } \sum G_{sl} = 1,$$

where: EstGL – Overall Performance Estimator of Agriculture/ Implementation Measures of the Program in each development region in Romania; IAG_i - Aggregated Index of Socio-Economic Context and/ or implementation of the program measures determined for each group/considered measure, i ; G_{sl} - Specific Weight for each of the group's 1 of aggregated indicators (complex) which characterizes the subject of the comparative analysis.

On mention that the Multi-Criteria Analyze Method contains a series of elements of subjective nature, which by successive evaluation and re-evaluation ensures significant quantification of qualitative nature of the size of indicators utilized resulting: (i) an aggregate image of the development stage of the branch/field/activities in territorial profile; (ii) an appreciation modality of the competitive level compared to another reference unit.

ANALYSIS OF AGGREGATE INDEXES AND THE REGIONAL DISCREPANCIES FROM AGRICULTURE AND RURAL SPACE THROUGH THE MULTI-CRITERIA DIAGNOSTIC METHOD

At the basis of evaluation and multi-criteria analysis were, mainly, the formal data and information (Eurostat, 2013; NIS, 2013a; NIS, 2013b). In establishing the list of primary indicators and their aggregation on used suggestion from different paper (Iancu, 2008; Trașcă et al., 2013; European Commission, 2008; European Commission, 2011, European Commission, 2013).

Land Resources

According to the land use there were considered indicators that define the following eight categories: Orchards and Tree Nurseries; Vineyards and Vine Nurseries; Meadows; Pastures; Forest and Other Lands with Forest Vegetation; Arable land; Agricultural Area; Total Area. The aggregated index for the average level of regional land resources is 4.3661 (Table 2). The highest level of the aggregated index for land resources compared to its average level is found in North – East region (with 55.4% higher), in North – West region (with +37.4%) and in South – Muntenia region (with +37.0%) and the lowest aggregated index is in the Bucharest – Ilfov region (with -77.1% under the average). Likewise we mention that in the case of South – West Oltenia region the aggregated index is close to the average level (higher with only 1.6%).

Human Resources and Their Quality

Human resources and their qualitative analysis included a number of 28 indicators as follows: Total Volume of Human resources; Human Resources in Urban and Rural areas; Population Density (inhabitant / km square); Activity Rate

– Total and Activity Rate from Urban and Rural; Unemployment BIM Rate – Total, Urban, Rural; Activity Rate at Superior Level Studies – Total; Activity Rate at Medium Level Studies – Total; Activity Rate at Inferior Level Studies – Total; Activity Rate at Superior Level Studies – Urban; Activity Rate at Medium Level Studies – Urban; Activity Rate at Inferior Level Studies – Urban; Activity Rate at Superior Level Studies – Rural; Activity Rate at Medium Level Studies – Rural; Activity Rate at Inferior Level Studies – Rural; Unemployment Rate at Superior Level Studies – Total; Unemployment Rate at Medium Level Studies – Total; Unemployment Rate at Inferior Level Studies – Total; Unemployment Rate at Superior Level Studies – Urban; Unemployment Rate at Medium Level Studies – Urban; Unemployment Rate at Inferior Level Studies – Urban; Unemployment Rate at Superior Level Studies – Rural; Unemployment Rate at Medium Level Studies – Rural; Unemployment Rate at Inferior Level Studies – Rural. Aggregated indexes (IAG) corresponding to the regional human resources average is 4.8583 (Table 2). It can be noticed that in 4 of the regions (South – West; South – East; North – East; South - Muntenia) IAG of human resources is above the average (with 3.3 – 40.8%). In the others regions IAG of human resources is under the average with 1.6 – 28.1%. The lowest levels of human resources IAG, compared to the average, were registered in the West region.

Cultivated Agricultural Surfaces

In the evaluation of these categories were taken into consideration a number of 9 indicators representing: Cultivated Surface – Total; Grains Cereals; Grain Maize; Beans Leguminous; Potatoes – Total; Sugar Beet; Oil Crops; Vegetables; Green Forage in Arable Land

The Aggregated Index (IAG) for the Regional Average of the cultivated agricultural surface is 4.8420 (Table 2). It can be noticed that within 3 of the regions (South - East; South – Muntenia;

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Table 2. Aggregated note and regional disparities compared to Regional Average for the main groups of problems taken into consideration

1.1.Land Resources			1.2.Human Resources			1.3.Cultivated Agricultural Area		
Regions	IAG	Average =100, %	Regions	IAG	Average =100, %	Regions	IAG	Average =100, %
Bucharest - Ilfov (BI)	1	-77.1	W	3.4920	-28.1	BI	1.096	-77.4
Average	4.3661	0	BI	3.9240	-19.2	W	3.763	-22.3
South – West Oltenia (SW)	4.4375	1.6	NW	4.2600	-12.3	Ctr.	4.105	-15.2
West (W)	5.0179	14.9	Ctr	4.7800	-1.6	NW	4.289	-11.4
Center (Ctr.)	5.5357	26.8	Average	4.8583	0.0	SW	4.377	-9.6
South – East (SE)	5.8760	34.6	SW	5.0200	3.3	Average	4.842	0
South – Muntenia (SM)	5.9821	37.0	SE	5.1400	5.8	SE	6.114	26.3
North – West (NW)	6.0000	37.4	NE	5.4240	11.6	SM	6.746	39.3
North – East (NE)	6.7857	55.4	SM	6.8400	40.8	N E	7.070	46.0
1.4. Livestock			1.5. Animal Agricultural Production, in Territorial Profile			1.6.Agricultural Production Value		
Regions	IAG	Average =100, %	Regions	IAG	Average =100, %	Regions	IAG	Average =100, %
Bucharest – Ilfov	1.0000	-78.2	BI	1.0000	-78.4	BI	1.7766	-58.8
West	4.1463	-9.6	SW	2.4030	-48.1	W	2.2553	-47.7
Average	4.5854	0	Average	4.6269	0.0	SW	3.9149	-9.1
South – West Oltenia	5.3780	17.3	W	4.8358	4.5	Average	4.3085	0
North – West	5.3902	17.6	NW	5.2090	12.6	Ctr.	5.3830	24.9
Center	5.3902	17.6	Ctr.	6.0746	31.3	NW	5.8936	36.8
South – East	6.1707	34.6	NE	6.3284	36.8	NE	6.3298	46.9
North - East	6.3537	38.6	SE	6.9552	50.3	SM	7.2979	69.4
South - Muntenia	6.5854	43.6	SM	7.5672	63.5	SE	7.6915	78.5
1.7. Equipment with Key Technical Means for Agriculture - Agricultural Tractors and Machines			1.8. Volume of Harvested Wood, in Territorial Profile			1.9. Economic Power of Regions		
Regions	IAG	Average=100, %	Regions	IAG	Average=100, %	Regions	IAG	Average=100, %
Bucharest - Ilfov – total	1.0000	-79.1	BI - total	1.0	-82.0	NE	1.512	-77.7
North - West – total	3.0000	-37.4	SE - total	3.2	-42.9	SW	3.476	-48.8
Average	4.7955	0	SW - total	3.8	-32.1	SE	3.982	-41.4
South – West Oltenia – total	4.8409	0.9	SM - total	5.3	-4.4	SM	4.439	-34.6

continued on following page

Regional Development Disparities in Romanian Agriculture and Rural Development

Table 2. Continued

South - East – total	5.0682	5.7	Average	5.5	0	NW	4.232	-37.7
Center – total	5.6818	18.5	NW - total	5.6	0.2	Ctr.	5.482	-19.3
West - total	5.8182	21.3	W - total	5.9	5.7	Average	6.793	0
North - West – total	6.6591	38.9	NE - total	7.3	31.0	W	7.152	5.3
South – Muntenia	8.1364	69.7	Ctr. - total	7.3	32.1	BI	7.933	16.8
1.10. Providing the Localities with Public Roads, Sewerage and Water			1.11. State of Population Poverty			1.12. Managerial Capacity Existing in the Field		
Regions	IAG	Average =100, %	Regions	IAG	Average =100, %	Regions	IAG	Average =100, %
Bucharest – Ilfov	1.970	-46.2	BI	1.7959	-63.5	W	1.8000	-65.7
Average	3.659	0	Ctr.	2.4898	-49.4	Ctr.	3.2611	-37.8
West	3.659	0.0	NW	3.5510	-27.8	SW	3.5222	-32.8
South-West	4.152	13.5	W	3.6939	-24.9	BI	4.3278	-17.5
South-East	4.705	28.6	Average	4.9184	0	SE	4.8389	-7.7
Center	5.985	63.6	SM	6.3469	29.0	Average	5.2444	0
North-West	6.992	91.1	NE	6.8571	39.4	NW	5.7944	10.5
North-East	7.030	92.1	SW	7.0408	43.2	SM	5.9611	13.7
South-Muntenia	7.121	94.6	SE	8.3061	68.9	NE	7.8167	49.0
1.13. State of Entrepreneurship								
	IAG		Average =100, %					
SW	1.0852		-84.1					
W	2.4148		-64.6					
NE	3.5114		-48.5					
SM	4.9091		-27.9					
SE	5.2443		-23.0					
Ctr.	5.3466		-21.5					
Average	6.8125		0					
NW	7.1023		4.3					
Bucharest – Ilfov	8.3182		22.1					

Source: Authors' own calculations

North - East) IAG of the cultivated agricultural surface is above the average (with 26.3-46.0%). In the others regions IAG of cultivated agricultural surface is under the average with 11.4-77.4%. The smallest cultivated agricultural surfaces were registered in Bucharest – Ilfov region (with -77.4% compared to the Regional Average) and in the West region (with -22.3% compared to the Regional Average).

Livestock

In order to establish the regional disparities for this category / group of indicators were taken into account 7 indicators representing the number of cattle, swine, sheep, goats, horses, poultry and beehives. The average Aggregated Index (IAG) of Livestock is 4.5854 (Table 2). It appears that beside the regions Bucharest – Ilfov and West

(where IAG for livestock was with -78.2 under the average and respectively with -9.6) all the others development regions registered IAG levels for Livestock situated above the Regional Average (with 17.3% – 43.6% higher). The highest levels of IAG for Livestock were registered in South-Muntenia region (with 43.6% over the national average) and in North-East region (with 38.6% under the average).

Animal Agricultural Production: Territorial Profile

In order to establish the regional disparities for this category / group of indicators were taken into account a number of 5 indicators representing quantities of: meat – total, beef meat; pork meat; sheep and goat meat; poultry meat.

Aggregated Index (IAG) for the Animal Agricultural Production is 4.6269 (Table 2; Figure 1). On can be noted that beside the Bucharest – Ilfov and South – West regions (where IAG for animal agricultural production was with 78.4% under

the reference average respectively with -48.1%) all the development regions registering levels of IAG for the animal agricultural production over the region average (with 4.5% – 63.5% higher).

The highest level of IAG for the animal agricultural production is registered in South – Muntenia region (with 63.5% over the national average) and in South - East region (higher with 50.3%).

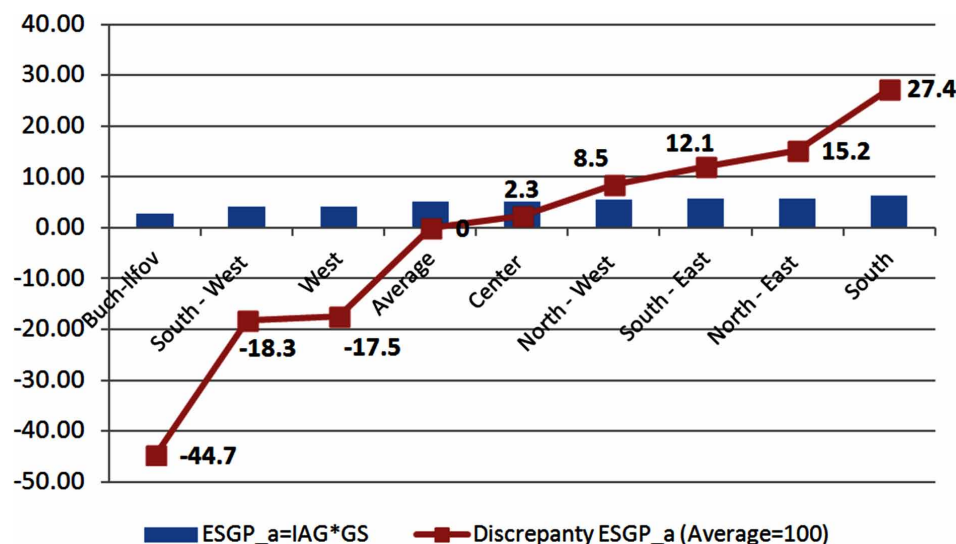
Agricultural Production Value

To establish IAG for the Value of Agricultural Production were used 7 indicators as follows: Agricultural Branch Production (thousand RON, current prices) – Total; Vegetal Production (thousand RON, current prices); Agricultural Services (thousand RON, current prices); Index for Value of Agricultural Production – Total (%); Index for Value of Vegetal Production, %; Index for Value of Animal Production, %.

According to the calculation resulted that average IAG for the Value of Agricultural Production is 4.3085 (Table 2). On regions, the highest level

Figure 1. Aggregated indexes and the regional discrepancies from agriculture and rural space for the animal agricultural production

Source: Author's own calculations



of IAG for the Value of Agricultural Production were registered in South – East (with 78.5% above the national Regional Average), in South – Muntenia (with over 69.4%) and in North – East region (with 46.9% over the reference average). At the same time, regions in Bucharest – Ilfov, West and South – West – Oltenia registered levels of IAG for the Value of Agricultural Production with -58.8% to - 9.1% under the Regional Average.

Equipment as Key Technical Means for Agriculture: Agricultural Tractors and Machines

In establishing the regional discrepancies for this category/group of indicators, 6 indicators were taken into consideration (Tractors; Seeders; Sprayers and Dusty Machine; Self-propelled Combine for Harvesting Grain; Combine Self-propelled Combine for Forage Harvester; Straw and Hay Bale Presses). Based on the levels registered by these indicators of allocated importance coefficients, and also the established rank compared to the Regional Average were established the discrepancies amongst regions.

The aggregated index (IAG) of equipment as key technical means for agriculture is 4.7955 (Table 2). It can be noticed that beside the Bucharest – Ilfov and North – East regions (where IAG of equipment as key technical means for agriculture was with 79.1% and respectively -37.4% under the average) all others development regions registered a level of IAG of equipment as key technical means for agriculture which was over the Regional Average (with 0.9% to 69.7% higher). The highest level for IAG of equipment as key technical means for agriculture were registered in South – Muntenia region (with 69.7% over the national average), in North – West (with 38.9% higher than the average) and in the West region (with 21.3% over the average), also.

Harvested Wood Volume

In determining the regional discrepancies regarding the Harvested Wood there were considered a number of 6 indicators representing: Total Quantity of Harvested Wood; Quantity of Conifer wood, Beech wood, Oak wood, of Various Species of Hardwood and Softwood ones.

The aggregated index (IAG) for Harvested Wood Volume is 5.500 (Table 2). To this indicator, in the proximity of Regional Average there were situated North – West region (with an IAG for the Harvested Wood Volume higher with only 0.2% compared to the Regional Average) and West region (with +5.7%). The highest IAG specific to Harvested Wood Volume is hold by Centre region (with 32.1% above the average) and by the North – East region (with 31.0% above the Regional Average). The IAG level for Harvested Wood Volume in North – West and West regions are relatively close to Regional Average; these are with 0.2% and respectively with 5.7% above the Regional Average. In 4 regions (Bucharest – Ilfov; South – East; South – West Oltenia; South Muntenia) IAG for the Harvested Wood Volume was under the Regional Average with 82.0 – 4.4%, phenomena correlated to the regional distribution of the forest areas.

The Economic Power of the Regions

In determining the regional discrepancies regarding the Economic-Social Strength of the Development Regions there were considered a number of 14 indicators representing: Total population; Share of Each Regions in Total Population; GDP/inhabitant, at PPS, in national currency; FDI Balance from Total in millions of Euros; FDI Balance in Agriculture in millions Euros; FDI Balance from Food Industry in millions of Euros; FDI /inhabitant, Euros; Gross Value Added (GVA) – Total/inhabitant, national currency; GVA – Agriculture/

inhabitants, national currency; GVA – Industry/inhabitant, national currency; GVA – Constructions/inhabitant, national currency; GVA – Services/inhabitant, national currency; Average Regional Monthly Net Salary Earnings, national currency; Growth Rate of the Average Regional Monthly Net Salary, percent of Brut Salary.

Aggregated index (IAG) of Economic and Social Strength for Development Regions is 6.793 (Table 2). It can be noticed that besides Bucharest – Ilfov and West regions (where reference IAG was with 16.8% and respectively with 5.3% above the Regional Average) in all the other development regions there were registered levels of IAG situated under the reference Regional Average with 77.7% (North – East region) and respectively with 19.3% (Centre region). This unequal distribution of the Economic and Social Strength of the Development Regions is also competent of explaining other processes and phenomena – such as entrepreneurship character, quality of management, absorption degree of Community funds, etc.

Regional Infrastructure: Providing the Localities with Public Roads, Sewerage and Water

Expression of the modernization degree and connection to the national and international ways, the regional level of providing the localities with public roads, sewerage and water was analyzed by using 14 indicators; Public Roads – Total; National Roads; County and Communal Roads; Density of Public Roads at 100 Km squares; Localities with Public Sewerage Equipment (number) – Total, in Municipalities and Towns and in Commune; Total Simple Length of the Public Sewerage Network, km; Number of Localities with Drinking Water Supply Installations – Total, in Municipalities and Towns and in Rural Area; Total Simple Length of Drinking water Distribution Network – Total, in Municipalities and Towns and in Rural.

Aggregated index (IAG) for providing the Localities with Public Roads, Sewerage and Water is 3.6590 (Table 2). It can be noticed that, besides Bucharest – Ilfov region (where IAG for Providing the Localities with Public Roads, Sewerage and Water was with 46.2% under the Regional Average), all the other 7 development regions registered a level of IAG for Providing the Localities with Public Roads, Sewerage and Water above Regional Average; also, it is worth to be mentioned that in the case of West region, IAG for Providing the Localities with Public Roads, Sewerage and Water as equal to the Regional Average. Likewise, it must be mention that between the regions there are strong gaps concerning providing the Localities with Public Roads, Sewerage and Water. Thus, regions with the highest level of IAG for Providing the Localities with Public Roads, Sewerage and Water (South – Muntenia, North – East and North – West, each one of them have an IAG Providing the Localities with Public Roads, Sewerage and Water with over 90% higher compared to the Regional Average) are situated high above the in terms of IAG to equip communities with public roads, sewer and water (North – West with +63.6% compared to Regional Average; South – East with +28.6%; South – West with +13.5%).

Poverty Status of the Population

Based on the Eurostat 2012 data it has been determined IAG for the Poverty State of the Population at the level of development regions. Aggregated indicators for determining the Poverty State were the following 4: Persons Found in Poverty and Social Exclusion Risk; Persons that Live in Households with Very Low Labor Intensity; Population Affected by Serious Material shortages; Poverty Rate. It can be mentioned that indicator Poverty Rate is based on available income, including consumption from own resources in 2010, from the Report “Social Trends, 2011”, (NIS, 2013).

Average aggregated index (IAG) referred to the Poverty State at the level of the development regions is 4.9184 (Table 2). The highest level of Poverty State IAG is in the region South – East, where the mentioned indicator is with 68.9% above the Regional Average. Levels over 25.0% of IAG for Poverty State are in South – Muntenia (with +29.0%), North – East (with +39.4%), as well as South – West (with +43.2%). The lowest level of IAG for Poverty State is in Bucharest – Ilfov region (where IAG was with 63.5% under the Regional Average); also, with levels under the Regional Average in this category are found Centre region (with -49.4%), North – West region (with -27.8%) and West region (with -24.9%).

Managerial Capacity Existing in Territory

Evaluating the existing Managerial Capacity State in Territory is skilled to highlight the implication power of various population categories in different activities. The Existing Managerial Capacity at Regional Level was determined by using 14 indicators, as follows: Total, Population According to their Professional Status; Employee; Employer; Self-employed; Unpaid family Workers; Urban Population – Total; Employee from Urban; Employer in Urban; Self-employed from Urban; Unpaid family Workers from Urban; Rural Population – Total; Employee from Rural; Employer from Rural; Self-employed from Rural; Unpaid family Workers from Rural.

Average aggregated index (IAG) determined for evaluating the existing Managerial Capacity in Territory is 5.2444 (Table 2). The highest level of IAG for the existing Managerial Capacity State in Territory is in the North – East region, where the mentioned indicator is with 49.0% over the Regional Average. Levels of the IAG for assessing the existing Managerial Capacity of over 10% compared to the Regional Average, were registered for the North – West region (+10.5%), South –

Muntenia region (+13.7%), as well as North – East region (+49.0%). In the other regions IAG for the existing Managerial Capacity in Territory is below Regional Average with -7.7% (South – East region) up to -65.7% (West region).

Entrepreneurship Status

In determining the regional discrepancies regarding the Entrepreneurship Status at the regional level were considered a number of 12 indicators representing: Number of active SMEs; Number of Radiated Firms – Total Units, out of which in Urban and Rural Areas; Number of Employees - Total Number of Employees, out of which from Micro SMEs, Small SMEs and from Medium SMEs; Turnover from SMEs - Total, out of which from Micro SMEs, Small SMEs and from Medium SMEs.

Average aggregated index (IAG) for the Entrepreneurship Status at Regional Level is 6.8129 (Table 2). It can be noticed that besides Bucharest – Ilfov and North – West regions, where IAG concerning the Entrepreneurship State at Regional Level was with 4.3% and respectively 22.1% above Regional Average, in the other development regions the mentioned indicator was lower than Regional Average with values between -21.5% (Centre region) and -84.1% (South – West region).

THE TERRITORIAL DISPARITIES RELATED TO SOME MEASURES SELECTED FROM THE NATIONAL PROGRAMME FOR RURAL DEVELOPMENT IN ROMANIA 2007-2013

National Strategic Plan for Rural Development of Romania (NPDR) covered the programming period 2007-2013 and was elaborated in compliance with Council Regulation (EC) no.1698/2005 of 20 September 2005 on support for rural develop-

ment by the European Agricultural Fund for Rural Development (EAFRD) and in accordance with the “Community Strategic Guidelines 2007-2013” which set out a framework for European Regional Development, European Social Fund and the Cohesion Fund. The NPDR is the expression of the National Development Priorities and Directions for 2007 - 2013 in the fields of agriculture, non-agriculture, forestry, and other investment activities in infrastructure, development and renovation of Romanian villages.(EGTC, 2008).

The Management Authority for NPDR has achieved in 2013 the “Progress Report of the Programme for the period 2007-2012” whose data and information were used further to determine the territorial disparities arise in the planning and / or implementation process of the NPRD 2007-2013. The data and information used in this paper in view to assess the territorial disparities covers the implementation period of January 1st 2007 - December 31st, 2012. At the basis of evaluation and Multi-Criteria Analysis were, mainly, the dates and information from “Report of NRDP for 2007-2012” (2013), elaborated by The Ministry of Agriculture and Rural Development, Directorate General for Rural Development - Managing Authority for NRDP. In this chapter we took into consideration 13 of the measures promoted by the NRDP 2007 - 2013, assuming that these are categories of processes / phenomena that will be the basis of determining IAG and disparities to Regional Average of financing from public funds.

Aggregate Index and Territorial Disparities on Measure no. 112 “Establishment of Young Farmers”

By the Measure no.112 “Establishment of young farmers” was approved and contracted a number of 9,408 projects, worth 207,823 thousands Euros, and by the end of 2012 were paid 68.4% of the total contracted amount. So, on average, by region, were submitted 1,176 projects, that worth

25,978 thousand Euros, the average size of a project reaching 22.07 thousand Euros / project.

Based on the data from the NPRD 2007-2012 Progress Report prepared by the Management Authority from MARD was determined IAG for the Measure no.112 “Establishment of young farmers”. The following 16-th indicators were used: Total Number of Projects Approved; Contracted Value - total, million Euros; Amount of Payments - Total, million Euros; the Average Value per project approved for public financing, Euros; Vegetal Sector - no. projects submitted by applicants; Vegetal Sector – Contracted value, million Euros; Vegetal Sector – Paid value, million Euros; Vegetal Sector - Average Contracted Value per Project, Euros; Livestock Sector – Number of Submitted Projects; Livestock Sector – Contracted Value, million Euros; Livestock Sector – Paid Value, million Euros; Livestock Sector – Average Contracted Value per Project, Euros; Mixed Sector - No. of Submitted Projects; Mixed Sector - Contracted Value, million Euros; Mixed Sector - Paid Value, million Euros; Mixed Sector - Average Contracted Value per Project, Euros.

The Regional Average Aggregate Index (IAG) for the Measure no.112 “Establishment of young farmers” is 5.1837 (Table 3). By development regions, the highest levels of IAG for the Measure no.112 “Establishment of young farmers” were in the South East region (54.3% above the Regional Average) and in South West region (52.4% above the Regional Average of IAG). Levels above the Regional Average had the North East region (+6.7%) and West Region (+37.1%).

It is found that below the Regional Average of IAG for Measure no.112 “Establishment of young farmers” were four regions (Bucharest - Ilfov, North-West, South-Muntenia and Centre), among which the most notably was Bucharest - Ilfov (IAG with 80.7% lower than the Regional Average) and the Central region (IAG with 27.9% lower than the Regional Average).

Results that the Measure no.112 “Establishment of young farmers” had the most grip in the South-East, South-West and West (52.2% of Contracted Amounts), in Bucharest - Ilfov, North-West, South-Muntenia the Submitted and Paid Projects were 26.2% of the Eligible Amounts of Selected Projects and in the Northeast and Central regions 21.6%.

It should also be noted that young farmers are “point of interest” within new National Rural Development Programme 2014-2020. Compared with previous programme 2007-2013 Ministry of Agriculture and Rural Development supplemented the allocation with over 131 million Euros for the sub-measure “Setting up of young farmers”. Thus, each young farmer will receive approx. 60,000 Euros as grant, which will be granted for a maximum period of five years. This sub-measure is still following: taking over the whole land from the older farmers; revenue growth of holdings managed by young farmers; encourage young families to stabilize with positive effect on the rural economy as a whole.

Aggregate Index and Territorial Disparities on Measure No. 121 “Modernization of Agricultural Holdings”

By Measure no.121 “Modernization of agricultural holdings” was approved and contracted a number of 2,012 projects, worth 766,498 thousands Euros, and by the end of the year 2012 were paid 54.0% of the contracted amount. So, on average by region were submitted 252 projects, it worth 95,812 thousand Euros, returning an average of 47,920 Euros / project.

IAG established for Measure no.121 “Modernization of agricultural holdings” was based on a total of 17 indicators, as follows: Number of Submitted Projects, total; Value Non-refundable-total, thousand Euros; Average Value per Project - average thousand Euros; Contracted Value - total,

million Euros; Total Paid Value, million Euros; Vegetal Sector - No. of Submitted projects; Vegetal Sector-Contracted Value, million Euros; Vegetal Sector-Paid Value, million Euros; Vegetal Sector-Average Value per Submitted Project, Euros; Livestock Sector- No. of Submitted Projects; Livestock Sector – Contracted Value, million Euros; Livestock Sector – Paid Value, million Euros; Livestock Sector – The Average Contracted Value per Submitted Project, Euros; Mixed Sector - No. of submitted projects; Mixed Sector - Contracted value, million euro; Mixed Sector - Paid Value, million Euros; Mixed Sector - Average Contracted Value per Submitted Project, Euros.

The Regional Average Aggregate Index (IAG) for the Measure no.121 “Modernization of agricultural holdings” is 5.3695 (Table 3).

By development regions, the highest levels of IAG for this measure were in the South East region (42.0% above the Regional Average) and in North West and South-Muntenia region (+33.7%, respectively +33.3% above the Regional Average of IAG). Under the levels of the Regional Average of IAG for the Measure no.121 “Modernization of agricultural holdings” were in five regions: (Bucharest – Ilfov, South-West, West, North-East and Center); among them stands out the Bucharest - Ilfov (IAG with 77.2% less than the Regional Average), South West region (IAG cu 46.2% lower than the Regional Average) and the West region (IAG 24.1% lower than the Regional Average).

It can be concluded that, relative to the size of IAG and of the determined disparities, for the Measure no.121 “Modernization of agricultural holdings” the largest request for EU funds has manifested in the regions South-East, North-West and South-Muntenia (56.8% of contracted amounts), followed cu the regions North-East, West and Central (35.3%), while in the other regions (Bucharest - Ilfov, South-West) the submitted and paid projects were under the Regional Average, these absorbing only 7.9% of the funds.

The Aggregate Index and the Territorial Disparities on Measure No.122 “Improving the Economic Value of Forests”

To Measure no.122 “Improving the economic value of forests” have applied only three development regions (The Center region with 14 projects, North-West region with 2 projects and the South-West with 1 project), per total were approved and contracted a number of 17 projects, worth 2,495 thousand Euros. On average, the value of a project was of 146.8 thousand Euros.

IAG for Measure 122 was based on a number of 3 indicators, as follows: Number of Proposed Projects; Non-refundable Value; Average Value per Project.

Aggregate index (IAG) at level of Regional Average for the Measure no.122 “Improving the economic value of forests” is 4.0 (Table 3). The Central region recorded an IAG cu 25.0% above the Regional Average. Below the Regional Average were the other two regions (North-West and South-West region with less than 50% and 25% below the Regional Average). Also, during the period 2007-2012 the Regions Bucharest –Ilfov, Sud-Muntenia, Nord-Est., Vest and South-East don’t submitted projects for the Measure no.122 “Increasing the Added Value of agricultural and forestry products” as it is mentioned in ” Report of NRDP 2007-2012 “, Ministry of Agriculture and Rural Development, Directorate General for Rural Development - Managing Authority for NRDP, Bucharest 2013.

In relation to the size of IAG and of determined disparities, the highest Eligible Values Projects returned the Central region (90.0% of total contracted amounts), and the smallest values the North-West and South-West regions (8.3% and 1.7%).

The Aggregate Index and the Territorial Disparities on Measure No.123 “Increasing the Added Value to the Agricultural and Forestry Products”

By Measure no.123 “Increasing the Added Value to the Agricultural and Forestry Products” was approved and contracted a number of 1,021 projects, worth 786,356 thousand Euros, and by the end of the year 2012 were paid 40.5% of the total contracted amount. So, on average, by region, were submitted 128 projects, worth 98,294 thousand Euros, returning 770.2 Euros / project.

IAG established for Measure no.123 “Increasing the Added Value to the Agricultural and Forestry Products” was based on a total of 10 indicators, as follows: Number of Approved Projects; Value Non-refundable; Contracted Value; Average Value of Contracted Project; Forestry - Contracted Value; Forestry - the Paid Value; Food Industry - Contracted Value; Food Industry - Paid Value; Mixed Projects - Contracted Value; Mixed Projects - Paid Value.

Aggregate index (IAG) at level of Regional Average for the Measure no.123 “Increasing the Added Value to the Agricultural and Forestry Products” is 5.4 (Table 3). By development regions, the highest levels of IAG in this measure were in the South-Muntenia region (49.6% above the Regional Average), in the South-East and North-West (with +41.7% and respectively with +21.1% above the Regional Average of reference IAG).

Below the Regional Average of IAG for the Measure no.123 were five regions (Bucharest - Ilfov, South-West, North-East, Center and West); among them stands the Bucharest - Ilfov region (IAG with 77.2% less than the Regional Average), South West (IAG with 66.5% lower than the Regional Average), South West (IAG with 54, 4% lower than the Regional Average), North East (IAG with 35.3% less than the Regional Average) and the Central region (IAG with 22.5% lower than the Regional Average).

It can be concluded that in the case of Measure no.123 “Increasing the Added Value to the Agricultural and Forestry Products”, compared to the size of IAG and to the determined disparities, the largest request of EU funding was manifest in the South-Muntenia region, South-East, North-West and West (72.5% of Contracted Amounts), followed by the Northeast and Central regions (18.5%), while the lowest were in Bucharest - Ilfov and South-West regions (9.0%).

The Aggregate Index and The Territorial Disparities on Measure No.125 “Improving and Developing the Infrastructure Related to the Development and Adaptation of Agriculture and Forestry”

By the Measure no.125 “Improving and Developing the Infrastructure Related to the Development and Adaptation of Agriculture and Forestry” were approved and contracted a number of 460 projects, worth 508 million Euros, and by the end of the year 2012 were paid 15.8% of the total contracted amount. It was noticed that, on average, by region, were submitted 58 projects, worth 63,497 thousand Euros, returning an average of 1,104,283 Euros/project.

IAG established for Measure no.125 “Improving and Developing the Infrastructure Related to the Development and Adaptation of Agriculture and Forestry” was based on a number of 8 indicators, as follows: Number of Approved Projects; Non-refundable Value; Contracted Value; Contracted Value per Area Unit (agriculture + forestry); Paid Value; Contracted Value per Approved Project; Paid Value for Consolidation and Improvement of Lands; Paid Value for Water Management.

Aggregate index (IAG) at level of Regional Average for the Measure no.125 “Improving and Developing the Infrastructure Related to the Development and Adaptation of Agriculture and Forestry” is 6.0714 (Table 3). By development

regions, the highest levels of IAG at this measure were in the regions North-West and (by 20.2% above the Regional Average and respectively by 13.9%); also in South-Muntenia region the level of IAG was by 2.0% above the Regional Average.

Below the level of Regional Average of IAG for the Measure no.125 “Improving and Developing the Infrastructure Related to the Development and Adaptation of Agriculture and Forestry” were five regions (Bucharest – Ilfov, West, South-East, North-East and South-West regions) with reference IAG varying amongst -60.0% and -14.5% of the Regional Average; within these stands Bucharest - Ilfov region (IAG by -60.0% lower than the Regional Average), West region (IAG by 51.8% below the Regional Average), South-East region (IAG by 44.5% below the Regional Average), and North-East region (IAG by 30.0% below the Regional Average).

In the case of Measure no.125 “Improving and Developing the Infrastructure Related to the Development and Adaptation of Agriculture and Forestry”, compared to the size of IAG and respectively to the determined disparities, the largest request for EU funds were manifested in the regions North-West and Center, which have absorbed 45.0% of public allocations, regions North-East, South-Muntenia and South-West have absorbed 35.8%, and the lower amounts came from the regions Bucharest – Ilfov, West and South-East (19.2%).

The Aggregate Index and the Territorial Disparities for Measure No.141 “Support for Semi-Subsistence Farms”

By Measure no.141 “Support for Semi-Subsistence Farms” were approved and contracted a number of 46,958 projects, worth 353.3 million Euros, and by the end of the year 2012 were paid 36.1% of the total contracted amount. It was noticed that, on average, by region, were submitted

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Table 3. The aggregate index and the territorial disparities for the main measures from NPRD 2007-2013

3.1. Measure No. 112 “Establishment of Young Farmers”			3.2. Measure No. 121 “Modernization of Agricultural Holdings”			3.3. Measure No. 122 “Improving the Economic Value of Forests”		
Regions	IAG	Average=100, %	Regions	IAG	Average=100, %	Regions	IAG	Average=100, %
BI	1.0000	-80.7	BI	1.2217	-77.2	BI	1.0000	-75.0
NW	3.4643	-33.2	SW	2.8867	-46.2	SM	1.0000	-75.0
SM	3.0765	-40.6	W	4.0739	-24.1	NE	1.0000	-75.0
Ctr.	3.7398	-27.9	NE	4.3153	-19.6	W	1.0000	-75.0
Average	5.1837	0	Ctr.	5.1724	-3.7	SE	1.0000	-75.0
NE	5.5306	6.7	Average	5.3695	0	SW	2.0000	-50.0
W	7.1071	37.1	SM	7.1576	33.3	NW	3.0000	-25.0
SE	8.0000	54.3	NW	7.1773	33.7	Average	4.0000	0
SW	7.8980	52.4	SE	7.6256	42.0	Ctr.	5.0000	25.0
3.4. Measure No. 123 “Increasing the Added Value to the Agricultural and Forestry Products”			3.5. Measure No. 125 “Improving and Developing the Infrastructure Related to the Development and Adaptation of Agriculture and Forestry”			3.6. Measure No. 141 “Support for Semi-Subsistence Farms”		
Regions	IAG	Average=100, %	Regions	IAG	Average=100, %	Regions	IAG	Average=100, %
BI	1.8077	-66.5	BI	2.4286	-60.0	BI	1.0000	-79.5
SW	2.4615	-54.4	W	2.9286	-51.8	W	2.2174	-54.5
NE	3.4923	-35.3	SE	3.3690	-44.5	SE	3.2174	-33.9
Ctr.	4.1846	-22.5	NE	4.2500	-30.0	SM	4.7826	-1.8
W	5.3846	-0.3	SW	5.1905	-14.5	Average	4.8696	0
Average	5.4000	0	Average	6.0714	0	NE	5.1304	5.4
NW	6.5385	21.1	SM	6.1905	2.0	SW	6.6957	37.5
SE	7.6538	41.7	Ctr.	6.9167	13.9	NW	7.6957	58.0
SM	8.0769	49.6	NW	7.2976	20.2	Ctr.	8.3087	70.6
3.7. Measure No. 142 “Starting up Producer Groups”			3.8. Measure No. 143 “Providing Services of Counseling and Advice for Farmers”			3.9. Measure No. 221 “First Afforestation of Agricultural Land”		
Regions	IAG	Average=100, %	Regions	IAG	Average=100, %	Regions	IAG	Average=100, %
BI	1.9344	-41.3	W	1.0000	-69,3	SW	1.4167	-62.2
SW	2.6066	-20.9	SM+BI	1.7541	-46,2	SM+BI	2.0000	-46.7
Ctr.	2.8689	-12.9	SE	2.5082	-23,1	W	3.4167	-8.9
SM	2.9344	-10.9	Average	3.2623	0	Average	3.7500	0
Average	3.2951	0	Ctr.	4.0164	23,1	Ctr.	4.0833	8.9
W	3.4918	6.0	SW	4.7705	46,2	NE	5.2500	40.0
NE	3.7049	12.4	NE	5.5246	69,3	SE	6.0000	60.0
SE	3.7213	12.9	NW	6.2787	92,5	NW	6.7500	80.0
NW	4.4590	35.3						

continued on following page

Table 3. Continued

3.10. Measure No. 431 – Sub-Measure 431.1 “Building Public - Private Partnerships”			3.11. Measure No. 312 “Support for the Creation and Development of Micro- Enterprises”			3.12. Measure No. 313 “Encouragement of Tourism Activities”		
Regions	IAG	Average=100, %	Regions	IAG	Average=100, %	Regions	IAG	Average=100, %
SW	2.0000	-57.9	BI	1.3750	-67.6	SW	2.3750	-49.3
BI	1.9344	-41.3	SE	3.0625	-24.9	SE	2.4375	-48.0
W	3.0000	-36.8	SW	3.8125	-10.3	SM+BI	3.0000	-36.0
SE	3.7500	-21.1	W	3.8125	-10.3	NE	3.7500	-20.0
Average	4.7500	0	Average	4.2500	0	W	4.6875	0
NE	5.8750	23.7	Ctr.	5.6250	32.4	Average	4.6875	0
NW	7.1250	50.0	NE	7.2500	70.6	NW	6.1875	32.0
Ctr.	7.2500	52.6	NW	7.3750	73.5	Ctr.	6.6875	42.7
SM	8.7500	84.2	SM	8.1250	91.2			
3.13. Measure No. 322 “Village Renewal and Development, Improving Basic Services for the Rural Economy and Rural Population and Enhancement of the Rural Heritage”								
Reg.	IAG		Average=100, %					
SE	1.8750		-70.6					
BI	1.8750		-70.6					
SM	3.7500		-41.2					
W	4.8125		-24.5					
SW	4.9375		-22.5					
Ctr.	5.1250		-19.6					
Average	6.3750		0					
NE	7.8125		22.5					
NW	8.4375		32.4					

Source: Own calculations

5,870 projects, worth 44,160 Euros, returning an average of 7,524 Euros/project.

IAG established for Measure no.141 “Support for Semi-Subsistence Farms” was based on a number of 4 indicators, as follows: Number of Approved Projects; Contracted Value; Paid Value; Contracted Value per Approved Project.

Aggregate index (IAG) at level of Regional Average for the Measure 141 “Support for Semi-Subsistence Farms” is 4.8696 (Table 3; Figure 2). By development regions, the highest levels of IAG at this measure were in the regions Center and North-West (by 70.6% above the Regional Average and respectively by 58.0%); also, in the South-West region the level of IAG was by 37.5% above the Regional Average.

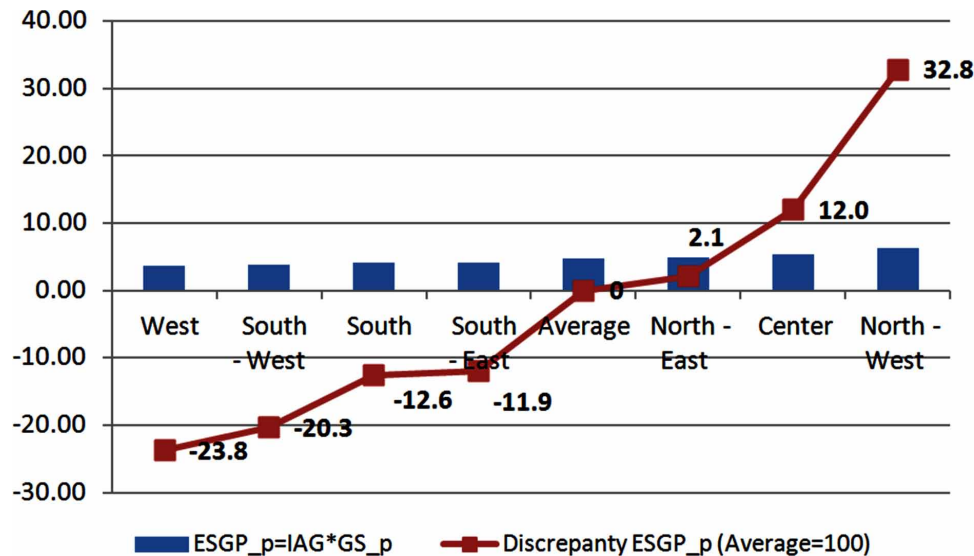
Below the Regional Average of IAG for the Measure no.141 were four regions (Bucharest – Ilfov, West, South-East, and South-Muntenia) with IAG oscillates between -79.5% and -1.8% of Regional Average; within these are Bucharest - Ilfov region (IAG by -79.5% lower than the Regional Average), West region (IAG by 54.5% below the Regional Average) and South-East region (IAG by 33.9% below the Regional Average).

Must be pointed out that the North-East region and the South-Muntenia region have had an IAG close to the Regional Average (by +5.4%, and respectively by -1.8%).

In the case of Measure no.141 “Support for Semi-Subsistence Farms”, compared to the size of IAG and respectively to the determined disparities,

Figure 2. The aggregate index and the territorial disparities for the selected measures from NPRD 2007-2013, determined by the multi-criteria diagnosing method

Source: Own calculations



the highest request/contracting of EU funds was manifested in the regions North-West, Center and South-West (57.1% of the contracted amounts), followed by the regions North-East, South-East and South-Muntenia (42.7%), and the smallest in the Bucharest – Ilfov region (0.2%).

The Aggregate Index and The Territorial Disparities on Measure No.142 “Starting up Producer Groups”

By Measure no.142 “Starting up Producer Groups” were approved and contracted a number of 35 projects, worth 5459.2 thousand Euros, and by the end of the year 2012 were paid 18% of the total contracted amount. So, on average, by region, were submitted 4 projects, worth 682.4 thousand Euros, returning an average of 155,977 Euros per project.

For determining the IAG specific for Measure no.142 “Starting up Producer Groups” has been used a number of 5 indicators, as follows: Number of Approved Projects; Contracted Value; Paid

Value; Value per Contracted Project; Regional Structure of Accessed Projects.

Aggregate index (IAG) at level of Regional Average for the Measure no.142 “Starting up Producer Groups” is 3.2951 (Table 3). By development regions, the highest levels of IAG at this measure were in North-West region (by 35.3% above the Regional Average), in South-East region and in North-East region (by +12.9% and respectively by +12.4% above the Regional Average of IAG). On mention that the West region had an IAG close to the Regional Average (by +6.0%), also.

Below the Regional Average of IAG for the Measure 142 were four regions (Bucharest – Ilfov, South-West, Center and South-Muntenia); within these stands Bucharest - Ilfov region (IAG by 41.3% lower than the Regional Average), South-West region (IAG by 20.9% lower than the Regional Average), Center region (IAG by 12.9% below the Regional Average), and South-Muntenia region (by 10.9% below the Regional Average).

So, in the case of Measure142 “Starting up Producer Groups” the largest request for EU funds was manifested in the regions North-West, South-

East and North-East which have absorbed 61.8% of public allocations, followed by the regions South-Muntenia, West and Center (by 25.0%), and the lower amounts came from the regions Bucharest – Ilfov and South-West (by 13.2%).

The Aggregate Index and The Territorial Disparities on Measure No.143 “Providing Services of Counseling and Advice for Farmers”

By Measure no.143 “Providing Services of Counseling and Advice for Farmers” were approved and contracted a number of 7,498 projects, worth 9,486.4 thousand Euros. So, on average, by region were submitted 1,071 projects, worth 1,355.2 thousand Euros, returning an average of 1,797 Euros/project.

For determining the IAG specific for Measure no.143 “Providing Services of Counseling and Advice for Farmers” have been used a number of 5 indicators, as follows: Number of Prepared and Submitted Projects; Number of Approved Projects for Financing; Non-refundable Eligible Value; Contracted Value; Average Value per Consulting Project.

Aggregate index (IAG) at level of Regional Average for the Measure no.143 “Providing Services of Counseling and Advice for Farmers” is 3.2623 (Table 3). By development regions, the highest levels of IAG at this measure were in North-West region (by 92.5% above the Regional Average), in North-East region (by +69.3% above the Regional Average of IAG) and in South-West region (by +46.2%). We also point out that the Center region had an IAG with 23.1% above the Regional Average. Below the Regional Average of IAG for the Measure no.143 “Providing Services of Counseling and Advice for Farmers” were three regions (West region, Bucharest – Ilfov + South-Muntenia, South-East); are remarkable West region (with an IAG by 69.3% lower than the Regional Average) and Bucharest – Ilfov + South-Muntenia (IAG by 46.2% below the Regional Average).

So, in the case of Measure no.143 “Providing Services of Counseling and Advice for Farmers” the largest request for EU funds was manifested in the regions North-West, North-East and South-West which have absorbed 68.3% of public allocations, followed by South-East and Center (27.7%). The lowest amounts were accessed by the regions West, Bucharest – Ilfov and South-Muntenia, which had only 4.0% of total contracted value on this measure.

The Aggregate Index and the Territorial Disparities on Measure No.221 “First Afforestation of Agricultural Land”

By Measure no.221 “First Afforestation of Agricultural Land” was approved and contracted a number of 7,498 projects, worth 9,486.4 thousand de Euros. So, on average, by region, were submitted 1,071 projects, worth 1,355.2 thousand Euros, returning an average of 1,797 Euros/project.

For determining the IAG specific to the Measure no.221 “First Afforestation of Agricultural Land” has been used a number of 3 indicators, as follows: Number of Approved Projects; Eligible Value; Average Value per Project.

Aggregate index (IAG) at level of Regional Average for the Measure 221 “First Afforestation of Agricultural Land” is 3.7500 (Table 3). By development regions, the highest levels of IAG at this measure were in North-West region (by 80.0% above the Regional Average), in South-East region (by 60.0% above the level of Regional Average) and in North-East region (by +40.0%). We also point out that the Center region had an IAG close to the Regional Average (by only 8.9% higher). Below the Regional Average of IAG for Measure 221 “First Afforestation of Agricultural Land” have been three regions (West, Bucharest – Ilfov + South-Muntenia, South-West); within these stands are South-West region (IAG with 62.2% lower than the Regional Average) and Bucharest – Ilfov + South-Muntenia regions (IAG with 46.7% below the Regional Average).

In the case of Measure no.221 “First Afforestation of Agricultural Land”, compared to the size of IAG and respectively to the determined disparities, the highest request/contracting of EU funds was manifested in the regions North-West, South-East and North-East and Center, which have absorbed 95.1% of public allocations, followed by West region (4.6%). The lowest amounts were accessed by the regions South-West and Bucharest - Ilfov + South-Muntenia, which had only 0.3% of the contracted amounts.

The Aggregate Index and the Territorial Disparities on Measure No.431 –Sub-measure no.431.1 “Building Public - Private Partnerships”

By Measure no.431 – sub-measure no.431.1 “Building Public - Private Partnerships” were approved and contracted a number of 101 projects, worth 4,201.9 thousand euro. So, on average, by region were submitted 13 projects, worth 525.2 thousand Euros, returning an average of 41,603 Euros per project.

For determining the IAG specific for Measure no.431 – sub-measure no.431.1 “Building Public - Private Partnerships” have been used a number of 4 indicators, as follows: Number of Selected Projects; Non-refundable Eligible Value; Paid Value; Average Value per Project.

Aggregate index (IAG) at level of Regional Average for the Measure no.431 – sub-measure no.431.1 “Building Public - Private Partnerships” is 4.7500 (Table 3). By development regions, the highest levels of IAG at this measure were in South-Muntenia region (with 84.2% above the Regional Average), the Center region (with 52.6% above the Regional Average) and North-West region (with 50.0% above the Regional Average).

Below the Regional Average of IAG for the Measure no.431 – sub-measure no.431.1. were the South-West region (with 57.9% below the Regional Average), Bucharest – Ilfov region (by

41.3% below the Regional Average), and the West region (by 36.8% below the Regional Average).

In the case of Measure no.431 – sub-measure no.431.1 “Building Public - Private Partnerships”, compared to the size of IAG and respectively to determined disparities, the largest request for EU funds was manifested in the regions South-Muntenia, Center and North-West which have absorbed 65.6% of public allocation/payments, followed by the North-East, South-East and West regions (29.5%). The lowest amounts were accessed by the South-West and Bucharest – Ilfov regions, which had only 5.0% of the contracted amounts for this measure.

The Aggregate Index and the Territorial Disparities on Measure No.312 “Support for the Creation and Development of Micro-Enterprises”

By Measure no.312 “Support for the Creation and Development of Micro-Enterprises” were approved and contracted a number of 2,649 projects, worth 332,099 thousand Euros. So, on average, by region were submitted 331 projects, worth 41,513 thousand Euros, returning an average of 125,368 de Euros per project.

For determining the IAG specific to the Measure no.312 “Support for the Creation and Development of Micro-Enterprises” have been used a number of 4 indicators, as follows: Number of Approved Projects; Contracted Value; Paid Value; Average Value per Project.

Aggregate index (IAG) at level of Regional Average for the Measure no.312 “Support for the Creation and Development of Micro-Enterprises” is 4.2500 (Table 3). By development regions, the highest levels of IAG at this measure were in South-Muntenia region (by 91.2% above the Regional Average), North-West region (by 73.5% above the Regional Average) and North-East (with 70.6% above the Regional Average); also the Center region has an IAG above the Regional Average (+32.4%).

Below the Regional Average of IAG for the Measure no.312 “Support for the Creation and Development of Micro-Enterprises” were the South-West and West regions (with 10.3% each of them below the Regional Average), South-East region (by 27.9% below the Regional Average) and Bucharest-Ilfov region (by 67.6% below the Regional Average).

In the case of Measure no.312 “Support for the Creation and Development of Micro-Enterprises”, compared to the size of IAG and respectively to the determined disparities, the highest request/contracting of EU funds was manifested in the regions South-Muntenia, North-West and North-East which have absorbed 50.3% of public allocations. These were followed by South-East, South-West, West and Center regions (with 48.8% of the contracted amounts). The lowest amounts were accessed by Bucharest – Ilfov region (0.9%).

The Aggregate Index and the Territorial Disparities on Measure No.313 “Encouragement of Tourism Activities”

By Measure no.313 “Encouragement of Tourism Activities” were approved and contracted a number of 975 projects, worth 159,734.8 thousand Euros. So, on average by region were submitted 139 projects, worth 22,819.3 thousand Euros, returning an average of 163,831 Euros per project.

For determining the IAG specific to the Measure no.313 “Encouragement of Tourism Activities” has been used a number of 4 indicators, as follows: Number of Approved Projects; Non-refundable Eligible Value; Paid Value; Average Value per Project.

Aggregate index (IAG) at level of Regional Average for the Measure no.313 “Encouragement of Tourism Activities” is 4.6875 (Table 3). By development regions, the highest levels of IAG at this measure were in Center region (by 42.7% above the Regional Average) and North-West region (by 32.0% above the Regional Average).

Below the Regional Average of IAG for the Measure no.313 “Encouragement of Tourism Activities” were South-West (by 49.3% below the Regional Average), South-East (by -48.0%), South-Muntenia + Bucharest-Ilfov (by -36.0%) and North-East (by -20.0%).

In the case of Measure no.313 “Encouragement of Tourism Activities”, compared to the size of IAG and respectively to the determined disparities, the largest request for EU funds was registered in the regions Center and North-West and Vest which have contracted 63.8% of public allocations. These regions were followed by South-Muntenia and Bucharest-Ilfov regions, and by North-East (21.4%). The lowest amounts were accessed/contracted by South-West, South-East, which have contracted only 14.8% of the total amount.

The Aggregate Index and the Territorial Disparities on Measure No.322 “Village Renewal and Development, Improving Basic Services for the Rural Economy and Rural Population and Enhancement of the Rural Heritage”

By Measure no.322 “Village Renewal and Development, Improving Basic Services for the Rural Economy and Rural Population and Enhancement of the Rural Heritage” were approved and contracted a number of 789 projects, worth 1,712.3 thousand Euros. So, on average by region were submitted 99 projects, worth 214.0 thousand Euros, returning an average of 2,170,165 Euros per project.

For determining the IAG specific to the Measure no.322 “Village Renewal and Development, Improving Basic Services for the Rural Economy and Rural Population and Enhancement of the Rural Heritage” have been used a number of 4 indicators, as follows: Number of Selected Projects; Eligible Contracted Value; Paid Value; Average Value per Project.

Aggregate index (IAG) at level of Regional Average for the Measure no.322 “Village Renewal and Development, Improving Basic Services for the Rural Economy and Rural Population and Enhancement of the Rural Heritage” is 6.3750 (Table 3). By development regions, the highest levels of IAG at this measure were in North-West (by 32.4% above the Regional Average) and North-East (by 22.5% above the Regional Average).

Below the Regional Average of IAG for the Measure no.322 “Village Renewal and Development, Improving Basic Services for the Rural Economy and Rural Population and Enhancement of the Rural Heritage” were the other regions, of which were emphasized South-East and Bucharest-Ilfov regions (with each Region 70.6% below the Regional Average), South-Muntenia (by -41.2%).

In the case of Measure no.322 “Village Renewal and Development, Improving Basic Services for the Rural Economy and Rural Population and Enhancement of the Rural Heritage” the largest request for EU funds was manifested in the regions North-West and North-East, which have contracted half of total (49.9% of public nonrefundable contracted allocations), followed by Center, West, South-West and South-Muntenia regions (43.4%). The lowest amounts were accessed by South-East and Bucharest – Ilfov, which had only 6.7% of total public non-refundable contracted allocations.

TERRITORIAL DISPARITIES OF SOCIO-ECONOMIC DEVELOPMENT OF AGRICULTURE VERSUS PROMOTED MEASURES CONTRACTED THROUGH NPRD 2007-2013

Based on the regional indicators of the social context from agriculture and rural space, as well as on the aggregated indicators afferent to NPRD 2007 – 2013 was determined the Global Performance Estimator/Indicator on the hypothesis that

each criteria/ measure from the Program had a relatively equal influence on it.

Analysis of the Global Performance Indicator/Estimator at Regional Level of Agriculture and Rural Space

The highest level of the Global Performance Estimator of Agriculture and Rural Space belongs to the South – Muntenia region (6.403; Table 4). Also, other four regions (North – East, South – East, North – West, Centre) reach a level of the Global Performance Estimator in Agriculture and Rural Area over the Regional Average (5.027).

The lowest level of the Global Performance Estimator in Agriculture (EstGL_a) is held by Bucharest – Ilfov region (2.780), followed by South – West Oltenia region (4.109) and West region (4.147), Table 4.

In direct link with the regional agriculture EstGL level were also the related discrepancies. Thus, compared to the Regional Average South – East region has a level of EstGL_a discrepancies with 27.4% higher (Figure 3).

North – East and South – East regions have an EstGL_a discrepancies with 15.2% and respectively with 12.1% above Regional Average of the analyzed indicator. The EstGL_a discrepancies of Center region were close to Regional Average. In Bucharest – Ilfov case EstGL_a discrepancies are with 44.7% below the Regional Average. EstGL_a discrepancies of South – West Oltenia and West regions, compared to the Regional Average are relatively close (-18.3% and respectively -17.5%).

Analysis of the Global Regional Performance Indicator of the NPRD 2007-2013

The highest level of the global measures implementation performance estimates of the program (EstGL_p) belongs to Bucharest – Ilfov region (1489). If we consider the fact that this region is not representative to the Program objectives

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Table 4. The level of Global Performance Indicator/Estimator and the Regional Discrepancies in Agriculture as well as the implementation of NPRD 2007-2013

Socio-Economic State of Regional Agriculture and Rural Development			NPRD 2007-2013		
Regions	EstGL_a= IAG*Gs ¹⁾	Average=100	Regions	EstGL_p= IAG*Gs ¹⁾	Average=100
București - Ilfov	2.780	-44.7	West	3.610	-23.8
South - West Oltenia	4.109	-18.3	South - West Oltenia	3.773	-20.3
West	4.147	-17.5	South - Muntenia	4.142	-12.6
Regional Average	5.027	0	South - East	4.171	-11.9
Center	5.142	2.3	Regional Average	4.736	0
North - West	5.456	8.5	North - East	4.837	2.1
South - East	5.635	12.1	Center	5.306	12.0
North - East	5.791	15.2	North - West	6.291	32.8
South - Muntenia	6.403	27.4	Bucharest - Ilfov	1488.990	31336.7

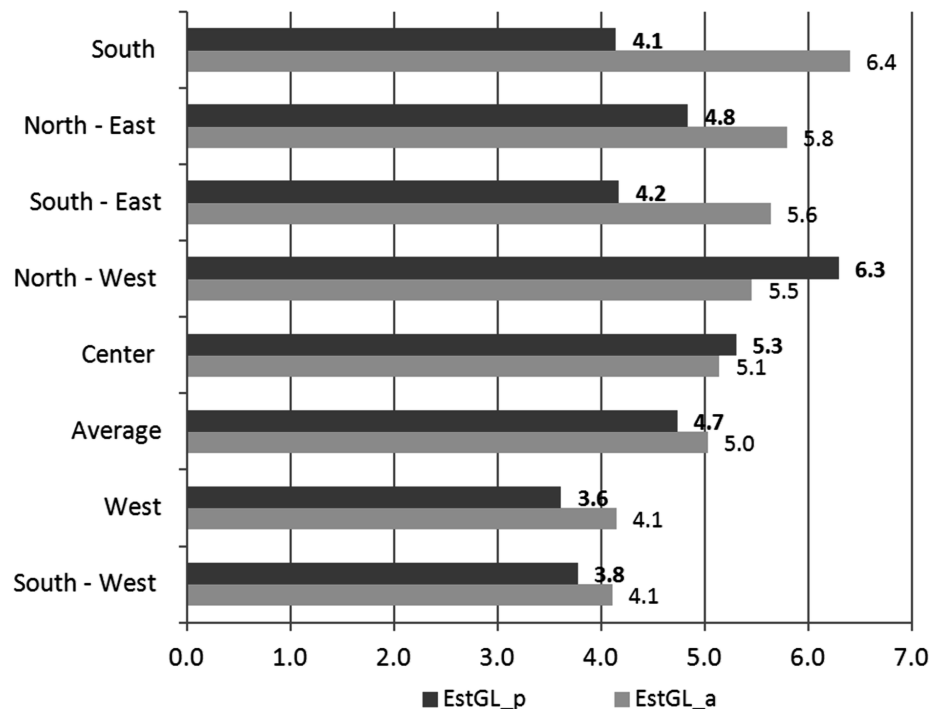
Specific weight/importance of each indicator group/measures was considered relatively constant in order to ensure an equidistant treatment to the approached issues.

Source: Own calculation

Figure 3. The level of the Global Estimators of Regional Performance and the Agriculture and Rural Space Discrepancies, as well as of the Program NRDP 2007-2013*

*It was excluded Bucharest - Ilfov region, it was considered as being unrepresentative

Source: Own calculation



then Bucharest – Ilfov region does not represent a standard of contracting/absorption of the Community funds/implementation of the Program.

In this context North–West region has the highest level of the global performance and program measures implementing (6.291). Also, other two regions (Center and North - East) reach an EstGL_p level situated above the Regional Average (4.736).

The lowest EstGL_p level is reached in West region (3.610) followed by South – West Oltenia region (3.773), South – Muntenia (4.142) and South – East region (4.171).

In direct connection with the EstGL_p level there were also the territorial afferent discrepancies. Thus, the highest EstGL_p discrepancies compared to the Regional Average have been registered in North – West region (32.8%). North – East and Center regions had an EstGL_p discrepancies level with 12.0% and respectively 2.1% higher than the Regional Average. EstGL_p discrepancies in Center region are close to the Regional Average. In the case of West region EstGL_p discrepancies are with 23.8% below the Regional Average, followed by South – West region (with -20.3%). EstGL_p discrepancies afferent to South – Muntenia and South – East regions are situated bellow the Regional Average (with -12.6% and respectively with -11.9%).

CONCLUSION

At national level in the socio-economic resources management and allocation of funds policies field is centered the county level that corresponds to NUTS-3 level from EU. In the current administrative structure of Romania there are regions of development that - at the time of their establishment - in the year 1998 - were designed to ensure both the development of appropriate local coordination of EU integration and fulfillment of some statistical objectives - the creation of entities relatively balanced in terms of socio-economic development. In the European Union the devel-

opment regions from Romania correspond to the NUTS-2 level. However, under the legislation in force, the Romanian development regions were the result of the agreement expressed freely by the county councils and local authorities, for which: they have no administrative status; do not function as administrative units; do not have legal personality.

In fact, the present Romanian model of territorial administration operates with two types of entities - counties and development regions – and it led to several disparities in terms of their level of development. The important point is that imbalances cannot be attributed to the work of Regional Development Agencies (RDA), institutional structures created to manage region units because they did not have a clear status in terms of their ability to activate in the segment of the public decision. In fact, the ARD received the first money from the state budget direct for regional development in 2012 and 2013 under the Governmental Decision (GD) no.797/2012 on the establishment of a state aid scheme to support investments that promotes regional development through the use of new technologies and the creation of related work. But this GD did not include the issues concerning regional issues for agriculture and rural development.

Starting from this reality the present study revealed, on the one hand, the development disparities between regions, with emphasis on agriculture and rural development, and, on the other hand, the assessment of the absorption capacity of a portion of the funds allocated National Rural Development Plan (NRDP) for 2007-2013.

Correlating the multi-criteria analysis indicators afferent to agriculture and rural space with those established for NPRD 2007 – 2013, respectively the Global Regional Performance Estimator's Discrepancies for Agriculture and Rural Space with those of the program, it is highlighted the response capacity of the regions to the allocations of non-refundable public funds. In the same time, considering the construction

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manner of these indicators policymakers can also make some corrections regarding the allocations of nonrefundable public funds, reorienting the available resources at a given moment.

After analyzing the level of regional indicators for agriculture and rural development some phenomena have been outlined (Table 5):

1. *South – West Oltenia and West regions* have attracted Community funds, although the general state of the agriculture and rural space have been modest (EstGL_a was with -18.3% respectively with -17.3% under the Regional Average);
2. *South – Muntenia and South – East regions* although possess a high socio-economic capacity for agriculture and rural space development (EstGL_a of 27.4% and respectively of 12.1% over the Regional Average), although within these territories the Program implementation was reduced (EstGL_p was below the Regional Average with over 10%);
3. *Center region* with socio-economic capacity for agriculture and rural area development is close to the Regional Average, but a better capacity of program implementation was registered (with 12.0% over the EstGL_p Regional Average);
4. *North – East region* with a socio-economic capacity for agriculture and rural space development of over 15% compared to Regional Average, had an program implementation capacity close to the Regional Average (EstGL_p was 2.1%)
5. *North – West region* had both socio-economic capacity for agriculture and rural development and a very high program implementation capacity;
6. *Bucharest – Ilfov region* – an unrepresentative region for agriculture and rural area – did not had a socio-economic capacity for agriculture, but on has developed the highest Program implementation capacity

The proposed method has allowed the evaluation of the absorption degree of 13 of the NPRD 2007-2013 measures according to socio-economic state of regional agriculture and rural space. The

Table 5. Correspondences between Global Regional Performance Estimators in Agriculture and the ones from the NPRD 2007 - 2013

Regions	Territorial Discrepancies of Socio-Economic Development in Agriculture and Rural Space versus those concerning the selected measures from NPRD 2007 - 2013
South - West Oltenia	Does not have agricultural capacity, didn't had the Program implementation capacity
West	Does not have agricultural capacity, did not have Program implementation capacity
South – East	Has high agricultural capacity but the Program implementation capacity was modest (under the Regional Average with over 10%)
South - Muntenia	Has high agricultural capacity but the Program implementation capacity was modest (under the Regional Average with over 10%)
Center	Has agricultural capacity(close to Regional Average), but had high Program implementation capacity
North - West	Has agricultural capacity and had very high Program implementation capacity
North – East	Has agricultural capacity and on had also a Program implementation capacity close to the Regional Average
<i>Bucharest - Ilfov</i>	Does not have agricultural capacity (does not have specific resources for developing agricultural activities), but through the administrative role (of Romania's capital) on had a very high Program implementation capacity

Source: authors' own design

Aggregated Indexes as well as the Global Performance in Agriculture Estimator and respectively of the Program, allow complex analyzes support of decisions, re-evaluations.

According to the analysis performed results that in the post-crisis period in order to achieve a sustainable economic growth of the rural space and agriculture the objective of assuring territorial cohesion will remain a necessity, only for the attainment of a balanced development in order to reduce the significant gaps that concern regional development and the ability to invest locally. Thus, territorial cohesion becomes a source of mobilization for the local potential of development and creation of cooperation networks and does not represent a compensation of handicap action.

Accomplishing these targets requires profound structural reforms within the general consolidation of competitiveness and regional productivity strategy. In this context, ensuring of regional institutional structures for a better sectoral development planning is necessary, given that in this moment the EU local and regional authorities implement two thirds of EU legislation. Such a measure will lead to more realistic evaluations of the regional impact in agriculture, innovation, sustainable rural development, because it's generally accepted that there are no universal solutions, there are several local troubleshooting.

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KEY TERMS AND DEFINITIONS

Aggregate Index of the Socio-Economic Framework for Agricultural and Rural Space:

Is an indicator complex used by Multi-Criteria Analysis Method which by successive evaluation and re-evaluation of primary indicators aggregated in a specific issues, assure a global characterization of it.

Global Indicator of Entities Performance:

Is based on the correlation of the Aggregate Index of the Socio-Economic Framework for Agricultural and Rural Space with the Specific Weight in connection with the adopted criteria, which takes into consideration the influence that it has on the studied phenomena/process.

Importance Coefficients: Is the value given to each regional analyzed problems/ issue; it can get a variety of values in accordance with the consequences estimated (by the analyst) to be obtained at the level of the branch or even of the economy; for e.g. it can be maximum, or medium, or minimum when we compare the importance of the reference issue with the influence exerted both on the branch overall, and on different activities. Practically, to each indicator from a group it's attached an "importance coefficient" which will conduct to re-evaluate the human action. The variation scale size of importance coefficients is depending on content, degree of homogeneity and relevance of the primary statistical indicators.

Multi-Criteria Analysis Method: Is the model used for the general socio-economic framework analyze which take into account several primary statistically indicators aggregated on a variety of issues. In this paper was considered 13 issues for the analyze of agriculture and rural development (Land resources; Human Resources; The quality of human resources at territorial level; Agricultural area under cultivation; Livestock; Animal

agricultural production in territorial profile; Value of Agricultural Production; Providing key technical means for agriculture; Economic power of the regions; Providing public roads, sewerage and water localities; Population poverty; Management capacity in the territory; Status of the entrepreneurship). On this way we analyzed the agriculture and rural development at the regional level in 2012. Also, the analyze of 13 measures selected from NPRD 2007-2013 which were assimilated with typologies of general socio-economic problems identified above give us information regarding intermediate absorption of Community funds at territorial level. On this way we can compare the general socio-economic regional framework for agriculture and rural development with the regional intermediate absorption of EU funds.

Overall Performance Estimator of Agriculture/Implementation Measures of the reference Program (in this paper is NPDR 2007-2013): Is a complex indicator which reflects the global performance of each Romanian development region; it is calculated taking into account Aggregated Index of Socio-Economic Context or Measures of the Program implemented, on the one hand, and the Specific Weight of them, on the others.

Rank of the Primary Indicator at Territorial Level: Represents the place established for each Primary Indicator taking into account to define the issues necessary to analyze the agriculture and rural development at the territorial level.

Regional Development: In Romania under the Law 151/ 1998 is the expression of the socio-economic development of some counties which together decided to get this status. Also, the counties which constitute the region are not administrative units with legal personality.

Chapter 2

Territorial-Based Marketing Strategies for Typical Agro-Food Products: Issues and Perspectives

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ABSTRACT

Geographical brands are one of the most relevant competitive levers in the agro-food industry, given the predominance of small and medium enterprises, with corporate brand salience closely linked to the origin of the business, the inputs, and the production process. They are one of the most significant attributes affecting the product evaluation by the consumer. This chapter aims to contribute to the understanding of the effects of geographical indications on demand side and on supply side. It summarizes the main findings highlighted by scholars about the impact of geographical indications on consumers' choice and on business and territorial strategies. It also examines the interconnections between geographical indications, agro-food products, and territorial reputation by analyzing four case studies. Best practices are linked to the communication of intangible elements related to the typical product, such as credibility, authenticity, warranty, and preservation of social and economic values.

INTRODUCTION

Given the nowadays market size, accessibility and globalization, businesses need to bring out their identity even through the lever of product

origin to gain in competitiveness. Similarly, during the decision-making process consumers seek information about origin to assess product quality and to pursue their own consumption motivations (Aiello et al., 2009).

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These aspects are much more significant in agribusiness than in other industries because the product characteristics are closely related to its origin from the viewpoint of the natural resources and the human *savoir faire*. The increased openness to new markets has forced many agro-food businesses to enhance their market positioning through the territorial anchorage.

The geographical boundaries that create distinctiveness for food products are often narrower than the country or region. Therefore, geographical brands (from COO label, to appellations of origin up to the indication of a local area of production) and their combination with corporate brands are one of the most relevant competitive advantages between countries, regions and companies. Local consumers are often the target market of the typical products, for which the designation of origin helps to strengthen consumer loyalty, to certify the origin and to preserve the product characteristics over time.

Since 1992, several food products in Europe have obtained legal protection and certification of production origin and process through the EU schemes of Protected Designation of Origin (PDO), Protected Geographical Indication (PGI) and Traditional Speciality Guaranteed (TSG) based on the Reg. EEC No. 2081/1992 and 2082/1992 repealed by Reg. EC No. 509/2006 and 510/2006 and by Reg. EC No. 1151/2012 in force nowadays. Recently, the Commission Delegated Regulation (EU) No. 664/2014 of 18 December 2013, the Commission Implementing Regulation (EU) No. 668/2014 of 13 June 2014 and the Commission Delegated Regulation (EU) No. 665/2014 of 11 March 2014 have implemented: the establishment of the Union symbols for PDOs, PGIs and TSGs, the Regulation (EU) No. 1151/2012 and the conditions to use the optional quality term 'mountain product'.

According to data available on DOOR Database (2014), about 1,200 PDOs and PGIs, and only about forty TSGs were registered in June 2014. France, Italy and Spain hold more than half of

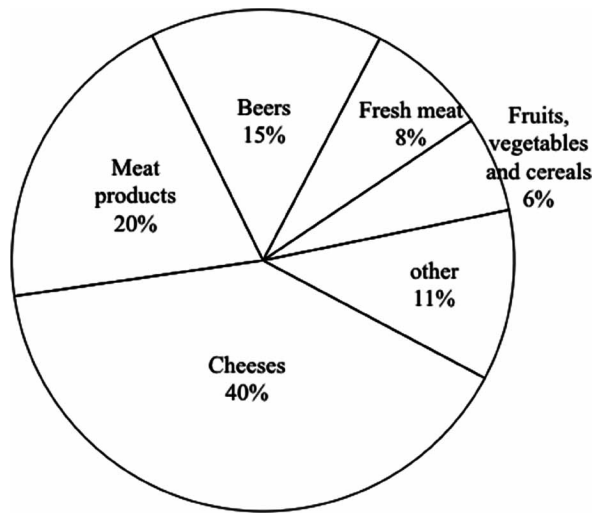
these products. Cheese, fruit and vegetable, oil and meat are the product types with the highest number of PDOs/PGIs. Wines with geographical indication are listed in the E-Bacchus Database (2014). France, Italy and Spain are the most relevant suppliers. Since 2009, the European regulation (Reg. EC No. 1493/1999) has included these wines within the same PDO/PGI categories of the other food products. In this way, a bundle of European typical wine and food products has been set up.

This wide supply results from the product specialization of European businesses based on the specificity of the natural and human resources. Problems arise in relation to the recognition in the market and the knowledge of consumers about the link between product, quality and origin. This link is easier to transmit to local consumers than to consumers outside the origin area (van der Lans, van Ittersum, De Cicco, & Loseby, 2001). Scholars agree that in the agro-food sector the indication of origin provides both the producers and the consumers with benefits, because it increases the visibility and recognition of the product on the market. Furthermore, it improves the information degree: the uncertainty and the risk perception of the consumer decrease, pulling the little-known producers on the market.

According to the data available on the European Union (2014), PDO and PGI products sales accounted for about 16 billion Euros in 2010 (latest available data), mostly in the domestic market (78%). Despite the unfavorable economic cycle in the period 2005-2010, sales have grown at an average annual rate of 3.8%. The turnover is focused on five product types, and cheeses have a dominant role (Figure 1).

Few countries generate most of the value (Figure 2). Italy concentrates almost two-fifths of the value, generated by cheeses and meat products for about 90%. Italy produces some of the most well-known designations of origin in the world, with high production volumes (i.e. Grana Padano PDO, Parmigiano Reggiano PDO, Prosciutto di Parma

Figure 1. Sales value of PDO and PGI products by type (% of total sales value, year 2010), Total Sales Value = 15.790 million euros
Source: Our elaboration from European Union (2014) data

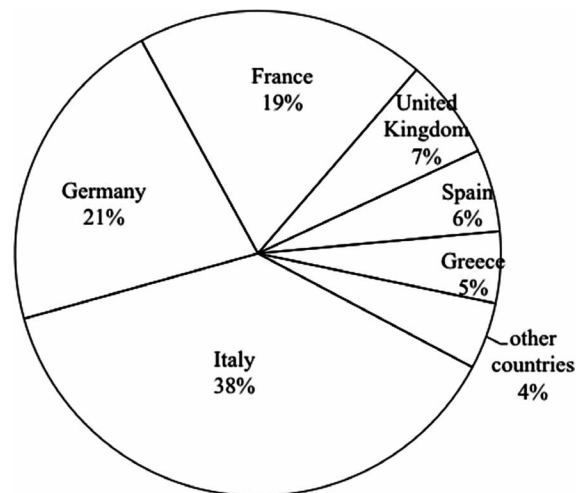


PDO). They are the most representative products of 'made in Italy' and promote a greater export propensity of Italy than other countries: 31% of Italian sales value is generated outside, while this share is limited to 6% and 12% respectively for France and Germany. The sales value of Germany and France reaches almost the same proportion on the total EU-27. However, in the first case the main contribution is given by beers (66% of the value) and meat products (21%); in the second case by cheeses (52%) and fresh meat (17%).

Producers' interest for origin is also stimulated by the widening of the target market in the emerging foreign countries, such as the markets of the Middle and Far East. According to several scholars, the origin of the business and/or the product is one of the most significant attribute affecting the evaluation of foreign products by the consumer (Kumara & Canhua, 2010). The search for a differentiation toward high-end products has sometimes driven businesses to strengthen their territorial anchorage, which is not always expressed in the same way considering the product and the target

markets. In emerging import markets, the COO label (i.e. wine of Australia or cheese of France) is considered one of the most significant cue affecting positive evaluations of foreign products. In some cases (such as for wine, olive oil or meat), producers distinguish their supply through a very strong territorial link, in order to satisfy sophisticated and willing to pay consumers. The French term *terroir*, which is nowadays spread all over the world, specifies a product that derives from the producer's ability to activate a diverse set of social and technical components (such as soil, climate, know-how, history, traditions) at the same time. The specific and limited production context and business environment provide the product with a higher and recognized quality (Charters, 2010). The indication of origin becomes a signal that more easily communicates the commitment of the producer and of the production system towards traceability, authenticity and sustainability processes than voluntary certification schemes.

Figure 2. Sales value of PDO and PGI products by Member State (000 euro, % of total sales value, year 2010)
Source: Our elaboration from European Union (2014) data



Facing this complex scenario, this chapter aims to contribute to the understanding of the effects of geographical indications on demand side and on supply side.

In the marketing science, the study of the mechanisms used by consumers to determine their choice with respect to product and/or brand origin has reignited the debate among scholars (Newman, Turri, Howlett & Stokes, 2014). The consumer associations between product attributes, business reputation and geographical brands are the issue of new investigations by scholars, using complex analysis methods that draw from marketing, sociology and psychology. In the food and wine marketing literature, geographical indications, mainly through PDO/PGI schemes, are able to add value to little-known corporate brands, given the small sizes of producers. At the same time, concerning the largest and most dynamic businesses, the consumer's perception of product quality is driven by the reputation of the geographical indication, as well as by the market penetration and reputation of the corporate brand. However, there are also agro-food businesses that feel the territorial link through the PDO/PDI too tight, and are focused on the individual brand salience and on wider territorial boundaries (regional brands or COO), which benefit from an higher degree of knowledge and appeal by consumers in distant markets. The interest of this chapter is also devoted to the analysis of the strategic-relational dynamics between businesses within the local context. Thus, the role of geographical indication is a challenging topic both from the theoretical and practical point of view and gaining knowledge of the consumer and business behaviours is useful to draw the new perspectives of this attributes for marketing in the future.

Therefore, the objectives of this chapter are twofold: 1) to summarize the main findings highlighted by scholars about the impact of geographical indications on consumer's choice and on business and territorial strategies; 2) to analyze the

interconnections between geographical indication, agro-food product and territorial reputation from the consumers' and businesses' point of view.

The chapter is organized as follows: first, the most relevant aspects concerning the effects of geographical indications on consumer perception and business strategy are presented; then, four case studies are described and discussed within a conceptual framework representing the dynamics of typical product; and finally, the conclusion suggests the main future research avenues and managerial implications.

BACKGROUND

Geographical brands are one of the most relevant competitive levers in the agribusiness industry, given the predominance of small and medium enterprises, whose corporate brand salience is closely linked to the origin of the business, the raw materials and the production process (Spielmann, 2013). The territorial link is also important for larger companies, because it helps to enhance brand reputation and to generate product differentiation. Taking the wine industry as example, product differentiation through origin constitutes the basis for the competitive strategies of businesses in the Old World of wine (France, Italy and Spain in particular), where it characterizes a product-oriented market approach. According to Spielmann and Charters (2013), *terroir* wines are a clear example of this trend. Even in the new wine producing countries, where businesses have a more market-oriented approach, the territorial anchorage is growing in importance to improve market positioning and deepen the product range. At the same time, the only indication of the COO on the packaging (for example, 'wine of Australia' or 'wine of Chile') can also become a geographical brand of quality for the consumer, especially in novice markets (Beverland & Lindgreen, 2002; Easingwood, Lockshin, & Spawton, 2011;

Bruwer & Buller, 2012). Collective or individual territorial projects are flourishing, emphasizing the characterization of the product through the specific territorial vocation. Some recent examples are illustrated by: Ballantyne (2011), who explains the relational dynamics in the wine region of Central Otago (New Zealand), where the marketing approach to *terroir* has required a collective construction of a technical and social nature; Easingwood et al. (2011), who argue the role of regionality to generate product differentiation processes for Australian wines and serve the needs of the markets; Atkin and Newton (2012), who illustrate the importance of a differentiation approach by the Californian wineries through the 'American Viticultural Areas'.

The analysis of the effects of geographical brands is a widely researched topic, spanning different interests and purposes from marketing strategy and consumer behaviour, up to market economics, public interventions and international trade (Beverland & Lindgreen, 2002; Barham, 2003; Pharr, 2005; Josling, 2006; Usunier, 2006). The topic is quite controversial, research findings are sometimes opposite and the debate involves scholars as well as businesses and public decision makers (Godey et al., 2012). For example, analyzing the role of COO, Bloemer, Brijs, & Kasper (2009) argued that "the COO effect is for instance still unclear if, how and to which extent it impacts on consumer evaluations." However, also concerning geographical indication, scholars state that "both the EU Commission and producers themselves might have overestimated the potential benefits that the PDO protection label could signal to consumers. Producers may have received the Regulation with an excessive enthusiasm: they may not have realized that a certification such as PDO or PGI must be part of a coherent marketing strategy and that an appropriate marketing mix is required." (van der Lans et al, 2001, p. 474).

Studies on the role of origin for food and wine, because of the embedded link with place

of production, have generated a research stream in marketing literature. High risk-sensitivity of food consumer can be mitigated by knowledge about the product origin; it certifies the product authenticity and provides the consumer with a 'quality commitment' which derives from the origin itself (van der Lans et al., 2001).

Regional brands, designations of origin or, more generally, geographical appellations or indications generate a mutual relationship between collective reputation and individual reputation (Durrieu, 2008). Unlike COO, which primarily acts as a cue, geographical appellations are brands that imbue a collective brand identity to a group of competing organizations (Charters & Spielmann, 2014): businesses take advantage of the collective brand image, but also the collective identity benefits from the corporate brand reputations.

Businesses and the whole production system take advantage of diverse benefits, as highlighted by many scholars. Particularly, they point out that: i) specific practices are maintained over time (for example, production techniques, supply area or characteristics of the raw materials); ii) the product identity increases thanks to the codification of collective rules; iii) a commitment to quality is expressed, favoring the reputation; iv) many actors of the local system are involved (businesses, institutions, consumers, citizens); v) a commercial designation using the geographical name, which can also develop synergies with other economic sectors (such as manufacturing, tourism, services) is implemented; vi) individual and collective investment choices are activated (Arfini, Belletti, & Marescotti, 2010).

According to Josling (2006), geographical indications can be considered as club goods. The geographical name is a public good, but a 'club' arises through the origin brand. Its use is permitted only to requiring businesses, which are located in a given territory and comply with the process and product rules. They share the same immaterial good: the geographical name and its reputation.

This implies that the individual strategies are accompanied by the collective ones, allowing the localization of economic benefits in the area. The access to the club generates a cost to the businesses (Arfini et al., 2010).

The empirical studies investigating the opinions and behaviour of entrepreneurs show that businesses seems to use the geographical brand more to protect the product from imitations or not 'original' practices and to raise barriers to entry than to have a tool of collective marketing at their disposal. As a result, obtaining the designation is more considered as a point of arrival to protect the production than as a starting point for a collective strategy (Teuber, 2011).

Nowadays, the development of the role of the collective marketing of the geographical denominations also comes from the increasing propensity to be connected by place branding strategies to enhance the territorial image of a whole country, region or specific area. This can positively affect consumer attitude towards the local supply (Papadopoulos & Heslop, 2002; Verlegh & Steenkamp, 1999).

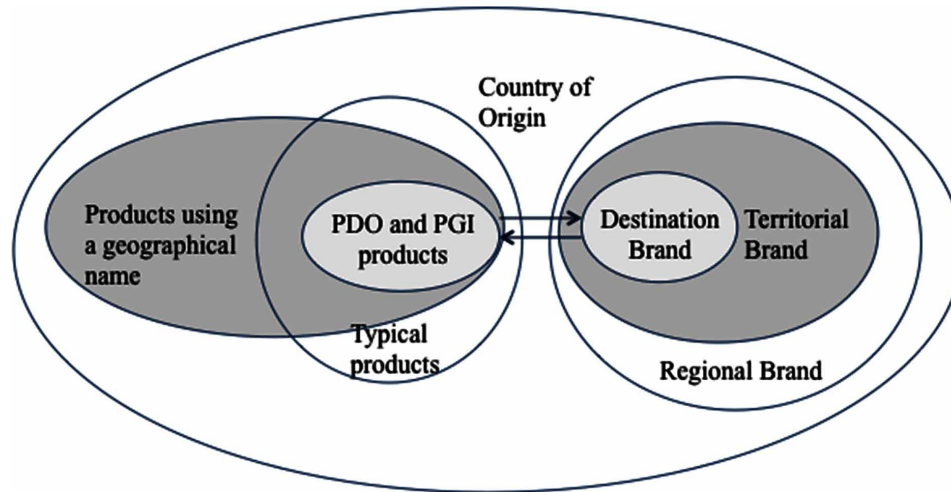
The co-creation of a typical product with an origin brand and the co-creation of a territorial or destination brand are more and more closely related today (Figure 3). COO is the most basic place and product branding: it does not act as a brand but it can affect the positive or negative perception of a product, a corporate or a place. As for the COO effect, the consumers' awareness and image of a geographical destination are relevant for the success of the local PDO/PGI marketing strategy (van der Lans et al., 2001). The universe of products using a geographical name and of typical products is very wide. However, they do not coincide because the characteristics of typicality could not be identified by consumers or producers themselves as linked to the production area. Similarly, some products bearing the geographical name are simply processed in that territory, without being able to incorporate specific distinctive characteristics. The definition of geographical

indication formulated by the Trips Agreement includes not only products whose link with the territory creates specificity and quality due to the origin, but also those who derive the reputation benefit from the territory (Arfini et al., 2010). The PDO/PGI products differ because the organization of producers realizes a co-creation that links production process and quality with origin. They recognize the benefit of using a certification and protection system (Teuber, 2011). The typical food products, and their combination with the tourism supply, are relevant factors to co-create a territorial or destination brand and characterize its differentiation capacity. At the same time, they determine territorial coordination dynamics that expand the arena of involved actors and activities. They become the driving force for the development of rural or marginal areas far from the urban or more known tourist destination. The relation is two-way, but there is no doubt that successful territorial brand and destination brand dynamics are able to attract much more attention from people, resources and reputation than single product geographical brands (Capitello, Agnoli, & Begalli, 2013).

New trends are enhancing the link between destination brand and its food and wine supply. These connections have not been completely studied yet. From the consumer point of view, scholars should understand the importance of these aspects for the destination choice. From the food and wine industry point of view, they should capture new development opportunities and a higher bargaining power with the Destination Marketing Organizations and the tourism businesses (Capitello et al., 2013).

According to Charters and Spielmann (2014), while the origin of a corporate brand can be perceived, or not perceived or differently perceived, territorial brand is strictly linked to the origin and the place. Focusing on champagne, these authors analyzed the concept of territorial brand in an innovative way. They argued that the link to a single place is indissoluble and has an overarching

Figure 3. The interlocked concepts of COO, geographical indications and place branding
 Source: our own elaboration from Arfini et al. (2010) and Charters and Spielmann (2014).



nature, encompassing all the proprietary brands in the territory and resulting from a co-creation of different actors and, at the same time, the territorial brand reputation is built from and kept alive by the marketing strategies of the individual enterprises. They identified four preconditions for strong territorial brands: an effective and sensitive brand manager; a willingness to co-operate amongst businesses; a common mythology and respect for ritual; and a local engagement.

In the marketing literature, the debate on the recognition of the geographical indications by the consumer has been recently reignited. Some recent studies, such as Pharr (2005), Koschate-Fischer, Diamantopoulos and Oldenkotte (2012), Aichner (2013) and Newman et al. (2014), confirmed the importance for businesses of this marketing factor, to conquer and satisfy customers from the most general COO to the most specific *terroir*.

Starting with Schooler's (1965) study, scholars have identified COO as a quality cue for product evaluation and purchase intention, and have begun to pay more attention to its cognitive effect (Bloemer et al, 2009). Follow-on studies have added affective ('Country of origin has symbolic and emotional value to consumers') and norma-

tive ('Consumers hold social and personal norms related to country of origin') aspects to the concept of COO (Verlegh & Steenkamp, 1999, p. 524).

The COO construct is evolving. Market globalization and production delocalization can push businesses to neglect their country or place of origin or, conversely, to clearly express it.

Pharr (2005) elaborates a holistic model that identifies antecedents, moderators and outcomes of COO effects. COO evaluation seems to be mainly subject to the cultural characteristics of the consumer (such as ethnocentrism, animosity or country stereotypes) and moderated by other product attributes (such as price, brand name and brand image) and by consumer involvement (such as product familiarity or complexity). COO evaluation can also affect perceptions of product and brand, but acts only indirectly on purchase intentions, as these involve a wider set of elements (such as attitude towards the product or budget constraints) on which COO has no direct influence (Verlegh & Steenkamp, 1999).

The COO concept is bounded to the product and has assumed many forms through the delocalization strategies of businesses (such as, country-of-design, country-of-assembly or country-of-

manufacture, etc.) (Aichner, 2013). This has given rise to the role of business identity in connoting product quality and guiding production strategies. Therefore, the concept of brand origin (BO) has been placed side by side with the COO concept. Recently, the study of the mechanisms used by the consumer to assess BO has been a new area of investigation among researchers. Although it seems clear that COO acts as a product quality cue, the link between brand and origin, its marketing relevance and consumer associations are not clear (Usunier, 2011). This happens because the link between origin and product/business spills over to perception of product quality, the brand preference and the brand loyalty. Several business strategic approaches emerge worldwide to increase consumers' COO awareness and to communicate product or brand origin using different explicit and implicit tools, often in combination with each other, from those legally regulated (for example, 'made in ...' or quality and origin label such as European PDOs/PGIs/TSGs) to those using written and spoken language, symbols, famous people or stereotypes (Aichner, 2013).

Considering food product, different studies concern consumers' perception of origin. It is investigated as the main subject of the study or as one of the product attributes. Its ability to influence the decision-making process has a multidimensional nature because it simultaneously affects many attributes: tangible attributes (physico-chemical parameters and sensory aspects), intangible attributes (producer and/or origin reputation, perception of craftsmanship and tradition), territorial attributes (preservation of local know-how, protection of natural resources, valorization of local raw materials) and ideal attributes (perception of naturalness, attachment to the small business and countertrend against standardization and globalization) (Arfini et al., 2010; Almlí, Verbeke, Vanhonacker, Naes, & Hersleth, 2011). Specificity, recognisability, relevance and credibility of the typical product emerge as key factors to promote the success of the product and the consumer willingness to pay

(Barjolle & Sylvander, 2000; Lockshin, Jarvis, d'Hauteville, & Perrouy, 2006).

The degree of consumer knowledge is equally important, because it affects the role of origin in consumers' choice. According to Perrouy, d'Hauteville, and Lockshin (2006), novice and experienced wine consumers take it differently into account. While experienced consumers combine the effect of the origin on choice with other product attributes (especially price and brand), and consider the origin when the other signals are insufficient or uncertain, the origin is less affected by the moderating effect of the other attributes for novice consumers. Chrysoschou, Krystallis, and Giraud (2012) showed that PDO/PGI contributes to increase the consumer loyalty if it is matched with a brand. The large number of registered products, the lack in education on European certification schemes by the consumer and the opportunistic and imitation behaviour of some businesses make the consumer uncertain about their real informative contribution, confused about brands, and little able to discern the product specificities (Fotopoulos & Krystallis, 2003).

The study of Adinolfi, De Rosa, and Trabalzi (2011) confirmed the positive influence of a geographical indication on the consumer's perception and showed different behaviours among consumers according to economic and cultural factors. This study also highlighted that the ability to affect consumer perception decreases when the origin label lacks in credibility.

Van der Lans et al. (2001) demonstrated that the PDO/PGI label seems to act as indicators of quality indirectly influencing the preferences of consumers; these authors found direct effect on product preference by consumers who live in the regions of origin of the product, primarily due to affective feelings about the region of origin and the local food production. Because of the wide variety of PDO/PGI labels, individuals brands and different price ranges, the geographical indication is not able to facilitate choice and consumer loyalty by itself; consumer would be most influenced by

the intrinsic perceived quality instead (Espejel & Fandos, 2009). For this reason, Espejel and Fandos (2009) argued that managers should design marketing strategies to emphasize the intrinsic properties of the agro-food products through their extrinsic attributes, among which quality labels, PDO properties and other possible differentiating quality aspects (also those of symbolic nature) help consumers to achieve a better perceived quality and a higher buying intention.

Therefore, local consumers have a different product perception than consumers far from the origin area. According to Van Ittersum, Meulenberg, Van Trijp, and Candel (2007), the region-of-origin cue effect and the certification label as quality warranty would influence both consumers, whereas local consumers would be more prone to be involved by the economic support dimension than others.

The PDO/PGI labels may serve as a quality standard ensuring traceability and authenticity and reducing transaction costs for consumers in far markets, who are reached through long distribution channels (Balestrini & Gamble, 2006).

The authenticity concept of *terroir* products has been also deepened by Spielmann and Charters (2013), who identify three dimensions expressed by consumers: the physical nature of the product, the institutional regulation and protection and the subjective perceptions. They are correlated and influence consumer behaviour and product assessment in different ways, depending on the target: the institutional dimension is mostly considered by low involved consumers, while the internalized authenticity of *terroir* is preferred by high involved consumers.

Finally, the role of typical products in consumer decision-making process is an important topic to be deepened, concerning the internalized authenticity. Charters and Pettigrew (2007) included the paradigmatic dimension among the intrinsic wine attributes. The link between origin, variety and typicality allows the consumer to interpret the quality of a product, providing the product with its

own specificity at the same time. This latter aspect favours the success of geographical indications (Barjolle and Sylvander, 2000) and it is related to the cohesion strategies of businesses, not only in terms of marketing and communication, but also of a sensorial spectrum, through which consumers can find a consistent satisfaction to their tangible and intangible expectations.

Considering the complexity of this topic, from the viewpoint of both business and collective dynamics and consumption behaviour, this chapter will give new insights into the role and the effects of geographical brands on the consumer, the business and the local system by analyzing some case studies. The empirical evidence presented in the next section will allow the achievement of two purposes: to analyze the interconnections between geographical indication, product assessment and territorial reputation from the consumers' point of view; and to examine the organizational and relational issues involved by the implementation of collective strategies and the different strategic decision levels that characterize these local production systems.

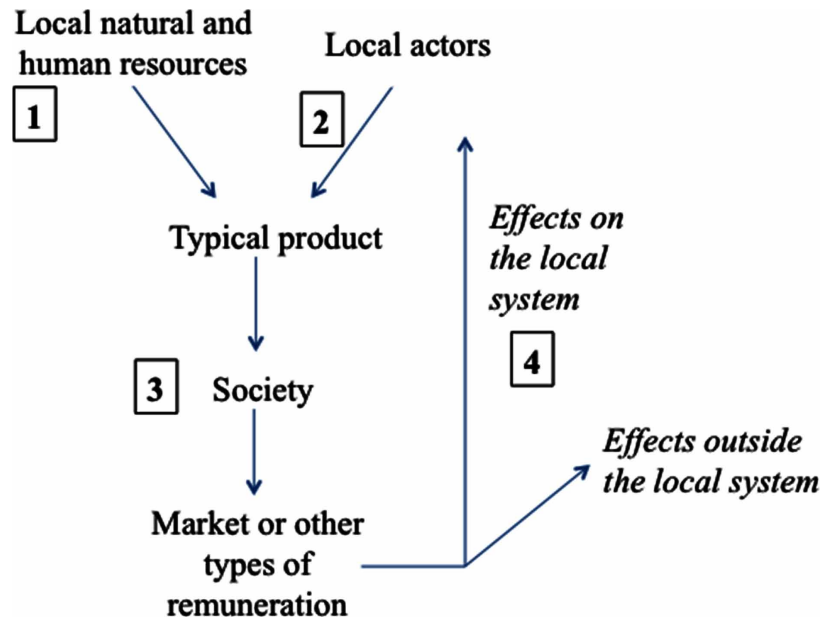
SOME EMPIRICAL EVIDENCE FROM FOUR ITALIAN CASE STUDIES

This paragraph will allow the reflection about 'the best' marketing strategies for typical products by addressing the analysis of four case studies. Many issues concern typical products, as highlighted by literature review in the previous paragraph. The case studies will focus on some critical aspects.

These case studies can be theoretically positioned in the valorization circuit of typical products proposed by Belletti, Brunori, Marescotti, and Rossi (2003), as shown in Figure 4 (Numbers in boxes indicate the case study and its positioning in the theoretical model.)

The virtuosity of the circuit primarily lies in the construction of the typical product. As well established among scholars, the construction

Figure 4. The dynamics of typical product and its local production system
Source: Our elaboration from Belletti et al. (2003) and Arfini et al. (2010).



of the local product and its identification with its origin are based on three dimensions: i) the specificity of local resources determining product peculiarities; ii) the history and the tradition rooted in businesses and in the local community; iii) the collective dimension of the product, that makes it the result of the choices of a single business and of the work of a system of businesses that interact in the determination of the product itself and of the collective marketing activities (Belletti et al. 2003; Barjolle & Sylvander, 2005; Arfini et al., 2010). The case study 1 'Construction of a product collective dimension through an efficient network of businesses' will illustrate the role of specific resources (natural and human) in representing the basis of a typical product and the business system. In this case, the market success derives from the coordination between businesses, which are philosophically and strategically homogeneous as cooperatives. They have focused on product recognition through the geographical name and the resources specificity. The case study 2 'Type of actors, product specialization and propensity to

relationships' will show the presence of businesses with different strategic orientation and product specialization in a typical area. This diversity affects the propensity to create collaborations at the local level.

These aspects are mainly developed within the local production system and need to deal with the consumers' expectations, both local or not. This is the legitimacy phase of the typical product (Belletti et al., 2003), through which the production system adheres to quality agreements and the market recognizes the characteristics of specificity, relevance and credibility of the product and shows its willingness to pay. The case study 3 'Local consumers' perception of the territorial brand' refers to this phase and will show that consumers link the product potentials to the environmental quality and they mainly infer through the extrinsic attributes of the product. They recognize distinctiveness in the origin certification when it is combined with the typicality of the raw materials (the local grape variety) as a mediator of intrinsic quality and traditional character of the product.

The phase of remuneration follows that of legitimacy. It takes place through the market or other forms recognizing an intangible value to the typical product, for which the market is willing to pay to ensure its preservation or improvement (such as hereditary values, existence value and/or anthropic values). The typical product can also activate other functions outside the agricultural sector (catering, hospitality, environmental and cultural services, etc.). The case study 2 will illustrate that these aspects have allowed the business system to obtain a renewed interest and attract the consumer on-site, growing the awareness of the collective brand and diversifying the modes to add value.

The generation of positive effects both on the local and the external environment is another important step in the dynamics of the typical product: economic development and employment in the local system, positive upstream and downstream effects and preservation of environmental, social and traditional production systems (Arfini et al., 2010). The case study 4 'Strength of the product system, localization strategies and competition strategies' highlights that business structure and development process represent differential factors influencing the relationships at the local level and the mechanisms that govern the distribution of the value generated by the typical product. They can generate imperfections in the virtuous circuit concerning the product identity or the decrease of the effect of the collective marketing (Arfini et al., 2010).

Case Study 1 'Construction of a Product Collective Dimension through an Efficient Network of Businesses'

This case study aims to describe the role of the coordination between businesses in the affirmation of a territorial brand (in this case, the apple of Vinschgau, located in South Tyrol, northern Italy, part of the collective brand South Tyrolean

Apple PGI), to show that the resource specificity can be the basis of the legitimacy process of the typical product (Capitello, 1998; Begalli, 2003).

In this case, the specificity of the resources is represented by an organizational model focused on the strategic coordination of the individual actors, as well as a territory characterized by strong vocation and high product specialization.

It is expressed by two levels.

The first level concerns the networking system puts in action by seven cooperatives specialized in preservation, selection and packaging of fruit and vegetables through the participation to the association of cooperatives (VI.P). It supports the associated producers in supply concentration and regulation, price regulation, sales promotion (for example, it is engaged in the product commercialization in new markets and in the main domestic and foreign retail chains), quality improvement (for example, paying attention to the environmental impact and to the health contents of the product) and the establishment of uniform quality standards. In addition, there is one more important aspect: the setting and implementation of communication strategies through the adoption of a collective brand (Vinschgau South Tyrol).

The second level is activated by the cooperative association and shows its relational ability in developing a wide network on behalf of its members, involving many actors, namely the provincial institution for research and experimentation, the center of agricultural dissemination, the working group for the integrated pest management, public institutions (municipalities, the autonomous province and the chamber of commerce) and the provincial association of cooperatives.

This is a source of competitive advantage because the business system has involved other public and private actors of the fruit and vegetable supply chain, allowing the activation of many trade flows (material, regulatory, financial and informational) with different degrees of intensity and integration.

The basic goals of these two network levels are related to the need to reduce environmental uncertainty and increase economic efficiency, given the continuous process of concentration of the distribution system and the increased business competitiveness. Further factors occur, which are often highlighted in literature (Begalli, 2003): reciprocity (favoured by cohesive cultural identity), ability to access resources and complementary expertise, proximity (in a natural environment characterized by orographic and climatic constraints) and goals sharing.

Relations with public institutions and the provincial association of cooperatives facilitate the collaboration and make the strategic and operational support of local public institutions more effective. Relations with the provincial institution for research and experimentation, the center of agricultural dissemination, the working group for the integrated pest management imbue advantages in placing the innovation at the system, cooperative and farmer level. These include: closeness of the association to the production needs of the cooperatives and their farmers; knowledge of the different market needs; opportunity to closely follow the research and experimentation programmes; adequate dissemination to farmers; production valorization by leveraging on environment and consumer health; higher efficiency in implementing the programme and the control of the integrated pest management.

This case study reveals that the market success of the product comes from a commercial coordination between businesses, which allowed the focus on product recognition through a geographical name, obtaining efficiency in research and innovation, supply concentration, higher negotiating power in international distribution channels and marketing effectiveness by consumer.

Possible developments to keep in mind are: continuous concentration processes, especially in the commercial phase, with probable activation of network or partnership also outside the area; role of the public institution in preparing a

fertile context for the dissemination, the supply of targeted services and the investment attractiveness; need of skills able to 'import' technological innovation from abroad.

Case Study 2 'Type of Actors, Product Specialization and Propensity to Relationships'

This case study is focused on a typical production area in the North-East of Italy devoted to the production of the 'Vialone Nano Veronese PGI' rice. It aims to highlight the presence of differentiated business typologies based on strategic orientation and product specialization, which affect the businesses propensity to create local relational networks (Begalli, 2003).

This area is characterized by the dominance of small businesses, whose supply is linked to traditional consumption styles and supported by collective marketing policies. Actually, these businesses suffer from the price competition of developing producing countries, as well as the aggressive strategy implemented by leading businesses, which aims to increase their market shares and brand image in the domestic market.

The 'Vialone Nano Veronese PGI' businesses system implements a pronounced separation of the rice production process that determines a tight network of interdependencies with strong local identification.

Four main business typologies can be identified: 1) the specialized rice mills, which concentrate about 40% of the paddy rice produced by the businesses associated to the consortium for the protection of 'Vialone Nano Veronese PGI' rice; 2) the rice growers, who provide about 45% of the total paddy rice processed within the consortium area. These represent the first and weakest stage of the supply chain, because they maintain individual relationships with rice mills, which control the final market leveraging on the brand image; 3) a cooperative who provides about 40% of the total paddy rice purchased by the rice

mills. It is a business with higher bargaining power than rice growers, because of low transaction costs and economy of scale realized through the concentration of the dried paddy rice production process. Recently, a part of the cooperative paddy production is processed into rice and marketed under its own brand; 4) the rice growers/rice mills operating at all stages of the supply chain, who markets about 15% of the total production of 'Vialone Nano Veronese PGI' rice under their own brands.

The relationship network established by these business typologies can be traced to the theoretical model of the recurrent contract, which considers the trust as basic element; it is based on the repeated exchange of resources through short term contracts, and long term relationships are expected among the parts. These relationships are strengthened through mutual communication processes, the history, the system of formal and informal rules, and the trust built up over time. The information system is based on daily and informal personal relationships. It is originated by the accumulation of knowledge, traditions and technologies about rice cultivation and processing, shared by all businesses typologies.

Albeit within a common and shared socio-cultural context, all businesses show an orientation to the valorization of their own individualities. This determines a differentiation of strategic-relational paths on the one hand, and an enhanced ability of adaptation of the local territorial system on the other hand. The rice mills try to enhance the bargaining power against rice growers, who try to react through a more extensive cooperative integration.

The activation of joint initiatives, especially concerning the marketing function, with companies operating in other local systems and focused on premium products (mainly typical wine and cheese) favoured the establishment of micro-networks, which converge the interests of customers and potential stakeholders toward the local system. In this context, the organization of events strictly

linked to rural tourism, typical gastronomy, the rice fair, and other sports and cultural initiative enhanced the attractiveness of the territory.

The territorial and institutional context played an important role in guiding the process of change. First of all, the PGI favoured a substantial rebalancing of contractual relations between local rice growers and rice mills, which has led to an intensification of horizontal and vertical integration processes. Moreover, the PGI certification and control systems resulted in integration between the local institutional system and the business micro-networks. This enhanced the role played by the consortium for the protection of 'Vialone Nano Veronese PGI' rice as an interface between businesses and institutions and as an actor of collective marketing strategies. However, the strong individuality shown by companies and the large share of production still not certified have limited the effectiveness of the consortium's activities to some extent.

Case Study 3 'Local Consumers' Perception of the Territorial Brand'

This case study aims to describe the local consumers' territorial brand perception in order to understand the link between the brand and the supply of typical products (particularly PDO and PGI wines) also considering the consumer knowledge. For this purpose, the Sannio wine region (South of Italy) is used as case study. It is analyzed using market data collected in the city of Benevento, combining two techniques: i) four focus groups and ii) a survey carried out through face to face interviews to consumers outside three shopping centers.

Focus groups were composed by people different in age, gender, occupation and wine knowledge. During the meetings, the moderator followed a questioning scheme in order to maximize the effectiveness of the discussion. The focus groups participants' characteristics, as well as the key questions of the discussion, are reported in Table 1.

Table 1. The characteristics of focus group participants and questioning scheme

Participants' Characteristics	Focus Group 1	5 participants; females; 22-24 years old; students or office workers
	Focus Group 2	5 participants; three females; 27-58 years old; students, office workers or freelancers
	Focus Group 3	7 participants; males; 27-59 years old; office workers or freelancers
	Focus Group 4	7 participants; six females; 29-50 years old; housewives, workmen or office workers
Key Questions	- What comes to your mind when you think about Sannio? - What do you like about Sannio? What don't you like? - What products come to your mind when you think about Sannio? - Do you remember the name of some wines? Do you remember the name of wines from Campania? - What adjective would you use in describing the products from Sannio? What in describing Sannio wines? - What do you like about Sannio wines? What don't you like? - What consumption occasion do you associate with the consumption of Sannio wines? What food?	

Source: Authors' elaboration

Focus groups results are summarized in a conceptual map (Figure 5), which shows the positive image associated by consumers to the territorial brand. This image is strictly linked to the concepts of natural environment, ecology, countryside and agriculture. The Sannio area is perceived as a friendly and relaxing place, where visitors can stay in farms vocated for rural tourism. Respondents also stressed relevant historical and religious destinations, local traditions, typical food and wine products, and the trust in local population. They also denoted a good knowledge of local food products and wine is the most emphasized good. Concerning wine, respondents know the main grape varieties for the production of local wines (Aglianico and Falanghina) as well as some specific areas of production (i.e. Solopaca). Products are positively described as natural, traditional and handmade.

The positive perception of the territorial brand could enhance expectations and awareness towards the wine supply. Figure 5 shows that the product legitimacy seems to be more linked to recognizable naturalistic values and the identity of the region of origin than to the intrinsic characteristics of the product.

The survey by questionnaire covered a sample of 203 people in the cities of Naples, Benevento and Caserta.

The questionnaire included questions aimed to investigate the purchase and consumption behaviour (consumption frequency, occasions and places of purchase) and the socio-economic characteristics of respondents¹. Further, it collected information about:

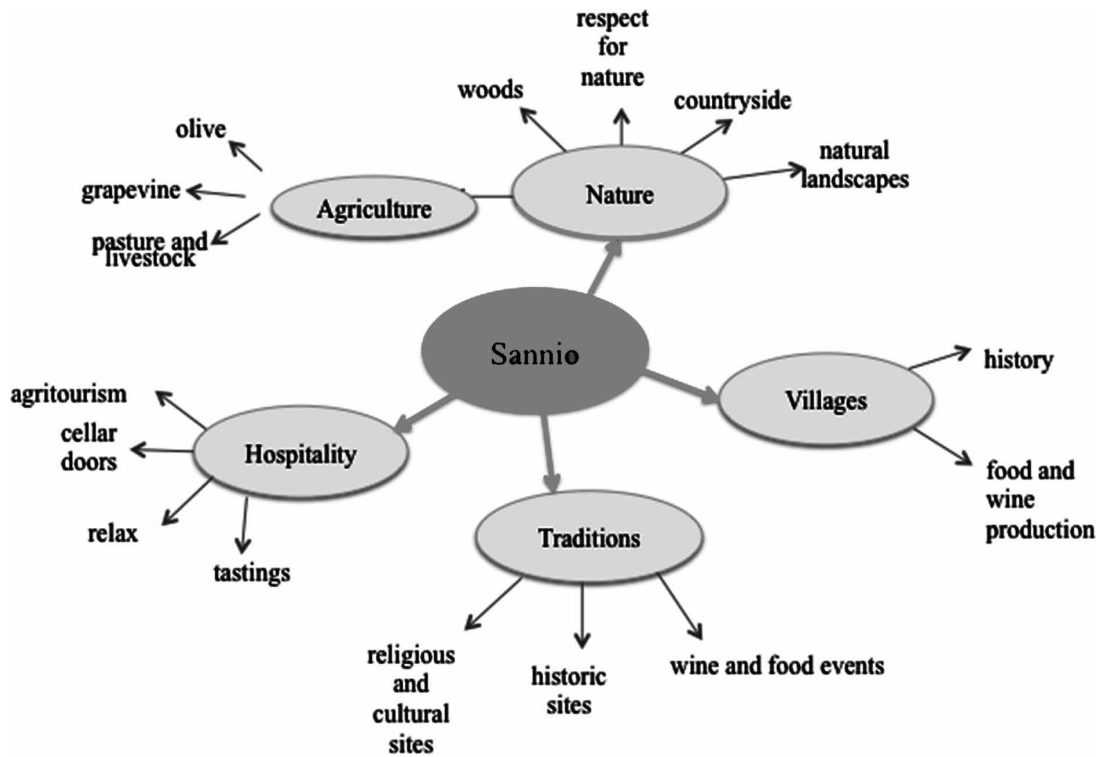
- Consumer knowledge about wine, using a method already tested by other authors (Perrouy et al., 2006);
- Importance of visible product attributes through the “Best-Worst Analysis” (Cohen, 2009).

Asking respondents to express their opinions about six statements performed the evaluation of the subjective knowledge about wine. Over 60% of respondents said they have a good knowledge about the world of wine; only 8% affirmed to know very well the world of wine and no respondent believed to have no knowledge.

The evaluation of objective knowledge was carried out by ten multiple-choice questions

Figure 5. Spontaneous perceptions of Sannio brand name

Source: Authors' elaboration



concerning the characteristics of the main wines and grape varieties, the production areas, the technology adopted in the wine-making process, and the perceived meaning of the origin brand (Table 2). The results show that over 60% of respondents know the local varieties and their characteristics, the meaning of the origin brand, production areas and some of the most important wine making practices. Sensory characteristics of wines and typical local varieties, as well as the grapes provenance, were found to be less well known than the other aspects.

The analysis of the objective knowledge was confirmed by that of the subjective knowledge: over 60% of respondents achieved a score higher than 50%; only 2% answered all of the questions correctly, while 9% answered not more than two questions correctly.

Table 2. Percentage of right answers to the questions concerning objective wine knowledge

Question Topics	Right Answers
Sensory characteristics of Falanghina	27.8%
Production area of Falanghina	20.3%
Most cultivated red grape variety in Campania	62.0%
Meaning of the acronym PDO	67.9%
Main production area in Campania	67.9%
Aromatic descriptors of Aglianico	33.9%
Taste characteristics of Aglianico	57.8%
What is Falanghina?	79.1%
What is the clarification?	61.5%
Main produced Wine in aurasi and Torrecuso	44.9%

Source: Authors' elaboration

The application of best-worst method allows the analysis of consumer preferences to evaluate the role of product attributes in the choice process. Six attributes (characterized by three/four levels) were investigated: PDO/PGI/variety ('Sannio PDO Falanghina', 'Benevento PGI Falanghina', 'Benevento PGI Chardonnay' and 'Sannio PDO white'); brand (well-known company, less well known company, cooperative and no brand); price (2, 5, 8 and 11 €/bottle); bottle shape (Bordeaux, Burgundy and Rhine); label style (traditional, artistic, innovative and graphic) and label colour (dark, whitish, gold and bicolour). Four clusters of attributes with a decreasing degree of importance emerged: 1) label with dark colour and cooperative brand; 2) Falanghina varieties (associated with PGI and PDO brands), label style (artistic, innovative and traditional) and shape of the bottle (Bordeaux); 3) bottle shape, label colour and style (bicolour, whitish, gold, Rhine and Burgundy), well-known or no brand, presence of PDO/PGI brands and variety; 4) not well-known brand and graphic style of the label. The first two clusters obtained positive scores, prevailing appreciation as 'best', the other two were mainly categorized as 'worst'.

These results highlight that consumer preferences are mainly affected by design elements and the corporate brand. The role of the origin brand is strengthened, resulting in a positive score only when it is combined with a local variety. The extrinsic attributes get more validation when it is confirmed by intrinsic attributes. The same role is played by the corporate brand: it obtains the highest positive scores when it is referred to cooperative. Given the presence of cooperatives, which often use the wine region name as a part of the corporate brand, it is apparent that their brand strategy is not only focused to communicate the business nature, but also the product origin.

Case Study 4 'Strength of the Product System, Localization Strategies and Competition Strategies'

This case study aims to point out that business structure and development process can be key factors in the construction and management of the typical product (in this case, 'Prosciutto di San Daniele PDO', Udine county, north Italy) (Begalli, 2003).

This case study is focused on a typical product, whose specificity compared to other cured hams, is the environmental conditions in which companies carry out the curing phase. In fact, while the provenance of pork legs includes all regions of northern and central Italy, the curing takes place in the town of San Daniele del Friuli.

The production of San Daniele hams has ancient origins. At the end of the Forties of the last century, companies producing hams began to lose their character of craftsmanship, to be transformed into modern industries. In the Sixties, many of the actual leading companies were already operating and created the conditions for the expansion of the San Daniele ham market. In those years, also the Consortium for the San Daniele ham protection was established and a origin brand was created, which became the engine of the local business development process.

In the Eighties, the reputation of the San Daniele ham favoured the entry of some national companies and multinational corporations in the local production system. These changes have led to the growth in size of certain local businesses and the progressive disappearance of traditional small businesses. Consequently, the share of certified production increased and the original agro-industrial district evolved in a competitive oligopolistic structure, territorially limited and characterized by strategies increasingly oriented to the global market.

Structure, strategies and performances of the local system are now related to the businesses' size and to the relationship dynamics that arise from the different corporate histories, experiences and cultures. The Consortium associates 27 producers, which can be distinguished in five strategic groups, the first two of which cover about the 75% of the total production:

- National companies with a differentiated product portfolio;
- Single-product large companies;
- Single-product medium-sized companies;
- Multinational and national corporations;
- Small family-owned businesses.

The local production system seems to adapt to individual business experiences and the district is no longer a tool for the dissemination of local entrepreneurship. Many entrepreneurs coming from outside the district are now operating within the PDO, searching for new sources of competitive advantage in the opportunities offered by the origin brand. However, they were not always able to integrate with the socio-cultural district.

The supply chain structure favours an extensive involvement of other agricultural systems, especially during the procurement of the raw material.

Businesses operating within the district did not give rise to a structured and lasting system of horizontal relations, and only when the market suffers from contingent situations of shortage or surplus, trade relations occur. The Consortium for the PDO protection offers diversified services to its members, which in turn financially support the consortium. This results in a formalized local macro-network that only related to the initiatives activated by the Consortium and many micro-networks related to individual businesses, which are linked to the macro-network and show weak relations of mutual interdependence.

The small craft businesses are the bearer's of a socio-cultural homogeneity, typical feature of the Marshallian district. However, the relevant

entrance of businesses from outside the district has changed the cooperative and competitive dimensions of the local scenario. From a theoretical point of view, this has drawn attention to the business and the system of relations it activates with different actors to understand the local dynamics.

The Prosciutto di San Daniele PDO local system shows its main strength in the competitiveness of the product, and its main weakness in the relational structure between competitive and social actors. The territory still remains a differential input. This case study is to consider how the relationship between the enterprise system and the set of historical, cultural and institutional elements can require the launch of a new collective identity. It no longer finds its coherence in the socio-cultural and size homogeneity of businesses, but in the share of strategic and competitive objectives of the territorial system. The relationship territory-businesses should go beyond the market orientation to activate processes of information and knowledge sharing, which can find in the cultural variety of business experiences an element of competitive strength.

CONCLUSION

The entrepreneurial and consumer behaviour dynamics makes the analysis of geographical indications an extremely complex marketing tool. The transferability of finding highlighted by scholars is influenced by the specificity of the studied context in relation to the product and its target market, the type of local businesses, the nature of relationships and the role of the public and private institutional context.

Thanks to four case studies, this chapter demonstrated the role and the effects of geographical brands actions on the consumer, the business and the local system in four specific realities.

Case studies 1, 2 and 4 give empirical evidence of the theoretical background analyzed by many scholars with reference to the dynamics of

the local production system. Although territorially bounded, these three realities have focused their development process on agro-food systems strongly oriented to quality production and closely tied to the culture and local traditions. They show that degree of endogeneity/exogeneity of rural development, type and intensity of institutional intervention, social and production context, structure and development paths of businesses may constitute the differential factors determining the competitive performance of the typical product.

Case study 1 showed that the valorization of local resources through coordination between individuals and businesses throughout the supply chain has been the main factor in determining the credibility of the quality label and the recognition of the product in the market. Even concerning the case study 2, production specialization and propensity to relationships represent the strengths of the production system, to gain economies of scale at the district level. Further, in this case, the local consumer is the reference target; the ability of businesses to attract consumers on site through individual and/or collective projects has helped to increase consumer awareness and loyalty and to diversify the sources of added value. Case study 4 demonstrates the strength of a product in attracting new entrants in the district. This brought a new entrepreneurial impulse to the supply, but generated a very heterogeneous and less fertile scenario from the coordination for a collective marketing viewpoint.

Finally, case study 3 helped to shed light on the consumers, especially the local ones. For them, the potential of product specificity lies in the production environment, namely the preservation of natural resources and the maintenance of tradition in using of the raw material, as a mediator of intrinsic quality of the product. In addition, the degree of objective and subjective knowledge emerges as a segmentation factor of the consumer interest for the typical product. The interest in the corporate brand overcome the interest in the

origin brand for the businesses that are able to incorporate the typicality of the origin more than the collective brand in the eyes of the consumer.

The relations between the businesses and historical, cultural and institutional factors constitute the origin specificity and constantly need to be supported by a collective identity, which can be based on the socio-cultural and dimensional homogeneity, or on the communality of strategic objectives. The coordination of the system territory-product-businesses should go beyond the simple market orientation to activate processes of circulation and sharing of information and knowledge that can be strengthened by the cultural diversity of the business experiences.

This is confirmed by the consumer, who considers relevance and distinctiveness of the typical product as intangible concepts that result from a values construction around the product, such as credibility, authenticity, warranty and preservation of social and economic values.

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KEY TERMS AND DEFINITIONS

COO: Country-of-Origin is the country where the product is manufactured or grown. Different national laws and international treaties regulate the use of this product cue.

Geographical Indication: Is a name or sign used on certain products which corresponds to a specific geographical location or origin. Its use may certify that the product has specific qualities, is made according to traditional methods, or enjoys a certain reputation, due to its geographical origin.

Industrial District: Is the ways in which economic specialization arises through clustering in a particular urban area. Since the 1980s, the term was connoted with the industrial development in

Central and North-eastern Italy, where small and medium-sized enterprises (SME) experienced strong growth. The success of SME-based Italian districts was one of the many factors that motivated economic development organizations across the world to adopt cluster promotion as an approach to stimulate growth and job creation.

PDO: The Protected Designation of Origin is the name of an area, a specific place or a country, used as a designation for an agricultural or a food product, which comes from such an area, place or country, whose quality is significantly or exclusively determined by the geographical environment, and whose production, processing and preparation takes place within the geographical area.

PGI: The Protected Geographical Indication is the name of an area, a specific place or a country, used as a description of an agricultural or a food

product, which comes from such an area, place or country, which has a specific quality attributable to its geographical origin and whose production, processing or preparation takes place within the geographical area.

Trips Agreement: The Agreement on Trade-Related Aspects of Intellectual Property Rights is an international agreement administered by the World Trade Organization that sets down minimum standards for many forms of intellectual property regulation as applied to nationals of other World Trade Organization Members.

Typical Product: A typical product is the expression of an origin area and its different dimensions and one of the most relevant expressions of local system. It plays a focal role in the rural development strategies and is synthesis of choices of private and public agents involved in its valorization.

Chapter 3

The Influence of Common Agricultural Policy (CAP) on Development of the Agricultural Production Structures in Romania and EU–28

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ABSTRACT

Agriculture represents without any debate a fundamental economic sector, with significant implication in achieving not only the food safety standards for a growing population, but also in promoting rural communities' cultural values and providing good living standards and revenues for farmers and rural population. In this context the evolution of agricultural production structures represent a major concern for all decision-makers involved in this sector. Achieving competitive results in valuing the agricultural potential impose a great convergence between inland agricultural policies and the Common Agricultural Policy in order to integrate the best measures in designing an economically efficient agricultural structure. The chapter aims to analyze the evolution of some of the agricultural production structures under the Common Agricultural Policy reform and the pressure to adapt and achieve the most functional decision in a better valorization of the inland agricultural potential.

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INTRODUCTION

The agricultural exploitations define one of the most important social and economic constructions aiming to highlight the superior value of agricultural potential, with strong reverberations on rural communities, their evolution representing an echo of different agricultural policy measures adopted over time, both at national but especially aggregate level in the EU-28. Understanding the implications of the Common Agricultural Policy (CAP) has in shaping the structures of agricultural exploitations triggers the often extensive polemics both the policy makers and the rural communities strongly affected by the measures adopted under the CAP reforms. From this perspective, the Common Agricultural Policy (CAP) is a dimension with major implications on the evolution of the European economy and the community space as a whole, being a policy with a deep tradition in the European Union (EU-28).

Despite the fact that the impact of Common Agricultural Policy reforms and transformation has already been analyzed in recent studies (Anderson et. al. 2014; Matthews et al. 2013; Andrei and Darvasi, 2012; Andrei and Untaru, 2012), there are important aspects that needs further approach. The transformations that have occurred in the last two decades have marked the evolution of the European policy effectively, modifying its radial philosophy, under the pressure of European economy are always into confrontation and evolution. Thus, starting with the reforms of the period 2003-2004, there was established a new approach slightly different than the old application method by introducing the separation of direct payments under the Single Payment Scheme (SPS) in most sectors governed by the principles of the first pillar of the CAP and strategizing efforts of rural development policy, which also represents the second pillar.

This approach has been continued by the reforms from the sugar sector in 2006 and those from the fruit and vegetables sector in 2007. The

separation of allowances and the financial support from the size of agricultural production itself and its reorientation towards market exigencies allow producers to reduce the dependence degree towards financial support measures and to increase the competitiveness of the agricultural sector as a whole.

As the literature states (Sassi, 2011), *agriculture shows the fastest convergence pace, followed at a considerable distance by services and industry*. This situation can be explained by the important role the agricultural sector holds in the EU-28 and the effects that it generates for the rural communities, most of the times dependent on the agriculture's evolution.

To complete this situation, as it has been shown (European Commission, 2007), the competitiveness of European agriculture indicates a significant increase in some important fundamental sectors, making the EU-28 one of the largest exporters of agricultural products with high added value although in the case of basic agricultural products it has been registered a decrease in market share.

The special importance of the Common Agricultural Policy made the European policy since the beginning of its existence has defined clearly objectives with impact on the community space. Thus CAP must ensure the achievement of major objectives, which are otherwise set forth in the European Treaty, and reflect the European coordinates in the domain of agricultural policy, such as (Andrei and Untaru, 2012):

- To increase agricultural productivity and rational use of production factors in order to improve the living conditions of the rural population and the development of appropriate agricultural production;
- To stabilize markets;
- To assure the supply of competitive agricultural products and high level of food safety;
- To ensure reasonable prices of agricultural products to consumers.

The implementation of the objectives enumerated above is provided by the common organization of the agricultural markets which requires standardization of the competition rules for the whole European space, especially by establishing a unitary and mandatory organizing coordination of national agricultural markets.

The present Common Agricultural Policy (CAP) is the result of tough, consistent, difficult reforms that required most of the times massive reconsiderations of the whole European agricultural system, which has been often at the confluence of economic demands and political decisions. In this respect, there are noteworthy four major reforms that have shaped the new CAP requirements, respectively MacSharry Reform (1992), Agenda 2000, Fisher Reform (2003) and Health Check (2008).

Thus MacSharry Reform (1992) aimed mainly reducing market distortions by diminishing the value of support prices and creating a mechanism of severance and direct payments related to the direct use of land or the amount of animals that farmers hold. As (Schmid and Sinabell, 2007) state in recent literature “the 1992 CAP reform was carried out in order to control agricultural budgets and prepare the completion of trade negotiations of the Uruguay Round” (Schmid and Sinabell, 200; p. 333).

In this context, the major strands within this reform aimed at following directions:

- To reduce budget allocations for agricultural expenditure by diminishing administrative prices,
- To generalize the system of production quotas in the entire European space,
- To disengage allocation of subsidies and support in relation to production,
- To introduce early retirement system.

Although much of the effects of the reform were positive and have achieved their targets, the agricultural markets are more predictable, produc-

tion is more easily absorbed by the market and for the farmers if it can noticed a slight improvement of income level but some important aspects should have been corrected.

Obviously Agenda 2000 continued the reforms started in 1992, and as (Anderson, 2014 or Swinnen, 2001) stated, it deepened and widened the MacSharry reform while the adopted measures were extensions of the previous reform. For this approach the policy of rural development is fundamental, which in these conditions is formed and recognized as representing Pillar II of the CAP. The measures taken in this phase have had the following results (Kelch, 1999):

- To reduce cereal prices by 15% from 24 EUR / tons at 18EUR / tons, coupled with a progressive offset of 9 € / tons for direct payments;
- To reduce direct payments to producers of oilseeds by 33% within 3 years in order to match its level of payments for cereals in 2002;
- To establish the basic rate of withdrawal of lands from agriculture circuit for the arable crops to 10% for the period of 2000-2006;
- To reduce price support for beef by 20%, respectively, 2.224 Euro / tons;
- To delay the reform of dairy products by 2005/2006;
- To increase milk share with 1.2% in the first two years;
- To establish agricultural expenditures for the year 2005/2006 to 4.5 billion. (Kelch, 1999; p.15)

But the greatest achievement of Agenda 2000 referred to the changing perceptions regarding the system of direct payments. As a result of this reform there was a change in the center of gravity, thus the mechanism of supporting the prices became more important than that of supporting farmers' incomes through modulation of direct payments to small farmers. This measure not only

led to an upgrade of the condition of small farmers and European farmers but somehow solved the problem of a permanent surplus of agricultural production and the competitiveness improvement of the community agriculture sector.

The measures adopted under Agenda 2000 were refined and diversified three years later by adopting Fisher Reform, a more necessary measure from the perspective of enlarging European Union to 25 countries, which brought with it high pressures on the community budget from agricultural perspective, if we consider the size of the Polish agricultural sector that was to compete at least as dimensions to that of France.

In this regard, the guidelines of the Fisher Reform concerned the achievement of decoupling financial payments for production, agriculture, cross-compliance, and compulsory modulation. (Erjavec et al.2009; Nowicki, 2002)

The philosophy CAP imposed through Fisher Reform was materialized in the adoption of Regulation (EC) no. 1782/2003¹ that founded and implemented tools and mechanisms or necessary schemes to adopt the new functioning mode of community agricultural policy. In this context according to (European Council, 2003) have been established the following aspects:

- The cross-compliance scheme has been designed to promote a more environmentally friendly agriculture and empower farmers in promoting sustainable farming practices while it is also a mandatory element in the analysis of financial support, or as the case, in keeping the grants and financial aid for agriculture;
- The substantiation of a budgetary discipline mechanism to ensure a more coherent correlation of CAP expenditures with annual financial limit set in community budget;
- The aid modulation scheme that allows a more facile transfer of the financial allocations between the two pillars of the CAP,

having a direct and immediate effect in promoting multifunctional agriculture in the EU-28;

- The agricultural counseling scheme designed to European farmers;
- The integrated management and control scheme of funds for completion of the CAP. (European Council, 2003).

The 2008 CAP “Health Check” represented a necessary step in order to continue the reform process in 2003. In these conditions the effectiveness check of the measures adopted in the CAP focused on four fundamental dimensions and they took into account (European Commission, 2007):

- The possibility of granting financial incentives in the consolidation dimension of rural development within the pillar II in order to adapt the exploitations to climate change by using with higher responsibility the natural resources and protecting the biodiversity;
- Using cross-compliance mechanism based on statutory management requirements (SMR) and good agricultural and environmental condition (GAEC) on effective management of available water resources and the appropriate achieving of the objectives set for the climate change management;
- Boosting agricultural research by promoting new technologies in rural areas and involving rural communities in production of second generation biofuels, which are more competitive and environmentally friendly;
- Analysis of the existing system of financial aid in energy crops and adapting it to the requirements imposed by achieving high economic performance. (European Commission, 2007).

The dimension *The 2008 CAP Health Check*² was much more complex than the previous reforms, targeting a wide range of issues with significant impact on European agricultural sector. The main issues tracked during verification of the health of agricultural policy were represented by simplified single payment scheme - in which EU Member States are allowed to use simplified Single Area Payment Scheme by 2013 instead implementing requirements of Single Payment Scheme by 2010. As for Romania and Bulgaria they could use the system of single simplified Payment Scheme (SSPS) by 2011.

On the other hand, there was much diminished the role of market intervention and supply control through the use of quotas, public intervention, price support and refunds that used to contribute substantially to the orientation of European agricultural production. However the Commission documents (European Commission, 2007) highlighted the need to preserve the intervention measures in the event of certain types of cereals, as common wheat grain, to constitute a so-called “safety net” and for the rest of grains the price will be established freely in the market at a balance between supply and demand.

As for the measure concerning the withdrawal of lands from the agriculture circuit there has been eliminated the supply management and increased the environmental dimension of this measure. SPS application diminished the effects of such measures, losing some efficiency and relevance and thus involving a reorientation of the development measures to promote sustainable rural communities given the heterogeneity in space of agro-environmental conditions. Other measures aimed at controlling the supply of agricultural products, *financial support for mountainous regions*, especially expiring quotas for dairy products and preparing the transition to a market system.

In Figure 1 there is presented the historical evolution of the CAP in the European area during 1962 - post 2013.

The evolution of CAP measures largely reflects political mutations in the European space and thus center of gravity shifted from direct support of agricultural production through substantial financial allocations to much finer measures of supporting farmers' income and promoting the development of rural communities. Moving attention from the mechanism of direct support to socio-durable awareness dimension of the community space occurs with enlargement EU-15 to EU-25 and then EU-27 that imposed severe pressure on the Community budget.

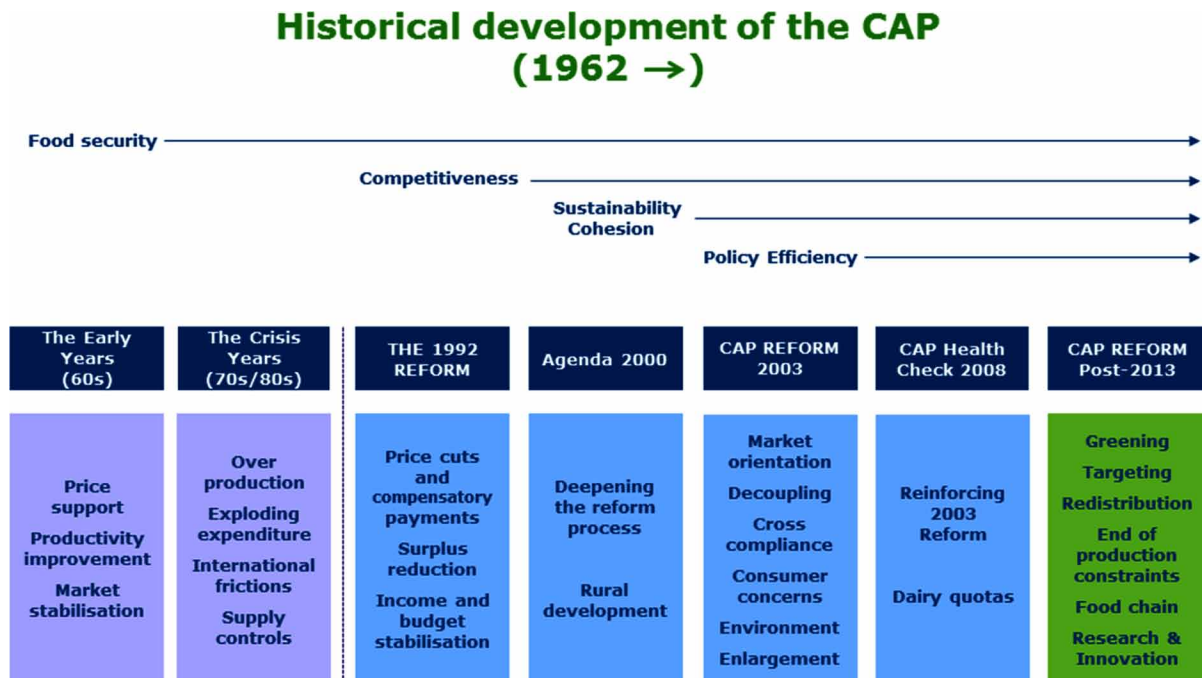
The effects of CAP reform reflect directly and unequivocally the structures of agricultural production. The states that integrated themselves in the first, respectively the second wave, disrupted to some extent the operation mechanism of CAP, whose main measures were intended especially to support classically the agricultural production and thereby “calming down” the large rural communities dependent on agriculture. When Poland and later Romania joined the EU they generated farm size enlargement of the European Union and implicitly the budgetary effort for the CAP. In these conditions, the size of CAP's reorientation to social and environmental dimensions counterbalances the practices of the previous agricultural financial mechanism.

In these conditions there is very important to notice the effects these reforms generated in the case of the European agricultural production structures from a much wider perspective, namely the confrontation between the scale and the social and political environment. This cannot be done without understanding the concept of agricultural exploitation /farm and its evolution in specialized literature and European and national legislation.

In order to achieve a better understanding of the effects of the CAP on farm structures we should take into consideration their classification according to the criteria available in a specialized literature, especially considering the rigors of European and national legislation.

Figure 1. History evolution of Common Agricultural Policy since 1962 to post 2013 reforms

Source: Authors' analysis based on DG Agriculture, http://ec.europa.eu/agriculture/cap-history/index_en.htm



Based on these considerations, the Romanian agriculture over time, as professors (Bold and Crăciun, 2012) assert in their study (2012), focused on three main forms of development:

- Traditional type, the peasant farms, located mainly in hilly and mountainous areas and suburban areas, where the owners get their income from other industries or services, completed with agricultural income;
- Households with a medium technical level in agricultural associations and agribusinesses from the main agricultural areas, with land held in farms optimally organized and shaped;
- Industrial type, the combined complex or specialized farms. (Bold and Crăciun, 2012; p. 351)

Given this typology of organizational systems of exploiting the agricultural potential it is up to

us to adopt the one which is the most effective or a combination of all the three of them. In the literature there are given a wide variety of classifications³ regarding agricultural exploitations, each of them highlighting those unique elements with specific characteristics that emphasize the functionality and viability.

Despite this variety of classifications, because of the numerous and the varied agricultural exploitations, there should be accomplished a close analysis through all the assessment and classification criteria to achieve a better framing, as it is argued in the literature (Tofan, 2005/2006), there should be taken into account not only economic criteria but also social and ecological economic interest not only private, but also the national economic interest, the abundance or scarcity of natural production factor, number of population, traditions (Tofan, 2005/2006, p. 128).

From the variety of classifications offered by literature studies and literature, it is considered

that the most synthetic and encompassing typology classification of agricultural exploitations was given by a group of foreign authors in a study (Rizov et al, 1999) under the World Bank coordination in 1999, presented in the table below.

According to this classification there are shown the three essential elements for an agricultural exploitation to function: the entrepreneur, the management system and the workforce. In most cases, excepting the industrial farm, the fundamental nucleus of agricultural exploitation is formed from the farmer's family that provide not only the labor force necessary for the activity, but also initiate and manage the farm activities and ensure the functionality in generating the necessary income.

The employed labor force is the defining element for industrial farms, professionally organized, scientifically-based, with qualified management. In the case of agricultural cooperatives, where besides family we can meet the tenants and the suppliers as entrepreneurs, it is like an exception to find employed sole managers and labor force. This classification presented above in Table 2 may be supplemented by classification realized by (Zahiu, 1999; p. 92-94) in her work called "Management agricol" (Agricultural Manage-

ment), which is more detailed and much closer to Romanian realities, identifying four major types of agricultural units.

The experience has shown that these forms of organization can achieve superior results in the agricultural potential, constituting a viable form of agricultural exploitation.

The national legislation⁴ classifies farms using three basic criteria: the nature of these activities, the size and namely ownership of the farm.

Classified in accordance with the nature of the work the agricultural exploitations perform they can be grouped into:

1. Farms for crops;
2. Farm animal sector;
3. Fish farm sector;
4. Mixed farms.

Given the size of their farms, the agricultural exploitations are differentiated into:

1. Commercial farms;
2. Family farms.

Depending on farm ownership, they are classified into three major categories:

Table 1. Types and basic characteristics of agricultural exploitations in the EU space

Exploitation Type	Management	Entrepreneur	Labor Force	Share Time Work at Farm	Share Income Farm
Family Farm	family	family	family	>50%	>50%
Family Farm with labor employment	family	family	family + labor employment	>50%	>50%
Family Farm with part time	family	family	family	<50%	<50%
Cooperative	family	family	family	-	-
Contractual farm (vertically integrated)	family / supplier	family / supplier	family	-	-
cooperative	family /employed manager	family + tenants	family and/or labor employment	-	-
Industrial farm	employed manager	tenants	labor employment	-	-

Source: Authors based on: (Vincze 2002; p. 84)

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Table 2. Structures and farm types in Romania

Individual units without legal personality (for individuals)	• Subsistence peasant farms • Family Holdings • Family Farms in leasing system • Simple Family Associations		• They have a profound traditional character having farmer's family at their center • production is totally dedicated to self-consumption • hold the largest share of total farm structures
Legal private organizations (companies)	Partnership companies	Agricultural companies	They were established and operated in accordance with Law No. 31/1990 on companies and Law No. 15/1990
	Capital companies	Limited liability companies Limited company	
Agricultural units with private capital majority state and joint ventures	Agricultural companies	Agricultural production companies	
	Services companies in agriculture	SC for acquiring and storing grains SC seed production SC compound feed production SC mechanization of agriculture	They were mostly privatized or their heritage was dissolved.
	Autonomous Agricultural Departments	National Agency of Agricultural Products Department of land reclamation Department of horse race	They were organized and operate in areas of agro-food economy while being in a process of deep reorganization and adaptation to market conditions.
Cooperative units	Consumer and supply cooperatives Marketing cooperatives Agricultural Cooperatives Production cooperatives Processing cooperatives Mutual credit unions Cooperative risk Cooperative associations		Have undergone extensive organization and privatization and most of these were abolished by Law 566/2004. For example agricultural cooperative is an autonomous association of an unlimited number of members, but at least 5 people, with variable capital, who carry economic, technical and social activities to provide goods, services and jobs exclusively or predominantly to their members.

Source: Author's based on: (Zahiu, 1999, p. 94)

1. Agricultural holdings from the private domain that comprise units of cult, agricultural companies with legal personality established in accordance with law concerning agricultural companies and other forms of association in agriculture;
2. State-owned or mixed-owned farms which include national companies and commercial companies;
3. Agricultural exploitations that have farmed out, leased or managed goods from the private property of the state. In this category there are classified national societies, institutes and research stations and agricultural

production, agricultural or forestry schools, county and local councils.

The size is an essential criterion in the analyzing and classifying agricultural exploitations. The size is analyzed and expressed both in terms of physical size and economic size. However, the importance of agricultural exploitations makes their minimum size be regulated by law in Romania. Table 3 presents the physical size, minimum agricultural exploitations for crops and livestock, as it is governed by national law.

The minimum size of holding varies, e.g. for the vegetable sector from 0.2 ha in the case of

Table 3. Minimum physical size of agricultural exploitations in Romania

For the Vegetable Sector		For the Animals Sector	
cereals, crops and medicinal plants	Plains area: 50 ha Hills area: 20 ha	cows or buffaloes	16 heads
• natural grassland and fodder crops grown in the mountains • cereal, crops and medicinal plants	25 ha	• cows or buffaloes • cattle fattening	50 heads
vegetables	2 ha	sheep or goats	300 heads
orchards and nurseries	5 ha	horse breeds	15 heads
strawberry pickers, fruit trees	1 ha	pigs	100 heads
noble vineyards, nurseries and hops	5 ha	laying hens	2,000 heads
greenhouses and solariums	0,5 ha	beekeeping	50 families
mushrooms field	0,2 ha	rabbits	500 heads

Source: Data processed on the basis of the Government Emergency Ordinance no. 108/2001 concerning agricultural exploitations.

mushrooms fields to 50 ha for grain farms, crops and medicinal plants. For the livestock sector, the minimum size varies from 15 heads for dairy cows or buffalos, reaching 2,000 heads for laying hens. Agricultural holdings smaller than those dimensions shown in Table no. 3, are considered to be family agricultural exploitations.

The classification of agricultural exploitations used in the European Union is very important. This classification required a single, unified typology of agricultural exploitations, providing common standard benchmarks for all 28 Member States, based on three criteria: region, economic size and type of activity.

The type of business and the economic size of farms are expressed in terms of standard gross margin (SGM). In turn, the economic size of farms is calculated in Economic Size Units (ESU) and is determined by standard gross margin of the farm, an ESU assigning the 1200 Euro. Table 4 presents the classification of farms by economic size classes.

The community typology used in the classification of farms is high and diversified level of coverage of all types of farming carried out at farm level across the EU. In this respect, *the Community typology of agricultural exploitation identifies 9 broad types of farm activities, 17 main types and*

50 special types. In addition, there are 32 subunits of some of these specific types of activities.

The economic size of the farm is a defining criterion in setting and framing them in the category of commercial farms in this respect there have been established minimum economic size threshold for each Member State. The determination of minimum threshold expressed in ESU is performed for each individual Member State according to the importance of farms, farm structure and varies with inflation. Thus, for example, in Table 5, there are shown the number of farms and the minimum economic size thresholds farms in FADN field of survey in 2007.

From the data presented in the table above, it can be noticed that the minimum economic size is 16 ESU for Germany and the UK, 8 ESU for France, and only one ESU for Bulgaria and Romania. Thus, in 2007-2008, RICA Survey included 1000 sample farms for Romania, and 2000 sample farms for Bulgaria. From this perspective it's worth emphasizing that although the ESU dimension is reduced for Romania they do not increase the number of farms that can be statistically analyzed by RICA. This confirms once again that Romanian farms are some of subsistence, which hardly meets the conditions to be included in the category of agricultural farm with production dedicated to market.

Table 4. Classification of farms by economic size classes

Class	Limits in ESU	Size of Classes
I	<2	Very small
II	>=2 and <4	
III	>=4 and <6	Small
IV	>=6 and <8	
V	>=8 and <12	Small medium
VI	>=12 and <16	
VII	>=16 and <40	Medium large
VIII	>=40 and <100	Large
IX	>=100 and <250	Very large
X	>=250	Extra

Source: Authors' own processing based on European Commission Decision amending Decision 85/377 / EEC establishing a Community typology for agricultural holdings 1999/725 / EC) 22 October.

The size of Romanian agricultural exploitations represents a major problem not only in terms of monitoring and statistically analyzing but rather the inability to attract massive investment flows to contribute to the improvement of fixed endowment holdings and to the low dimension of European agricultural financial support that they benefits, especially through schemes to support agricultural production and farmers' income.

To better understand this situation, but also the limitations and obstacles the Romanian agriculture sector faces in achieving high performances, we must consider both the specific national cultural model, which is closely interconnected with the European one, but without major differences, and the structural evolution of national agricultural holdings and agricultural exploitations on the other side.

Therefore a significant part of this chapter is to analyze the effects of CAP on the evolution of national farms in correlation with the European space and its implications for agricultural policy reforms on economic modeling of agricultural structures in the context of convergence with the requirements of the European agricultural model.

Table 5. Thresholds minimum economic size farms in FADN field of survey

Country	Minimum Economic Size Threshold (UDE)	Number of Surveyed Farms
Bulgaria	1	2000
France	8	7 320
Spain	2	9 706
Germany	16	6 360
Poland	2	12 100
Romania	1	1 000
Hungary	2	1 900
Great Britain	16	2 500
Italy	4	17 000

Source: Authors' own survey based on FADN Standard Results 2007-2008

In Table 6 there are presented the main coordinates concerning the importance of agricultural exploitations structures at level UE-27 in 2011.

From the data presented in Table 6 it can be seen that out from 4,817,985 farms that were under observation FADN in 2011, most of the farms were Romanian, respectively 1,041,904, and they represented 21.63% of the total. As mentioned above, the ratio is much diminished when we take into consideration the sample farms. In these conditions only 13.52% of Romanian farms managed to fulfill efficiency criteria imposed (i.e. 5,746 farms), representing 7.01% of the total of 81,946 farms that made up the European sample. On the other hand, countries with a smaller number of farms located in FADN field of observation, are more strongly represented in the sample statistic measuring the EU-27, such as Poland (13.52% of total), Italy (13.32% of total), Germany (10.89% of total), Spain (9.98% of total) and France (9.04% of total), reflecting a high degree of efficiency of agricultural production structures.

But taking into account their ability to create farm net value added, the old EU Member States record the highest levels, at least at the level of 2011 analysis. So the farm net value added for

Table 6. The overview of the main results by type of farming in EU-27, 2011

Type of Farming	Number of Holdings		Size of Holdings		Average Results per Holding in (1 000 EUR) (current)				
	In the FADN Field of Observation	In the Sample	Utilized Agricultural Area UAA (ha)	Labour Input(AWU)	Total Output	Intermediate Consumption	Depreciation	Farm net Value Added	Family Farm Income per Unit Unpaid Labour
EU-27	4,817,985	81,946	32.22	1.56	66.19	39.98	8.61	28.33	15.47
Belgium	30,290	1,254	48.05	2.12	236.18	150.32	30.45	80.30	42.38
Bulgaria	115,275	2,250	33.55	2.37	33.06	18.25	3.79	16.10	4.27
Czech rep.	14,813	1,417	230.48	6.59	328.98	246.20	36.07	126.56	17.09
Denmark	28,730	2,026	98.64	1.66	419.28	273.77	41.21	138.56	58.18
Germany	192,621	8,926	84.45	2.18	230.98	159.88	29.03	78.85	35.48
Ireland	103,331	1,051	43.34	1.12	52.40	36.22	5.75	28.85	27.89
Greece	321,526	3,690	9.19	1.18	23.15	11.51	3.60	14.66	13.18
Spain	515,117	8,178	37.18	1.39	48.61	27.57	3.14	28.82	20.45
France	291,309	7,409	88.05	2.01	191.07	114.14	30.64	75.39	37.72
Italy	779,435	10,913	15.79	1.28	52.18	22.01	7.02	28.31	16.12
Cyprus	10,210	470	8.38	1.50	36.21	22.44	2.15	15.46	8.31
Latvia	21,956	1,000	71.37	1.99	45.17	35.48	7.61	14.84	6.54
Lithuania	53,317	1,105	46.56	1.75	36.21	22.04	6.69	15.20	6.59
Luxembourg	1,552	448	82.59	1.77	181.33	121.46	52.49	70.04	38.09
Hungary	101,334	1,922	47.01	1.54	63.42	41.95	5.67	29.97	23.10
Malta	3,038	522	2.62	1.37	32.03	24.25	2.25	8.32	5.29
Nederland	51,640	1,461	35.20	2.81	451.00	285.97	53.31	128.96	49.83
Österreich	92,832	2,034	30.71	1.44	71.26	40.56	15.44	33.50	24.94
Poland	725,660	11,076	18.49	1.72	29.16	17.82	4.20	12.72	6.38
Portugal	110,308	2,303	24.91	1.59	28.17	16.05	3.62	14.61	9.44
Romania	1,041,904	5,746	9.80	1.35	13.04	6.64	1.17	6.75	4.60
Slovenia	39,930	929	11.12	1.48	26.96	18.97	7.11	7.49	4.60
Slovakia	3,870	530	544.63	14.29	577.49	460.71	103.93	160.77	14.47
Finland	39,623	890	54.27	1.29	87.42	78.57	24.06	33.75	24.59
Sweden	28,134	1,013	98.55	1.40	170.60	137.40	23.94	48.76	29.61
UK	92,214	2,724	155.34	2.08	240.28	159.60	28.10	93.32	24.44
									32.96

Source: Authors based on Directorate General for Agriculture and Rural Development (2013). Agriculture in the European Union - Statistical and economic information. Report 2013

Germany (78 850 Euro) is 2.78 higher than the average EU-27, France (75 390 euro), 1.22 times higher while the UK (93,320 euro) is 3.29 times higher than the European average. Romania records the lowest level of farm net value added of only 6750 euro and is 4.2 times lower than EU-27 average of 11.68 times smaller than Germany, 11.7 times smaller than France. We cannot improve too much the comparative situation even if we compare it with the neighboring countries EU-27. Thus Bulgaria (16.10 thousand euro) records higher levels of 2.38 times farm net value added than Romania and 4.03 times than Hungary (29970 euro), and 1.88 times higher than Poland (12,720 euro), a state whose agriculture sector is comparable to Romania's one. In Slovenia (7490 euro) and in Malta (8320 euro), there are noticed farm net value added values significantly close to those of Romania's.

This situation can be juxtaposed and to the level of labor productivity in agriculture measured by two significant indicators, analyzed at 2011 level: farm net value added per AWU and Family Farm Income per unit for unpaid labor. And from this perspective, the situation of Romanian agricultural exploitation structures is one that reflects the high levels of economic efficiency criteria. Thus in Romania's case, in 2011, it was generated 4.60 thousand euro farm net value added per AWU, which means 3.35 times less than the average EU-27 (15,470 euro), 7.78 times less than the values recorded by Germany (35,480 euro), or 8.24 times than France's values (37,720 euro), or 5.02 times than Hungary's ones (23.10 thousand euro). Romania still registers a favorable level than Bulgaria (4270 euro) and a relatively similarity with the values recorded in Poland (6380 euro).

As for the second indicator taken into account, unpaid family farm income per unit labor, the situation is at least interesting. In most countries of the EU-27, it has been noticed from this perspective a relatively comparable between these two indicators, which shows an approximately complementary dimension of employed labor in

agriculture emphasized by the farm net value added per AWU and the size of subsistence agriculture expressed by unpaid Family Farm Income per unit for unpaid labor. Thus in countries with a high share of subsistence agriculture the family farm income per unit for unpaid labor is high, with values close to the indicator of labor productivity. Thus in Romania's case the family farm income per unit is approximately equal to unpaid labor (4590 euro) farm net value added per AWU (4.60 thousand euro), as for the EU-27 (15,470 euro / 15,820 euro). The situation is similar in other countries such as Poland (6380 euro / 6,830 euro), Bulgaria (4270 euro/ 3,990 euro) or Malta (5290 euro/ 5,590 euro).

The value of agricultural potential at competitive parameters is strongly determined both by the evolution of farming/agricultural farms structures, but mostly by their action efficiency. Extrapolating this approach, in order to realize the importance and especially the efficiency of the agricultural sector in different EU-27 Member States, in Table 7 there are shown the level of the main agricultural indicators in EU-27 in 2012.

Analyzed from the perspective of the main efficiency indicators, the European agricultural sector shows a significant bias, at the level of the year 2012. Thus there can be identified, on the one hand the EU-15 Member States, with a highly developed agricultural sector, high yield and high values of the main efficiency indicators, but with a non-significant share, most of the times the values varying between 0.6% (Germany) and 1.6% (France and Italy), with the exception of Greece (2.8%), in terms of gross value added contribution to GDP formation, and on the other hand the 12 countries that joined EU since 2005, where agriculture continues to represent a significant economic sector with broad influences on the formation of GDP. In this regard the highest values of agriculture's contributions to GDP in 2012 were recorded in Romania (4.7%) and Bulgaria (4.2%), followed by countries such as Lithuania (3.5%) or Hungary (2.7%).

Table 7. The level of the main agricultural indicators in EU-27 2012

Country	GVA at Basic Prices/ ha UAA (utilized agricultural area)	GVA at Market Prices/ GDP (total) %	Factor Income (net Value Added at Factor Cost of Agriculture) (Mio EUR)	Factor Income/ AWU (EU-27= 100)	Total Intermediate Consumption Output of the Agricultural Industry (%)	Share of Other Production Costs/Output of the Agricultural Industry (%)
Belgium	1 772.5	0.6	2 282.4	269.4	71.8	21.6
Bulgaria	324.4	4.2	2 012.3	33.9	62.4	21.3
Czech Rep.	385.1	0.9	1 876.5	121.6	72.1	37.4
Denmark	1 353.1	1.5	3 112.5	407.3	69.6	32.8
Germany	1 021.8	0.6	15 434.0	206.1	68.8	28.3
Ireland	387.2	1.1	2 702.3	111.9	75.1	24.0
Greece	1 325.0	2.8	6 064.0	105.1	48.8	33.9
Spain	917.4	2.1	22 589.0	174.6	49.0	24.1
France	1 098.9	1.6	27 494.8	242.9	58.8	28.2
Italy	1 946.6	1.6	15 366.9	97.2	47.4	47.6
Cyprus	2 887.8	1.9	348.3	94.4	53.7	16.9
Latvia	173.5	1.4	469.7	40.2	75.9	16.8
Lithuania	411.2	3.5	1 072.7	50.6	60.7	20.5
Luxembourg	872.5	0.3	89.8	162.0	71.1	32.9
Hungary	485.7	2.7	3 146.7	50.6	65.5	27.8
Malta	4 952.4	0.8	67.5	94.5	55.6	10.5
Nederland	4 575.5	1.4	5 478.0	220.1	67.9	26.2
Österreich	1 047.7	1.0	2 560.4	140.6	58.6	31.7
Poland	620.3	2.4	10 061.8	32.8	61.1	12.1
Portugal	611.7	1.3	2 274.0	43.8	66.0	25.9
Romania	451.5	4.7	5 227.9	22.8	57.0	41.3
Slovenia	806.6	1.1	391.3	35.0	66.3	30.9
Slovakia	300.0	0.8	734.6	88.2	75.9	37.8
Finland	726.3	0.9	2 292.8	197.8	67.0	43.5
Sweden	615.2	0.5	1 793.5	227.3	71.0	32.1
UK	603.4	0.5	11 003.8	260.6	64.6	23.5
EU-27	912.7	1.2	146 390.9	100.0	60.4	29.5

Source: Authors based on Directorate General for Agriculture and Rural Development (2013). Agriculture in the European Union - Statistical and economic information. Report 2013

The evolution of the other three indicators considered in European analyses, namely: the factor Income/AWU, the total intermediate consumption/output of the agricultural industry and respectively, the share of other production costs/output of the agricultural industry, also confirmed,

with some exceptions, this small but significant polarization of Community agriculture sector. This situation can be explained through shares of individual products in agricultural output (Figure 2) in the case of different Member States.

The structure of agricultural production provides an intrinsic picture of national guidelines for agricultural policy, reflecting both the cultural and national production. From Figure 1 it can be seen that for the majority of countries EU-27 a significant share of agricultural output is detained by grains, except for countries like Spain, Italy and Romania where vegetables and fruits have the biggest share. For EU-27 cereals and other crop products hold 31% of shares of individual products in agricultural output, followed by: vegetables and fruits (18.2%), milk (13.2%), pigs (9.6%), cattle (8.5%) and poultry and eggs (7.7%).

Strengthening the structure of agricultural production around the sectors of grain, vegetables and fruits can be explained in terms of financial allocations made through the support of Pillar I within the CAP, which due to financial supporting measures for agricultural production led to the increasing level of agricultural production, but more seriously, to the distortion of the normal functioning of European agricultural markets.

The evolution of agricultural production was stimulated by the accomplished investments in the European agricultural sector. The evolution of gross fixed capital formation in 2009-2012 confirms the interest in making investments in agriculture imposed not only by improving economic performance, especially by increasing the exploitation of agricultural potential on the one hand, by shifting the financial allocations for the purchasing and implementation of new techniques and more friendly environment technologies that help implement performing organic farming at the same time. The Figure 3 shows the evolution of the gross fixed capital formation in some EU-27 during 2009-2012.

From Figure 2 it can be seen that over the analyzed period, with reference to the date of the first wave of EU integration, the evolution of the gross fixed capital formation, although a slight increase of 4.5% in the EU-27, went to a reduction, especially in the EU-15, as applicable, Spain (-32.3%), Denmark (-20.6%), Belgium (-9.0%),

and Germany (-4.2%). A dramatic reduction trend of gross fixed capital formation was recorded in the case of newly integrated countries in EU-27, as in Slovakia (-37.3%), Slovenia (-19.5%), and Poland (-15.4%), excepting Latvia (+ 93.4%).

Under pressure of convergence with the European agricultural model, the states of the second wave of expansion, in 2007 recorded a significant growth of this indicator. Thus in the case of Romania, for example, the values of this indicator are double (212.3% in 2009, 254.6% in 2012), sometimes triple (2011 = 350.6%), an increase over the period of 42.3%. Bulgaria benefits but an increase of only 10.8% over the period, gross fixed capital formation increases are above all the years of the period under review. Levels of gross fixed capital formation by reflection are not properly reflected by an increase of gross value-added (GVA) at basic prices in some EU-27, as it is shown in Figure 4.

The increases of gross value-added (GVA) at basic prices in some countries of EU-27 are much lower than the recorded level of gross fixed capital formation. Thus the only states that register a decrease in GVA are: Belgium (-11.5%), Portugal (-8.7%) and Slovenia (-1.7%). The highest GVA increases were registered in Lithuania (95.7%), followed by: Denmark (79.6%), Slovakia (50%), Poland (36.3%), and France (32%). On the other hand, the lowest values are recorded for Spain (2.3%) and Romania (2.5%). Bulgaria maintained an increase of 23.7% to GVA, higher than the EU-27 average of 13.3%.

The ability to generate competitive levels of GVA is reflected by the quality of farm structures. As it can be seen from the corroborating data from Figure 3 and Figure 4, achieving a considerable amount of investment, with gross fixed capital formation immediately reflected, does not contribute immediately and appropriately to economic performance-enhancing agriculture.

Figure 2. Shares of individual products in agricultural output (%) in some EU-27 countries, 2012
Authors own computation based on Directorate General for Agriculture and Rural Development (2013).

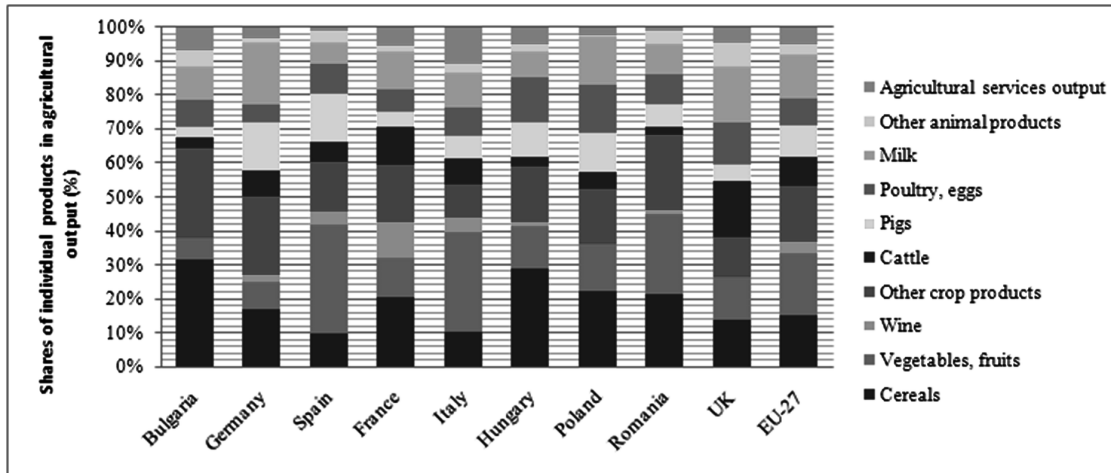
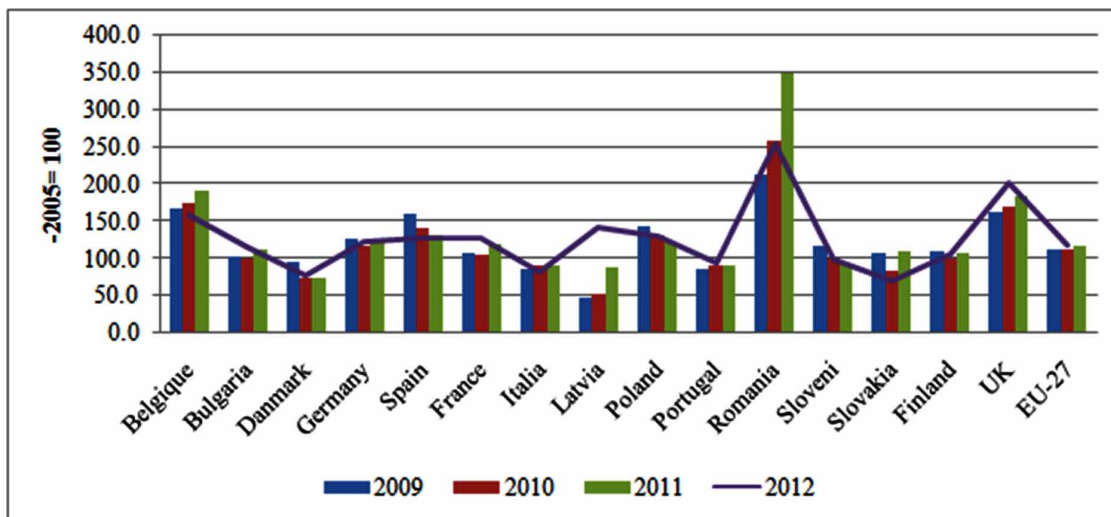


Figure 3. The evolution of the gross fixed capital formation in some EU-27 countries, 2009-2012
Authors own computation based on Directorate General for Agriculture and Rural Development (2013)

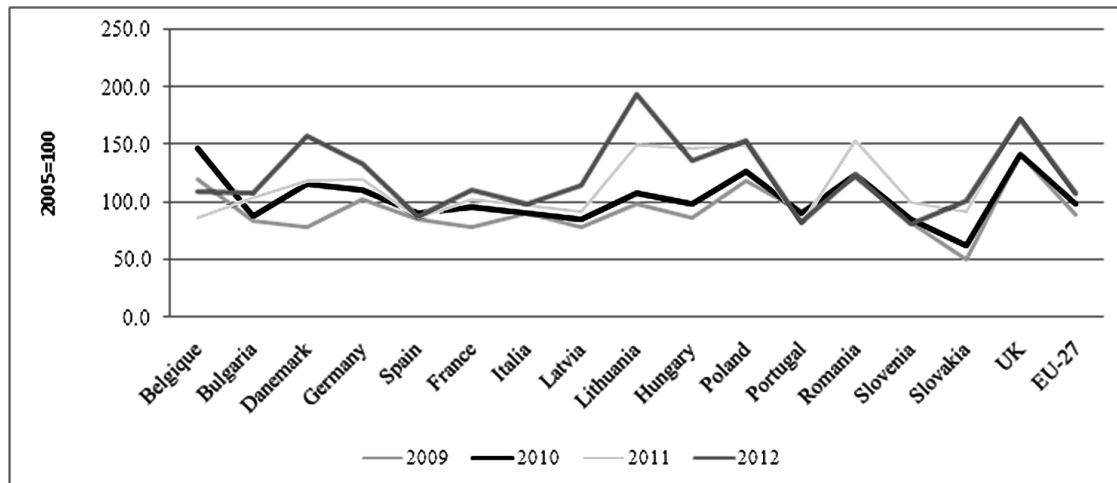


Evolution of Agricultural Production Structures under the Influence of PAC

Beyond the social and cultural importance that have acquired over time, the agricultural holdings are concentrated expression of superior organizing forms of production factors aiming to value the agricultural potential of each state shall have at

a time. Assuming that a functional and competitive agriculture, located in accordance with the requirements of a market economy, must achieve in addition to its classical functions a superior cohesion among European rural communities, at least at a satisfactory level of income for farmers but also a high material comfort for the community at large.

Figure 4. Evolution of gross value-added (GVA) at basic prices, in some EU-27 countries, 2009-2012
 Authors own computation based on Directorate General for Agriculture and Rural Development (2013)



In the EU-27, the evolution of agricultural holdings has been determined by the guidelines and measures adopted within the CAP. As it was reviled in literature (Bartolini and Viaggi, 2013; Andrei and Untaru, 2012; Hansen and Hermann, 2012), any modification of this European policy paradigm is not without effect, but they trigger response and action on the part of adapting to the requirements of this, on the other hand it is trying new paradigm capitalization requirements.

Thus the agricultural exploitations define the required guidelines within the CAP, reflected in all the agricultural reforms implemented in the Community space. Therefore, a good indicator for assessing the effects of financial support measures, and especially the impact of CAP reforms, has generated on modeling agricultural production structures, dynamics defined by the total number of farms and agricultural exploitations' dimensional typology both at EU-27 level, and especially, at national level. In Table 8 there is summarized the evolution of farm structures (farms), depending on class size of 8 member states and the EU-27, during 2003-2010.

Thus, if in 2003 in the EU there were recorded a total of 15,021.3 thousand farms, seven years

later, and after two rounds of enlargement, in 2010, their number decreased by 20% (3006.6 thousand farms respectively) reaching 12,014.7 thousand farms. Reducing the total number of farms in the EU-27 is not actually a bad thing, but it confirms a significant trend of aggregation of agricultural areas around large farms, economically efficient, which in this context also benefits of a high level of CAP funding. If in the case of the old member states of the EU, we can find a small number of large agricultural exploitations, which mostly ended the aggregation of land ownership, supported by active government measures, while in the case of countries that have recently joined the Community space we can find a large number of agricultural exploitations. In Figure 5 there is shown the evolution of the agricultural farms in some EU-27 countries, as share of EU-27, during 2003-2010.

From Figure 4 we can see a sharp polarization of the structures of agricultural production between old and new EU Member States. So in the case of states with a strong agricultural sector and a well-articulated land holding structure aggregated around large and very large exploitations, the farm share is sensitively diminished. Thus, in 2010, the

Table 8. Evolution of the agricultural holdings in some EU-27 countries, during 2003-2010

Country	Class (ha UAA)	x 1 000 Farms				% of Total Farms			Δ	Δ%
		2003	2005	2007	2010	2003	2007	2010	2007-10	2007-10
EU-27	0-5	10,957.6	10,349.1	9,644.8	8,314.2	72.9	70.4	69.2	-2,643.4	-24.1
	05-10	1,526.1	1,584.7	1,560.5	1,307.4	10.2	11.4	10.9	-218.7	-14.3
	10-20	1,015.1	1,030.4	992.6	902.7	6.8	7.2	7.5	-112.4	-11.1
	20-50	835.4	825.9	804.3	773.9	5.6	5.9	6.4	-61.5	-7.4
	0>50	687.1	691.8	698.1	716.5	4.6	5.1	6.0	29.4	4.3
	Total	15,021.3	14,481.9	13,700.3	12,014.7	100.0	100.0	100.0	-3,006.6	-20.0
Bulgaria	0-5	644.3	511.2	467.8	338.5	96.8	94.8	91.4	-305.8	-47.5
	05-10	9.7	10.4	10.1	10.7	1.5	2.0	2.9	1.0	10.3
	10-20	4.0	4.8	5.5	6.8	0.6	1.1	1.8	2.8	70.0
	20-50	2.5	2.9	3.6	6.0	0.4	0.7	1.6	3.5	140.0
	0>50	5.1	5.3	6.2	8.4	0.8	1.3	2.3	3.3	64.7
	Total	665.6	534.6	493.2	370.5	100.0	100.0	100.0	-295.1	-44.3
Germany	0-5	97.5	88.0	83.6	27.4	23.6	22.6	9.1	-70.1	-71.9
	05-10	60.0	56.3	51.0	47.3	14.6	13.8	15.8	-12.7	-21.2
	10-20	77.3	72.5	68.7	63.2	18.7	18.5	21.1	-14.1	-18.2
	20-50	94.0	88.5	81.9	76.1	22.8	22.1	25.4	-17.9	-19.0
	0>50	83.5	84.6	85.4	85.2	20.3	23.0	28.5	1.7	2.0
	Total	412.3	389.9	370.6	299.1	100.0	100.0	100.0	-113.2	-27.5
Spain	0-5	627.0	577.2	551.4	525.6	55.0	4.0	4.4	-101.4	-16.2
	05-10	169.1	165.0	157.3	141.9	14.8	1.1	1.2	-27.2	-16.1
	10-20	131.4	126.1	122.4	111.0	11.5	0.9	0.9	-20.4	-15.5
	20-50	113.8	111.4	111.7	107.7	10.0	0.8	0.9	-6.1	-5.4
	0>50	99.5	99.7	101.2	103.7	8.7	0.7	0.9	4.2	4.2
	Total	1,140.8	1,079.4	1,044.0	989.8	100.0	8.2	8.2	-151.0	-13.2
France	0-5	169.5	147.7	130.4	138.8	27.6	271.7	323.7	-30.7	-18.1
	05-10	57.1	52.2	48.5	46.6	9.3	101.0	108.8	-10.5	-18.4
	10-20	63.7	58.0	52.2	50.2	10.4	108.8	117.0	-13.5	-21.2
	20-50	121.3	109.5	99.2	88.5	19.8	206.7	206.5	-32.8	-27.0
	0>50	202.3	199.8	197.1	192.0	33.0	410.6	447.9	-10.3	-5.1
	Total	613.9	567.2	527.4	516.1	100.0	1,098.8	1,203.9	-97.8	-15.9
Hungary	0-5	693.3	641.2	560.2	501.6	89.7	437.0	358.6	-191.7	-27.7
	05-10	33.5	29.0	24.4	26.5	4.3	19.0	19.0	-7.0	-20.9
	10-20	21.6	19.0	17.2	19.4	2.8	13.4	13.9	-2.2	-10.2
	20-50	14.2	14.0	12.4	15.4	1.8	9.7	11.0	1.2	8.5
	0>50	10.7	11.7	12.2	13.9	1.4	9.5	9.9	3.2	29.9
	Total	773.3	714.9	626.4	576.8	100.0	488.6	412.3	-196.5	-25.4
Poland	0-5	1,444.8	1,750.9	1,637.3	831.4	66.5	3,411.0	1,939.3	-613.4	-42.5

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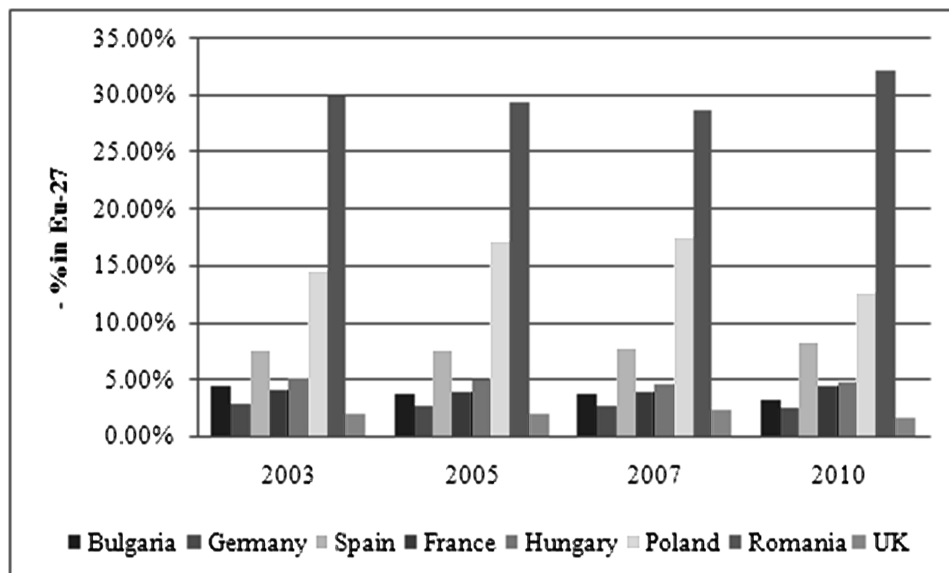
The Influence of Common Agricultural Policy

Table 8. Continued

Country	Class (ha UAA)	x 1 000 Farms				% of Total Farms			Δ	Δ%
		2003	2005	2007	2010	2003	2007	2010	2007-10	2007-10
	05-10	372.5	370.2	389.4	335.0	17.1	811.3	781.3	-37.5	-10.1
	10-20	246.7	237.9	239.3	218.5	11.4	498.5	509.7	-28.2	-11.4
	20-50	90.3	96.8	101.4	95.3	4.2	211.3	222.3	5.0	5.5
	0>50	17.9	20.7	23.6	26.5	0.8	49.2	61.8	8.6	48.0
	Total	2,172.2	2,476.5	2,391.0	1,506.6	100.0	4,981.3	3,514.4	-665.6	-30.6
Romania	0-5	4,205.1	3,870.7	3,530.7	3,593.8	93.8	8,961.2	15,714.2	-611.3	-14.5
	05-10	218.9	289.6	300.0	182.4	4.9	761.4	797.7	-36.5	-16.7
	10-20	37.4	65.9	70.1	43.6	0.8	177.9	190.7	6.2	16.6
	20-50	9.5	16.1	16.1	17.9	0.2	40.9	78.4	8.4	88.4
	0>50	14.1	13.8	14.4	21.2	0.3	36.5	92.7	7.1	50.4
	Total	4,485.0	4,256.1	3,931.3	3,859.0	100.0	9,977.9	16,873.8	-626.0	-14.0
UK	0-5	103.5	106.9	119.3	16.6	36.9	13.9	2.3	-86.9	-84.0
	05-10	27.0	28.1	29.4	26.9	9.6	3.4	3.7	-0.1	-0.4
	10-20	29.6	30.6	30.7	28.7	10.6	3.6	4.0	-0.9	-3.0
	20-50	45.0	46.7	46.5	42.4	16.0	5.4	5.9	-2.6	-5.8
	0>50	75.4	74.5	74.0	72.2	26.9	8.6	10.0	-3.2	-4.2
	Total	280.5	286.8	299.9	186.7	100.0	34.9	25.8	-93.8	-33.4

Source: Authors based on Directorate General for Agriculture and Rural Development (2013). Agriculture in the European Union - Statistical and economic information. Report 2013

Figure 5. Evolution of the agricultural farms in some EU-27 countries, during 2003-2010
Authors own computation based on Directorate General for Agriculture and Rural Development (2013)



farms in France represented only 4.30% of the EU-27, those from Germany 2.49%, while farms in the UK only 1.55% of the total EU-27. On the other side we can find countries like Romania (32.12% of total EU-27) and Poland (12.54%). As for Bulgaria and Hungary we can see some compatibility with European agricultural model, thus in Bulgaria's case the agricultural holdings represent only 3.08% of the total EU-27 and in Hungary's case only 4.80% of EU-27. In these countries, the share of farms is a lower one, for example to that of Romania, which holds the highest number of agricultural farms in the EU-27.

From the perspective of EU-27 holdings with an area <5ha hold the highest share, so in 2003 they represented 72.95% of the total, while in 2010, although slightly lower, they held 69.20% of the total. A constant trend has been noticed in the holding surface between 10-20 ha, whose weight fluctuated slightly around 11%. In other farm structures' case, the area between 10-50 ha there can be seen increase tendencies, highlighting a process of consolidation of land ownership around economic agricultural exploitations.⁵ In Figure 6 there is presented the evolution of agricultural production structures, depending on the size of UAA in the EU-27 in 2003-2010.

To highlight the effect of the CAP upon the evolution of UAA size of farms in Figure 6 it is highlighted the evolution of very small farms with UAA <05ha, from eight European countries, four belonging to the EU-15 (France, Germany, UK and Spain), two from the second wave of expansion in 2005, respectively EU-25 (Hungary and Poland), and two states that joined the EU in 2007, respectively from EU-27 (Bulgaria and Romania).

From Figure 7 we can see that in the case of the old EU-27 states, the small farms, usually subsistence farms, hold a very small share of less than 1% of the total, for example Germany (0.33%) and (UK-0.20%) or 1.65% for France, while countries such as Romania, hold the highest percentage of small farms (43.22%), which confirms an increase in the subsistence nature of

these holdings and the high dependence of rural agricultural communities.

Also the large number of subsistence farms prevents an improvement of the adequate level of income for farmers and thus an improvement in their living standards. On the other hand, it can be seen the consolidation of large commercial farms of EU-15 states. In Figure 8 there is evidenced the evolution of the agricultural holdings with UAA > 50 ha in the EU-27, during 2003-2010.

Thus in 2010, farms with an area > 50 ha represented 26.80% in France, 14.47% in Spain and 11.89 in Germany, while in Poland, 3.70%, 2.96% in Romania and only Bulgaria only. The major discrepancies between Member States of EU-27 in terms of the structure of agricultural holdings, emphasizes the distribution of financial measures under the CAP. Large farms absorb an appreciable level of financial resources of the CAP, especially those of Pillar I, while subsistence farms still remain captive of chronic underdevelopment. To better understand this situation, in Figure 9 it is shown the evolution of surfaces under SPAS scheme, in the case of countries that joined the EU-27 in 2005-2007.

Thus, while Poland and Romania hold large areas in Single Area Payment Scheme, the results of agricultural exploitations, at least in Romania, do not confirm a significant improvement of the production structures, in terms of concentration and their transformation into commercial farms with significant economic returns. The Implementation of direct payments under the CAP also influenced significantly the evolution of agricultural holdings in the European Community. Both direct production support measures, although limited, and at a much reduced level compared to the beginning of the CAP, and especially SPAS, have helped shape farm structures. The measures adopted through the CAP mechanism have had directly an impact on the way of exploiting the agricultural potential, emphasizing equally aggregation of agricultural property trends in economic, superior and high economically efficient

Figure 6. Evolution of the agricultural holdings in EU-27, during 2003-2010

Authors own computation based on Directorate General for Agriculture and Rural Development (2013).

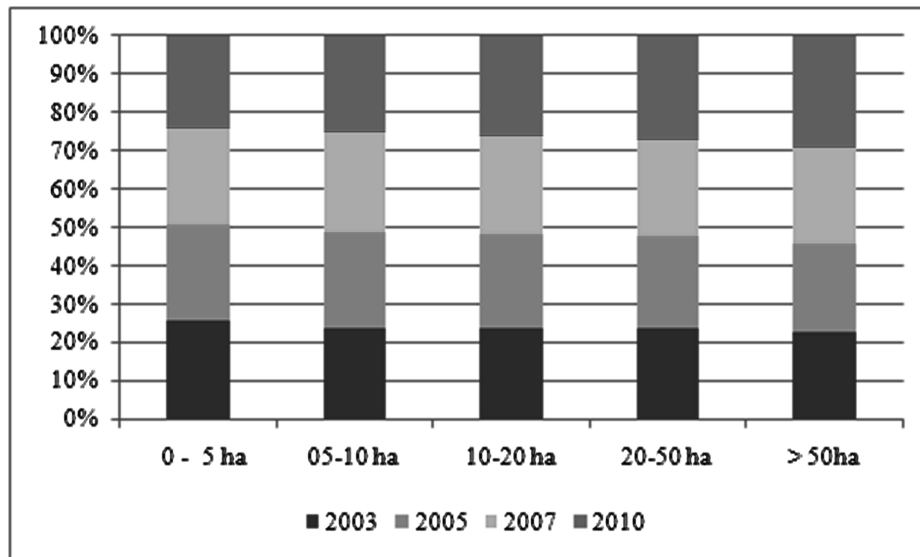


Figure 7. Evolution of the agricultural holdings with UAA<5 ha, in EU-27, during 2003-2010

Authors own computation based on Directorate General for Agriculture and Rural Development (2013)

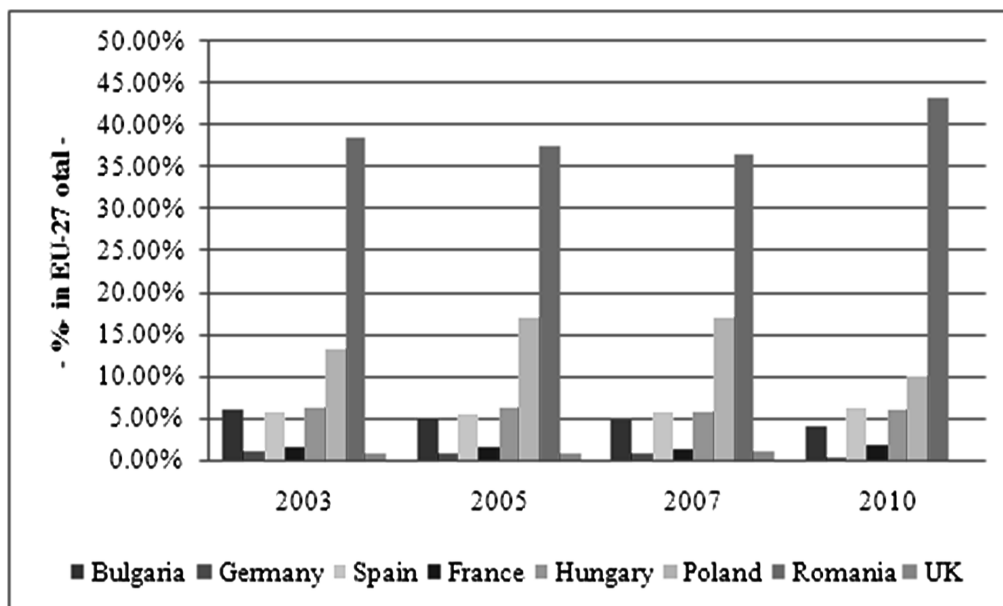


Figure 8. Evolution of the agricultural holdings with UAA>50 ha, in EU-27, during 2003-2010
Authors own computation based on Directorate General for Agriculture and Rural Development (2013)

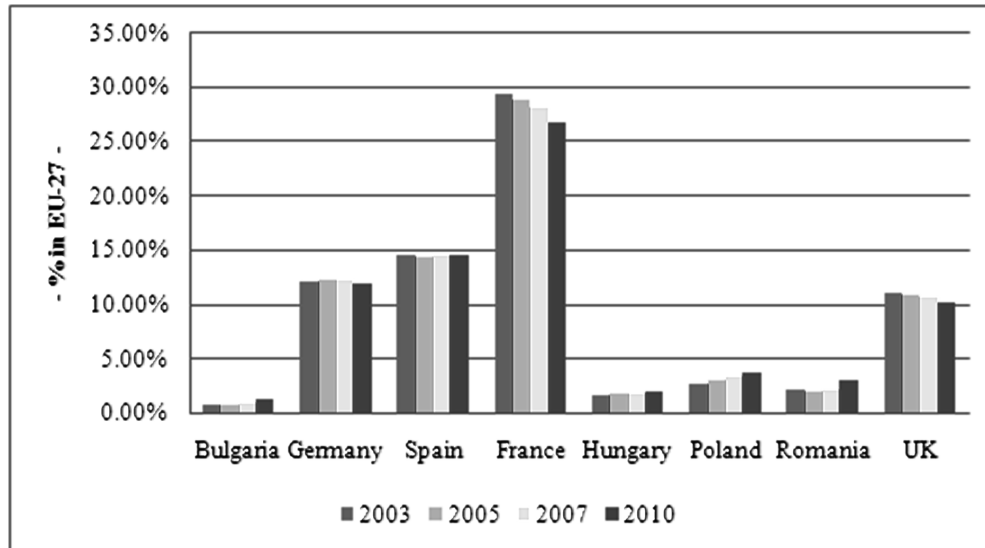
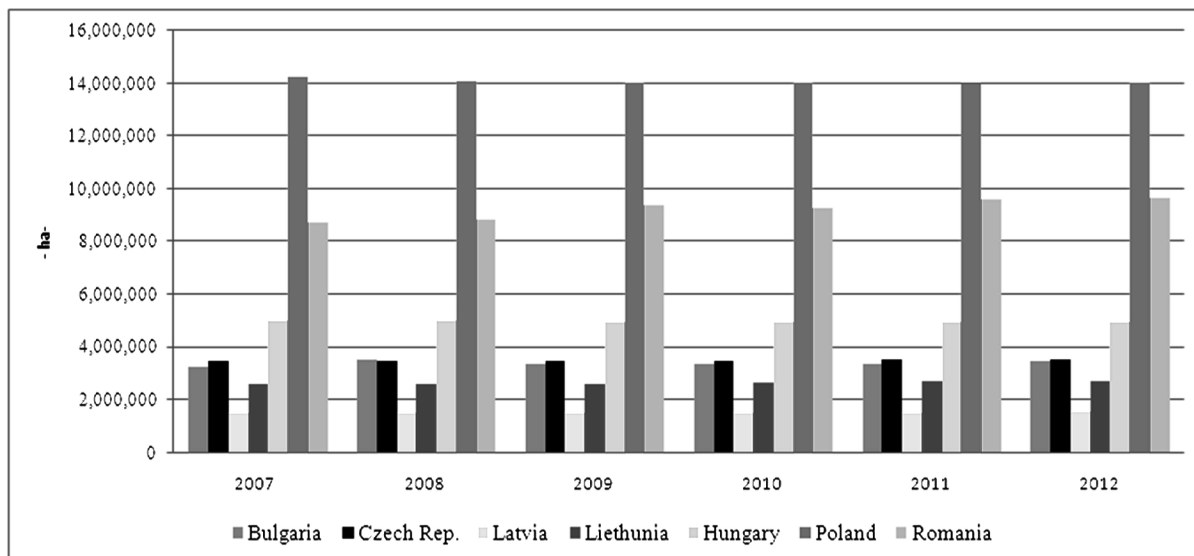


Figure 9. Evolution of Single Area Payment Scheme areas in some EU-27 countries, 2007-2012
Authors own computation based on Directorate General for Agriculture and Rural Development (2013)



structures. The CAP reforms required a shift from direct support measures of production and the agro-environment funding SAPS and thereby assisted the transition from Pillar I to Pillar II and rural development measures.

Old EU member states continue to preserve some major advantages in applying SPS system. For example states like France and Spain apply SPS historical for a large area of sectorial payments with major impact in agricultural sector, even if we take into consideration just the payments for

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Table 9. Overview of the implementation of direct payments under the CAP in some EU-27 countries

Country	Start Date	Model SPS / SAPS	Min. Requirements	Separate Decoupled Payments	Specific Support under Articles 68 – 72 (Reg. (EC) No. 73/2009)
Bulgaria	2007	SAPS	0.5 ha 100 €	Separate soft fruit payment 41%	Quality certification for Fruit and Vegetables
					In the dairy sector
					For ewes and she-goats
Spain	2006	SPS historical	100 €		Improving quality of vegetables, tobacco, sheep and goat farmers, milk and milk products, beef meat, sugar beet and cotton
					Programme crop rotation non-irrigated land
					Nuts sector agri-environmental measure
					Aid to goat sector in LFA
					Support for suckler cows, dairy sector and sheep sector in vulnerable areas
France	2006	SPS historical	100 €		Additional aid for protein crops
					Aid for quality of durum wheat
					Quality of tobacco
					To maintain organic farming
					For conversion to organic farming
					Aid for calves from suckling cows and for organic labelled calves; aid for sheep and goat producers; aid for milk producers in mountain areas
					Fattening of young calves
					Crop harvest insurance
					Mutual funds in case of animal or vegetal diseases or environmental incidents
Poland	2004	SAPS	1 ha	Separate sugar payments: 100%	For cultivating pulses and herbage legumes
				Fruits and vegetables - Separate Fruits and vegetablespayment for tomatoes: 100%	For keeping cows in South-eastern Poland and sheep in Southern Poland orImproving the quality in the tobacco sector
				- Separate soft fruit payment: 100%	
Romania	2007	SAPS	1 ha	Separate sugar payments: 100%(of phased-in level)	For improving quality in the organic farming sector
					To the milk sector in LFA
				Fruits and vegetables: Separate Fruits and vegetablespayment: 68%	

Source: Authors based on Directorate General for Agriculture and Rural Development (2013). Agriculture in the European Union - Statistical and economic information. Report 2013

mutual funds in case of animal or vegetal diseases or environmental incidents, crop harvest insurance or to maintain organic farming as France applies.

In Table 9 there is shown synoptically an overview of the implementation of direct payments under the CAP in some member states, under the Reg. (EC) No. 73/2009.

CONCLUSION

Analyzing the evolution of the agricultural structures represents a basically component for a better understanding of the valuing agricultural potential perspective. During the years the shape of the agricultural structures was modeled by the impacts of the Common Agricultural Policy massive reforms. The numerous changes and shifts in CAP philosophy have directly influenced both the inland agricultural policy and the European agricultural model. Agricultural holdings represent a major component in applying the CAP rules of financing and development. Rural communities are highly depending on the agricultural production structures which continue to mobilize a huge part of resources and also assure the revenues for a great part of rural population. Despite the tendency of reducing the number of the agricultural holdings and the aggregation of the utilized agricultural surface, the agricultural economics still holds major percentages in the rural economics.

Farms are important links in valuing agricultural European and national potential, and equally economic models with wider cultural influences. Due to their structure, farms mobilize available material, human, and financial resources in the rural communities, and they also offer supporting material to families, especially to those who own small subsistence farms. Although the trend is to consolidate the large, economic, highly mechanized farms, small subsistence farms will still hold significant shares in European rural economy.

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KEY TERMS AND DEFINITIONS

Agricultural Exploitations: Are the main structures in valuing the agricultural potential by putting in common the land resources, assets and labor in making agricultural production.

Direct Payment: Is a financial instruments in directs supporting the agricultural production.

GVA: represents an important economic indicator for measuring agricultural holdings outcome.

PAC: Represents the main EU policy in agricultural field being one of the oldest European policies.

Very Small Farms: According to EU regulation represents all the agricultural production structures with <2 limits in ESU regarding the size of classes.

ENDNOTES

- ¹ This Regulation was amended by European Council Regulation (EC) No 73/2009 of 19 January 2009 establishing common rules for direct support schemes for farmers under the common agricultural policy and establishing certain support schemes for farmers, amending Regulations (EC) No 1290/2005, (EC) No 247/2006, (EC) No 378/2007 and repealing Regulation (EC) No 1782/2003 (OJ L 30, 31.1.2009, p. 16)

- ² For further effects of The 2008 CAP Health Check, a detailed description is available at: http://ec.europa.eu/agriculture/healthcheck/index_en.htm
- ³ For example VinczeMária, in *Economie agroalimentara. Teoriisirealitati (Agricultural Economy. Theories and Realities)*, Ed. Risoprint, Cluj-Napoca 2002, categorizes the agriculture exploitations using 10 criteria, LetitiaZahiu, in her book *Management agricol (Agriculture Management)*, (p.92), or Rizov M., D.Gavrilescu, H. Gow, E. Mathijs, J. F. M. Swinnen (1999): *Transition and Enterprise Restructuring: The Development of Individual Farming in Romania*, EU Phare ACE and the World Bank/ECSSD/DECRG Working Paper no. 3 December.
- ⁴ ***According to Government Emergency Ordinance no. 108/2001 on farms and Government Decision no. 49 of 17 January 2002 approving the Methodological Norms for the application of Government Emergency Ordinance no. 108/2001 on farms.
- ⁵ Pertinent analysis regarding the effect of the CAP reform measures on shaping the agricultural holding structure and surface are made in studies like: (Ion and Andrei, 2014; Matthews et al.2013; Bartolini and Viaggi, 2013 or Andrei and Dusmanescu, 2012).

Chapter 4

Current State of Fish Production on Carp Farms in Serbia

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ABSTRACT

In the Serbian fishing industry, carp breeding in pond is the most important activity. Analysis has shown that breeding may be organized in a two-level semi-intensive system, or in a fully intensive breeding system. Carp farms in Serbia cover any area of around 10,000 ha, with an annual restocking of young fish at around 8,600 ha. Species usually bred include carp, bighead carp, silver carp, grass carp, catfish, pike, and perch. By the level of production of edible fish in carp ponds, with an average production level of 5,000-7,000 tons of fish annually, Serbia takes an important place in Europe. In the chapter, the authors calculate several performance indicators of production for all carp farms, and the results show that by the production intensity Serbia is highly positioned in Europe.

INTRODUCTION

Serbia is continental country in which prevails continental and semi continental climate, along with mountain climate in hilly areas. Fishery in Serbia is divided on fishery on large rivers and aquaculture. Aquaculture refers to fish production in warm water ponds called carp ponds and production in cold water ponds called trout ponds.

On trout ponds there are rainbow trouts (*Oncorhynchus mykiss*) bread in a total annual production of around 1.2 million kilograms.

In carp farms there are several fish types bread: common carp - *Cyprinus carpio* and accompanying fish species, such as bighead carp – *Hypophthalmichthys nobilis*, silver carp - *Hypophthalmichthys molitrix*, grass carp - *Ctenopharyngodon idellus*, wels – *Silurus glanis*, pike-perch – *Stizostedion*

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lucioperka and northern pike – *Esox Lucius*. Total annual production in recent years on carp farms is around 12 million kilograms.

Ponds are also used for breeding other fish types: bream – *Abramis brama*, tench – *Tinca tinca*, crucian carp – *Carassius carassius* and “wild” carp – *Cyprinus Carpio*, for the purpose of fish restocking in open waters (rivers and lakes).

Fishery takes an important role in Serbian agriculture generating 1-1.5% of total income. At the same time opportunities for development, as well as interconnection with other sectors of agriculture could provide significant contribution to agriculture in the near future.

In order to precisely describe carp fishery in certain country, apart from data on total production quantities per fish species and age categories, it is also necessary to analyze the fish breeding process. It is necessary to calculate some production parameters, which can be used to compare production over years, and with other countries in which the production is similarly organized.

In this paper there were analyzed basic characteristics of carp farms in Serbia, methods of fish breeding, as well as realized production in the period 2007-2013. There has also been made a comparison with major producers of the same fish species in the European continent.

TYPES OF CARP FARMS IN SERBIA AND SYSTEMS OF PRODUCTION

Carp breeding is done in many different ways worldwide, in different types of ponds according to its hydro-construction. In Serbia, it is possible to find several different types of carp ponds varying in size and characteristics.

Carp ponds can be divided in several ways, with two distinguished basic criterions, hydro-construction and technology. According to the first criterion, carp ponds can be compared by size, type and location of building, as well as according to the way of water supply (Hristić &

Bunjevaca, 1996; Marković & Mitrović - Tutundžić, 2003; Čanak, 2012).

According to construction type majority of carp farms in Serbia are earthen farms. There exist also few cage farms, as well as one silo farm. According to the location where they were built criteria, the most common are the ponds surrounded by dams. There are also ponds on swamp grounds (fish farm in Živača, Ečka, etc.), as well as ponds with longitudinal dams (Sakule lake). According to their size, ponds are divided in the following way: ponds with the total surface below 10 ha have a share of 16.2% in total number of ponds but cover only 0.8% of total area under fish farms. Farms with the size of 10-50 ha cover 4.7% of total surfaces and participate with 33.8% in the number of carp farms. Fish farms ranging in size 50-150 ha cover 9.3% of total surface and have a share of 16.2% in total number of carp farms. Farms in the size 150-500 ha participate with 25.7% in total number of carp farms, as well as with 47.2% in total areas under farms. The biggest fish farms (over 500 ha) cover around 38% of total surfaces under farms and participate with 8.1% in total number of fish farms in Serbia. This means that large farms, with size of over 150 ha, cover over 85% of total surfaces under carp farms in Serbia (Čanak, 2012).

Water supply for carp ponds can be provided from rivers, channels, and wells. The most of carp farms in Serbia are supplied with water by pumps and discharged by gravity.

According to the criterions of technology used and production models, the following divisions can be distinguished: according to completeness of production process, according to the length of breeding period (Hristić & Bunjevaca, 1996), according to the breeding system (Marković, 2010), as well as according to stocking structure (Bohl, 1999).

Carp farms in Serbia are mostly semi-systematic (part of operation farms), what means that production starts by purchasing certain category of stocking fish (fry, advanced fry, fingerlings).

Period of breeding usually takes three years in semi-intensive system, or two years in intensive breeding system. Structure of stock in production of one-month old fry is monoculture, while in production of other stage categories there exist both monoculture and poly-culture stocks.

Carp production system in Serbia is mostly semi-intensive, with two levels of intensity. In classic semi-intensive breeding system there are additional cereals used for nutrition (corn, wheat, barley) along with agro-technical activities: cultivation of pond bottom, fertilization and liming. Achieved quantity of fish production in classic semi-intensive breeding system ranges from 700 to over the 1,500 kg/ha, with an average level of around 1,000 kg/ha (Marković & Poleksić, 2011). In semi-intensive production of higher level, called “partly intensive production” (Ćirković et al., 2002), there exist partial or complete replacement of cereals in nutrition with concentrated feed (pelleted or extruded). Use of concentrated food for carp feeding on large fish farms utilizing semi-intensive system has been used in Serbia since 2004. That was followed by rapid expansion of such a breeding system. At a time in Serbia operate several large factories producing extruded feed for fish, with an annual production capacity of over 40,000 t. Quantity of fish produced using this breeding system ranges from 1,500 kg/ha to over 2,000 kg/ha. Some authors give examples of production with over the 3 t/ha (Marković & Poleksić, 2011), although the average level in Serbia is around 2 t/ha.

Intensive carp breeding system is used in specialized fish farms, which are specially built and equipped. Ponds are smaller in size, but deeper. Water from wells is usually used in the production process, and fish ponds are equipped for water aeration (paddlewheel aerators are most common). Achieved production quantity in those systems, on a yearly average is around 3 t/ha (Čanak, 2014; Čanak, 2010).

Extensive breeding system is not common in Serbia. Production levels are in a range from

300 to 600 kg/ha (Marković & Poleksić, 2011). Examples of extensive system are lake Sakule 2 (120 ha), fish farm Baranda, as well as part of Živača fish farm (50 ha).

There exists organized commercial fishing in fish ponds (Joca Lake on Ečka fish farm, Sakule 1 on fish farm Baranda, fish farm Živača, etc). For that type of fishing license is required. That is followed by occasional fish harvesting of certain fish quota, as well as bringing in of proper fish species for sport fishing in ponds.

Filing of carp fish ponds with fresh water in Serbia is usually done from large rivers such as Tamiš, Tisza, Danube, Begej, etc., then from DTD canal network system, wells, as well as from other sources. The most active fish farms are filled from the canal network system DTD - more than 4,000 ha. Then comes the Tamiš River, which is by surfaces and flow the most burdened river (especially during the summer period), with about 2.5 thousand ha under fish ponds. In 3rd place is the Tisza River with about 1.4 thousand hectares under the fish ponds. Mentioned three recipients are burdened with more than 70% of surfaces under carp farms in Serbia (Čanak, 2012).

SURFACES UNDER CARP FARMS AND USED MECHANIZATION

When talking about the surface covered by carp fish farms in Serbia, there can be found various secondary data. According to Statistical Office of Republic of Serbia (SORS) data is given according to *total area (surface)*, as well as *area in exploitation*. Term *area in exploitation* represents the area of individual production facilities – lakes that are engaged in production in certain year (stocked with fish). Term *total area (surface)* of fish farm should represent so-called total projected area of fish farm after its building, which is reduced for areas that are not in use (for any reason). Producers themselves often decrease registered surfaces of production facilities during the inventory process,

for too shallow or too sludge lake parts, or parts overgrown with reeds. In SORS data it is possible to find data on other surfaces (areas) that include dams and other surfaces that are not part of production facilities.

Calculation of areas under carp fish farms in Serbia, based on aforementioned SORS data, requires the following information: areas (surfaces) in exploitation, total area of production facilities, as well as the total area of production facilities increased for other areas.

According to previous table it can be seen that total surfaces, as well as registered surfaces in exploitation in observed period were subject to change. Total recorded surfaces under carp fish farms in Serbia in observed period were around 9.9 thousands hectares, while those in exploitation were around 8.6 thousands hectares.

Based on data from Table 1 we can calculate share of surfaces of different categories of fish facilities, so that ponds for summer fingerling generate 9.7%, ponds for two-summer fish 16%, broodstock ponds 0.5%, ponds for production of market size fish 72.7% and wintering ponds 1.1% of total area (calculated according the data for total surfaces and observed period). Ćirković et al. (2002) give a recommendation for a ratio that should exist between different categories of production facilities, where ponds for production of market size fish should cover 79% of total available surfaces, fattening ponds for production of two summer fish 15%, fingerling ponds for production of one summer fish 5% and wintering ponds 1% of available surfaces (in case that fingerling is bred in intensive and two summer fish in partly intensive system). Such division roughly corresponds to the real situation, having in mind that during the inventory under the ponds for one summer fingerling production there were included production facilities as for one month old fry, as well as one summer fish. Due to the fact that in the number of fish farms in Serbia, fingerling and two summer fish is still bred in conventional semi-intensive and partly intensive

breeding system, share of ponds for production of market size fish has been slightly lower in favor to fry production facilities.

Beside data from SORS other data about surfaces under carp fish ponds in Serbia can be found in scientific literature. For example (Ćirković, 2002) gave a list of fish ponds including their size. Bugarčić (2007) made an inventory of artificial lakes in Vojvodina, noting the data about areas covered by carp fish ponds. Based on those papers and a questionnaire, (Čanak, 2012) gave updated list of carp fish farms with their sizes. During 2012 and 2013 there occurred further changes, where some farms ceased to work (fish farm in Baranda), while some of them started with organization of sport fishing activities instead of pure breeding (Živača fish farm). In addition to earthen fish farms in 2013 there were registered another 5 cages for carp breeding.

Equipment used in carp farming in Serbia can be divided into two groups: general that may be used on trout fish farms as well (or other agricultural farms) and specific that is characteristic just for activities on carp fish farms.

Motor boats are specific vehicles used on carp fish farms in process of fish nutrition, lake control, execution of agro-technical measure of liming, fish harvesting, fishing, etc. During the observed period their number has been reduced from 164 to 121.

Motor mowers, either for maintaining of dams, pond surrounding or underwater vegetation, are the indicator of level of investments in fish ponds maintenance. Their number was highest in 2013 following positive trend over the time.

Specific equipment in carp farming that point to production intensification includes aerators, elevators and feeders, where can be also noticed increase in their presence on farms in previous years.

Increased number of transportation pools, trucks, coolers and delivery vehicles, indicates to larger investment in mechanization of production process, as well as decision of legal entities that

Current State of Fish Production on Carp Farms in Serbia

Table 1. Areas under carp farms in Serbia (period 2007-2013)

Production Facility/Year	2007	2008	2009	2010	2011	2012	2013	2007-2013
One Summer Fingerling Production Ponds								
Total area (ha)	876	873	880	891	1,052	1,106	1,037	959
in exploitation (ha)	730	733	745	738	896	955	887	812
Two summer Fish Production Ponds								
Total area (ha)	1,032	1,349	1,517	1,556	1,896	1,805	1,931	1,584
in exploitation (ha)	923	1,174	1,344	1,345	1,632	1,585	1,651	1,379
Bloodstock Ponds								
Total area (ha)	13	39	18	18	136	131	21	54
in exploitation (ha)	7	36	15	15	116	117	12	45
Ponds for Production of Market Size Fish								
Total area (ha)	7,685	6,989	7,496	7,682	7,041	6,689	6,869	7,207
in exploitation (ha)	6,982	5,988	6,327	6,742	5,786	5,963	6,051	6,263
Wintering Ponds								
Total area (ha)	129	102	110	117	101	96	135	113
in exploitation (ha)	106	87	94	101	87	84	89	93
Total								
Total area (ha)	9,735	9,352	10,021	10,264	10,226	9,827	9,993	9,917
in exploitation (ha)	8,748	8,018	8,525	8,941	8,517	8,704	8,690	8,592

Source: Authors' calculation according to SORS data (2014).

Table 2. Used equipment on carp fish farms (period 2007-2013)

Type of Equipment/Year	2007	2008	2009	2010	2011	2012	2013
Motor boats	164	136	148	153	143	121	129
Pools for fish transportation	243	240	292	289	274	262	299
Coolers (mobile and fixed)	13	11	13	15	18	17	27
Motor mowers	39	37	42	47	45	46	60
Water pumps	-	-	-	-	-	-	191
Tractors	75	67	81	82	78	89	104
Trucks	39	44	48	46	42	37	44
Vans (delivery vehicles)	11	9	16	13	18	20	30
Nets (all types)	177	161	213	594	204	199	413
Aerators	10	11	11	12	21	19	31
Elevators	11	11	11	10	12	13	17
Feeders	-	-	-	-	-	-	32

Source: SORS (2014).

Current State of Fish Production on Carp Farms in Serbia

are involved in fishery to organize by themselves part of transport and fish selling in last years of observed period.

ACHIEVED PRODUCTION AND PRODUCTION STRUCTURE

Leading fish species that are grown in Serbia for consumption are carp, bighead and silver carp, grass carp, perch and catfish. Other species that are caught during harvesting, with the most common being crucian carp, are not intentionally bread. They enter into production facilities during pumping of the water. It happens often that silver carp,

perch and catfish reach fish ponds as alleviants or fry in water pumped into ponds.

In table 3 it can be seen that carp takes dominant place in production structure (82.8%). Carp is followed by silver and bighead carp (summarily expressed, 10.2%) and grass carp (3.1%). Category other fish species contains catfish, pike, perch, as well as some species (weed fish) that are not subject of breeding. Majority of predators (catfish, pike, perch) and all weed fish, come into the production facilities as a spawn during the water pumping into the lake, or they lag behind after the fish harvesting in un-drained parts of the lakes.

Analysis of production structure can go into the two directions: observation of grown fish species,

Table 3. Production on carp fish farms in Serbia (period 2007-2013)

Fish Species and Age Category/ Year, Share		2007	2008	2009	2010	2011	2012	2013	2007- 2013	%
Carp	One and Two Summer Fish (%)	30.37	35.53	38.53	34.28	28.35	38.38	39.80	35.30	29.2
	For consume (%)	69.63	64.47	61.47	65.72	71.65	61.62	60.20	64.70	53.6
	Total (t)	7,924	8,936	10,356	10,675	9,216	9,870	10,709	9,669	82.8
Bighead and Silver Carp	One and Two Summer Fish (%)	20.28	40.21	48.53	39.95	56.65	55.78	29.21	41.87	4.3
	For Consume (%)	79.72	59.79	51.47	60.05	43.35	44.22	70.79	58.13	5.9
	Total (t)	1,062	1,341	1,587	1,243	860	1,235	1,020	1,192	10.2
Grass Carp	One and Two Summer Fish (%)	28.83	32.08	37.13	37.52	31.35	37.14	36.59	34.60	1.1
	For Consume (%)	71.17	67.92	62.87	62.48	68.65	62.86	63.41	65.40	2.0
	Total (t)	292	395	332	645	369	308	195	362	3.1
Other Species	One and Two Summer Fish (%)	12.12	3.09	34.59	28.50	24.92	31.32	58.05	25.91	1.0
	For Consume (%)	87.88	96.91	65.41	71.50	75.08	68.68	41.95	74.09	2.9
	Total (t)	176	561	241	231	783	933	258	455	3.9
Total	One and Two Summer Fish (%)	28.85	34.35	39.68	34.89	30.38	39.55	39.25	35.58	35.6
	For Consume (%)	71.15	65.65	60.32	65.11	69.62	60.45	60.75	64.42	64.4
	Total (t)	9,454	11,233	12,515	12,794	11,227	12,346	12,182	11,679	100.0

Source: Authors' calculation according to SORS data (2014).

as like in observation of age categories of certain fish species that are bred. Until 2012, in SORS records all data about spawn production were kept collectively for all spawn age categories. Starting from 2013 data for quantity of produced fry, fingerling or two-summer fish have been divided.

Based on data about production structure by carp age categories (Tables 3 and 4) different conclusions can be made, such as the compliance between spawn and consume size fish production, or about achieved level of production intensity. In intensive carp production on national level, one summer fish has share of around 20% and two year consume carp about 80%. In semi intensive production, if spawn is produced just for production purposes (not for sale), share of one summer fish has to range 7-9%, two summer fish 25-27% and consume size fish around 65-67%. These approximations of the production structure are valid just in period of fish harvesting and before their overwintering, in other words before came to wintering weight losses.

Structure of spawn and consume size fish production in observed period, shown in previous tables, ranged from 30%:70% to 40%:60%, with average ratio of 35%:65%. Many reasons affect these changes in age categories production structure, where the most important are: emergence of diseases, lack (or surplus) of certain spawn age category needed for stocking, feed shortage, unfavorable feeding conditions during the vegeta-

tion period, incomplete records about sold market size fish, etc.

PERFORMANCE INDICATORS OF PRODUCTION

In carp fishery the following performance indicators of production are used:

- *Total production* (kg) represents weight of sold fish and fish in stock (in ponds) by the end of December each year,
- *Production per unit* (kg/ha) represents ratio between total production and fish farm size,
- *Fish growth* (kg) represents difference between total production and stocked fish,
- *Growth coefficient* (-) represents ratio between total production and total weight of stocked fish,
- *Feed conversion ratio (FRC)*, (-) represents ratio between weight of given feed and fish growth.

Except those indicators, there are also used quantity of applied lime (kg/ha), content of spent fertilizers (kg/ha), weight of produced fish per employee, etc. Each indicator can be calculated for any production facility (pond, lake), any species and age category of grown fish, as well as

Table 4. Production structure on carp fish ponds (in 2013)

Categories/Species	Carp	(%)	Silver carp	(%)	Grass carp	(%)	Other	(%)	Total	(%)
Fry (000 pieces)	60,530	-	2,000	-	2,000	-	34	-	64,564	-
Fingerling	992,863	9.3	46,906	4.6	13,717	7.0	4,912	1.9	1,058,398	8.7
Two summer fish	3,269,058	30.5	251,035	24.6	57,502	29.5	144,843	56.1	3,722,438	30.6
Fish for consume	6,447,187	60.2	721,920	70.8	123,432	63.4	108,216	41.9	7,400,755	60.8
Total	10,709,108	100.0	1,019,861	100.0	194,651	100.0	257,971	100.0	12,181,591	100.0

Source: Authors' calculation according to SORS data (2014).

Current State of Fish Production on Carp Farms in Serbia

for complete fish farm. It is feasible to calculate certain production indicators for the whole branch of carp fishery in some country.

Production per unit could be calculated in several ways. One way is to divide total annual fish production with total area under the carp fish farms. Second way is to divide the total production with surfaces in exploitation in certain year. On these ways are obtained somewhat different indicators, where, in observed period, average production per unit amounts 1,198 kg/ha, calculated toward the total surface (Qus), or 1,381 kg/ha, calculated toward the surface in exploitation (Que).

Indicator of fish growth can be calculated only if data for stocked and produced fish are available for certain year. According to SORS methodology, data for stocked fish are collecting just for category of consume size fish.

If we want to make analysis of market size fish production per unit of surface, quantity of produced market size fish can be expressed per unit of surface of ponds in exploitation. In this way produced quantity of consume size fish is brought down on surfaces where it was really achieved.

In production facilities for edible fish growing (ponds for market size fish production) on carp fish farms in Serbia, it is possible to grow two summer fish as well. Also, there are some cases

when in same facilities, at the same time are grown consume size fish and fingerling. Besides that in conventional semi-intensive system is not to rare the situation when the tiny three year old fish are not sold on market, but it is returned to spawn category, wherein it is not calculated in the production of market size fish. Due to aforementioned, it can be concluded that the production on ponds in Serbia is certainly larger than shown one, so that the presented data refer only to market size fish intended for sale.

In Table 6 it can be seen that for the consume size carp production has been usually stocked around 400-500 kg/ha of two summer carp fish, with simultaneous stocking of other fish species. Average of stocked spawn for consume fish production in observed period for entire Serbia was 512 kg/ha. Carp production per unit ranged from 800 kg/ha to 1,100 kg/ha, with average of around 1 t/ha.

Growth represents the mass increase and it is the base for the creation of business value surplus. Strivings are in the achieving of maximal growth with minimal investment of production factors, such as feed, agro-technical measures, etc. Growth can be monitored through the unitary growth per unit of fish pond area, as through the growth coefficient. Rise of unitary growth points

Table 6. Production per unit and growth, growth coefficient for consume size fish (2007-2013)

Fish Species, Indicator/Year			2007	2008	2009	2010	2011	2012	2013	2007-2013
Carp	Stocked	kg/ha	370	366	518	456	498	443	456	443
	Production	kg/ha	790	962	1006	1041	1141	1020	1065	999
	Growth	kg/ha	420	596	488	585	643	577	609	556
	Growth Coefficient	-	2.1	2.6	1.9	2.3	2.3	2.3	2.3	2.3
All Fish	Stocked	kg/ha	442	420	618	534	549	495	533	512
	Production	kg/ha	963	1231	1193	1236	1351	1251	1223	1201
	Growth	kg/ha	522	812	575	701	802	756	690	689
	Growth Coefficient	-	2.2	2.9	1.9	2.3	2.5	2.5	2.3	2.3

Source: Authors' calculation according to SORS data (2014).

to more intensive production. Achieved unitary growth in the national carp production in observed period was 559 kg/ha, while for all consume fish it was 689 kg/ha.

Growth coefficient (Čanak, 2012) is the indicator often used in production practice, but without common name. As a term, quotient or growth coefficient shows how many times the stocked fish in certain lake had been increased their initial mass during the breeding period. In professional literature, certain authors descriptively provide a data for this indicator in carp production like “X-fold weight gain” (Horvath et al., 2002). It should be mentioned that in Serbia during the observed period, growth coefficient in semi-intensive carp production has significantly higher values. Here has to be distinguished growth coefficient of average stocked carp weight from the growth coefficient of the stocked fish shoal initial mass. In conventional semi-intensive system, it is usual that the bigger two summer fish (> 700 g) increase its average weight for 3-3.5 times, while the whole quantity of stocked two summer fish (shoal) increases its weight just for 2.5 times, primarily due to mortality that occurs in process of growing.

In Table 6 it can be seen that the growth coefficient for the complete mass of stocked two summer fish, in the Serbian consume carp production in observed period, had an average value of 2.3, ranging from 1.9 to 2.6. Also, the same average growth coefficient (2.3) was achieved in the production of all market size fish.

According to official data from SORS, it is not possible to calculate the feed conversion ratio for the entire branch of carp fishery in Serbia. Some author's claims that the most often value

for the feed conversion ratio in cereals nutrition ranges from 3 to 6 (Marković, 2010). According to others, in market size fish production during the nutrition with cereals mixture it can be achieved a feed conversion ratio of 2.3 (Ćirković et al., 2002). Calculations in other countries are based on similar standards for mentioned ratio in cereals nutrition. So, in carp production in Central and Eastern Europe, feed conversion ratio ranges from 2.5 to 4 in cereals nutrition, while in nutrition with extruded feed it ranges from 1.3 to 1.8 (Gyalog et al., 2011). In regard to age category of grown carp spawn, feed conversion ratio in Serbia ranges from 1.3 to 1.6 in the production of one year fish, then from 1.4 to 1.6 in the production of two year fish, while in production of consume size carp it ranges from 1.4 to 1.8 (Marković, 2010).

Level of applied agro-technical measures in carp fishery can be indicated by the consumption of fertilizers and lime.

In previous table is presented a consumption of fertilizers (organic 98.6% and mineral 1.4%) and lime in all fish farms in exploitation on national level. Based on recommendations that in spawn and consume size fish production fertilizers has to be annually applied in quantity of 3-5 t/ha (Bunjevaca, 2011) or 1-3 t/ha (Marković, 2010), it can be seen really weak enforcement of this agro-technical measure. Applied lime fits to general recommendations for liming of fishery facilities - few times during the production cycle, with 50-150 kg/ha (Hristić & Bunjevaca, 1999), but it does not include initial liming, 200-1,500 kg/ha (Bunjevaca, 2011; Marković, 2010). General conclusion is that both agro-technical measures can be used more in Serbia.

Table 7. Use of fertilizers and lime ($\text{Ca}(\text{OH})_2$), (in kg/ha)

Year	2007	2008	2009	2010	2011	2012	2013	Average 2007-2013
Fertilizers	83	56	79	122	87	48	94	81
Lime	371	559	627	473	454	536	520	505

Source: Authors' calculation according to SORS data (2014).

UTILIZATION OF PRODUCTION CAPACITIES

Like a term, utilization of production capacities can be observed from several aspects. It can be made a difference between the level of production facilities utilization in technical sense and achieved production volume in line to used technology.

Level of production facilities utilization in carp fishery in Serbia has changed over the time (see Table 1). In observed period (2007-2013) surfaces under the carp farms in exploitation varied between 8 and 8.9 thousand hectares (in average 8,600 ha). According to SORS, in 1998, the surfaces in function were over the 10.3 thousand hectares (the largest recorded area on that principle of recording).

Comparing the surfaces in exploitation (in observed period, 2007-2013) with the year in which the most surfaces were in function (2010), it can be gained the level of utilization, which ranges between 90% (2008) and 100%. But, after the comparison with the values for 1998 (100%), variation will be much greater, as the share of surfaces in exploitation (in observed period 2007-2013) will range from 78% to 87%.

From the point of production facilities utilization, as next reference data can be used the data from the Table 1 (total carp fish farms surfaces in Serbia registered for the production in certain year). Some authors claim that entire (in the production active) surfaces on national level are about 11,000 ha (Marković et al., 2013) what is 10% more than all registered surfaces in observed seven year period. According to SORS obtained utilization of surfaces in exploitation is 87% in compare to total area of fish farms. In this way was done the comparison among the surfaces in use in different years, as among average total surfaces and average surfaces in exploitation for the observed period. Both cases gained small variation, in other words it was higher utilization of production capacities in the period of last seven years, but before that.

Focusing the production capacities utilization, like reference data logical are the data about totally registered ponds surfaces, i.e., surfaces in function in certain years. In such a way for the all fish farms surfaces is obtained the utilization level of 87%.

From technological aspect, production capacities utilization can be monitored in several ways. The only accessible way in Serbia, according to available data, is the comparison of achieved production results. Considering the result for the largest total production per unit (1,487 kg/ha, achieved in 2009) and comparing it with the same indicator for other years, it will be gained utilization level that ranges between 74% and 100%.

In term of applied technology on carp farms in Serbia, observed period (2007-2013) was characterized by fact that in carp nutrition was predominantly used concentrated - extruded feed (2004 is marked as starting year in feeding with mentioned feed). In this way, in compare to previous period (1997-2003), better production results are achieved (SORS, 2014), when nutrition was primarily based on cereals. Exception was in 1998, when over 10,000 hectares were exploited and when was achieved significant overall production, although the production per unit remained below 1t/ha.

Summarizing the above mentioned methods for assessment of production capacities on carp farms utilization, we can come to maximally achievable production under current conditions. According to available data it can be concluded that production in semi-intensive growing system, together with cereals nutrition, in multi-year average amounts around 1 t/ha (Ćirković et al., 2002; SORS, 2014). On the other side, in years when concentrated feed were mostly used, production usually amounted around 1.4 t/ha (Table 5). It is important to mention that production per unit in amount of more than 1 t/ha, even more than 1.5 t/ha can be also achieved without concentrated feed, but with stronger application of certain agro-technical activities (fish ponds bottom cultivation and fertilization), what is really rare in Serbia.

After we multiply total areas under carp farms (around 9.9 thousand ha) with the highest production per unit (about 1.5 t/ha, in 2009) upper limit of the total production will be gained (about 15 thousand t), what can be considered as a maximal production value under the current conditions and with used technology. The lower limit can be drawn on about 10 thousand tons, only in case if we assume return to old technology and feeding with pure cereals.

Comparing the projected maximal production on carp farms with average production in last seven years, it's obvious that there is possibility for real increase of production for about 3.5 thousand tons per year. It can happen without greater investments, just with appliance of best known growing practice. Of course, production can be increased much more, but authors attempt to give a realistic, maximally projected production value under the current conditions.

Important fact is that previous analysis covered entire Serbia, and it was based on multi-year averaged data. Conducted analysis reflects actual capabilities of carp production in Serbia, including all enterprise's limitations in current business environment. More precise projection of possible carp production on national level can be certainly done after projection of possible production for each carp farm separately (with respect of condition and real capabilities of each fish farm).

SERBIA AS CARP PRODUCER WITHIN THE EUROPE

Carp production in Europe has a very long tradition. Dominant system in carp production is semi-intensive (like in Serbia), but in some countries extensive system is also present in large percent.

Comparison of Serbian and other European countries carp production requires careful approach, as FAO's methodological procedure for data collecting significantly differs from method used by Serbian statistical office (SORS). The most important difference is in interpretation of the term production. According to SORS methodology, this term considers all quantity of consume size fish, and one and two summer old fish recorded at 31st December of current year, what includes sold fish and fish in stock. By EU and FAO methodology term production means the output from aquaculture at first sale, including production from hatcheries and nurseries offered for sale. How SORS methodology for data collecting includes the data for harvested and sold fish, direct comparison with other European countries can be possible.

In previous Table is presented that in carp production Serbia takes 8th place in Europe. Considering only the EU countries, Serbia takes really high 5th place.

Table 5. Production of fish per unit

Area/year		2007	2008	2009	2010	2011	2012	2013	2007-2013
Fish farms	Total area (ha)	9,593	9,211	9,893	10,129	9,989	9,600	9,837	9,750
	Exploited area (ha)	8,635	7,895	8,416	8,825	8,314	8,503	8,589	8,454
Total production Q (kg)		9,453,813	11,232,567	12,515,036	12,794,057	11,227,276	12,345,524	12,181,591	11,678,552
Production per unit Qus (kg/ha)		985	1,219	1,265	1,263	1,124	1,286	1,238	1,198
Production per unit Que (kg/ha)		1,095	1,423	1,487	1,450	1,350	1,452	1,418	1,381

Source: Authors' calculation according to SORS data (2014).

Table 8. Carp producers in Europe with production of over the 1,000 t (in 000 t)

No.	Country/Year	2007	2008	2009	2010	2011	2012	2007-2012
1	Russian Federation*	44,276	48933	51581	56,797	56,180	60,880	53,108
2	Ukraine*	22,983	20,000	20,000	20,000	20,000	20,000	20,497
3	Czech Republic	17,947	17,507	17,258	17,746	18,198	17,972	17,771
4	Poland	15,698	17,150	18,133	15,400	14,430	17,700	16,419
5	Belarus*	12,469	13,022	13,609	12,834	12,625	11,639	12,700
6	Hungary	9,570	10,485	9,931	9,927	10,807	9,985	10,118
7	Germany	9,244	10,855	9,887	9,634	5,082	5,521	8,371
8	Serbia*	4,859	5,165	5,428	6,116	6,071	5,959	5,600
9	France	4,200	4,200	4,200	4,200	4,200	4,000	4,167
10	Romania	3,544	3,977	4,142	2,888	2,652	3,400	3,434
11	Lithuania	3,231	2,823	3,222	2,936	3,061	3,257	3,088
12	Moldova*	2,500	2,550	2,750	2,900	3,200	3,300	2,867
13	Croatia	1,503	1,546	2,058	1,816	2,891	2,484	2,050
14	Bulgaria	1,180	1,469	1,927	1,906	1,390	1,288	1,527

Source: FishstatJ (2014); Note: * Countries that are not part of EU.

Except absolute production values, better estimation of current state of entire carp fishery branch involves calculation of carp production per unit of production surface, as well as production per capita.

Data from previous table cover the carp production in aquaculture, without the accompanying fish species grown together with carp. Author's decision for such an analysis comes from the fact that other fish species grown in poly-culture with carp are usually fed by natural food. So, on that way it can be concluded about the general production intensity on carp farms in certain country.

By volume of carp production per production surface, Serbia takes 1st place in the Europe with production of 560 kg/ha. Its production is before the production achieved in Russian Federation, Belarus and Bulgaria. Mentioned is logical, considering that in Serbia carp is more and more grown by use of concentrated feed in semi-intensive production system of higher level. Basically, it means that within the European sector

of carp fishery, carp growing in Serbia is under the highest level of intensity.

Observing the carp production per capita, Serbia is positioned at 6th place in Europe, or 4th place considering only the countries that belong to European Union (just behind the Czech Republic, Hungary and Lithuania).

SWOT ANALYSIS OF CARP PRODUCTION IN SERBIA

SWOT matrix should provide more precise analysis of the current state in Serbian carp production. It can also serve as part of the development strategy of Serbian fishery, which momentarily does not exist. *Strengths* of carp fishery involve available resources, and potential impacts on consumers and other parts of the national fishing industry. *Weaknesses* of carp production in Serbia contain limitations and adversities in relation to competitors. *Opportunities* represent the positive outcomes

Table 9. Carp production per production surface and per capita

No.	Country	Production 2007-2013 (Average)	Farm Area (ha)	Production (kg/ha)	Population (in mil)	Production (kg/capita)
1	Russian Federation	53,108	101,100	525	143.5	0.37
2	Ukraine	20,497	50,000	410	45.5	0.45
3	Czech republic	17,771	41,000	433	10.5	1.69
4	Poland	16,419	51,700	318	38.5	0.43
5	Belarus	12,700	24,530	518	9.5	1.34
6	Hungary	10,118	28,000	361	9.9	1.02
7	Germany	8,371	40,000	209	80.6	0.10
8	Serbia	5,600	10,000	560	7.2	0.78
9	Romania	3,434	80,000	43	19.9	0.17
10	Lithuania	3,088	24,434	126	3.0	1.04
11	Moldova	2,867	12,000	239	3.5	0.82
12	Croatia	2,050	10,226	200	4.3	0.48
13	Bulgaria	1,527	3,000	509	7.3	0.21

Source: Authors calculation based on data from FishstatJ (2014) and FAO – NASO (2014).

this branch can achieve globally or within the close surrounding in upcoming future. *Threats* to national carp production are recognized in potentially negative impacts from close surrounding and broader region.

In line to tradition in fish production on carp fish farms in Serbia, rise of carp production is strongly linked to the end of the 19th and beginning of the 20th century. In other words, over the 100 years of tradition could be an excellent base for further development. Adequate natural conditions and development of carp fishery can be estimated as excellent, if they are compared to the conditions present in countries from the close and far surrounding. Climate and number of feeding days are very favorable (one of the most favorable in the Europe). On carp farms in Serbia are usually used the semi-intensive systems for fish growing. In mentioned systems fish is grown in poly-culture what results better utilization of natural potential of lakes and several fish species.

Serbia traditionally represents a large and developed market for fish species from carp farms.

It is known that entire fish production from the Serbian carp fish farms is sold and consumed in national market. Another important strength of Serbian carp fishery is that all spawn for stocking, as like all cereals and concentrated feed are locally produced (mainly in Vojvodina province, where the majority of carp farms are located).

Very expressed weakness of Serbian carp production is seasonal character of the national market. Seasonality is mainly related to the Orthodox faith and fasts (the most of produced carp are sold during the St. Nicholas fast). On the other side, sale of rainbow trout is somewhat more evenly distributed during the year.

One more consumer habit in Serbia causes the weakness of carp production. The demand for big fish (over 3 kg) is in line with much longer period of growing mainly achieved after 3 years. Important weakness is also recognized in condition of production facilities (fish ponds). Most of the carp ponds in Serbia are more or less unkempt, sludged and overgrown with reeds, so they require reconstruction in some level. The reason for this

Current State of Fish Production on Carp Farms in Serbia

Table 10. SWOT analysis in carp production in Serbia

Strengths	Weaknesses
- Tradition in production; - Natural conditions for carp production; - Assortment of fish species that are produced; - Complete production can be sold on national market; - Spawn and feed are locally provided; - Low level of import of produced fish species.	- Expressed market seasonality; - Long breeding period – usually three year growing system; - Neglected fish farms; - Orientation to national market; - Low profitability.
Opportunities	Threats
- Export of quality products in Europe; - Great possibilities for capacities increment; - Intensification of production; - Possibility of organic production; - Possibility for expansion of assortment.	- Import of cheap fish; - Koi herpes virus; - Vulnerability by deterioration of water quality; - Small consumption of fish in Serbia.

Source: According to authors' opinion

primarily lays in long-term neglect of fish ponds maintenance and in lack of technological measures for sludge dredging and cultivation of ponds bottom.

Another weakness of Serbian carp production appears in low level of export of fish produced on carp farms. In last thirty years was not recorded a significant export of fish, except in certain cases into the countries from close surround. Cause of this lays in high wholesale fish prices in Serbian market, usually much higher than the prices in the Europe. On the other hand, although there is no export, national market is able to accept entire quantity of produced fish. Also, low profitability in carp production on Serbian fish farms is recognized as very significant weakness (Crnobrnja, 2000; Čanak, 2012).

In previous years in Serbia has come to notable development of processing capacities (building of many craft and several large industrial facilities for fish processing). Thereby are acquired the conditions to Serbia that in accession to EU take a chance to sell a certain quantity of quality fish products on this huge and developed market. This can be considered as a great opportunity for Serbian carp production.

Possibilities for production growth on carp fish farms in Serbia are almost limitless. Intensification of production in line with use of concentrated feed

and higher presence of poly-cultural production, could lead to the significant increase of produced fish quantities. On the other side, the resources for the establishment of new fish farms (available land and water) are sufficient for a tenfold increase of used surfaces.

With production of organic products, Serbia can successfully compete in the EU market (consumption of organic products exists in EU like very often habit). Carp farms are very suitable for organization of production with organic character. On that way one more production line can be established and gained products can easily find proper market.

During the enlargement of current assortment (number of grown fish species), the Law on fish fund sustainability have been widely consulted, as it prohibits the import of non-native fish species and their bringing into the domestic waters. Acknowledging mentioned legal limitation, it can be concluded that fish species used for growing in aquaculture can be primarily sturgeon species (family of Acipenseridae).

After Serbia open its market, as a threat to national carp production can be considered the offer of warm water fish species from European carp farms. Mentioned primarily includes traditionally big producers of carp and other fish species, such are Czech Republic, Poland and Hungary.

It is known that the carp farms in Croatia experienced their economic smash, after they lost their traditional market, Serbian market.

Koi herpes virus (*Cyprinid herpesvirus-3*) at carp can be labeled as great biological threat. Mentioned virus illness could cause great losses on carp fish farms. Up to now it has not still recorded in Serbia. Virus of spring viraemia of carp (*Viraemia vernalis cyprinid*) has to be also mentioned as it's sometimes present on carp fish farms causing the several times larger mass mortality of fish.

In compare to European countries, low consumption of fish per capita on local level can appears as limiting factor for production increase on carp farms in Serbia.

After observation of SWOT analysis for Serbian carp production it can be concluded that accession to EU will strengthened some positive factors, so carp production in Serbia can be seen as potentially perspective branch.

POSSIBLE PRODUCTION DEVELOPMENT ON CARP FISH FARMS

Assessment of possible further development of carp farms in Serbia has to include next elements: current state of farms, business environment for carp production on national level (Čanak & Ugrenović, 2014) and changes of market-political situation in relevant countries.

Serbia possesses favorable natural conditions for further development of warm-water fishery. It has on disposal large surfaces suitable for establishment of warm-water fish farms that only in Banat region cover over the 100,000 ha (Ćirković et al., 2002; Marković & Mitrović-Tutudžić, 2003). So, in perspective, part of professional auditorium turned to fish production see enough space useful for spreading of surfaces under carp farms. On national level, there is a sufficient quantity

of water with adequate quality needed for warm-water fish species growing.

There is justified necessity for improvement of grown fish production characteristics, primarily carp. Currently is conducted the carp selection program in the Center for Fishery and Applied Hydrobiology at Faculty of Agriculture - University in Belgrade. Main goal is creation of parental shoal with improved production characteristics. In other words, real expectations are turned to improvement of feed conversion, faster growth and less sensitivity to growing conditions at the queens produced in mentioned program.

Besides advancement of grown fish species production characteristics, some authors find a development perspective in introduction of new fish species, such as African catfish, eel, tilapia, sturgeon fish, or crustaceans, oysters and amphibians (Ćirković et al., 2002). Mentioned brings into the focus certain legal limitations regarding the introduction and growing of all ochthonous fish species in Serbia.

Observing the socio-economic conditions, it can be certainly expected increase of fish consumption per capita on national level. Also, expectations include the fact that domestic warm-water fish will be further highly positioned in the fish consumption. From other side, accession to the European Union will slowly but surely open new markets to Serbia what will possibly lead to increase in production. However it should have in mind that joining the EU and removal of certain custom barriers after entering the WTO (World Trade Organization) will increase competition to domestic producers. Recent political tensions between EU and Russian Federation create greater deficit of various commodities in the large Russian market, what sets Serbia in a very favorable position. In other words, size of market for realization of produced warm-water fish should not be an obstacle in process of carp production development on national level.

In last few decades, one of the basic threats that occurred in Serbian carp (warm-fish) market was related to the lower prices of fish that come from the countries which financially support fish export. Unfortunately, domestic producers were not sufficiently supported by the government. So, without appropriate governmental support, during the EU accession can appear a problem of domestic aquaculture products competitiveness on the EU markets (Mišćević et al., 2011).

Despite the long tradition in warm-water fish production, and existence of a well-trained, experienced and educated labor force, expressed changes in economic system in last decade impose the need for introduction of different business approaches. Further development of the warm-water (carp) fishery in Serbia will be primarily determined by significant investments. Improvement of this sector is impossible without appearance of serious investors that hold progressive ideas and contemporary business activities.

Materials base does not represent a hindering factor for the warm-water fishery development, but on the contrary its incentive factor of rapid development.

Great impact on production efficiency and further production development will come after successful change of market habits, in order to produce fish with lower average weight. Currently, it can be expected further habits adoption by local population towards the consuming of smaller size fish.

Unfortunately, there is no precise prediction of price parity between carp and cereals, except general expectation that the prices will be mutually dependent to some extent.

According to some analysis of economic indicators within the investment evaluation (Čanak, 2012), compared to small size fish farms large one can have big advantages. On the other hand, smaller farms can much easier react in order to improve their economic effects. But, in opportunity for accession to the EU markets, large fish

farms will certainly have more advantages and their development will be much faster.

In previous 15 years, surfaces under the fish farms have increased for 10-15%, while number of farms was almost doubled (Marković & Poleksić, 2009). This increase and expected continuation of noted trend is mostly referred to small family fish farms. Also, it can be expected the establishment of several large fish farms (larger than 100 ha), before all due to fact that on larger surfaces production is more cost-effective.

Although greater disburden of fish farms in terms of fees and taxes reduction is not anticipating, as potential government support can be considered subsidized loans directed to this sector of economy. According to experience from other countries, after pre-accession funds become fully available to Serbia, it can be expected allocation of significant funds to national fishery.

As significant state support can represent adjustment of national standards and international agreements for fish trade with countries that potentially could be a large export markets. This is one of preconditions for better functioning of fish processing facilities in Serbia (currently are active only few of them).

According to previous analysis, certain conclusions about the possible production development on the carp farms in Serbia in upcoming period can be:

- Up to 2016 there will be no significant changes in sub-sector of warm-water fishery. It can be expected a slight fall of production, primarily due to effects of economic crisis;
- In line with accession processes to European Union can be expected: growth of fish production, reconstruction of many fish farms, building of new fish farms and establishment of certain fish species production that are momentarily not present in domestic production facilities;

- Significant increase in fish production can initiate potential export expansion of Serbian warm-water fish species into the large Russian market;
- Up to 2020, we can expect annual production of warm water fish on national level in range from 15 to 20 thousand tons;
- Further development of commercial fish production will go in two directions: toward the top carp and pike production (mentioned requires large size lakes), or to commercial fishing for a broader group of users (mostly intended for population from urban areas).

Related to development of fishery sector on national level, Serbia has to manage better the accession processes to the EU than its neighbors Hungary and Croatia. If this happened it may be expected above estimated scenario. Otherwise, it can be expected stagnation, with annual production in range from 5 to 10 thousand tons of consume size fish.

CONCLUSION

In the paper there has been analyzed current status of carp fishery in Serbia, as well as there has been made a comparison with the largest carp producers in Europe.

Analysis included technical-technological characteristics of carp ponds in Serbia, the types of fish breed, as well as the quantity and structure of production in the period 2007-2013. Based on general statistical data, there have been calculated performance indicators for the whole branch of carp fishery in Serbia. Production on national level was compared with other countries carp producers in Europe that produce more than 1,000 t of carp per year. Therefore it has been made a cross-country comparison of production intensity, as well as the production per capita for the period 2007-2012.

Carp production in Serbia is mostly conducted in earthen ponds which cover total area of about 10,000 ha. The area used for carp production has been changing over the observed period, and average level is around 8.6 thousands hectares. Large fish ponds are dominant, with those over 150 ha covering more than 85% of all carp fish farms in Serbia. Fish ponds are supplied by water from big rivers, channels and wells.

The system of carp production is mostly semi-intensive, with two different levels of intensity. Besides conventional semi-intensive system, a higher level of semi-intensive growing system based on feeding with concentrated and extruded food is becoming popular.

Use of mechanization on carp farms recorded increasing trend. That indicates greater investments in maintaining fish ponds, as well as production intensification in the observed period (for example, by use of larger number of aerators).

Current production in carp fish farms, according to SORS methodology, during observed period has recorded an average of 11,679 tons per year. In the production structure, carp generates around 83%, silver and bighead carp around 10%, grass carp around 3% and other fish species (catfish, pike, perch and crucian carp) around 4%. According to age categories, spawn generates approximately 35% and consume size fish 65%.

Average production per unit for all produced fish and on all production surfaces equals around 1,200 kg/ha. Production per unit on all surfaces in exploitation for market size carp is around 1 t/ha, while for all consume size fish is 1,381 kg/ha. Achieved growth coefficient is the same for market size carp as for all produced market size fish (2.3). Volume of used fertilizers and lime indicate insufficient use of agro-technical measures.

Comparison of national carp production with the production in European countries is possible only by use of EU methodology (FAO methodology for collecting of data on aquaculture).

According to that methodology Serbia is ranked 8th among European countries, by carp quantity

produced, and 5th if compared only with EU countries. Using the same FAO methodology, carp in Serbia is produced at the most intensive level of 560 kg/ha, which is far before results for Russian Federation, Belarus and Bulgaria. According to carp production per capita, Serbia takes 6th place in Europe, with 0.8 kg/capita.

Analysis showed a good development of Serbian carp fishery branch, with its significant position among European producers.

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KEY TERMS AND DEFINITIONS

Advanced Fry: Is one month old fish.

Broodstock Pond: Specialized pond for broodstock fishes.

Consume Size Fish or Market Size Fish: Is usually three year old fish with body mass of more than 2 kg (in Serbia often more than 3 kg), or two year old fish with an average body mass of 1,3-2 kg.

Feeding Fry: Is few day old fish that is stocked into nurseries or fry ponds, and raised to stage of advanced fry.

Fish Farm: Like economical unit it consists of different production facilities - fish ponds, lakes where fish production (fish farming or fish breeding) is conducted.

Nurseries or Fry Rearing Ponds: Ponds for production of advanced fry. They usually cover the surface from 100 m² to 2,000 m².

One Summer and Two Summer Fingerling Ponds: Ponds for production of one year and two year old fish (they usually occupy 1-30 ha).

One Summer Fingerlings or One Year Old Fish: Is fish after one vegetation season. One summer fingerlings are stocked into the ponds in spring in order to be raised to the stage of two summer old fish, or in case of intensive carp farming to the stage of two years old consume size fish.

Ponds for Consume (Market) Size Fish Production: They are in range from few to few hundred hectares. The biggest pond in Serbia covers about 600 ha. On national level there are several fish ponds with surface larger than 100 ha.

Stages/Age Categories of Fish: Eggs, feeding fry, advanced fry, one summer fingerlings, two summer fish and three summer or market/consume size fish.

Two Summer Fingerling: Is two summer old fish, intended to rise to stage of three year old market size fish.

Wintering Pond: Specialized pond for fish overwintering, with usual surface in range from 0,1 to 1 ha.

Chapter 5

The Reform of EU Economic Governance

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ABSTRACT

The main objective of this chapter is to explore and describe the EU's management of the economic and financial crisis, the leading role of the European Council in economic governance, the governmental and parliamentary institutions involved in EU economic governance, and the democratic character of the new system of economic governance. Applying new conceptual and methodological approaches, this study advances to the next level research on the political relevance of EU-level coordination in the area of economic governance, the new governance of fiscal discipline, the dynamic of building sovereignty at the EU level, and the economic governance of the Euro area. This chapter discusses the major trends in scholarship about the evolution of EU economic governance, the changing decision-making agenda of EU economic governance, the deficiencies in EU economic governance exposed by the crisis, and the slowness of the European measures on the regulation and governance of finance. The authors is specifically interested in how previous research investigated the categorization and exercise of EU competences, the economic government of the Euro area, supranational modes of policymaking, and the tendency of EU economic governance towards intergovernmental policy coordination.

1. INTRODUCTION

Research on the institutional dynamics of EU rule-making, the function of Cohesion Policy in macroeconomic stabilization during the crisis, the budgetary processes of euro area states, and the intricate interconnections and combined consequences of rules-based and coordination-based fiscal governance has yielded fairly consistent findings over the past decade. The mainstay of the

paper is formed by an analysis of the multilateral scrutiny of economic policy coordination, strategic decision-making in economic governance, the structural reform of the legal design of European economic governance, and the enforcement mechanisms employed by economic governance. The theory that I shall seek to elaborate here puts considerable emphasis on the EU's economic policy coordination processes, the legal status of measures implementing financial support to EU

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states, the new legal design governing economic policy coordination in the euro area, and the expansion of the euro crisis. The material gathered in this study provides a rich and diverse context for understanding the ineffectiveness of EU macro-economic convergence tools, the process of reform to economic governance, the interconnection between rules-based and coordination-based forms of governance, and the changes to the EU's economic governance framework.

2. THE FRAMEWORK OF EU ECONOMIC GOVERNANCE

The new European system of economic governance has basically modified the framework requirements for national collective agreement and has generated a new European interventionism in the sphere of wage policy: the EU's road map for change is a decentralized system of collective agreement (European market integration did not automatically cause a convergence of national collective agreement systems). The new European interventionism generated a direct assault on established systems of multi-employer agreement, and must be regarded as a political undertaking to mitigate European trade unions. (Schulten and Müller, 2013) EU economic governance has been generated by inter-state coordination as a method to take action on the currency area's advances and to improve merging. Policy-makers and political leaders should consider a set of realistic modifications that could augment the record of EU economic governance. As a response to the euro area crisis, EU leaders should have readjusted the institutional basis of European Monetary Union (EMU). EU governance assigns a priority to merging in terms of fiscal and competitiveness aggregates (fiscal discipline and market elasticity may disunite EU economic frameworks). EU economic coordination is politically sensitive. More energy should be spent on enhancing the coordination of national policies immediately.

National welfare policies and wage-setting systems are an outstanding determinant of EU convergence or divergence. (Thillaye, 2013)

Present stages in European economic governance introduce regulation and increased (supranational) supervision on banks and markets, involving new, particular and compulsory regulatory procedures. Backing European economic governance is stronger among individuals that depend on a powerful welfare state, and in states that do not manage well economically. The sharing of macro-economic supremacy in the crisis presents a more relevant provocation to national identity than European integration. Collective identity has an important role in resolving assistance for European economic governance. National governments are cautious not to annoy their electorate by making undesirable judgments on the European level. European integration, free trade and European economic governance concern the internationalization of national economies. Free trade support and backing European economic governance refer to intricate and indefinite aspects of economic internationalization. Individuals with relevant levels of education and with a relevant socio-economic position tend to be more helpful of free trade and of European integration. Human capital and social class are vital factors of assistance for European economic integration. (Kuhn and Stoeckel, 2014) The financial and the socio-economic crisis tend to create disturbing spillover results in terms of political crisis and trust in the EU institutions. The participation of the European Parliament (EP) in the "management" of EU economic governance is essential for the legitimacy and the effectiveness of the new regulatory framework. In order to make the new economic governance function, unity and reciprocal trust amongst Member States and national citizens are crucial. The EP enjoys integral position as budgetary authority of the EU together with the Council (the EP status in the EU-budget process has been bolstered). The financial crisis weakens the soundness of the EU budget and the financing of the EU policies.

Successful co-ordination between national and EU budgets should be employed. The EP has stated its interest against the constitution of a strictly inter-governmental co-ordination system of the economic and fiscal policy, and is the only European institution in which cohesion and reciprocal trust between member states and between national citizens can be established. The authority over budgetary policy and the judgment on the fostering of structural reforms are requested at EU level. The inner separations of the EP have weakened its capability to strive for more keen powers in the framework of the EU economic governance. (Fasone, 2014) The fundamental cause of the irrelevant EU growth performance is a government by the rules, determining the considerable disregard of development as a policy goal (the benign unconcern of European authorities compared with present growth is the cause of continental Europe's unsatisfactory economic functioning). The establishment of Europe makes the latter a group of quasi-nation-states without a federation. (Fitoussi and Saraceno, 2013)

Considerably greater integration across all features of economic policy is necessitated if EMU is to function successfully. Structural reforms are indispensable in helping to enhance Europe's poor development record, and are essential to advance the performance of EMU and undertake aspects of competitiveness. The policy changes and reforms demanded for an adequate EMU involve stages towards fiscal union, macro-prudential and banking policies to guarantee sustainable financial integration, and an economic union to assist convergence of competitiveness across the euro area. An adequate EMU entails a powerful mechanism for coordinating fiscal and monetary policy. The original incentives of the crisis lay with weak financial supervision and loose fiscal policies, and with the essential framework of EMU and its governance. Once countries enroll in a currency union and undergo fast economic growth, low interest rates and large capital inflows, the motives to carry out the structural reforms diminish.

(Pickford et al., 2014) Modifications to financial regulation at EU level could alter the atomization in banking/financial services. The financial and political realities of fiscal stabilization counteract any future boosts in resources at EU-level. Public finance reinforcement demands will cut down economic growth expenditure and may enhance co-financing provocations. The member states most intensely influenced by the crisis will confront the most powerful fiscal fortification pressures. Fiscal stabilization will influence public finances and Cohesion Policy. Cohesion Policy includes a multilevel governance design entailing a notable level of sub-national involvement in all stages of the policy cycle, aims to correlate the goals and funding streams of various policy zones and tools, and will be instrumental in macroeconomic governance objectives in the 2014–20 period. The adjustment costs of fiscal fortification will influence public finances and Cohesion Policy co-financing. Employment of the Cohesion Fund as a preventive and sanctionative instrument for following EU macroeconomic targets has been of uncertain relevance. (Begg et al., 2014)

The institution of the euro and a common interest rate has constituted a component in consolidating unbalanced designs of specialization. The unconvincing growth of European regulation of the banking and financial sector clarifies the appreciable incapacity of the EU to manage the crisis. Countries become less strong within a monetary union thanks to the suspicion of the financial markets. The greatest feasible macroeconomic soundness is demanded for improved performance. The states' ability to step in the economy employing the traditional instruments to struggle against the crisis has been limited. The present economic crisis's structural nature affects every feature of the economic design in a horizontal fashion. The depth of the current crisis has had a severe effect on economic activity in EU countries. (Vence et al., 2013) The euro-crisis was a result of the systemic shortcoming of the governance design selected to handle the disequilibrium between monetary

and economic policy, and triggered an essential inspection of the EU administration of the financial sector. The coordination of economic policies did not determine merging between member states, the ban of solidarity did not generate different risk premiums in agreement with national public finances, and the fiscal surveillance did bring about decrease of government debts and deficit below EU standards (administration through market regulation and rules employed by political entities do not function). Successive reforms established an adjustment route when a member state infringed fiscal rules. The recent reforms have advanced the national ownership of the rules. If a member state does not obey fiscal rules, EU law predicts remedial mechanisms at the EU level and at the national level. (de Streel, 2013)

The current situation of sovereignty shared between the EU and the member states in the governance of the euro is unsustainable. Member states must identify better methods to register the backing of financial markets for debt consolidation and fiscal discipline. The debt consolidation plan must be assigned to non-EU bodies or independent European agencies. Any new economic governance framework must give substantial power to governments in the decision-making process. The sovereign debt crises of 2010 determined decision-makers' awareness of the deficiencies in the economic administration of the euro area. The euro area was insufficient to conjointly organize its highly localized indebtedness difficulties. More coordination among member states and the setting up of groundbreaking financing tools can clarify the problem of excessive indebtedness. Governments of extremely indebted member states have stimulants to increase their capacity to respond. The institutional design of the EU has proved unsatisfactory to undertake problems of debt reinforcement. (Jabko, 2011)

The economic governance of the monetary union should be beefed up to prevent a return of the growing intra-Euro-area instabilities. The issue of intra-Euro-area inequalities is obvious in the het-

erogeneous advances in housing and credit markets across the euro area. Intra-Euro-area instabilities' unraveling influenced government finances and the essence of the euro area financial system. The European Central Bank (ECB)'s answer has brought about breathing space for governments and supervisors to keep on the demanded carrying out of the restructuring and reform process. The ECB's decisions as a market maker of last resort have hampered a systemic breakdown. The breathing space supplied by the ECB's decisions should be employed for additional carrying out the essential restructuring and reform process. The ECB has employed its balance sheet to act as a market maker of last resort. (Smets, 2012) The imbalance of capitalism happens as a result of the engagement of financial institutions in the booms and busts. There is little in the EMU that can make the booms and busts combine at the euro area level. The crisis in the euro area has decreased into an existential one about the future of the union. Macroeconomic policies in the euro area have been imposed by financial markets. The adaptation process within the euro area is as asymmetric as the adjustment processes of the fixed exchange rate regimes. The greatest risk for the viability of the euro area emerges from social and political disturbances in countries that are coerced into a deflationary spiral. (De Grauwe, 2013)

The current eurocrisis dares the practicality and the legitimacy of the present design of governing in the multistage European polity. Constrained and induced agreement has a function in all political systems. Socially promoted legitimacy convictions are an operational requirement for the survival of governments which are *effective*, *efficient* and *liberal*. Legislators and regimes in representative democracies face incompatible prerequisites. The EU's liberalism gives priority to the protection of individual rights and the close institutional restrictions on majoritarian political performance. The European polity's capacity for successful political action is hindered by the presence of several veto positions in EU legislation. The global alteration

of European economies, communities and polities must be the collective impact of several proactive and reactive interplays of public and private agents. The member states should follow the whole series of liberal and republican standards of legitimacy. (Scharpf, 2013) The standard public debt level of euro area countries is 95.5% of GDP. Economic efficiency necessitates that debt restructuring does not generate systemic results. Euro area member countries have relinquished *de facto* their prerogative to choose whether and how to restructure their debts. Presently baseless public debts are an inheritance of past policy oversights, whereas the restructuring costs must be assimilated as progressively as possible. The Politically Acceptable Debt Restructuring in the Eurozone (PADRE) plan includes altering some of the current debts into zero-interest rate perpetuities, and starts with purchases on the secondary markets of public bonds at face value. It should continue with the growing acquisition of sovereign bonds on the secondary market as they attain maturity, up until the program is accomplished. (Pâris & Wyplosz, 2014)

The governance of the euro area has established fault lines. The most outstanding reason for a revived and reinforced social policy is the demand to legitimize the building of a sovereign authority to control the euro area. The legitimacy aspects of the EU are intimately connected with the breakdowns of its social policies. The deterioration of national social frameworks without the replacement of adequate EU substitutes is a leading element behind increasing opposition to the integration process. The vulnerabilities of democratic powers in the EU are intimately related to its insufficiency of social policies. Social policies can have a significant function in moderating the problems of economic divergence in the EMU, and might legitimize the new more federal institutions that are necessary for a resolution of the euro area crisis. (Grahl & Teague, 2013) As a consequence of the effect of the international financial bubble on the Euro peripheral countries, reforms were

dropped and institutions disintegrated. The real estate boom got connected with the political-economic alliance that obstructed reforms. The bubble that the Euro determined became the calmate against any reform. The Euro project sought to construct a unified European identity, to remove nominal exchange rate variations and the substantial imbalances that they could bring about, establish a monetary authority separated from political forces, and to widen assistance for structural, supply-side reforms to enhance Europe's growth pace. The financial bubble generated the degradation of governance and of the institutional agreements on the Euro periphery. Tighter macroeconomic policies would influence, positively or negatively, reform inducements. The credit bubble impacted information separation about the functioning of financial institutions and governmental agencies (bubbles bring about signal extraction harder). (Fernández-Villaverde, Garicano, & Santos, 2013) Crisis management is needed for economic governance to emerge, but *ad hoc* crisis management is incomplete to undertake the divergence in macro-economic circumstances and policy priorities across euro-area member nations. European leaders are progressively aware of the need to improve their economic governance capacity, advancing various ordinary replies to the crisis. More substantial governance is more feasible than a re-nationalization of currencies and policies. Member governments have not been specifically keen about constructing sovereignty at the EU level. Governments should be involved in a cumulative decision-making process while identifying the variety of goals that they target. The refinement of an economic governance design for the EU necessitates a critical reorganizing of power and economic resources among the member states and EU institutions. (Jabko, 2011)

The responsibility of the alteration necessary to cut down instabilities within the euro area has been generated particularly by the debtor countries in the periphery. The ECB's committed itself to extensive acquisitions of member-states'

government bonds in periods of crisis. The ECB's resolution to be a lender of last resort secures the system from falling down. The euro area advanced a governance system through which the creditor countries established the budgetary and macroeconomic policies for the euro area. The European Commission has adopted the task of agent of the creditor nations in the euro area. (De Grauwe, 2013) Euro area countries should make notable advance towards divided macroeconomic adjustment, a successful joint-liability banking union, and a viable scheme for sovereign debt sustainability and default risk. The euro area should identify an approach to destroy the connection between banks and sovereigns, and ease back on fiscal austerity. The re-establishment of financial soundness and an operational banking system is an essential prerequisite for sustainable economic growth and enhanced labor market performance. Improvements of welfare and wage systems, and of the supply of public services, may lead to more substantial economic performance in the long-run. Europe must accomplish more powerful and more stabilized macroeconomic adjustment policies to take the economy up from a decline in aggregate domestic request and business reliance, and should make fast advance towards a backstopped banking union which involves joint liability for banks. (Magnus, 2013)

The EU budget should not be evaluated fully from the view of whether it encourages economic growth. The EU should meet extreme long-term supplementary expenditures following from the demographic condition and from an advance in the contest for world resources. Carrying out an EU policy or serving its goals may be an essential requirement for financing from the budget. Governments interfere in the performance of the market to rectify market decline or to seek establishing a fairer sharing of resources. The magnitude and value of the workforce is relevant in the account of differential economic growth. Investment in productive capital is essential for preserving Europe's growth performance. A climate change

and environment policy conduces to sustainable long-term economic growth. (Mayhew, 2012) The EU's principal economic target is to advance trade and investment flows between its member-states (the euro area economy stagnates). The EU maintains that "third countries" outside the Union assist to spend for the growth of the EU's poorer areas in return for uncontrolled admission to the single market. Europe is a zonal trading center: the EU seeks to decontrol services, and thus trade will be developing at a swifter rate. Because of its magnitude, the EU is in a powerful condition concerning trade transactions. EU regulation aims to establish a single market (some rules arising from Brussels levy more expenditures than they grant advantages). (Springford, Tilford, & Whyte, 2014)

Structural reforms may enhance member states' flexibility and competitiveness, and set their growth frameworks on a more sustainable route. The principal dynamic strength of governance improvements has been economic demand. Sound EU institutions would hamper fiscal or competitiveness instabilities from escalating into detrimental spillovers and new bail-outs. Europeans cannot acknowledge new sovereignty shifts and resources sharing. Positions towards EU integration and cohesion are extremely heterogeneous among countries relying on their economic situation, whereas there is a growing belief about the demand for more relevant coordination in a substantially interdependent EU. A more systemic employment of a multi-criteria advance to policy reform would back divergence and evaluate different choices of EU governance. (Thillaye, Kouba, & Sachs, 2014) National governments must carry the entire responsibility of political accountability for unwanted uses of governing authority. In a republican model focusing on shared self-determination and democratic responsibility, the EU must be justified as an authority of governments. In connection with their own citizens, governments are in charge for securing and promoting the common good. Lacking a straightforward legitimating connection with its citizens, the EU must depend on

the conformity of its member governments and on their legitimacy. Governments tend to shun European policies whose instant impact would bring about politically prominent resistance at the national level. Legitimacy intermediation cannot assist those “supranational” European governing roles in whose practice member-state governments are not entailed. Supranational EU government should not be legitimized by input-oriented grounds. (Scharpf, 2013)

3. THE MACROECONOMIC GOVERNANCE AT THE LEVEL OF THE EU

European economic governance may not entail liberalization. European economic governance in the crisis might chiefly aid people who rely on the welfare state. People with less relevant socioeconomic position and higher reliance on the welfare state may be more caring of European economic governance in the crisis. People build their judgment on European economic governance on its anticipated entailments for the national economy. European economic governance leads to material earnings for poor countries that gather it as a last alternative. The material advantages for the national economy might weaken the negative influence of nationalist feelings on assistance for European economic governance. Citizens in states with irrelevant macroeconomic indicators are likely to be more caring of European economic governance. (Kuhn and Stoeckel, 2014) Monetary unions should be supported by suitable political institutions and governance structures adapted to react in periods of crisis. A monetary union should be held up by a level of fiscal union, banking union and economic union. Structural reforms to carry out greater elasticity in labor and product markets are needed for the adequate operation of the single currency area, but the measures that should be undertaken are chiefly country-specific. Member states have been unwilling to allow a

position for European institutions in structural policies. The reform process has been broadened to wider macroeconomic policies. The character of structural reforms and the priorities for action will be mostly affected at the national level. The framework of governance structures can be critical in influencing the efficiency and effectiveness of policymaking. (Pickford et al., 2014)

The basis of the theoretical building of EU economic policy has been undermined by the crisis. The financial crisis greatly originated in the rise in inequalities and downward constraints on wages and household incomes before 2008. Substantial macroeconomic imbalances have advanced in terms of *growth, productivity, balance of trade, employment and competitiveness*. The European measures taken to undertake the origins of the financial crisis are inefficient, and the EU has not been able to moderate the spiral of the euro crisis. In the action of multilateral scrutiny, a collection of “structural reforms” targets at intensifying the strengthening of public finances and consolidating economic competitiveness. (Degryse, 2012) Cohesion Policy has been utilized as a handle to back EU macroeconomic equilibration goals during the current crisis, the counter-cyclical result has been quite irrelevant for the EU, and there are significant obstacles to employing Cohesion Policy as a swift and adequate crisis management instrument. Several alterations in governance have results on the behavior of Cohesion Policy. The fundamental principle for Cohesion Policy is to undertake the economic, social and territorial dissimilarities manifested across the EU. Inter-institutional connections in economic governance are in flux. The dynamic governance agreements reconfigure the routes through which Member States are influenced by EU-level judgments. The seriousness of the economic crisis which brought about the reforms will have a lasting effect. The reforms are altering the equilibrium of decision-making powers in manners that are incompletely comprehended. (Begg et al., 2014)

The EU got involved during the financialization of the global economy. The countries which manage their economic development through the process of financialization have disregarded their industrial policies. The sectoral and commercial programs of the internal market should modify their route thoroughly. The EU has created an economic map characterized by the presence of groups of deeply dissimilar countries. The decisions taken in the EU indicate the relevance of supervising and control in order to augment the advancement of economic activity. The democratic shortfall in economic decision-making has become visible in the EU. The Structural Funds and the Cohesion Funds are insubstantial tools with which to fortify and ensure the territorial cohesion of the EU. The capacity of states to draft and carry out the policies which best accommodate them is progressively thinned out in an economic context with unreasonable deregulation and liberalization. (Vence et al., 2013) The contradictions of the EU's circumstances of shared economic sovereignty are obvious. Economic governance should identify a method to guarantee long-run fiscal sustainability and necessary flexibility. There is a shared sovereignty over economic governance within the EU. The EMU is a flawed assembly from the view of *economic efficiency* and *political effectiveness*. Member states should accord on a basic reform that would undertake the topic of shared sovereignty. The split personality of the EU distinguishes between its federal monetary institutions and its decentralized economic policy institutions. Reviving endeavors to consolidate economic governance will not produce radical outcomes in the short term. (Jabko, 2011)

The excessive deficit process was rapidly introduced after the institution of the euro, and was not efficient in impeding some member states from employing baseless fiscal policies. Thus, the powers of the Commission were improved, the consequences of remedial recommendations were fortified, and the EU supervision has been reinforced. The reforms of economic governance

generated an adjustment of the institutions having responsibility for its enforcement, and consolidated the Commission, the Council and the Eurogroup's supervision over internal fiscal and socio-economic schemes. The foundation of EU economic governance is primarily grounded on the TFEU and regulations ratified by the Council (the enforcement of EU economic governance is chiefly dependent on proposals indicated by the Commission and adopted by the Council). Economic governance is enforced through unique legal tools which incline to contractualize the association between the EU and its Members. (de Streel, 2013) The EU level has not been assigned main fiscal policy competences, all EU member states deal with fiscal rules and macro-economic policy coordination, and the ineffectiveness of fiscal rules is a critical source of the sovereign debt crisis. The favorable outcome of the rules concerning fiscal sustainability will rely on the disposition of the member states to apply them. The unplanned financial assistance will be substituted by a longer-term assistance package. Conditional financial aid and potential debt restructuring will consider future sovereign debt crises. Policy changes are subject to the disposition of member states. The restricted function of governments in macro-economic developments should be emphasized. The intricacy of governance tools has hindered dealing with the reciprocal interdependence. The improvement of the economic governance design should guarantee the monetary union's long term sustainability, and is made up of both reviewing present economic governance and addressing crisis governance. The EU may not rightly identify macro-economic disequilibria or bring about a substantial policy reply if necessary. (Verhelst, 2011)

The answer to the crisis stands for a intensifying of rules-based governance. Rules-based and coordination-based governance methods constitute "hybrid" normative networks and accountability frameworks. The institutions and processes of policy timing have been institutionalized in the reformed legislative design. The reply to the

economic crisis is an indication of wide tendencies towards pluralization and differentiation in the shapes and tools of EU governance. Collaboration between Member States occurs with the legal structures and processes of the EU as the successor to the original Communities. The normative matrix which brings about responsibilities and obligations for recipient states does not stem from the traditional practice of rule-making powers by the EU legislator. Disputes between EU duties and domestic law are managed by the supremacy principle. The processes and products of reforms to EU economic governance cannot be compared with a rough supranationalism. (Armstrong, 2013) European policy has gradually focused on national wage policies and wage setting arrangements. Wages are the major economic adjustment variable to overwhelm economic disequilibria and to promote competitiveness. The EU advances a powerful austerity policy in order to prevail over the debt crisis (austerity policy has an on-the-spot influence on wage policy). The growing economic disequilibria between the “surplus” and “deficit” states are the consequence of divergent increases in national competitiveness. Unemployment is primarily the outcome of institutional inflexibilities in the labor market. (Schulten and Müller, 2013)

The ECB’s decisions have caused a moderation of strains in the interbank money market. Rather than determining inflation risks, the ECB’s liquidity accommodation prevented deflationary risks. The ECB’s decisions do not unswervingly undertake the requirement for adaptation that must occur following the unraveling of the instabilities. Unreasonable instabilities generally appear in several regions simultaneously. The vital function of financial soundness and an accurately functioning, integrated financial system in a relevant monetary union is clear. The real estate boom was mainly financed through a broadening present account deficit. (Smets, 2012) Financial markets can pressure countries into a negative stability distinguished by increasing interest rates that bring about excessive austerity decisions. Political

action should be grounded on an accurate evaluation that arise from several design breakdowns that have almost nothing to do with government excess. The ECB can hamper market feelings of fear and panic in the sovereign bond markets from pressing countries into a negative equilibrium. The appropriate separation of tasks helps the ECB function as a lender of last resort: the ECB’s decision has diminished the risk of a financial implosion. (De Grauwe, 2013) If adopted, the PADRE plan would supply a significant increase to extremely indebted euro area countries. Within a globally integrated euro area, there is no possibility for sustainably moderating the interest rate. If enacted, the PADRE plan would provide governments the room that they necessitate to assist a much-needed improvement. As debt increases, the related tax burden will steadily weaken the advantages from debt-financed spending. High public debt causes subdued growth, and diminishes the governments’ capacity to handle detrimental economic disorders, and is an important source of economic and financial vulnerability. The powerful engagement to open financial markets may be deteriorated by poor growth in high-debt countries associated with emerging worries of transfers in the lower-debt countries. There is no pre-determined method for determining a country debt restructuring. Effects of a debt restructuring are a loss of market access and a profound exchange rate depreciation. (Pâris & Wyplosz, 2014)

Present endeavors to support the euro area may have the effective “spillback” result of undermining additional popular assistance in the member states for the EU. The member states may not agree to a completely mature fiscal union that entails substantial transfers from the European core to the periphery. A more powerful EU social policy would stimulate internal devaluation endeavors to be done in a way that did not intensify social exclusion. There is little expectation of substantially unified or accorded social policies inside a restored euro area. Various labor market governance structures across the euro area es-

establish a relevant restriction on the regulation of harmonized EU social policies. (Grahl & Teague, 2013) Since 2008 there have been rather drastic turnarounds in relative unit labor expenditures, but there have been no counterbalancing internal reassessments in the surplus countries. The creditor-dictated governance that has resulted since the flare-up of the sovereign debt crisis in the euro area has collapsed. Austerity measures have been culpable for rising debt. Burden-sharing between the currency union's creditor and debtor countries might work out the euro area crisis. The euro area's entire macroeconomic position should oppose the feebleness of request across the currency union. (De Grauwe, 2013)

A common currency zone causes several externalities among its participating countries. EU institutional entities dynamic in the euro area have been considerably beefed up by the reform of fiscal governance. EU law necessitates the setting up of a national rectification process to raise the strength of the fiscal rules. National possession of EU fiscal rules is an important demand for the triumph of EMU. There are outstanding dissimilarities between economic governance and the oversight of network industries. The current reforms have enhanced the decision-making process of the sanctions embraced at EU and national levels. In order to guarantee the sustainability of the EMU, supplementary reforms may be necessary. Fiscal policy may be more concentrated with the setting up of a euro area budget to assimilate asymmetric macroeconomic shocks or the supplying of common eurobonds. (de Streel, 2014) Through the financial crisis and the ensuing recession, economic integration is the solution to foster political integration in the EU. Effectiveness of the delivery processes for EU budget support has been insufficient. Sound macroeconomic policy is associated in the euro area with triumph in strengthening the monetary union. Citizens of the more powerful economies feel endangered by becoming long-term sponsors to the weaker peripheral euro area members. Direct income aids in agriculture and

the competitiveness and employment goal of the structural funds should be removed from the EU budget. Some of the undertakings set about under the competitiveness and employment target have been growth improving. (Mayhew, 2012)

The EU has valid grounds to be involved in regulation: the EU establishes the common minimum criteria that are needed for reciprocal admission to work. A thickening of the EU market for services is unfeasible without more EU regulation. There are periods when integrative action at a European level may bring forth better results than countries functioning independently. The EU's member-states maintain wide capacities to regulate their economies: the fostering of common minimum criteria permits room for tremendous fluctuations in degrees of product and labor market regulation at the national level. (Springford, Tilford, & Whyte, 2014) Unstructured labor-markets and decentralized wage-setting systems may not surpass extremely institutionalized ones in relation to wage restraint. The increase of minimum wage coverage and the likelihood, for the EU, to legislate or integrate member states' policies successfully are prerequisites of EU coordination. Divergent prospects might arise from dissimilarities in living levels. The outstanding divergences in labor market institutional agreements should be considered. If wage coordination is centralized, individuals' and countries' prospects can be handled at EU level. Wage coordination may include another stratum of intricacy and bureaucratic supervision onto EU economic governance. (Thillaye, Kouba, & Sachs, 2014) The EMU required the capacities to generate the prerequisites for the triumph of the monetarist framework at the level of the euro area. The optional attraction between monetarism and supply-side policies is fairly credible. More substantial junction may demand much greater levels of economic flexibility, which need important supply-side alterations in most or all euro states. The European feedbacks to the euro crisis have weakened national democratic legitimacy, and have eradicated the likelihood of

legitimacy intervention (the practice of European governing roles must rely on its own legitimacy). “Rescuing-the-euro” schemes have had relevant effects on citizens’ private interests and extremely outstanding options in debtor and creditor countries. (Scharpf, 2013)

4. FUNDAMENTAL DEFICIENCIES OF THE SYSTEM OF ECONOMIC GOVERNANCE IN THE EURO AREA

The economic governance reforms will have extensive consequences on the entire management of member state economies. As the reforms have proceeded, the functions of EU institutions have developed. The economic governance reforms seek to furnish a healthy, solid and sustainable macroeconomic environment. The ECB is constrained to substantiate the EU’s general economic policies and targets. The ECB’s main monetary policy goal of price stability may clash with cohesion. The ECB’s leading aim of preserving price stability conduces to economic strength. The position of the European Council as a nucleus of strategic decision-making in economic governance may be fortified. The multilevel governance design has a consolidative potential for organizing expenditure. (Begg et al., 2014) The barriers between norm production and norm compliance function particularly as a recursive process. The legislative packages adopted as a reaction to the crisis propagate the structures and processes of policy coordination as a new form of governance. EU legislative action can determine policy coordination as a product. There are outstanding links between rules-based and coordination-based forms of governance within the new economic governance architecture. Rules-based and coordination-based forms of governance are progressively merged within the reformed economic governance framework of the EU. Substantive agreement with fiscal rules is preponderantly a practice in political accountability. EU fiscal rules are not self-executing

norms. The new governance of fiscal discipline is a “hybrid” form of administration. The normative circumstances for fiscal discipline depend on the signals and directions which appear out of cyclical processes of policy coordination. The obvious beefing up of sanctions for violations of fiscal discipline is incorporated in the structures and processes of reporting and monitoring. (Armstrong, 2013)

Policy analysis is a pre-condition for effective EU policy-making. Deliberative intergovernmentalism concentrates on ministers and heads of state of government meeting in the Council and the European Council, and is mainly interested in boosting our comprehension of the character of current intergovernmentalism. Intergovernmental policy co-ordination has a significant co-operative scope. The European Council has consolidated itself as the prevailing player in economic governance, uses an important portion of its activity to economic governance, and has progressed to the nucleus of economic governance, employing an essential supervisory position. Intergovernmentalism focuses on the representation of national interests and the pursuit of collective policy answers. Intergovernmental connections acknowledge a certain demand for consensus-oriented policy discussion through several institutional alterations. (Puetter, 2012) The negative impact of an exclusive national identity on backing for European economic governance powerfully relies on a country’s GDP per capita. Citizens in economically sound member countries think that European economic governance may damage their economy. The negative influence of exclusive national identity is less strong in poorer member states. Exclusive nationalists tend not to assist European economic governance. In poor member nations exclusive internal identity has a less relevant effect on European economic governance. People in poor member states understand economic curbs as primarily strengthening the state of their national economy. In economically sound states, European economic governance

tends to be gathered as a supplementary weight of duties and costs. (Kuhn and Stoeckel, 2014)

The European economic governance seeks to consolidate the soundness of the euro area: the countries of the euro area are undergoing a considerable economic crisis and an extended recession. The euro area governments have intensified the fortification of their public finances, the introduction of “new economic governance” chiefly planned to control the countries of the euro area, cutting down social and developmental disparities would beef up cohesion in the EU and the euro area, and the economies of this zone members are captured in a process of divergence. The governance of the euro is restricted to several disciplinary and surveillance rules. The institutional and political design of the single currency has undergone structural difficulties. The economic recovery programs put forward by the EU member states report notable proliferations of public deficits and public debts. (Degryse, 2012) The EU has never been an optimal monetary zone. Countries in the Euro area cannot turn to the devaluation of a currency they no longer own to be more competitive. The states cannot preserve their public finances without the European Central Bank (ECB) intervention, whereas the ECB cannot stimulate the economy without government policies for development. The ECB has never been able to depend on a deposit insurance entity set up by the states. National central banks in the Euro area do not have a control of the creation of money. Central banks should establish their legitimacy exclusively on respect for the insurmountable goal of controlling inflation. The independence and private character of the ECB seek a monetary policy which advances the concerns of the private financial sector of the economy. The neoliberal European Union/Euro area is characterized by restricted development in the common regulation of banking and finance activities. The function attributed to the ECB and the euro-system concentrates solely on price stability. (Vence et al., 2013)

The recent sovereign debt crisis encouraged the theme of fortifying the economic governance of the euro. A sound economic governance of the euro area will necessitate substantial time and political capital. The precise presence of the euro is auspicious for the future of economic governance. European governments that have adopted the euro as their currency are interested in its existence as a lasting currency. No government has specified any blatant concern to examine the central choice of a euro exit (the economic costs of exiting the euro may be high). Core countries may be better able to exit the euro. The political costs and unpredictabilities related to exiting the euro area are damaging. Concerns of sovereign debt crises within the euro zone have notably increased. EU member states have advocated more relevant governance agreements in the sphere of economic policy coordination. The institution of substantial European economic governance may affect core zones of national economic governance. The shift of sovereignty surpasses “pooling” in the area of monetary policy, whereas several economic policy powers persist generally for national prerogatives. (Jabko, 2011) Financial markets have reacted excessively to increases in the euro area. Macro-prudential policies should play a relevant function both in diminishing financial risks across the euro area and in adjusting to country-specific conditions. The euro area deals with significant development and unemployment provocations. Integral coordination across the range of economic policies necessitates an *ex ante* endeavor to coordinate across euro area countries. Euro area members may necessitate backing in order to carry out severe structural reforms. Deficient policy coordination within the euro area may generate a deflationary bias. (Pickford et al., 2014)

The sovereign debt crisis that affected the euro area in 2010 has proved the insufficiency of the European economic governance. The members of the euro area have become decisively reliant on each other’s economic and fiscal functioning. Euro

area members enjoy other members' achievements and have to distribute the responsibility of each other's downswings. The Euro area sovereign debt crisis does not influence the euro area in an important way. The financial assistance has supported troubled euro area countries in the short run. The EU is to reform current economic governance, regarding circumstances in which euro area countries do not necessitate external financial aid. Crisis governance should consider conditions in which Euro area countries cannot finance themselves at reasonable interest rates. The financial health of the weakened Euro area countries should be reestablished. Tools concentrated on the Euro area hinder a disregard of economic governance as undergone before the crisis. (Verhelst, 2011) The euro area sovereign debt crisis has generated widespread regulatory undertakings with results for economic policy coordination in EMU. The legal framework relevant to economic policy coordination in EMU has been modified considerably. The influence of the new economic governance design on national parliaments has been recognized by the principal EU institutions. The judicial discourse on European economic governance and its democratic credentials identifies its origins in the Treaty on the EU. The new legal design leads to a limitation of national policy area and a considerable switch of economic policy decision-making power in the euro area. The new legal framework impacts the economic policy decision-making processes at the level of the member states. The current state of the European legal order may not be sufficiently vigorous to back the existing switch in economic policy from the national to the European level. (Amtenbrink, 2014)

The close connection between sovereign and banking risks has been displayed in a significant positive correspondence between sovereign and bank bond premia in the Euro area. The build-up of the sovereign crisis was preventing the capacity of banks to back the real economy. The entail-

ments of higher central bank money for inflation rely on the intrinsic origin of the monetary expansion. The substantial rise in base money has not transferred into an increase in broad money growth. Banks should fortify their resilience by maintaining earnings and advance developing capital. The soundness of banks' balance sheets assists the progress of a suitable supply of credit to the economy. (Smets, 2012) Euroization is an effective and trustworthy sanction regarding the incapacity of a country to relevantly reform, furnishing stimulants for repayment that do not exist if a country in default is permitted to remain within the EMU. Current mechanisms within the EMU are inadequate to hamper unreasonable debt buildups. In the EMU regime there is a single central bank acting for the interests of *all* agents in the federation. The principal factor to the inflation pace will be the openness of the countries. Lacking a strategy to commit to its options, the member countries of a monetary union should set up recommendations for handling with debt crises. (Cooper, 2012) The structural conflict of the euro area system has been determined by the institution of a monetary union without a fiscal union. The aggregate level of public debt would be higher without the euro. Introducing the euro is a policy text, which altered the requirements for the members of the euro area. The significant levels of public debt in several of the euro area states are the principal danger for the existence of the Euro. Higher equality of economic development generates a better synchronization of business cycles and may cut down the demand for highly asymmetric fiscal policies. The economic crisis composes an asymmetric shock which influenced the budgets of all countries. (Köhler & König, 2014)

The stresses and pressures of the crisis have displayed serious vulnerabilities in the plan of the euro area. What is necessary to save the euro is to permit countries to evade and even to *temporarily* leave the euro area. The likelihood of default and devaluation are adequate short-run growth poli-

cies. The crisis in the euro area may have been caused by high levels of deficit and debt in several European countries following the constitution of the single currency. Member countries should persuade markets that the default risk of their sovereign bonds fell as a consequence of joining the euro. Sovereign default and a temporary exit from the euro could furnish shock absorbers for countries. (Allen & Ngai, 2012) The 2009 Europe-wide crisis should be identified as one of the euro as a currency (the European crisis is a current accounts crisis within the euro zone). European Commission's management of the crisis between 2009 and 2012 characterizes the most recent notable phase of competence creep. Macro-economic scrutiny and competitiveness are zones of core EU competence correlated with the economic policy administration of the euro area. The sovereign debt crisis proves the demand for higher policy oversight of Member States. The trend towards turning political problems into technocratically established targets is obvious in post-crisis EU governance. (Tsoukala, 2013) In the euro area, assistance from the strong to the weak consists in extremely conditional credits. The donors decide on the conditions under which they allow assistance to the recipients. The euro area's members should take the difficult path of essential improvements. (Schmieding, 2013)

The strengthening and widening of European integration have brought about relevant growth and productivity incentives. Countries that have a higher degree of financial development may be better able to take advantage of and share the advantages of integration. Countries with higher degrees of global financial integration indicate larger dissimilarities between existent levels and synthetic counterfactual ones. Trade openness, financial inclusion and the embracing of the Euro clarify the fluctuations of advantages from EU membership across nations and over time. (Campos, Coricelli, & Moretti, 2014) The EU cannot carry out flexicurity reforms, but can press national governments to do so. The political

crises of the euro area should be associated with broader aspects in the harmonizing of contemporary capitalism and representative democracy. The disintegration of member-state social policy does not complement the replacement of social policy at the euro area level. The euro area crisis has made essential social policies at the EU level totally impracticable. The existence of the EMU necessitates crucial stages towards federation. The new integration steps to rebuild the euro area should advance the interests of the populations of the region. Social policies secure successful convergence of economic performance within the EMU. Effective reconstruction of the euro area demands an outstanding transfer of sovereignty to federal institutions. (Grahl & Teague, 2013)

Huge or growing imbalances in social efficiency are a threat to the legitimacy of the EU and to the accurate performance of the euro area. Heterogeneous welfare systems and kinds of regulatory schemes may generate the same economic and social results. Spillovers can be induced by national social policies necessitated by a damaging social condition. The demand for structural reforms in economically affected countries is extensively recognized. The EU should display specific vigilance when getting entailed in the politics of welfare reform. (Thillaye, Kouba, & Sachs, 2014) The EMU has eliminated the expertise of monetary and exchange rate schemes from its member nations. Current policies to save the euro and the more persistent regime that is being set up to hamper future crises of the EMU require democratic legitimacy. The EU regulation understands the eurocrisis as a result of the high difference of macroeconomic balances that advanced among the economies of the euro area. The Commission establishes performance standards for national economies and the particular procedures that governments should follow to rectify imbalances. Intergovernmental input legitimacy cannot justify arbitrary interferences in individual member states. (Scharpf, 2013)

5. CONCLUSION

The implications of the developments outlined in the preceding sections of this paper suggest a growing need for a research agenda on the constitutional design of economic governance of the EU, the relevance of structural reforms to EMU, the rigidities of the EU's governance architecture, and the mechanisms through which economic governance affect Cohesion Policy. The analysis presented in this paper contributes to research on the governance mechanisms of the euro area, the character of rules-based governance in the EU, the means by which Cohesion Policy can form the results of the governance reforms, and the growing heterogeneity of the Euro area. These findings highlight the importance of examining the reform of economic governance, the situation of sovereignty in the EU, the process of rectifying macroeconomic imbalances in the EU and the euro area, and the political stakes of Europe's future economic governance design. The paper generates insights about the slow rate of economic governance reform, apparent shortcomings in EU economic governance, the administration of economic and social schemes as part of the euro area governance, and the architecture of the new economic administration of the euro area. My paper contributes to the literature by providing evidence on the risks and opportunities arising from the governance changes, the intrinsic problems of economic governance within the euro area, the evolution of the European integration process, and economic governance reforms adopted in the EU.

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EU: A politico-economic organization of 28 member states that are mainly situated in Europe.

Euro Area: An economic and monetary association of 18 EU member states that have chosen the euro (€) as their common and exclusive legally valid currency.

Macroeconomics: A division of economics handling the performance, structure, behavior, and decision-making of an economy.

Reform: The enhancement or adjustment of what is inappropriate, corrupt, insufficient, etc.

KEY TERMS AND DEFINITIONS

Economic Governance: A critical requirement for fostering economic growth and cutting down poverty.

Chapter 6

Soil Moisture as One of the Limiting Factors in the Production of Medicinal Plants

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ABSTRACT

*On small production lots on which medicinal plants are grown, irrigation systems of a smaller capacity (“drip, drip” and “sprinkling” systems) are mainly used. The water for irrigation should be in keeping with the national and the potential European quality standards, and should be as “free” as possible of potential pollutants, such as feces, heavy metals, pesticides, and toxicologically hazardous matters. Therefore, in this chapter, several priority MAPs are selected according to their importance for this sector, and their needs are analyzed in drought and irrigation conditions. In this group of plants, the authors included the following: marshmallow (*Althaea officinalis* L.), peppermint (*Mentha piperita* L.), valerian (*Valeriana officinalis* L.), lovage (*Levisticum officinale* Koch), lemon balm (*Melissa officinalis* L.), ribwort plantain (*Plantago lanceolata* L.), marigold (*Calendula officinalis* L.), and basil (*Ocimum basilicum* L.).*

INTRODUCTION

The use of medicinal and aromatic plants (MAPs) is manifold: from diet, cosmetics, health care to the use for religious and healing rituals, which are typical of many cultures. However, MAPs find one of their most important applications in pharmaceutical industry, whose development constantly increases the interest in certain plant

species. This has led to a significant increase in the use of MAPs in the last few years, especially in West European, but also, in highly-populated Asian countries, such as India and China. It is estimated that in Europe, commercial trade is done in about 2,000 MAP species, of which, 1,200 to 1,300 are native to Europe. The increasing demand for MAPs has simultaneously increased the pressure on natural resources. According

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to the data by the European Strategy for Plant Conservation (ESPC, 2008–2014)¹, 90% of MAP species originating from Europe are still collected directly from nature. On the other hand, according to the International Standard for Sustainable Wild Collection of Medicinal and Aromatic Plants (ISSC-MAP)², the major threats to the populations of medicinal and aromatic plants are overcollection (excessive gathering) and the loss of habitat, including the conversions of land for agricultural and other purposes. That is exactly the reason why organized (plantation) growing of medicinal and aromatic plants is more and more promoted as one of the measures to protect biodiversity, instead of their collection from nature being the only source of the supply of the constantly growing market.

Medicinal plants, according to the definition by the World Health Organization, encompass those plant species whose one part or several parts contain biologically active substances that can be utilized for therapeutic purposes or for chemical synthesis pharmaceuticals. By this definition, aromatic plants are those which contain active matter of special scent or taste that is used for the preparation of fragrances, cosmetic products, alcoholic or non-alcoholic beverages and aromas for food products. They are also used to obtain essential oils. Spices are defined as “vegetable products or mixtures, free from extraneous matter, used for flavoring, seasoning or imparting aroma in foods” in keeping with the International Standards Organization (ISO) definition. Essential oils or extracts are also derived from these plant sources either as a primary or a secondary processing. According to the data by Ignjatijević (2010), during the year 2008 Serbia was on the 31st position in the world by the export value of MAPs. Although it has favorable agroecological conditions, as well as certain experience in the field of growing and collecting medicinal, aromatic and spice plants, the Republic of Serbia, as an exporting country, has been “debased” from the leading position in the region to the position of a state that only symbolically participates in

this sector. Unfortunately, the state still is not providing sufficient means to make a position such as this better, and encourage the production and processing of medicinal plant raw materials, so the existing and interested stakeholders in this sector are on their own. For example, Spain and Italy are the leaders in the European Union when it comes to the organic production of medicinal, spice and aromatic plants (Filipovic, Roljevic, & Bekic, 2013). Spanish experts have suggested that our entire production of these plants should be converted to organic, and that the production areas should be significantly increased, primarily because of the good quality of our raw materials. On the other hand, Italian experts estimate that organic production in our country could be arranged on approximately 300,000 hectares, primarily with medicinal plants (Filipović & Popović, 2014). By the Law on Organic Production, the conditions are prescribed for the establishment of organic production, and they include: (1) the provision of the spatial isolation of soil lots from pollution; (2) the content of harmful substances has to be less than the maximum allowable values; (3) air pollution has to be reduced to a minimum; and, (4) the water used for irrigation has to meet the quality standards prescribed by law.³ By the constant control of the samples of irrigation water, the desired quality is reached, and thus, on the basis of the research conducted at 50 locations in Vojvodina by a group of researchers (Čuvarđić et al., 2004), the quality of soil and water was confirmed to be satisfactory for growing health-safe food.

Due to climate change and the increase of sunny and very warm days in Serbia, it is necessary to begin with the rehabilitation of already built irrigation systems, along with the construction of new ones, as soon as possible. That is very important if we take into account the forecast by international experts that food prices will grow in the next 10 years, which is also an export opportunity for Serbia. According to the principles of good agricultural and collection practices (WHO, 2010), in case of soil moisture deficit, if irriga-

tion is used, it should be minimized as much as possible, and applied in keeping with the needs of a plant. Water used for irrigated cultivation of medicinal plant raw materials should be fit for the purpose, i.e. substantially free from contaminants, such as feces, heavy metals, agrochemicals (e.g. pesticides, fertilizers) and toxicologically hazardous substances. The water complies with local (national) standards where they exist.⁴

Given that, according to the latest more voluminous study on medicinal plants, the total number of medicinal and aromatic plant species in our flora is around 700, of which, 420 are officially registered, and around 280 are in trade, based on data from the “Strategy of Medicinal Plant Protection in the Republic of Serbia” (Amidžić et al., 1999). But, If we just point out that in this group of plants, by their botanical characteristics, we distinguish annual, biennial or perennial ones, woody or bushy MAPs, and thus, each of them has different needs within their thriving conditions (humidity, heat, soil, sunlight, etc.), we come to the conclusion that this is a very heterogeneous group of plants, which is, unfortunately, very little known about. A difference is also present in the reproduction method of MAPs. In practice, the most commonly utilized reproduction methods are the following:

1. Generative
 - a. Direct seed sowing on production lots,
 - b. Seedling production, followed by seedling transplanting into a permanent place;
2. Vegetative
 - a. The planting of aboveground plant parts (dividing the root crown, clusters, cuttings, etc.),
 - b. The planting subsoil organs (tubers, rhizomes, stolons, etc.).

As can be noted with most of the above mentioned modes of plant reproduction, for growth and development, it is necessary to provide the

needed moisture. It can be partly preserved by the utilization of some agricultural measures such as: the closing of winter ridge, mulching, the sowing of companion and cover crops, and so on. However, the most effective way to ensure a sufficient amount of moisture is irrigation. Irrigation (watering), as a measure of crop care, is recommended for most cultivated medicinal plants. When irrigating, one should be rather careful, so the plant species with essential oil concentrated in the outer parts of the leaves and blossoms should not be watered by sprinkling; this mode should especially be avoided prior to the harvest, because the quantity of essential oil will be considerably reduced that way. Quite a number of researchers state that the lack of water, i.e. the presence of soil drought can adversely affect the productivity and the quality of the raw materials obtained from cultivated MAPs (Aliabadi, Lebaschi, & Hamidi, 2008; Asghari & Farahani, 2014; Baher, Mirza, Ghorbanali, & Rezaii, 2002; Belitz & Sams, 2007; Khorasaninejad, Mousavi, Soltanloo, Hemmati, & Khalighi, 2011; Ozturk, Unlukara, Ipek, & Gurbuz, 2004, Rahmani, Daneshian, Valadabadi, & Bigdeli, 2008). On the other hand, which is less common, water can greatly affect the content of biologically active matter in medicinal plants: if has rained before the harvest, the content of the active matter is reduced in many medicinal plant species, because they lose some substances soluble in water. That is particularly evident with those plants in which essential oils are produced in the organs placed on the surface of various above-ground parts (e.g. in glandular hairs). Nevertheless, depending on the conditions of the production and the climatic characteristics of a region of cultivation, irrigation can bring about the increase in yield by as much as 100%, and in extremely dry years, this increase can be by up to two or three times. At present, 40% of the world's food needs are satisfied from irrigated surfaces, although they account for only 17% of the total global soil resources.

DROUGHT AND THE PRODUCTION OF CULTIVATED PLANT SPECIES

According to the data by the Republic Hydro-meteorological Service, in Serbia, from the year 2000 onwards, several years of drought have been recorded, as well as a few years when excessive precipitation caused floods at the time of the sowing or harvesting of agricultural crops. Such adverse weather conditions would significantly affect the supply extent in the following year, causing the rise in prices and the reduction of the export of major agricultural products.

Hydromeliorative measures (irrigation and drainage) should be introduced. According to Cević et al. (2007), the use of soil with the application of irrigation, primarily provides a wider selection of agricultural plant species, two harvests per area unit during the growing season, as well as safe and stable agricultural production which excludes variations. Therefore, nowadays, irrigation is seen not only as a measure of the production process which is to replace or supplement the lack of natural precipitation, but also as an exceptional factor in a more intensive use of agroecological and technical conditions. The implementation of this measure is no longer only related to arid and semi-arid conditions and drought years, but the effect of irrigation is much more complex. In drought years, the effect of irrigation on yields is very high, and with the increase in yield in the conditions without irrigation, due to favorable amounts and time distribution of precipitation, the effect of irrigation is reduced.

In Serbia, the irrigation is below the real needs and real opportunities. It is mainly applied to small areas, thus having no great impact on the extent of the production in agriculture. It is used very extensively, because it is usually treated as a supplementary measure in the process of the stabilization of agricultural production. Such a status of irrigation is the result of the failure to fulfill the basic requirements for its application in terms of comasation, arondation and the creation

of the economic conditions for more efficient organization of agricultural production.

Serbia has very favorable climatic conditions and good soil and water potentials for intensive agricultural production. However, stable production is limited by insufficient precipitation and its irregular time distribution during the growing season. The occurrences of rainless periods are common, the consequence of which is dry soil. Droughts are particularly expressed in the northern, eastern and south-eastern parts of the country, as well as in lowland regions, all the mentioned having the most productive soil types. Droughts in Serbia occur every three to five years on average. The drought years in Serbia were 2000, 2003, 2007, and 2012, when the long-term droughts took on the character of a natural disaster, and significantly reduced the primary agricultural production, which left and will be leaving a serious mark on the national economy (Kljajić, 2014).

According to Babović et al. (2009), irrigation has a large impact on the increase in yields and production, as well as on the intensification of agricultural production. In addition to the increase in yields in crop production, especially regarding industrial plants, the agricultural production in the cultivation of vegetables, seed crops and forage crops is increasing, together with the profitability of the business. The yields of field crops in the irrigation system are two times as high as the yields in dry land crop production. Depending on the intensity of drought, for instance, the yields of corn can decrease by up to 50% compared to the yields in the irrigation conditions. In extremely dry years, that yield decrease in corn can go up to 80%. The revenue and profit in the irrigation system two is times higher than in the dry land farming. The production efficiency in the irrigation system has risen from 1.03 to 1.18, the profitability of production from 3.0 to 18.4%, and labor productivity in the production of field crops has gone up 2.2 times. The intensification of production through irrigation has the following effects: (1) the improvement of agricultural production

structure and of the ways of farming, as well as (2) more intensive livestock production, (3) greater competitiveness and agricultural export growth. In the conditions of the intensive exploitation of plants and water potential productivity, irrigation is a very important factor (Sredojević et al., 2006).

IRRIGATION IN SERBIA: THE STATUS AND TRENDS

The volatility of agricultural production is conditioned by the reliance on natural factors, and water is one of the fundamental ones, which provide greater production. The investments in irrigation systems are necessary, but with constant technological improvements and economic evaluation of these investments (Rajić et al., 2012).

The current state of irrigation in our country, observed through the total number of irrigation systems, and the scope of the surfaces which they have been constructed on respectively, is far from optimal both in terms of the extent of the utilization of arable soil and in terms of the sufficiency of the existing technical equipment (Potkonjak & Mačkić, 2010). The reached level of the development of irrigation in Serbia does not meet the needs of stable and efficient agricultural production. Irrigation has not found its proper place in our agriculture because each good crop year pushes this issue into the background. According to the available data, in the Republic of Serbia, the total area of about 180,000 ha is under irrigation systems, but the extent of its use is 50–60%. It is estimated that a total of some 30,000 ha is currently in operation (Kljajić, N., Sredojević, & Kljajić, Ž., 2013).

Due to the great national importance of agriculture, the irrigation development in Serbia can not only rely on foreign investors, but must activate all the potential domestic natural and financial resources. Bearing in mind the structure of our population and the characteristics of the land in their possession, the development plans for irri-

gation must be adapted to the specific conditions of the Serbian agriculture. The priority in the development of irrigation is: (1) the rehabilitation of the existing and the construction of new small and large systems, (2) the change of the production structure in agriculture, (3) the modernization of machinery and (4) the creation of the economic conditions for the utilization of the existing and (5) the creation of new production capacities in order to increase employment (Babović, Radojević, V., & Radojević, V., 2004). Hence, it is important that the development of future irrigation systems is planned in two main technical directions, one of which would include (1) the construction of large systems (“the irrigation on large estates”) on the areas of several thousand hectares, whereas the other one would be related to (2) smaller systems, on the areas of up to 100 ha, which is to say on small estates – the estates of individual producers.

The irrigation on large estates makes possible: the application of modern and productive agricultural machinery, the reduction in the costs of soil processing, a smaller loss of the usable boundary soil areas, and the like. Speaking of the deficiencies, it should be pointed out that the forming of excessively large lots, where one single plant species is to be grown, results in large areas where there are no forms of non-forest greenery (shrubs, lonely trees, alleys, forest shelterbelts etc.) or building objects, so, in the periods of the year without vegetation, or with low plant density, the occurrence of the following is possible: wind erosion, excessive soil drying, microclimate changes and other occurrences that disrupt the state of the environment.

The irrigation in small-holder agriculture, i.e. the estates of individual producers, makes possible one of the most important perspectives of the irrigation development in the country. Namely, in small-holder agriculture, and in relation to large estates, a faster implementation is viable, as well as a faster set-up and use of irrigation systems. As some possible sources of the water supply of the systems for the irrigation of small estates, the

following are used: wells, canal networks and reservoirs. Depending on the position of a soil lot, one of the mentioned sources is determined. As an important measure in the irrigation process, the quality control of well water is performed, and this water has to be controlled during the irrigation season. The investments in the construction of irrigation systems on smaller estates is acceptable to the investors, and provides a real opportunity for the implementation of credit arrangements. In support of the development of the irrigation of "small estates", goes the fact that, of the total 1.6 million hectares of arable land in Vojvodina, about 67% is private property.

The new and modern approach to irrigation involves major changes in the entire agricultural sector and the government policy in agriculture. It is necessary to create such a framework to rationally fit irrigation into the whole system of agricultural production, and make it an important factor in the development of the agricultural sector. This approach requires a transformation of the food industry and the dependent industries. Intensive irrigation development, with a significant increase in agricultural production, also conditions proper adjustment of the structure of the food industry. Only in this way it is possible to achieve real economic effects and justify the investments in the construction of irrigation systems.

A national irrigation strategy can be implemented through appropriate structural measures in the state policy for agriculture (Petković, 2003). One of the ways to secure financial sources for the construction of the irrigation network in Serbia would consist of the formation of a special investment fund. This fund could be formed using the existing fiscal mechanisms. In that regard, one possibility would be based on the introduction of the tax on financial transactions, by which, an investment fund for the development of irrigation would be formed. Another alternative consists of the provision of the incentives for the development of irrigation in the framework of the national budget.

The calculation of the required investment starts from the concrete conditions on the ground, because a large number of elements affect the total amount of an investment. The economic feasibility of the construction of irrigation systems, among other things, depends on the way of obtaining the necessary investment, i.e. a financial structure that is specific to each system. Securing the necessary investments requires increased involvement of local and foreign funds that are raised through various forms of financing (loans, joint ventures, concessions, leasing). For that purpose, it is necessary to continue the engagement of experts on the implementation of the program of irrigation that would have a significant impact on the development of agriculture and on the increase in employment (Potkonjak, 2003).

As it can be concluded from the above mentioned: by the design and construction of irrigation systems, rationalizing is achieved in terms of the use of our available water sources, and the efficiency and profitability of agricultural production growth.

SOME OF THE PRIORITY MAPS IN TERMS OF WATER PROVISION

When choosing a particular MAP in terms of cultivation, it is necessary to consider issues such as: local agroecological conditions (e.g. precipitation, the occurrence of early autumn and late spring frosts, etc.), the needs of major crops, production systems (organic or integrated, irrigated or non-irrigated, with conservation or conventional tillage, etc.), and the like. Based on the consideration of all that, it is necessary to find time and space for the establishment of certain MA plant species, as well as the technology model that will meet the objectives.

If cultivated medicinal plants are in question, from the sowing to the gathering of plants, in case of those most wanted plant species, it is necessary to make the most of human labor. In such intensive

work, when certain medicinal plants are the issue, permanent and seasonal workers are hired almost daily. As an example, we will mention the picking of marigold blossom, which begins in June, and, if irrigation is used, it often ends in November. There are some years and occasions when picking takes place almost on daily basis, for which state, some of the causes may be recognized in suitable environmental effects (precipitation, temperature, sunlight, etc.), as well as in irrigation, in the selection of appropriate assortment, and others. If the harvest is postponed for only a few days, marigold shifts from the flowering stage to the fruiting stage, and, as such, it is not suitable for buyers-up. Great involvement in the production of certain medicinal plants is also present in the collection of wild plants. A collector may be engaged as long as from the beginning of the collection of certain plant species, i.e. from February, until the end of the collection, i.e. by November. The period of collecting is also correlated with the moisture present in soil. The less moisture, the shorter the collection period will be, and, vice versa, the more moisture, the longer the collecting period will be. Collecting herbs can be extra work for a number of unemployed population, and thus may create the conditions for ensuring the survival of a large number of families. A daily wage for the work on a plantation ranges 10–20€ on average. As far as the collection and sale of dried plants is concerned, a collector can earn as much as 20–50€. Some enterprises organize plant collecting in the field, and pay per kilogram of collected (fresh) plants, in which case, some pickers (collectors) can earn up to 50€ a day. As the production and collection of medicinal plants is based on the principles of good agricultural and collection practices, so the sustainable use of natural resources is present, as well as public health protection and the economic empowerment of rural areas through the creation of so-called “green jobs”. “Green economy” creates great opportunities for sustainable development, including income increase, poverty reduction and the improvement of the quality of

living. Green economy, in its own particular way, “protects” natural resources, through the means of the agro-ecological and ethical measures that are crucial for poverty reduction, which is a particularly significant problem in developing countries. Green economy is defined as the one that emits little carbon, efficiently uses natural resources, and which is more socially inclusive. By the increase in production and the controlled collection of medicinal plants, the goals are achieved that are consistent with the objectives promoted by green economy. Green economy puts nature, as a resource, and human, as the resource manager, on the same level. Thus, by a green workplace, we imply any sort of work that is done in agriculture, its production, research and development (R&D), administration and service industries, and which results in a significant contribution to the preservation or improvement of the quality of the environment. Specifically speaking, green jobs include the jobs that help to preserve ecosystems and biodiversity with reduced energy consumption, the reduction in the use of carbon, and the reduction in the creation of all forms of waste and pollution (Bolesnikov, M., Radišić, Ferencak, Dobromirov, & Bolesnikov, D., 2012).

In Serbia, unfortunately, there is the trend of the reduction in grown plants, while the surfaces under collected plants are spreading. In relation to the collection of wild plant species, cultivation has several advantages, among which: one gets a larger quantity of raw materials, and the raw materials are of standard quality; there is the possibility to choose favorable conditions for the production (zoning and crop rotation); plant resources are protected from over-exploitation; there is the ability to control all the production stages through the introduction of standards.

A certain number of cultivated medicinal plants require greater amounts of moisture for their growth and development. This group of plants primarily include: marshmallow (*Althaea officinalis* L.), peppermint (*Mentha piperita* L.), valerian (*Valeriana officinalis* L.), lovage (*Levis-*

ticum officinale Koch), lemon balm (*Melissa officinalis* L.) ribwort plantain (*Plantago lanceolata* L.), marigold (*Calendula officinalis* L.) and basil (*Ocimum basilicum* L.). A few more cultivated and collected MAP species can certainly be added to this group of MAPs, thereby considerably rounding out the choice of the priority MAPs.

But, as this is the beginning of the work on the analysis of the state and the need for water of a large group of plants, the next step would be the introduction and analysis of several more plant species representative of the MAP sector, which would meet the needs of this, in our circumstances, insufficiently analyzed field. Unfortunately, there is little published domestic research and data on this area, which further complicates the analysis of the case and the achievement of the expected goal of our research. It is evident that the failure to irrigate these few priority medicinal plants results in lower yields in most cases (Table 1), makes poor quality raw materials, shortens their vegetation period, deteriorates soil conditions, and the like.

On small production lots on which medicinal plants are grown, “small” irrigation systems are mainly used (“drip, drip” and “sprinkling” sys-

tems). In practice, depending on soil type and other factors, for the majority of plants (if they are planted), the beginning of irrigation is in the planting stage, that is, before the beginning of intensive growth phase. It is best to determine the optimal time to start irrigating by using a tensiometer, an instrument that measures the force with which the water is bound in the soil. The completion of irrigation is related to the beginning of the fall, and depends on the needs and the length of the vegetation period of a grown plant species. Unfortunately there is no official data on the areas under medicinal plants that are irrigated. The Table 1 shows the approximate total amount of water that was needed for the irrigation of 8 priority MAPs in the course of the year 2013. The greatest need for water was by peppermint (280 l m^{-2}) and 3 root MAPs with somewhat less consumed water (250 l m^{-2}). The least water was spent in the production of marigold blossom (80 l m^{-2}). In regard to the need for soil moisture and irrigation, one of the most studied medicinal species is peppermint. It is irrigated as the need arises, several times during the vegetation period. Its irrigation usually starts 3–4 weeks before the blossoming, and it continues right until the blos-

Table 1. The priority medicinal plant species with higher water needs during the year 2013*

Ordinal number	Plant Species – Latin Name	Plant Species – Common Name	Used Plant Part	Part of Growth Season for Irrigation Application	Approximate Total Amount of Water Required for Irrigation (l m^{-2})
1	<i>Althaea officinalis</i> L.	marshmallow	<i>radix</i>	IV-X	250
2	<i>Mentha piperita</i> L.	peppermint	<i>folium</i>	VI-IX	280
3	<i>Valeriana officinalis</i> L.	valerian	<i>radix</i>	IV-X	250
4	<i>Levisticum officinale</i> Koch	lovage	<i>radix</i>	IV-X	250
5	<i>Melissa officinalis</i> L.	lemon balm	<i>folium</i>	VI-IX	200
6	<i>Plantago lanceolata</i> L.	ribwort plantain	<i>folium</i>	IV-IX	120
7	<i>Calendula officinalis</i> L.	marigold	<i>flos</i>	VI-X	80
8	<i>Ocimum basilicum</i> L.	basil	<i>herba</i>	IV-IX	120

* Source: The data displayed were obtained from the production and experimental soil lots of the Institute for Medicinal Plant Research “Dr Josif Pančić” from Belgrade, located in Pančevo.

soming with 20–25 mm per week. The growth of irrigation works particularly well after the first cutting. Irrigation can provide two cuttings, and, in the case of a long and warm fall, the third cutting is also possible, which is quantitatively lesser than the first two, and with an economically less satisfactory yield. It has been found that, in the case of the abundant fertilization and irrigation of peppermint, the yield of green mass and essential oil may increase by 20–40%. By the increase in the vegetative mass and essential oil by 30%, one can obtain an average of additional 500€ per hectare (Kišgeci, 2002). Yield increases through the means of irrigation, and it is possible to have three cuttings, but, in that case, stem is greater and thicker, so it is disputable how much more leaf yield there is (that is when lower leaves fall off or turn yellow). Irrigation also makes the quantity of oil lower, so, if it is also checked, then it turns out not to be very profitable. A piece of research on the productivity and quality of peppermint was performed by Khorasaninejad et al. (2011). Two experiments were conducted to determine the effect of drought stress on the growth parameters, the essential oil constituents and the yield of peppermint. 5 levels of water deficit stress, including D1 (100% of field capacity control), D2 (85% of field capacity control), D3 (70% of field capacity control), D4 (60% of field capacity control) and D5 (45% of field capacity control), were investigated during 4 months. The results indicate that drought stress motivated a significant reduction in all of the growth parameters and essential oil yield. The highest values of growth parameters, essential oil percentage and yield in all were observed under 100% of field capacity control. Also, the highest values of Mentone and menthofuran were recorded under 100% of field capacity control, and the highest values of peppermint were obtained under 70% of field capacity control. In Bulgaria, peppermint (*Mentha piperita* L.) must be grown under irrigation if high yields of oil and leaves are to be obtained. To determine the most efficient and beneficial irrigation system, the effects of

sprinkler irrigation, of surface drip irrigation, of subsurface irrigation at the 35 cm depth and the subsurface irrigation with microporous hose at 15 cm depth on the peppermint culture over a 4-year period was evaluated. It was found that the highest yield of oil and plant raw materials was obtained when drip surface irrigation or subsurface irrigation with microporous hose was used. Both of these irrigation practices were found to conserve water to a greater extent than the other examined practices (Nedkov & Georgiev, 1991). Several methods of inferring plant water stress for irrigation scheduling are based upon the measurements in the environment in which the plants grow. These measurements include parameters such as: soil water content, air temperature, pan evaporation and incident radiation. It is hypothesized that advanced estimates of plant water deficit can be obtained by direct measurements made on the plants (Gallardo, 1992). When to apply water for peppermint? (Mitchell, 1997; Mitchell & Yang, 1998). Once we have the daily data on crop water use, we can determine when to irrigate using the “check book” method, in which irrigation and rainfall are only seen as “deposits” and crop water use as a “withdrawal”. This is done by subtracting the amount of daily crop water use since the last irrigation with the amount of irrigation when the water level reaches a threshold based on certain soil conditions. This threshold equals a fraction of the root zone depth (about 60 cm in most soils) and the soil’s water-holding capacity based on soil texture (Table 2). For example, 60 cm deep sandy loam has an available soil water content of 61 cm, or a total of 68.6 cm. For peppermint, one should irrigate when 35% of the available soil water has been depleted, which in this example means when about 2.5 cm has gone. If crop water use for a particular summer period is 0.5 cm per day, the irrigation should occur every 5 days ($2.5 \text{ cm} \div 0.5 \text{ cm per day}$). The peak water use by peppermint was about 580 mm per harvest with a great inter-year variation. Of two harvests per year, the peak water use in the second harvest was

considerably lower than that in the first harvest due, to a shorter vegetation period. The second harvest was significantly less than the first harvest, which suggests that, under the irrigation with sustained deficit, the second harvest is not profitable (Okwany, Peters, Ringer, & Walsh, 2013). In the Ozturk (1997) study, the plant *Mentha piperita* was greatly affected by the salinity and total ash values in the water for crop irrigation. The obtained results indicate that peppermint requires irrigation management in order to achieve high yield. Water deficit brings about the decrease in plant growth and essential oil accumulation, and it alters plant morphology. The application of a biostimulator affects the essential oil content and increases the yield of a medicinal plant (Kołodziej, 2008). The soil moisture extraction was higher (41.89%) under a smaller number of irrigations (150 mm CPE) than that of a greater number of irrigations (36.52%). It might be attributed to the higher extraction of soil moisture from the deeper layers by the highly expensive plant roots of Japanese mint (*Mentha arvensis* L. subsp. haplocalyx var. piperascens). Soil moisture extraction by roots was recorded at the maximum (36.4%) between 15 and 30 cm of soil depth (Saxena & Singh, 1995).

In the course of the year 2013, at several locations in South Banat, the yield was recorded of fresh mass of MAP parts used in the processing of grown plants in dry land farming and in irrigated conditions (Table 3). From the table, it can be seen that, depending on the parts used as plant raw material, a greater or lesser differences

were recorded in the variation. In the following paragraphs we will present a few excerpts from papers whose theme was the irrigation of medicinal plants.

In irrigating conditions, a significantly higher yield ($p < 0.01$) of dry root and fresh aboveground biomass of marshmallow was achieved in comparison with that in dry soil farming. The number of marshmallow root swellings was considerably higher ($p < 0.05$) in dry farming as compared to irrigation (Jevđović et al., 2009).

In growing valerian and lovage for root, sandy but moist soil should be chosen. If soils are difficult and inadequate for the cultivation of these species, it is necessary to make the suitable conditions for their cultivation through the implementation of meliorative and agrotechnical measures. Another agrotechnical measure that is increasingly present is irrigation (Novák, Németh, Nagy, Demeter, & Székely, 2005). Nedkov and Slavov (1989) found that there was the increase of 80–90% in the yield of valerian root through the treatment with 50 t ha⁻¹ of manure.

Melissa officinalis L. was found to be highly tolerant against water stress. The dry yield under water deficit (0, 12.5, 25.0, 37.5 and 50.0%) varied from 13.05 to 19.20 g plant⁻¹. The decrease in yield was not statistically significant until 25% of water deficiency, whereas the EO ratio increased with each increase in water deficiency (Ozturk, Unlukara, Ipek, & Gurbuz, 2004). In the Republic of Macedonia, as for the perennial plantations of lemon balm grown by organic methods, after each

Table 2. Water-holding capacity of different soil textures, and properties of soil moisture by the feel method (Mitchell, 1997)

Soil Texture	Water-Holding Capacity	Adequate Soil Moisture	Critical Soil Moisture for Irrigation (on Squeezing)
fine sand	17.8 to 22.9	leaves wet outline on hand	no wet outline on hand
sandy loam	43.2	forms weak ball	forms weak ball under pressure
loam, silt loam	61.0	forms strong ball	forms weak ball
clay loam	68.6	easily ribbons between fingers	forms ball, feels dry, not easily pliable

Soil Moisture as One of the Limiting Factors in the Production of Medicinal Plants

Table 3. An approximate representation of the yield of fresh crop biomass in case of dryland crop production and in case of irrigated crop production in the agroclimatic zone of South Banat (Vojvodina – Serbia) in the course of the year 2013*

Ordinal Number	Plant Species – Latin Name	Plant Species – Common Name	Yield of Fresh Crop Biomass in Dryland Crop Production (t ha ⁻¹)	Yield of Fresh Crop Biomass in Irrigated Crop Production (t ha ⁻¹)	Attained Difference (%)
1	<i>Althaea officinalis</i> L.	marshmallow	7.0	9.0	22.2
2	<i>Mentha piperita</i> L.	peppermint	5.2	11.0	52.7
3	<i>Valeriana officinalis</i> L.	valerian	1.8	9.0	80.0
4	<i>Levisticum officinale</i> Koch	lovage	10.4	15.0	30.7
5	<i>Melissa officinalis</i> L.	lemon balm	9.5	12.3	22.8
6	<i>Plantago lanceolata</i> L.	ribwort plantain	10.2	18.5	45.0
7	<i>Calendula officinalis</i> L.	marigold	7.8	12.8	39.1
8	<i>Ocimum basilicum</i> L.	basil	5.6	7.8	28.2

* Source: The data displayed were obtained from the production and experimental soil lots of the Institute for Medicinal Plant Research “Dr Josif Pančić” from Belgrade, located in Pančevo, as well as from the soil lots of individual producers of MAPs.

mowing, the plantations are irrigated with 50 mm of water (Mihajlov, Ilieva, Markova, Zlatkovski, 2013). On the other hand, comparing different parameters of cultivated lemon balm, such as leaf yield, stem yield and the lengths of internodes were higher than the values obtained by stress-induced treatments. Except for the case of the values of the content and quantity of essential oils, which was greater in the regimes in which soil drought was artificially initiated: in the variant with 60% of field water capacity, the yield of essential oils was almost twice as high (12.97 kg ha⁻¹) as compared to the regime without stress (6.73 kg ha⁻¹).

A significant difference in morphological, productive and qualitative characteristics of marigold has been achieved by the application of subirrigation in comparison with surface irrigation (Elhindi, 2012). Depending on the gathering and the effect of the measure of irrigation of marigold flower, differences occur among certain morpho-physiological features and in the content of some chemical compounds important for the quality of the obtained raw material (Shokrani, Pirzad, Zardoshti, & Darvishzadeh, 2012). Based on the

results, it can be inferred that the maximum petals yield of marigold and its consequent extract yield was achieved by normal irrigation (the irrigation of 40 mm evaporation from a class A pan), along with the maximum use of nitrogen fertilizer (90 kg N ha⁻¹). Among the irrigation treatments, irrigation of 80 mm evaporation from a class A pan, gave by far the highest extract weight percentage (content), compared to other treatments (Rahmani et al., 2012). The best method of marigold irrigation was furrow and ridge (Ghaziani, Berimavandi, Torkashvand, Hashemabadi, & Kaviani, 2012). Azimi et al. (2012) came to the conclusion that the increase in water deficit stress caused the decrease in some morphological traits of *Calendula*, but, on the other hand, the increase in the percentage of essential oil. But, this increase in essential oil percentage cannot lead to the raise in the yield of essential oil, because it decreases along with irrigation intervals and water deficit stress strength (the gradual increase of irrigation intervals), as well as the blossom yield.

Basil reacts exceptionally favorably to irrigation, and following the application of these mea-

tures, the yield is significantly higher. Depending on the environmental conditions, Basil can be irrigated from 3 to 6 times during the vegetation period. The first irrigation takes place immediately after sowing or transplanting, and then, every 10–14 days, depending on precipitation. It is particularly important to apply the irrigation in the stage of germination and the emergence of seeds, in the phase of tillering (shoot growth) and at the beginning of budding upon the first mowing. It is recommended that a crop of basil be watered after the first cutting. In that case, it often happens that, by the production and the quality, the yield obtained from second cutting is more abundant compared to the first cutting. In the case of longer periods of drought, irrigation becomes a necessary factor in successful production, and is necessary to carry it out exactly in those critical periods when precipitation is rare or even non-existent. This irrigation is conducted in installments, usually with 30–40 l of water per m². When irrigating with water in which the concentration of certain salts is higher, the basil plant “synthesizes” essential oils and certain components therein to a certain concentration (Said-Al Ahl, Meawad, Abou-Zeid, & Ali, 2010).

A field study on basil (*Ocimum basilicum* L.) has been carried out to determine the effect of different irrigation water levels on basil's plant. Water stress negatively affected the plant height and its yields. Inversely, the essential oil ratio of the plant increased as the applied amount of irrigation water decreased. Water stress has a positive effect on essential oil composition of the plant. The main components of the essential oil were linalool, eugenol and methyl chavicol. Since the yields changed in parallel with the amount of irrigation water applied, the irrigation water use efficiency was not significantly different, according to the irrigation water levels (Ekren et al., 2012). According to Yassen et al. (2003), the irrigation of basil (*Ocimum basilicum* L.) at the ratio 0.6: 0,8 of the relation between irrigation

water and cumulative pan evaporation resulted in the greatest plant height, with the ratio 87.6: 90,2 cm, and the yield of this medicinal plant with the ratio 1.176: 1.665 kg da⁻¹. Omidbaigi et al. (2003) reported that the essential oil content of potted seedlings of basil increased under water deficit. The number of components of the oil of *Ocimum basilicum* L. increased as the water stress increased. Moeini Alishah et al. (2006) studied the effects of different levels of water stress applying 100, 90, 80, 70, 60 and 50% of field capacity on potted basil in a growth chamber. They reported that as the water stress increased, the plant height and herb yield decreased. The highest average plant height, fresh medicinal plant yield and dry medicinal plant yield were given as 56.46 cm, 38.69 g plant⁻¹, and 4.573 g plant⁻¹, respectively.

PROSPECTS FOR THE UTILIZATION OF IRRIGATION AS A MEASURE TO RAISE THE COMPETITIVENESS OF THE PRODUCTION OF MEDICINAL PLANTS IN SERBIA

Today, there are a large number of species of medicinal and aromatic plants that are officially used, but their number is constantly changing. In the pharmaceutical industry, there are about 50% of the active substances of plant origin, which requires a growing demand for natural raw materials. The trend of returning to natural sources of nutrition and medical treatment is more and more noted, particularly in relation to the increase in living standards. In the first place, the limiting factors for the possible development of the MAP production in Serbia are: an unorganized market for the buying-up of fresh and dried plants, the lack of a plan for the utilization of the existing and the acquisition of new drying kilns, the limited storage and refrigeration facilities, as well as the processing facilities. What should certainly be mentioned is the relatively low technical capac-

ity to deal with this type of production, and, as the greatest disadvantage, we should point out the lack of training of the existing and potential producers of MAPs. A number of individuals and legal entities are willing to encourage further progress of the MAP sector, which is for the goal of obtaining raw materials of known origins, but also of high value finished products based on this type of plants.

In MAP cultivation in recent years, drought was one of the major problems in the production of medicinal raw materials. Thus, in the research by Đuričin and Bodroža (2013), through the application of the methods of qualitative and quantitative analysis of financial statements and the synthesis of the obtained research results, the conclusion was reached that, in the analyzed period, with its prevailing market conditions, the agro-meteorological developments had a significant impact on the deterioration of the yield position of the group companies belonging to the MAPs sector of Serbia.

On the other hand, there are positive examples from national research practices, whose work indicates the “tracing” of potential guidelines when it comes to the ensued water deficit in the cultivation of MAPs. Therefore, the monitoring and analysis of weather and climate conditions are necessary for the proper planning of sowing structure, the correction of crop management and the analysis of the conditions for the production of agricultural crops, in our case, MAPs. Of the many parameters that are monitored, the greatest impact on agricultural production is made by the amounts and time distribution of precipitation, as well as air temperature. These are exceptionally important parameters in the field of the monitoring of soil and plant moisture regimes, because they directly affect water reserves in the soil, moisture and feeding regimes, evapotranspiration and balance of moisture during the vegetation period of plants, which the yield of cultivated crops directly depends on. The amount of water consumed, i.e.

the coverage of precipitation, according to numerous studies, makes a highly significant impact on the yield of plants (Maksimović, 2013).

CONCLUSION

Serbia has favorable natural characteristics: climate, water resources, manpower, as well as great potential in the sector of agriculture that has not been adequately exploited. The collection of plants from nature is the dominant mode of market supply; 90% of traded plants of plant turnover originate from nature. The territory of Serbia has significant capacity to expand the production and processing of medicinal plants. There is a possibility for a rich raw material base, both in terms of diversity and in terms of quantity; there are already constructed buildings that can be adapted to the needs of production; there is enough arable land for plantation growing of medicinal plants; there is the possibility of securing the funding for this sort of production; a market has been developed for final products; the technology is partly developed and available to the producers to-be, and so on. According to the data from the Serbian Chamber of Commerce, in 2012, there was 1,337 hectares under grown plants. To these areas, we can add a portion of the areas of the plants under spice plants that are listed as vegetables and a portion of the areas on which it is produced for foreign customers, which makes a total of approximately 20,000 hectares.

Not only does the growing of medicinal plants solve the issue of the settlement of the domestic pharmaceutical industry with necessary quantities of drugs of sustainable quality and pharmacological effects, but also, the potential export of these medicinal raw materials. By solving the issue of increasingly frequent water deficits, and by introducing some less included agricultural measures in the production system of MAPs, the expected revenue and profit/benefit from this type

of industry can be achieved. By the irrigation of generally small arable properties under MAPs, and by the investment in “small” irrigation systems (“drip, drip” and “sprinkling” systems), a suitable raw material base for the domestic and foreign manufacturing could be created in a relatively short period of time.

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KEY TERMS AND DEFINITIONS

Biodiversity: The definition of biodiversity refers to the amount of diversity between different plants, animals and other species in a given habitat at a particular time.

Cultivation MAP's: The production of crops (medicinal plants) using prepared land by tending them either by unskilled or skilled people. Depending on the mode of cultivation e.g. conventional or organic, growers should be allowed to follow different Standard Operating Procedures for cultivation.

Irrigation System: A hydraulically distinct network of structures, pumps, canals, channels, pipes that may be used to abstract and/or convey,

distribute and apply irrigation water to a defined land area, and which includes associated land, buildings, equipment, access roads and infrastructure which are necessary to operate, maintain and repair the system.

Medicinal and Aromatic Plants (MAP): Includes plants used to produce pharmaceuticals, dietary supplement products and natural health products, beauty aids, cosmetics, and personal care products, as well as some products marketed in the culinary/food sector.

Organic Agriculture: Holistic approach to plants and animals growing which aims to ensure high quality products, soil conservation, clean water, rich diversity and human health.

Soil Moisture: Regimes are defined based on the watertable level and the presence or absence of available water (water that can be used by plants).

ENDNOTES

¹ Planta Europa (2008). A Sustainable Future for Europe; the European Strategy for Plant Conservation 2008–2014. Plantlife International (Salisbury, UK) and the Council of Europe (Strasbourg, France)

² Medicinal Plant Specialist Group (MPSG) (2007). International Standard for Sustainable Wild Collection of Medicinal and Aromatic Plants (ISSC-MAP). Version 1.0. Bundesamt für Naturschutz (BfN), MPSG/SSC/IUCN, WWF Germany, and TRAFFIC, Bonn, Gland, Frankfurt, and Cambridge (BfN-Skripten 195)

³ The Regulation on the admissible concentrations of hazardous and harmful substances in the soil and water for irrigation and the methods of their analysis (the Official Gazette of the Republic of Serbia, Number 23/94)

⁴ WHO (2010): Guidelines for Good Agricultural and Wild Collection Practices for Medicinal and Aromatic Plants (GACP-MAP). The World Health Organization, Geneva. EUROPAM, the European Herb Growers Association, Brussels, November, 2010. Working Copy No. 8.0 and Guidelines for cultivation of raw materials used for herbal and fruit infusions in the countries of origin. EHIA Code of Good Agricultural Practice for Herbal Infusion Raw Materials, Issue 5–18th January, 2012

Chapter 7

Romanian Rural Tourism in the Context of Sustainable Development

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ABSTRACT

Tourism, in all its activities, is dependent on the environment, and by exploiting its resources, products are created, creating a significant added value. But all this must take into account the rational use of natural resources with risk of depletion or degradation and the ability to achieve a decent standard of living for future generations, with an equitable distribution of general or specific revenue. Based on these considerations, the aim of this chapter is to assess the evolution of touristic infrastructure both in time and in terms of regional distribution. To estimate the tourism supply of Romanian rural tourism accommodation, the main statistical indicators used were the number of agro tourist boarding houses, the existing accommodation capacity, and the accommodation capacity in operation, their territorial concentration, and the way in which the results are strategic levers in the regional development of Romania.

INTRODUCTION

Competitiveness of rural tourism, on background process development sustainability can shape and analysis from a basic element of rural touristic supply: accommodation. In relation to the location and services, rural tourism units can be competitive success of a tourist destination.

Given the economic and social changes faced by Romania, while, there have been changes in the classification of tourism facilities that operate rural tourism, which justifies the existence of the macro-distributed data, regions of development and counties from 2000 to 2012, provided by NIS (Tempo-one line).

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The conceptions of researchers and analysts have changed over time from negative opinions, which had consider rural tourism as a weak producer of value-added, to the positive one, which consider it as a important value-added creator.

The decrease in revenues from agriculture, increasing interest in sustainable development, the increasing efforts of local institutions to develop rural communities have created prerequisites of increased competitiveness of rural tourism destinations.

In this context, there has been a significant change in the market rural, characterized by a growing concern for health and the environment, which led to a significant increase in demand for accommodation and standards for this type of tourism, emphasizing the phenomenon of sustainability and attenuating seasonality (European Commission, 2000).

In the year 2013, EUROSTAT study (European Commission, 2013) results show that in predominantly rural regions across Europe, the share of services in regional GDP was lower (64.8%) in 2010, to predominantly urban regions (78, 6%) and the mixed regions.

Except Netherlands and Romania (46.8%) in almost all European countries, services that include tourism contributed with more than half of the value-added in the region predominantly rural. However, within Europe, it was determined that 32.2% of the total number of beds in all collective accommodation establishments are placed in the regions predominantly rural, which represent more than a third.

The objectives of this chapter is to evaluate the evolutions and the regional distribution of number of the agro tourist boarding houses (ATBH), existing accommodation capacity (EAC), and accommodation capacity in operation (ACO), their territorial concentration and specific modality in which the results are strategic levers in the regional development of Romania.

In the research methodology based on theoretical statements as guiding principles were used methods and techniques, ordering processes, correlation and processing information taken from official data provided by the National Institute for Statistics of Romania.

BACKGROUND: SUSTAINABILITY, SIGNIFICANT ELEMENT OF THE COMPETITIVENESS OF RURAL TOURISM

The competitiveness as a complex concept is viewed and analyzed globally, but also in terms of each component separately, considering the financial, human and organizational aspects. Regarding to this concept (Kotler, 2001) seats that it can be represented by the degree to which a nation, in a free and fair market conditions can produce goods and services that pass test of international markets, while managing to maintain and increase the real income of its citizens. National competitiveness is the result of competitive interdependence manifested at regional, local or company level.

In tourism, competitiveness can be approached from economically through the capacity of destination or of travel company to be more profitable in the tourist market. For a tourist destination, the competitiveness can be shaped by factors such as: attractions and tourist resources, support factors harmonized with other resources, favourizing conditions, demand conditions, tourism destination management, planning and development, policy implemented for raising the standard of effectiveness and profitability at international level.

Tourism enterprise competitiveness is analyzed mainly through tourism products, targeting innovation, diversification, renewal and quality, client positioning the background first.

This context creates the potential market highlighting the necessity of competitive tourism products in the contemporary period, given the living conditions conducted under stress spectrum and pollution are increasingly oriented towards ecological and biodiversity plan.

Currently, the trend in Europe is the evolution of rural tourism which is constantly expanding, with all of crises manifested but under spectrum of storage, conservation, and regeneration of all resources involved in shaping competitive rural tourism products.

Emptaz-Collomb (2009) highlight that the concern of rural communities and institutions regarding environmental conservation has led over time to a specific approach to sustainable development. However, specific events constitute result of intertwining elements of demographic, social, cultural, economic and environmental factors.

The promotion of rural tourism type is a significant factor towards the development of poorer regions economic recovery, mainly of tourism opportunities, which can improve the living conditions of local people in those regions.

Studies conducted by Mehta and Kellert (1998), and Walpole and Goodwin (2000 and 2002) showed that the attitude towards interdependence between tourism and environmental conservation is direct but rather weak (European Commission, 2013). However, reveals that the over the past 15 years numerous studies have been conducted predominantly oriented towards interdependence revenues from tourism and conservation support environment. The study carried out by Walpole and Goodwin (2002) ended with the conclusion that poor countries with poor material and financial situation negatively influence support activities and environmental preservation.

World Commission on Environment and Development (1987, p.41) has defined sustainable development in their report as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”

Michael Lemonick (2009) in his article „Top 10 Myths about Sustainability”, was referring to the second myths („Sustainability is all about the environment”), quotes Anthony Cortese, founder and president of the organization for sustainable education “Second Nature”, who said: “The economy is a wholly owned subsidiary of the biosphere. The biosphere provides everything that makes life possible, assimilates our waste or converts it back into something we can use”.

World Conference on the Environment in Rio de Janeiro in 1992, paid special attention to the concept of sustainability, which involves establishing a balance between economic growth, environmental protection and finding alternative resources, defined as “the quality of a anthropogenic activities to take place without exhausting available resources without destroying the environment, so without compromising the ability to meet the needs of future generations”(Popa s.a, 2009; dexonline.ro).

At the microeconomic level, sustainable tourism development is the focus on technological developments and institutional change, touristic accommodation structures in harmony with increasing current capabilities and future ones and to meet human needs and aspirations towards recreation, restoration and spend nice time in line with the observance of ecological management. As early as the end of XX century, Welford (1997) highlighted some principles of sustainable development among which: integrated management, preventive and proactive behavior, continuous improvement, consumer information, caution, crisis strategies, contribution to the collective effort, social and environmental responsibility to the community.

Basically, sustainability is a much deeper, being linked not only to activities involving the conservation and regeneration of natural resources and other components as well as the organization of sustainable holidays, which explains further involvement in rural tourism products of the competitiveness manifested the rural tourism.

ROMANIAN RURAL TOURISM: PRESENT AND PERSPECTIVES

Measuring the Rural Touristic Supply in Terms of Sustainability

The territorial structural analyzes is based on Nomenclature of Units for Territorial Statistics (NUTS) developed by the Statistical Office of the European Union (EUROSTAT) and included in the REGIO database under NUTS territorial units which are hierarchically structured on three levels: NUTS 1 (97 regions), NUTS 2 (271 regions) and NUTS 3 (1303 regions). In Romania, following their accession to the EU, the three NUTS levels have the following structure (Table 1): NUTS 1-4 macro, NUTS 2-8 regions and NUTS 3 - counties in each region. (Regulation EC No 176/2008, Regulation EC No 1059/2003).

Given that information (the statistics data series) which are processed and interpreted are taken from NIS (NIS, 2012) end EUROSTAT (2014), we consider that it is useful to present short definitions of them.

- *Agro tourist boarding houses* are accommodation structure, for temporary tourists' installation, located in rural areas, with the capability to provide their meals and specific activities of this type of environment. It is expressed in number of units
- *Existing rural touristic accommodation capacity* represents the number of the seats available by agro tourist boarding houses in order to tourist accommodation.
- *Rural touristic accommodation capacity in operation* is a statistical indicator which assessment offer accommodation, representing the number of seats offered by agro tourist boarding house in relation to the number of days of their operation in a predetermined period. It is expressed in number of place-days.

Context created by information taken about three indicators measuring the supply of rural tourism accommodation, allowed the application of specific indicators of structural analysis (relative sizes of the structure), dynamic indicators (average indicators) and indicators involved in

Table 1. Romania's territorial units according to NUTS

NUTS 1	NUTS 2	NUTS 3
Macro 1	North-West	Bihor, Bistrița-Năsăud, Cluj, Maramureș, Satu Mare, Sălaj
	Center	Alba, Brașov, Covasna, Harghita, Mureș, Sibiu
Macro 2	North - East	Bacău, Botoșani, Iași, Neamț, Suceava, Vaslui
	South-East	Brăila, Buzău, Constanța, Galați, Tulcea, Vrancea
Macro 3	South -Muntenia	Argeș, Călărași, Dâmbovița, Giurgiu, Ialomița, Prahova, Teleorman
	București-Ilfov	București, Ilfov
Macro 4	South-WestOltenia	Dolj, Gorj, Mehedinți, Olt, Vâlcea
	West	Arad, Caraș-Severin, Hunedoara, Timiș

Source: Regulation No 176/2008 of the European Parliament and of the Council

the methods establish specific degree of concentration, Gini-Struck coefficient of concentration, trapezoidal method to calculate the Gini index of concentration (Țițan, 2012), and diversification - value Agresti (Jaba, 2002).

Struck concentration coefficient is the corrected form of the Gini coefficient and is determined independently of the number of categories considered, across time and space permitting comparability of the results, being expressed by the relation:

$$C_s = \sqrt{\frac{n \sum g_i^2 - 1}{n - 1}} \in [0; 1] \quad (1)$$

In view of the rigorous evaluation as in the research, the trapezoidal method was applied to calculate the Gini concentration index. This takes into account the determination of the concentration using surface concentration value (with respect to the surface of trapezoids formed on the ranges of variation of the characteristic X) by applying the relation:

$$I_G = 1 - \sum_{i=1}^N s_i^2 \in \left[0; 1 - \frac{1}{N}\right] \quad (2)$$

where: $n = \sum n_i$ – counties number (40 countries); q_i – share of accumulated global values up

to the same level x_i f_i – share of herds (n_i) in total collectivity ($\sum n_i$) corresponding to the level x_i of X (in the case of research: the number of agro tourist boarding houses, the number of places or the accommodation capacity in operation).

Also, diversification indicators occupy a significant place in the survey. An important role in this analysis, had diversification index, found in the specialized literature under the name of value Agresti, determined by the relation (Agresti, 1990, p.24):

$$V_s = 1 - \sum_{i=1}^N s_i^2 \in \left[0; 1 - \frac{1}{N}\right] \quad (3)$$

The maximum value is set at 0.8 by the relation: $1 - \frac{1}{N}$, where N represents the number of categories (groups). In the study, as a result of the previous processing five groups were established for each characteristic (Table 2).

Supply tourist accommodation in rural areas of Romania has recorded a general upward trend since 2000, although during the global financial crisis has shown a slight decline, with the effects recorded in 2009-2011.

The increasing of the number of tourist accommodation units in 2012 compared to 2011 was significant compared with the trends from

Table 2. The way of distributing of counties in the five groups in relation to each measuring indicator of the supply of rural tourism accommodation

Number of Agro Tourist Boarding Houses	Existing Accommodation Capacity (Places)	Accommodation Capacity in Operation (Places-Days)
0 - 55	0 - 882	0-307187
55 - 110	882 - 1764	307187 - 614374
110 - 165	1764 - 2646	614374 - 921561
165 - 220	2646 - 3528	921561 - 1228748
220 - 275	3528 - 4410	1228748 - 1535935

Note: The lower limit included within

previous years. Meanwhile, the accommodation capacity, so the number of accommodation provided by rural touristic accommodation establishments registered a continuous growth, including in the financial crisis, when maintained, however, positive.

The real challenge lies in shaping management decisions imposing sustainability as a priority of running rural tourism activities with the need to maintain and reuse natural resources in rural areas and component elements that make up the rural touristic supply.

Applying research methodology outlined above constitutes a context for future economic modeling approaches through Bayesian econometrics, bringing together the interests of various groups of researchers in economics and adjacent, such as specialists in the tourism trade, services, marketing (Simionescu, 2013)

The Accommodation Supply of Rural Tourism in the Context of Sustainable Development Trend

Sustainable development of rural tourism accommodation supply manifests interrelated with the milestones for the development and sustainability of rural communities. Is the action plan are in-

tertwinde influence of public authorities with the management strategies applied by rural touristic accommodation.

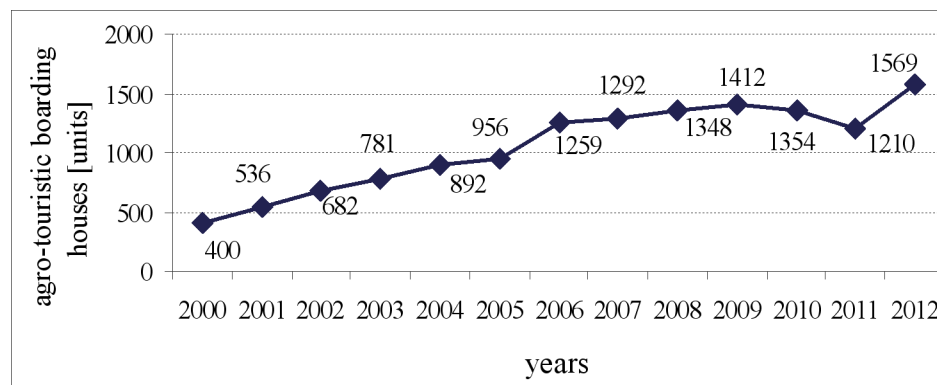
The study of rural tourism accommodation supply in Romania was started by analyzing the evolution of the three main indicators definite above (number of agro tourist boarding houses, existing rural accommodation capacity and rural accommodation capacity in operation) both at general level (the Romanian territory) and regional level.

During 2000 - 2012 the number of agro tourist boarding houses (Figure 1) increased about 3.92 times from 400 registered in 2000 to 1569 agro tourist boarding houses in 2012, the annual average being 12.06%. In the period preceding the economic crisis their number increased continuously but with different rhythms being distinguished three periods of approximately linear growth:

- The period 2000-2005 in which the average annual increase was 111.2 agro tourist boarding houses, the annual average being 19.04% with 7.34 percentage points above the annual average of the period 2000-2012,
- The period 2005-2006 have been recorded no less than 303 agro tourist boarding houses (an increase of 31.69%)

Figure 1. Evolution of the agro tourist boarding houses in Romania during 2000-2012

Source: authors own computation based on NIS (2013)



- The period 2006-2009, in which the trend of growth continues, but with an average annual increase of only 52 agro tourist boarding houses, the annual average being 3.90%, with 8.16 percentage points below the average.

Triggering the economic crisis in 2008 had a negative impact on the supply of accommodation places in the period 2009 to 2011, in which coming out of tourist circuit, a total of 202 agro tourist boarding houses, out of whom 144 in the period 1010-2011 (in the first two years of decline, the number of agro tourist boarding houses fell by 14.3%). Year 2012 brings a revival of rural tourism, at least in terms of the supply of accommodations, in the period 2011 to 2012 the number of agro tourist boarding houses increasing by 29.67%.

In the eight regions of development of Romania the number of agro tourist boarding houses is significantly different. Of these, the Centre region, number of agro tourist boarding houses is two times higher than in the North - West region, which is from this point of view, on place the second. Note

that these two regions of development make up the Macro 1, comprising the counties of Transylvania.

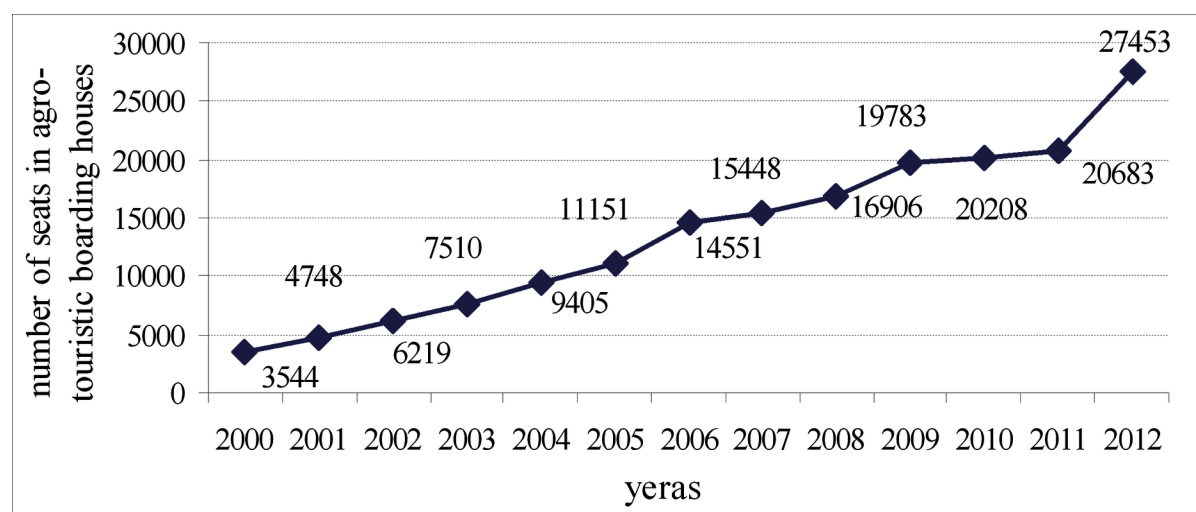
Very close, in terms of number of agro tourist boarding houses, changing alternatively with North-West, the second and third places, there is the North-East region which has also a rich cultural, natural and historical heritage. In these three regions there are over 70% of total agro tourist boarding houses.

Evolution of existing accommodation capacity, represented by the number of seats in agro tourist boarding houses in Romania, is highlighted by the chronogram shown in Figure 2. Its upward trend is evident. Throughout the period under review, the average absolute increase is approximately 1992 places per year, while the relative increase is 18.60% per year.

In the period preceding the economic crisis, the number of the accommodation places in agro tourist boarding houses shows an evolution similar to that recorded by the number of agro tourist boarding houses: In the period 2000-2005 the average annual rate was 27.77%, with 7.17 percentage points above the annual average of the

Figure 2. Evolution of existing accommodation capacity in agro tourist boarding houses, in Romania, in the period 2000-2012

Source: Authors own computation based on NIS (2013)



period 2000 - 2012, in 2005-2006 the number of accommodation places increased by 30.49%, and in the period 2006-2009 the average annual rate was 10.78%, with 7.82 percentage points below the average for the period 2000-2012.

Although the economic crisis has led to decrease in the number of agro tourist boarding houses from 1412 in 2009 to 1210 in 2011, the supply of accommodation places continued to rise, from 19783 in 2009 to 20683 places in 2011 (an increase of 4.55%). Year 2012 brings a recovery of the supply of places in agro tourist boarding houses, their number being with 32.73% higher than in 2011.

Analyzing the evolution of the number of agro tourist boarding houses and of the accommodation places provided by them, it appears that, in the period, increased from an average of 8.83 accommodation places per agro tourist boarding houses share reported in 2000 to 18.86 accommodation places per agro tourist boarding houses in 2012. This is highlighted by the annual growth rates of the two indicators. Except for 2006, which compared to 2005, annual growth in the number of agro tourist boarding houses overtake annual growth rate of accommodation places (31.69% vs.

30.49%) throughout the period, annual growth in the number of accommodation places was higher than the annual growth of the number of agro tourist boarding house, the biggest difference, 12.99 percentage points being recorded in 2009.

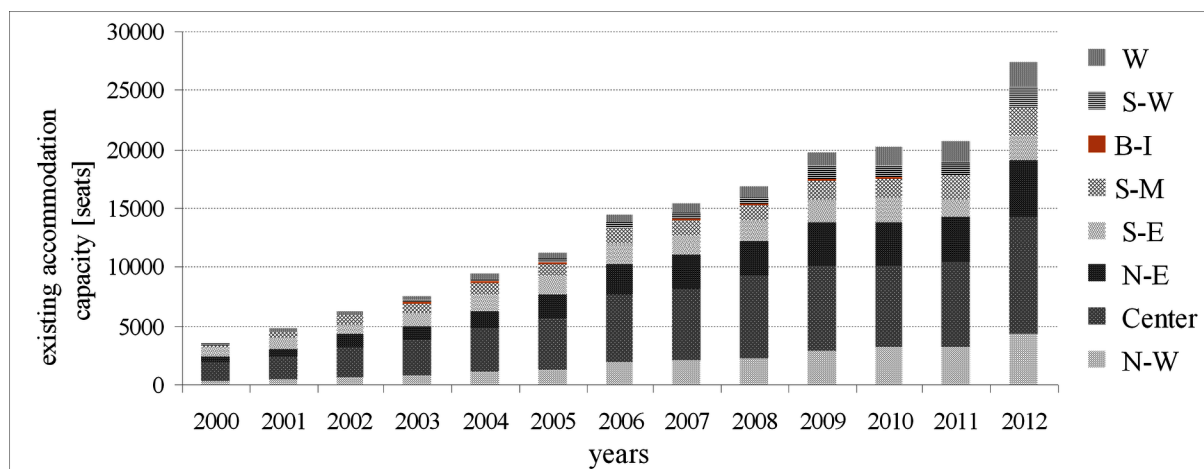
Also, an important conclusion is that the economic crisis has affected to a much greater extent, agro tourist boarding houses with small accommodation capacities compared to those with higher capacities. This conclusion is underlined by the fact that although in the crisis period the number of agro tourist boarding houses fell by 202, the number of accommodation capacity increased, during the same period, with 900 seats.

Through an analysis of existing accommodation capacity of agro tourist boarding houses, by regions of development of Romania (Figure 3) results, as expected, given the distribution of them by regions of development analyzed above that, throughout the period of analysis, most of accommodations are supplied to agro tourist boarding houses from the Center region. After the Center region, on second place since 2002, is North-East region, followed by the North-West region.

Regarding the rhythms of evolution of existing accommodation capacity per regions of develop-

Figure 3. Evolution of the existing accommodation capacity in agro tourist boarding houses by regions of development of Romania, in the period 2000-2012

Source: authors own computation based on NIS (2013)



ment for the period 2009 - 2012, the situation is slightly different. The West region in 2010 recorded the highest growth (25%) and, although in the coming years is surpassed by growth rate of the South-Muntenia (23% in 2011) and South East (24% 2012), during the economic crisis existing accommodation capacity in agro tourist boarding houses in the West region increased by 75.97%. Note that the West region is the only region that, during the economic crisis, showed only positive values of the growth rate of existing accommodation capacity in agro tourist boarding houses.

The accommodation capacity in operation (places-days) in agro tourist boarding houses in Romania, in the period 2000-2012, both across the country and by regions of development had a similar evolution to the evolution of existing accommodation capacity across the country, respectively, by regions of development.

Thus, as in the existing accommodation capacity, the annual growth rates of accommodation capacity in operation in 2010 have been positive only in the West (22.09%), North-West (14.35%) and South-Muntenia (4.21%). In 2012, relative to 2009, in the West region, the accommodation capacity in operation doubles (204.72%). Also significant values are recorded in the South-WestOltenia (167.27%), Centre (162.78%), South-East (132.14%), North-West (131.57%) and North-East (130.37%).

Territorial Structural Developments on Rural Touristic Supply

Studying supply Romanian rural tourism accommodation begins with analysis of the evolution of existing accommodation capacity and accommodation capacity in operation as the most representatives at both general (the Romanian territory) and particular, that from the eight macro-regions.

A structural analysis of the supply of Romanian rural tourism accommodation in the eight regions of development more clearly highlights regional differences, thus allowing the shaping of strategic

insights attenuation and sustainable development territorial disparities.

Agro tourist boarding houses structural hierarchy of the eight regions of development of Romania has changed slightly from year to year. In 2000-2012 period the trend of decreasing percentage in Central region (with the strong concentration of the total agro tourist boarding houses: from 60.60% in 2000) in favor of the other regions, so that will arrive in 2012, as territorial distribution of agro tourist boarding houses in this region corresponds to only 37.86%.

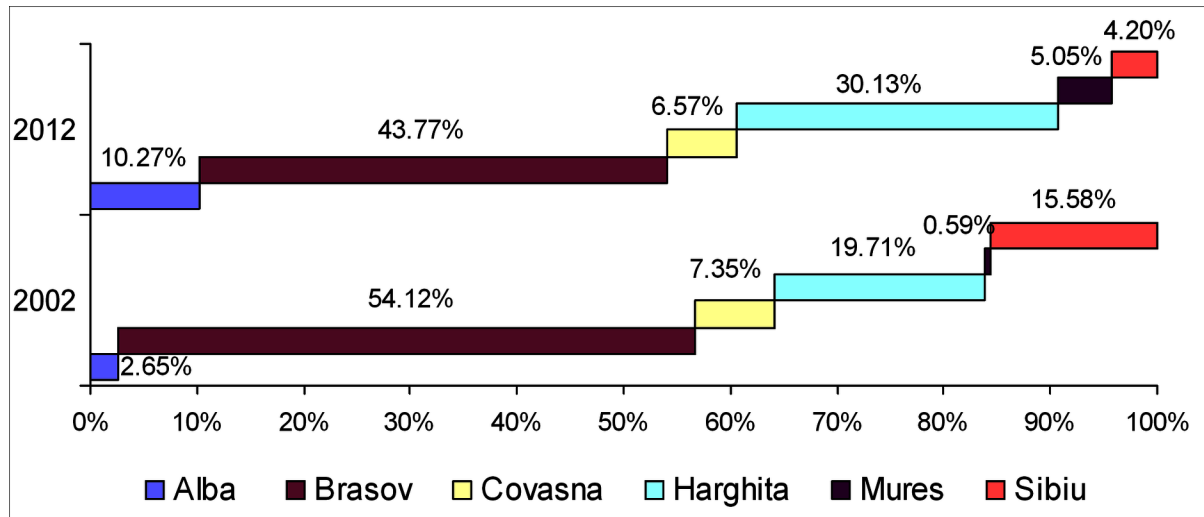
Justification situation is reported primarily in civilization, the mentality and attitude of the local community in practicing rural tourism, the implementation of appropriate policies and strategic management level. However, positive results following the establishment of agro tourist boarding houses and practicing this form of tourism are highlighted and by a detailed analysis of the distribution of their structural components counties (Alba, Brasov, Covasna, Harghita, Mures and Sibiu).

Since in Covasna and Mures were recorded hostels established in 2001 and 2002 for a clearer reflection of the situation of structural distribution of tourist hostel, comparing the 2002 with structure in 2012, established for rural tourist pensions counties. The results (Figures 4) showed significant increases in percentage points in 2012 compared to 2002 in Alba, Harghita and Mures, while for other counties (Brasov holder of more than half of all agro tourist boarding houses, Sibiu and Covasna) are indicated only by a few percentage points decrease insignificant given the suggestive supply tourist accommodation rural county.

North Est Region, ranked second on the structural hierarchical scale of agro tourist boarding houses throughout the period 2000-2012, will determine shares varied between 11.19% in 2001 and 18.43% in 2011. In this region NE, rural touristic pensions operated from 2000 until 2005 in the territory of Bacau, Iasi, Neamt, Suceava,

Figure 4. Structure of agro tourist boarding houses counties of Centre region in 2002 and 2012

Source: Authors own computation based on NIS (2013)



Vaslui in 2005 and 2011 and Botosani county area, leading to a comparative analysis of the structural set at 2012 to 2005 (considering less suggestive comparison of 2012 versus 2011).

Comparative graphical representation (Figure 5) show a significant tiebreaker for Suceava (with the 52.24% in 2005 and 49.06% in 2012) and Neamt (from 31.33% in 2005 to 37.74% in 2012) in the supply of rural touristic accommodation given, primarily, to the rich natural, historical and cultural potential, and policy maintenance, recovery and transmission of cultural values and ethno-historical folklore they have. A significant potential for rural touristic supply Iasi and Bacau counties of, although in 2012 compared to 2005 as a division of the supply of accommodation known process of reducing by 1.81 and 4.44 percentage points respectively.

These counties are the foundation of sustainable development of rural tourism through the nature, material, spiritual and human reserve, features that propagate as in spectrum of conservation and reclamation involved in the inestimable value of this type of tourism.

Vaslui County granted in 2005, particular attention to developing of rural tourism, which

noted the increase of 2.74 percentage points in 2012 compared to their establishment.

Throughout the period of analysis, 2000-2012, is maintained also North West region as occupies the third place in the ranking of tourist agro tourist boarding houses structural rural regions of Romania, the shares varying from 8.75% in 2000 and 19.65% in 2010.

In 2000, rural tourism is run mainly in Maramureş (which holds throughout the analysis, the largest number of rural agro tourist boarding houses) and then Cluj, Sălaj, Satu-Mare, as reported in 2002 to establish a rural tourist hostels in Bihor county, and in 2004 in Bistriţa-Năşăud, which provide opportunities for comparative structural analysis in 2012 compared to 2004.

Natural and cultural potential of inestimable value is found in the county of Maramureş creating opportunity for tourism also rural tourism especially, justifying the existence of many rural agro tourist boarding houses in the area, although with the passing years, the whole region NW share of their corresponding total is reduced with the 21.15 percentage points in 2005 compared to 2012.

Strategic policies, management of rural communities and private entrepreneurs led to the

Figure 5. Structure of agro tourist boarding houses in North Est region in 2002 and 2012

Source: Authors own computation based on NIS (2013)

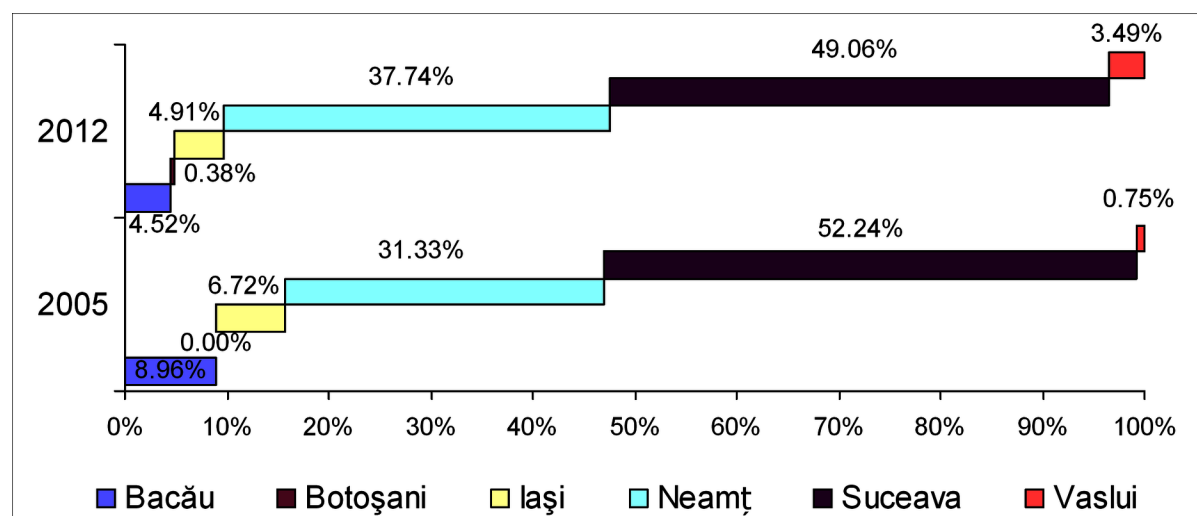
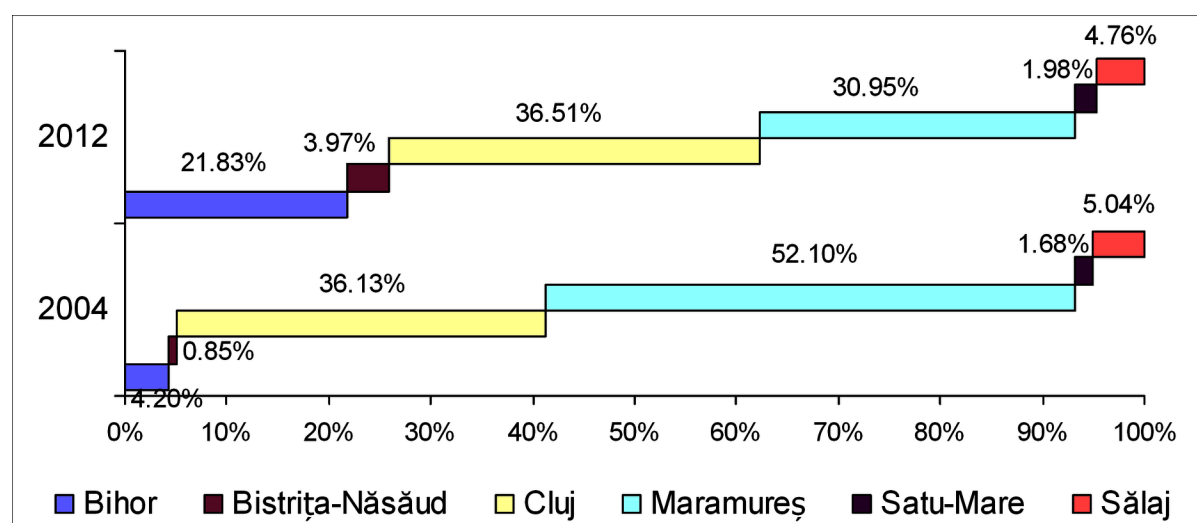


Figure 6. Structure of agro tourist boarding houses in counties of North West region in 2002 and 2012

Source: Authors own computation based on NIS (2013)



establishment of more rural accommodation also tourist facilities in other counties in the region, and to increase tourist activity in those areas (especially in Bihor county where there is a significant increase with the 17.63 percentage points in 2012 compared to 2004), except Sălaj county, where the interest for practicing this type

of tourism has decreased in recent years, as evidenced by reducing by 0.28 percentage points in 2012 compared to 2004.

Regions South-East and the South-Muntenia are in constant competition to occupy third and fourth place, which led to a constantly changing of the hierarchy placement. Thus, in the process of

setting up or dissolution of agro tourist boarding houses during 2000-2012 led to fluctuations percentage between 6.73% (2009) and 9.51% (2001) for the region South-East, and between 6,75% (2000) and 10.99% (2004) to the other region.

In 2000, South-East region rural touristic accommodation supply is mainly based on the number of rural pensions in Vrancea, Constanța, Tulcea, Buzău rural boarding representing 36.36%, 33.34%, 24.24% and 6 06%. In 2012 not only that there is a rural tourist facility in Braila county approved but are defined and structural changes towards increasing the Buzau County with the 41.13 percentage points, while for all other counties registers discounts: 4.02 percentage points for Tulcea, Vrancea with the 12.76 percentage points and 25.47 percentage points for Constanta.

The potential of these counties is quite low (except the counties of Tulcea and Constanța), which requires a significant strategic directions for action modeling and managerial carried out in local communities in order to harmonize them at regional level backed towards sustainable development.

Rural tourist supply of the region South-Muntenia contribute to the practice of rural tourism primarily through extremely rich environment, natural and human, that Prahova, Arges and Dâmbovița counties have. It is, in this way, the essence of rural tourism activities in this region, which runs through rural touristic accommodation in hostels representing 44.45%, 33.33% and 22.22% of those registered in the region in 2000. In 2003 rural tourism establishments are certified Ialomita and Giurgiu county and in 2011 in Teleorman. In 2012 compared to 2003 will be recorded increases by several percentage points for Arges, Dâmbovița, Ialomița and Teleoman, Prahova and Calarași recorded discounts, while Giurgiu will remains again without registered rural tourist activity, while no longer functional agro tourist boarding houses are recorded.

South-Muntenia region is a region that has a great tourism potential area, therefore it is very

important at this level to establish clear lines of action regarding the implementation of rural tourism activities, especially that natural environment in Arges, Dâmbovița and Prahova can be a foundation of sustainable development of this type of tourism.

Two regions (South-West and West) compete for supremacy in the hierarchy but only for 5th and 6th place. For agro tourist boarding houses in total, each corresponding number establish the time of percentages ranging from 1.00% (2000) and 6, 88% in 2012, corresponding to the South-west region and between 1.75% in 2000 and 7.14% in 2012 to W.

Rural tourist hostels from South-West region are found in Gorj and Valcea in 2000, two areas with significant natural and human potential, which opened broad prospects for practicing rural tourism.

In 2002 established rural tourism facilities in Dolj County, and in 2004 Mehedinti allowing structural stability at this year leading to a comparison with the structural situation of agro tourist boarding houses since 2012 (in 2011 there is an approved facility in Olt County). Thus, Vâlcea, Dolj and Mehedinti counties face an increase in 2012 compared to 2004 by 1.41, 1.56, 9.88 percentage points respectively, while registered in Gorj county compared to other counties, a reduction of 12 85 percentage points.

Given that Valcea relies most on extensive natural potential, directions of rural tourism development must find alternatives that lead to attraction of funds and creation of a diversified anthropogenic potential, enabling sustainable development of this type of tourism.

Caras-Severin, Arad and Hunedoara counties represent the West region and in 2000, includes some rural touristic accommodations that enable the practice of this form of tourism. In 2001, there are 25 units in Timis county, across the region, at that time, represented 64.10% of the total, the remaining percentages belonging to the other three counties. The structural situation changes in the

year 2012 when Timișul lose significant percentage (51.6) in favor of other counties, Hunedoara county recording increase of 10.05 percentage points, Arad County with 15.63 percentage points and 25.92 percentage points Caras-Severin.

The attitude of communities, the level of civilization are significant advantages towards raising the standard of sustainable development of rural tourism which should adequately modeled and targeted tourism market requirements

For the last BI ranked, which corresponds to a significant number of small rural agro tourist boarding houses, the supply compared to other regions have established share between 0.13% (2012) and 0.74% (2008). Conditions and context of rural touristic supply (small area compared to the other regions, lowland area, bordering the capital of Romania), led to the placement of this area in the last step but a strategic organization and managerial adequate and sustained strategy can lead to significant insights rural development in terms of tourism supply and sustainable development with it.

The many agro tourist boarding houses in Central region leads to a large number of places supplied, aspect which shapes the possibility of

getting of the first place in the ranking of the structural capacity of existing rural touristic accommodation in Romania. Figure 7 highlights the oscillatory trend of diminishing percent on accommodation supplied, ranging from 45.68% in 2000 and 36.69% in 2012.

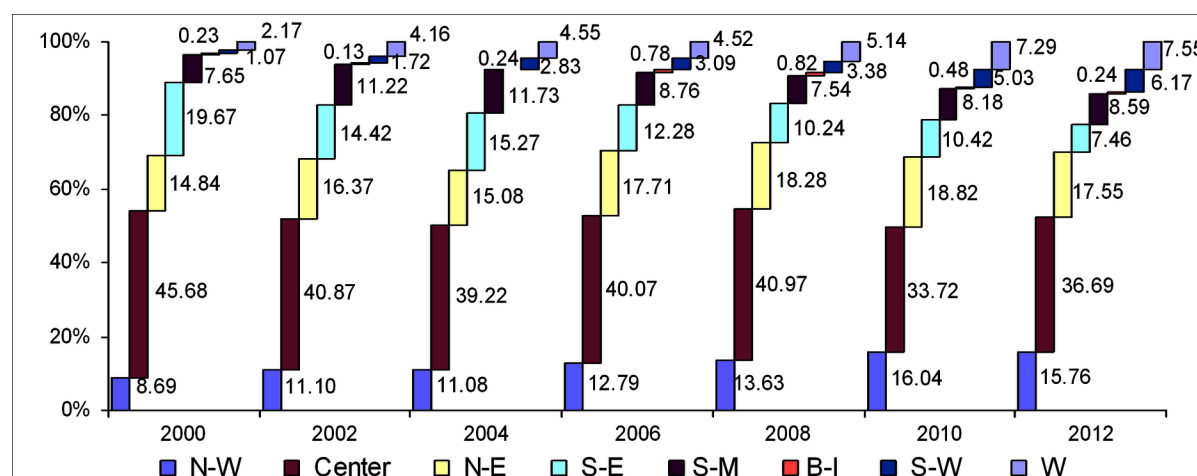
Regarding shares established through agro tourist boarding houses places supplied in each region in their total in Romania, there is a competition for the entire period of analysis (2000-2012) between the NE and SE regions. The contest for second and third place led to a changing each hierarchy placement, thus establishing percentage fluctuations during 2000-2012, ranging between 14.66% (2001) and 19.64% (2011) for the region North-West and between 6.70% (2011) and 19.67% (2000) for the South-East. region.

Dispute fourth and fifth places is given between North-West region, which corresponds to a percentage range between 8.69% - 15.76% (in 2000 and 2012 respectively), and South-Muntenia with a percentage distribution between a minimum of 7.54% set in 2008 and a maximum of 11.73% recorded in 2004.

The same two regions (South-West and West) compete for 5th and 6th place, in the supply of

Figure 7. Tourist accommodation capacity current structure, on regions of development of Romania, during 2000-2012

Source: authors own computation based on NIS (2013)



accommodation in the areas referred to all places Romanian agro tourist boarding houses. Structural percentages established are close in value to those established for agro tourist boarding houses: between 1.07% (2000) and 6.17 in 2012 for the South-West region, ie the region of West between 2.17% in 2000 and 7.82% in 2011.

As might be expected, the last class is still BI, which corresponds to an insignificant number of places in rural touristic pensions compared to the total number of all regions is only 0.13% (2002) and 0.82% (2008).

The same trend of structural changes, as if the number of agro tourist boarding houses, there is the case of accommodation capacity in operation, showing small deviations from the percentage values for the indicator: established number of seats supplied by rural tourism in the eight regions of development of Romania.

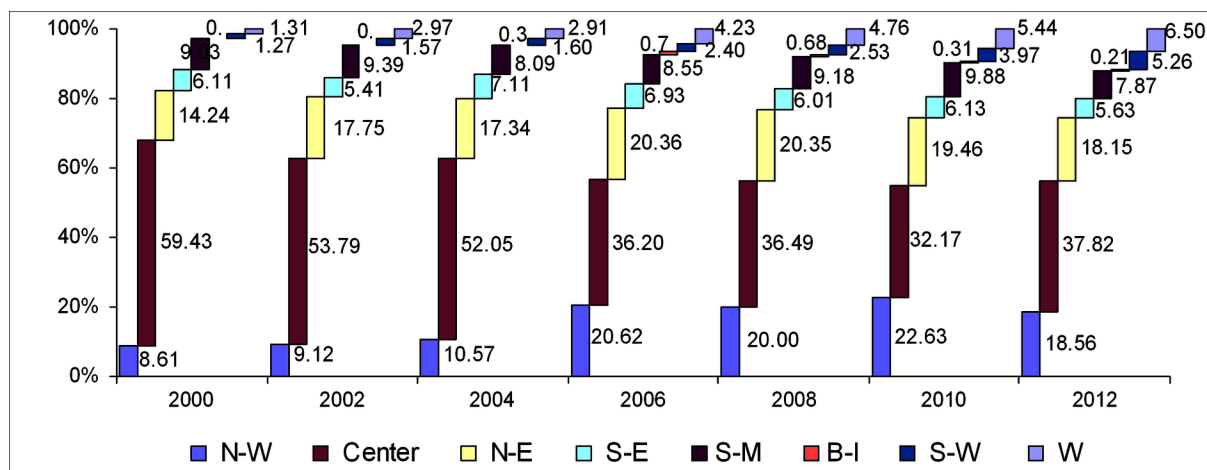
Figure 8. clearly highlights the structural developments established for accommodation capacity in operation corresponding to agro tourist boarding houses allocated in the eight regions of development of Romania.

Distribution of structural hierarchy of accommodation capacity in operation regions of development of Romania, with highs and lows percentage of the corresponding oscillation is as follows:

- First place occupied by the Central region with decreasing shares fluctuating between 59.43% (2000) and 32.17% (2012);
- Second and third place is occupied when the North-East region, when the North-West during 2000-2012 percentages ranging between 14.24% (2000) and 20.36% (2006) for North-East region and between 8.61% (2000) and 20.63% (2010) for the North-West region;
- Fourth and fifth place is disputed between regions and South-Muntenia with percentages varying between 5.33% in 2003 and 7.21% in 2005 for the first region, respectively the second between 9.03% and 10.51% recorded in the years 2000 and 2003;

Figure 8. Structure of accommodation capacity in operation on developing regions of Romania, during 2000-2012

Source: authors own computation based on NIS (2013)



- Sixth and seventh places are allocated alternatively be region West or to the South-West between 1.31% (2000) and 6.66% (2011) returning tourist accommodation capacity of the region W of the total of the corresponding pensions in Romania rural tourism, and between 1.27% (2000) and 5.26% (2012) for the South-West;
- Last place belongs to region BI with percentages ranging from 0.01% (2000-2002) to 0.71% (2006).

Accommodation capacity analysis of agro tourist boarding houses presented in detail on county, highlighted the similarities and disparities that are manifesting in relation to the distribution of agro tourist boarding houses on counties and regions of development.

Concentration and Regional Diversification of Rural Touristic Accommodation Supply

Results of the analysis of the indicators of rural touristic supply are the premises to study the concentration and territorial diversification manifested in Romania.

Quantification of territorial disparities is based on various methods known in the literature by using indicators such as: coefficient (index) Gini, Theil index Hoover index or Palma report or different percentiles reports, Lorenz curve, coefficient of variation, Hirschman index or Kolm report.

The applicability of these indicators is to adapt over time and space and different areas. Thus, targeting tourism literature are found Gini concentration ratios applied to predict the impact of the field and its role in foreshadowing flexible policies for developing tourist regions.

Julie Jie Wen and Corazon Sinha (2009) have analyzed the spatial distribution of tourism in China using Gini coefficient..Also, Miloš Bigovic used Gini coefficients to measure the concentration seasonal tourism in Montenegro, study high-

lighting the existence of a strong and consistent seasonality in this region (Bigovic, 2011).

However, the literature in the field presents Papakonstantinidis Leonidas, from quantifying income inequality, by applying the Gini indexes in the methodology to forecast the impact of tourism and development policy formulation in two of the most important tourist regions of Greece (Papakonstantinidis, 2012)

The study of the evolution of the three indicators and their corresponding structural fluctuations, on regions of development and counties in the period 2000-2012, led to obtain an overview of the Romanian tourism supply of accommodation. Trend changes, in time and space, has created framework necessary for the analysis of regional concentration and diversification of rural touristic supply in Romania, in order to shape a clearer image of the level of development of rural tourism relative to Romania's regional development strategy.

A first way of analyzing the territorial concentration of Romanian rural touristic supply is to determine the Struck concentration coefficients, at territorial development level, in the regions of Romania, whose evolution in the period 2000-2012 is shown in Figure 9.

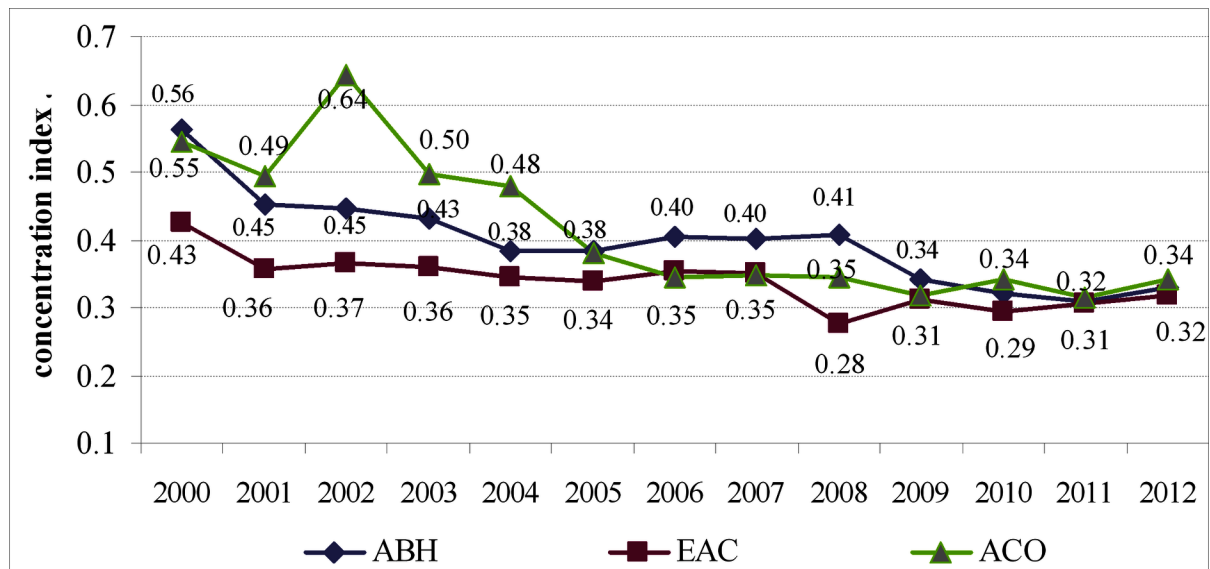
The number of agro tourist boarding houses, at the level of each region, has allowed determination of structural coefficients, from which the coefficients were calculated annual Struck concentration. Thus, it resulted that, during 2000-2012, the concentration of the geographical spread fluctuated from year to year, as a whole, resulted a trend of reduction from a maximum of 0.5626 in 2000, to a minimum of 0.3085 in 2011.

The same trend of reduced of territorial distribution concentration was identified at Romania level, both existing accommodation capacity and the accommodation capacity in operation, as follows:

- Data on existing accommodation capacity of agro tourist boarding houses by regions

Figure 9. Evolution of Struck territorial concentration coefficients of rural touristic supply during 2000-2012

Source: authors own computation based on NIS (2013)



of development have concluded to a concentration high enough, between a maximum of 0.426 in 2000 and 0.277 minimum in 2008;

- Significant fluctuations due to territorial distribution of accommodation capacity in operation, led to variations of the coefficient of concentration from a maximum of 0.644 in 2002, and a minimum of 0.313 in 2009.

In the whole, in Romania, compared to territorial regions of development, the rural touristic accommodation supply tends to a uniform territorial distribution, the concentration decreasing significantly in the period 2000-2012. The manifested trends was determined both by the intense and accelerated development of rural tourism since 1990, implicitly and after 2000, when it placed increasing emphasis on active and direct contact between man and nature in the context of high-level manifestation of pollution and stress, as well as by the particularities of this kind of tourism,

which creates financial advantages over the others, in the crisis triggered and manifested after 2008.

For a more detailed analysis of regional concentration, starting from distributions of the number of agro tourist boarding house, of the existing accommodation capacity and of the accommodation capacity in operation by county, by applying the trapezoidal method were determined Gini concentration indices, respectively indices of diversification (Agresti value), the of 2012.

In the year 2012, the distribution of the number of counties by agro tourist boarding houses in Romania shows that, out of the 40 counties, in the majority (72.50%) were between 0 and 54 agro tourist boarding houses, in 20% were between 55 and 109 agro tourist boarding houses, while only in 7.5% of their total there are more than 109 agro tourist boarding houses (by 2.5% for each of the following three ranges of values 110-164, 165-219, respectively, 220-274 agro tourist boarding houses). Corresponding to this distribution, was resulted in a low concentration level, and highlighted by the value of 0.368 of

concentration index. The same conclusion is underlined by Agresti value 0.4326 (corresponding to the distribution of the number agro tourist boarding houses by counties) led in relation to the maximum value (0.8). So the inequality between counties in terms of the number of agro tourist boarding houses is reduced.

Distribution of counties by existing accommodation capacity of agro tourist boarding houses in Romania in 2012 follows the number of agro tourist boarding houses in the sense that:

- 75.00% of all counties have existing accommodation capacity between 0 and 881 places;
- 17.50% of all counties have existing accommodation capacity between 882 and 1761 places;
- 7.50% of all counties have accommodation capacities over 1761 places (by 2.5% for each of the following three ranges of values 1764-2645, 2646-3527, respectively, 3528-4409 places)

Given the distribution of counties in groups by existing accommodation capacity supplied by agro tourist boarding houses, using the same method, resulted in a concentration index value of 0.6291 which indicate a significant concentration of existing accommodation capacity in counties of Romania. This can lead to disparities and therefore requires the application of appropriate mitigation strategies, with positive effects on the performance of rural tourism activities and tourism in general. On the other hand the value Agresti is 0.5051 and compared with the maximum value of 0.8, highlights the existence of disparity and widening trend of concentration.

Considering the territorial distribution of the values of the third indicator which characterizing the supply of rural touristic accommodation, was determined the distribution of counties by accommodation capacity in operation in agro tourist boarding houses in Romania in 2012, resulting:

- 77.50% of all counties have accommodation capacity in operation between 0 and 307186 places-days;
- 15.60% of all counties have accommodation capacity in operation between 307187 and 614373 places-days;
- 7.50% of all counties have accommodation capacity in operation over 614373 places-days (by 2.5% for each of the following three ranges of values 614374-921560, 921561-1228747, respectively, 1228748-1535935 places-days).

Starting from these, has result for concentrated index the value 0.3605 indicating a low concentration degree of accommodation capacity in operation of agro tourist boarding houses from Romania. Also, since Agresti value is 0.3751, it follows that there is a low degree of diversification in relation to the maximum value of 0.8, the disparities between counties in terms of accommodation capacity in operation of agro tourist boarding houses is lower than the others' two indicators analyzed.

In general, given the indicators those characterize the rural touristic supply, in the year 2012, resulted a breakdown in counties with a relatively low concentration, of the number of rural tourism and accommodation capacity in operation. The exception is existing accommodation capacity, which has a county distribution, not very favorable for future work of the Romanian tourism, requiring measures to mitigate of regional disparities.

The same "pattern" fall and the results of diversification indicator for number of hostels and accommodation capacity in operation, which shows a reduced disparity between counties, which means a distribution that tends toward uniformity, and that would allow maintaining a certain level the policies imposed by the regional development strategies for these two indicators, while for the existing accommodation capacity should be approached another development strategy.

FUTURE RESEARCH DIRECTIONS

The results of structural analysis on region, and of agro tourist boarding houses within the counties of the eight regions, indicates the distribution of the supply of the tourist accommodation area, and the degree of exploitation of tourism potential available to each. In this context it may establish implementing strategic measures, recovery and development of rural tourism potential which to run on the background of sustainability process

The National Strategy for Regional Development, which was outlined and applied on Regional Development Plans and the National Strategic Reference Framework 2007-2013, rural touristic accommodation supply analysis outlines the sustainable development level of this type of tourism and the possibilities that are foreseen in this direction.

In this context it is necessary that decisions and policies implemented through regional development strategies for development of agro tourist boarding houses and of accommodation capacity in operation to be performed within the same limits and coordinated. Regarding existing accommodation capacity, resulted a pronounced inequality in the territorial distribution of its, requiring the development and implementation of specific policies.

Currently, the basic element in the reform process, aimed at future territorial planning in Romania it is applied Strategic Concept of Territorial Development, Romania 2030 (www.mdrt.ro, 2013). It has the overall objective, affirmation process of the continental regional identity, of its role in the region, increasing spatial cohesion, the competitiveness and sustainable development of Romania that lead to ensuring Romania's integration into EU structures.

The Ministries policy advice to programs and strategies could affect tourism (Stănculescu, 2006). So, established strategies must lead to the outline of the substantiation of territorial development, supporting balanced development

of Romania. This context created can stimulate partnerships, associations or collaborations at local, regional, and inter-institutional agreement, to promote and implement regional strategic projects.

Integrated territorial development perspective aims to establish and implement modality to use national potential with the aim eliminate development gaps. In this framework can be placed in the future and development of regional rural touristic supply, outlining a research direction to follow the effects of Romania's regional development strategies.

In relation to determining the degree of territorial concentration of Romanian rural touristic supply is required in the future adoption of strategies for mitigating regional disparities manifested positive impact on economic growth both in the rural communities that especially in Romania, all under the spectrum sustainable rural resources.

CONCLUSION

The study includes the analysis of assessment results of the trend, across time and space, of the number of agro tourist boarding houses, the existing accommodation capacity and the accommodation capacity in operation as well as the results of determination of the territorial concentration of these indicators, which can be a start point to develop and implement strategic decisions in the regional development of Romania.

Regarding to the accommodation supply of rural tourism in the context of sustainable development trend we conclude that, after 2000, when it put more emphasis on the practice of rural tourism as a result of changes in contemporary human life is impressive, the development process, fairly sustained of supply of rural tourism accommodation. This trend is the result of the support at national, regional and local level through the application of regional development strategies based on the one hand per funds that were needed in this direction,

as well as maintaining a balance regional supply that not affect human communities in these areas.

The same time, the analysis of the indicators reflecting the supply of rural tourism accommodation through its peculiarities revealed that the economic crisis has had a relatively small impact, which occurred mainly in the first year after its onset, in 5 of the 8 regions of development in Romania, where, except for the Bucharest-Ilfov region, the decrease rates ranging from 0.38% in the Northeast region, and 10.06% in the South-West Oltenia. But, on the existing accommodation capacity of agro tourist boarding houses in the Bucharest-Ilfov, the impact of economic crisis was significantly (-41.69% in 2010, and still -21.38% in 2011), so in 2012 the accommodation capacity in operation has halved (44.54%) than the one registered in 2009.

The evolution of rural touristic supply in each development region has known increases and decreases in the values of evaluation indicators of rural tourist during the entire period of analysis 2000-2012. The study results show that the highest average growth rates for each indicator were recorded in the regions of development South-West Oltenia and West (average increases ranging between 25.99% and 37.23%), while lowest increases average were recorded in South-East development region, at the indicator the number of agro tourist boarding houses, and at existing accommodation capacity (with average rates of 7.77% and 9.39%), and in the Center region, at the indicator the accommodation capacity in operation (15.13%).

The disparities between regions with high natural supply and with low natural supply are more obvious among counties in the developing regions. Significant to note is that these disparities are still quite low, being due mainly to features of rural touristic supply (traditions, culture, history of rural localities), as confirmed by the results of the concentration coefficients Struck, the indices of concentration Gini, and the diversification-value Agresti.

The rural touristic potential, specific to each development region, form the reference framework in regional development strategies. Starting on these can be established opportunities targeted to local and regional economic growth, as the result of exploitation of natural, cultural and historic potential for the decrease of the disparities between rural areas intended for tourism.

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KEY TERMS AND DEFINITIONS

Agro Tourist Boarding Houses: Accommodation structure, for temporary tourists' installation, located in rural areas, with the capability to provide their meals and specific activities of this type of environment.

Existing Rural Touristic Accommodation Capacity: The number of seats available by agro tourist boarding houses in order to tourist accommodation.

Regional Concentration: Targeting mainly towards a region of the distribution of activities or elements that characterize an industry such as tourism.

Regions of Development: Territorial units established at national level as a result of an agreement between the county and local governments, given certain characteristics, officially established with purpose of developing and implementing strategies or development funds.

Rural Tourism: Is that form of tourism in which tourism services and activities take place in rural areas where there is prominent, the interdependence of the three basic elements still: nature, community, and traditional food.

Rural Touristic Accommodation Capacity in Operation: Statistical indicator assessment offer accommodation, representing the number

of seats offered by agro tourist boarding house in relation to the number of days of their operation in a predetermined period.

Sustainable Development: Conducting activities aimed at progress, but having regard to saving resources and protecting the natural environment so that future generations can dispose of them in their turn.

Chapter 8

Territorial and Agricultural Resources from the Rural Vrancea Area with Decisive Role in the Development of the Local Economy

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ABSTRACT

Vrancea County is a predominantly rural area in which natural components are harmoniously combined in three major relief steps, which require a specific functional zoning from the economy point of view. Given the fact that mineral resources are found in limited quantities, the solution to the economic development of local communities in rural areas is the rational use of land resources and agriculture and zootechnic sector development, to which it can be also added the tourist resources, so as to exceed the subsistence level and to add extra value to the local area. This chapter focuses on the analysis of qualitative and quantitative indicators that reflect the current state of the resources of the land and agricultural background, their evolution over time, but also try to explain as more realistic the current status of the Vrancea motherland in a county and regional context.

INTRODUCTION

To identify the most appropriate solutions to the problems facing the current local economies, both in a short term and in the future it is necessary to notice and analysis from synchronic and dia-

chronic perspective of all major socio-economic elements which best defines the current state of the local economy.

Using the archive information, but also the time periods 2006-2011, obtained from the National Statistics Institute (Romanian), the Vrancea

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County Directorate of Statistics, the Statistical Yearbook of the county as well as the City Records or other bibliographic sources, analyzing these data and calculating the main indicators of the agricultural sector we have tried to emphasize the evidence which is the current state of economic development in rural areas and the main elements that must be improved in the interests of economic growth that can improve the quality of life in the rural environment.

Due to the existing agricultural and forestry resources, the economic profile of the agricultural base and wood exploitation, plus traditional industrial branches poorly represented by the food industry, the raw processing of the wood mass and the craft industry. On the Sub-Carpathian glaci space stretches one of them most important wine-producing areas of the countries, cultures that extend right down in the plain lands, favoured by Southern exposure, the wines from the vineyards of Odobesti, and Cotesti being compared in their quality with the French ones.

BACKGROUND

Compared to the national economy, within the local economy each village may be considered as a nation and each household as a businessman (Samphantharak & Townsend, 2008).

Some experts have the opinion that the dynamics of the regional or local development is not primarily related to the factors of production. The ability of a country (administrative units) to attract and to capture household income is the basis of the current residential economy, which changes today the destiny of several communities offering at the same time development opportunities for territories whose productive economy is weak or non-existent.

Thus, for many communities, it appears the problem of attractiveness, rather than the of competitiveness, being adopted now the most suitable strategies focused on territorial attractiveness,

with respect to the services offered to citizens, the quality of life, the development of the natural environment built, of the cultural heritage, etc. The territories that manage to combine productive economy by attracting and maintaining residents income can be considered the most dynamic. The ideal would be to maintain the productive economy and to promote efficient the residential economy.

Wendell Berry (1996) stated in his essay that it's time to be seen the difference between a local small business that must protect the fate of the local community and a large corporation, absent from the lives of the community, but which has the main purpose to ruin the local community. The idea of a local economy is based only on two principles: of the neighbourhood and subsistence. Into a viable community, neighbours are asking what they can do or provide for one another, and they find answers that local conditions may grant.

The role of the local economy is fundamental. Strong local economies make regions and communities much stronger. This often translates into improved the quality of life for those who live and work in the communities (<http://www.learningsustainability.com>).

The economic policy often determines the strength of the local economies. Under the conditions of globalization the mobility of large traders (multinational companies) often have low interest in increasing the quality of life of the communities from the profits are extracted. These big profits tend to focus on global interests and not for the communities in which they operate; the risk is emphasizing the differences between the rich and the poor. Therefore, preventing the emergence of social disparities can be done by encouraging the growth of incomes policies in the local community, attracting profits within them, creating strong local economies through a sustainable policy (Nedelcu, 2013).

In the concept of rural development of the European Union are outline as main targets and goals in the future of rural regions, the maintenance of a viable rural community "unaltered", by

maintaining the culture and traditions; promoting economic and social cohesion, maintaining and creating jobs; encouraging the diversification process and the improvement of infrastructure facilitating access to new technologies; increasing the quality of life and preservation of the environment (Cândeia, Simon & Tătaru, 2007).

MAIN FOCUS OF THE CHAPTER

Issues, Controversies, Problems

The rural socio-economic area of Vrancea County is closely tied to the natural space, without which economic components might not be functional. That's why I considered it necessary to address some general character relating to localization, the natural frame and the influence of environment components over the local economic development.

INFLUENCE OF NATURAL ENVIRONMENT COMPONENTS OVER THE LOCAL ECONOMIC DEVELOPMENT

Located in south-eastern Romania, at the outside Curvature Carpathians the Vrancea County represents Romania in miniature, in which natural space descends in steps, differencing its self in functional areas specific to each step of the terrain: mountainous zone (Vrancea Mountains), in which economic activities are related to forestry, herding and tourism; the hillside, Sub-Carpathian, in which the main economic activity of the inhabitants is the animal husbandry and fruit growing dependent on a fragile environment due to clay substrate; the glacis zone and the high plain which whom the southern exposure has favoured the development of wine-sector products and low plain area, framed by the Siret and their tributary stream, both favourable for agricultural activities, as well as other industrial or tertiary activities.

The geographical position of the territory prints to the Vrancea County the general characteristics climate temperate continental-moderate, with local influences due to physical and geographical conditions, on the general background of the general air circulation which runs under the action of principal barice systems (Tătaru, 2008).

The topo-climatic characteristics are determined by the physical and geographical elements influenced by altitude (arrangement of relief in steps from West to East), alternating hills and Sub-Carpathian depression (creates favourable conditions of thermal inversions) the slopes, downhill, the corridors of the valley, vegetation that require certain adjacent surface features and with an important role in the distribution of solar energy on the surface of the basin. The changes over the active surface are caused by anthropogenic activities, particularly changes to the vegetal carpet through deforestation and fallows for increasing the agricultural surfaces.

The water resources from the analysed space are provided by surface waters, mainly from rivers, stagnant water volume being insignificant and form groundwater and phreatic. Flowing waters belong to the hydrographical basin of the Siret River (Putna, Susita Trotus), the debits distribution and of the river flows during a year being different depending on rainfall contribution to rivers feed, feed which is more than 80% from rainfall, the remaining 20% being ensured in the mountain sector of snow feed, and in the plain sector from the subterranean sources (The System of Water Management Vrancea [SWM], 2013).

The bio geographic are differentiated from West to East, starting with the subalpine up to the meadow, with plant associations and natural faunal kept only in less accessible areas and protected by law.

On many of the intense eroded lands or damaged by heavy landslides, but sometimes on the exploited forests place, forest plantations were made with different species from those who formed the natural vegetable carpet (especially

pine groves, but also red ash wood species, acacia, willow and at higher altitudes of spruce and larch), by recording an artificial geographical landscape (Improvement Territorial Plan of Vrancea County [ITPVC], 2011).

Humanizing influence has been felt both in the mountain and Sub-Carpathian landscape on the slopes with gentle gradients where instead of forest areas have arisen pastures and meadows from the need for the population to expand agricultural areas, but mainly in the plain sector, where natural meadows have been completely fallowed making way to the agricultural crops (Tătaru, 2008).

Although it has a relatively low surface, the Vrancea county territory has a bedspread of varied and complex soils, owed to the diversity of the geographical conditions from one sector to another. It is possible to meet steppe and forest steppe characteristic soils in the plain region and specific forest soils in the region of hills and mountains.

The lands use mostly respect the quality classes resulted through reliability, but there are still surfaces where the subsistence agriculture is practiced on lands that could be much better exploited from forest point of view. Subsistence agriculture rise poverty and poverty maintains subsistence. It's a vicious circle from which it can come only through a proper management and use of soil resources (Tătaru, 2008).

The subsoil resources are few and in small quantities. They are located in the Sub-Carpathian hills, being represented by salt, construction materials, clays for ceramics, mineral springs and in smaller quantities - earth oil, natural gas and coal (coal layers of the Black Valley, Ramnei Valley, Vulcaneasa, Reghiu - Poienita, Luncile, etc. have similar qualities to brown coal from Comanesti). In May 2007 it was discovered an important deposit earth oil and gas at Torcesti probe from Adjud locality. The gas deposit has a volume of 130,000 cubic meters of natural gas per day and 11 tons of condensate gas. The subsoil resources are in limited quantities it is necessary the devel-

opment of trade flows in other regions, in order to support economic activity. Scanty resources are those energetic (coal, oil, natural gas), which are extensively applied in economics, being away from meeting the requirements of the county (ITPVC, 2011), that is why we believe that the land resources are one of the most important resources that can sustain and vitalize the local economy.

THE STRUCTURE OF LAND FUND AND OF AGRICULTURAL ACTIVITIES

Research conducted shows that the economy of the Vrancea County is a rural one, oriented towards an agrarian economy, of subsistence and with a degree of urbanisation of less than 50%. This rural-agricultural character was reflected in slower growth of county economy, compared to the national average in the period 2003-2006, and especially after this year due to the economic crisis and declining investment values. The character of the county-level economy is given by the agriculture (45.5%), industry (20.3%) and trade (9.8%) (ITPVC, 2007).

Agricultural Resources and Agricultural Characteristics

The agriculture is influenced by natural conditions, especially by the earth (Toderoiu, 2002). In his quality of main production asset, the earth is much differentiated as fertility, position etc. which put its mark on the economic and social efficiency of resources and factors of production systems (Toderoiu, 2002).

The features of the natural Vrancea frame have generally allowed the practice of agriculture in ancient times. Depending on the type of terrain, lands are associated after their suitability with a particular type of culture. Thus, the mountain sector with high relief, fragmented, with low fertility soils, cool and humid climate have favoured the development of pastures, hayfields and forests

in particular, at the expense of arable surfaces, present only in contact depressions, on the small surfaces; the Sub-Carpathian sector with a less tall terrain, with broad valleys and terraces, it meets favourable conditions to fruit tree cultivation; the Sub Carpathian glacis obtained favourable conditions for vine culture, ancient culture, geto-Dacian tradition, causing the presence here of the largest vineyards in the country; and last but not least the plain sector, where the arable areas have the largest expansion to the detriment of other agricultural lands (Tătaru, 2008), Figure 1.

The main problems faced by this sector are related to inefficient agriculture, an excess of manpower, in by using the mostly subsistence agriculture, for own use.

Land Resources

The Land fund represents the totality of lands (including those covered with waters) within a territory. After its purpose, the land fund is made up of: land with agricultural purpose (arable, pasture and hayfields, vineyards, orchards and nurseries etc.); forests and other lands covered with forest vegetation; construction, roads and railways; water surfaces and swampy area; other surfaces.

The Land Fund is the main factor of production in agriculture and forestry, and implicit the base of raw materials for a large number of industries.

Within this framework, prevention of soil degradation, protecting and improving the land fund as well as the increased efficiency of use it is a duty for all holders of land, regardless of the base title on which there were obtained (Law no. 18/19 February 1991).

Land-use structure is closely related to both natural components positioning, especially terrain, as well as the existence of fitting works planning and land improvement. The variety of categories of service of land fund represents a real opportunity for progress of viable and profitable economic activity in various sectors of the rural economy of the Vrancea County.

In Vrancea county, the total surface of the land fund in the year 2011 was of 485 703 ha, of which 61% private property, which represents 2,03% of the Romanian land fund. Between 2006-2011, the land fund surface had a constant evolution, without major changes, with small decreases of living areas, orchards and forest areas (Table 1). Slight increase was registered in arable and grass-covered areas.

At the end of 2011, the share of the private sector was dominant in the case of agricultural land (100%), waters and swamps belonged in a significant proportion (87%) of the public sector while forests had a relatively balanced structure on the three forms of ownership (private property, 41%, common property 31% and public property 28%), Figure 2.

Agricultural lands have a share of 52,55% (in 2011) from the total area of the land fund, a share with 12,75% higher than the area occupied by forests (Figure 3). The dynamics of surface remains nearly constant, with a slight increase of arable area, of 100 ha within the analyzed period and a decrease of 417 ha of vines areas. Spatially, the share of farmland space gradually decreases from East to West in favour of forest areas.

Arable lands have a great share of the total area of land fund (33%) while the forests and other lands with vegetation, occupy 43% of the total (Figure 4).

The share of agricultural lands of the total area ranging from 14.3% in the township Mera and 94,8% in the township Cioresti. High shares (over 90%) of the agricultural area still hold 6 communes of which Obreja, Slobozia Ciorasti, Tataranu, Milcovul, Balesti and Gologanu. The lowest percentage values (under 20%) belong to the municipalities located in the hilly and lowland areas such as Nereju, Paulesti, Tulnici, Nistoresti, Andreiasu de Jos, Jitia.

On average, the area of the agricultural land on the family household is of 2,28 ha, on the administrative units being between 0.72 ha minimum amount in Brosteni and 8,27 ha in Slobozia and

Figure 1. Land use map in Vrancea County (processing after INCD – URBANPROIECT, PATJ VRANCEA)

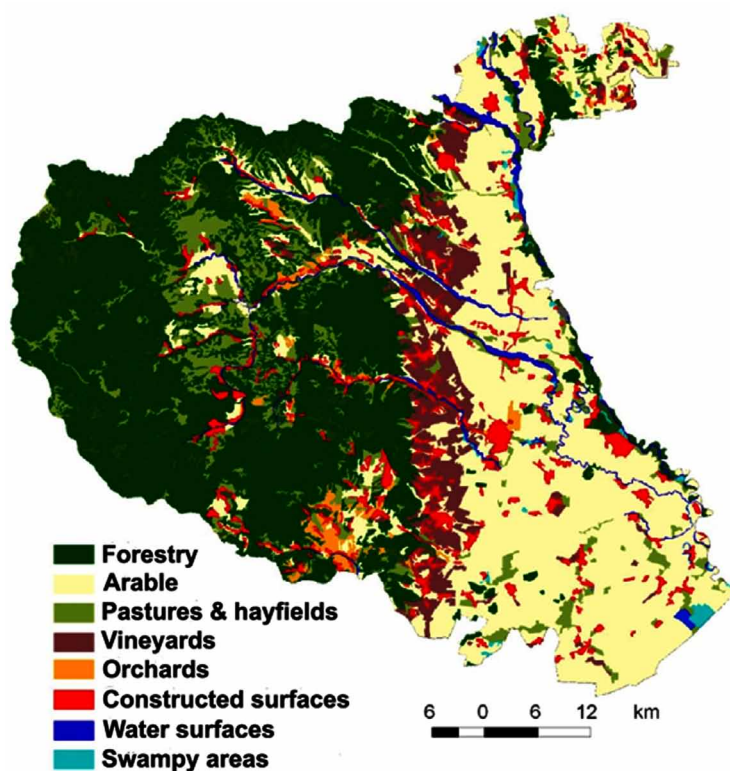


Table 1. The structure of the Vrancea County land fund between 2006-2011 (ha)

Service Category (ha)		2006	2007	2008	2009	2010	2011	Dynamic
Total surface		485703	485703	485703	485703	485703	485703	0
Agricultural surface		255666	255626	255462	255417	255366	255279	-387
of which, by category of service:	Arable land	148111	148112	148038	147956	148203	148211	100
	Pastures	43719	43720	43713	43708	43708	43708	-11
	Hayfields	32777	32777	32908	32904	32904	32904	127
	Vineyards	27236	27325	27104	27141	26927	26819	-417
	Orchards	3823	3782	3699	3708	3624	3637	-186
Forests and other lands covered with forest vegetation		193291	193289	193286	193286	193286	193326	35
Water surfaces and swampy areas		13894	13894	13894	13894	13894	13894	
Other lands		22852	22852	22852	22852	22852	22852	

Source: Statistical Yearbook of Vrancea County, 2012; calculated data

Figure 2. Vrancea County. Main categories of land use forms of ownership (2011)

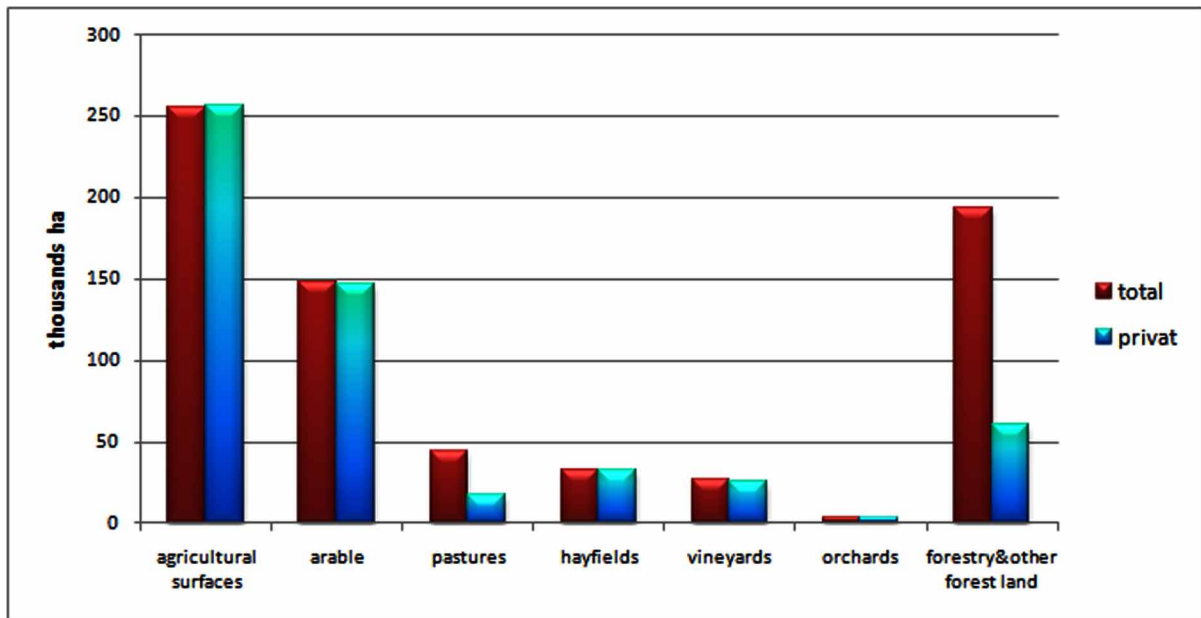


Figure 3. The evolution of agricultural and forestry areas in Vrancea County (2006-2011)

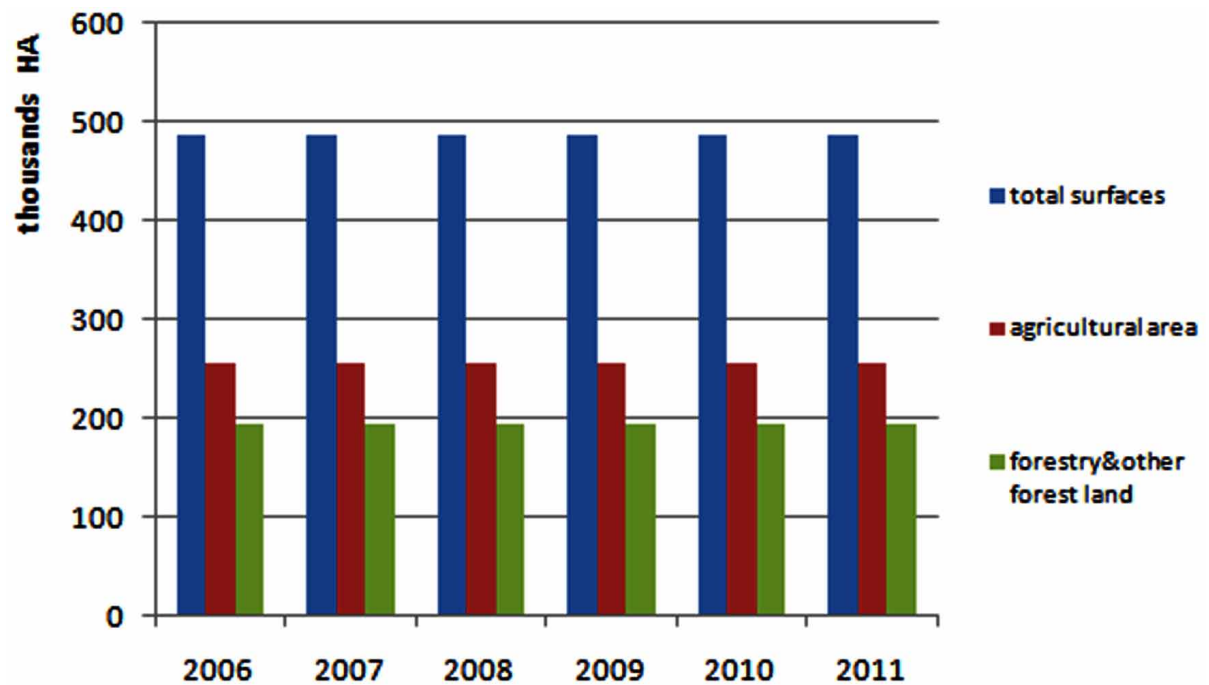
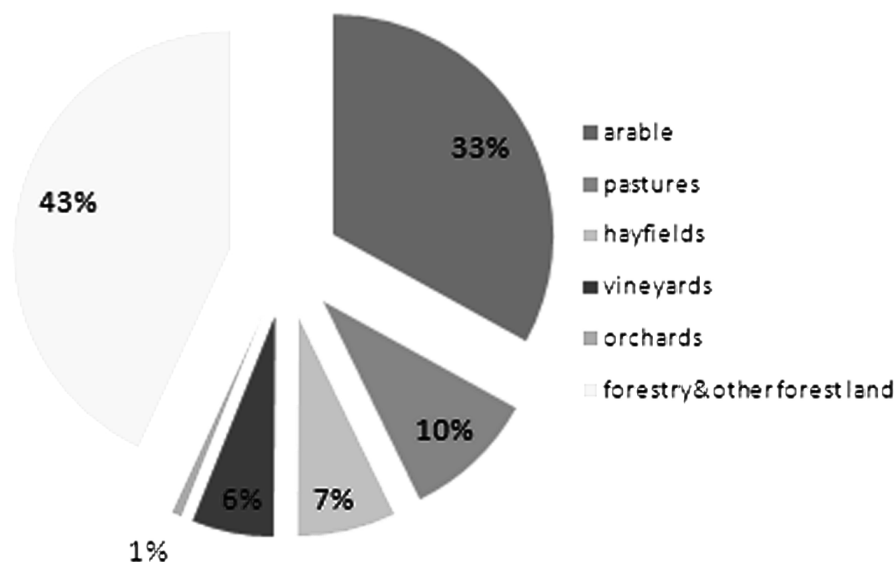


Figure 4. Vrancea County. The share of lands in total land fund (2011)



Ciorasti. These values reflect the fact that does not meet the conditions for practicing industrial agriculture because of the high degree of fragmentation of family property, especially after the application of the Law 18/1991. In this sense, the predominant form is the traditional agriculture, based on an elementary technique, which is based on products necessary own consumption.

From the analysis of statistical data shows that the structure of the agricultural lands is in close connection with the relief, the special compliance being evident: predominance of the arable in the plain, vineyards and orchards in the high plain, pastures and hayfields in the hilly area.

Thus, the *arable lands* hold the highest share in the structure of agricultural lands occupying 65% of the total agricultural area. The biggest extension of arable lands is met in the Siret Plain, the surfaces reduced to the West toward the contact and hill zone.

In the piedmont area and in the Sub Carpathian depressions and between hills, predominant are the share between 20-40% and even under 20% of the arable land. Are underlined townships from the Sub Carpathian depressions with shares under 10% (Bordesti – 2.5%, Andreiasu de Jos – 3.3%,

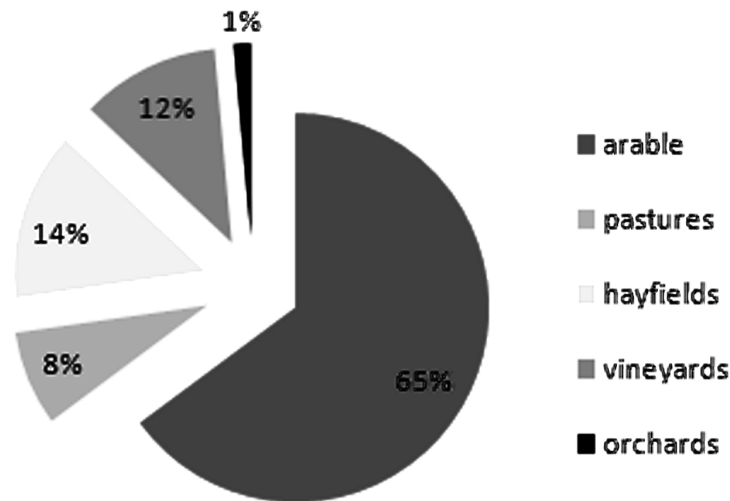
Dragosloveni – 3.7%, Nistoresti – 4.4%, Vintileasca – 6.0%, Chiojdeni – 8.2%, Nereju – 8.4%, Tulnici – 9.7%). The arable lands have a frequency over 50% of the agricultural surface in the case of 30 townships (46.9% of the total number of townships that belong to Vrancea county). The highest shares (over 85%) are registered in the case of 7 townships (Slobozia Ciorasti – 89.7%, Vanatori – 89.5%, Ciorasti – 88.6%, Golesti – 87%, Tataranu – 86%, Maicanesti – 85.6% and Pufesti – 85.4%)

A large share of the total area of agricultural land has the *pastures and hayfields*, which integrates 22%, which shows the great importance which give the inhabitants to the animal husbandry.

Their surface rises towards the West, and in the Sub Carpathian depressions pastures and hayfields become prevalent occupying between 60 and 80% of agricultural land, while the lowest areas, under 10% is registered in the townships located in the plain (Figure 5).

Pastures and hayfields occupy areas of over 90% in 6 townships in the western part of the county: Andreiasu de Jos, Tulnici, Nistoresti, Barsesti, Nereju, Jitia.

Figure 5. Vrancea County. The share of agricultural lands in the whole agricultural area (2011)



The average surface of the pastures calculated for all the townships is of 620 hectares, close to the value of the 602 ha of the hayfields.

Fruit lands represent only 1.8% of the agricultural area, with a negative dynamic in the last 20 years as a result of global deforestation, either because of a change of category of use of the land, whether due to aging of fruit species without being replaced.

The dominant species belong to the plum (Putna Basin), apple, walnut (the Susita basin), cherry and wild cherry (Ramnic-Ramna basin).

Unfortunately nurseries do not cover enough the deficiency of the fruit area. The lack of collection centres or controlled heat deposits have contributed greatly to the limitation of these areas. The average surface overall administrative units is 51.77 ha, and shares of more than 5% are found in only 5 townships, of which the maximum value of 11% of the agricultural area, in the Chiojdeni township of the fruit basin Ramnic-Ramna.

There are also townships where there is no value of fruits areas, which are generally located in areas

such as agricultural crop or wine-growing areas such as: Balesti, Vulturu, Tamboiesti, Vartescoiu.

The occupied areas with orchards do not constitute in the fruit centres because they occupy very small and isolated areas, belonging to households of the population, many of these occupied areas with orchards being replaced by other types of crops or are interspersed with vineyards, pastures and hayfields.

The wine-growing lands represent approximately 12% of the total agricultural area of Vrancea County, the wine-growing area comprising a continuous surface in the piedmont between Zabrait and Ramna and differencing its self the vineyards: Panciu, Odobesti, Cotesti and wine-growing centres with smaller surfaces: Paunesti-Ruginesti and Tamboesti-Bordesti.

The largest area of land occupied with grape vine is in the Cotesti township, of 1 955 hectares which represents a share of 59.7% of the total agricultural area of the township. However following the territorial distribution it is noted that the largest share in the total agriculture is held by the Vartescoiu township (68. 6%), followed

by Jaristea (63.84%). The rest of the townships with wine-growing tradition hold areas with values between 30 and 60%. Townships without tradition in viticulture have occupied areas with grapes vines in percentage between 1% and maximum 5%, while 8 of the 68 Vrancea townships have shares of 0% thanks to their specialization in other economic activities conditioned to terrain.

Considered as “base of agricultural production, which depends on public nutrition, the land influences the economic activity in agriculture directly and indirectly, as the main asset of the labour and as an important element of capital” (Zahiu, 1993, p. 12). The agricultural land (fund land) is suitable for “the possibility of intensive use, but also the need for the involvement of its rationality in agricultural production” (Zahiu, 1993, p.12).

Plant Culture and Agricultural Production

Plant Field Culture and Vegetable Production

Is performed on large surfaces mainly in the plain sector, being crops with high productions for commercial purposes and on small areas in other sectors for household consumption. The uneven distribution of arable areas taken in use determines to an overall rural level the practice of a subsistence agriculture, the total food resources preventing the marketing of products on the external markets.

The arable areas suitable for main crops fields, wheat, corn, vegetables, potatoes and fodder plants are taken into use taking into account the existing of natural conditions, in particular the climate, but also for crop rotation and the moment decision of the farmers for that type of crop, involving at the same time the economic factors related to seeding costs, lack of agricultural equipment, the possibility of selling products on the market, demand, and so one.

Due to these factors the dynamics of arable surfaces to be used is in an ever-changing with direct implications on vegetable production (Table 2).

The total area cultivated with crop plants has experienced positive growth over the period 2006-2011, with small fluctuations between the years 2007-2010 (Figure 6). During the analysis the area occupied with growing plants increased with 5 075 ha, from which the greatest increase as known the area occupied with cereal grains, particularly wheat and rye, followed by vegetables and potato culture. The negative dynamics has known the classical oilseeds crops which have restricted the areas due to their replacement with rape seed crops.

The largest arable area in 2011 has been occupied by the cereals for grains, including 68.41% corn, 4.73% wheat and rye and 3.02% barley and two row barley (Figure 7). Increasing areas of crops for cereal grains caused positive dynamics to the vegetable production, increase over 40% registered in the wheat production and over 37% of corn production (Table 3).

Oilseeds plants have been cultivated on an area of 10% of the total, and vegetables that cover the consumption requirement cover a surface of 5%. The lowest shares belong to sugar beet and potatoes which do not attain the percentage of 1% of the surface. The production of sugar beet has grown in 2011 after that between 2007-2010 the whole surface became a disaster area, decreasing instead the potato production, even though the crop area increased.

In the plain and hill areas, it can observe a diversification of crops. The maize prevails regardless of region.

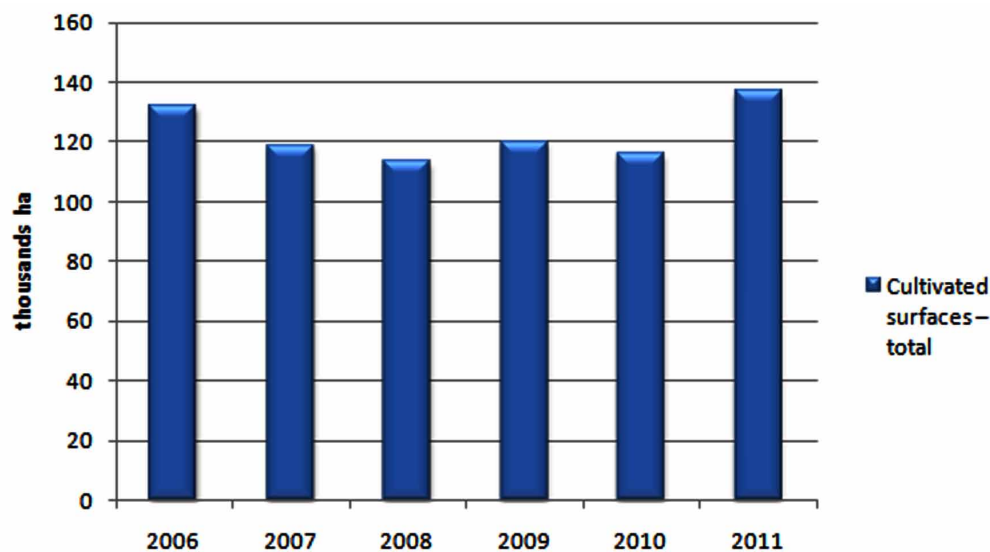
The areas occupied with corn decreased as a share between 2006-2011, with 3 per cent in favour of wheat and rye crops due to the fact that the production of wheat has become a disaster area in 2007, cultivated surface being required to be increased in order to recover the deficit of production (Figure 8, Figure 9). Average produc-

Table 2. Cultivated agricultural areas in Vrancea County, between 2006-2011 – main crops (ha)

Main Crops (ha)		2006	2007	2008	2009	2010	2011	Dynamic
Cultivated surface – total		131932	118887	113365	120125	116269	137007	5075
Cereals for grains – of which:		91961	86897	85270	88768	80117	98739	6778
	Wheat and rye	20156	22541	19734	21833	30987	24829	4673
	Barley and two-row barley	3320	3991	5076	5811	3910	2981	-339
	Grain maize	66820	57543	57521	58196	41487	67548	728
Beans		510	462	127	102	104	121	-389
Oil plants		12821	13317	8166	9601	10649	12530	-291
Sunflower		10685	10418	4945	5923	6110	7749	-2936
Sugar beet		40	-	-	-	-	100	60
Potatoes		1847	633	1574	1905	1977	2007	160
Vegetables		5393	3908	4717	5542	5688	5724	331

Source: Statistical Yearbook of Vrancea County, 2012

Figure 6. The dynamics of total area cultivated with crop main plants (2006-2011)



tion per hectare is registered for the year 2011 was of 4 454 kg per hectare, with an increase of 1 179 kg compared to 2006 (Table 4).

The wheat is the second crop as importance to the County level. The average production in the year 2011 is of 3.373 kg/ha with values between 500 kg/ha in Nistoresti township (mountain) and

2 450 kg/ha in the Pufesti township (plain). Large media productions are performed on the hilly and depression areas with values of up to 1 400 kg/ha (Figure 10).

An increasingly higher importance have the vegetables crops, favoured by the enlargement of irrigated surfaces and high demand by consumers,

Figure 7. The share of cultivated areas in Vrancea County, in the year 2011

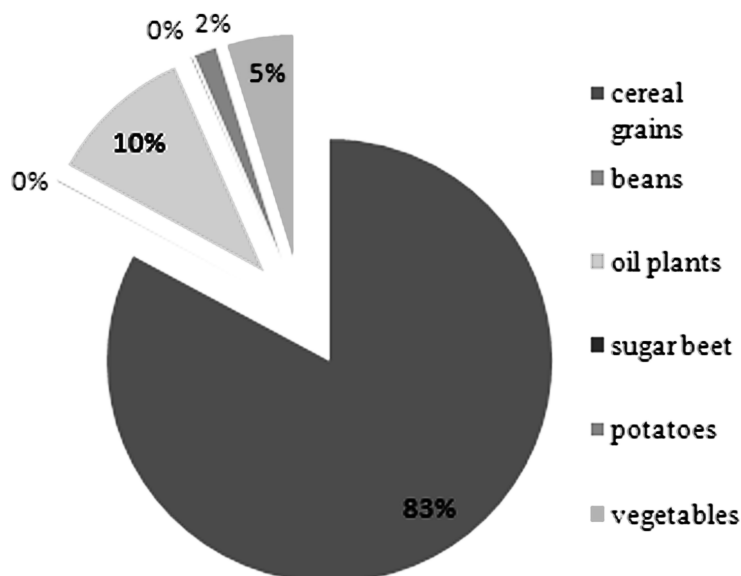


Table 3. Vegetable agricultural production to main crops in Vrancea County between 2006-2011 (tons)

Main Crops		2006	2007	2008	2009	2010	2011	Dynamic
Cereal grains - of which:		277985	118926	224085	249925	263430	401670	123685
	Wheat and rye	50998	35353	72849	54609	78021	83746	32748
	Barley and two-row barley	5546	5027	13545	14583	9332	10290	4744
	Grain maize	218890	75827	131581	175275	170077	300882	81992
Beans		2360	681	446	475	138	183	-2177
Sunflower		18517	7762	5740	9168	10829	15334	-3183
Sugar beet		1200	-	-	-	-	6800	5600
Potatoes-Total		44111	3975	17114	17139	17211	30891	-13220
Vegetables		77312	49742	57643	73844	76438	84724	7412

Source: Statistical Yearbook of Vrancea County, 2012

especially those in the Focsani city. The cultivated area with vegetables in field and solariums in households increased from 5 393 ha in 2006 to 5 724 ha in 2011. Favoured by the proximity of the Sturza channel, deriving from Putna river around

Bolotesti the biggest vegetables productions are recorded precisely in these townships located in the vicinity of irrigation channels (over 8 000 tonnes productions, Tifesti).

Figure 8. The share areas occupied with cereal grain in Vrancea County (2006)

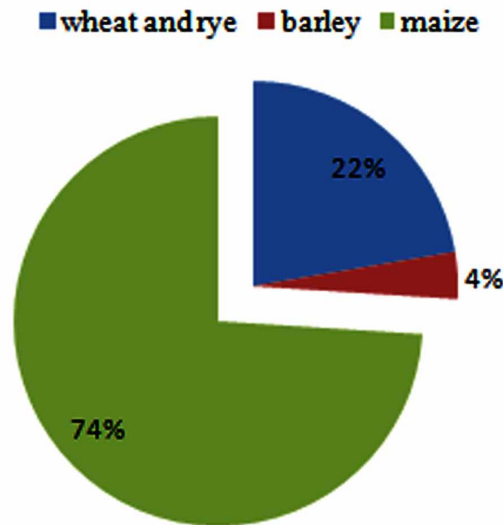


Table 4. The average production at hectare of the main crops in Vrancea County between 2006-2010 (kg)

Main Crops	2006	2007	2008	2009	2010	2011	Dynamic
Wheat	2534	1568	3692	2501	2518	3373	839
Barley and two row barley	1670	1260	2668	2510	2387	3452	1782
Oat	1532	937	1837	1654	1441	1765	233
Maize grains	3275	1318	2288	3012	4100	4454	1179
Bean grains	1202	1024	1055	971	1317	1496	294
Sunflower	1733	745	1161	1548	1772	1979	246
Soy grains	2095	1062	2190	1525	-	1800	-295
Sugar beet	30000	-	-	-	-	68000	38000
Potatoes- Total	23482	5942	10728	8856	8639	15325	-8157
Autumn potatoes	24916	6113	10601	9371	6400	16119	-8797

Source: Statistical Yearbook of Vrancea County, 2012

Viticulture and Grape Production

The culture of the vine has ancient traditions in Vrancea County being practised in remote times, which is influenced by natural conditions particularly favourable of the Piedmont area (Nedelcu & Brankov, 2014).

With the 10% of the area cultivated with vines, Vrancea is the largest County of winemaking of the country, the wine production and is an important economic sector both locally as well as international interest. Since 2007, Vrancea County has joined with five other counties in the country (Alba, Arad, Iasi, Constanta and Prahova) in The

Figure 9. The share areas occupied with cereal grain in Vrancea County (2011)

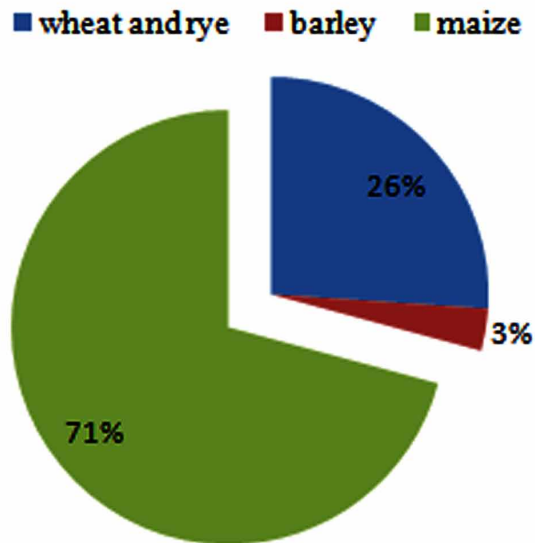
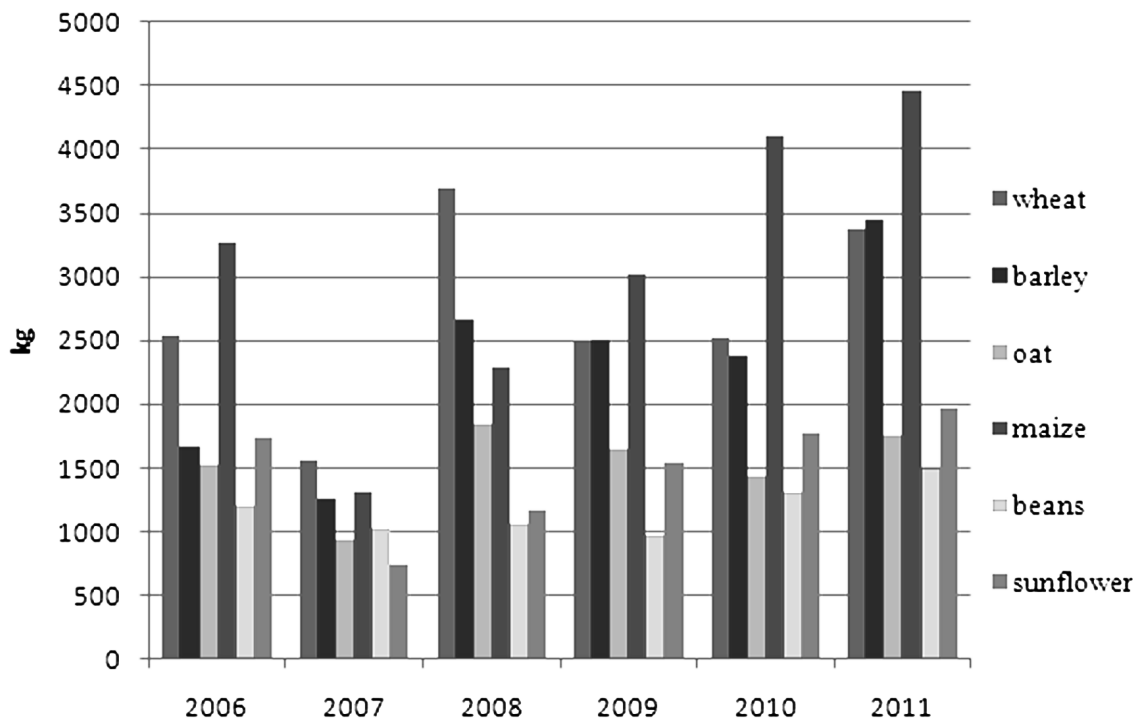


Figure 10. The evolution of average production per hectare of main crops (2006-2011)



Association Of The European Wine-Growing Regions, which since the establishment (1994) has as its main objective the promotion of the common interests of the wine-growing regions at European level and worldwide.

After 1990, areas filled with vines decreased gradually until 2006, after which the areas registered a slight positive growth by the year 2011, by planting of areas with noble vine, and replaced the disaster areas. The wine-growing area is of 25.478 ha which 88.1% ha is noble vine and for table grapes and 11.8% is hybrid vineyard. Over 90% of the land area is private property (Table 5).

The hill area centralize 96.9% of the total wine area, in the plain is just 2.8%, and at the mountain 0.3%.

There is a clear difference between the two in terms of the structure of the vines (Improvement territorial plan of Vrancea County, 2007):

- In the hill area: 81.2% is a noble vine, 15.2% for table grapes and 3.6% hybrid vine,
- In the plain area: 29.00% is noble vine, 2.9% for table grapes and 68.1% hybrid vine.

Total wine production is 157 746 tons of which 91.5% of production of noble vine 8.5% production of hybrid vine. The total production of the noble vineyard is 144 243 tons of which 97.4% in the hilly area (Table 6).

The necessary production of grapes for the wine centres (Odobesti, Cotesti, Faraoanele, Vartescioiu, Panciu) of three important vineyards (Odobesti, Cotesti and Panciu), but also the method of obtaining revenue through the sale of the wine-growers 'grapes was variable during the analysis period (2006-2011). It is noted an increase in production until 2009 and then a sudden drop by the year 2011, decrease compared to 2006 being of 8 592 tons (Figure 11).

The average production of grapes per hectare had variable values during the analysed period,

fluctuating between a minimum of 6 182 kg/ha and a maximum of 8 566 kg/ha in 2009 with a negative dynamic with a minus of 483 kg for the calculated interval (Table 7).

The wine industry is strongly represented in Vrancea County, two big factories valuing the native grape production: Vincon Vrancea, Vinexport S.A, and other 12 smaller factories established the help of SAPARD programme (Strategic Development Plan of Vrancea County [SDPVC], 2007-2013). Galbena de Odobesti, wines, Feteasca Neagra, Cabernet Sauvignon, Merlot, etc. are known all over the world.

The Fruit Trees and Fruit Production

In parallel with wine culture approximately on the same areas is develops the fruit growing, the most favourable conditions meeting in the pied-mont area and the external Sub Carpathian hills and rivers terraces. Areas filled with fruit trees have fluctuated over time depending on natural conditions, but also of the economic priorities of that time. New areas were either planted or were destroyed by various disasters (hail, torrential rain, high winds that shook the flowers) and subsequently replanted. The most common orchards are the plum orchards from which it is prepared the plum brandy, known as brandy from Vrancea is one of the most popular and at the same time with the old tradition are the dried plums on rack and which are usually consumed in the cold season (Tătaru, 2008). Visible is that fact that big fruit plantations of once have drastically restrained the areas either by changing the destination of use (construction, other cultures, etc.), either due to their replacement due to aging, many orchards in hilly areas, beyond the age of 100 years.

According to statistical data, at the rate of 99.99% fruit trees are private property, occupying an area of 1.8% of the agricultural area. The largest share in the total number of fruit trees is held by the plum (53.6%), followed by apples (29%), cherries and wild cherries (8,20). The

Table 5. The surface of vine product in Vrancea County, between 2006-2011 (ha)

Wine-Growing Areas	2006	2007	2008	2009	2010	2011	Dynamic
Fruit Vine - total	24910	23483	24900	24811	25504	25499	589
Grafted and domestic vine	22149	20698	22154	22065	22653	22646	497
Hybrid vine	2761	2785	2746	2746	2851	2853	92

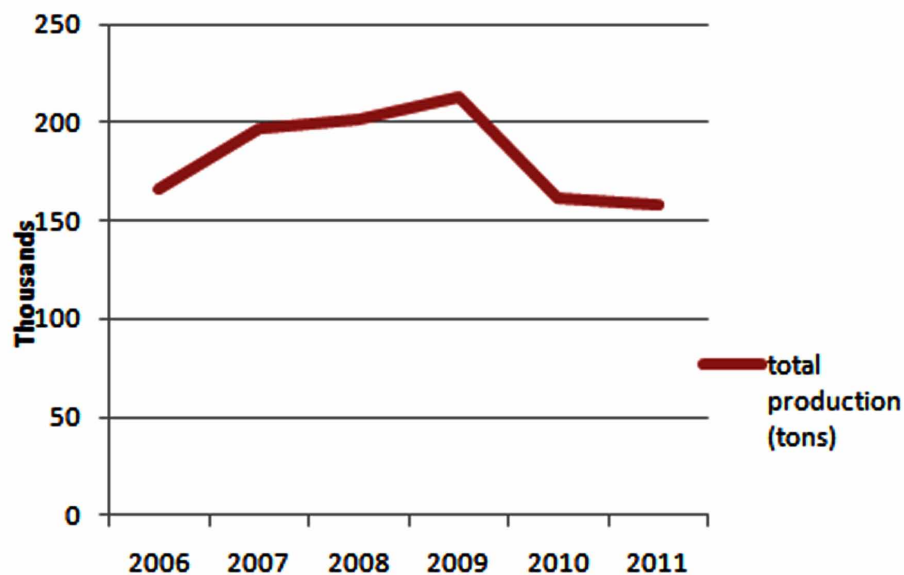
Source: Statistical Yearbook of Vrancea County, 2012

Table 6. The grape production in Vrancea County, between 2006-2011 (tons)

Grapes production	2006	2007	2008	2009	2010	2011	Dynamic
Production Fruit vine – total tons	166238	196458	201089	212525	161457	157646	-8592
Grafted and domestic vine	152580	179358	188575	190589	152066	144243	-8337
Hybrid vine	13441	17100	12514	21936	9391	13403	-38

Source: Statistical Yearbook of Vrancea County, 2012

Figure 11. The evolution of total production of grapes between 2006-2011 (tons) in Vrancea County



total number of fruit trees in the analysis period 2006-2011, decreased by 26%, which represents a number of 817 791 fruit-bearing trees of. Of this number, more than half are plum, followed by cherry and wild cherry (Table 8).

The total fruit production has suffered fluctuations being conditioned on the fruit tree's bearing number from the analyzed year and climatic conditions or different disasters. Thus, in the period 2006-2011, the largest fruit production was achieved in 2006, dropping the following

Table 7. Average grape production obtained in Vrancea County, between 2006-2011 (kg/ha)

Annual Average Production	2006	2007	2008	2009	2010	2011	Average 2006-2011	Dynamic
The average production of fruit vines– total	6665	8366	8076	8566	6331	6182	7364,33	-483
The average production of grafted fruit vines	6889	8665	8512	8638	6713	6369	7631,00	-520
The average production of hybrid fruit vines	4868	6140	4557	7988	3294	4698	5257,50	-170

Source: Statistical Yearbook of Vrancea County, 2012

Table 8. The number of fruits trees in Vrancea County, between 2006-2011 (piece)

Fruit Trees Number	2006	2007	2008	2009	2010	2011	Share 2011 (%)	Dynamic
Trees - Total	3151581	2143998	2109101	2259818	2338594	2333790	100	-817791
Plums	1728606	1107936	1113803	1256735	1279568	1252119	53.65	-476487
Apples	736117	670037	637533	644732	667829	694949	29.78	-41168
Pears	91904	46039	44352	44434	48306	42256	1.81	-49648
Peaches and nectarines	16020	50386	5456	5716	6934	5486	0.24	-10534
Cherries and wild cherries	353936	142867	149385	153385	180897	191256	8.20	-162680
Apricots-apricot trees	67313	45772	31549	28035	27858	29019	1.24	-38294
Walnuts	98013	95342	94924	95147	93274	88336	3.79	-9677
Other trees	59672	31314	32099	31634	33928	30369	1.30	-29303

Source: Statistical Yearbook of Vrancea County, 2012; Own calculations

year (2007) with over 55%, after this year's the increases of production being slow, until 41 099 tonnes in 2011, a decrease of approximately 26 000 tons from 2006 (Table 9).

Valuing the types of vegetable productions in rural areas of Putnei basin requires a good integration of these with downstream industries and a fast access to outlets.

Animal Herds and Animal Production

Pastures and hayfields have always been the fodder base for the main occupation of the inhabitants of the hilly-mountain sector, animal husbandry. In the past, in the mountain area, the largest trade-offs

caused on the basis of the public areas occupied with pasture for raising sheep, shepherding the traditional practice of Vrancea inhabitants and in the plain sector, there were big problems with regard to the delimitation of the grazing ground for cattle growth (Tătaru, 2008).

Currently, the area occupied with pasture and hayfields is of 74 093 hectares, representing 32.13% of the total agricultural area. The largest areas belong to the Nistoresti township (4 150 ha) and Tulnici. (3 345 ha)

The livestock between the analysed period 2006-2011 have registered fluctuations depending on existing market demand for meat, milk and eggs. In proportion of 99.99% of the animals are

Table 9. Fruit production in Vrancea County between 2006-2011 (tons)

	2006	2007	2008	2009	2010	2011	Media	Dynamic
Plums	67323	30053	38022	36359	39722	41099	42096.33	-26224
Apples	32978	13186	19026	17292	20608	16675	19960.83	-16303
Pears	22182	12547	13339	12597	12953	17360	15163.00	-4822
Plums	1647	786	1096	1047	1064	1035	1112.50	-612
Peaches and nectarines	305	85	132	112	110	111	142.50	-194
Cherries and wild cherries	5806	1219	1927	2295	2276	3085	2768.00	-2721
Apricot and apricot trees	1223	343	492	475	369	505	567.83	-718
Walnuts	2564	1354	1384	1808	1714	1673	1749.50	-891
Strawberries	285	11	81	81	180	250	148.00	-35
Other fruits	333	522	545	652	448	405	484.17	72

Source: Statistical Yearbook of Vrancea County, 2012; Own calculations

private property, with the exception of the birds, which are grown in specialized factories in the vicinity of Focsani town and a pig herd belonging to the Danish specialist farm “Premium Pork” headquartered in the Slobozia Ciorasti township.

According to Table 10, a positive dynamic had the herds of swine, goats and bee families, while in the analysed period the biggest declines were recorded by the herds of cattle, sheep and poultry. A decrease of 23% was registered in the herd of horses, these generally being used as a resource for animal traction for the various agricultural practices.

The meat production has registered a significant increase, decrease of the herd of cattle and beef production being the replaced of the surplus of swine heads, namely increasing the quantity of pork produced due to investments in this sector.

Milk production decreased with 251 000 hl, productive media on the head cow in 2011, of 47 000 hl (Table 11). The most productive cattle are those from the plain, while in hills and mountain area is predominate the production of meat and milk from sheep and goats.

Consumption of poultry meat is generally assured of own households, poultry production,

recording an increase of 4 763 tons, while production of eggs has seen a significant decline in proportional decrease laying flock.

Technical Resources in Agriculture

Of the factors that contribute to the achievement of performance in any economic system, technical resources play an extremely important role, especially in terms of ensuring a high level of productivity of labour. In the field of agriculture, the factor of production equipment holds a central role from the perspective of economic efficiency (Bucur, 2010).

After the abolition of State Agricultural Enterprises, the park of tractors and agricultural machinery has become entirely private property, the period after 1990 was marked by a continuous growth trend as regarding their number among the rural population. Need to purchase agricultural equipment raised especially after farmers have regained the ownership over the lands. However the economic efficiency remains low as long as agricultural holdings will remain separated in small plots and farmer's unwillingness to join in associations of agricultural lands.

Territorial and Agricultural Resources

Table 10. The overall herd of animals in Vrancea County, between 2006-2011 (heads)

	2006	2007	2008	2009	2010	2011	Dynamic
Cattle	62448	59266	59569	56729	44004	43416	-19032
Swine	81130	96313	106360	112422	144834	145303	64173
Sheep	160869	169596	177733	175846	133972	133579	-27290
Goats	21204	23832	23868	24633	32108	35156	13952
Horses	21379	22327	20619	20332	16610	16472	-4907
Poultry	2018834	1839039	1626153	1469183	1678814	1834377	-184457
Bees (families)	10815	12707	13292	13206	22595	20206	9391

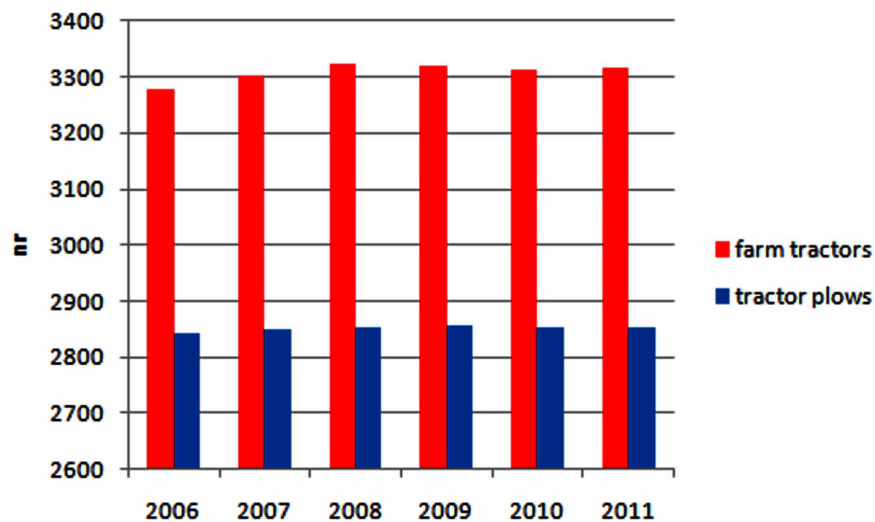
Source: Statistical Yearbook of Vrancea County, 2012; Own calculations

Table 11. The agricultural animal production at the Vrancea county level, realised between 2006-2011

	2006	2007	2008	2009	2010	2011	Dynamic
Meat-total (tons live weight)	23378	23995	23951	2486	30248	36628	13250
Cattle Meat (tons live weight)	4752	4428	6202	4323	3704	3842	-910
Swine meat (tons live weight)	6250	8426	10385	10640	17096	15982	9732
Sheep and goats (tons live weight)	1815	1824	1920	1819	1749	1483	-332
Poultry meat (tons live weight)	10558	8311	5443	7804	7699	15321	4763
Milk – total thousand hl	1329	1321	1392	1282	1064	1078	-251
Milk cow buffalo cow thousand (hl)	1180	1161	1223	1119	892	921	-259
Wool – total (tons)	379	443	461	525	458	330	-49
Eggs – total (millions pieces)	172	146	131	135	145	139	-33
Extracted honey (tons)	181	230	275	261	337	355	174

Source: Statistical Yearbook of Vrancea County, 2012; Own calculations

Figure 12. The evolution of tractor park and tractor plows in Vrancea County, between 2006-2011



The tractor park in Vrancea was increased gradually so after 1990, and during the analysis period (2006-2011). The rhythm of growth was more obvious in 2008 (Figure 12), the number of tractors rising from 3 278 pieces, to 3 318 pieces, after which was a slow decline, especially due to the ageing tractors already purchased under “used” regime and their disposal, as well as of the income decline fund and the impossibility renewal of the parc.

The increase of the number of tractors from 2006 until 2011 was almost insignificant, only 38 units, which represents a growth rate of 1.15% compared to 2006 (Table 12).

The number of plows for tractor grew at a frequency of 4 pieces/year total growth for the period 2006-2011 being of only 8 units. The plow number is much lower than that of tractors, with approximately 450 pieces, which underlines the fact that tractors are not used exclusively for agricultural activities and other destinations.

Of the other agricultural machines, the mechanical drills are in a number of 1 059 units and their self-propelled combinations for harvesting cereals in a number of 259 pieces, which is a very

small number considering the total area occupied with agricultural straw of 98 739 ha (2011). The values indicate the lack of effectiveness of labour productivity given that it combines the need to harvest 381 ha, and a seeder should seed 93 hectares of arable land for straws.

The limited capacity of the County to attract advanced technical resources as well as the high degree of separation of agricultural holdings can trig a fire alarm on the emergence of agricultural development gaps both within the County as well as towards other counties in the region or in the country

For the measure 141 applied most farmers, but not all have been declared eligible. Through the measure 141 it is granted a non-refundable support of 1,500 Euros per year for semi-subsistence farm, i.e. for households that have a few animals and the few land.

The granted support for a period of five years in Vrancea was for 1942 projects, worth 7.6 million Euros, which is just a kind of “social assistance” for semi-subsistence farms (According to Payments Agency for Rural Development and Fisheries).

Table 12. The evolution of agricultural machines in Vrancea County, between 2006-2011

	2006	2007	2008	2009	2010	2011	Dynamic	Average growth rate (%)
Physical agricultural tractors	3278	3302	3322	3318	3314	3316	38	1.16
Plows for tractors	2844	2848	2852	2858	2852	2852	8	0.28
Mechanical seeders	1065	1059	1062	1065	1059	1059	-6	-0.56
Croppers – Self-propelled harvesting grain	258	262	263	263	256	256	-2	-0.78
Croppers – Self-propelled harvesting fodder	11	9	7	7	9	9	-2	-18.18
Harvester Self-propelled harvesting fodder	29	25	24	24	25	25	-4	-13.79
Baling presses for straw and hays	54	54	56	56	44	44	-10	-18.52

Source: Statistical Yearbook of Vrancea County, 2012; Own calculations

The Evolution of Vrancea Economy in a Regional Context

Vrancea County's GDP is an indicator showing the economic situation, while reflecting the contribution of this indicator in the formation of regional GDP. GDP is the sum of all final uses of goods and services by resident institutional units, characterized by the actual final consumption, gross fixed capital formation plus exports and minus imports of goods and services.

In 2005, GDP in the Vrancea County level is at 3295.1 million lei, which represents 10.1% of the regional GDP (the SE Region). Even if this indicator does not contribute enough to the formation of regional GDP, it can be seen that growths are registered, both at county and regional level. The County's GDP registered in 2008 an increase of 62% compared with 2005, and in 2010 approximately 71.4% compared to 2005 (Table 13).

For the year 2010, The gross valued added was of 5136.7 million lei current prices, representing a share of 10.2 of the GVD of the SE region (Table 14).

SOLUTIONS AND RECOMMENDATIONS

Existing resources in the Vrancea rural areas can be used rationally and can constitute an economic revitalization base in rural communities, on re-shape of non-viable economic segments, either by supporting sectors by attracting structural funds and community participation in local development.

It is recommended that solutions of increasing economic efficiency should be adapted to natural conditions and geographic area. Thus, in the plain area would be necessary merging the agricultural holdings of less than 1-3 ha, setting up farms with the agricultural area of more than 10 ha, as well as the need to purchase agricultural equipment, increasing the park of tractors and their use even within agricultural associations.

On small areas, it is recommended that natural fertilization of plots and establishment of ecological farms with untreated chemical products.

Strategic programmes and measures should take into account, in particular, the creation of jobs for young people, stopping urban and interna-

Table 13. The evolution of gross domestic product at county and regional level

	NACE REV.1					NACE REV.2		
	2005	2006	2007	2008	2009	2008	2009	2010
South-East Region	32852.1	38508.7	44273	55865.9	-	53851.1	52706	56339.5
Vrancea	3295.1	4178.6	4633.4	5555.3	-	5539.6	5377	5747.6

Source: Statistical Yearbook of Vrancea County, 2012

Table 14. Gross value added at the district and regional level registered at county and regional level, between 2005-2010

	CAEN REV.1				CAEN REV.2		
	2005	2006	2007	2008	2008	2009	2010
South-East Region	28972.4	33897.6	39203.1	49837.4	48049.7	47510.4	50268.4
Vrancea	2897.4	3677.7	4091.8	4942.1	4928.9	4830	5136.7

Source: Statistical Yearbook of Vrancea County, 2012

tional migration in order to supplement incomes, encouraging young farmers, attract investments in local communication and reinvestment of profit on local plan, encouraging local consumption, establishment of small and medium-sized enterprises for processing animal and vegetable agricultural products and others.

FUTURE RESEARCH DIRECTIONS

The present study is an excerpt from the chapter "Multi-criteria diagnosis of the level of local economic development in Vrancea rural communities" which represents a detailed analysis on the main socio-economic criteria related to the local economy, as premises to the broader and prospective study which will be part of his doctoral dissertation "The local economy in Vrancea rural communities-premises, level of development and prospective evaluation" (Alexandra Tătaru).

Future researches should focus on finding solutions and developments models for an effective

growth and decreased the rate of poverty in the analysed space.

CONCLUSION

It is noted that the economy of the Vrancea County is rural one, oriented towards a subsistence agricultural economy and with a degree of urbanisation of less than 50%. This rural-agricultural character was reflected in the slower growth of county economy, compared to the national average in the period 2003-2006, especially after this year due to the economic crisis and declining of investment values. The character of the county-level economy is given by the agriculture (45.5%), industry (20.3%) and trade (9.8%).

The main problems faced by the primary sector are related to inefficient agriculture, an excess of manpower, by using the mostly a subsistence agriculture, for own use. *Arable lands* hold the largest share in the structure of agricultural lands, occupying 65% of the total area. The biggest

extension of arable land is in the Siret Plain, the surfaces decreasing to West and toward the contact area and the hill one. *Wine-growing lands* represent approximately 12% of the total agricultural area of Vrancea County, the wine-growing zone comprising a continuous surface in the piedmont between Zabraut and Ramna differencing vineyards: Panciu, Odobesti, Cotesti and wine-growing centres with smaller surfaces: Paunesti-Ruginesti and Tamboesti-Bordesti.

The wine industry is strongly represented in Vrancea County, two big factories valuing the native grape production: Vincon Vrancea, Vinexport S.A, and other 12 smaller factories established the help of SAPARD programme (^sDPVC, 2007-2013). Galbena de Odobesti, wines, Fetească Neagra, Cabernet Sauvignon, Merlot etc. are known all over the world.

The two traditional activities (vine-growing and wine-making) may allow a better balancing of economic development, social and cultural life of local communities through the spatial diffusion of impulses of growth required by the wine-growing centres, considered “engines” of local and regional sustainable development, generating indirect effects in other sectors of the local economy, encourage profitable activities (hotel services, restauration, transport, craft activities, service guides etc.).

In the plain and hill areas, we can observe a diversification of agricultural crops. Maize prevails regardless of the region. The largest arable area in 2011 has been occupied by the cereals for grains, of which 68.41% maize, 4.73% wheat and rye and 3.02% barley and two row barley.

Valuing the types of vegetable production in rural areas of Putnei basin requires good integration with downstream industries and a fast access to outlets.

The total area of forests and other lands covered with forest vegetation in Vrancea County total in 2011, 179.300 ha, value that represents 36% of the total area of Vrancea County (0,45 ha/habitant)

between 2006-2011 the registered a decreasing trend. An area of more than 70% of the share of the non agricultural land is represented by the forest, in 37 townships of the in the 68 existing at county level. On the basis of forest resources in Vrancea rural environment have been created numerous SMEs with wood processing profile. The main species present and harvested in Vrancea County are beech 44.48%, coniferous 41.22% various soft species 4.15%, oak 4.79%, and various strong species 5.37%.

The limited capacity of the County to attract advanced technical resources, as well as the high degree of separation of agricultural holdings can trig a fire alarm on the emergence of agricultural development gaps both within the County as well as towards other counties in the region or in the country.

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KEY TERMS AND DEFINITIONS

Agricultural Potential: All agricultural resources (capitalized, under capitalization, identified), materials (productive and non-productive) and human resources available to a particular territory.

Crop: All the technical agricultural works and "agropedoameliorative" (that can solve within the soil works) necessary for crop plants. Examples: crop maize, potato and vine crop.

Land Fund: The total area of lands within a certain administrative limit units (township, town, County). Depending on the intended use of the land, the main categories of use of the land fund are: arable land, vineyards, orchards (cultivated lands), pastures, hayfields, lakes, ponds, land occupied by buildings, communication paths, and other areas.

Rural Areas: Can be appreciated, as the natural environment in which there are settled human activities, provided that they are not aggressive and promote his degradation. Return of the population to agricultural and non-agricultural activities in rural areas can be appreciated as a biological, because re-balance because it returns in an environment devoid of all harmful aspects of urban space.

Vineyard: Agricultural unit characterized by specific conditions of climate, soil and terrain, through the cultivated grapes varieties, by methods of cultivation and vinification processes used, which, overall, lead to obtain a production of grapes and wines with similar features.

Territorial and Agricultural Resources

Viticulture: Branch of horticulture concerned with the cultivation of grape-vines and the processes of transformation of the grapes into wine. Ensure the production of seeding material, grapes for wine production and consumption.

Vrancea County: District geographically located between the two historic regions of Romania: Moldova (north of the river Milcov) and Wallachia (south of the river Milcov). The county has an total area of 4 863 km², and the residence is the city of Focsani (73 868 at the 2011 census). The county's population amounts up to 323 080 inhabitants, and the average density is 66.5 inhabitants / km². The name of "Vrancea" has the Thracian-Dacian origin and it comes from the word

"Vrana", which translates as "forest" or "mountain" or Sanskrit, where the word "Vran" means "mountain". This county includes, according to the current administrative-territorial division, 73 municipalities of which 2 municipalities, 3 towns and 68 townships in which there are 331 villages. Its famous vineyards Panciu, Cotesti, Odobesti are holding over 11% of the agricultural area of the County. Highly developed and fruits especially plum and apple culture. The industry of this County is profiled in the foreground branches producing food, provided especially for wine production, specific to this area, to which is added wood processing and textile industry.

Chapter 9

Changing Consumption Patterns in Green Economy

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ABSTRACT

This chapter has considered the recent changes occurring in consumer habits, aiming to highlight the link between them and the transition to a green economy. In the first part, after a brief introduction, the authors perform a review of the literature in the field, starting from the presentation of the concept of sustainable consumption. They start with the major changes in the social current economic environment and their impact on changes of the consumption patterns; they continue with the presentation of the changes of the consumption pattern in the European Union and the specific aspects of the current changes of the consumption patterns in Romania. Thus, the authors aim to identify the key features of the New European Consumer.

INTRODUCTION

Lately expressions like responsible consumption, sustainable consumption and green consumption are used in various contexts, often being related to the current theme of sustainable development. However, most of the times, these terms have different meanings and it seems not to be always clear what the one who uses the term means.

In order to implement the Single Market for Green Products initiative adopted by The European Commission in April 2013, a better under-

standing of the consumer behavior and attitudes it is requested. To meet this need, a survey was conducted on the 'Attitudes of Europeans towards building the single market for green products.'

In 2011 in Barcelona, during the congress RIPESS (Intercontinental Network for the Promotion of Social Economy and Solidarity), the idea that *People seem to have forgotten that the economy, namely, economic activity must be rational because processed resources are limited and, therefore, they must be used rationally* was launched.

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The green economy requires changing consumer habits. It speaks thus about sustainable consumption patterns and green consumption patterns.

A change in consumption patterns requires a strategy that takes into account the imbalance of excessive consumption and ignoring the limited resources available.

Changing unsustainable patterns of consumption can be achieved by several ways: the reduction in total consumption, the reduction in the consumption of particular goods or some of the shift to a more sustainable consumption (Karen & Charles, 2014).

The question arises whether these patterns exist or the concepts are just the reflection of an environmentalist current or anti-consumerism current.

The objective of this chapter is to highlight the changes in the green economy and the transformations they bring in consumption patterns.

BACKGROUND

The concept of sustainable consumption was introduced in 1992 at the United Nations Conference on Environment and Development (UNCED) in chapter 4 of the Agenda 21, refereeing also, to sustainable consumption patterns. Thus, *developing national policies and strategies to encourage changes in unsustainable consumption patterns* was considered.

Subsequently, in 1994 within the Oslo Symposium on Sustainable Consumption, sustainable consumption was defined as follows: *the use of services and related products which respond to basic needs and bring a better quality of life while minimizing the use of natural resources and toxic materials as well as emissions of waste and pollutants over the life cycle of the service or product so as not to jeopardize the needs of future generations.*

Consumption patterns problem was approached in the literature before the '80s. Analysis of the changes in lifestyles and consumption patterns

should be performed in order to evaluate the role of the relations between needs and satisfaction. Among the first analyzes of the evolution of the consumption patterns, work of Wilkinson it is remarkable (1973). In the same time, we must mention proposals belonging to Douglas and Isherwood (1979), Campbell (1987) and Fine and Leopold (1993).

Max-Neef (1991) elaborated the need-satisfiers theory as the foundations of a framework for analyzing lifestyles and households consumption patterns. It defined nine basic universal needs, without establishing a hierarchy permanently fixed to them. In working out his theory, Max-Neef's objective was helping grassroots groups to build their own conception of (human) development. Although the analyze of consumption patterns or lifestyles didn't represent the main concern for many sociological analysis, it should be mentioned as a continuous presence in the papers of many scholars

It was not primarily meant to analyze consumption patterns or lifestyles as such, notwithstanding its use as such by several scholars (Jackson & Marks, 1999, Stagl & O'Hara, 2001, Jackson, Jager, & Stagl, 2004)

Consumption and environmental studies have started to capture the attention of researchers. (Stern, Dietz, Ruttan, Socolow, & Sweeney, 1997, Princen, Maniates, & Conca, 2002).

Howes's study (1996) on cultural influences in consumption and globalization are also worth mentioning. The role of cultural factors in various consumer practices attracted the attention of many researchers, such as Lury (1996), Slater (1996), Humphery (1998), Gottdiener (2000), Scanlon (2000).

In the '90s and after, environmental issues began to be increasingly present in research related to consumption. Work of Stern (1997), Jackson, and Michaelis (2003), Jackson, Jager, and Stagl (2004), Michaelis and Lorek (2004), Jalas (2005, 2006), Jackson (2006), Boulanger (2007), Lintott (2007), Jonathan (2009), Jackson (2009), Jackson and Victor (2011) is noteworthy.

Lunt and Liningstone (1992) in *Mass Consumption and Personal Identity*, and Buckingham and Humphery, six years later, (1998) in *The Shelf Life: Supermarkets and the Changing Cultures of Consumption*, tried to study the new orientation of the consumers of '90's, proposing a new model of consumption against which was discussed in the literature before and after '80s. This model has considered limiting as much as possible of the satisfaction of consumption needs - not because of low income, but because consumerist excesses - excesses that would lead in the future - say the authors - to significant imbalances between the environment, which must be protected, and the economic and social and cultural environment which must be developed.

Hamilton (2002) in his book *Overconsumption in Australia: The Rise of the Middle - Class Battler* describes the extremes of the consumerist phenomenon in Australia and makes explicit references to USA - from where the excessive consumption pattern was taken up, showing how the excessive nature of consumerist practices of privileged social categories (categories with high and very high incomes) influences the society and its development.

Drakopoulos (2008) talked about the 'paradox of happiness' induced by the excessive consumption, saying that this feeling was superficial, being provided only at the basic level.

Zavestoski also in *Anti-Consumption Attitudes: Psychology & Marketing* (2002), was concerned about market studies initiated in the U.S. on the issue of anti-consumerism attitudes. He and Schor and Hamilton and Mail concluded that consumers must return to some very simple and, particularly, protective with the environment consumption patterns.

Whitwell (2014), in his book, *Lost in Translation: Exploring the Ethical Consumer Intention - Behavior Gap*, describes the current occidental consumerist society and refers to 'ethical consumerism'. He conducted a study that aimed to explain the gap between ethical purchase intention-behavior.

In addition to the above mentioned authors, there are Australian social analysts, such as Whitwell (1989), Pollon (1989), Reekie (1993), Humphery (1998), Frow and Morris (1993) Frow (1997) Morris (1998), Bennett, Emmison and the Frow (1999), Schor and Holt (2000), Harris (2001), and De Graff et. al. (2001), McQueen (2001) and Hamilton (2002) - who had, also, in sight the development of Western consumer society, the consumerist phenomenon and the excessive nature of consumerist practices of privileged social classes, etc.

The authors of the above mentioned papers have outlined a new criticizing trend in the field of consumption habits analysis in western area, revealing trends increasingly clear of some social categories, to engage in less consumer-oriented activities.

CURRENT ORIENTATIONS IN CONSUMPTION PATTERNS

Major Changes in the Current Social Economic Environment and Their Impact on Consumption Patterns

In this paper we took into consideration some major coordinates which, in our opinion, customize current social economic environment, namely:

- Globalization,
- Global economic crisis,
- Sustainable development.

Globalization

One of the effects of globalization is very the sharp dynamic of the current social economic environment, having effects at least at three levels as follows:

- Political changes,
- Technological development,
- Changes in customers' mindset.

Globalization offers the advantage of costs reducing through standardization processes, which support the economy of scale, simplifying in the same time distribution. In terms of consumption patterns, it could be reflected in homogenization of markets due to the increasing of convergence of consumer preferences.

People desire to promote their own culture, their own tastes might counteract this trend of globalization. But actual consumer seems to be not only an individualist, but a 'zapper'. This type of consumer, whose nationality does not determine categorically consumption patterns, will be increasingly hard to understand because he is difficult to be characterized, to be included in a given category. In the last 20 years social polarization has led to large differences in consumption. Much of the world's population can afford only satisfaction of the basic needs, which, however, represents only a small part of consumption. So they are not important for global companies which are interested, especially in higher needs. In this sense, they appeal to the individual's identity and its value system, generating in this way, segmentation variables increasingly difficult to distinguish. Technological progress creates effects especially on that part of the people with high and very high incomes. Among this class the consumers with special needs and requirements arise. Global companies emphasis mainly on them, trying to satisfy these needs as shown above.

Thus, we can state that globalization should not be seen simply in terms of economies of scale, but rather through a flexible and innovative approach. Globalization favors the developed economies that create multiple competitive advantages for multinational companies.

Global Economic Crisis

Probably the more noticeable effect of the economic crisis on consumers was that of consumption

decrease due to the reduction of the incomes. The so-called *New Frugality* has emerged as a consequence of this fact. This is considered as a form of rational consumer behavior, *characterized by a strong awareness of the value* (Voinea & Filip, 2011). In consumer behavior, this means:

- Consumption reducing,
- Tracking of obtaining the lowest price,
- Purchasing "private label" brands (the retail stores brands),
- Shopping at discount outlets (Egol, Andrew & Rangan, 2010).

Consumers have noticed other effects such as [...] the instinct of preservation and the concept of prudence (Ciacu & Taseu, 2010). Consumers seem to be primarily interested in the usefulness of the products.

There are categories whose consumption habits do not seem to have been affected by the crisis and these have not changed. For example, in Romania it is the case of the young families with children, with higher and middle income and above average.

The vast majority of consumers to look for new landmarks: they became more economical, more responsible and more demanding. So, we notice that the place of the reckless consumer was taken by the temperate consumer, doing permanent arbitration. New consumer seems to have understood that true progress is to consume better, not more (Voinea & Filip, 2011).

Sustainable Development

Sustainable development was considered as a serious challenge and a major strategic issue. All stakeholders - whether they are employers, producers, retailers, consumers, businesses or government are increasingly interested in sustainability, asking for sustainable solutions.

Sustainable development is a development model that takes into account the environment, but also on the economic and social. It includes a integrated model of economic development, social development and environmental protection.

Thus, sustainable development is a development model based on production and consumption patterns that can be followed in the future without affecting people or the environment. However, our current lifestyles will have to change, at least in terms of the impact they have on the environment.

In this context, we proposed introduction of a new dimension in customer satisfaction evaluation model - which we have called 'the green dimension'.

Based on the results of a wider research, aiming to validate this model, we identified four main determinants of population's attitude towards the green dimension:

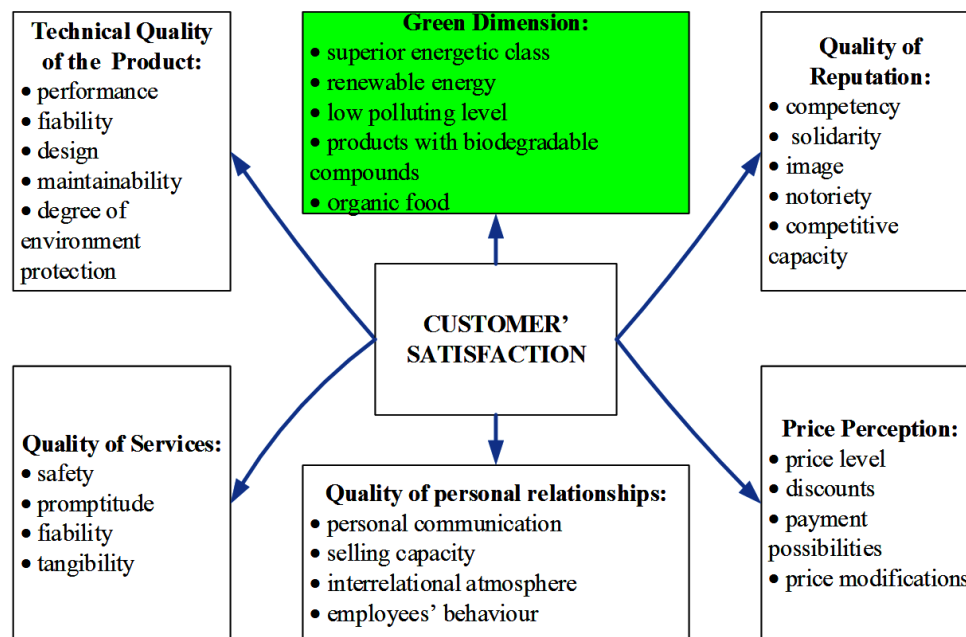
1. Phenomena with negative environmental effects,
2. Activities to protect environment,
3. Willingness to save and motivation for it,
4. Willingness to pay extra for green products and justification for it (Sima & Gheorghe, 2009).

Changes of the Consumption Pattern in the European Union

Customizing min max principle of economy (also optimal principal) in the context of the green economy basically means create added value using a minimum of resources and generation of an as low as possible environmental impact. In this context, citizens can play a decisive role through an appropriate consumer behavior.

The European Commission has calculated the positive effects on the environment that could re-

Figure 1. A new Model of the assessment of customers' satisfaction
Source: Sima, V., Gheorghe, I., 2009



sult by improving the consumption pattern. Thus only by implementing energy efficient building systems and use of buildings, final energy consumption could fall by about 40%, the emission of greenhouse effect gases would be reduced by 35% and water consumption would decrease to about 30%.

In this respect, the Ecolabel is a tool proposed in 1992 by the European Commission. It may be a relevant criteria decision for consumers. In fact, it is a tool for certification of “green” products and services, meanings products which have a reduced environmental impact.

What Represents Sustainable Consumption in EU Vision?

The European Commission defines sustainable consumption as concerning our lifestyle, purchasing and consumption behavior and disposal of products so that they become as less harmful to the environment.

The aim is to meet our basic needs for goods and services while bringing about a better quality of life and also ensuring that there are sufficient resources left for future generations (European Communities, 2009).

Sustainable consumption requires a sustainable production system able to transform environmental challenges into opportunities, simultaneously offering increased satisfaction for consumers.

What Is the EU Doing about It?

In July 2008, the European Commission elaborated an Action Plan on Sustainable Consumption and Production and Sustainable Industrial Policy.

To assist retailers in their attempt to empower consumers, the European Commission has set up the Retail Forum, involving also producers, as well as consumer and other non-Governmental Organizations.

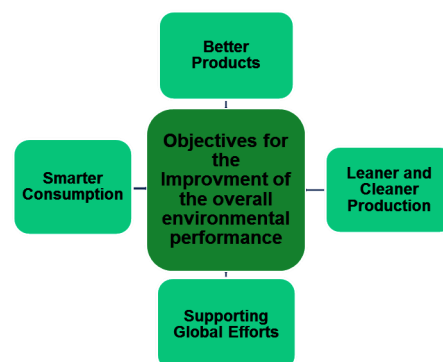
Also, a number of tools have been developed in order to provide information about sustainable consumption. In this regard, we can mention Europa Diary for young students, distributed in schools in the EU, and year online information and education tool which include a module on sustainable consumption from November 2009.

What are Public Authorities Doing about It?

Applying the EU Commission’s proposal that half of all tendering procedures in the EU Member States should be green by 2010, the public authorities in the respective countries may influence consumption behavior of their citizens by including environmental considerations in those procedures. The concept of green public procurement (GPP) was thus introduced which can play a major role in stimulating eco-friendly products, green and innovative technologies.

The Directive on the Promotion of Clean and Energy Efficient Road Transport Vehicles introduced, among other things, a system of incentives for citizens who contribute to the consideration of new purchasing criteria, namely, low fuel consumption, low CO₂ and pollutant emissions etc.

Figure 2. The EU approach regarding the new model of sustainable consumption and production
Source: Proposed by the Authors



Under the action plan, those products with environmental performance, with low power consumption are eligible for incentive initiatives and for purchase by public authorities in Member States and the EU institutions.

Options about providing tax breaks for consumers who buy green products may be, also, taken into account.

Influence of Environmental Impact on Consumption Habits

Thus, according to a Eurobarometer survey conducted in 2009, concerning Europeans' Attitudes Towards the issue of Sustainable Consumption and Production, the following conclusions concerning environmental impact on consumption habits resulted:

- The EU citizens considered that minimizing waste and recycling were the actions having the most powerful influence on the environmental problems (30%); they were followed by purchasing organically produced products or energy efficient appliances (selected by 21% and 19%, respectively).
- Slightly more than half of EU citizens (55%) affirmed that when buying or using products they were well informed and fully aware of effects of these products on the environment. Noteworthy is that there are countries - Cyprus, Lithuania and Bulgaria – where *around 6 in 10 respondents said they know little or nothing about such impacts*.
- For more than 80% of the interviewed persons, the impact of a product on the environment is an important element in purchasing decision, but there are countries - Greece, Cyprus and Italy – where this aspect is very important for more than half.
- Purchase decision is considered as being influenced more by the environmental im-

part of the products than by the brand of the product, by almost 60% of the respondents.

- People who take into account the energy efficiency of products using electricity or fuel when buying such products, with a share between respondents surveyed, regardless of the country - from 59% in Cyprus to 85% in Germany (European Commission, 2009).

Recent Trends in Consumer Habits in the EU

EU consumer habits have changed in recent years. These changes were highlighted in the monitoring report of the EU in 2011. The modern consumer took the place of classical consumer. This is better informed, more demanding and more responsive to changes occurred in the current environment. The recession has led to changing consumer habits, they becoming more restrictive and more careful with their own budgets.

The Monitoring Report of the EU Sustainable Development Strategy for 2011 states that:

- Share of household expenditure among EU citizens has steadily increased between 2000 and 2007, but due to the economic crisis since 2008, began slightly decrease, continuing decline in 2009 as well. Meanwhile, the number of persons per household has also been decreased, increasing the number of smallholdings at the same time.
- In the period 2000-2009, the household energy expenditures have significantly increased but, due to the economic crisis, the final energy consumption decreased slightly.
- In the same period, 2000-2009, the number of ownership cars per 1 000 inhabitants was increasing, but at a slower rate than in 1990-2000 (EUROSTAT, 2011).

A note of the European Commission of 31 March 2014 in Brussels states that: *Household consumption expenditure represents 56% of the GDP of the European Union*. We can see that under these conditions new needs and new ways to satisfy them (e.g. new ways of shopping have been developed, such as e-commerce or digital services). Also as a consequence of the economic crisis, the need to move towards more sustainable consumption patterns appears.

More than ever, well informed and experienced consumers can stimulate innovation and growth, demanding value, quality and service.

Figure 3 shows the composition of EU-28 consumption expenditure in 2012 (using COICOP 3 breakdowns).

Ranked first in total household expenditure in the EU-28 were expenditure for housing, water, electricity, gas and other fuels in the EU, with an average value of 3,500 Euros per capita, representing 24.1%. The expenditures for transportation

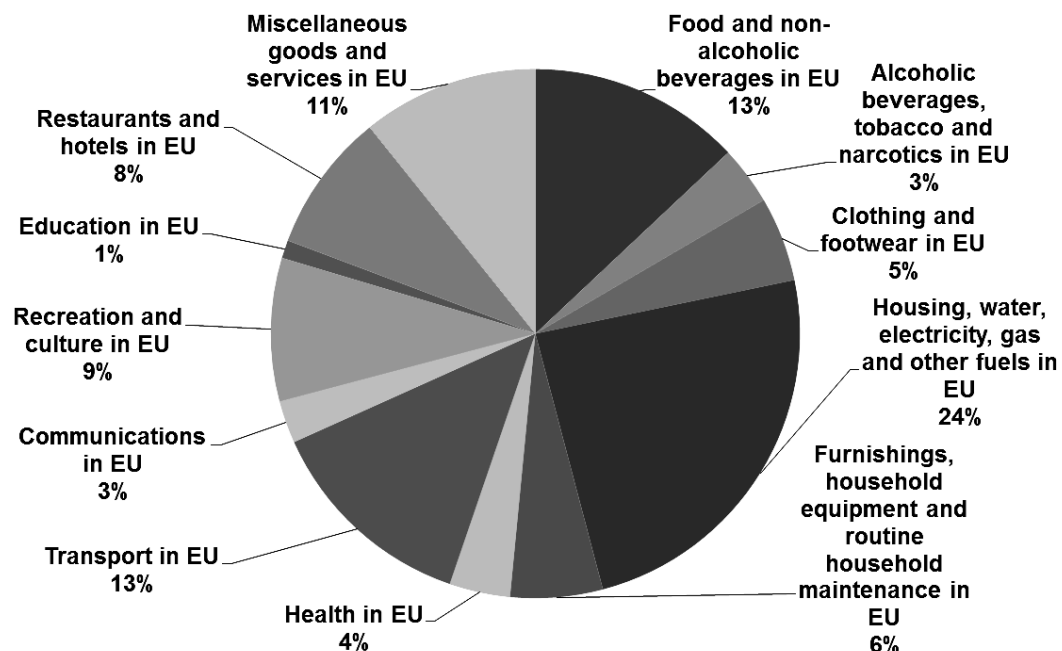
and food and non-alcoholic beverages follow, with equal values of 1900 Euros per capita, representing 13% each.

These three categories together represent about half of total spending. The other categories of expenses are distributed as follows: recreation and culture (1300 Euros, representing 8.7%), restaurants and hotels (1200 Euros, representing 8.5%), furnishings, household equipment and routine household maintenance (800 Euros, representing 5.6%), clothing and footwear (800 Euros, representing 5.2%), health (500 Euros, representing 3.7%), alcoholic beverages, tobacco and narcotics (500 Euros, representing 3.6%), communications (400 Euros, representing 3.6%), education (200 Euros, representing 1.1%) and miscellaneous goods and services in EU (1600 Euros, representing 10.8%).

Analyzing the evolution of consumption for different categories, between 2001 and 2012, in the EU-28, some trends can be highlighted, namely:

Figure 3. Composition of EU-28 expenditure in 2012 (COICOP 3 digit, EU-28 expenditure in percentage of total expenditure)

Source: Processed by the Authors



- There are categories for which consumption declined until 2007; thereafter it registered a slight increase. This is the case of food products and soft drinks, and alcoholic beverages, tobacco and narcotics, too.
 - For the first category this behavior can be explained by the fact that in recession periods people tend to primarily satisfy the basic needs.
- There are expenditure categories whose evolution has shown some fluctuations, but the trend was downward, i.e. expenditures for communications, restaurants and hotels, transportation and miscellaneous goods and services.
- There are categories that showed a continued downward trend, namely: expenditures for clothing and footwear, furnishings, household equipment and routine household maintenance and recreation and culture.
- There are categories that showed a continuously increasing trend, namely: housing, water, electricity, gas and other fuels, health and education. For the first category the increase can be explained by increasing energy prices, especially as a result of the application of specific levies to support targeted specific energy and/or climate policies.

New European Consumer

From the perspective of the purchasing and consuming behavior, two key features of the new customer can be identified, namely:

The New Consumer is a Smarter Consumer

Smarter consumer is essentially a better informed consumer. Some additional information regarding the environmental performance of certain products

can be offered by different labeling schemes, such as energy labeling – Energy Labelling Directive, Energy Star Regulation, eco-labels for mobile phone, the EU Ecolabel, labels indicating the insulation capacity of windows can etc.

The Ecolabelling System, initiated in 1992 by the European Commission has been very well received business environment, being an important way of certification of products and services which have a low impact on the environment (green products and services). This has led to an increase in consumer confidence and loyalty The Ecolabelling improves brand image and confirms products quality.

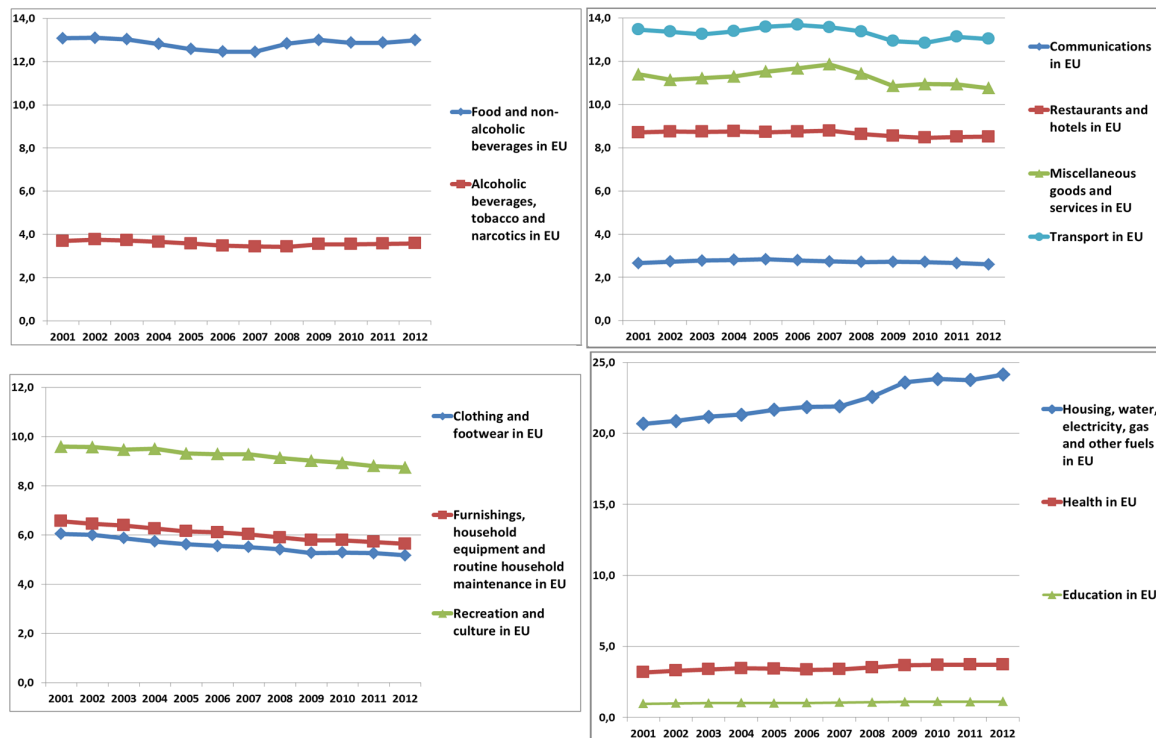
According to the above mentioned Eurobarometer survey, the following conclusions regarding the potential benefits of ecolabeling resulted:

- About 50% of EU citizens say that eco-labeling is an essential element in their buying decisions, the proportion being, however, different from one country to another.
- The main information on ecolabel is about possibility to recycle or reuse the product and the least important is considered to be information about the total amount of greenhouse gas emissions released by a product.
- Regarding the degree of notoriety of the EU Ecolabel, about 40% of the respondents in the survey had seen it, or had heard about it; while only 19% declared they have also purchased products being ecolabeled.
- The highest degree of awareness of the EU Ecolabel was registered in Lithuania, Denmark and Estonia (between 49% and 51%) and the lowest in the UK, Italy and Sweden (between 26% and 31%) (European Commission, 2009).

The Purchasing and Consumption Behavior of the New Consumer Becomes Increasingly Green

Figure 4. Trends in the evolution of different types of expenditure between 2001 and 2011, in EU (COICOP 2 and selected COICOP 3 categories, % of total expenditure)

Source: Processed by the authors, using EUROSTAT data online data code: nama_co3_c



Customers became more informed, more able to express their opinions and more preoccupied of topics like health, environment or social problems (Sima & Gheorghe, 2009).

People show an interest increasingly higher for green products and services. This interest may represent an opportunity for the retailer for which the diversification of green products may be a competitive advantage.

Meanwhile, retailers can help to increase the consumer awareness by offering more sustainable options on their shelves.

From the above mentioned Eurobarometer survey the following conclusions concerning consumer views on promotion of environmentally-friendly products resulted:

- Providing better information to consumers was not considered to be the best method to promote ecological products for retailers.
- Almost 50% of the survey respondents claimed that increase the visibility ecological products on the shelves (25%) or the existence of a dedicated green corner for them (24%) should represent for retailers, pathways to promote this category of products.
- A taxation system – to promote ecological products – based on reducing taxes for more environmentally-friendly products received more support than a system based on increasing taxes for environmentally-damaging products, although more than 50% of respondents affirmed that the best taxation system in order to promote

environmentally-friendly products would be to reduce taxation for the more environmentally-friendly products, in combination with increasing taxes for environmentally-damaging products (European Commission, 2009).

Specific Aspects of the Current Consumption Pattern in Romania

The Evolution of Consumption in Romania after 2000

In the Table 1 we analyzed the structure of consumption expenditure of households in Romania in the period 2001-2013. In this analysis, we took into account the structure of consumption expenditures on the following categories: food products, non-food products, services.

Analyzing the data presented in Table 1 and Figure 5, it can be observed, primarily that the food products have weight in consumption. Non-food products follows, and services are only on the third place.

It can also be noted, that the consumption trend changed after 2009 as follows:

- Between 2001 and 2009 a downward trend in the share of food products was manifested and, respectively, an increasing trend of the share of nonfood products and services. This type of consumer behavior suggests an increase in living standards.

- Between 2009-2013 the consumption behavior has changed in the sense that there was a slight increase in the share of food products without, however, reaching the previous values of 2007. Regarding the evolution of non-food products consumption it was remained relatively constant.

Service consumption has decreased slightly after 2009.

This new type of behavior suggests significant negative changes in living standards.

Consumer behaviors are different for different categories of consumers. Thus, in farming families food products expenditures represent the largest share. Unemployed or retired families allocate too, significant share of consumer expenditures for food products.

Regarding the time evolution of their, the relative trends are similar for all categories, namely, decrease until 2009, followed by a slight increase in 2010-2013.

Regarding non-food products and services, it appears, also, relatively similar consumption behavior of different categories of consumers. Thus, in the period 2001-2009 there was an increase in the share of spending on these categories. In 2010-2013 there was a reverse trend (Table 2).

Services are an important benchmark for assessing the living conditions in the analysis of consumption. Using services to meet consumer needs is closely related to many factors, among which the most important are: the purchasing

Table 1. The structure of consumption expenditures of households in Romania during 2001-2013 - % -

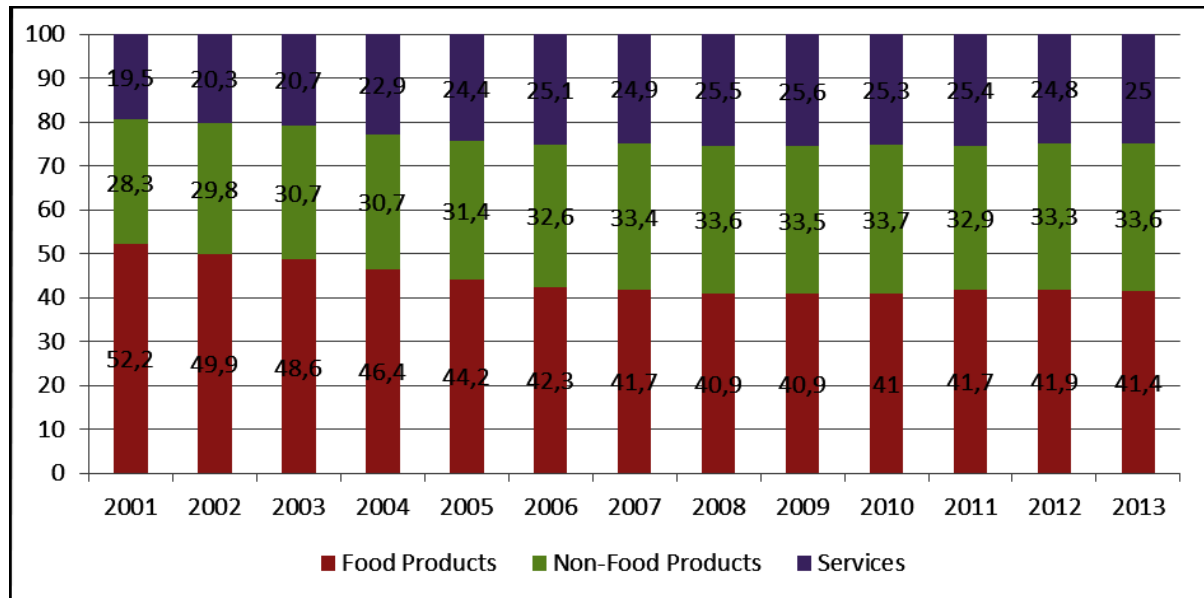
Years	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Food Products*	52.2	49.9	48.6	46.4	44.2	42.3	41.7	40.9	40.9	41	41.7	41.9	41.4
Non-Food Products	28.3	29.8	30.7	30.7	31.4	32.6	33.4	33.6	33.5	33.7	32.9	33.3	33.6
Services	19.5	20.3	20.7	22.9	24.4	25.1	24.9	25.5	25.6	25.3	25.4	24.8	25.0

*Including soft drinks

Source: The National Institute of Statistics of Romania, Query TEMPO-Online, Data for years 2001 to 2013

Figure 5. The structure of consumption expenditures of households in Romania during 2001-2013

Source: Processed by the authors, using data for years 2001 to 2013, The National Institute of Statistics of Romania, Query TEMPO-Online



power or money income; residence environment and living conditions; consumer behavior.

Considering the situation presented in Table 1, namely the fact that throughout the period considered (2001-2013) the expenditure for services is the lowest share in total consumption expenditure of households in Romania, namely between 19.5% in 2001 and 25.6% in 2009 - the best year, it can be stated that the standard of living is relatively low.

For a more complete picture, we have chosen for analysis three points in time, which we considered significant: 2001 - the moment of commencement of the period of study, 2009 - the point when the economic crisis started to be visible in Romania - and 2013 - the final moment of the study period.

Essential Characteristics of the Services Expenditure in 2001

In 2001, spending on food products and soft drinks had a 52.2% share in total consumption expenditure of households, 13.5% of expenditures were for covering the costs of housing, water,

electricity, gas and other fuels, 6% of the money was for alcohol and cigarettes, 6% being, also, the share of expenditures on clothing and footwear.

The remaining expenditures (education, health, communications, transport etc.) had a share of 22.4%.

Considering the structure of services expenditures shown in Figure 6, it appears that the largest share were dedicated to housing related services (rent, electric energy, thermal energy, gas, water, sewer, sanitation and utilities, other services for the maintenance of the house) with 47%.

These and telephony services represented 70% of the total.

On the opposite Insurances services, respectively, Personal Care, were situated, each representing about 1% of the total.

Up to 30% of total expenditures were represented together by Health services (2%), Miscellaneous (3%), Education (4%), Tourism and Culture and Recreation (5% each), respectively, Transportation (9%).

Table 2. The structure of consumption expenditures of households in Romania, by category of consumers during 2001-2013 - % -

Years	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Food Products													
Total	52.2	49.9	48.6	46.4	44.2	42.3	41.7	40.9	40.9	41	41.7	41.9	41.4
Employees	46.1	43.9	42.4	41.4	39.2	37.9	37.1	37.2	37.4	37.6	37.9	38	37.4
Employers	35.4	35	35.6	31.4	30.1	:	29.4	:	:	:	:	:	:
Self-Employed in Non-Agricultural Activities	52.5	50.1	48.2	46.3	45.2	44.8	44.8	43.8	44.2	42.6	44.5	44.9	45.5
Farmers	67.5	65.4	63.2	59.6	57.8	57.1	56.5	55.9	53.2	53.8	54.4	55.1	54
Unemployed	58.3	56.2	52.9	52	48.5	46.6	46	47.4	45.6	45.8	46.4	47.1	46.2
Retirees	55.9	53.6	52.9	50.2	47.7	45.2	45.2	43.2	42.6	42.4	43.3	43.7	43.1
Non-Food Products													
Total	28.3	29.8	30.7	30.7	31.4	32.6	33.4	33.6	33.5	33.7	32.9	33.3	33.6
Employees	30.4	32.0	32.8	32.2	32.9	34.2	34.6	34.7	34.1	34.5	33.9	34.5	34.9
Employers	29.9	29.8	30.3	31.8	29.6	:	:	:	:	:	:	:	:
Self-Employed in Non-Agricultural Activities	26.9	28.3	30.0	29.7	31.1	32.9	31.7	33.3	32.4	32.6	31.6	31.9	32.2
Farmers	23.6	24.8	26.5	26.7	28.3	29.4	30.0	30.4	30.5	30.3	29.5	29.4	29.3
Unemployed	26.5	28.2	29.4	30	31.6	32.2	32.6	32.6	32.1	32.4	32.8	32.7	32.4
Retirees	2.7	2.8	3.0	3.6	3.8	4.1	3.9	4.1	4.5	4.5	4.7	4.3	4.5
Services													
Total	19.5	20.3	20.7	22.9	24.4	25.1	24.9	25.5	25.6	25.3	25.4	24.8	25.0
Employees	23.5	24.1	24.8	26.4	27.9	27.9	28.3	28.1	28.5	27.9	28.2	27.5	27.7
Employers	34.7	35.2	34.1	36.8	40.3	:	:	:	:	:	:	:	:
Self-Employed in Non-Agricultural Activities	20.6	21.6	21.8	24	23.7	22.3	23.5	22.9	23.4	24.8	23.9	23.2	22.3
Farmers	8.9	9.8	10.3	13.7	13.9	13.5	13.4	13.7	16.3	15.9	16.1	15.5	16.7
Unemployed	15.2	15.6	17.7	18	19.9	21.2	21.4	20.0	22.3	21.8	20.8	20.2	21.4
Retirees	16.9	17.8	17.7	20.0	22	23.8	22.4	23.9	24.0	24.1	24.2	23.7	23.6

Source: The National Institute of Statistics of Romania, Query TEMPO-Online, Data for years 2001 to 2013

Analyzing the social groups, the unemployed and pensioners stand out. Although with the lowest income, they allocated in 2001, about 75% of total expenditures for housing related services and for telephone (74.4%, respectively 74.2%).

Noteworthy, however, is the fact that workers and farmers, also, allocated over 60% of total expenditure for these two types of services (71.7% to employees and, respectively, 61.8% for farmers).

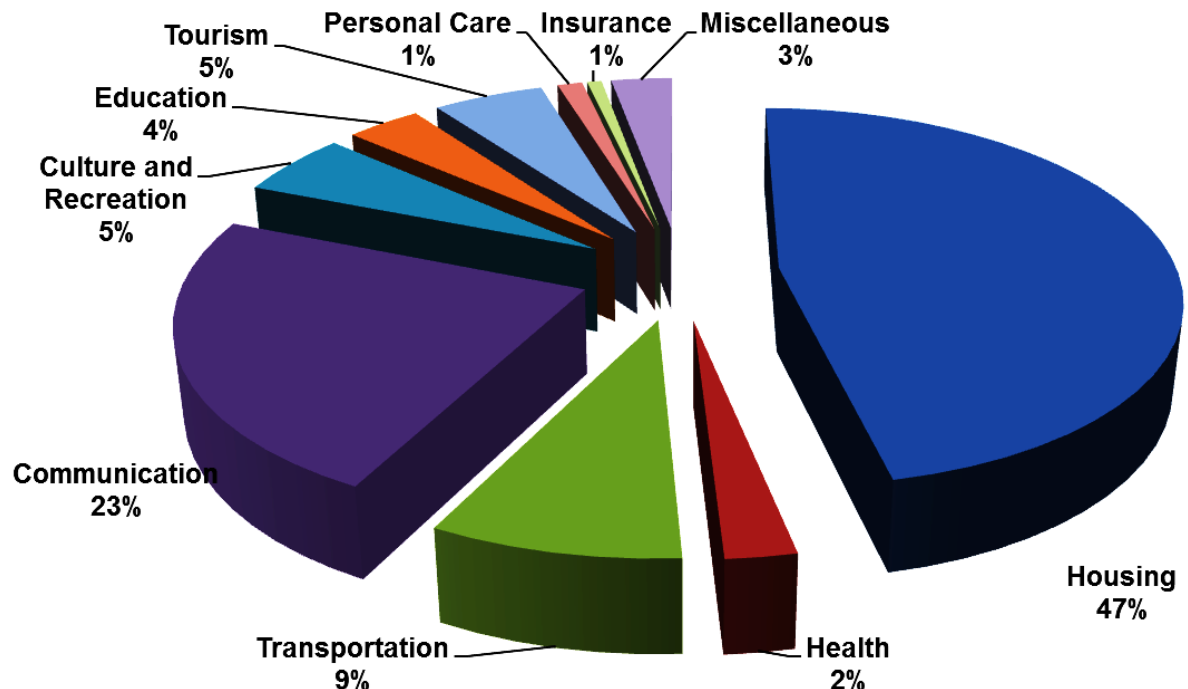
Another remarkable aspect is the fact that the employers (a relatively new social category in Romania in 2001 emerged after 1989) have allocated, also, the largest share services expenditures for housing related services (37.9%).

The housing related and telephone services, represented over 60% of the total (66.2%).

On the opposite, Insurances services and Personal Care were situated. These have represented by 1% and, respectively, up to 2% of the total.

Figure 6. The structure of services expenditures of households in Romania in 2001(%)

Source: Processed by the authors, using data from The National Institute of Statistics of Romania, Query TEMPO-Online



Regarding the low-income category, for services Insurances services, the lowest percentage was allocated by the unemployed (0.4%), which is explained by the low income.

For the Personal Care services the distribution of expenditures was about the same - the unemployed have spent the lowest percentage (0.7%), and employers have spent the highest percentage (1.5%).

An interesting distribution appears at the expenditure for Tourism services, where employers are remarkable with a share of over 10% (11.5%). They recorded the highest percentage in comparison with other social categories who have allocated each less than 2%.

The smallest percentage have been allocated to tourism services bt the farmers (0.3%).

Essential Characteristics of the Services Expenditure in 2009

According to NIS of Romania (The National Institute of Statistics of Romania), total household expenditure represented 88.4% of total revenue.

By categories of households, the highest total average expenditure per person was recorded in the unemployed and retired households, who had the lowest incomes, and the lowest level of expenditure, in farming households.

The main destination of household expenditure - consumption - represented on average across all households, 72% of the total. The size and structure of consumption expenditures of households depend directly on the level of income. There are also other factors that differentiate the level and structure of consumption expenditures.

Table 3. Level and structure of the monthly average expenditure for services per household, on different social categories, in 2001 - %

	Employees	Employers	Self-Employed in non- agricultural activities	Farmers	Unemployed Persons	Retirees
Housing	51.9	37.9	52.0	51.5	56.6	50.4
Health	2.3	2.2	1.5	4.2	1.9	4.9
Transportation	8.4	7.6	8.6	16.4	7.6	10.0
Communication	19.8	28.3	23.2	10.3	17.8	23.8
Culture and Recreation	6.5	4.7	5.7	9.4	7.4	0.5
Education	5.2	3.1	2.2	2.0	4.3	3.2
Tourism	1.4	11.5	1.1	0.3	0.6	0.8
Personal Care	1.1	1.5	0.9	1.1	0.7	1.0
Insurance	0.6	0.8	0.9	0.7	0.4	0.7
Miscellaneous	2.8	2.3	3.8	4.0	2.6	4.6

Source: The National Institute of Statistics of Romania, Query TEMPO-Online

In relation to average total consumption expenditure only the expenditure of employees and retired persons households exceeded the average (by 15.0% and, respectively, 0.7%) the other categories of households being below the average: the farmers households by 37.3%, the unemployed persons households by 25.7% and the self-employed households by 23.9% (The National Institute of Statistics of Romania, Query TEMPO-Online, data for 2009).

In 2009, the expenditure for food consumption represented on all households a share of 44.2% of total consumption expenditure, falling by 0.1 percentage points compared to 2008.

On average across all households, the share of non-food expenditure in 2009 was about 31.0% (31.5% in 2008). The highest share was recorded in households of employees (31.8%) and the lowest in those of unemployed persons (26.8%).

Regarding expenditure for services in 2009 on the total number of households, they represented a relatively low share: 25.6% of the total consumption expenditure (Table 1, Figure 5).

As shown in Figure 7, the expenditures for housing related services had the largest share

(48.3%). These include expenditure for electricity and natural gas with high shares, reaching 59.9% of total expenditures for housing related services, falling by 0.2 percentage points from the previous year.

In 2009, the expenditure for food consumption represented on all households a share of 44.2% of total consumption expenditure, falling by 0.1 percentage points compared to 2008.

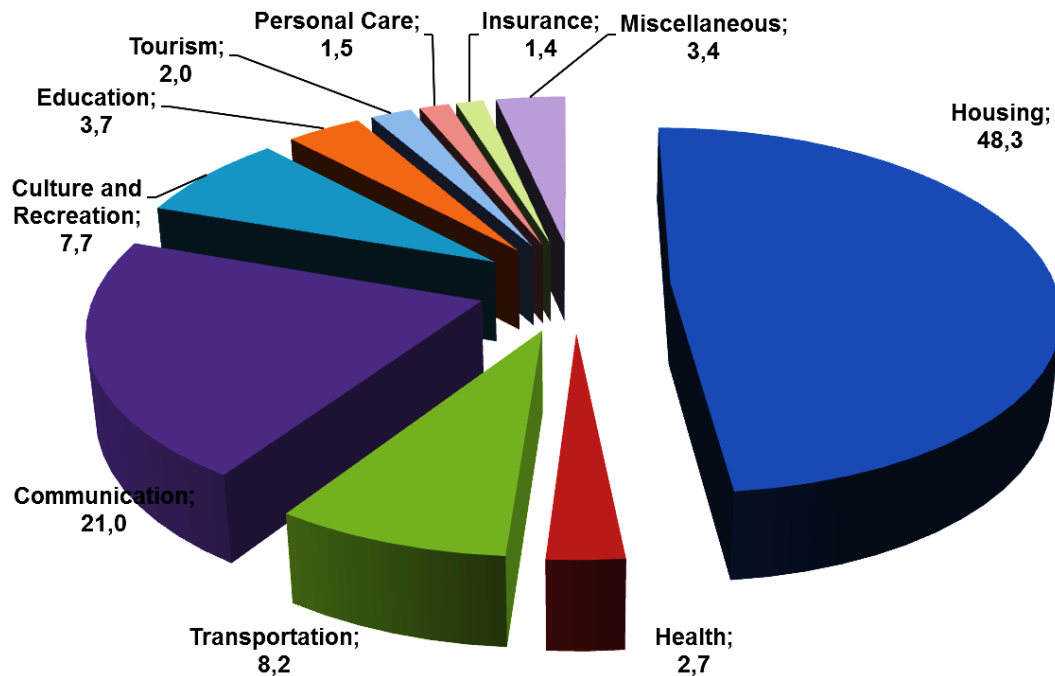
On average across all households, the share of non-food expenditure in 2009 was about 31.0% (31.5% in 2008). The highest share was recorded in households of employees (31.8%) and the lowest in those of unemployed persons (26.8%).

The housing related services represented the largest component of services expenditure for all categories of analyzed households. They represented in 2009 a share of over 50% in unemployed and retired persons' households (53.3% in unemployed households, respectively, 51.8% in households of pensioners).

Values less below 50% were recorded in the self-employed households (44.2%) and in the employees households (48.1%) (Table 4).

Figure 7. The structure of services expenditures of households in Romania in 2009 (%)

Source: Processed by the authors, using data from The National Institute of Statistics of Romania, Query TEMPO-Online



Communication services are ranked the second in the hierarchy of services expenditures with a share of 21%. These are followed as size and weight by transport expenditure (8.2%).

Expenditures for these three categories of services have absorbed almost 80% (77.5%) of all of services expenditures on all households.

Health and education services represented a relatively low share in total paid services: 2.7% for health services and 3.7% for education services, slightly up compared to previous year.

Most of the expenditure for service groups the above mentioned can be treated as “required” payments of household being determined by the housing situation and living conditions, the needs of travel to and from work or study, the state of health, etc. They absorb most of the expenditure for services, leaving few resources for expenditure other types of services (e.g. leisure services and culture (7.7%) personal care (1.5%), insurance (1.4%), etc.). This is reason why expenditures for

such services are low, they together representing less than 11% (10.6%).

By categories of households the highest average monthly expenditure for services was registered in the households of employees, and the lowest in employees households spent of farmers. The employees’ households spent in 2009 3-4 times more than the farmers households.

Essential Characteristics of the Services Expenditure in 2013

The largest part of household expenditure was allocated also for consumption. Total consumption expenditure include, to varying degrees, two components: purchases in the market, which means spending money and value of consumption from own resources.

In relation to average total consumption expenditure made on all households, only the households of employees and retired persons exceeded the average (by 15.9% and, respectively,

Table 4. Level and structure of the monthly average expenditure for services per household, on different social categories, in 2009 1 - %

	Employees	Self-Employed in Non-Agricultural Activities	Farmers	Unemployed Persons	Retirees
Housing	48.1	44.2	39.9	53.3	51.8
Health	2.6	2.4	1.8	1.2	5.4
Transportation	6.9	11.6	10.7	7.1	7.1
Communication	21.9	21.3	22.9	20.8	18.4
Culture and Recreation	6.0	8.2	11.1	8.1	7.7
Education	4.6	5.7	3.0	2.0	2.2
Tourism	3.7	2.0	0.4	0.4	2.0
Personal Care	1.8	1.6	1.4	0.8	1.4
Insurance	2.0	1.1	1.1	1.1	0.9
Miscellaneous	2.3	2.0	7.6	5.0	2.9

Source: The National Institute of Statistics of Romania, Query TEMPO-Online

1.7%) the other categories of analyzed households being below the average: the farmer households by 35.1%, the unemployed households by 29.1% and the self-employed households' by 22.4% (The National Institute of Statistics of Romania, Query TEMPO-Online, data for 2013).

The services expenditure represented, in 2013, a relatively small share, i.e. 25.0% of total consumption expenditure (Table 1) (it may be noted that this share was maintained at a similar value to that of 2009 (25.6%), the difference of 0.6% being significant).

We can say that the share of these expenditures for services increased in 2013 compared to 2001 by 5.5%, from 19.5% to 25.0% (see Table 1). This may be justified taking into account that Romania joined the EU in 2007 and has been required to apply EU law in all fields.

The expenditures for housing related services represented the largest share in 2013, too (52.7%, see Figure 8). Within these the electricity and natural gas have large weights, reaching 60.9% of total expenditures for housing related services, up 2.5 percentage points from the previous year

(The National Institute of Statistics of Romania, Query TEMPO-Online, data for 2013).

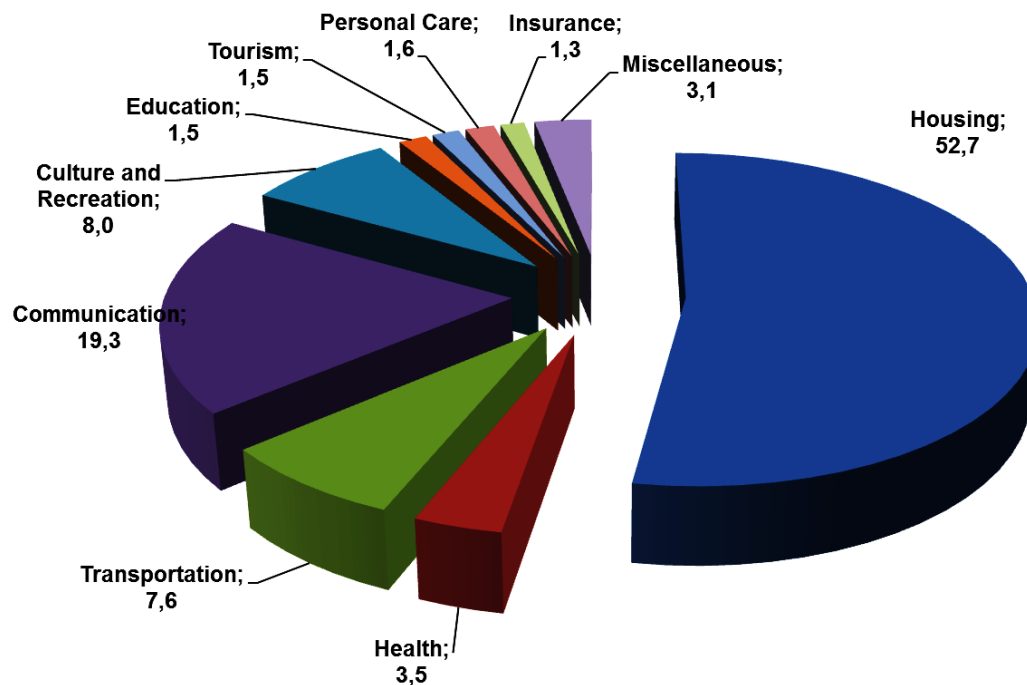
The expenditures for health and particularly those for education showed a low level, especially because fulfillment of these needs of household members was performed in mostly by public services they received under the social security system or for free.

By categories of households the highest average monthly expenditure for services was registered in the employees' households, and the lowest in the households of farmers. The employees' households spent in 2013 on average 2.9 times more than the farmers households (The National Institute of Statistics of Romania, Query TEMPO-Online, data for 2013).

The highest average level of expenditures for housing related services was recorded in unemployed and retired persons' households, being over 50% (58.1% in households of unemployed and 55.1% in households of retirees). The lowest monthly average was recorded in farming households (43.2%). The employees' households and the self-employed allocated, also, in 2013, over

Figure 8. The structure of services expenditures of households in Romania in 2013 (%)

Source: Processed by the authors, using data from The National Institute of Statistics of Romania, Query TEMPO-Online



50% of total expenditures for services (52.0% respectively 50.9%) for housing related services.

The expenditures for communications services (where the phone services had the largest share) occupied the second place in volume and share of total expenditure services (19.3%). Here we can mention that the highest level was recorded in farmers' households (21.5%) and the lowest in the households of retirees (17.2%). Intensifying competition on the Romanian mobile telephony market resulted in improved supply, allowing them to communicate more. Another important issue is the fact that numerous members of the families of farmers went to work outside the country, amplifying, too, the need for communication services.

At the opposite pole are situated Insurances services, respectively, Personal Care Services, each representing less than 2% of total expenditure (1.6% and 1.3% Personal Care Insurances).

The expenditures for Culture and Recreation services (8%), Transportation services (7.6%),

Health services (3%), Miscellaneous services (3.1%), Education services (1.4%), and Tourism services (1.5%) together represent less than 30% of total expenditures for services (Figure 8).

By different social groups unemployed and retirees stand out, who having the lowest incomes were allocated in 2013, over 70% for housing related services and communications services (76.5% for unemployed people, respectively, 72.3%, for retirees) (Table 5).

The expenditures for Culture and Recreation Services, showed an interesting distribution. Here the farmers' households can be mentioned, with a share of over 10% (11.4%). This high value can be explained by the fact that the category Culture and Recreation also included radio-TV subscriptions representing a significant value relative to their low income. In this category of expenditure the employees' households recorded the lowest percentage (6.7%).

Table 5. Level and structure of the monthly average expenditure for services per household, on different social categories, in 2013 - %

	Employees	Self-Employed in Non-Agricultural Activities	Farmers	Unemployed Persons	Retirees
Housing	52.0	50.9	43.2	58.1	55.1
Health	3.7	2.8	3.7	2.2	5.3
Transportation	7.0	8.3	11.1	7.0	6.8
Communication	19.1	21.4	21.5	18.4	17.2
Culture and Recreation	6.7	8.4	11.4	7.3	8.4
Education	2.3	2.0	1.8	0.7	0.5
Tourism	3.3	0.7	0.0	0.4	1.2
Personal Care	2.0	1.8	1.5	0.8	1.4
Insurance	1.6	1.6	1.1	0.7	1.3
Miscellaneous	2.3	2.1	4.6	4.5	2.9

Source: The National Institute of Statistics of Romania, Query TEMPO-Online

Recent Trends in Consumer Habits in Romania

Analyzing the evolution of consumption for different product categories in the period 2001-2010², in Romania, some trends can be highlighted (Figure 9), namely:

- There are categories for which the consumption showed a downward trend. This is the case of food and soft drinks, and alcoholic beverages, tobacco and narcotics. This behavior can be explained by the fact that during the recession, with falling revenues, Romanians have become more rational in terms of consumption. At the same time, they provide increasingly more of these products from their own resources.
- There are categories for which consumption trends showed some fluctuations, but the overall trend has been upward, namely: clothing and footwear, Recreation and Culture, Communications, Health and Miscellaneous goods and services. For them, the trend of the expenditure evolution roughly followed the evolution trend of living standards.

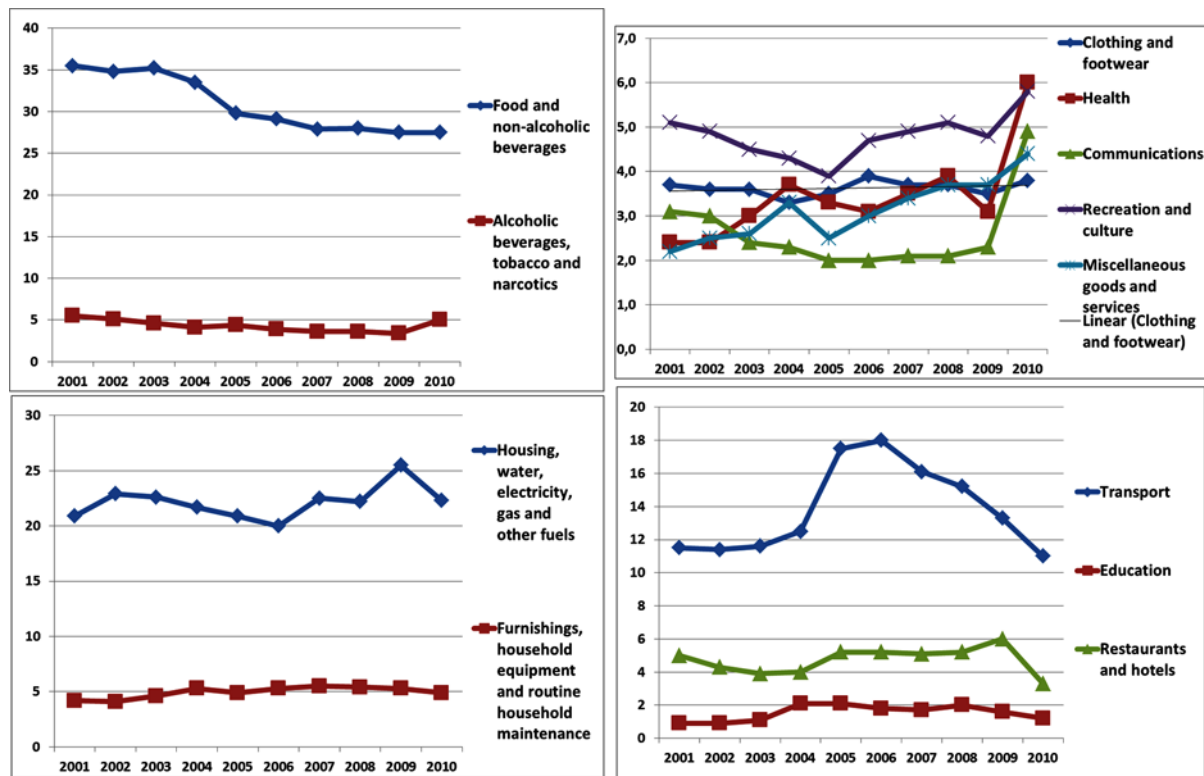
- There are categories for which an increasing trend manifested, but with a decrease during 2005-2006. This is the case of housing-related services.
- There are categories for which a continuous upward trend manifested, with a peak during 2005-2006 p, namely: transportation, restaurants and hotels and Education. The decline was the most obvious in the case of transport services. This can be explained by the increase of prices, especially for gasoline and diesel.

Solutions and Recommendations

The green economy is the key to a healthy, prosperous and clean life. But, like any economic revolution, the transition to the green economy involves efforts and sacrifices for the people. Registration on the path of sustainability will be a long and complex process. The ultimate goal is that the new economic system will not be in conflict with the planetary ecosystem, being able to support economic progress for a long and sustainable future.

Figure 9. Trends in the evolution of different types of expenditure between 2001 and 2010, in Romania (COICOP 2 and selected COICOP 3 categories, % of total expenditure)

Source: Processed by the authors, using EUROSTAT data online data code: nama_co3_c



In microeconomic terms, the green economy requires greening supply contracts. This means that:

- Products must acquire and display multiple green attributes
- Products must generate less waste
- Products must meet certain environmental criteria during manufacture.

In a word, products must become green.

Consumereconomy determines people to focus their income, attitude, energy and attention to the excessive consumption pattern. Thus, people consuming for fashion, remain prisoners of this need, which is a basic need. This model encourages the overconsumption - beyond the needs - of

any assets less useful, sometimes even damaging, thus, creating artificial needs.

The excessive consumption does not allow people with this kind of attitude, to evolve in terms of meeting the complex, elevated, spiritual needs. These needs could improve their social conditions, making them to think about the consequences of their activities on the environment.

In order to support orientation towards an economy which consumes less, and to discourage the excessive consumption model, both consumers and producers should emphasize the product life cycle.

Also, recycling and reuse processes are critical for the concept of sustainable consumption.

The transition from an economy of waste to a recycling and reuse economy offer advantages:

- New jobs (including green jobs)
- Economic and social stability
- A healthier and cleaner environment (energy will come largely from renewable sources).

Rethinking of economic activities on principles of eco-efficiency is another important element of green economic model.

Green businesses are in many countries, as is the case of Romania, just beginning. Investment in wind farms and solar plants is in its infancy.

For the consumer to become sustainable, certain measures must be taken:

- Suspension of government subsidies (fuel, metals and minerals, wood, etc.) that can lead to lower prices and encourage excessive consumption.
- Ecotaxation imposing. This process is relatively limited - environmental taxes in OECD countries is on average about 6-7% of total of all fees.
 - The entire economic activity must be reconsidered on the principles of eco-efficiency- that are based on technological innovation.
- Construction of green buildings with zero energy consumption and zero-carbon emissions, which locally produce all required energy from renewable sources.
 - The European Parliament established that since 2019, any new building in the European Union to be “green”.

The above mentioned organic supply can lead to technological innovations and to green markets establishment. These, based on the principles of eco-efficiency, require the use of:

- New tools for regulatory purposes
- New standards and labeling programs.

All these request a better information for consumers so that they can choose those products that are environmental friendly.

In the future in order to find a way for institutionalization of green supply specific rules or laws that support this new activity has yet to settle on now.

The high demand for organic products from all institutions can play an important role in building a wider market for the sale of ecological goods and services.

In this respect, manufacturers will be more motivated to design and produce them.

The share of this category of products will increase, and economies that produce conventional products will have to decrease prices, making the purchase of organic products become more accessible.

Considering the fact that resources are limited, they must be rationally used. This requires finding new ways to recycle and reuse.

We can talk in this context about rationality in consumption, which led to the emergence of a new model of consumption. This new consumption model is based on certain types of products, preferred by consumers because they can satisfy several needs at the same price. This will make the manufacturer to rethink classical products. Consumers will not buy these products especially. He will have the possibility to rent them or share them with other customers.

Given the above, we can say that we must shift to a new model of consumption specific to green economy, which involves elements such as:

- Thinking long term. It must consider the future is our responsibility and to take into account the impact of current decisions on future generations
- Technological innovation. This should maximize the use of green energy and increase access to green goods by lowering their selling price.

In this context, the involvement at multiple levels is required:

1. At the administrative level. Governments represented by specific institutions should correlate demographic policies with economic, educational, social policies in order to ensure an optimal balance between resources and population needs.
2. In the business environment, companies must take a lot of risks, generate more innovations and create new green jobs.
3. At civil society level, citizens must change:
 - i. Their model of life and consumption (the unhealthy habits and practices of production and consumption)
 - ii. Their mindset regarding environmental protection
 - iii. Their lifestyle. Return to traditions and customs may represent a solution.

Responsibility towards society and the environment is not only of the developed countries, but also of all countries.

Producers should find healthier and less polluting production processes. The success of rethinking the economic activity requires:

- Innovation
- Competitiveness.
- A new economy that can change the economic environment producing on the principle of eco-efficiency.

FUTURE RESEARCH DIRECTIONS

Customers are increasingly aware of environmental issues.

Customers are becoming increasingly enthusiasts about green products and services, being increasingly aware of the importance of a clean

and sustainable lifestyle and claiming that *buying green is important to them* (Sima & Gheorghe, 2009). They are looking for:

- Organic retail sales have grown
- Green buildings are forecast to grow
- Products with antioxidants, fiber, no preservatives and organic claims all increased sales
- Natural and mineral water and nonfizzy drinks increasingly represent a considerable part of the growth of the entire beverage industry, and they are expected to outsell soda.

In order to establish new objectives of the strategy of customer satisfaction increase this new green dimension should be taken into consideration. This requires collecting and analyzing “information regarding: technical quality of the product, quality of reputation, quality of the service, quality of the personal relationships, price perception and green dimension” (Sima & Gheorghe, 2009).

In order to evaluate the consumer satisfaction from this point of view, developing of a specific set of green indexes could be important.

CONCLUSION

Mansoor (2011) identified five major changes in the new consumer behavior as a result of economic recession as follows:

- **The Need for Simplicity:** As a result of the recession, consumers have become more rational, so that their demands have become simpler. It is expected that this model of consumption that emphasize usefulness to continue after the crisis.

- **Temperance:** Consumers have begun to save - even the rich. This attitude can be considered a form of opposition to consumerist model.
- **Smart Consumption:** Consumers looking for the lowest price, at any cost, sacrificing quality and giving up to be loyal to a particular brand.
- **Green Consumerism:** The demand for eco-friendly products has declined during the economic crisis, because people are not willing to pay more for these products, which require more complex and more expensive technologies.
- **Ethical Consumerism:** The same considerations lead people to become more concerned about them and their families and less willing to the community.

In our opinion another major change can be observed:

- **Return to the Roots:** Globalization has led to some extent to uniform consumption patterns. People began to feel that they were losing their national and cultural identity, traditions becoming apart. On the other hand, the economic crisis had also its role in formation of this current through what analysts call “inspiration” - looking for inner valuable experiences that are not related to consumption, but to emotions that give joy on long term and inspires creative acts. Thus, many people have turned to traditional values, discovering a ‘retro’, authentic, rich content world, that emotionally supports them. At the administrative level governments can also support this process through protectionist laws.

The new model of consumption may differ depending on living standard, level of development, degree of integration into regional structures, level of globalization, and cultural environment - tradition, religion.

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KEY TERMS AND DEFINITIONS

Green Dimension of Customer Satisfaction: Refers to some specific requests of the customer including, superior energetic class, renewable energy, low polluting level, products with biodegradable compounds, and organic food. People want an ecologic approach of everyday life, but they want personal benefits or at least an awareness that can be transposed in stimulations or facilitations.

New Consumer Behavior: Characterized by some key features including, the need for simplicity, temperance, smart consumption, green consumerism, ethical consumerism, and return to the roots.

New European Consumer: Is that whom, from the perspective of the purchasing and consuming behavior, two key features can be identified, namely: the new consumer is a smarter consumer, and the purchasing and consumption behavior of the new consumer becomes increasingly green.

Organic Supply: Products must acquire and display multiple green attributes, products must generate less waste, and products must meet certain environmental criteria during manufacture.

Sustainable Consumption: Form of consumption which use of goods and services that respond to basic needs, enhancing the quality of life, improving resource efficiency and minimizing emissions of waste and pollutants over the life cycle, so as not affect the future generations lives.

Sustainable Development: “Meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland Commission (1987). Report of the World Commission on Environment and Development. United Nations). It includes economic development, social development and environmental protection.

The Green Economy: Alternative economy aiming for economic growth and improvement of people’s lives without degrading the environment. It is a new economic system which is not in conflict with the planetary ecosystem, being able to support economic progress for a long and sustainable future.

ENDNOTES

- ¹ In 2006 and 2008 to 2013, due to the low number of observations collected in surveys, information regarding the category of Employers households are not presented
- ² EUROSTAT data available at the time of this paper performing

Chapter 10

Entrepreneurship in Small-Scale Farms: From Production to Commercialization

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ABSTRACT

This chapter aims to relate a case of rural entrepreneurship developed in Portuguese small-scale farms promoted through the European Project PROVE. The Project PROVE appears in 2007 inside European Program EQUAL; several local partners and development agencies work together with small farms to solve a problem. Parts of these farms do not have enough scale to sell large quantities in markets or to arrange agreement with national and international distributors. However, they have agricultural surplus and difficulties in selling their entire surplus in the local markets. Parts of the first farms are also in urban regions and suffer urban pressures, are familiar explorations, and the number of women is relevant. This entrepreneurial solution was spread to different regions in Portugal and also in other European countries and endures beyond the end of the European project.

1. INTRODUCTION

Although many economic changes have happened since Schumpeter (1934) wrote “The Theory of Economic Development” the appropriateness of the relations between the actors involved in the entrepreneurial process, become indispensable develop the entrepreneurship studies. Entrepreneurship is not only the act of creation and development a new business to survive and compete, is also, according to Schumpeter (1934), innovate and create conditions for a radical transformation or

an action capable to disrupt with the past (creative destruction). But, entrepreneurship could include also new combinations of economic resources that promote economic development.

Prevails today the tendency to approach entrepreneurship and innovation as integrated topics. Entrepreneurs are considered as agents of change and growth of an economy, and may act to accelerate the generation, dissemination and application of innovative ideas. In this sense, entrepreneurship and innovation are complementary. Since innovation is the specific tool of entrepreneurs, the means

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by which they exploit the changes as opportunities for supply a new products or services.

Thus, the individual (entrepreneur) is the basic unit of analysis in the relationship between the economy and entrepreneurship. Accordingly, entrepreneurship is the process of creating and/or expanding businesses that are innovative or that arise from opportunities identified by the entrepreneur. Empirical studies provide evidence that some entrepreneurs acquire most of their skills, especially those associated with attitudes through practice (Raffo et al. 2004).

In this context, the entrepreneur assumes particular emphasis on entrepreneurial process. Miner (1997) proposes a typology of entrepreneur based on tests conducted on a sample of one hundred successful entrepreneurs and emphasizes the following profiles:

1. Entrepreneur – Type real manager:
 - a. Desire to exercise power;
 - b. High communication skills and supervision;
 - c. Strong need to promote;
 - d. Desire to perform routine management tasks;
 - e. Positive attitude towards authority
2. Entrepreneur – Type generator of ideas:
 - a. Innovative;
 - b. Solve problems;
 - c. Clever;
 - d. Averse to risk
3. Entrepreneur – Type emphatic super-seller:
 - a. Denote empathy and cognitive style;
 - b. Reveal ability to build strategic alliances;
 - c. Desire to help the others;
 - d. Value the social process and has a strong need for relationships of harmony, believes that the sales force is a key strategy.
4. Entrepreneur – Staff researcher or personal achiever:
 - a. Strong personal initiative;

- b. Internal control;
- c. Strong commitment with the venture;
- d. Desire to learn and to obtain information;
- e. Desire to plan and set goals for the future;
- f. Desire for feedback on their achievements;
- g. It places great value in careers in which the objectives, achievements and individual job requirements are exalted.

Entrepreneur is the main element of the entrepreneurship process. Consequently entrepreneurship is seen as a systemic process that results from the interaction of the entrepreneur/opportunity and project. This process highlighted the role of the individual entrepreneur as a key element that identifies opportunities and turns them into concrete projects. Entrepreneurship is not therefore a purely individual phenomenon, the entrepreneur not act alone. This is also a social process where individual perceptions are influenced the individual profile but also for the economic, social and cultural contexts. Given the fact that entrepreneurship is a process that is influenced by the contexts in which the entrepreneur is inserted. Bruin and Dupuis (2003) describes several types of entrepreneurship:

- Entrepreneurship by necessity;
- Ethical Entrepreneurship;
- Entrepreneurship capital;
- Electronic Entrepreneurship;
- Family Entrepreneurship;
- Community Entrepreneurship;
- Municipal Entrepreneurship;
- State Entrepreneurship;
- Local Entrepreneurship;
- Entrepreneurship in old age;
- Entrepreneurship in young.

Based on the various aspects or types of entrepreneurship, the next section introduces rural entrepreneurship.

1.1. Rural Entrepreneurship

In 2010, almost half of the total OECD population (48%) lived in predominantly urban regions, which accounted for around 6% of the total area. Predominantly rural regions accounted for one-fourth of total population and 80% of land area. In Ireland, Finland, Norway and Slovenia the share of national population in rural regions was twice as high as the OECD average (OECD, 2011). Due this trends most of the entrepreneurship and innovation studies are applied to urban areas, the studies about rural entrepreneurship are still scarce (Akgün et al., 2010). Literature also registers few studies about personal characteristics of rural entrepreneurs and explanations about how they differ from the urban entrepreneur, or why they choose to locate their businesses in rural areas (Wortman, 1990).

The rural development becomes more linked with entrepreneurship. Drabenstott et al. (2003) highlight the role of entrepreneurship policy to support regions in the creation of an “entrepreneurial ecosystem” and emphasize the range of policies, programs and measures to stimulate and support various kinds of rural entrepreneurship.

In several countries rural territories suffer desertification and lost population to the urban regions. Due this situation the unemployment grows (Bosworth, 2012), the population ageing (Paniagua, 2013; Walsh et al., 2012), there are limitations to access educated labor, sufficient capital and infrastructure (Reynolds, et al, 1995). The promotion of rural development is in part dependent from the entrepreneurship as a strategic development intervention useful to promote rural development process (Kulawczuk, 1998; Vaillant and Lafuente, 2007; North and Smallbone, 2006).

In most territories the creation and development of rural enterprises have an enormous potential and in some countries are applied specific public policies to support the reanimation of the rural regions with an important support from the local agencies and other local stakeholders.

These public policies take place with different aims, such as: prevent rural unrest, improve the income of the farmers, create employment opportunities to women, reduce need of social support in disadvantaged regions and improve welfare of rural territories (Labrianidis, 2006; Chun and Watanabe, 2012).

Wortman (1990) defined rural entrepreneurship as the creation of a new organization that introduces a new product, serves or creates a new market, or utilizes a new technology in a rural environment. Additionally, Moyes (2010) refer that rural entrepreneurship research has traditionally focused on the farmer however Miljkovic et al. (2010) argues that rural entrepreneurship is not limited to agriculture and related activities such as food processing, covering a myriad of other activities (namely industrial activities) and also supply complementary products or services, such as tourism (Stathopoulou et al., 2004).

Attending to the creation of new rural firms, Plummer and Headd (2008) and Yu and Orazem (2009) found that firm entry rate is generally lower in rural areas than urban areas. Nevertheless, rural firms reveal a lower salvage value due to thinner markets for capital in small towns (Yu and Orazem, 2009). This lower potential salvage value can be viewed as a potential barrier to exit (Yu and Orazem, 2009), and barriers to exit serve as barriers to entry (Eaton and Lipsey, 1980, MacDonald, 1986).

Moreover, other important topic associated to rural entrepreneurship is social capital. Social capital could reduce or prevent some negative impacts in rural communities. Beggs, et al (1996) suggest that personal networks of non-metropolitan residents contain a larger proportion of long-term relations and tend to be more multiplex. Others studies (Barkham, 1994 and Portes, 1998) refers the importance of entrepreneurs' social capital and their ability to capture advantage of their social structures, networks, collaborations and ties (Woolcock and Narayan, 2000).

Capital social can be considered as a public good and facilitate to overcome the disadvantages associated with the peripheral location of these territories and promotes rural entrepreneurship. Networks and collaboration allows economies of scale in distribution, access to distant markets and to information and knowledge (Atterton, 2007), and provision services to the clients (Young, 2010). Entrepreneurs with strong social ties within rural communities are more engaged with networks of local assistance and less inclined to exploit institutional assistance (Meccheri and Pelloni, 2006).

1.2. Agricultural Commercialization and Small-Scale Farms

Literature not provides a clear-cut division about small farms and smallholder farmers. The more simple definition found in literature refers to a smallholder in the cases when the land available for a farmer is very limited (Chamberlin, 2008; Hazell et al., 2007). Additionally smallholders can be differentiated from the others according with some characteristics, such as landholding size, wealth, market orientation, and level of vulnerability to risk (Chamberlin, 2008). Other nomenclature classifies farms according numeric value. Hazell et al (2007) define small farms as those with less than two hectares of cropland.

Concerning commercialization, its possible to define agricultural commercialization as the proportion of agricultural production that is marketed (Govereh et al., 1999). Commercialization brings several benefits to the rural entrepreneurs but also to the community and region. Von et al (1994) refer that commercialization has an important role in increasing incomes and stimulating rural growth, through improving employment opportunities, increasing agricultural rural productivity, direct income benefit for employees and employers, expanding food supply and potentially improving nutritional status.

Samuel and Sharp (2007) argued that that agricultural commercialization is a bridge through

which smallholder farmers are able to achieve welfare goals. These authors also note that a better involvement in output markets would result in higher agricultural productivity that can facilitate the achievement of the welfare goals of small farms.

Several factors influence potential success of commercialization of small farmers. Literature refer the importance of exogenous factors such as, population, accessibility of new technologies, infrastructure and market creation, macroeconomic and trade policy (Von et al, 1994) and other factors, for instance, agro-climatic conditions and risks, access to market and infrastructure, community and household resources and endowments, development of local products, input and factor markets, laws and institutions, and cultural and social factors affecting consumption preference, production, and market opportunities and constraints (Pender and Dawit, 2007).

In summary, commercialization is a fundamental issue to rural entrepreneurs. The success of existing entrepreneurs can be improved by supporting them with business advice, such as, business planning, marketing and information technology. Rural territories also must provide to their rural entrepreneurs specialized support in order to help farmers in commercialization and marketing of the products, providing infrastructure such as incubators, transportation and reinforce collaboration and partnership to production and distribution of the products.

2. CASE STUDY: PROVE - PROMOTING AND SELLING

2.1. Methodology

This chapter aims to study a case of rural entrepreneurship. This case also presents features associated with entrepreneur's owners of small farms. The case used using descriptions of the international project PROVE supported by European

Union (EQUAL Initiative). The study is based on information available on PROVE website¹ and on documental information.

This exploratory study is supported on a qualitative research applied to Project PROVE. The empirical part of this research was carried out by applying case study methodology, which, according to Yin (1989), it refers to empirical research that investigates a contemporary phenomenon within a real-life context when the boundaries between the phenomenon and context are not clearly evident and where multiple sources of evidence could be used. Comparing case study methodology with other methodologies, Yin (1989) states that in order to define the method to be used, issues that are raised by the research must be analyzed. This method is specifically suitable for answering explanatory 'how' and 'why' questions and deals with operational facts that occur over time rather than frequencies or incidence. To achieve a better understand about rural entrepreneurship.

2.2. Project PROVE: Rural Entrepreneurship

2.2.1. Project Overview

PROVE is an inter-territorial co-operation project between eight Local Action Groups located around Portugal that provide continuity to the experience and methodology developed as part of the IC EQUAL initiative which is projected to solve questions related to the marketing of local products and to take advantage of the proximity of producers and consumers in peri-urban areas.

The PROVE born from a local experience with huge success and is implemented in the different Portuguese regions: South and centre regions (Sesimbra, Palmela, Montemor-o-Novo and Mafra) and north region (Lousada, Penafiel and Paços Ferreira).

The project allows that 3-5 farmers cooperate to form a PROVE core in each region. Weekly

producers assemble and organize basket with local products from different farmers. Each farmer cooperates with different products from their farms considering the customer orders and the seasonality of the products.

Farmers prepare the baskets and make its distribution to the selected location. At the end of each week producers dividing the profits of they're sales and planning next week. According with farms testimonies this project allows the creation of employment, prompt and fair payment for agricultural products, alternatives to sell their agricultural production and also the contact and recognition of agricultural labor by consumers. Figure 1 presents the PROVE process during one week.

This Project intends to promote new forms of short marketing chains between small producers and consumers thereby:

1. Supporting producers sell their produce, directly and immediately obtaining a fair price for their work;
2. Supplying to consumers quality products and a straight contact with producers.

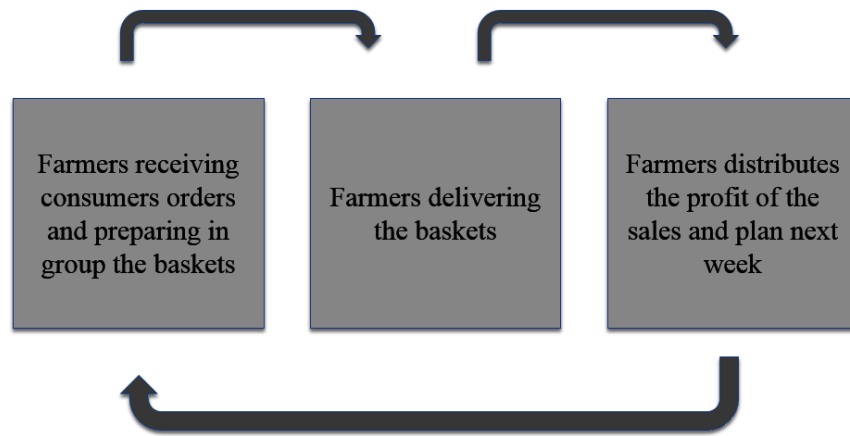
Nowadays PROVE are disseminated in Portugal (are present in 14 of 18 districts in Portugal Continental). And is a successful project replicable in different Portuguese regions and also in other European countries.

PROVE aims to get a set of specific objectives, such as:

- To encourage local sustainability processes by promoting new forms of short marketing chains for agricultural produce, especially between small rural farms and consumers;
- Developing networks for product and/or production between producers and consumers;

Figure 1. The PROVE process

Source: author based on PROVE



- Creating new income sources for farmers through the diversification of farm activities, such as teaching, tourism and cultural activities;
- Promoting and reinforcing the local entrepreneurial capacity of small producers;
- Improving the use of the internet and ICT by small farms to promote their sales and the supply of fresh local produce.

2.2.2. PROVE Methodology

In order to, achieve the objectives, PROVE developed a methodology supported in several activities to promote commercialization and sustainability of small farms:

- Publicising the project and training mediators (local experts promoting the PROVE methodology) through seminars and training workshops;
- Promoting activities to create and develop PROVE producer areas;
- Disseminating the project and its results;
- Organizing workshops for experts and producers on the farms;

- Intervening with plans to encourage farm diversification (products and activities);
- Developing local marketing experience and network to improve technological skills, share resources and knowledge, and minimise the costs associated with marketing of local produce;
- Promoting the PROVE website and G-PROVE on-line ordering system for home delivery of fresh local produce;
- Visiting producers in the PROVE areas;
- Taking international research and cooperation with others partners;
- Creating a guide to best practice and to the farm intervention plans.

Its possible to find some results and benefits associated with PROVE, such as, expanding and strengthening the local food sector in Portugal through creating 20 new PROVE areas and connecting local producers to consumers via the PROVE website and G-PROVE on-line ordering system, catching new consumers to sustain the local food sector through the comprehensive and easy-to-use G-PROVE on-line ordering system, creating Farm Intervention Plans and encouraging the diversification of farms activities.

2.2.3. Project Assessment

2.2.3.1. Project Assessment: Consumer's Perspective

In 2012 PROVE was assessed by a team (Rodrigo et al, 2012) that applied a questionnaire to the consumers. The universe of respondents (452) corresponds to 33% of total consumer 1379. This assessment allows knowing the profile of the PROVE consumers in different Portuguese regions. Most of the PROVE consumers are young (40% are aged between 36 - 45 and 33% between 26-35 years), with higher levels of education (65% have bachelor's or higher education degree) and with medium/higher considering the Portuguese average household income (42% for this income exceeds € 2,001). Most of the consumers belong to households with small size (65% of total of respondents living in households consisting of 1-3 individuals) and have a close proximity to agriculture and rural "world. They know about the PROVE distribution channels, mainly informality and through family, friends and/or other PROVE consumers. The acquisition Basket is made on the basis mainly two times for month (58% of total responses) and quantity of the products satisfies the needs of households of consumers. In general consumers evaluate positively the PROVE, specifically with regard to: variety, quantity, quality, price and delivery site of PROVE.

The vast majority of consumers (76%) are not available to buy a certified basket. This unavailability is justified by their trust, especially in producer (54% of responses) and also the entities involved in the Project (28%). Concerning a social dimension of the project and the involvement with rural world, 55% of the total respondents expressed interest in visiting a farm without implying any direct involvement with agriculture. The contacts with producers, on delivery of the basket, seems suffice them. The consumer's motivations to adhere to the project PROVE are essentially economic and civic. This statement is based on the

high number of responses obtained in these types of motivations, compared to the environmental nature; individual / personal; and social policies that were also the subject of inquiry. That is, "PROVE be consumers" means, from the point of view of respondents, especially, "supporting the local economy "," contribute to the reduction of food imports "and" contribute for improving the income of local farmers. "

2.2.3.1. Project Assessment: Farmer's Perspective

According with Baptista et al (2002) in June 2011 PROVE had 58 farmers involved. Small and very small farms dominated the north of the country, and represent 69% of PROVE producers. Most of the farms groups have about 3-4 producers, who sold about 3231 baskets per month (June 2011), a total of 25,848 kg (average of 8 kg mix), generating an income of 25,848 € monthly (average 8 € basket). The average revenue per producer / month is 478 €, presenting this value a large variation, with a minimum of 157 € and maximum of € 1,593. The groups located near urban centres evidence greater dynamism, developing its activity in a large region, particularly in nearby cities where there is a greater growth potential. The variation in the number of baskets sold is very high; a group sells for about 620 baskets month (Sesimbra near Lisbon) other group (VP Ancora in the north of the country) sell only about 30 baskets per month. The groups with low sales have, in the medium term, higher difficulties to survive.

PROVE producers are mostly women (62%) with different ages, 51% have between 40 and 60 years old and 26% between 31 and 40 years old. The level of education varies widely, 79% studied until basic education and 21% have higher education degree. The formation in the fields of agricultural production, were mainly acquired with working experience in agriculture. Just, 17% have higher technical training in agricultural issues. Most of these workers devote at least 70%

of their time to agriculture, and 62% of the total don't develop other remunerated activity and for 1/3 of the farmers agriculture is the main source of family income. Farms have small areas, up to 4.5 ha in 75% of the farms in the project. Hand labour is mostly familiar (76%). And farmers belong to small families with about 3-4 members in average. In such units there exists a great diversity productive and is practiced in conventional agriculture, mostly outdoors. The farms studied focus almost exclusively their activity in agricultural and animal production, and in general tend to no diversify into other complementary activities.

The main motivation (79%) of producers to enter the PROVE is access to market for marketing its products in more advantageous conditions. The direct contact with consumers is the second main reason for 66% of producers. Environmental and health concerns were motivation for 57% of producers. The analysis of the PROVE producers, agricultural holdings and perspectives allows to present the following producers typology.

The advantages of the PROVE are reported by 59% of producers: the assured flow of goods and an increase in income, direct contact with consumers, and the various opportunities created by the project. They also refer other advantages, such as socializing, training and personal achievement.

The principal disadvantage referred is the lack of commitment to consumer purchasing (25%), low income generated by PROVE and the extra work mainly in small groups with low sells by month. About 21% of the producers didn't indicate any disadvantage in the project.

The perception of producers about consumers is that they want more products fresh and healthy products (quality), developed a relationship of trust with producers (over 90%) and also a strong connection with the territory.

Regarding the results and impacts of the PROVE, most producers agree (between 53% to 66%) that this project stimulated the cultivation of new vegetable species, increased the cultivated area, improved marketing conditions and increase farm and family income. The project also allows improve the productivity of the farms and diversify the supply of new species mainly for the request of the consumers. PROVE still allows the sale of other products extra basket, such as eggs and sausages.

About ¾ of producers recognize that this project, implies motivation, organizational skills and working team. Over half of those considered important to have a different attitude concerning agriculture, food and environment.

Table 1. Producer's typology

Producer - Trader	Strongly oriented to the market; uses multiple channels to sell their products.
Producer – Militant	Concerned about the environment and mode of production. Consider PROVE as a civic network and ideological instrument. Generally have a large farm.
Producer – Diversifier	PROVE is a vehicle for sale other products, small producer.
Producer - Network (assembler)	Involves neighbours, very small producers in providing products for the basket.
Producer – Micro	Produces micro small quantities, sells the surplus only in PROVE. Works in agriculture in part time at the end the of the day and in weekends.

Source: Baptista et al (2002), adapted

CONCLUSION

The PROVE attending to the operating model and results achieved, evidence a huge potential and be able to grow and be successful. PROVE was a well succeed Project that provide a set of important lessons replicable to other regions and countries in Europe or in world, such as, a concept of local identity essential to draw up local strategies, a local approach that encourages the participation and initiative among local stakeholders, a method that ensures the knowledge transfer and the dissemination of best practice between producers, consumers and partners, a local processes that involve several stages and are essential to stimulate relations between producers and consumers.

It is important to be clear and dynamic, and to allocate responsibilities and authority in order to encourage the local trading of quality local products and services. In the fact, the success or failure of a strategy depends on how the interests and relationships between local stakeholders are structured.

In summary, PROVE promote rural entrepreneurship and are based in partnership and collaboration between small sale farmers, local agencies for development and municipalities, allowing social exchanges and improve interconnectedness among network ties. This project develop a proximity solution to sell the products thought the creation of a label PROVE and a basket that includes seasonal products from different farms, providing a proximity way of sell products a and bring also customers to farms as a win-win sustainable solution. PROVE allows preserve landscape of these regions, generate income to small farms and provide health, seasonal and fresh products to customers.

This case shows that agriculture could provide income to rural communities and rural development. In this context rural entrepreneurship gaining

importance as a force of economic change that must take place if several rural communities want to survive. Nevertheless, entrepreneurship requires an enabling environment in order to flourish.

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KEY TERMS AND DEFINITIONS

Case Study: Is a descriptive, exploratory or explanatory analysis of event.

Commercialization: Is the process or cycle of introducing a products into the market.

Equal Initiative: EQUAL Community Initiative was financed by the European Social Fund and co-funded by the EU Member States within the 2000-2006 programming period. The initiative focused on supporting innovative, transnational projects aimed at tackling discrimination and disadvantage in the labour market. These projects were created to generate and test new ideas with the aim of finding new ways of fighting all forms of discrimination and inequality within and beyond the labour market.

PROVE Project: PROVE is an inter-territorial co-operation project between eight Local Action Groups located around Portugal that provide continuity to the experience and methodology developed as part of the IC EQUAL initiative which is intended to resolve issues related to the marketing of local products and to take advantage of the proximity of producers and consumers in peri-urban areas.

Rural Entrepreneurship: Entrepreneurship that emerge in rural regions and acts as a key factor of economic development of the region.

Rural Marketing: Process of developing, pricing, promoting, distributing, rural specific goods or services.

Small-Scale Farm: Small farm with mainly intensive agriculture and small dimension.

ENDNOTES

- ¹ PROVE available on <http://www.prove.com.pt/>

Chapter 11

Solar Energy Potential as Support for Sustainable Development of Romanian Economy

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ABSTRACT

Energetic resources represent one of the most important factors in the process of consolidation of competitive market economy, having also a very important role in assuring the functionality of the economic system components. The decline of oil and gas production imposes the necessity to identify and implement new energy sources. Another reason to identify new energy sources is the pollution that is generated by the fossil fuel burn. The chapter presents a methodology about the solar energy potential evaluation for Romania. As a result of the tax incentives that are offered to investors in renewable energy, many projects were developed in Romania in the recent years, especially about wind and solar energy. But many projects have been done without a realistic assessment of potential wind or solar energy, as the consulting firms had presented an exaggerated image of the financial potential of these investments.

INTRODUCTION

The sustainable development of a country involves finding a balance between internal consumption of resources and the potential of resources that are owned, so that the depletion of these resources is never reached. Also, sustainable development involves the harmonization of the technologies that are used in order to ensure an environment that is as clean as possible.

All these requirements are contradictory because the resources (materials and energy) are often exhaustible and technological processes are generating environmental pollution.

Energy resources occupy an important role in the sustainable development of any economy because energy is needed both for basic needs such as home heating and cooking, but also to ensure the production of material goods and services. Because of this, the evolution and de-

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velopment of human society is closely related to the existence and the exploitation procedure of the energy resources.

The energetic resources that are used mostly are the fossil fuels: coal, oil and natural gas, hydraulic energy of rivers, uranium and renewable resources. The use of coal as an energy resource has led to a rapid development of the technology and production at an industrial level, generating the first industrial revolution. But the extraction of charcoal requires a high volume of work and it generates CO₂, other toxic or greenhouse gases and a quantity of ashes after combustion.

The transition to oil derivatives and natural gas as an energy resource has allowed the accelerated development of the technology and of the world economy, because their extraction is much simpler than that of coal, and the combustion process only generates CO₂ and other gases, without ash.

But the development of technology did not have only beneficial effects. During the pursuit for profit, there has been a growth in the production of goods, involving a higher level of the consumption of energy that is obtained by burning fossil fuels. This led to discharges of huge amounts of CO₂ and other products of combustion (gas, ash, etc.) leading to intense environmental pollution.

Ascertaining the direct link between pollution from industrial processes and the number of cases of diseases of various kinds, from mild allergies to complicated and difficult-to-treat cancers, measures to limit the emission of CO₂ and of other substances in the atmosphere were adopted, in order to gradually decrease the amount of CO₂ that is released into the atmosphere.

This problem, which is manifested globally, can be solved by modifying the current technologies in order to reduce flue gas emissions, especially CO₂ and sulfur compounds, or by substantially reducing the quantity of fossil fuels burned to produce energy.

The reduction of the quantity of fossil fuel that is burned can only be achieved by replacing them with other energy sources. A viable alternative, but

more expensive and sometimes more risky, is the nuclear energy. This is a clean way of producing energy but an accident can cause pollution effects more dangerous than a coal or gas plant (long term radioactive contamination). Another possibility is the renewable energy that includes wind, solar, hydro, geothermal and biomass energy. These sources are practically inexhaustible because all stem from the same source, which cannot ever be exhausted: the energy radiated by the Sun to Earth.

The replacement of traditional energy sources based on fossil fuels with renewable sources is also needed because conventional sources are depleting. The finite, exhaustible nature of these energy sources has been reported for the first time by the American geologist Marion King Hubbert in 1956.

The twentieth century has been dominated by the search and the insurance of the opportunities to exploit oil and natural gas resources. These resources have generated various economic effects, from economic crises (such as those in the years: 1973, 1979 and 2011) to the outbreak of armed conflicts between states. Along with the traditional sources of energy in the second half of the twentieth century, nuclear energy developed, which although it is much cleaner than energy from coal or petroleum products, it is much less used due to the dangerous radioactive waste.

The limited energy resources raises the question of energy options in the future, especially since in many specialized studies such as (Apergis & Danuletiu, 2012; Shahbaz, 2013), a number of correlations between the consumption of energy and industrial development of a society and national income have been highlighted, which shows a strong correlation between these factors.

Unfortunately, the volume of oil and gas reservoirs in use is declining, and other deposits are found increasingly difficult, at higher depths and / or in very difficult conditions for operation. The decline of oil reservoirs has been provided by American geologist Marion King Hubbert ever since 1956, in "Nuclear Energy and the Fossil Fuels", which was presented at a meeting of the

American Petroleum Institute, San Antonio, Texas (Hubbert, 1956).

It was initially met with much skepticism, and became the target of many critics, but the theory of the American geologist Marion King Hubbert, which stated that the United States production will peak in the late of 60's and early of 70's, was rehabilitated in 1970, when the United States have reached the peak of the production followed by its decline.

Hubbert noted that fossil fuel production follows a bell-shaped curve and uses, in order to estimate future production, a logistic curve:

$$Q(t) = \frac{Q_{\max}}{1 + a \cdot e^{a(t_{\max} - t)}} \quad (1)$$

where $Q_{\max}$ is the final quantity that is recovered from the reservoir; $Q(t)$ - Cumulative production until t year; a - Constant; t - Estimate of the production for the t year; $t_{\max}$ - Year of peak production.

Hubbert curve was confirmed for other fuels such as natural gas. Hubbert's theory has been confirmed also for other countries, as it is used as a tool to estimate the future production of fossil fuel reservoirs but also of rare metals, and in general, of any finite deposits.

Renewable energy policy must face a challenge: it has to find a balance between the need of immediate installation of large capacities that produce renewable energy and granting of a period of time that will allow research to help reduce the cost of these capacities.

For finding such a balance, the following factors are to be taken into consideration¹:

- Currently, the use of renewable energy costs more than the usage of hydrocarbons, but the difference decreases, especially when taking into account the costs of climate change;
- Renewable energy improves energy security of the EU by increasing the share of

domestically produced energy and diversifying the fuel;

- Renewable energies emit few greenhouse gas emissions or none; most of these types of energy contribute significantly to improving air quality;
- The closure and deactivation of the capacities of generating energy that make us of fossil fuel and obsolete technologies require a longer period of time, in order to create new habits of consumption and to avoid social problems.

In order to achieve the 20% target, a massive growth in all three renewable energy sectors will be required: electricity, bio fuels and heating and cooling systems. The Strategic frames introduced by some Member States have produced results in all these areas, showing that it can succeed.

By 2020, renewable could cover about one third of EU electricity consumption. Currently, wind power covers about 20% of electricity needs in Denmark, 8% in Spain and 6% in Germany. A decrease of the currently high costs to other technologies is estimated - photovoltaic, solar thermal, tidal and wave energy.

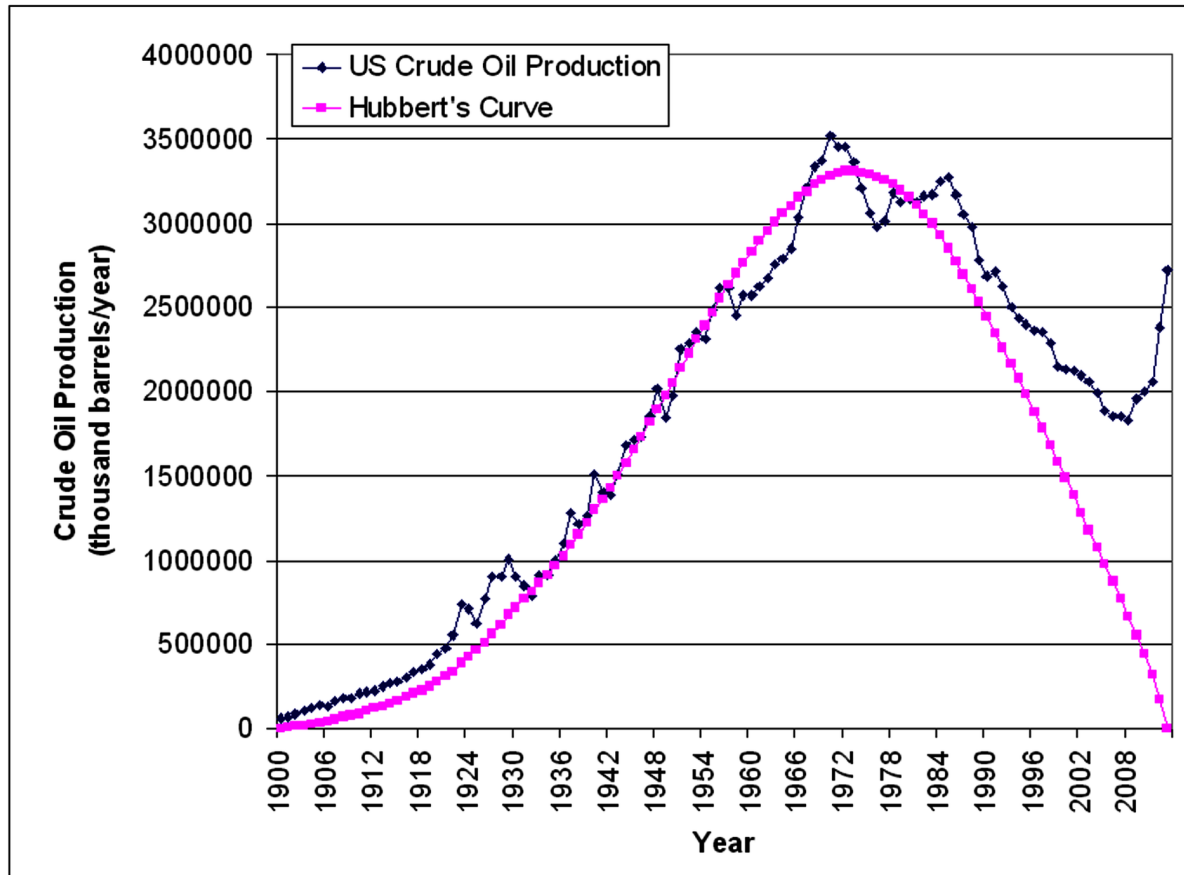
Concerning heating and cooling systems, progresses are expected through several technologies. In Sweden, for example, over 185,000 geothermal heat pumps were installed. Germany and Austria are the first in solar heating. If other Member States reach these levels, the share of renewable energy for heating and cooling will increase by 50%.

Regarding bio fuels, bio ethanol is already 4% of the petrol market in Sweden, while Germany is the world leader in biodiesel, with 6% of the diesel market. Bio fuels could cover up to 14% of transport fuels by 2020.

A particular feature of this framework is the need for a minimum level of coordinated development of the bio fuels throughout the entire EU. Currently and in the near future, bio fuels are and will remain more expensive than other

Figure 1. The evolution of the United States oil production and Hubbert's curve

Source: Created by author with data provided by the Energy Information Administration ("http://www.eia.gov" www.eia.gov)



forms of renewable energy, but over the next 15 years, they will be the only way to significantly reduce oil dependence in the transport sector. In the roadmap for Renewable Energy and in the Bio fuels Progress Report, the Commission proposes to establish a binding minimum target for bio fuels of 10% of vehicle fuel by 2020 and the insurance of the sustainability of bio fuels usage within and outside the EU. The Commission will also continue and intensify the use of renewable energy through other policies and by supporting the measures which are designed to create a true internal market for renewable energy in the EU.

Europe has two key objectives for energetic technologies: to lower the cost of clean energy and to bring the enterprises from EU on the first

place in the energetic low-carbon technologies sector, that is booming. In 2007, the Commission presented a *European Strategic Plan for Energetic Technologies*² to achieve these two objectives. The plan has a long-term vision, by the extent of the challenge represented by the long transition to a sustainable energy system with low carbon, without the loss of competitiveness³:

- Until 2020, the technology must accomplish the target according to which the renewable energy target is 20%, allowing a marked increase in the share of lower cost renewables (including distribution of off-shore wind power and bio fuels of the second generation);

- Until 2030, the production of electricity and heat will have to increasingly use low carbon sources; an extensive use of fossil fuel which has almost no emissions CO₂ with capture and storage. Transport will need to increasingly adapt to using second generation bio fuels and hydrogen fuel cells;
- For 2050 and beyond, the European energy system should be based solely on low-carbon sources, which could include renewables, sustainable coal and gas sources, significant proportions of hydrogen and nuclear fission the fourth generation of fusion energy for the Member States concerned.

The priorities of such specific initiatives include⁴:

- Buildings, appliances, equipment, industrial processes and transportation systems which energetically more efficient;
- The development of bio fuels, especially of the second generation bio fuels, in order to become a truly competitive alternative to oil;
- Ensuring the short-term competitiveness of offshore wind energy and the path to a competitive European super-grid offshore;
- The ensuring of Photovoltaic electricity competitive, in order to harness solar energy
- The usage of technologies that are based on hydrogen fuel cells in order to exploit their benefits in decentralized production of energy, and in transport
- Sustainable technologies based on coal and gases, particularly carbon capture and storage (see below);
- The EU should remain a leader in technology for nuclear fission reactors of the fourth generation and fusion technologies in order to increase the competitiveness,

the safety and the security of nuclear electricity and in order to reduce waste.

These sectoral objectives should be based on specific milestones and on a higher volume of energy research expenses.

Romania has been exploiting the hydraulic potential for generating electricity for many years, so that a surplus of energy from these sources could come from implementing SHP. In Romania, in the period since its accession to the EU in 2007, a variety of projects for getting energy from renewable sources have been implemented, due to a support system based on the so-called Green Certificates, which the producers of green energy have received an amount of money for each MW they produced.

By becoming a full member, Romania must comply to the requirements of EU legislation concerning renewable resources of energy and fight to achieve them.

Romania has a wide range, but quantitatively reduced, of fossil, minerals and primary energy resources: oil, natural gas, coal and uranium as well as significant potential of renewable resources.

An accurate assessment of the possible coverage of primary energy needs in the future should start from the current proven reserves, coupled with a realistic estimate of potential resources and in close correlation with the resource consumption forecasts that are determined by the final energy demand⁵.

From this point of view, at present, the following estimates can be made⁶:

- Lignite reserves can ensure effective exploitation for about 40 years at a production level of about 30 million tons/year. In the extraction of lignite the level of state intervention is reduced, and is reduced to the giving of grants which are only meant for exploitation of underground subsidy, and it will be eliminated over time;

- Regarding coal, restricting perimeters and closing led the nonperforming mines to a situation where only about 30% of the total geological reserves of coal is found in the perimeters that can be found in the concession of CNH-SA.

According to a 2007 Directive, the EU allowed the continuance of the subsidy for exploiting the coal by 2018 and is conditioning this fact by applying the strict implementation of a program of closure of loss-making mines⁷. It is estimated that the development of production costs, of the additional costs of CO₂ emissions and the elimination of subsidies on production (required by EU) will reduce the increasing competitiveness of domestic production of coal and therefore significantly constrain production.

Deposits in Romania are located in geo-mining conditions complex and mineralogical characteristics that influence quality of coal is at the lower limit. From the economic and energy point of view for electricity production, indigenous coal, without subsidies source becomes marginal.

As of national primary energy resources (Table 1) it is obvious that, except for renewable energy sources, lignite is the only domestic primary energy carrier in terms of resources, can contribute significantly to consumer demand for electricity in the next 2-4 decades⁸.

It can be concluded that the production of primary energy in Romania who is based on both the exploitation of fossil primary energy reserves, coal and hydrocarbons as well as those of uranium, in the most optimistic case, can not grow in the next decade. It follows that the coverage increased demand for primary energy in Romania will be possible by increasing the use of renewable energy sources and the primary energy imports - gas, oil, coal, nuclear fuel.

On the horizon analyzed, Romania will remain dependent on imports of primary energy. The level of dependence will depend on the discovery of new internal resources exploited for the

integration of renewable energy and the success of energy efficiency measures. Package "Energy - Climate Change" EU sets a series of targets for 2020, known as the "20-20-20 targets", namely:

1. Reducing GHG emissions in the EU by at least 20% from 1990 levels
2. 20% increase in the share of renewable energy sources (RES) in total EU energy consumption and a 10% target for bio fuels in transport energy
3. A 20% reduction of primary energy consumption, which will be achieved by improving energy efficiency, to the level that would have been eating in the absence of such measures.

Energy efficiency measures are critical in ensuring the lowest cost to achieve the objectives set by the energy-climate change package. It is obvious that the 20% energy efficiency will greatly contribute to sustainability objectives and competitiveness in the EU. In addition, reducing consumption through energy efficiency is the best way to reduce dependence on fossil fuels and imports.

Admitting the importance of energy technologies to reduce CO₂ emissions, to ensure security of supply and competitiveness of European companies, the EU proposed a joint strategy to promote energy technologies. In October 2009 was adopted "The European Strategic Energy Technology Plan - Towards a low carbon future". In this document, the Commission proposes a coordinated strategy between the EU, Member States and European industrial companies, as well as prioritizing energy technologies with emphasis on technologies to improve energy efficiency, use of renewable energy sources and reducing CO₂ emissions.

Also, there was adopted a scheme of financial support for investors in renewable energy sources, scheme based on Green Certificates.

Unfortunately, the existence of this support scheme has led to anomalies in the analysis and

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Table 1. National energy resource situation

Resources of Primary Energy	Reserves						Annual Estimated Production	The Estimated Period of Assurance		
	Reserves		Exploitable Concessioned		In New Perimeters			Geological Reserves	Exploitable Reserves Concessioned ²⁾	In New Perimeters
	Mil. tons ¹⁾	Mil toe	Mil. tons	Mil. toe	Mil. tons ¹⁾	Mil toe		Mil. tons ¹⁾	Year	Year
1	2	3	4	5	6	7	8	9	10	11
Coal										
- Huil	755	422	105	38,8			2,5	229		*)
- Lignit	1.490	276	445	82,4	1.045	133	3,0	47	15	30
Oil	74	72					4,5	14		
Natural gas ¹⁾	185	159					10,5	15		

1. Natural gas only, expressed in billions of m³;

2. Duration of the concession is of at least two years;

* It depend on the evolution of regulations of European Commission in the field

Source: Elements of energetic strategy for the period 2011-2035, Ministry for Economy, Commerce and Business Environment

Table 2. Estimation of national reserves of oil and natural gas in Romania

YEAR	OIL Millions Tonnes	NATURAL GAS Billion m ³
2006	80	170
2007	76	162
2008	72	155
2009	68	148
2010	64	141
2011	60	134
2012	56	127
2013	52	120
2014	48	114
2015	45	107
2016	41	101
2017	38	95
2018	34	89
2019	31	83
2020	28	77
Premises considered in the estimation	- Due to the depletion of deposits, oil production can record annual decrease of 2 - 4%. - Degree exploited reserves replacement shall not exceed 15 - 20%	- Due to the depletion of deposits, oil production can record annual decrease of 2 - 5%. - Degree exploited reserves replacement shall not exceed 15 - 30%

Source: Elements of energetic strategy for the period 2011-2035, Ministry for Economy, Commerce and Business Environment

implementation of projects of this type, and this not only in Romania. Projects of this type have been presented in an overly optimistic manner according to which, based on Green Certificates, investment was going to recover very quickly, providing tremendous business profitability. In these conditions have started more investment, some enjoying and funding by operational sectoral programs. Also the mirage of these businesses has led to violations of the law, there are cases of voluntary environmental destruction for installing machinery. On the other hand, the support scheme based on Green Certificates, as applicable in Romania proves immoral because transfer investment costs from the investor to the consumer, without the latter to become the beneficiary of that investment.

The excitement generated by the possibility of implementing renewable energy also led to an overstatement of the potential of these sources in Romania. It is also true that the assessment methodologies that were used have led to different results over time. Because of this, a more realistic assessment of the potential for renewable energy sources is beneficial for choosing future strategies. Further, this chapter will present an assessment of the solar potential of Romania, evaluation tries to account for all the technical and economical aspects specific to these energy sources.

The following figure presents Romania's energy dependence on fossil fuel sources and the total dependence on energy.

As it can be seen, the stronger dependence is, for Romania, for hard coal and derivatives. This dependence is mainly due to the closure of many coal mines in the analyzed period. Reducing the dependence on hard coal and derivatives in recent years is not based both on reopening closed mines or the discovery of exploitable deposits in terms of economic efficiency but, especially, on the decline of domestic consumption. This decrease in domestic consumption is due to the closure of coal power plants that provide a certain level of consumption.

The next level of energy dependence of Romania is held by petroleum products. The slightly downward trend of this dependence is justified by several factors such as: reducing the need for oil, due to the closure of petrochemical processing plants (Brazi, Teleajen, Rafo, Arpechim ș.a.) and the concentration of production in oil refining to obtain fuels for means of transport; the increase of domestic oil production amid of refurbishment completed in OMV Petrom SA, in order to improve the efficiency in extraction sector; reducing the volume of goods transported by road, due to the economic crisis, and thus reducing the need for car fuel domestic consumption.

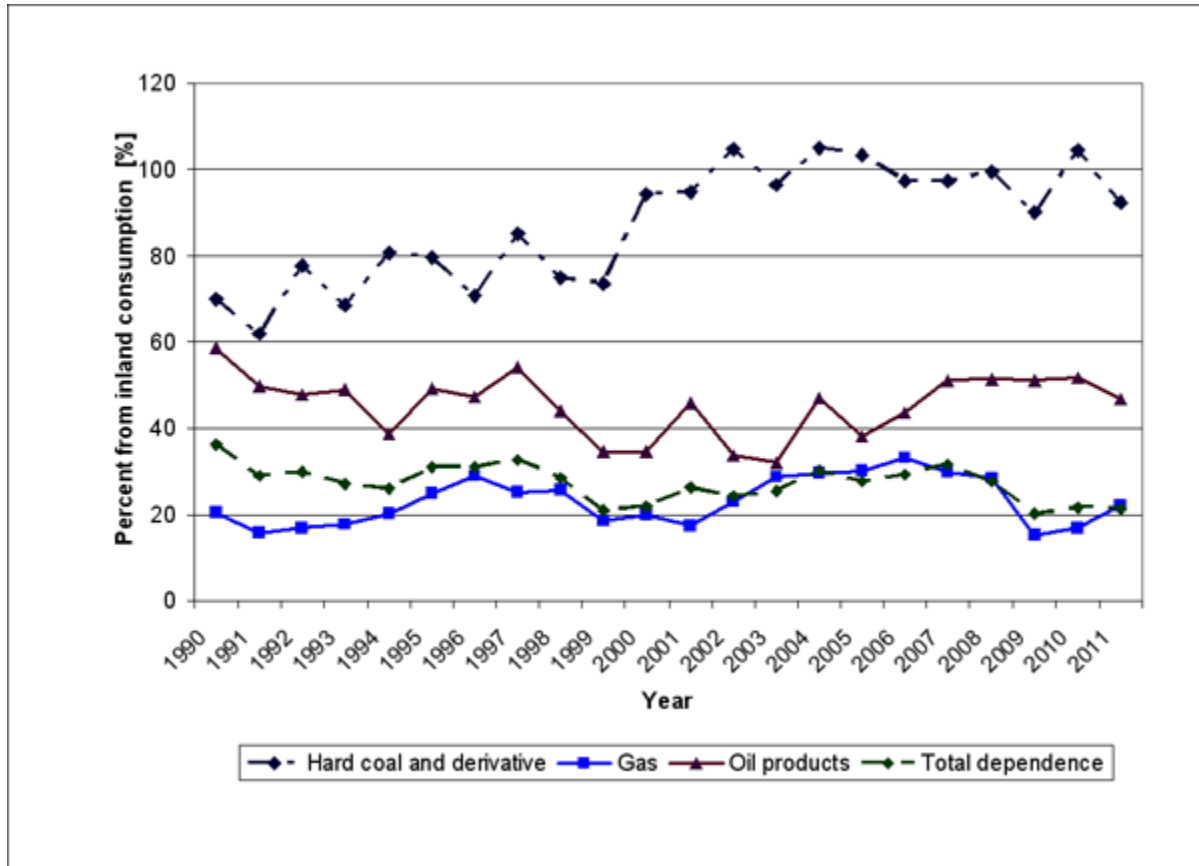
The lowest energy dependence of Romania is at natural gas, due to the existence of their own oilfields which covers the needs of domestic consumption (residential and industrial) to a large extent. Moreover, Romania buys gas in summer, when the price falls, and stores them underground in depleted structures that are used as a natural underground reservoirs and will remove them in winter when demands are higher (depending on temperature evolution). The discovery of new gas fields in the Black Sea has increased hopes of a full energy independence obviously referring strictly to natural gas.

Overall, the energy dependence of Romania has a downward trend but this is not justified by the discovery of new own sources that reduce dependence on fuel imports but, especially, by restricting domestic consumption, amid the economic crisis that began the end of 2008. Under these conditions appears as a necessity justified the promotion and implementation of non-conventional energy sources (also called renewable) sources that permit to reduce the dependency on fossil fuel imports.

In this chapter there will be presented a method for evaluating the potential of Romania for solar energy in both forms: thermal energy and photovoltaic.

Figure 2. Romania's energy dependence on fuel sources and energy dependence of the total

Source: Processing of author after Eurostat



EVALUATING SOLAR ENERGY POTENTIAL

Solar energy is the oldest form of energy used by humans, as it is used for house heating and for drying herbs and fruits in order to preserve them.

Solar energy can be used in two distinct ways:

1. To generate thermal energy used to heat homes and for various processes;
2. To generate electricity, a technology that was not developed until the twentieth century.

The development of human society has led to the shift towards the use of other energy sources for heating and manufacturing of products neces-

sary for life. So they started to use wood and coal as an energy source. The usage of solar energy for the production of electricity was achieved only in the twentieth century due to the development of technology achieved in this century.

The development of technology has led to a variety of technological solutions which captures and converts solar energy into electricity or heat.

In general, for heat generation solar collectors with dark tubes coupled in batteries of different sizes have been developed, batteries that are fitted singly or in parallel. These tubes batteries form a “solar panel” for heat, having a specific heat capacity of the fluid flowing through it. As a working fluid, water or other special fluids with appropriate thermal characteristics can be used.

In addition to the solar panels plants with a greater capacity are used, in which the tube through which the fluid that transports the energy is located in the focus of a parabolic cylinder-shaped mirror. In this case, the arrangement of the tubes can not be made in compact batteries but only in parallel rows, through which the transport fluid moves in opposite directions.

Another way of using solar energy for thermal processes using large mirrors mounted as a three-dimensional parabolic surfaces in the furnace which is to be the heated element. It may be a fluid circuit, a furnace for molten metal, or a Stirling engine.

For power generation, complex, large-scale systems can be used, which converts thermal energy into mechanical energy (Stirling engines or steam generators acting with classical turbine) and photovoltaic cells, which provides direct conversion of sunlight into electricity.

For electricity are used solar panels with photovoltaic cells that convert light directly into electricity. They can be mounted in complex matrices forming solar farms.

Photovoltaic panels can be installed on roofs of individual houses or public buildings.

In Romania solar panels with vacuum tubes are especially used to generate heat energy and photovoltaic panels to generate electricity. Generally solar thermal panels are used as additional source of energy for heating residential space, greenhouses, swimming pools, along with a conventional source of energy, fossil fuels or electricity. The role of these systems is to reduce the costs with space heating and with hot water preparation that, without being a main source of heat, due to the variability of atmospheric conditions.

The potential of a renewable energy source can be determined in several ways, depending on the main aspect taken into account, that are defined four types of potentials of energy, namely:

- Theoretical potential; is defined by the maximum amount of renewable energy of

- a certain type that can be collected in a certain area, without regard to any restriction;
- Geographic Potential ; maximum quantity of renewable energy of a certain type, which can be collected in a specific area, determined by taking into account the existing geographical restrictions;
- Technical potential; maximum amount of energy that can be obtained in a certain area, considering the level of technique at the evaluation time;
- Economic potential; maximum amount of energy that can be obtained in a certain area at a volume of investments that can be made practically.

Theoretic Solar Potential

The potential of solar energy should be determined by how this form of energy is used to generate heat energy used to heat accommodation or production, pools etc, or for the production of electricity by direct conversion, based on the photovoltaic effect.

The theoretical potential is determined based on meteorological data measured periodically on the intensity of solar radiation. Measured data allowed the development of a solar map of Romania presented in the figure below.

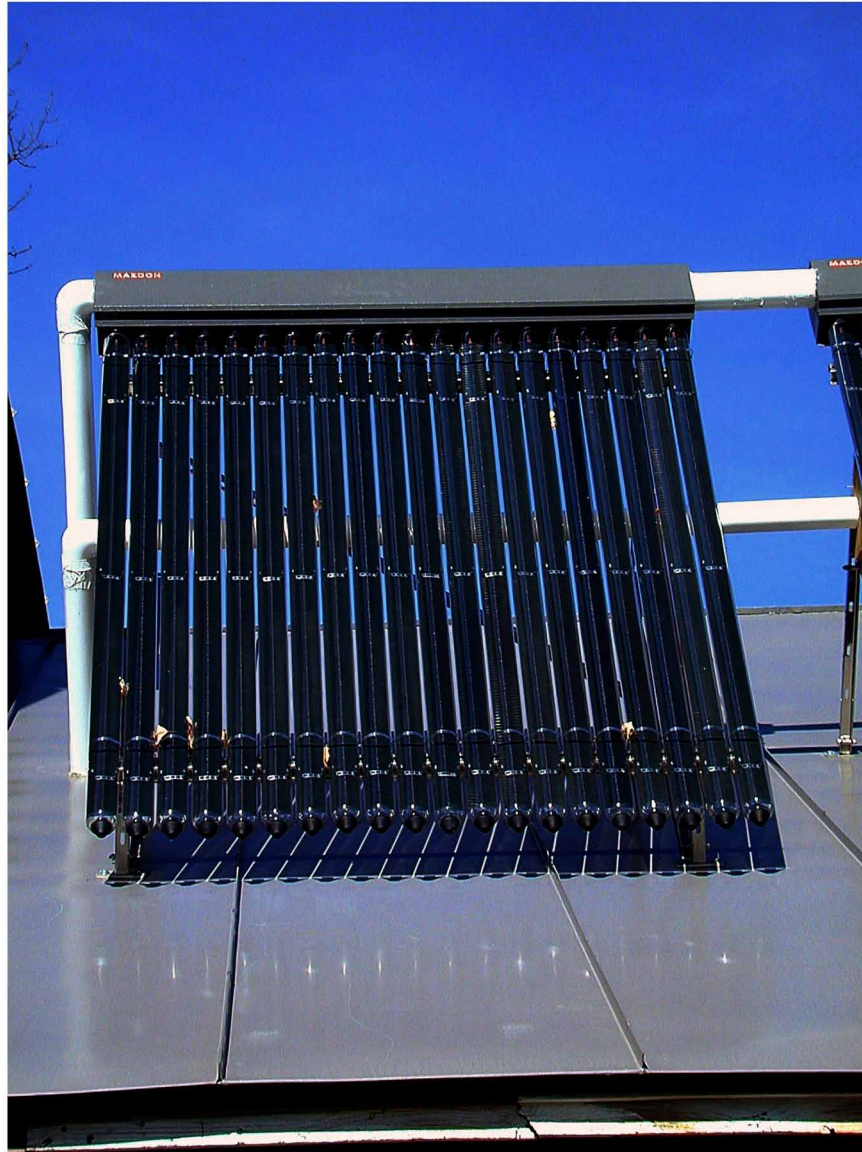
For thermal solar potential, some evaluations that were performed in 2006 have led to the values from Table 3.

For photovoltaic solar potential the following estimates exist (also made in 2006) and are shown in the table below.

The values that are shown above are estimates of solar potential of Romania that have a high degree of approximation. They give no indication about the potential of a certain area, or how to establish this potential. Also they give no indication of the level of technique at the moment of determining these values.

Figure 3. Solar panel with vacuum tube unpressurized

Source: photo by Alan D. Ford, NREL, 09501, <http://images.nrel.gov/viewphoto.php?imageId=6323444>



Geographical Solar Potential

Geographical solar potential is determined on the basis of the solar maps that are presented in the previous section.

As it can be seen, the intensity of solar radiation in Romania varies between 1100 and 1400 kWh/m².

From the analysis of the map from Figure 17 in chapter 3, the following aspects can be drawn regarding Romania's geographical solar potential:

- The area with maximum level of irradiation greater than 1400 kWh/m²/year includes Constanta county, a third of Ialomita county, half of Calarasi county, 70% of Giurgiu county, 80% of Olt county, 70% of Dolj and half of Tulcea county.

Solar Energy Potential as Support for Sustainable Development of Romanian Economy

Figure 9. Theoretical solar potential of Romania for global horizontal irradiation

Source: SolarGIS © 2013 GeoModel Solar s.r.o.

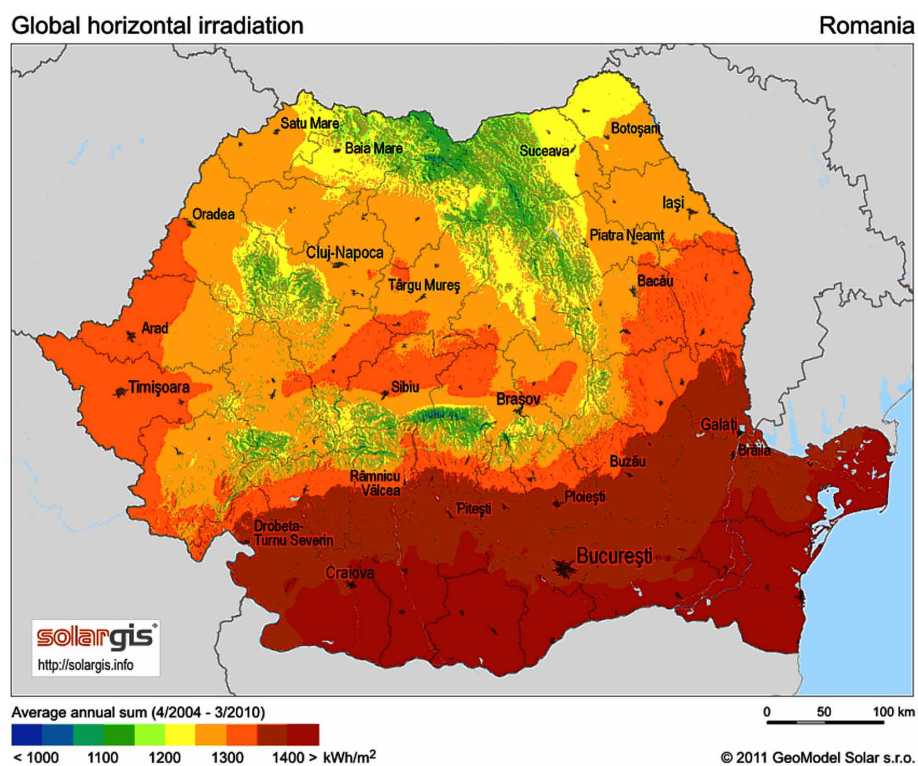


Figure 10. Theoretical solar potential of Romania for normal direct irradiation

Source: SolarGIS © 2013 GeoModel Solar s.r.o.

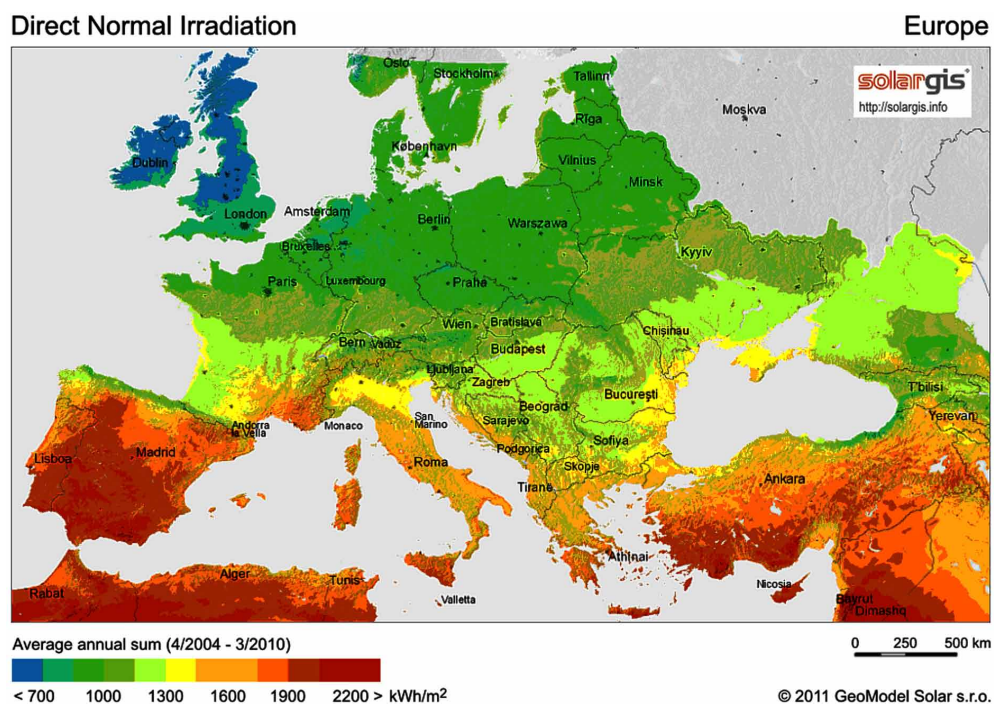


Table 3. Solar thermal potential of Romania

Parameter	MU	Technical	Economical
Thermal power	MW _t	56000	48570
Thermal energy	GWh/an	40	17
	TJ/an	144000	61200
	thousand toe/year	3430	1450
Capture area	m ²	80000	34000

Source: ANM, ICPE, ICEMENERG, 2006

Table 4. Photovoltaic theoretical solar potential of Romania

Parameter	MU	Technical	Economical
Peak power	MW _{peak}	6000	4000
Electric energy	TWh/year	6,0	4,8
	thousand toe/year	516	413
Occupied area	Km ²	60 (3 m ² /place)	40 (2 m ² /place)

Source: ANM, ICPE, ICEMENERG, 2006

The next area, having average intensity of solar radiation, with a mean of 1350 kWh/m²/year, includes the following counties (see Table 6).

The area with average intensity of solar radiation of 1300 kWh / m² / year, includes the following counties (see Table 7).

The area with potential under 1100 kWh/m²/year include the counties (see Table 8).

The area with average intensity of solar radiation of 1250 kWh/m²/year, have 87.590 km².

In terms of energy, the geographic potential of Romania will consist of:

- For the area with a medium annual irradiation >1400 kWh/m² => 42.113.400 GWh/year;
- For the area with an annual medium irradiation of 1350 kWh/m² => 60.708.100 GWh/year;
- For the area with an annual medium irradiation of 1300 kWh/m² => 49.416.900 GWh/year;

- For the area with an annual medium irradiation of 1200 kWh/m² => 105.108.000 GWh/year;
- For the area with an annual medium irradiation ≤ 1100 kWh/m² => 40.509.700 GWh/year,
- Resulting in a total of 297,856,100 GWh/year, or 25,611,014.62 thousand toe/year. Romania's gross energy consumption in 2011 was 36,349,000 thousand toe⁹. We note that, theoretically, the solar geographic potential of Romania can provide about 70.45% of gross electricity consumption of Romania.

Technical Solar Potential

Technical solar potential refers to the energy that can be obtained by conversion with current technologies in favorable economic conditions.

Plants that convert solar energy into thermal energy can be of various types and sizes. They can make a direct conversion of solar in heat energy,

Table 5. Surface area with irradiation >1400 kWh/m²/year

No Crt.	Counties	Total Area km ²	Percent Covered %	The Resulting Surface km ²
1	Tulcea	8.499	50	4.249
2	Constanța	7.071	100	7.072
3	Olt	5.498	80	4.398
4	Giurgiu	3.526	70	2.468
5	Dolj	7.414	70	2.224
6	Ialomița	4.453	30	1.336
7	Călărași	5.088	50	2.544
8	Teleorman	5.790	100	5.790
TOTAL				30.081

Source: Processing of author

Table 6. Areas with average irradiation of 1350 kWh/m²/year

No. Crt.	County	Total Area km ²	Percent Covered %	Resulting Surface km ²
1	Tulcea	8.499	50	4.249
2	Brăila	4.766	100	4.766
3	Galați	4.466	70	3.126
4	Vrancea	4.857	25	1.214
5	Buzău	6.103	60	3.662
6	Prahova	4.716	50	2.358
7	Dâmbovița	4.054	70	2.838
8	Argeș	6.826	50	3.413
9	Olt	5.498	20	2.749
10	Vâlcea	5.765	50	2.882
11	Dolj	7.414	30	2.224
12	Ilfov	1.593	100	1.593
13	Mehedinți	4.933	80	3.946
14	Ialomița	4.453	70	3.117
15	Călărași	5.088	50	2.544
16	București	288	100	288
TOTAL				44.969

Source: Processing of author

or can be equipped with concentrators (plane mirrors– Figure6, or parabolic mirrors – Figure 4 and 5)) that focus solar energy on a specialized collector.

In desert areas, where the daily insolation is high, it can build plants that convert solar energy into electrical energy taken either by classical turbines driven by the steam created by heating

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Table 7. Surface area with medium irradiation of 1300 kWh/m²/year

No.	County	Total Area km ²	Percent Covered %	Resulting Surface km ²
1	Vaslui	5.318	100	5.318
2	Bacău	6.621	50	3.310
3	Galați	4.466	30	3.126
4	Vrancea	4.857	50	1.214
5	Buzău	6.103	30	1.831
6	Prahova	4.716	25	1.179
7	Dâmbovița	4.054	25	1.013
8	Argeș	6.826	20	1.365
9	Vâlcea	5.765	20	1.153
10	Gorj	5.602	30	1.681
11	Mehedinți	4.933	20	987
12	Caraș-Severin	8.520	20	1.704
13	Timiș	8.697	25	2.174
14	Arad	4.453	50	2.226
15	Bihor	7.544	20	1.509
16	Brașov	5.363	30	1.609
17	Harghita	6.639	25	1.673
18	Sibiu	5.432	45	2.444
19	Alba	6.242	40	2.497
TOTAL				38.013

Source: Processing of author

Table 8. Surface of area with irradiation < 1100 kWh/m²/year

No.	County	Total area km ²	Percent covered %	Resulting surface km ²
1	Hunedoara	7.063	20	1.412
2	Bacău	6.621	30	1.986
3	Neamț	5.896	60	3.538
4	Vrancea	4.857	15	729
5	Bistrița-Năsăud	5.355	50	2.678
6	Suceava	8.553	65	5.559
7	Satu-Mare	4.418	15	663
8	Argeș	6.826	30	2.048
9	Vâlcea	5.765	30	1.729
10	Gorj	5.602	20	1.120
11	Alba	6.242	20	1.248
12	Maramureș	6.304	100	6.304
13	Cluj	6.674	35	2.336
14	Harghita	6.639	50	3.319
15	Sibiu	5.432	20	1.086
16	Brasov	5.363	20	1.072
TOTAL				36.827

Source: Processing of author

Figure 4. Solar panel with cylindrical parabolic concentrator

Source: photo by David Hicks, NREL, 18553 <http://images.nrel.gov/viewphoto.php?imageId=6323510>

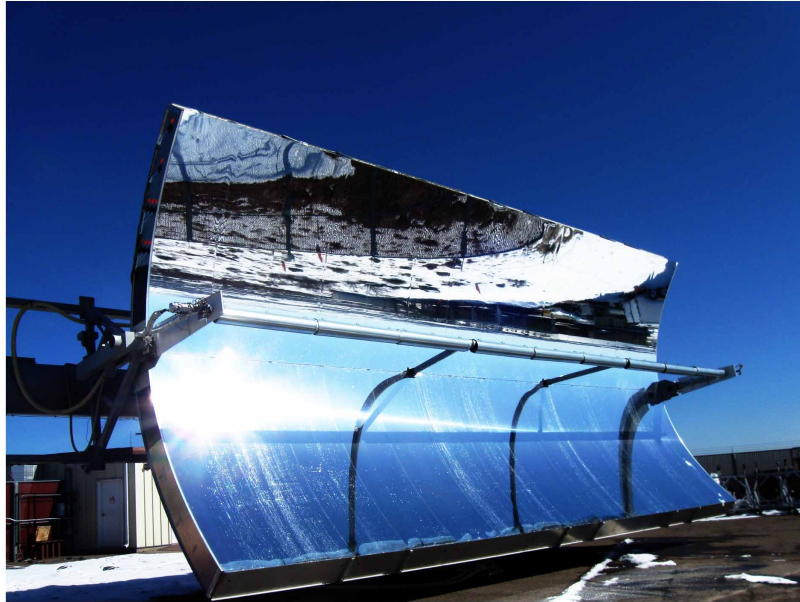


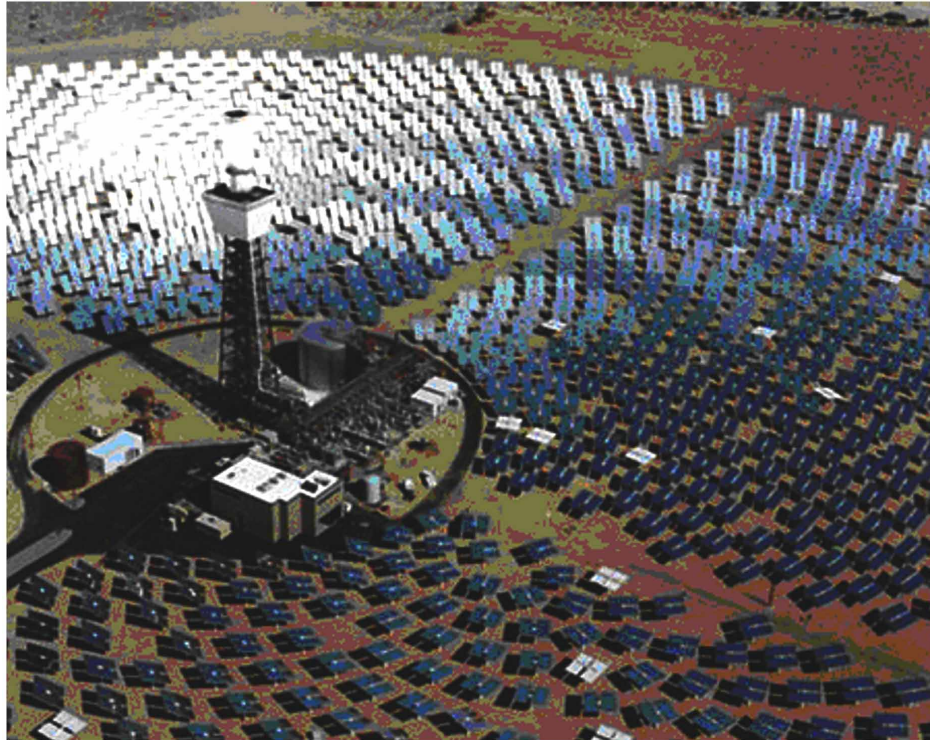
Figure 5. Solar generators with Stirling engine and parabolic concentrator

Source: photo by David Hicks, NREL, 19881 <http://images.nrel.gov/viewphoto.php?imageId=6323527>



Figure 6. Solar Generator with tower with distributed concentrators

Source: photo by Sandia National Laboratories, NREL, 00036 <http://images.nrel.gov/viewphoto.php?imageId=6323048>



of thermal agent either by acting with Stirling engines (Figure 5). Also, solar energy may be used to melt the metal, by concentration by means of the parabolic mirror.

In Romania solar energy collectors are used for heating, used in parallel with other energy sources to provide enough heat at times when the weather does not permit the well functioning of solar installations.

The most favorable areas for these facilities are in the south of Romania, in Dobrogea, and the highlands. There is the possibility of using these facilities in any part of the country, without being able to guarantee a proper economic efficiency.

In order to estimate the heat solar potential we must evaluate technical potential of solar thermal energy and then to evaluate the economic potential of solar thermal energy.

Technical Solar Potential for Thermal

To estimate the potential of solar thermal we should consider the following issues:

- Solar thermal plants which are used for residential space heating or with other destination and / or to prepare hot water;
- Installation of solar panels is made on the roof of the apartment buildings or other buildings. This means that only the urban and rural areas will be analyzed.

The annex shows that the number of dwellings in Romania is of 5,104,662, and for the buildings with other destinations (schools, industrial buildings etc.) is of 13,115.

After the simulations performed with thermal solar simulators we obtained an average of 2,900 kWh/year, thermal power supplied, corresponding to solar thermal installations with an area of 5 m² installation with forced circuit at a price of approx. 2,200 Euro. For buildings who do not have residential destination will be considered panels with area of 30 m², which generate in a year an average of 10,100 kWh energy.

If we consider that each residential building is equipped with solar thermal panels of 5 m², we get an quantity of energy of 14,800 GWh/year, or 1272.57 thousand toe/year.

For buildings with other destination, equipped with panels with a surface of 30 m² each, we have an quantity of energy produced by 132,422,155 kWh / year, or 132.42 GWh/year, equivalent to 11.390 toe/year.

It follows that, for solar thermal potential of Romania will have a total of 14,932 GWh / year, or 1,284 thousand toe/year.

Technical Solar Potential for Photovoltaic

Solar energy can be converted directly into electricity by using photovoltaic panels consisting of arrays of photovoltaic cells mounted together.

For photovoltaic solar energy we considered the following two situations:

1. By installing solar panels on buildings either integrated into the roof (the house type buildings - see Figure 8) either placed on it (for buildings with flat roof) in the most favorable position;
2. By installing solar panels in solar farms, for the production of electricity in industrial regime (see Figure 7).

The yield of solar panels depends on the angle of light falling on the surface. The best case is when the lighting panel is perpendicular to the surface. In order to maximize the amount of energy

collected by the solar panel they must be directed for a greater period of time perpendicular to the direction of illumination. This can be achieved with mobile installations, automated, which change the position of the collectors during the day. As these installations grow the price of investment and of maintenance, in practice, it is preferred to mount the panels in static position, oriented in the direction and inclination of the most favorable in order to ensure the collection of a large amount of energy possible.

To assess the technical potential solar PV we will consider the two cases that were presented above: panels installed on buildings and pannels mounted in solar farms.

For building-mounted photovoltaic panels have considered two kinds of configuration:

1. Photovoltaic panels mounted on the roof of residential buildings. In general they are integrated into the roof and provides a peak power of about 1-2 kW. For the analyzed situation it was considered that for each residential building, solar panels that provide a peak power of 2 kW installed were mounted;
2. Solar panels mounted on the roof of buildings with other than housing destinations (schools, public buildings, industrial buildings, etc.). For this situation we considered two situations for calculation: in 75% of buildings to install panels that provide an output of 5 kW peak, and in the remaining 25% is mounted panels that provide a peak power of 50 kW.

Energy produced in a year, with the photovoltaic panels that provide a peak power of 2 kW was determined using the portal *Photovoltaic Geographical Information System - Interactive Maps* to calculate the energy produced by a solar plant with specified power, based on meteorological data from previous year, for the whole year, differentiated month.

Solar Energy Potential as Support for Sustainable Development of Romanian Economy

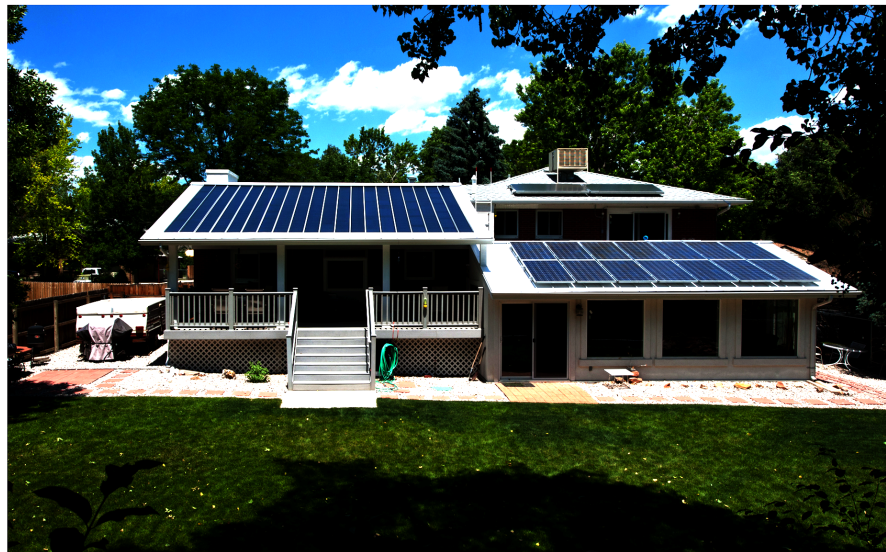
Figure 7. Solar farm with photovoltaic panels at Ghighiu, Prahova county

Source: photo by author



Figure 8. Solar panels mounted on the roof of a house

Source: photo by Dennis Schroeder, NREL, 19562 <http://images.nrel.gov/viewphoto.php?imageId=6320861>



Detailed results for each county are given in the annex. The global potential obtained has a value of 9,634.9 GWh/year for panels mounted on residential buildings and 674.3 GWh/year for panels mounted on buildings with other than residential destination.

Technical potential of solar photovoltaic generated in decentralized system (mounted on buildings) is 10,939.2 GWh/year.

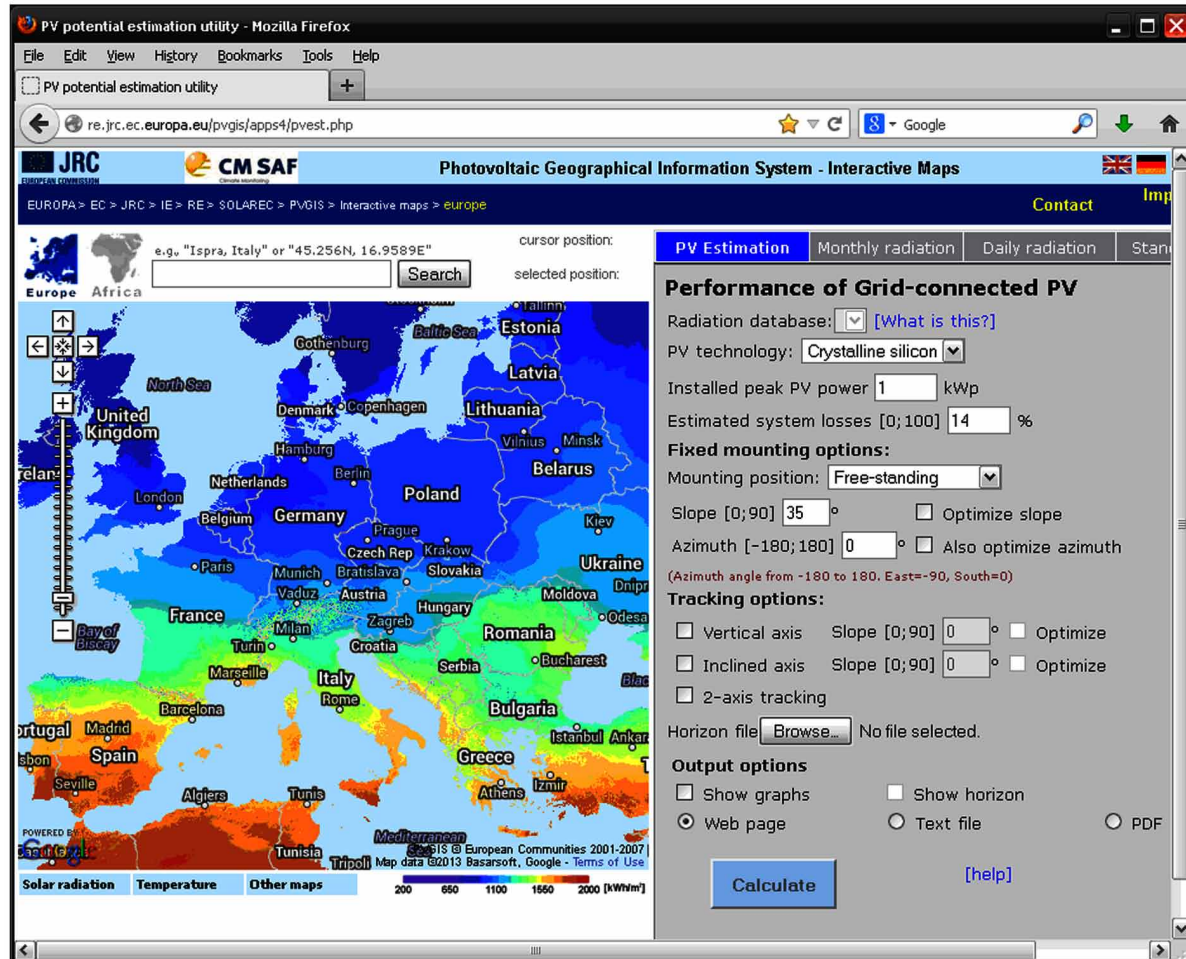
For solar farms should be kept in mind that their installation remove from use the occupied land. On the surface of a solar farms can not grow anything, on the contrary, the plants are removed to avoid shading solar panels.

High power solar farms are implemented, usually in desert areas, where land is not used anyway for agricultural production. In Romania there are no such desert areas that are located in areas favorable to a production that generate profit. The only alternatives that remain are the following:

1. To locate them on agricultural land (arable or pasture) with the consequence of their removal from agricultural. In addition, due to the terrain and climate are favorable growth perennials, solar farm maintenance operations will require frequent removal of plants grown in the solar panels. Because

Figure 11. Photovoltaic geographical information system interface

Source: <http://re.jrc.ec.europa.eu/pvgis/apps4/pvest.php>



all supporting solar panels has a truss-type structure, access to land will be difficult to achieve cleaning. This means additional costs for that job will be done by hand, in difficult conditions. A potential risk of manifestation is the possibility that the company that operates and maintains solar farm to prefer a less expensive solution, to apply chemical treatments with herbicide concentrate, so plants may not grow for at least one year. Would create a serious problem because the soil environment would be degraded in the solar farm but due to rain, substances

2. used will migrate and surrounding areas or groundwater, with negative consequences;
3. To locate them on degraded lands, which for various reasons can not be used for growing plants;
3. To place them in favorable areas, on land or areas that are not currently used for agriculture (e.g. the sides of disused rubbish dump on the steep hillside, which can not be used for cultivation or pasture etc.).

In conclusion, the paper will explore the possibility of installing solar farms on degraded lands.

Biologically degraded land area is not exactly known in Romania in this category are included fallow land, land cleared and reforested and not degraded biologically. Therefore, we considered that solar farms can be installed on a maximum of 50% of these areas.

According to Eurostat, in 2011, the area that was not worked in Romania was of about 913,000 hectares. Considering another source¹⁰, the degraded surfaces for year 2010 are classified and are presented in the Table below.

In order to determine the technical potential of solar PV, we will consider to be available a percentage of 50% of the existing degraded surface at year 2010 level, specified in Table 9. This rate ensures that we indeed refer to terrains which are degraded or cannot be used for agriculture, without taking into account uncultivated terrain, but which can be returned to agricultural use at any time.

It results an area available for solar farms of about 287,600 hectares.

Analyzing the data concerning the areas that are occupied by operational solar farms resulted in a density of 2,000 solar panels/ha, for a peak power of 500 kW/ha (returning a peak power of 0.25 kW/panel FV).

With the Photovoltaic Geographical Information System - Interactive Maps portal, the generated power is determined by a group of panels which have a peak power of 20 kW in Romania. The values obtained were between 16.6 MWh/year and 23.2 MWh/year. To calculate the technical potential of solar farms will be used a mean value of 21 MWh/year. Due to the fact that on a hectare of land there can be installed about 2000 photovoltaic panels that generate 500 kW at peak power, it means that they will generate an amount of energy of 525 MWh/year. For the area determined, the 287,600 ha will give an quantity of energy 150,990 GWh/year, which is equivalent to 12,982,803 toe/year

Romania's global technical potential for electricity from photovoltaic source is of 161,299 GWh/year, or 13,869.388 thousand toe/year.

Final electricity consumption of Romania for 2011 was of 3,673 million toe, and gross energy consumption from primary sources was of 36,349,000 toe. We note that the solar photovoltaic potential Romania has may completely cover the final energy consumption in 2011 and a rate of 21.98%, gross energy consumption in the same year.

Economic Potential of Solar Energy

Assessing the economic potential must be done differently for the two types of energy that are generated by using Sun's energy: thermal and photovoltaic, due to the different duration of life of these installations.

Thermal Economic Potential

To estimate the economic potential heat is considered the following prices:

- For residential buildings, it is considered that a solar panel thermal vacuum tube with a surface of 5.1 m² will be installed, with a cost of 9,000 RON/package¹¹;
- For buildings with another purpose, it is considered that six solar panels of 5.1 m² are to be installed, with a cost of 3,000 RON/panel. The remaining components needed for installation will cost about 9,000 RON. The result is a total cost for the whole package of around 27,000 RON.

The amortization period of the installations is of 15-20 years, depending on the climatic characteristics of the area in which they are installed. It will be accepted a depreciation period of 20 years, which will result in a depreciation rate of 450 RON/year for installations that are mounted on residential buildings and 1,350 RON/year for those that are mounted on buildings with other destinations.

Table 9. Degraded land areas, by county in 2010

No.	County	Degraded Land Surface [ha]
1	Alba	43376
2	Arad	9096
3	Arges	10360
4	Bacau	12365
5	Bihor	9751
6	Bistrita-Nasaud	23506
7	Botosani	13742
8	Brasov	7781
9	Braila	8513
10	Buzau	8219
11	Caras-Severin	12551
12	Calarasi	2359
13	Cluj	33452
14	Constanta	23138
15	Covasna	919
16	Dambovita	1944
17	Dolj	5751
18	Galati	3452
19	Giurgiu	1158
20	Gorj	16681
21	Harghita	8243
22	Hunedoara	27500
23	Ialomita	5406
24	Iasi	27531
25	Ilfov	1046
26	Maramures	9797
27	Mehedinti	13677
28	Mures	13593
29	Neamt	13279
30	Olt	5644
31	Prahova	7599
32	Satu-Mare	13207
33	Salaj	19132
34	Sibiu	8794
35	Suceava	14055
36	Teleorman	2131
37	Timis	4871
38	Tulcea	22604

continued on following page

Table 9. Continued

No.	County	Degraded Land Surface [ha]
39	Vaslui	16101
40	Valcea	8671
41	Vrancea	4243
42	Bucarest	93
TOTAL		495331

If we accept the operation and maintenance costs at 5% of the initial investment, we have a cost of O & M of 270 RON/year for installations that are mounted on residential buildings and 810 RON/year for other installations.

The payback period was considered equal to the manufacturer's lifetime warranty for vacuum tube collectors.

Considering an average price of the heat that is produced in a centralized system of 250 RON/Gcal we have the following values for the produced energy:

- 12,500 RON for a twenty-year period, for residential buildings;
- 43,500 RON for other buildings, for the same period;

For an energy production equivalent with 50 Gcal for residential buildings and 174 Gcal for the other buildings.

It is noted that the price of 250 RON/Gcal for the entire period of operation, it results in the loss

of 900 RON for a residential installation and 300 RON benefit for other installations.

If we use an average price of 300 RON/Gcal, we get the following costs:

- 15,000 RON for residential buildings;
- 52,200 RON for buildings with other destination.

We note that in this case we will have a benefit, instead of heating with heat from centralized sources of 1,600 RON/solar plant for residential installations and 9,000 RON/solar plant for industrial plants. It follows that thermal solar installations in Romania can only be profitable for a price of at least 300 RON/Gcal. For a lower price of investment per Gcal, the best case brings no benefits loss.

Photovoltaic Economic Potential

To determine the economic potential of solar energy the following values can be used:

Table 10. Calculation of production cost of heat produced

	Residential Buildings	Buildings with Other Destinations
The initial cost of investment [RON]	9000	27000
Amortization rate [RON/year]	450	1350
O & M [RON/year]	270	810
Energy produced [Giga calories]	50	174
Total production cost [RON]	13400	43200
The specific cost of production [RON/Gcal]	268	248

Source: Calculated by the author

- For installations that are mounted on buildings, it will be considered that they are connected to the national power grid (on-grid);
- The price that is used in the calculation will be: for installations that are mounted on residential buildings, which have a peak power of 2 kW – 4,500 euro/piece; for installations of 5 kW peak power - 12,000 euro/piece; for installations of 50 kW - 41,000 euro/piece. The prices that were indicated were determined as averages of market prices for the plants that have been analyzed. These facilities include, in addition to solar panels, installation accessories (cables, inverters, batteries etc.);
- For solar farms, the specific cost of the investment is accepted it has a value between 1,500-2,000 euro/kW installed (peak power). An analysis will be made for a range of prices as the production cost of photovoltaic cells is steadily decreasing while the production technology matures, so that in the coming years, the specific cost of an investment in solar farms will reach 1,500 euro/kW installed and perhaps even less;
- The life length of the investment is accepted to be of 10 years at most (Current solar cells age in time and wears out during this period of time if we take into account the pace of technological progress in this field).
- Power plants with a higher capacity have a lower cost of the investment, because they require a number of technological elements (cables, inverters, batteries etc.) whose price is approximately constant regardless of the number of photovoltaic panels that are used;
- Power plants with a low capacity have a very low profitability, so that the investment can not be recovered in a reasonable period of time (under 10 year warranty), while the installation of 50 kW has a good profitability, as the recuperation of the investment can be achieved within 6 years;
- For small power plants subsidies are required to ensure the recuperation of investment within a reasonable period of time; to highlight the effect of these subsidies, the Green Certificates scheme was used, considering that 6 GC/MWh of electricity that is produced by photovoltaic systems are allocated;
- If green certificates are allocated to the system with 50 kW peak power, the investment is recovered within the first year, which would actually be overcompensation.

For the solar installations that are mounted on buildings, the results of calculations which were made by using the data from the annex are shown in table below.

As can be seen, the specific cost is of 2,250 euro/kW for plants which have a 2 kW peak power, 2,400 euro/kW for installations with a 5 kW peak power and 820 euro/kW for the installations with a 50 kW peak power.

The conclusions that can be drawn from this analysis are:

For panels that are mounted in solar farms, considering that on one hectare of land panels with a peak power of 500 kW are mounted, it means that, for the whole area of 287,600 ha, solar panels with a total installed capacity of 143.8 million kW will be able to be installed.

Simulation results are presented in Table 12.

From the results the following conclusions can be taken:

- Without the state support, even if the price of the investment is reduced to 1,500 euro/kW peak power, the investment return is low, and can not be recovered within a reasonable period of time;
- With the support from the state and through the compensation scheme with Green

Solar Energy Potential as Support for Sustainable Development of Romanian Economy

Table 11. Costs and profits for solar systems installed on buildings

	Installation 2 kW	Installation 5 kW	Installation 50 kW
Unit price (euro/piece)	4500	12000	41000
Total cost of investment (million EURO)	22970.98	118.032	134.439
O&M (million euro)	114.8549	1.77048	4.03317
Production (MWh)	9634923	61298.025	612980.25
Value without Green Certificates (million euro)	452.8414	2.8810072	28.810072
Profit without Green Certificates (million euro)	337.9865	1.1105272	24.776902
Rentability without GC (%)	1.47	0.94	18.43
Duration amortization without Green Certificates (years)	67.96419	106.28466	5.4259811
Value with Green Certificates (million euro)	2794.128	17.776427	177.76427
Profit with Green Certificates (million euro)	2679.273	16.005947	173.7311
Rentability with CV (%)	11.66	13.56	129.23
Duration amortization with Green Certificates (years)	8.57	7.37	0.77

Source: Calculations by author

Table 12. Costs and profit of solar farms

Specific Cost (Euro/kWp)	1500	1600	1700	1800	1900	2000
Investition cost (million Euro)	215.700	230.080	244.460	258.840	273.220	287.600
O&M (2%) (million Euro)	4314	4602	4889	5177	5464	5752
Estimated production (GWh)	150.990	150.990	150.990	150.990	150.990	150.990
Unit price (euro/MWh)	47	47	47	47	47	47
Produced value without GC (million Euro)	7096,53	7096,53	7096,53	7096,53	7096,53	7096,53
Gross profit without GC (million Euro)	2782,53	2494,93	2207,33	1919,73	1632,13	1344,53
Rentability without GC (%)	1,29	1,085	0,91	0,74	0,60	0,47
Duration amortization without GC (years)	77,5	92,2	110,7	134,8	167,4	213,9
Value, with GC (mil. Euro)	43787,1	43787,1	43787,1	43787,1	43787,1	43787,1
Profit, with GC (mil. Euro)	39473,1	39185,5	38897,9	38610,3	38322,7	38035,1
Rentability, with GC (%)	18,30	17,03	15,91	14,92	14,03	13,23
Duration amortization with GC (years)	5	6	6	7	7	8

Source: Calculations performed by the author, based on Eurostat and NSI

Certificates, the solar installations are profitable even for current specific price, of 2,000 euro/kW peak power installed.

CONCLUSION

From the above the following conclusions can be taken:

- Solar thermal potential of Romania have a total of 14,932 GWh/year, or 1,284 thousand toe/year.
- Romania's global technical potential for electricity from photovoltaic source, is 161.299 GWh/year, or 13,869.388 thousand toe/year.

The final electricity consumption of Romania for 2011 was of 3.673 million toe, and the gross energy consumption from primary sources was of 36,349,000 toe¹². We observe that the solar photovoltaic potential that Romania has may completely cover the final energy consumption at 2011 level and a rate of 21.98% of the gross energy consumption in the same year.

The analysis of the economic potential the following conclusions can be taken:

- Solar thermal plants can be effective only for a high price of the Gcal or for high capacity systems
- In addition, thermal solar installations require auxiliary equipment (pipes, pumps, valves, filters, valves, etc.) that increases the price of such equipment even more;
- Solar thermal installations are recommended to be used where collector panels with an area greater than 5 m² can be installed and where there is room for installing a heat buffer (boiler) of a large capacity so that they can conserve energy that was collected in a certain period of time;

- Small photovoltaic systems are only profitable in the supporting alternative with green certificate, otherwise the investment cannot be able to recover over the life of the equipment;
- Large capacity plants that are mounted on buildings can be recovered easily, as it has a specific price of cost of 1,111 euro/kW;
- For efficient operation, the use of solar panels with a surface lower than 5.10 m² is not recommended.

Considering the technical progress, the solar energy can be a viable alternative to fossil fuels for Romania.

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KEY TERMS AND DEFINITIONS

Economical Potential: Potential that can be implemented in economical conditions.

Fossil Fuels: All fuels derived from coal, oil or natural gases.

Geographical Potential: Potential of an energy source, calculated taking account by the geographical restrictions existing in the analyzed area.

Photovoltaic Energy: Electric energy produced with photovoltaic cells through direct conversion.

Renewable Energy Resources: Energy resources that are not exhaustible.

Technical Potential: Potential of an energy source, calculated taking account by the geo-

graphical restrictions combined with the technical restrictions, imposed by the level of technique at the moment of evaluation.

Theoretical Potential: General potential of an energy sources, calculated without restrictions.

Thermal Solar Energy: Thermal energy produced with solar collectors.

Wind Energy: Electrical energy produced with wind turbines.

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- ¹¹ Package contains solar panel, water heater, connecting pipes and the elements of automation and control
- ¹² Eurostat, <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=ten00086&plugin=1>

Chapter 12

Population Number and Consumer Income and Expenditure Dynamics: An Analysis of World Countries

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ABSTRACT

The population issue is one of the most complex subjects to analyze since all the science dimensions are related to it in varied proportions. In this chapter, population is analyzed according to consumer income and expenditure. Both the dynamics and disparities among countries regarding population, income, and expenditure are studied and multiple analyses from different views are undertaken. Given the numerous categories of consumer expenditure, only the food and non-alcoholic beverage consumer expenditure category is researched, in this chapter, both from a general perspective and from a narrower viewpoint restricted to each class. Several forecasts of the consequences of increasing the rice, wheat, corn, and coffee consumption are made.

INTRODUCTION

The level of domestic consumption in any country is influenced by at least three factors: population number, population income and specific consumption patterns for each country (Figure 1).

Each factor has its own importance and it is highly correlated with the other two. The consumption of high price goods is almost absent in low income per capita countries and vice versa, the overall consumption will become constant

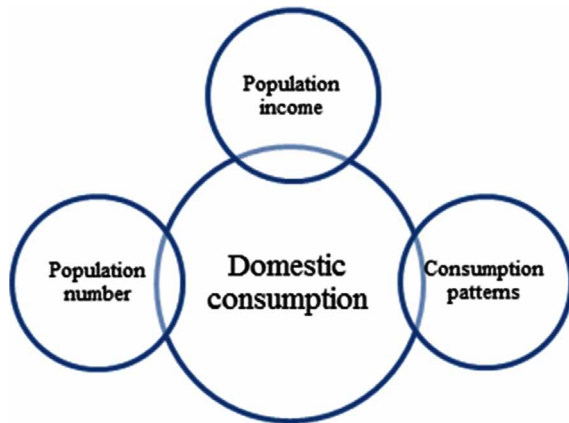
at one particular level in high income per capita countries. This opinion is based on John Maynard Keynes' marginal propensity to consume according to which "men are disposed, as a rule and on the average, to increase their consumption as their income increases, but not by as much as the increase in their income" (Keynes, 2008, p. 87).

On the other hand, by maintaining the income per capita constant, a country with more people will have a higher domestic consumption than a country with fewer people. Besides these,

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Figure 1. Relation among domestic consumption, population number and income, and consumption patterns

Source: Made by author



hypothetically speaking, if there are at least two countries with the same population number and income per capita, the consumer expenditure for durable and non-durable goods, services etc. will be different due to specific patterns which have strong roots in the country's culture.

Starting from the importance of the way population, income and consumption are intertwined, the chapter has five main objectives.

The first objective is to analyze the population dynamics in order to emphasize the key countries that have the potential to establish the future trends in world economy.

The second objective is to study the consumer disposable income dynamics and to highlight the states with the highest and lowest income per capita and with the growth or decrease rates of disposable income per capita.

The third objective is to examine the food and non-alcoholic beverage consumer expenditure dynamics by means of five analyses which are meant to underscore the countries with the highest and the lowest level as well as to highlight the corresponding growth or decrease rates of food and non-alcoholic beverage consumer expenditure.

The fourth objective is to analyze the food and non-alcoholic beverage consumer expenditure for two subcategories and nine classes against both the food and non-alcoholic beverages category and disposable income.

The fifth objective is to study the interaction of population number, consumption and food and non-alcoholic beverage consumer expenditure categories.

BACKGROUND

Population is defined in different manners by various scientific disciplines, such as demography, biology, ecology, statistics etc. The fundamental starting point is the demographic perspective, according to which the population represents "any group of persons who can be delimited on the basis of some observable characteristics" (Hinde, 2002, p. 18). The criteria used to group people as population are varied and depend on the research goals, such as country boundaries, geographical region, time span (year), gender, education, ethnic affiliation, and social and economic indicators etc.

Turchin (2003) and Bacaër (2011) state that the causes of changing the population number and composition in time and space can be explained by analyzing the population dynamics.

Hummel (2008) underscores that between social, cultural, economic, political, ecological etc. factors and population dynamics there is a two-way relationship, i.e. these factors influence the population dynamics and, in turn, population dynamics have an effect on the country's cultural, social, economic etc. system, in the short, medium and long term. Nevertheless, the importance of the ecological factor cannot be neglected, since the interaction between people and environment is continuous.

Kupiszewski and Kupiszewska (2011) draw attention to the international migration issue, which

in recent years has grown and has come to affect the population dynamics of both the developed and the least developed countries.

There are at least three ways in which to study the population dynamics (Turchin, 2003):

- The mathematical viewpoint which uses various types of models;
- The statistical perspective which deals with the time-series data;
- The field research based on the observation and recording process.

In economics, as a social science, the population is studied from both the income and the expenditure points of view, using different indicators.

Arnold (2011) claims that at least five indicators are used to measure the country's output in the national income accounting including disposable income. It is calculated per capita, at current prices, at constant prices and in purchasing power parity (PPP).

The disposable income represents the personal income that is out of taxes (known as personal taxes) (Sexton, 2013) which have different weights from a country to another, depending on country fiscal policy. Between income taxes and disposable income there is a negative correlation (Arnold, 2014). Thus, the disposable income can be used directly by people for consumption, saving and investments.

The disposable income includes four categories of income, such as (Euromonitor International Ltd, 2013):

- Wages;
- Income for self-employment;
- Interests, dividends and income from rentals;
- Social insurance and assistance benefits received from the government.

The important relationship between income and consumption was identified by J. M. Keynes

and it was presented through the consumption function, i.e. the disposable income is the sum of consumption and saving. If the consumption level is lower than the income level, the difference goes to saving. On the contrary, if the consumption level is higher than the income level, dissaving occurs (Boyes & Melvin, 2013). Even if the disposable income is zero, the consumer expenditure will be higher than zero due to autonomous consumption (Tucker, 2011).

LaTorre, Kenelly, Reed, Carpenter & Harris (2012) state that consumer expenditure represents "the total amount spent on a commodity to purchase the quantity demanded at a set market price" (p. 440) and it refers only to buying durable and non-durable goods and services and not to purchasing assets or marketing transfers (Collin, 2003; Black, Hashimzade, & Myles, 2009).

According to Mostert, Oosthuizen, Smit, Van Der Vyver (2007) the consumer expenditure is "the expenditure necessary to survive" and is directly correlated with the income (p. 212).

The results of surveys made on consumer expenditure are rather correlated due to the fact that the consumer expenditure categories studied are different, both as number and type, according to the survey objectives. For example, Pecotich & Shultz II (2006) studied 9 categories and Taylor & Houthakker (2010) used 14 categories. In this case, the disparities are not only in the number of categories, but especially in their type, since only six categories are identical.

MAIN FOCUS OF THE CHAPTER

Analysis of Population Dynamics

In this subchapter, the population of all countries between 2004 and 2011 was sorted out in descending order taking into account the values of year 2011. Furthermore, only the countries that had over 3 million people in 2011 were selected in order to ensure a balance between the complexity

of the research regarding the analyzed countries and to avoid the amount of data that was not useful to the study (the other 72 countries that comprise below 3 million people have a weight of 0.68% in the world population). The result was 117 states (Appendix 1).

The data in Appendix 1 show that even if the number of population has grown continuously, some countries experienced a decline in their population over different periods of time, e.g. Russia, Japan, Ukraine, Cuba, Belarus, Serbia, Georgia, Croatia, Bosnia and Herzegovina, Porto Rico, and Moldova.

It is important to underscore that the population growth rate was not constant from 2005 up to 2011 and its variation was not influenced by the states with population decline (Figure 2).

Despite the fact that in 2007/2006 as opposed to 2006/2005 the number of countries with population decline remained constant (9 states), the population growth rate was comparatively smaller (1.18% than 1.20%). A contradictory situation was in 2008/2007 as opposed to 2007/2006, when the number of countries with population decline went up to 11 and so did the population growth rate (from 1.19% to 1.18%).

The following two years were characterized by the same unpredictability. In 2009/2008 against 2008/2007, the number of countries with population decline diminished by one state, but the population growth rate equally went down (1.19% from 1.18%). In 2010/2009 against 2009/2008, the number of countries with population decline continued to decrease as well as the population growth rate (1.18% from 1.17%).

The year 2011/2010 is comparable to 2005/2004 from the point of view of the general theory of the increase in the population growth rate as the number of countries with population decline goes down.

The contradictory situations can be explained by the fact that the trends are established by the countries with the most populous countries in the world, i.e. the top 3 countries (China, India,

European Union 27 – Appendix 1) have 44.48% of the population in the 117 states, the top five countries (China, India, European Union 27, the United States, and Indonesia – Appendix 1) have 52.52%, the top 10 countries have 64.59%, the top 15 countries have 72.11% and the top 20 states approximately 77.30% (Figure 3).

During 2004-2011 only five countries recorded a continuous decrease of their population, i.e. Ukraine, Belarus, Serbia, Bosnia and Herzegovina, Puerto Rico and Moldova. The most significant reductions were 0.14% (Puerto Rico) in 2005, 0.12%, 0.17% and 0.19% (Bosnia and Herzegovina) in 2006-2008, 0.13%, 0.10% and 0.06% (Moldova) in 2009-2011 against previous years. The largest decline was 0.73%, 0.67% and 0.60% (Ukraine) in 2005-2007 and 0.58%, 0.54%, 0.51% and 0.93% (Puerto Rico) in 2008-2011 against previous years.

A particular case is represented by the countries that saw declines of their population for different periods of time, such as Russia (2005-2009), Japan (2006, 2008-2010), Cuba (2008-2011), Georgia (2007-2008) and Croatia (2006-2011). By contrast, Japan in 2006 (0.01%), Russia in 2009 (0.03%) and Croatia in 2006 and Japan and Cuba in 2008 (0.05%) recorded the largest decreases. Additionally, Croatia in 2011 (3.10%), Russia in 2005 (0.49%) and 2006 (0.44%) witnessed the most significant decreases.

Analysis of Consumer Disposable Income Dynamics

In Appendix 2 is displayed the disposable income per capita, in US\$ at current prices, from 2004 to 2011, for 47 countries. These states are sorted in the same order as was used in Appendix 1 to facilitate the comparisons concerning the issues introduced in the following subchapters.

The first analysis highlights the hierarchical structure of the top five countries with the highest and lowest disposable income per capita, during 2004-2011.

Figure 2. Evolution of population growth rate and the number of countries with population decline, 2005-2011

Source: Made by author based on calculation of data in Appendix 1

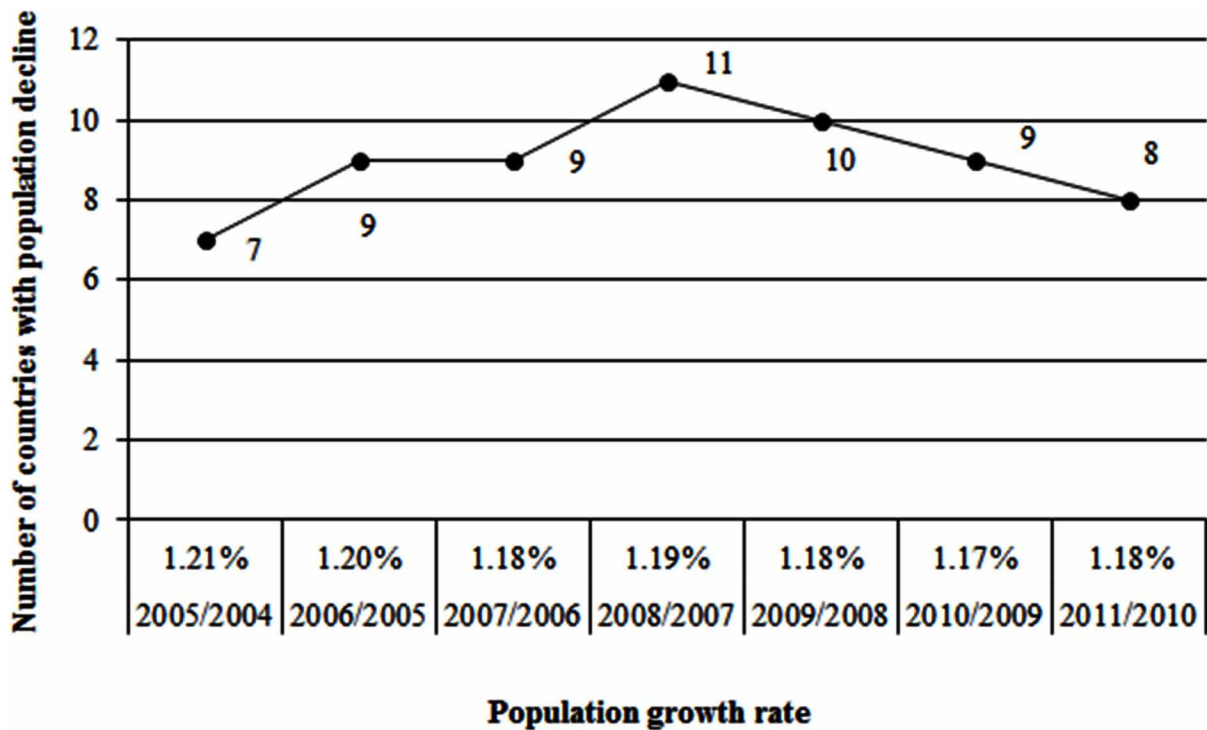
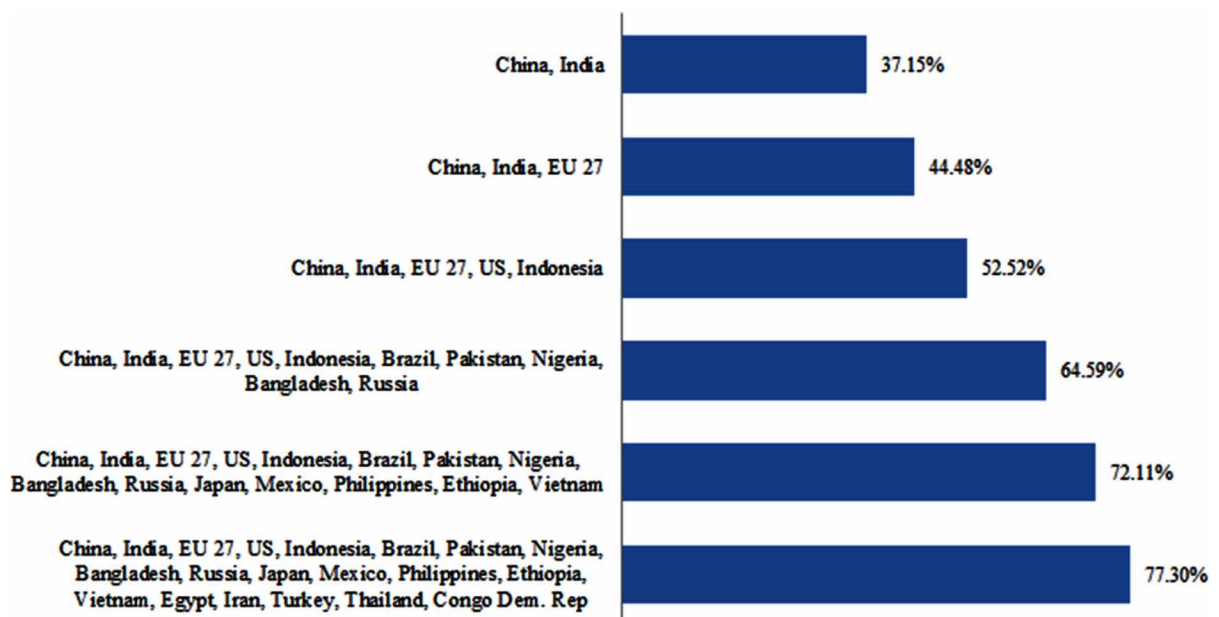


Figure 3. The weights of the top 20 countries according to number of population, 2011

Source: Made by author based on the calculation of data in Appendix 1.



In 2004, Switzerland (US\$31,904.2), the United Arab Emirates (US\$30,602.6), the United States (US\$29,240.9), Norway (US\$27,261.4) and Japan (US\$22,440.1) were the top leaders among the countries with the highest disposable income per capita. By contrast, Vietnam (US\$374.1), Nigeria (US\$429.8), Pakistan (US\$470.0), India (US\$543.7) and Azerbaijan (US\$670.5) recorded the lowest disposable income per capita.

In 2005, the hierarchy was slightly different both for the richest countries, namely the United Arab Emirates (US\$33,675.8), Switzerland (US\$32,585.3), Norway (US\$30,966.3), the United States (US\$30,266.7), Japan (US\$22,168.1), and for the poorest states, i.e. Vietnam (US\$422.1), Pakistan (US\$539.8), Nigeria (US\$544.4), India (US\$618.8), Bolivia (US\$773.5).

In 2006, in the top leaders among the countries with the highest disposable income per capita, Australia replaced Japan, the new hierarchy being the United Arab Emirates (US\$37,122.6), Switzerland (US\$33,568.4), the United States (US\$30,609.8), Norway (US\$29,531.7) and Australia (US\$22,746.8). In the case of the states with the lowest disposable income per capita, Nigeria and Pakistan swapped places as opposed to the previous year: Vietnam (US\$475.9), Nigeria (US\$586.4), Pakistan (US\$597.7), India (US\$681.8) and Bolivia (US\$862.0).

In 2007, Norway and the United States castled: the United Arab Emirates (US\$36,751.7), Switzerland (US\$36,544.5), Norway (US\$34,555.3), the United States (US\$31,846.5) and Australia (US\$27,242.8). The same rule was applicable to Pakistan and Nigeria: Vietnam (US\$562.6), Pakistan (US\$662.2), Nigeria (US\$779.7), India (US\$829.3) and Bolivia (US\$976.5).

In 2008, Switzerland took the lead Switzerland (US\$41,157.4), Norway (US\$37,925.7), the United Arab Emirates (US\$36,169.7), the United States (US\$33,368.2), Australia (US\$29,115.2), and for the poorest countries, Pakistan and Vietnam changed their positions: Pakistan (US\$662.6),

Vietnam (US\$744.3), Nigeria (US\$814.6), India (US\$928.2) and Bolivia (US\$1,190.4).

2009 was the first year when the United Arab Emirates left the top five countries and Japan came back: Switzerland (US\$40,877.7), Norway (US\$35,687.1), the United States (US\$32,362.3), Australia (US\$29,309.5) and Japan (US\$25,944.2). On the other hand, Nigeria swapped its place with Vietnam: Pakistan (US\$735.8), Nigeria (US\$763.5), Vietnam (US\$774.9), India (US\$932.9) and Bolivia (US\$1,274.0).

In 2010, Australia and the United States castled: Switzerland (US\$43,151.3), Norway (US\$38,818.0), Australia (US\$35,356.6), the United States (US\$33,250.9), Japan (US\$28,064.1), and Nigeria and Pakistan followed the same rule: Nigeria (US\$690.2), Pakistan (US\$812.9), Vietnam (US\$842.3), India (US\$1,137.5) and Bolivia (US\$1,345.9).

In 2011, the hierarchical structure of top five most developed countries remained the same as in 2010: Switzerland (US\$50,946.6), Norway (US\$43,549.3), Australia (US\$41,751.0), the United States (US\$34,501.2) and Japan (US\$30,457.2). In the group with the least developed countries, Vietnam changed its position with Pakistan: Nigeria (US\$739.7), Vietnam (US\$960.1), Pakistan (US\$993.6), India (US\$1,264.6) and Bolivia (US\$1,572.2).

During 2004-2011, on average, the highest income was recorded for Switzerland (US\$38,841.9), Norway (US\$34,786.9), the United States (US\$31,930.8), the United Arab Emirates (US\$30,915.9), Australia (US\$28,445.6), and the lowest income for Vietnam (US\$644.5), Nigeria (US\$668.5), Pakistan (US\$684.3), India (US\$867.1) and Bolivia (US\$1,092.0).

The second analysis refers to the growth and decrease rates of disposable income per capita for each year against the previous year. Thus, in 2005/2004, Ukraine (46.97%), Venezuela (33.02%), Azerbaijan (31.22%), Belarus (31.15%) and Brazil (30.32%) had the highest income growth

rate, while Tunisia (1.33%), Switzerland (2.13%), Algeria (3.16%), the United States (3.51%) and Israel (3.65%) had the lowest income growth rate. There are also only two countries that suffered a decrease of their income per capita, i.e. Turkmenistan (-10.57%) and Japan (-1.21%).

In 2006/2005, the highest income growth rates were reported by Russia (28.59%), Ukraine (24.55%), Indonesia (23.90%), Brazil (22.73%) and Belarus (21.86%). The lowest income growth rates belong to the United States (1.13%), Switzerland (3.02%), South Africa (3.20%), Algeria (3.37%) and Australia (3.72%). Additionally, the number of states which recorded a decrease of income doubled: Turkmenistan (-14.92%), New Zealand (-6.43%), Norway (-4.63%) and Japan (-4.34%).

In 2007/2006, Turkmenistan moved to the top five countries with the highest growth income: Turkmenistan (33.66%), Nigeria (32.96%), Kazakhstan (31.54%), Russia (31.48%) and Venezuela (31.17%). On the other hand, Mexico and Ecuador have joined the states with the lowest income growth rates: the United States (4.04%), Mexico (7.16%), Ecuador (7.45%), South Africa (7.62%) and Switzerland (8.87%). Only Japan (-1.38%) and the United Arab Emirates (-1.00%) faced decreases.

In 2008/2007, Vietnam was the only country that maintained its position among the states with the highest income growth: Azerbaijan (44.46%), Venezuela (36.20%), Vietnam (32.30%), China (31.75%) and Ukraine (30.03%). As an alternative, there were new states that experienced the lowest income growth: Pakistan (0.06%), New Zealand (2.05%), Hong Kong (2.83%), Canada (4.08%) and Nigeria (4.48%). The countries with income decline were: South Korea (-11.38%), South Africa (-7.68%) and the United Arab Emirates (-1.58%).

In 2009/2008, there were 31 countries (65.95%) out of the 47 analyzed that suffered a drop of their population income against 16 states that recorded an income increase. On the other hand, for these 16 countries the highest income growth

rates were much lower than in 2008: Venezuela (26.21%), Egypt (17.58%), Azerbaijan (15.09%), China (13.48%) and Pakistan (11.05%). The lowest income growth rates were for: India (0.51%), Australia (0.67%), Peru (0.90%), Brazil (1.23%) and Indonesia (1.55%). Out of the 31 countries with decreases, the most significant were: the United Arab Emirates (-34.31%), Ukraine (-29.09%), Kuwait (-22.10%), Mexico (-19.94%) and Turkey (-15.10%).

In 2010/2009, there were new states in the top five of the highest income growth rates: Brazil (28.41%), Indonesia (26.34%), South Africa (24.98%), India (21.93%), Kazakhstan (21.44%), as well as in the lowest income growth rate: the United Arab Emirates (0.33%), the United States (2.75%), Tunisia (4.15%), Venezuela (4.96%) and Hong Kong (5.44%). The number of countries in which the figures went down has decreased from 31 to 5: Nigeria (-9.60%), Croatia (-3.37%), Kuwait (-2.98%), European Union 27 (-2.45%), Morocco (-0.35%).

In 2011/2010, Ukraine (23.80%), Pakistan (22.23%), Turkmenistan (22.01%), China (20.24%) and Russia (19.75%) had the highest income growth rate, whereas Kuwait (0.27%), Egypt (3.06%), Turkey (3.66%), the United States (3.76%), Tunisia (3.79%) the lowest one. Venezuela (-20.88%) and Belarus (-4.98%) were the only two states that recorded decreases in their population income.

For 2005-2011, on average, the top five states with the highest growth rates were Azerbaijan (23.51%), Ukraine (20.28%), Brazil (20.03%), China (19.78%), Russia (19.49%), and the lowest Kuwait (0.96%), the United States (2.42%), Japan (4.65%), European Union 27 (5.03%), Hong Kong (5.26%). the United Arab Emirates was the only country that saw a reduction (-1.39%).

The severe decreases of disposable income per capita in 2009 (for 31 countries) and to a lesser extent in 2010 (for 5 countries) can be explained by the global economic crisis which began in 2007 and was followed by the 2008-2009 reces-

sion (Brancaccio & Fontana, 2011; Nurse, 2012; Kim, 2012), which was felt even in 2010 (Suter & Herkenrath, 2012).

Analysis of Food and Non-Alcoholic Beverage Consumer Expenditure Dynamics

Since this study analyzes the data from *World Consumer Income and Expenditure Patterns 2013*, the Euromonitor International Ltd uses 12 categories of consumer expenditure, and each of them has other subcategories (Figure 4).

It is very difficult to analyze all these categories and subcategories in one single research project, therefore in this chapter I am focusing only on the food and non-alcoholic beverages category and its subcategories.

Appendix 3 shows the food and non-alcoholic beverage consumer expenditure per capita between 2004 and 2011, in US\$ per capita, at current prices, for the same countries and in the same order that were presented in Appendix 2.

The first analysis emphasizes the countries with the highest and the lowest level of food and non-alcoholic beverage consumer expenditure per capita along with its dynamics. Thus, in 2004, the United Arab Emirates (US\$4,032.4), Norway (US\$3,231.0), Japan (US\$3,103.8), Switzerland (US\$3,091.2) and Australia (US\$2,063.8) were the top five countries with the highest food and non-alcoholic beverage consumer expenditure per capita. On the other hand, Vietnam (US\$105.3), India (US\$134.7), China (US\$160.9), Pakistan (US\$189.1) and Nigeria (US\$189.6) had the lowest consumer expenditure for the same goods.

In 2005, Switzerland and Japan changed their places in the top leaders among the states with the highest food and non-alcoholic beverage consumer expenditure per capita: the United Arab Emirates (US\$4,240.7), Norway (US\$3,490.5), Switzerland (US\$3,128.0), Japan (US\$2,941.0) and Australia (US\$2,166.0). Moreover, in the group of countries with the lowest consumer expenditure, Bo-

livia joined the hierarchy, while Nigeria was out: Vietnam (US\$114.9), India (US\$151.2), China (US\$169.4), Bolivia (US\$205.9) and Pakistan (US\$209.1).

In 2006, the hierarchical structure of the top five countries remained unchanged: the United Arab Emirates (US\$4,545.4), Norway (US\$3,616.5), Switzerland (US\$3,164.7), Japan (US\$2,796.2), Australia (US\$2,309.1), as well as for the last five states: Vietnam (US\$126.4), India (US\$159.4), China (US\$183.2), Bolivia (US\$224.5) and Pakistan (US\$232.4).

In 2007, the same situation applied to the top five states: the United Arab Emirates (US\$4,529.0), Norway (US\$4,148.5), Switzerland (US\$3,344.8), Japan (US\$2,800.5) and Australia (US\$2,771.1). But, for the countries with the lowest consumer expenditure, Pakistan and Bolivia castled: Vietnam (US\$154.9), India (US\$194.8), China (US\$225.3), Pakistan (US\$252.9) and Bolivia (US\$254.9).

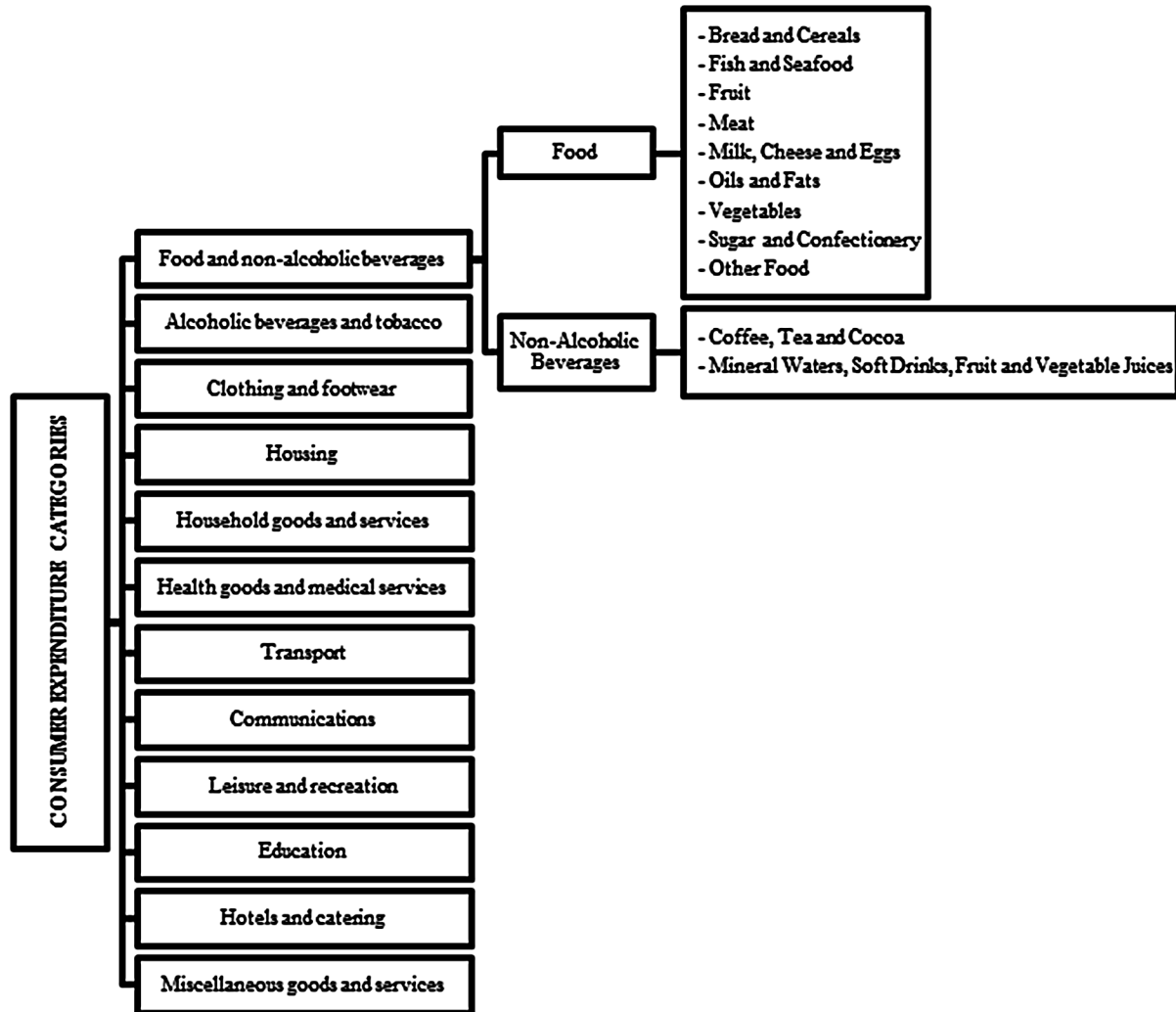
In 2008, Norway moved to the first place: Norway (US\$4,560.1), the United Arab Emirates (US\$4,391.7), Switzerland (US\$3,758.5), Japan (US\$3,152.2), Australia (US\$2,814.6), and in the lot of countries with the lowest consumer expenditure, Bolivia was the only state that maintained its place: India (US\$198.2), Vietnam (US\$212.5), Pakistan (US\$258.7), China (US\$288.6) and Bolivia (US\$311.4).

In 2009, the United Arab Emirates fell to the last place of the top five countries: Norway (US\$4,265.2), Switzerland (US\$3,809.3), Japan (US\$3,510.0), Australia (US\$2,721.9) and United Arab Emirates (US\$2,592.8). On the other hand, China was no longer in the hierarchy and was replaced by Nigeria: Vietnam (US\$192.6), India (US\$192.9), Pakistan (US\$290.7), Nigeria (US\$322.3) and Bolivia (US\$333.0).

In 2010, Hong Kong was ranked among the top five countries: Norway (US\$4,495.4), Switzerland (US\$3,948.8), Japan (US\$3,668.7), Australia (US\$3,308.2), Hong Kong (US\$2,735.7), and Nigeria and Pakistan swapped: Vietnam (US\$177.9),

Figure 4. The consumer expenditure categories

Source: Made by author based on data in Euromonitor International Ltd. (2013). *World Consumer Income and Expenditure Patterns 2013*, 13th Edition. London, Western and Southern Europe Euromonitor International Ltd pp. 30-37



India (US\$220.9), Nigeria (US\$289.1), Pakistan (US\$322.8) and Bolivia (US\$354.9).

In 2011, the place of Hong Kong was taken by New Zealand: Norway (US\$4,981.2), Switzerland (US\$4,608.2), Japan (US\$3,991.1), Australia (US\$3,879.8) and New Zealand (US\$3,028.4). For the countries with the lowest consumer expenditure, the hierarchy remained unchanged: Vietnam (US\$201.2), India (US\$234.5), Nigeria (US\$307.2), Pakistan (US\$394.5) and Bolivia (US\$413.4).

Over the 2004-2011 period, on average, the top five states with the highest food and non-alcoholic beverage consumer expenditure per capita were: Norway (US\$4,098.6), the United Arab Emirates (US\$3,731.8), Switzerland (US\$3,606.7), Japan (US\$3,245.4), Australia (US\$2,754.3), and the lowest figures were recorded for: Vietnam (US\$160.7), India (US\$185.8), Pakistan (US\$268.8), China (US\$279.6) and Nigeria (US\$285.9).

The second analysis highlights the growth and decrease rates of the food and non-alcoholic beverage consumer expenditure per capita, between 2004 and 2011. Thus, in 2005/2004, Ukraine (52.43%), Brazil (27.98%), Belarus (27.55%), Nigeria (25.79%), Venezuela (22.69%) had the highest growth rate and Saudi Arabia (0.78%), Israel (0.87%), Switzerland (1.19%), Tunisia (1.29%) and European Union 27 (2.68%) the lowest growth rate. There are also only three countries that suffered a decrease in figures: Turkmenistan (-17.21%), Japan (-5.25%) and Indonesia (-4.66%).

In 2006/2005, Ukraine and Belarus were the only states that remained in the top five: Azerbaijan (34.02%), Russia (26.52%), Ukraine (25.40%), Indonesia (23.51%), Belarus (21.59%), and Switzerland in the second set of countries: Switzerland (1.17%), the United States (3.13%), Turkey (3.33%), Norway (3.61%) and South Africa (4.10%). Also, Turkmenistan and Japan still dealt with a reduction in rates: Turkmenistan (-20.77%), Japan (-4.92%) and New Zealand (-1.02%).

In 2007/2006, Nigeria and Venezuela joined the top five countries: Azerbaijan (35.14%), Ukraine (32.38%), Nigeria (31.36%), Venezuela (28.62%) and Russia (27.88%). In the case of the lowest growth rate, Japan and Ecuador were the new entries: Japan (0.15%), the United States (4.61%), South Africa (4.88%), Switzerland (5.69%) and Ecuador (7.40%). The only state that witnessed a decrease was the United Arab Emirates (-0.36%).

In 2008/2007, Azerbaijan (41.04%), Ukraine (38.10%), Vietnam (37.19%), Belarus (33.34%), Russia (32.15%) had the highest growth rate and Australia (1.57%), New Zealand (1.64%), India (1.75%), Turkmenistan (2.20%), Pakistan (2.29%) had the lowest growth rate. The number of countries that in which the rates dropped grew up to three: South Africa (-9.17%), South Korea (-7.70%) and the United Arab Emirates (-3.03%).

In 2009/2008, only ten states recorded a growth rate, i.e.: China (23.35%), Egypt (16.12%), Venezuela (16.10%), Pakistan (12.37%), Japan

(11.35%), Azerbaijan (10.80%), Saudi Arabia (8.40%), Bolivia (6.94%), Switzerland (1.35%) and Brazil (1.04%). Countries such as the United Arab Emirates (-40.96%), Ukraine (-30.64%), Kuwait (-22.84%), Mexico (-20.81%) and Belarus (-15.23%) experienced the most dramatic reduction.

In 2010/2009, 40 countries reported growth rates. The highest were: Brazil (27.59%), Russia (24.12%), Indonesia (23.26%), South Africa (22.09%), and Australia (21.54%), while the lowest were: Turkmenistan (0.92%), the United States (1.33%), the United Arab Emirates (1.55%), Tunisia (1.68%), and Switzerland (3.66%). Among the 7 states with reported decrease in rates were: Nigeria (-10.30%), Vietnam (-7.63%), European Union 27 (-2.56%), Kuwait (-2.07%), Croatia (-1.95%), Morocco (-0.96%) and Venezuela (-0.03%).

In 2011/2010, only Russia and Australia maintained their position in the top five countries: Pakistan (22.21%), Ukraine (21.00%), Russia (19.04%), Kazakhstan (17.66%), Australia (17.28%), and the United States on the other hand in the lowest rates countries: Croatia (2.74%), Tunisia (3.76%), Egypt (3.95%), the United States (5.01%) and Jordan (5.29%). Furthermore, Venezuela (-23.69%), Belarus (-6.36%), Turkey (-1.52%) and Kuwait (-1.00%) faced rate reductions.

During 2005-2011, on average, Ukraine (22.02%), Azerbaijan (21.49%), Russia (19.34%), Brazil (18.70%), Kazakhstan (17.72%) had the highest growth rate, and Kuwait (2.52%), the United States (3.08%), Japan (3.89%), European Union 27 (4.79%), Tunisia (4.84%) the lowest growth rate. Only the United Arab Emirates (-2.96%) and Turkmenistan (-0.51%) reported rate decreases.

The third analysis underlines the countries with the highest and the lowest weight of food and non-alcoholic beverage consumer expenditure in disposable income per capita along with its dynamics based on data in Appendix 4. Thus, in 2004, Azerbaijan (47.19%), Belarus (44.32%), Nigeria

(44.11%), Algeria (41.67%) and Jordan (40.84%) were the top five countries with the highest weight of food and non-alcoholic beverage consumer expenditure in disposable income per capita. By contrast, Singapore (5.12%), the United States (6.20%), Hong Kong (8.96%), Canada (9.01%) and Switzerland (9.69%) had the lowest weight.

In 2005, Egypt took over the place of Azerbaijan: Nigeria (43.81%), Belarus (43.10%), Algeria (41.92%), Jordan (40.72%) and Egypt (40.26%). On the other hand, Canada switched the place with Hong Kong: Singapore (5.12%), the United States (6.26%), Canada (8.81%), Hong Kong (9.06%) and Switzerland (9.60%).

In 2006, Azerbaijan came back in the top five, while Jordan was out: Azerbaijan (45.23%), Nigeria (43.72%), Belarus (43.01%), Algeria (42.35%) and Egypt (41.59%). The hierarchy at the other end of the cline remained unchanged: Singapore (5.17%), the United States (6.38%), Canada (8.70%), Hong Kong (8.96%) and Switzerland (9.43%).

In 2007, Egypt and Belarus castled: Azerbaijan (47.00%), Nigeria (43.20%), Egypt (42.96%), Algeria (42.36%), Belarus (41.48%), whereas the order in the second set of countries remained the same: Singapore (5.13%), the United States (6.41%), Canada (8.50%), Hong Kong (9.01%) and Switzerland (9.15%).

In 2008, Belarus, Nigeria and Egypt switched places: Azerbaijan (45.88%), Belarus (43.14%), Nigeria (42.66%), Algeria (42.36%) and Egypt (42.26%). At the opposite top of the scale, Australia joined the hierarchy: Singapore (5.30%), the United States (6.38%), Canada (8.61%), Switzerland (9.13%) and Australia (9.67%).

In 2009, Azerbaijan and Nigeria were the only countries that maintained their position: Azerbaijan (44.17%), Algeria (42.48%), Nigeria (42.21%), Egypt (41.73%) and Belarus (41.64%). On the other side, Australia and Switzerland changed their places: Singapore (5.30%), the United States (6.50%), Canada (9.04%), Australia (9.29%) and Switzerland (9.32%).

In 2010, Jordan joined the top five: Azerbaijan (42.74%), Algeria (42.58%), Nigeria (41.89%), Egypt (41.19%), Jordan (40.80%), and Switzerland and Australia castled: Singapore (5.20%), the United States (6.41%), Canada (8.89%), Switzerland (9.15%) and Australia (9.36%).

In 2011, Nigeria and Jordan were the only states that did not change their position: Algeria (42.60%), Egypt (41.55%), Nigeria (41.53%), Azerbaijan (41.44%) and Jordan (40.91%). The structure of the second hierarchy remained the same: Singapore (5.14%), the United States (6.49%), Canada (8.92%), Switzerland (9.05%) and Australia (9.29%).

On average, from 2004 up to 2011, Azerbaijan (44.15%), Nigeria (42.89%), Algeria (42.29%), Belarus (42.09%) and Egypt (41.54%) were the top five countries with the highest weight of food and non-alcoholic beverage consumer expenditure in disposable income per capita. At the opposite pole, Singapore (5.18%), the United States (6.38%), Canada (8.81%), Switzerland (9.31%) and Australia (9.76%) had the lowest weight.

The fourth analysis underscores the growth and decrease rates of food and non-alcoholic beverage consumer expenditure weight in disposable income per capita. Thus, on the one hand, in 2005/2004 there were only 9 countries that recorded a growth rate of the food and non-alcoholic beverage consumer expenditure weight in disposable income per capita: Kazakhstan (14.00%), Thailand (4.30%), Ukraine (3.71%), Kuwait (3.56%), Hong Kong (1.16%), the United States (0.85%), Peru (0.62%), Algeria (0.60%) and Morocco (0.40%). On the other hand, the most important decreases reported for: Azerbaijan (-16.18%), Croatia (-14.34%), China (-11.48%), Indonesia (-10.54%) and Mexico (-8.08%).

In 2006/2005, the highest growth rates were reported for Azerbaijan (14.35%), Norway (8.64%), New Zealand (5.78%), Thailand (3.68%), Croatia (3.36%), and the lowest growth rates for Saudi Arabia (0.11%), Pakistan (0.38%), Jordan (0.52%), Israel (0.65%) and Ukraine (0.69%). The

most considerable drop rates was in the case of Venezuela (-7.87%), China (-7.47%), Turkmenistan (-6.88%), India (-4.32%) and Brazil (-2.93%).

In 2007/2006, Azerbaijan was the only state that maintained its position in the top five with the highest growth rate: Kuwait (4.00%), Azerbaijan (3.91%), Vietnam (3.66%), Egypt (3.30%) and Morocco (3.08%). In a similar way, Jordan was the only state that preserved its place in the country hierarchy with the lowest growth rates: Algeria (0.02%), Jordan (0.10%), European Union 27 (0.19%), Australia (0.20%) and Bolivia (0.23%). The largest reductions were for: Turkmenistan (-5.83%), Kazakhstan (-4.82%), Turkey (-3.57%), Belarus (-3.55%) and Switzerland (-2.92%).

In 2008/2007, all the top five states were new entries: Hong Kong (16.47%), Kazakhstan (15.55%), Thailand (7.28%), Israel (6.41%) and Ukraine (6.21%). As for the countries with the lowest growth rates, Bolivia was the only one that remained in this set: Brazil (0.04%), Morocco (0.06%), Norway (0.15%), Bolivia (0.21%) and Indonesia (0.59%). This was equally applicable to Turkmenistan in the case of countries with decreasing rates: India (-9.10%), Australia (-4.96%), Turkmenistan (-4.93%), Ecuador (-4.51%) and Venezuela (-3.87%).

In 2009/2008, Kazakhstan remained in the top five: China (8.70%), Canada (5.06%), New Zealand (4.87%), Kazakhstan (4.42%), Croatia (3.16%), and for the second hierarchy all states were newcomers: Singapore (0.06%), Saudi Arabia (0.20%), Algeria (0.28%), Israel (0.45%) and Pakistan (1.19%). At the same time, Turkmenistan and Venezuela were still in the rate reduction zone: Vietnam (-12.94%), the United Arab Emirates (-10.13%), Venezuela (-8.01%), Turkmenistan (-5.56%) and South Africa (-4.23%).

In 2010/2009, Croatia was the only country which kept its position: Russia (6.08%), Mexico (3.26%), South Korea (2.04%), Hong Kong (1.80%) and Croatia (1.46%). As in the previous year, all the countries with the lowest growth rates were new entries: Ukraine (0.04%), Jordan

(0.17%), Algeria (0.25%), New Zealand (0.41%) and Pakistan (0.51%). On the other hand, Vietnam (-15.02%), Kazakhstan (-6.39%), India (-6.08%), Turkmenistan (-5.10%), Venezuela (-4.75%) had the most impressive decrease rates.

In 2011/2010, all the top five states with the highest growth rates were new: the United Arab Emirates (2.95%), Thailand (1.70%), the United States (1.20%), Egypt (0.87%) and Israel (0.60%). Only Algeria and New Zealand remained in the lowest growth rates hierarchy: Algeria (0.05%), New Zealand (0.22%), Japan (0.24%), Mexico (0.24%) and Hong Kong (0.28%). The top states with rate reductions were: China (-5.66%), Turkey (-5.00%), India (-4.51%), Turkmenistan (-4.26%) and South Korea (-4.03%).

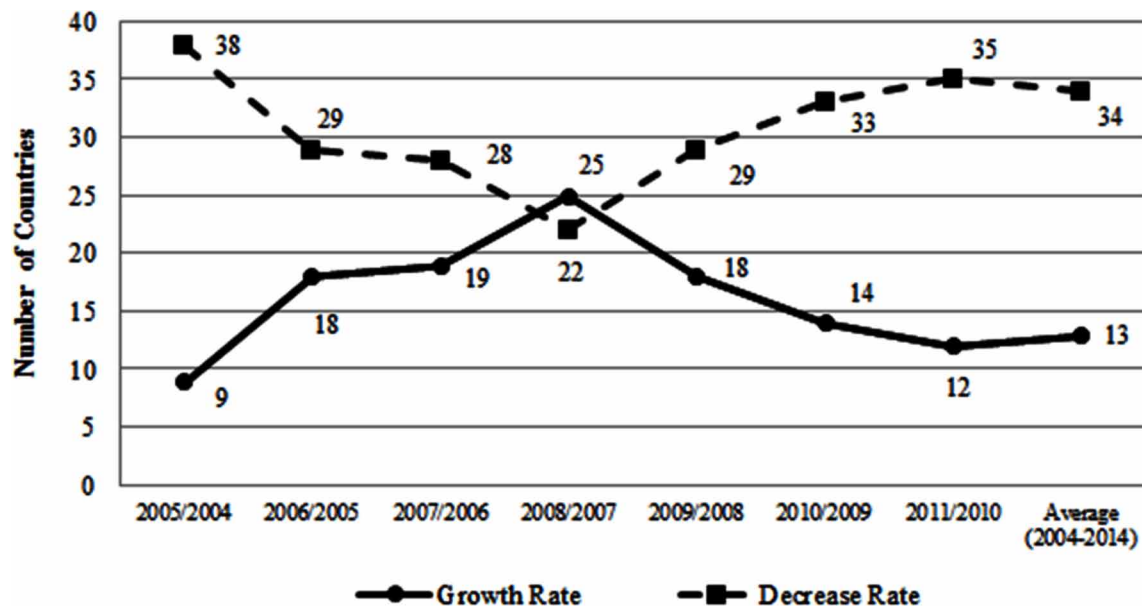
Overall, during 2005-2011, there are more countries with decrease rates of food and non-alcoholic beverage consumer expenditure weight in disposable income than with growth rates (Figure 5). In each year the proportion of countries with decrease rates is over 50%, except for 2008 when it was 46.81%. The highest values were recorded in 2005 (80.85%), 2011 (74.47%) and 2010 (70.21%).

Last but not least, on average, Kazakhstan (3.02%), Hong Kong (2.95%), Thailand (2.65%), New Zealand (1.59%), Kuwait (1.40%) had the highest growth rates. Jordan (0.03%), Singapore (0.05%), Egypt (0.29%), Algeria (0.32%), Israel (0.41%) had the lowest growth rate. Turkmenistan (-5.71%), Venezuela (-5.39%), India (-4.01%), Vietnam (-3.87%), China (-2.88%) had the highest reduction rate.

The fifth analysis draws attention to the evolution of growth or decrease rate between 2005 and 2011 for three major indicators: population number, disposable income and food and non-alcoholic beverage consumer expenditure (Appendix 5). Therefore, the countries can be categorized into three groups, taking into account the whole period (2005-2011):

Figure 5. Distribution of number of countries according to growth / decrease rate of food and non-alcoholic beverage consumer expenditure weight in disposable income, 2005-2011

Source: Made by author based on the calculation of data in Appendix 4.



- The first group comprises countries with growth rates for each of the three indicators: China, Brazil, Pakistan, Egypt, Saudi Arabia, Bolivia and Azerbaijan;
- The second group refers to countries with a single decrease rate irrespective of the type of indicator or year: India, Peru, Australia, Ecuador and Switzerland;
- Third group refers to countries with maximum of two decrease rates irrespective of the type of indicator or year: the United States, Indonesia, Mexico, the Philippines, Vietnam, Thailand, Colombia, Argentina, Algeria, Canada, Malaysia, Chile, Kazakhstan, Tunisia, Israel, Hong Kong, Jordan and Singapore;
- The fourth group includes countries with more than three decrease rates irrespective of the type of indicator or year: Turkey, South Africa, Venezuela and Norway;
- The fifth group includes countries with more than four decrease rates irrespective

of the type of indicator or year: European Union 27 (4 decrease rates), Nigeria (4), South Korea (4), New Zealand (4), Kuwait (5), the United Arab Emirates (6), Russia (7), Japan (9), Ukraine (9), Croatia (10), Belarus (11) etc.

Generally speaking, during 2005-2011, for most of the countries, the disposable income per capita rate was higher both than the population number and the food and non-alcoholic beverage consumer expenditure rates. However, there are some exceptions (Table 1).

The situation of countries with disposable income per capita rate lower than the population number rate can be attributed to at least three causes:

1. The disposable income per capita rate went down while the population number growth rate went up: Japan (2005, 2007), the United Arab Emirates (2007-2009), Turkmenistan

Table 1. Countries with disposable income per capita rate lower than the population number and the food and non-alcoholic beverage consumer expenditure rates

Period	Disposable Income Per Capita Rate is Lower Than Population Number Rate	Disposable Income Per Capita Rate is Lower Than Food and Non-Alcoholic Beverage Consumer Expenditure Rate
2005/2004	Japan, the United Arab Emirates, Turkmenistan etc.	the United States, Thailand, Ukraine, Algeria, Morocco, Peru, Kazakhstan, Hong Kong, Kuwait, etc.
2006/2005	Japan, the United Arab Emirates, Turkmenistan, Norway, New Zealand, Kuwait, etc.	the United States, Pakistan, Egypt, Thailand, South Africa, Ukraine, Algeria, Morocco, Saudi Arabia, Australia, Azerbaijan, Israel, Jordan, Singapore, Norway, New Zealand, Croatia, Kuwait, etc.
2007/2006	Japan, the United Arab Emirates, etc.	India, European Union 27, the United States, Japan, Mexico, Vietnam, Egypt, Ukraine, Algeria, Morocco, Australia, Tunisia, Bolivia, Azerbaijan, the United Arab Emirates, Hong Kong, Jordan, New Zealand, Kuwait, etc.
2008/2007	Pakistan, South Africa, South Korea, the United Arab Emirates, etc.	European Union 27, Indonesia, Brazil, Pakistan, Russia, Vietnam, Turkey, Thailand, South Korea, Colombia, Ukraine, Canada, Morocco, Peru, Saudi Arabia, Chile, Kazakhstan, Bolivia, Belarus, Israel, Hong Kong, Singapore, Norway, Croatia, Kuwait, etc.
2009/2008	India, European Union 27, the United States, Nigeria, Russia, Mexico, the Philippines, Turkey, Thailand, South Korea, Colombia, Ukraine, Argentina, Algeria, Canada, Morocco, Peru, Malaysia, Australia, Chile, Kazakhstan, Tunisia, Belarus, the United Arab Emirates, Switzerland, Israel, Hong Kong, Jordan, Singapore, Turkmenistan, Norway, New Zealand, Croatia, Kuwait, etc.	China, the United States, Pakistan, Japan, Turkey, Thailand, South Korea, Algeria, Canada, Saudi Arabia, Chile, Kazakhstan, Switzerland, Israel, Hong Kong, Singapore, New Zealand, Croatia, etc.
2010/2009	European Union 27, Nigeria, Morocco, the United Arab Emirates, Croatia, Kuwait, etc.	Pakistan, Russia, Mexico, South Korea, Ukraine, Algeria, Australia, Bolivia, the United Arab Emirates, Hong Kong, Jordan, New Zealand, Croatia, Kuwait, etc.
2011/2010	Venezuela, Belarus, Kuwait, etc.	the United States, Japan, Mexico, Egypt, Thailand, Algeria, Canada, the United Arab Emirates, Israel, Hong Kong, Jordan, New Zealand, etc.
Average (2005-2011)	the United Arab Emirates, Kuwait, etc.	the United States, Egypt, Thailand, Ukraine, Algeria, Morocco, Peru, Kazakhstan, Israel, Hong Kong, Jordan, Singapore, New Zealand, Kuwait, etc.

Source: Made by author based on the calculation of data in Appendix 5.

(2005, 2006, 2009), Norway (2005, 2009), New Zealand (2005, 2009), South Africa (2008), South Korea (2008, 2009), India (2009), the United States (2009), Nigeria (2009, 2010), European Union 27 (2009, 2010), Mexico (2009), the Philippines (2009), Turkey (2009), Thailand (2009), Argentina (2009), Algeria (2009), Canada (2009), Morocco (2009, 2010), Malaysia (2009), Chile (2009), Kazakhstan (2009), Tunisia (2009), Switzerland (2009), Israel

- (2009), Hong Kong (2009), Jordan (2009), Singapore (2009), Kuwait (2009, 2010) etc.;
2. The disposable income per capita rate went down and the population number rate decreased less than the disposable income per capita rate: Japan (2006), Russia (2009), Ukraine (2009), Croatia (2009) etc.;
3. The population growth rate is higher than the disposable income per capita growth rate: the United Arab Emirates (2005, 2006,

1010), Pakistan (2008), India (2009), Kuwait (2011) etc.

In a similar way, the reasons for which some countries had a disposable income per capita rate lower than the food and non-alcoholic beverage consumer expenditure rate were:

1. The disposable income per capita rate decreased and the food and non-alcoholic beverage consumer expenditure rate increased: Norway (2006), Japan (2007), Switzerland (2009), etc.;
2. The disposable income per capita rate fell and the food and non-alcoholic beverage consumer expenditure rate decreased less than the disposable income per capita rate: the United States (2009), Turkey (2009), Thailand (2009), South Korea (2008, 2009), Algeria (2009), Canada (2009), Chile (2009), Kazakhstan (2009), the United Arab Emirates (2007), Israel (2009), Hong Kong (2009), Singapore (2009), New Zealand (2006, 2009), Croatia (2009, 2010), Kuwait (2010), etc.;
3. The food and non-alcoholic beverage consumer expenditure growth rate is higher than the disposable income per capita growth rate: China (2009), India (2005, 2007), European Union 27 (2007, 2008), the United States (2005-2007, 2011), Indonesia (2008), Brazil (2008), Pakistan (2006, 2008-2010), Russia (2008, 2010), Japan (2009, 2011), Mexico (2007, 2010, 2011), Vietnam (2007, 2008), Egypt (2006, 2007, 2011), Turkey (2008), Thailand (2005, 2006, 2008, 2011), South Africa (2006), South Korea (2010), Colombia (2008), Ukraine (2005-2008, 2010), Algeria (2005-2007, 2010, 2011), Canada (2008, 2011), Morocco (2005-2008), Peru (2005, 2008), Venezuela (2007), Saudi Arabia (2007-2009), Australia (2007, 2008, 2010), Chile (2008), Kazakhstan (2005, 2008), Tunisia (2007), Bolivia (2007, 2008,

2010), Belarus (2008), Azerbaijan (2006, 2007), the United Arab Emirates (2010, 2011), Israel (2006, 2008, 2011), Hong Kong (2005, 2007, 2008, 2010, 2011), Jordan (2006, 2007, 2010, 2011), Singapore (2006, 2008), Norway (2008), New Zealand (2007, 2010), Croatia (2006, 2008), Kuwait (2005-2008), etc.

On the other hand, data in Appendix 5 show that not all the countries reported growth rates for all three indicators, and some of them even faced reductions. The critical period was between 2008 and 2010, with a peak in 2009 (Figure 6).

In 2008 against 2007, the number of countries with population number, disposable income and food and non-alcoholic beverage consumer expenditure decrease rates has started to slightly increase, as an anticipation of the next year circumstances.

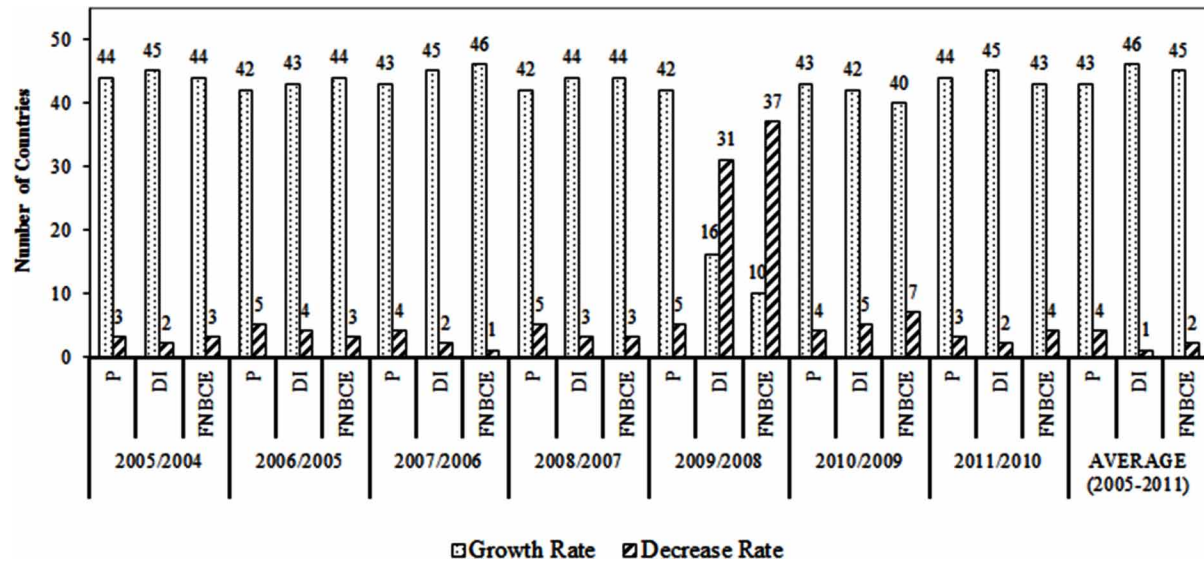
In 2009 the number of these countries rose above the number of states that still had growth rates (31 countries against 16 in the case of disposable income and 37 countries against 10 for non-alcoholic beverage consumer expenditure). As an exception, the number of countries with declining rate of population number remained unchanged in 2008, 2009 and decreased in 2010.

The year 2010 was somewhat similar to 2008 in respect of the number of countries with decrease rates for the three indicators. Instead, 2011 can be labeled as the beginning of a steady situation with standard distribution of the indicators, taking into account the data from 2005 up to 2011.

Analysis of Food and Non-Alcoholic Beverage Consumer Expenditure Categories

According to Figure 4, the food and non-alcoholic beverages category includes two main subcategories: food and non-alcoholic beverages. The food subcategory contains nine classes (Bread and cereals; Fish and seafood; Fruit; Meat; Milk, cheese and eggs; Oils and fats; Vegetables; Sugar

Figure 6. Distribution of number of countries according to growth / decrease rate of population number, disposable income and food and non-alcoholic beverage consumer expenditure, 2005-2011, P- Population; DI- Disposable Income; FNBCE - Food and Non-Alcoholic Beverage Consumer Expenditure
Source: Made by author based on the calculation of data in Appendix 5.



and confectionery; Other food), whereas the non-alcoholic beverages category comprises two classes (Coffee, tea and cocoa; Mineral waters, soft drinks, fruit and vegetable juices).

Appendix 6 presents the food and non-alcoholic beverage consumer expenditure per capita both for the above mentioned subcategories and classes, in 2011, in US\$ per capita, at current prices.

The first analysis emphasizes the country hierarchical structure emerging from the weight of the two subcategories and nine classes in the food and non-alcoholic beverages category. Thus, in 2011, the countries with the highest weight of food consumption expenditure in the food and non-alcoholic beverages category were China (97.26%), Peru (96.90%), Egypt (96.83%), Pakistan (96.66%) and the Philippines (96.07%). On the contrary, the lowest weight was recorded in the case of: Tunisia (73.26%), Brazil (82.33%), Algeria (83.46%), Colombia (84.56%) and New Zealand (85.00%).

Obviously, the states with the highest weight of non-alcoholic beverages consumption expen-

diture in the food and non-alcoholic beverages category were the ones with the lowest proportion of food: Tunisia (26.74%), Brazil (17.67%), Algeria (16.54%), Colombia (15.44%), New Zealand (15.00%) and vice versa: China (2.74%), Peru (3.10%), Egypt (3.17%), Pakistan (3.34%) and the Philippines (3.93%).

In 2011, the bread and cereals consumer expenditure weight in food and non-alcoholic beverages category had a different distribution among countries. The highest proportion was for India (27.20%), Algeria (26.71%), the Philippines (25.40%), Pakistan (24.51%), Indonesia (23.27%), and the lowest for Tunisia (7.28%), Japan (9.52%), Saudi Arabia (11.66%), Kuwait (11.93%) and China (12.05%).

In the case of fish and seafood, the highest weight was calculated for Malaysia (22.49%), Hong Kong (19.54%), Singapore (15.38%), Vietnam (15.16%), Indonesia (13.81%), and the lowest for Bolivia (0.02%), Pakistan (0.62%), Argentina (1.01%), Jordan (1.63%), Venezuela (1.71%).

For fruit, the hierarchy was different from the previous one; the top five countries were Canada (12.74%), Kuwait (12.51%), Indonesia (11.34%), Vietnam (11.17%), Colombia (10.99%), and the last five were Algeria (3.07%), Pakistan (3.63%), Japan (4.33%), Mexico (4.62%) and the Philippines (5.35%).

The countries with the highest weight of meat in the food and non-alcoholic beverages category were Turkmenistan (30.57%), Croatia (29.93%), China (29.64%), Russia (28.93%), Bolivia (27.71%), and the ones with the lowest corresponding weight: Indonesia (6.79%), India (6.81%), Japan (8.70%), Tunisia (8.74%) and Pakistan (10.16%).

Regarding the milk, cheese and eggs class, the highest weight was calculated for Pakistan (25.89%), India (21.01%), Ukraine (17.97%), Israel (17.59%), Brazil (17.19%), and the lowest for Morocco (1.88%), Algeria (2.00%), Tunisia (2.34%), Japan (4.55%) and Nigeria (6.04%).

In the case of oils and fats, Morocco (10.93%), Pakistan (9.66%), Egypt (9.02%), Belarus (8.80%) and Tunisia (7.27%) had the highest weight, and Canada (0.80%), South Korea (1.01%), Mexico (1.15%), Hong Kong (1.42%) and Norway (1.65%) had the lowest weight.

For vegetables, the highest weight was computed for Thailand (24.86%), Morocco (18.06%), Peru (16.92%), India (16.04%), Tunisia (15.76%), and the lowest for Brazil (5.65%), Norway (7.08%), Turkmenistan (7.39%), Argentina (7.76%) and South Korea (7.87%).

On top of the list for the sugar and confectionery class, were the following: New Zealand (11.79%), Norway (11.77%), Australia (11.18%), Japan (8.95%), Pakistan (8.45%), and at the bottom of the list were Mexico (1.39%), Thailand (2.14%), Hong Kong (2.69%), Ecuador (2.76%) and Indonesia (2.78%).

Concerning other food, Japan (33.36%), the United States (17.92%), Canada (14.25%), Jordan (13.50%), Mexico (10.31%) had the highest weight, and Turkey (1.26%), Azerbaijan (1.44%),

Ecuador (1.71%), Colombia (1.72%), Ukraine (1.76%) the lowest weight.

For coffee, tea and cocoa the top five countries were Nigeria (6.01%), Jordan (4.84%), Belarus (4.45%), Algeria (4.42%), Tunisia (4.17%), and the last in the hierarchy were China (0.35%), Hong Kong (0.56%), Canada (0.60%), India (0.71%) and Ecuador (1.07%).

In the case of mineral waters, soft drinks, fruit and vegetable juices, Tunisia (22.57%), Brazil (14.94%), Venezuela (13.18%), Algeria (12.12%), New Zealand (11.60%) had the highest weight, and Peru (1.24%), Pakistan (1.45%), the Philippines (1.99%), Egypt (2.04%), Belarus (2.05%) had the lowest calculated weight.

The second analysis underlines the weight of each subcategory and class in disposable income, for different countries. In 2011, the countries with the highest weight of food consumption expenditure in disposable income were: Egypt (40.23%), Azerbaijan (38.63%), Pakistan (38.38%), Jordan (37.73%), Belarus (37.13%), while the ones with the lowest weight were Singapore (4.81%), the United States (5.72%), Australia (8.20%), Switzerland (8.25%) and Canada (8.55%). Comparatively, the highest weight of non-alcoholic beverages consumption expenditure in disposable income was for Tunisia (8.34%), Algeria (7.04%), Nigeria (5.98%), Morocco (4.26%), Thailand (3.49%), and the lowest weight for Singapore (0.33%), Canada (0.37%), China (0.41%), Hong Kong (0.54%) and Japan (0.64%),

For bread and cereals consumer expenditure weight in disposable income, Algeria (11.38%), Pakistan (9.73%), Nigeria (9.23%), the Philippines (8.90%), Peru (8.32%) had the highest level and Singapore (0.99%), the United States (1.08%), Japan (1.25%), Canada (1.30%), Switzerland and Kuwait (1.41%) had the lowest level.

The countries with the highest weight for fish and seafood were the Philippines (4.58%), Nigeria (4.56%), Malaysia (4.40%), Indonesia (4.19%), Algeria (3.98%), and the lowest weight was computed for Bolivia (0.01%), the United States

(0.12%), Argentina (0.21%), Pakistan (0.24%), Brazil (0.27%).

Regarding fruit, the highest weight was for Peru (3.55%), Indonesia (3.44%), Nigeria (3.30%), Jordan (3.21%), Kazakhstan (2.99%), and the lowest weight was for the United States (0.35%), Singapore (0.53%), Japan (0.57%), Norway (0.69%), South Korea (0.74%).

In the case of meat, Egypt (10.40%), Belarus (9.25%), Kazakhstan (9.23%), Ukraine (9.18%), Jordan (9.12%) had the highest weight, and Singapore (0.80%), Japan (1.14%), India (1.26%), the United States (1.31%), Canada (1.64%) had the lowest weight.

The countries with the highest weight of milk, cheese and eggs were Pakistan (10.28%), Ukraine (6.24%), Azerbaijan (5.96%), Belarus (5.57%), Egypt (5.51%), and the countries with the lowest similar weight were Singapore (0.55%), the United States (0.57%), Japan (0.60%), Morocco (0.68%), Tunisia (0.73%).

For oils and fats, the top five countries were Morocco (3.94%), Pakistan (3.84%), Egypt (3.75%), Belarus (3.50%), Jordan (2.44%), and Canada (0.07%), South Korea (0.11%), the United States, Hong Kong and Singapore (0.15%) and Australia (0.16%) came in last.

Regarding vegetables, the highest weight was calculated for Thailand (7.17%), Morocco (6.51%), Azerbaijan (6.48%), Peru (6.28%), Egypt (5.96%), and the lowest weight for the United States (0.57%), Singapore (0.60%), Norway (0.81%), Brazil (0.84%), South Korea (0.87%).

In the case of sugar and confectionery, Pakistan (3.35%), Azerbaijan (2.68%), Jordan (2.53%), the Philippines (2.41%), Tunisia (2.26%) had the highest weight, and Singapore (0.24%), Hong Kong (0.29%), Mexico (0.30%), the United States (0.39%), Canada (0.41%) had the lowest weight.

For other food, the highest weight was for Jordan (5.52%), Japan (4.37%), the Philippines (3.30%), Morocco (2.77%), Tunisia (2.66%), and the lowest for Singapore (0.15%), Turkey and

Colombia (0.29%), the United Arab Emirates (0.31%), Australia (0.34%) and Ecuador (0.36%).

The countries with the highest weight of coffee, tea and cocoa were Nigeria (2.50%), Jordan (1.98%), Algeria (1.88%), Belarus (1.77%), Azerbaijan (1.34%), and at the bottom end of the scale were China and Canada (0.05%), Hong Kong (0.06%), the United States (0.11%), India (0.13%), Singapore (0.15%).

For mineral waters, soft drinks, fruit and vegetable juices, the top five countries were Tunisia (7.04%), Algeria (5.16%), Nigeria (3.49%), Morocco (3.04%), Thailand (2.66%), and the last ones were Singapore (0.18%), Canada (0.32%), China (0.35%), Japan (0.36%), Peru (0.46%).

Analysis of Interaction of Population Number, Consumption and Food and Non-Alcoholic Beverage Consumer Expenditure Categories

In this section, the interaction of factors such as population number, consumption and weight of one food and one non-alcoholic beverage consumer expenditure class in both the food and non-alcoholic beverages consumer expenditure category and disposable income is studied, for the top 20 most populous countries, as follows:

- Rice, wheat, corn and rye (Bread and Cereals class);
- Coffee (Coffee, Tea and Cocoa class).

The importance of analyzing the interaction between population number and consumption is that a population growth rate higher than the food supply growth rate generates difficulties in ensuring the food resources (Ene, 2009) and represents a starting point in a future world food crisis.

Table 2 shows the comparison of population number, domestic consumption of rice, wheat, corn and rye and weight of bread and cereals consumer expenditure in the food and non-alcoholic

beverages consumer expenditure category and disposable income in 2011.

The data in table 2 show that four country groups can be identified. The first group comprises the countries with low consumption per capita for rice, wheat, corn and rye, and high weights of bread and cereals consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and disposable income:

- India, with 73.87 kg per capita rice, 66.95 kg per capita wheat and 14.82 kg per capita corn consumption and 27.2% weight of bread and cereals consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and 5.04% in disposable income;
- Indonesia, with 156.04 kg per capita rice, 24.75 kg per capita wheat and 40.20 kg per capita corn consumption and 23.27% weight of bread and cereals consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and 7.06% in disposable income;
- Nigeria, with 29.23 kg per capita rice consumption and 22.22% weight of bread and cereals consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and 9.23% in disposable income.

The second group includes the countries with high consumption per capita for rice, wheat, corn and rye, and low weights of bread and cereals consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and disposable income:

- China, with 100.44 kg per capita rice, 82.21 kg per capita wheat and 133.92 kg per capita corn consumption, and 12.05% weight of bread and cereals consumer expenditure in the food and non-alcoholic

beverages consumer expenditure category and 1.79% in disposable income;

- The European Union 27, with 242.76 kg per capita wheat, 128.25 kg per capita corn and 16.21 kg per capita rye consumption, and only 16.59% weight of bread and cereals consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and 2.08% in disposable income;
- The United States, with 13.89 kg per capita rice, 98.33 kg per capita wheat, 914.99 kg per capita corn and 1.06 kg per capita rye consumption, and 16.72% weight of bread and cereals consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and 1.08% in disposable income;
- Russia, with 270.01 kg per capita wheat, 22.38 kg per capita corn and 12.94 kg per capita rye consumption, and only 14.04% weight of bread and cereals consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and 3.73% in disposable income;
- Egypt, with 41.57 kg per capita rice, 222.94 kg per capita wheat and 157.45 kg per capita corn consumption, and 15.94% weight of bread and cereals consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and a relatively high weight, 6.62%, in disposable income;
- Thailand, with 154.71 kg per capita rice and 16.47% weight of bread and cereals consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and a relatively high weight, 4.75%, in disposable income.

The third group is represented by those countries with high consumption per capita for rice, wheat, corn and rye, and high weights of bread and cereals consumer expenditure in the food and

Population Number and Consumer Income and Expenditure Dynamics

Table 2. Comparison of population number, domestic consumption of rice, wheat, corn and rye and weight of bread and cereals consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and disposable income in 2011

Country	Domestic consumption				Population number	Domestic consumption				Weight of Bread and Cereals consumption expenditure in:	
	Rice (metric tons)	Wheat (metric tons)	Corn (metric tons)	Rye (metric tons)		Rice (kg per capita)	Wheat (kg per capita)	Corn (kg per capita)	Rye (kg per capita)	Food and non-alcoholic beverages category (%)	Disposable income (%)
China	135,000,000	110,500,000	180,000,000	n/a	1,344,130,000	100.44	82.21	133.92	n/a	12.05	1.79
India	90,206,000	81,760,000	18,100,000	n/a	1,221,156,319	73.87	66.95	14.82	n/a	27.20	5.04
European Union 27	n/a	122,844,000	64,900,000	8,204,000	506,031,022	n/a	242.76	128.25	16.21	16.59	2.08
United States	4,329,000	30,639,000	285,096,000	330,000	311,582,564	13.89	98.33	914.99	1.06	16.72	1.08
Indonesia	38,044,000	6,035,000	9,800,000	n/a	243,801,639	156.04	24.75	40.20	n/a	23.27	7.06
Brazil	8,200,000	10,800,000	49,500,000	n/a	196,935,134	41.64	54.84	251.35	n/a	20.95	3.12
Pakistan	n/a	23,000,000	n/a	n/a	176,166,353	n/a	130.56	n/a	n/a	24.51	9.73
Nigeria	4,800,000	n/a	n/a	n/a	164,192,925	29.23	n/a	n/a	n/a	22.22	9.23
Bangladesh	32,400,000	n/a	n/a	n/a	152,862,431	211.96	n/a	n/a	n/a	n/a	n/a
Russia	n/a	38,600,000	3,200,000	1,850,000	142,956,460	n/a	270.01	22.38	12.94	14.04	3.73
Japan	8,200,000	n/a	15,700,000	105,000	127,817,277	64.15	n/a	122.83	0.82	9.52	1.25
Mexico	n/a	n/a	29,500,000	n/a	119,361,233	n/a	n/a	247.15	n/a	17.79	3.84
Philippines	12,900,000	n/a	7,200,000	n/a	95,053,437	135.71	n/a	75.75	n/a	25.40	8.90
Ethiopia	n/a	n/a	n/a	n/a	89,393,063	n/a	n/a	n/a	n/a	n/a	n/a
Vietnam	19,400,000	n/a	n/a	n/a	87,840,000	220.86	n/a	n/a	n/a	22.91	4.80
Egypt	3,300,000	17,700,000	12,500,000	n/a	79,392,466	41.57	222.94	157.45	n/a	15.94	6.62
Iran	3,250,000	15,700,000	n/a	n/a	75,424,285	43.09	208.16	n/a	n/a	n/a	n/a
Turkey	n/a	17,300,000	n/a	350,000	73,058,638	n/a	236.80	n/a	4.79	21.51	4.87
Thailand	10,300,000	n/a	n/a	n/a	66,576,332	154.71	n/a	n/a	n/a	16.47	4.75
Congo, Dem. Rep.	n/a	n/a	n/a	n/a	63,931,512	n/a	n/a	n/a	n/a	n/a	n/a
Subtotal	370,329,000	474,878,000	675,496,000	10,839,000	-	-	-	-	-	-	-
Other countries	74,624,000	179,648,000	176,952,000	1,707,000	-	-	-	-	-	-	-
Total	444,953,000	654,526,000	852,448,000	12,546,000	-	-	-	-	-	-	-

Source: Made by author based on data in Appendix 1, 2 and 6 and calculation of data extracted from United States Department of Agriculture. (2014). Foreign Agricultural Service, *World Rice Production, Consumption, and Stocks*, *World Wheat Production, Consumption, and Stocks*, *World Corn Production, Consumption, and Stocks*, *World Rye Production, Consumption, and Stocks*. Retrieved August 02, 2014, from <http://apps.fas.usda.gov/psdonline/>

non-alcoholic beverages consumer expenditure category and disposable income:

- Brazil, with 41.64 kg per capita rice, 54.84 kg per capita wheat and 251.35 kg per capita corn consumption and 20.95% weight of bread and cereals consumer expenditure in the food and non-alcoholic beverages

consumer expenditure category and 3.12% in disposable income;

- Pakistan, with 130.56 kg per capita wheat consumption and 24.51% weight of bread and cereals consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and 9.73% in disposable income;

- The Philippines, with 135.71 kg per capita rice and 75.75 kg per capita corn consumption and 25.40% weight of bread and cereals consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and 8.90% in disposable income;
- Mexico, with 247.15 kg per capita corn consumption and 17.79% weight of bread and cereals consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and 3.84% in disposable income;
- Vietnam, with 220.08 kg per capita rice consumption and 22.91% weight of bread and cereals consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and 4.80% in disposable income;
- Turkey, with 236.80 kg per capita wheat and 4.79 kg per capita rye consumption and 21.51% weight of bread and cereals consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and 4.87% in disposable income.

The forth group consists of those countries with low consumption per capita for rice, wheat, corn and rye, and low weights of bread and cereals consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and disposable income. This situation is specific only for Japan, with 64.15 kg per capita rice, 122.83 kg per capita corn and 0.82 kg per capita rye consumption and 9.52% weight of bread and cereals consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and 1.25% in disposable income.

Dealing with countries which have both the largest population number and the most significant population growth rate, such as China and India, it is important to forecast the consequences of increasing the rice, wheat and corn consumption for these states on world consumption (table 3).

The increase of 2011 rice consumption by 50% while the 2011 world consumption remained the same, implies that China and India will take up two-thirds of the world consumption. For wheat the weight is almost a half and for corn one-third of the world consumption.

For rice, this means that countries such as Indonesia (38,044,000 metric tons), Vietnam (19,400,000 metric tons), the Philippines (12,900,000 metric tons), Thailand (10,300,000 metric tons), Brazil (8,200,000 metric tons), Japan (8,200,000 metric tons), Nigeria (4,800,000 metric tons), the United States (4,329,000 metric tons), Egypt (3,300,000 metric tons) and Iran (3,250,000 metric tons) will no longer have to consume these quantities so as to ensure the domestic consumption for China and India, which will be 112,603,000 metric tons above the 2011 year quantity.

For wheat, Russia (38,600,000 metric tons), the United States (30,639,000 metric tons), Indonesia (6,035,000 metric tons) and Pakistan (23,000,000 metric tons) should discard these quantities in order to ensure the China and India consumption (96,130,000 metric tons).

For corn, the European Union 27 (64,900,000 metric tons), Mexico (29,500,000 metric tons) and the Philippines (7,200,000 metric tons) are supposed to completely renounce these quantities to ensure the China and India consumption (99,050,000 metric tons).

The changes will be even more dramatic if China and India increase their consumption by 100%. Thus, they will be the only two countries to consume rice, they will cover 58.74% of wheat consumption and 46.48% of corn consumption.

In Table 4 is presented the relationship among population number, production, domestic consumption of coffee and weight of coffee, tea and cocoa consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and disposable income for 2011.

Following the pattern of the previous analysis, the studied countries can be clustered in four groups. The first group consists of the countries

Table 3. Consequences of increasing the rice, wheat and corn consumption in China and India on world consumption

Consumption	CHINA						INDIA					
	Rice			Wheat			Rice			Wheat		
	(metric tons)	(% of 2011 world cons.)	(% of 2011 world cons.)	(metric tons)	(% of 2011 world cons.)	(% of 2011 world cons.)	(metric tons)	(% of 2011 world cons.)	(% of 2011 world cons.)	(metric tons)	(% of 2011 world cons.)	(% of 2011 world cons.)
Consumption in 2011	135,000,000	30.34	16.88	110,500,000	21.12	20.27	90,206,000	12.49	18,100,000	2.12		
Consumption in 2011 increased by 50%	202,500,000	45.51	25.32	165,750,000	31.67	30.41	135,309,000	18.74	27,150,000	3.18		
Consumption in 2011 increased by 100%	270,000,000	60.68	33.76	221,000,000	42.23	40.55	180,412,000	24.98	36,200,000	4.25		
World consumption in 2011	444,953,000	-	-	654,526,000	-	-	444,953,000	-	852,448,000	-		

Source: Made by author based on data extracted from United States Department of Agriculture. (2014). Foreign Agricultural Service, *World Rice Production, Consumption, and Stocks, World Wheat Production, Consumption, and Stocks, World Corn Production, Consumption, and Stocks, World Rye Production, Consumption, and Stocks*. Retrieved August 02, 2014, from <http://apps.fas.usda.gov/psdonline/>

Population Number and Consumer Income and Expenditure Dynamics

Table 4. Comparative investigation of population number, production, domestic consumption of coffee and weight of coffee, tea and cocoa consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and disposable income for 2011

Country	Production (kg)	Domestic consumption (kg)	Population number	Domestic consumption (kg per capita)	Weight of Coffee, Tea and Cocoa consumption expenditure in:	
					Food and non-alcoholic beverages category (%)	Disposable income (%)
China	n/a	55,800,000	1,344,130,000	0.04	0.35	0.05
India	302,100,000	73,860,000	1,221,156,319	0.06	0.71	0.13
European Union 27	n/a	2,533,200,000	506,031,022	5.01	2.89	0.36
United States	3,180,000	1,369,980,000	311,582,564	4.40	1.69	0.11
Indonesia	559,500,000	101,400,000	243,801,639	0.42	1.39	0.42
Brazil	3,270,000,000	1,165,200,000	196,935,134	5.92	2.72	0.41
Pakistan	n/a	n/a	176,166,353	n/a	1.89	0.75
Nigeria	1,800,000	1,680,000	164,192,925	0.01	6.01	2.50
Bangladesh	n/a	n/a	152,862,431	n/a	n/a	n/a
Russia	n/a	251,400,000	142,956,460	1.76	2.65	0.70
Japan	n/a	414,000,000	127,817,277	3.24	2.13	0.28
Mexico	240,000,000	148,200,000	119,361,233	1.24	1.48	0.32
Philippines	27,600,000	169,500,000	95,053,437	1.78	1.94	0.68
Ethiopia	367,500,000	171,600,000	89,393,063	1.91	n/a	n/a
Vietnam	1,164,900,000	80,220,000	87,840,000	0.91	3.05	0.64
Egypt	n/a	n/a	79,392,466	n/a	1.13	0.47
Iran	n/a	14,700,000	75,424,285	0.19	n/a	n/a
Turkey	n/a	18,900,000	73,058,638	0.26	2.79	0.63
Thailand	51,000,000	46,500,000	66,576,332	0.70	2.90	0.84
Congo, Dem. Rep.	15,900,000	12,000,000	63,931,512	0.18	n/a	n/a
Subtotal	6,003,480,000	5,123,192,980	-	-	-	-
Other countries	2,421,540,000	2,922,027,020	-	-	-	-
Total	8,425,020,000	8,045,220,000	-	-	-	-

Source: Made by author based on Appendix 1, 2 and 6 and calculation of data extracted from United States Department of Agriculture. (2014). Foreign Agricultural Service, *Coffee, Table 03A Coffee Production, Coffee, Table 04 Coffee Consumption*. Retrieved August 05, 2014, from <http://apps.fas.usda.gov/psdonline/>

with low consumption per capita for coffee and high weights of coffee, tea and cocoa consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and disposable income:

- Russia, with 1.76 kg per capita coffee and 2.65% weight of coffee, tea and cocoa consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and 0.7% in disposable income;

- Nigeria, with 0.01 kg per capita coffee and 6.01% weight of coffee, tea and cocoa consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and 2.50% in disposable income;
 - Vietnam, with 0.91 kg per capita coffee and 3.05% weight of coffee, tea and cocoa consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and 0.64% in disposable income;
 - Turkey, with 0.26 kg per capita coffee and 2.79% weight of coffee, tea and cocoa consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and 0.63% in disposable income;
 - Thailand, with 0.70 kg per capita coffee and 2.90% weight of coffee, tea and cocoa consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and 0.84% in disposable income.
- Brazil, with 5.92 kg per capita coffee and 2.72% weight of coffee, tea and cocoa consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and 0.41% in disposable income;
 - Japan, with 3.24 kg per capita coffee and 2.13% weight of coffee, tea and cocoa consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and 0.28% in disposable income.

The forth group is represented by those countries with low consumption per capita for coffee and low weights of coffee, tea and cocoa consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and disposable income:

The second group includes the states with high consumption per capita for coffee, and low weights of coffee, tea and cocoa consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and disposable income. In this group there is only one country, the United States, with 4.40 kg per capita coffee and 1.69% weight of coffee, tea and cocoa consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and 0.11% in disposable income.

The third group includes countries with high consumption per capita for coffee and high weights of coffee, tea and cocoa consumer expenditure the in food and non-alcoholic beverages consumer expenditure category and disposable income:

- The European Union 27, with 5.01 kg per capita coffee and 2.89% weight of coffee, tea and cocoa consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and 0.36% in disposable income;
- China, with 0.04 kg per capita coffee and 0.35% weight of coffee, tea and cocoa consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and 0.05% in disposable income;
 - India, with 0.06 kg per capita coffee and 0.71% weight of coffee, tea and cocoa consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and 0.13% in disposable income;
 - Indonesia, with 0.42 kg per capita coffee and 1.39% weight of coffee, tea and cocoa consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and 0.42% in disposable income;
 - Mexico, with 1.24 kg per capita coffee and 1.48% weight of coffee, tea and cocoa consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and 0.32% in disposable income;
 - the Philippines, with 1.78 kg per capita coffee and 1.94% weight of coffee, tea and cocoa consumer expenditure in the food and non-alcoholic beverages consumer expenditure category and 0.68% in disposable income.

The forecast of the consequences of increasing the coffee consumption in China and India on world consumption is shown in Table 5.

The data in table 5 emphasize that the growth of 2011 coffee consumption by 50% in China and India, while maintaining constant the 2011 world consumption, will increase the corresponding weight from 1.61% to 2.42%. This implies that all of Thailand's (46,500,000 kg) and Turkey's (18,900,000 kg) coffee consumption should be reoriented to China and India in order to cover the 64,830,000 kg needed. Alternatively, the coffee consumption of any of the following countries European Union 27, the United States, Brazil, Russia, Japan, Mexico, the Philippines and Ethiopia could serve the same purpose.

Supposing that China and India increase their coffee consumption by 100%, they will hold 3.23% of world consumption which equals the consumption of Ethiopia (171,600,000 kg) or the Philippines (169,500,000 kg) or Mexico (148,200,000 kg).

The third hypothesis is the raise in China's and India's coffee consumption by 200% which would represents 4.83% in the 2011 word consumption, i.e. either the consumption of Russia (251,400,000 kg) and Congo (12,000,000 kg) or

Indonesia (101,400,000 kg) and the Philippines (159,500,000 kg).

SOLUTIONS AND RECOMMENDATIONS

I do not agree with the theory of stopping the population growth which has numerous followers among philosophers, writers, economists, biologists, physicists, country presidents, prime ministers, monarchs, politicians, archbishops etc. (Thomas, 2011; Population Matters, 2014).

Firstly, no one has the moral right to decide over the life and death of other people, since we are supposed to have the same rights with any other man, woman and child on this planet, no matter they live in a developed or poor country, much less so over unborn babies. Secondly, these statements hide selfish characters because they deny future generations the chance to live. Thirdly, some of the anti-population growth speeches refer directly or indirectly to the population of Asia due to its considerable current growth rate, but they never address the developed states' population, which is not fair.

Table 5. Consequences of increasing the coffee consumption in China and India on world consumption

Consumption	China		India	
	(kg)	(% of 2011 world consumption)	(kg)	(% of 2011 world consumption)
Consumption in 2011	55,800,000	0.69	73,860,000	0.92
Consumption in 2011 increased by 50%	83,700,000	1.04	110,790,000	1.38
Consumption in 2011 increased by 100%	111,600,000	1.39	147,720,000	1.84
Consumption in 2011 increased by 200%	167,400,000	2.08	221,580,000	2.75
World consumption in 2011	8,045,220,000	-	8,045,220,000	-

Source: Made by author based on data extracted from United States Department of Agriculture. (2014). Foreign Agricultural Service, *Coffee, Table 04 Coffee Consumption*. Retrieved August 05, 2014, from <http://apps.fas.usda.gov/psdonline/>

The solution is in the hands of the more developed countries' presidents to elaborate a world population growth plan in which all states should take part, in order to establish a world strategy to help the poorest states which face the population growth issue.

A similar recommendation can be used to reduce the gap between the countries with high and low disposable income per capita. What is necessary is intensive and joined efforts from all the richest countries to assist the least developed country governments in applying the economic measures needed to ensure wealth for their people.

In order to provide food worldwide under the circumstances of the continuous population growth, it is important to identify new crops area in every country in the world and to adapt or develop areas for grains, vegetables, fruit trees etc. where the climatic conditions do not yet allow it.

FUTURE RESEARCH DIRECTIONS

Taking into account the existing population growth rate, an essential issue on which studies should focus is the relationship between people and food and water resources, on a global and a country scale, in the past, present and future years.

Future research relating the population number to disposable income per capita and consumer expenditure between 2010 and 2015 could be useful because the data will not be subject to the influences of the 2008-2009 economic crisis and could better emphasize each country's particularities and trend.

Furthermore, a future research can include new additional indicators to be studied or some of the current indicators can be replaced with others, depending on the objectives, the methodology and the expected results.

CONCLUSION

In the near and medium-term future, the biggest threat for world food consumption will come both from China and India. First of all, in 2011 China had a disposable income which rose above US\$3,000 per capita, i.e. twice more than India. Between 2005 and 2011, both countries had no decreases of their disposable income. On the contrary, they had two of the highest average disposable income growth rates: 19.78% for China and 13.02% for India.

Second of all, India's population absolute growth is on average about 15,790,030 people per year, against that of China, of about 6,865,000 people per year, calculated for the 2005-2011 period. As far as weights are concerned, India has 20.20% of absolute growth out of the analyzed 117 states' population, as opposed to China with only 8.78%. Nevertheless, other countries that are worth being paid attention to are Nigeria (with an average population absolute growth of 4,027,668 people), Indonesia (3,215,406 people) and Pakistan (3,002,137 people).

Unfortunately, there are significant differences between the disposable incomes per capita from a country to another; for example, in 2011, Nigeria, which was ranked the 8th world country according to the population number, accounted for 1.45% of Switzerland's disposable incomes per capita, although Switzerland was ranked on the 82nd place according to the population number. There are many similar situations, especially if one compares the United States with some European countries or some states from Africa and Asia. These disparities have negative impact on the social life and the life expectancy of people from the least developed countries, and contribute along other factors to increasing the inequality between people.

The impact of the 2008-2009 global economic crisis on the disposable income per capita was different according to the country's region (e.g. North America, South America, Europe, etc.) because during 2007-2010, in states such as China, Indonesia, Brazil, Pakistan, Vietnam, Egypt, Peru, Saudi Arabia, Australia, Ecuador, Bolivia, Azerbaijan etc., the income growth rate remained positive, surpassing 10% in some cases, even though it was variable.

There is a negative correlation between the states with high disposable income and high disposable income growth rate. Most of the countries with high disposable income per capita have low disposable income growth rate or this rate has even decreased and vice versa. For example, in 2011, the United States was the fourth world state with the higher disposable income per capita, and was still the fourth world state with the lowest disposable income growth rate. By contrast, Pakistan was the third world state with the lower disposable income per capita, but was the second world state with the higher disposable income growth rate.

The same negative correlation is applicable in the case of food and non-alcoholic beverage consumer expenditure per capita. Therefore, the countries with high food and non-alcoholic beverage consumer expenditure per capita have a low food and non-alcoholic beverage consumer expenditure growth rate or even a decreasing one and vice versa. For example, the United States was on the 12th place among the countries with the highest food and non-alcoholic beverage consumer expenditure per capita, but on the 4th place along with the countries with the lowest food and non-alcoholic beverage consumer expenditure growth rate. In contradistinction, Pakistan was on the 4th place among the countries with the lowest food and non-alcoholic beverage consumer expenditure per capita, but on the 1st place with the highest food and non-alcoholic beverage consumer expenditure growth rate.

These statements come to endorse the idea that the global crisis did not influence very much

both the disposable income and the food and non-alcoholic beverage consumer expenditure per capita of some of the countries.

The countries with a high weight of food and non-alcoholic beverage consumer expenditure in disposable income per capita have low growth or decrease rates of food and non-alcoholic beverage consumer expenditure weight in disposable income per capita and vice versa. For example, in 2011, Algeria was the first in the top five countries with the highest weight of food and non-alcoholic beverage consumer expenditure in disposable income, and was also ranked first in the countries with the low growth rates of food and non-alcoholic beverage consumer expenditure weight in disposable income per capita. Unlike it, the United States was the second among countries with the lower weight of food and non-alcoholic beverage consumer expenditure in disposable income, but was the third among countries with the highest growth rates of food and non-alcoholic beverage consumer expenditure weight in disposable income per capita.

Most of the same countries that were affected by the economic crisis, such as European Union 27, New Zealand, South Korea, Japan, Russia etc., were also confronted with declines in population number, disposable income and food and non-alcoholic beverage consumer expenditure rates.

2009 year was a significant year for its impact on the countries with population number, disposable income and food and non-alcoholic beverage consumer expenditure growth rates. It was the single year in the 2004-2011 timespan when the number of countries with decrease rates of disposable income and food and non-alcoholic beverage consumer expenditure was higher than the number of countries with corresponding growth rates.

The countries with the highest weight of food and non-alcoholic beverages consumption expenditure in food and non-alcoholic beverages category are the same as the countries that have the highest weight of food and non-alcoholic beverages consumption expenditure in disposable

income. This rule is applicable only to food in general, bread and cereals.

The reverse situation is relevant only for non-alcoholic beverages in general and meat in particular, i.e. the countries with the lowest weight of food and non-alcoholic beverages consumption expenditure in the food and non-alcoholic beverages category are identical to the countries that have the lowest weight of food and non-alcoholic beverages consumption expenditure in disposable income.

The third situation is the two-way correlation which is significant for fish and seafood, fruit, milk, cheese and eggs, oils and fats, vegetables, sugar and confectionery, other food, coffee, tea and cocoa, mineral waters, soft drinks, fruit and vegetable juices.

If China and India should increase their 2011 rice, wheat and corn consumption by 50%, this might generate a major world consumer crisis, since these three cereals are the basic food for most of the world's population and the growth rate of area, yield and production is lower than the population growth rate.

By way of contrast, the increase of China's and India's 2011 coffee consumption by 50%, 100% or 200% is unlikely to cause any crises in world coffee consumption, due to the low level of domestic consumption per capita and to India's considerable coffee production (over 302 million kg in 2011) which could cater for this kind of growth.

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KEY TERMS AND DEFINITIONS

Consumer Expenditure: The amount of money used by the consumer to buy those goods and services which ensure their survival and comfort.

Consumption Patterns: The characteristics of a consumer group with a particular behavior referring to: type of goods and services, quality and quantity of goods and services, space and time of buying, amount of money that a consumer group is willing to spend etc.

Disposable Income: The income that does not include any tax such as income tax and social security contributions.

Disposable Income Per Capita: The average disposable income calculated as a ratio between population total disposable income and total population. In most cases, it is calculated per year unless otherwise mentioned.

Domestic Consumption: The durable and non-durable goods and services that are consumed by a country. The goods can be produced in that country or imported.

Food Consumer Expenditure: The amount of money used by consumer to buy only perishable and non-perishable food, such as vegetables, bread, meat, fish, milk, sugar etc.

Non-Alcoholic Beverage Consumer Expenditure: The amount of money used by consumer to buy only beverages that do not contain alcohol, such as fruit juice, coffee, mineral water etc.

APPENDIX 1

Table 6. Distribution of Population Number in Countries with Over 3 Million People, 2004-2011

Country	2004	2005	2006	2007	2008	2009	2010	2011	Average (2004-2011)
China	1,296,075,000	1,303,720,000	1,311,020,000	1,317,885,000	1,324,655,000	1,331,260,000	1,337,705,000	1,344,130,000	1,320,806,250
India	1,110,626,108	1,127,143,548	1,143,289,350	1,159,095,250	1,174,662,334	1,190,138,069	1,205,624,648	1,221,156,319	1,166,466,953
European Union 27	494,330,068	496,303,356	498,179,240	500,032,205	501,924,141	503,408,338	504,631,894	506,031,022	500,605,033
United States	292,805,298	295,516,599	298,379,912	301,231,207	304,093,966	306,771,529	309,326,295	311,582,564	302,463,421
Indonesia	221,293,797	224,480,901	227,709,821	230,972,808	234,243,489	237,486,894	240,676,485	243,801,639	232,583,229
Brazil	184,010,283	186,142,403	188,134,315	189,996,976	191,765,567	193,490,922	195,210,154	196,935,134	190,710,719
Pakistan	155,151,394	157,971,415	160,905,794	163,928,329	167,008,083	170,093,999	173,149,306	176,166,353	165,546,834
Nigeria	135,999,250	139,585,891	143,314,909	147,187,353	151,208,080	155,381,020	159,707,780	164,192,925	149,572,151
Bangladesh	141,235,035	143,135,180	144,868,702	146,457,067	147,969,967	149,503,100	151,125,475	152,862,431	147,144,620
Russia	143,821,212	143,113,885	142,487,260	142,114,903	141,956,409	141,909,244	142,385,523	142,956,460	142,593,112
Japan	127,761,000	127,773,000	127,756,000	127,770,750	127,704,040	127,557,958	127,450,459	127,817,277	127,698,811
Mexico	109,381,550	110,731,826	112,116,694	113,529,819	114,968,039	116,422,752	117,886,404	119,361,233	114,299,790
Philippines	84,231,329	85,821,214	87,366,573	88,875,548	90,371,287	91,886,400	93,444,322	95,053,437	89,631,264
Ethiopia	74,066,147	76,167,240	78,290,649	80,440,708	82,621,190	84,838,032	87,095,281	89,393,063	81,614,039
Vietnam	81,437,700	82,393,500	83,313,000	84,221,100	85,122,300	86,025,000	86,932,500	87,840,000	84,660,638
Egypt	70,591,288	71,777,678	72,990,754	74,229,577	75,491,922	76,775,023	78,075,705	79,392,466	74,915,552
Iran	69,342,126	70,152,384	70,976,584	71,809,219	72,660,887	73,542,954	74,462,314	75,424,285	72,296,344
Turkey	66,845,635	67,743,052	68,626,337	69,496,513	70,363,511	71,241,080	72,137,546	73,058,638	69,939,039
Thailand	65,087,400	65,559,487	65,883,961	66,076,927	66,185,340	66,277,335	66,402,316	66,576,332	66,006,137
Congo, Dem. Rep.	52,487,293	54,028,003	55,590,838	57,187,942	58,819,038	60,486,276	62,191,161	63,931,512	58,090,258
Myanmar	49,875,169	50,181,020	50,500,070	50,828,959	51,174,018	51,540,490	51,931,231	52,350,763	51,047,715
South Africa	47,019,452	47,639,556	48,269,753	48,910,248	49,561,256	50,222,996	50,895,698	51,579,599	49,262,320
South Korea	48,039,415	48,138,077	48,371,946	48,597,652	48,948,698	49,182,038	49,410,366	49,779,440	48,808,454
Colombia	42,527,623	43,184,026	43,841,370	44,498,390	45,153,037	45,802,561	46,444,798	47,078,792	44,816,325
Tanzania	37,765,139	38,824,384	39,942,347	41,119,693	42,353,790	43,639,752	44,973,330	46,354,607	41,871,630

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Table 6. Continued

Country	2004	2005	2006	2007	2008	2009	2010	2011	Average (2004-2011)
Ukraine	47,451,600	47,105,150	46,787,750	46,509,350	46,258,200	46,053,300	45,870,700	45,706,100	46,467,769
Kenya	34,834,606	35,785,718	36,757,498	37,752,304	38,773,277	39,824,734	40,909,194	42,027,891	38,333,153
Argentina	38,308,779	38,647,854	38,988,923	39,331,357	39,676,083	40,023,641	40,374,224	40,728,738	39,509,950
Algeria	33,461,345	33,960,903	34,507,214	35,097,043	35,725,377	36,383,302	37,062,820	37,762,962	35,495,121
Sudan	30,778,572	31,585,871	32,397,535	33,218,250	34,040,065	34,853,178	35,652,002	36,430,923	33,619,550
Uganda	27,766,986	28,724,869	29,711,397	30,728,747	31,778,799	32,864,328	33,987,213	35,148,064	31,338,800
Canada	31,995,000	32,312,000	32,570,505	32,887,928	33,245,773	33,628,571	34,005,274	34,342,780	33,123,479
Morocco	29,855,820	30,125,445	30,395,097	30,667,086	30,955,151	31,276,564	31,642,360	32,059,424	30,872,118
Iraq	26,673,536	27,377,045	28,064,095	28,740,630	29,429,829	30,163,199	30,962,380	31,760,020	29,146,342
Peru	27,403,845	27,723,281	28,030,688	28,328,410	28,625,628	28,934,303	29,262,830	29,614,887	28,490,484
Venezuela	26,261,326	26,725,897	27,190,882	27,655,937	28,120,312	28,583,040	29,043,283	29,500,625	27,885,163
Uzbekistan	25,864,350	26,167,000	26,488,250	26,868,000	27,302,800	27,767,400	28,562,400	29,339,400	27,294,950
Afghanistan	24,018,682	24,860,855	25,631,282	26,349,243	27,032,197	27,708,187	28,397,812	29,105,480	26,637,967
Malaysia	25,365,089	25,843,466	26,327,098	26,813,819	27,302,348	27,790,324	28,275,835	28,758,968	27,059,618
Saudi Arabia	23,839,231	24,690,067	25,371,936	25,915,624	26,366,358	26,796,375	27,258,387	27,761,728	25,999,963
Nepal	24,921,910	25,292,058	25,634,043	25,950,022	26,249,412	26,544,943	26,846,016	27,156,367	26,074,346
Ghana	20,835,514	21,384,034	21,947,779	22,525,659	23,110,139	23,691,533	24,262,901	24,820,706	22,822,283
North Korea	23,639,303	23,813,333	23,969,917	24,111,989	24,243,894	24,371,865	24,500,520	24,631,291	24,160,264
Mozambique	20,438,827	21,010,376	21,587,317	22,171,404	22,762,525	23,361,025	23,967,265	24,581,367	22,485,013
Yemen	19,612,696	20,139,661	20,661,714	21,182,162	21,703,571	22,229,625	22,763,008	23,304,206	21,449,580
Australia	20,127,400	20,394,800	20,697,900	20,827,600	21,249,200	21,691,700	22,031,800	22,340,000	21,170,050
Syria	17,676,012	18,167,367	18,804,914	19,561,477	20,346,056	21,031,546	21,532,647	21,961,676	19,885,212
Madagascar	17,763,367	18,290,394	18,826,126	19,371,023	19,926,785	20,495,695	21,079,532	21,678,934	19,678,982
Cameroon	17,674,960	18,137,734	18,611,937	19,097,676	19,595,026	20,103,945	20,624,343	21,156,272	19,375,237
Sri Lanka	19,435,000	19,644,000	19,858,000	20,039,000	20,217,000	20,450,000	20,653,000	20,869,000	20,145,625
Angola	15,976,715	16,544,376	17,122,409	17,712,824	18,314,441	18,926,650	19,549,124	20,180,490	18,040,879
Cote d'Ivoire	17,144,325	17,393,994	17,662,417	17,949,061	18,260,044	18,601,342	18,976,588	19,389,954	18,172,216
Chile	16,168,241	16,337,749	16,504,530	16,668,892	16,831,184	16,991,729	17,150,760	17,308,449	16,745,192

continued on following page

Population Number and Consumer Income and Expenditure Dynamics

Table 6. Continued

Country	2004	2005	2006	2007	2008	2009	2010	2011	Average (2004-2011)
Kazakhstan	15,012,985	15,147,029	15,308,084	15,484,192	15,674,000	16,092,701	16,321,581	16,556,600	15,699,647
Niger	12,708,897	13,183,798	13,679,705	14,197,289	14,737,895	15,302,948	15,893,746	16,511,462	14,526,968
Burkina Faso	13,034,258	13,421,929	13,822,257	14,235,075	14,659,646	15,094,967	15,540,284	15,995,313	14,475,466
Malawi	12,569,091	12,924,746	13,307,535	13,713,758	14,138,207	14,573,338	15,013,694	15,457,531	13,962,238
Ecuador	13,529,091	13,777,131	14,023,503	14,268,397	14,512,402	14,756,424	15,001,072	15,246,481	14,389,313
Guatemala	12,367,800	12,678,919	12,995,374	13,317,931	13,648,307	13,988,988	14,341,576	14,706,578	13,505,684
Cambodia	13,149,386	13,356,424	13,555,054	13,747,288	13,940,518	14,144,225	14,364,931	14,605,862	13,857,961
Mali	11,572,936	11,941,258	12,325,545	12,725,629	13,138,299	13,559,296	13,985,961	14,416,737	12,958,208
Zambia	11,174,650	11,470,022	11,781,612	12,109,620	12,456,527	12,825,031	13,216,985	13,633,796	12,333,530
Zimbabwe	12,693,047	12,710,589	12,724,308	12,740,160	12,784,041	12,888,918	13,076,978	13,358,738	12,872,097
Senegal	10,967,568	11,270,826	11,582,925	11,904,974	12,238,791	12,586,827	12,950,564	13,330,737	12,104,152
Chad	9,665,024	10,014,413	10,356,822	10,694,366	11,030,628	11,371,325	11,720,781	12,080,037	10,866,675
Cuba	11,273,363	11,292,078	11,301,100	11,301,674	11,296,355	11,288,826	11,281,768	11,276,053	11,288,902
Guinea	9,379,621	9,576,331	9,798,963	10,046,967	10,314,678	10,593,248	10,876,033	11,161,530	10,218,421
Rwanda	9,254,379	9,429,457	9,660,946	9,928,143	10,222,961	10,529,668	10,836,732	11,144,315	10,125,825
Tunisia	9,932,400	10,029,000	10,127,900	10,225,100	10,328,900	10,439,600	10,549,100	10,673,800	10,288,225
South Sudan	7,730,180	8,039,351	8,376,893	8,736,736	9,118,386	9,520,571	9,940,929	10,381,110	8,980,520
Bolivia	9,187,610	9,354,709	9,517,395	9,676,456	9,834,098	9,993,406	10,156,601	10,324,445	9,755,590
Dominican Republic	9,207,389	9,343,362	9,479,269	9,615,015	9,750,195	9,884,265	10,016,797	10,147,598	9,680,486
Haiti	9,129,933	9,260,879	9,388,642	9,513,714	9,638,255	9,765,153	9,896,400	10,032,864	9,578,230
Somalia	8,249,965	8,466,938	8,687,671	8,910,851	9,140,259	9,380,854	9,636,173	9,907,903	9,047,577
Benin	7,922,796	8,182,362	8,443,671	8,707,490	8,973,293	9,240,783	9,509,798	9,779,795	8,844,999
Burundi	7,510,771	7,770,392	8,042,579	8,328,312	8,624,280	8,926,687	9,232,753	9,540,362	8,497,017
Belarus	9,730,000	9,663,000	9,604,000	9,560,000	9,528,000	9,507,000	9,490,000	9,473,000	9,569,375
Azerbaijan	8,306,500	8,391,850	8,484,550	8,581,300	8,763,400	8,947,243	9,054,332	9,173,082	8,712,782
United Arab Emirates	3,658,658	4,148,883	4,875,639	5,797,347	6,798,635	7,718,319	8,441,537	8,925,096	6,295,514

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Table 6. Continued

Country	2004	2005	2006	2007	2008	2009	2010	2011	Average (2004-2011)
Switzerland	7,389,625	7,437,115	7,483,934	7,551,117	7,647,675	7,743,831	7,824,909	7,912,398	7,623,826
Tajikistan	6,663,929	6,805,655	6,954,522	7,111,025	7,275,252	7,447,396	7,627,326	7,814,850	7,212,494
Honduras	6,762,426	6,898,825	7,037,428	7,178,436	7,322,368	7,469,844	7,621,204	7,776,669	7,258,400
Israel	6,809,000	6,930,100	7,053,700	7,180,100	7,308,800	7,485,600	7,623,600	7,765,800	7,269,588
Serbia	7,463,157	7,440,769	7,411,569	7,381,579	7,350,221	7,320,807	7,291,436	7,234,099	7,361,705
Hong Kong	6,783,500	6,813,200	6,857,100	6,916,300	6,957,800	6,972,800	7,024,200	7,071,600	6,924,563
Papua New Guinea	5,948,461	6,095,959	6,245,797	6,397,623	6,550,877	6,704,829	6,858,945	7,012,977	6,476,934
Caribbean small states	6,609,643	6,654,820	6,700,409	6,746,333	6,792,178	6,837,418	6,881,636	6,924,204	6,768,330
Paraguay	5,793,330	5,904,170	6,014,781	6,125,285	6,236,005	6,347,383	6,459,721	6,573,097	6,181,722
Lao	5,699,112	5,790,646	5,895,930	6,013,278	6,139,127	6,267,968	6,395,713	6,521,314	6,090,386
Togo	5,397,851	5,540,214	5,685,845	5,834,806	5,987,491	6,144,457	6,306,014	6,472,304	5,921,123
El Salvador	6,050,297	6,072,538	6,096,692	6,122,952	6,151,776	6,183,484	6,218,195	6,256,242	6,144,022
Jordan	5,290,000	5,411,000	5,536,000	5,661,000	5,786,000	5,915,000	6,046,000	6,181,000	5,728,250
Libya	5,507,000	5,594,450	5,686,475	5,782,108	5,876,805	5,964,325	6,040,612	6,103,233	5,819,376
Eritrea	4,665,522	4,854,066	5,035,036	5,209,846	5,382,163	5,557,889	5,741,159	5,932,852	5,297,317
Nicaragua	5,386,299	5,455,219	5,524,927	5,595,533	5,667,983	5,743,329	5,822,209	5,905,146	5,637,581
Sierra Leone	4,928,175	5,119,895	5,280,909	5,416,015	5,532,139	5,641,182	5,751,976	5,865,491	5,441,973
Kyrgyz Republic	5,104,700	5,162,600	5,218,400	5,268,400	5,318,700	5,383,300	5,447,900	5,514,600	5,302,325
Singapore	4,166,700	4,265,800	4,401,400	4,588,600	4,839,400	4,987,600	5,076,700	5,183,700	4,688,738
Turkmenistan	4,696,876	4,747,839	4,801,595	4,858,236	4,917,543	4,978,962	5,041,995	5,106,668	4,893,714
Norway	4,591,910	4,623,291	4,660,677	4,709,153	4,768,212	4,828,726	4,889,252	4,953,088	4,753,039
Costa Rica	4,246,336	4,320,130	4,392,493	4,463,226	4,532,711	4,601,424	4,669,685	4,737,680	4,495,461
Georgia	4,318,300	4,361,400	4,398,000	4,388,400	4,383,800	4,410,900	4,452,800	4,483,350	4,399,619
Central African Republic	3,893,595	3,960,897	4,032,102	4,106,897	4,185,106	4,266,247	4,349,921	4,436,217	4,153,873
New Zealand	4,087,500	4,133,900	4,184,600	4,228,300	4,268,900	4,315,800	4,367,800	4,405,200	4,249,000

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Table 6. Continued

Country	2004	2005	2006	2007	2008	2009	2010	2011	Average (2004-2011)
Lebanon	3,853,582	3,986,865	4,079,823	4,139,813	4,186,088	4,246,924	4,341,092	4,382,790	4,152,122
Croatia	4,439,000	4,442,000	4,440,000	4,436,000	4,434,508	4,429,078	4,417,781	4,280,622	4,414,874
Congo, Rep.	3,448,868	3,542,867	3,646,653	3,758,858	3,876,475	3,995,146	4,111,715	4,225,359	3,825,743
Liberia	3,184,643	3,269,786	3,384,791	3,522,294	3,672,714	3,821,440	3,957,990	4,079,697	3,611,669
West Bank and Gaza	3,236,626	3,320,396	3,406,334	3,494,496	3,596,688	3,702,218	3,811,102	3,927,051	3,561,864
Bosnia and Herzegovina	3,886,723	3,879,828	3,875,157	3,868,665	3,861,201	3,853,446	3,845,929	3,839,322	3,863,784
Panama	3,303,335	3,365,929	3,428,509	3,491,034	3,553,480	3,615,846	3,678,128	3,740,282	3,522,068
Mauritania	3,055,425	3,146,164	3,237,713	3,330,037	3,422,901	3,516,077	3,609,420	3,702,763	3,377,563
Puerto Rico	3,826,878	3,821,362	3,805,214	3,782,995	3,760,866	3,740,410	3,721,208	3,686,580	3,768,189
Moldova	3,603,945	3,595,187	3,585,209	3,576,910	3,570,108	3,565,604	3,562,045	3,559,986	3,577,374
Uruguay	3,323,822	3,325,155	3,330,217	3,338,384	3,348,898	3,360,431	3,371,982	3,383,486	3,347,797
Kuwait	2,196,466	2,296,314	2,417,445	2,554,920	2,702,221	2,850,102	2,991,580	3,124,705	2,641,719
Oman	2,464,001	2,522,325	2,554,905	2,569,739	2,593,523	2,663,224	2,802,768	3,024,774	2,649,407
Total	6,358,093,604	6,435,167,274	6,512,269,565	6,589,293,137	6,667,476,522	6,745,826,864	6,824,880,963	6,905,175,014	6,629,772,868

Source: Adapted from The World Bank (2014). *Population, total*. Retrieved June 30, 2014, from <http://data.worldbank.org/indicator/SP.POP.TOTL>

APPENDIX 2

Table 7. Disposable Income per Capita, 2004-2011, (US\$ per capita, at current prices)

Country	2004	2005	2006	2007	2008	2009	2010	2011	Average (2004- 2011)
China	873.1	1,038.4	1,213.6	1,508.2	1,987.0	2,254.9	2,545.5	3,060.6	1,810.2
India	543.7	618.8	681.8	829.3	928.2	932.9	1,137.5	1,264.6	867.1
European Union 27	13,444.0	14,058.2	14,935.5	17,298.1	19,182.0	17,714.5	17,280.4	18,632.0	16,568.1
United States	29,240.9	30,266.7	30,609.8	31,846.5	33,368.2	32,362.3	33,250.9	34,501.2	31,930.8
Indonesia	808.3	861.5	1,067.4	1,277.2	1,415.5	1,437.4	1,816.0	2,081.2	1,345.6
Brazil	2,297.2	2,993.6	3,674.1	4,557.3	5,351.9	5,417.9	6,957.2	8,075.3	4,915.6
Pakistan	470.0	539.8	597.7	662.2	662.6	735.8	812.9	993.6	684.3
Nigeria	429.8	544.4	586.4	779.7	814.6	763.5	690.2	739.7	668.5
Russia	2,302.5	2,960.3	3,806.7	5,005.1	6,273.2	5,375.7	6,290.3	7,532.9	4,943.3
Japan	22,440.1	22,168.1	21,204.9	20,912.6	23,741.4	25,944.2	28,064.1	30,457.2	24,366.6
Mexico	4,950.5	5,881.3	6,361.5	6,817.2	7,203.9	5,767.4	6,571.3	7,155.9	6,338.6
Philippines	838.4	929.7	1,076.7	1,265.6	1,462.2	1,390.7	1,547.3	1,752.6	1,282.9
Vietnam	374.1	422.1	475.9	562.6	744.3	774.9	842.3	960.1	644.5
Egypt	961.4	1,118.1	1,203.9	1,422.0	1,751.2	2,059.1	2,248.1	2,316.9	1,635.1
Turkey	4,190.5	5,079.5	5,393.9	6,593.5	7,193.4	6,107.5	7,199.3	7,463.1	6,152.6
Thailand	1,566.0	1,689.6	1,953.8	2,321.7	2,592.4	2,494.4	2,913.5	3,180.8	2,339.0
South Africa	2,848.3	3,142.4	3,243.1	3,490.1	3,222.0	3,362.3	4,202.1	4,644.0	3,519.3
South Korea	9,089.4	10,730.8	12,121.6	13,302.6	11,789.3	10,379.5	12,233.9	13,598.2	11,655.7
Colombia	2,014.2	2,436.4	2,591.6	3,242.8	3,710.7	3,520.1	4,252.0	4,767.0	3,316.9
Ukraine	842.4	1,238.1	1,542.0	2,010.1	2,613.8	1,853.4	2,138.4	2,647.3	1,860.7
Argentina	2,548.6	2,945.1	3,283.7	3,952.4	4,818.4	4,516.8	5,284.5	6,235.0	4,198.1
Algeria	1,048.6	1,081.7	1,118.2	1,264.8	1,505.2	1,477.5	1,563.1	1,718.7	1,347.2
Canada	17,891.5	20,096.9	22,393.1	24,994.0	26,015.0	24,293.4	27,920.4	30,077.5	24,210.2
Morocco	1,365.8	1,417.6	1,502.8	1,682.3	1,958.8	1,958.4	1,951.5	2,132.3	1,746.2
Peru	1,761.0	1,909.1	2,044.3	2,332.0	2,829.4	2,854.9	3,231.7	3,597.8	2,570.0
Venezuela	1,932.7	2,570.8	3,092.4	4,056.2	5,524.5	6,972.4	7,318.2	5,790.3	4,657.2
Malaysia	2,335.6	2,570.6	2,883.8	3,436.4	4,007.1	3,779.3	4,423.4	5,084.6	3,565.1
Saudi Arabia	3,688.1	3,916.0	4,275.5	4,921.6	5,611.0	6,070.3	6,630.2	7,167.6	5,285.0
Australia	20,112.6	21,930.6	22,746.8	27,242.8	29,115.2	29,309.5	35,356.6	41,751.0	28,445.6
Chile	3,688.9	4,435.1	5,078.8	5,661.2	6,348.0	5,922.7	7,172.5	8,429.3	5,842.1
Kazakhstan	1,913.9	2,028.8	2,466.3	3,244.2	3,692.8	3,322.7	4,035.0	4,811.2	3,189.4
Ecuador	1,806.2	1,988.1	2,168.7	2,330.3	2,639.4	2,732.4	3,052.6	3,466.6	2,523.0
Tunisia	2,210.0	2,239.4	2,392.0	2,637.8	3,002.5	2,905.3	3,026.0	3,140.6	2,694.2

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Population Number and Consumer Income and Expenditure Dynamics

Table 7. Continued

Country	2004	2005	2006	2007	2008	2009	2010	2011	Average (2004-2011)
Bolivia	741.8	773.5	862.0	976.5	1,190.4	1,274.0	1,345.9	1,572.2	1,092.0
Belarus	1,302.9	1,708.7	2,082.2	2,623.3	3,363.6	2,954.2	3,299.6	3,135.4	2,558.7
Azerbaijan	670.5	879.8	1,031.2	1,341.2	1,937.5	2,229.9	2,422.7	2,856.5	1,671.2
United Arab Emirates	30,602.6	33,675.8	37,122.6	36,751.7	36,169.7	23,760.7	23,838.8	25,405.5	30,915.9
Switzerland	31,904.2	32,585.3	33,568.4	36,544.5	41,157.4	40,877.7	43,151.3	50,946.6	38,841.9
Israel	10,647.8	11,036.1	11,644.2	13,431.6	16,369.4	15,154.3	16,969.9	18,613.3	14,233.3
Hong Kong	19,534.9	20,441.5	21,736.1	23,771.1	24,442.7	23,922.1	25,224.3	27,834.0	23,363.3
Jordan	1,791.0	2,053.8	2,230.3	2,536.5	2,964.9	2,962.1	3,262.8	3,425.8	2,653.4
Singapore	16,140.7	16,927.8	18,149.1	20,306.0	21,984.6	20,722.8	23,783.1	27,354.5	20,671.1
Turkmenistan	1,985.0	1,775.1	1,510.3	2,018.6	2,170.1	2,035.8	2,164.8	2,641.3	2,037.6
Norway	27,261.4	30,966.3	29,531.7	34,555.3	37,925.7	35,687.1	38,818.0	43,549.3	34,786.9
New Zealand	12,524.7	14,201.3	13,288.2	15,546.4	15,864.4	14,016.1	16,295.2	18,412.4	15,018.6
Croatia	5,044.6	6,403.3	6,816.7	7,924.0	9,261.1	8,165.2	7,890.2	8,384.2	7,486.2
Kuwait	13,976.4	15,274.7	15,917.6	17,335.0	18,920.8	14,739.5	14,300.9	14,339.3	15,600.5

Source: Adapted from Euromonitor International Ltd. (2013). *World Consumer Income and Expenditure Patterns 2013*, 13th Edition. London, Western and Southern Europe Euromonitor International Ltd, p. 77.

APPENDIX 3

Table 8. Food and Non-Alcoholic Beverage Consumer Expenditure per Capita, 2004-2011, (US\$ per capita, at current prices)

Country	2004	2005	2006	2007	2008	2009	2010	2011	Average (2004-2011)
China	160.9	169.4	183.2	225.3	288.6	356.0	400.0	453.7	279.6
India	134.7	151.2	159.4	194.8	198.2	192.9	220.9	234.5	185.8
European Union 27	1,724.5	1,770.8	1,875.3	2,176.0	2,456.6	2,229.3	2,172.3	2,341.6	2,093.3
United States	1,813.7	1,893.3	1,952.5	2,042.5	2,130.0	2,104.5	2,132.5	2,239.3	2,038.5
Indonesia	298.5	284.6	351.5	413.8	461.3	453.1	558.5	631.0	431.5
Brazil	369.5	472.9	563.4	686.4	806.4	814.8	1,039.6	1,204.2	744.7
Pakistan	189.1	209.1	232.4	252.9	258.7	290.7	322.8	394.5	268.8
Nigeria	189.6	238.5	256.4	336.8	347.5	322.3	289.1	307.2	285.9
Russia	615.8	739.8	936.0	1,197.0	1,581.8	1,353.5	1,680.0	1,999.8	1,263.0
Japan	3,103.8	2,941.0	2,796.2	2,800.5	3,152.2	3,510.0	3,668.7	3,991.1	3,245.4
Mexico	1,152.2	1,258.3	1,329.9	1,459.7	1,518.9	1,202.8	1,415.1	1,544.7	1,360.2
Philippines	315.9	346.3	392.4	458.5	525.3	494.8	546.0	614.2	461.7

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Population Number and Consumer Income and Expenditure Dynamics

Table 8. Continued

Country	2004	2005	2006	2007	2008	2009	2010	2011	Average (2004- 2011)
Vietnam	105.3	114.9	126.4	154.9	212.5	192.6	177.9	201.2	160.7
Egypt	392.1	450.2	500.7	610.9	740.0	859.3	926.0	962.6	680.2
Turkey	1,019.9	1,223.7	1,264.4	1,490.4	1,670.0	1,457.4	1,715.4	1,689.3	1,441.3
Thailand	376.6	423.8	508.1	603.3	722.7	709.8	825.5	916.6	635.8
South Africa	620.6	680.4	708.3	742.9	674.8	674.4	823.4	901.3	728.3
South Korea	1,017.1	1,180.4	1,304.3	1,413.0	1,304.2	1,173.6	1,411.5	1,505.7	1,288.7
Colombia	351.0	419.4	442.7	553.1	661.7	620.4	732.9	815.8	574.6
Ukraine	271.4	413.7	518.8	686.8	948.5	657.9	759.4	918.9	646.9
Argentina	595.0	674.4	740.5	876.4	1,047.6	965.2	1,110.5	1,300.2	913.7
Algeria	436.9	453.4	473.6	535.8	637.6	627.6	665.6	732.2	570.3
Canada	1,612.1	1,770.8	1,949.1	2,124.2	2,238.6	2,196.2	2,481.9	2,682.7	2,132.0
Morocco	470.1	489.9	533.9	616.1	717.8	716.2	709.3	769.0	627.8
Peru	657.2	716.9	753.3	851.1	1,079.6	1,066.0	1,200.9	1,334.9	957.5
Venezuela	564.1	692.1	767.0	986.5	1,291.6	1,499.5	1,499.1	1,144.0	1,055.5
Malaysia	531.2	563.7	622.7	729.1	831.9	770.7	885.0	996.8	741.4
Saudi Arabia	847.9	854.5	934.0	1,071.5	1,293.6	1,402.3	1,495.4	1,583.0	1,185.3
Australia	2,063.8	2,166.0	2,309.1	2,771.1	2,814.6	2,721.9	3,308.2	3,879.8	2,754.3
Chile	659.1	761.1	866.4	948.7	1,095.7	1,037.8	1,217.2	1,402.1	998.5
Kazakhstan	575.2	695.1	842.4	1,054.7	1,387.2	1,303.3	1,481.6	1,743.2	1,135.3
Ecuador	445.7	479.2	509.4	547.1	591.7	591.0	647.3	724.9	567.0
Tunisia	710.9	720.1	758.9	847.6	961.2	928.9	944.5	980.0	856.5
Bolivia	198.2	205.9	224.5	254.9	311.4	333.0	354.9	413.4	287.0
Belarus	577.4	736.5	895.5	1,088.2	1,451.0	1,230.0	1,329.6	1,245.0	1,069.2
Azerbaijan	316.4	348.0	466.4	630.3	889.0	985.0	1,035.4	1,183.7	731.8
United Arab Emirates	4,032.4	4,240.7	4,545.4	4,529.0	4,391.7	2,592.8	2,633.1	2,889.0	3,731.8
Switzerland	3,091.2	3,128.0	3,164.7	3,344.8	3,758.5	3,809.3	3,948.8	4,608.2	3,606.7
Israel	1,616.1	1,630.1	1,731.1	1,979.1	2,566.5	2,386.7	2,627.4	2,899.2	2,179.5
Hong Kong	1,749.8	1,852.3	1,947.8	2,140.9	2,563.9	2,548.5	2,735.7	3,027.3	2,320.8
Jordan	731.4	836.4	913.0	1,039.4	1,207.7	1,206.4	1,331.1	1,401.5	1,083.4
Singapore	826.9	867.2	937.5	1,042.0	1,165.2	1,099.0	1,235.6	1,405.1	1,072.3
Turkmenistan	686.7	568.5	450.4	566.9	579.4	513.3	518.0	605.1	561.0
Norway	3,231.0	3,490.5	3,616.5	4,148.5	4,560.1	4,265.2	4,495.4	4,981.2	4,098.6
New Zealand	1,849.0	2,062.2	2,041.1	2,432.7	2,472.6	2,291.0	2,674.4	3,028.4	2,356.4
Croatia	1,491.6	1,621.9	1,784.6	2,033.4	2,435.4	2,215.1	2,171.8	2,231.4	1,998.2
Kuwait	1,502.3	1,700.3	1,795.3	2,033.4	2,268.0	1,749.9	1,713.6	1,696.4	1,807.4

Source: Adapted from Euromonitor International Ltd. (2013). *World Consumer Income and Expenditure Patterns 2013, 13th Edition*. London, Western and Southern Europe Euromonitor International Ltd, p. 175

APPENDIX 4

Table 9. Weight of Food and Non-Alcoholic Beverage Consumer Expenditure in Disposable Income per Capita, 2004-2011, (%)

Country	2004	2005	2006	2007	2008	2009	2010	2011	Average (2004-2011)
China	18.43	16.31	15.10	14.94	14.52	15.79	15.71	14.82	15.70
India	24.77	24.43	23.38	23.49	21.35	20.68	19.42	18.54	22.01
European Union 27	12.83	12.60	12.56	12.58	12.81	12.58	12.57	12.57	12.64
United States	6.20	6.26	6.38	6.41	6.38	6.50	6.41	6.49	6.38
Indonesia	36.93	33.04	32.93	32.40	32.59	31.52	30.75	30.32	32.56
Brazil	16.08	15.80	15.33	15.06	15.07	15.04	14.94	14.91	15.28
Pakistan	40.23	38.74	38.88	38.19	39.04	39.51	39.71	39.70	39.25
Nigeria	44.11	43.81	43.72	43.20	42.66	42.21	41.89	41.53	42.89
Russia	26.74	24.99	24.59	23.92	25.22	25.18	26.71	26.55	25.49
Japan	13.83	13.27	13.19	13.39	13.28	13.53	13.07	13.10	13.33
Mexico	23.27	21.39	20.91	21.41	21.08	20.86	21.53	21.59	21.51
Philippines	37.68	37.25	36.44	36.23	35.93	35.58	35.29	35.05	36.18
Vietnam	28.15	27.22	26.56	27.53	28.55	24.85	21.12	20.96	25.62
Egypt	40.78	40.26	41.59	42.96	42.26	41.73	41.19	41.55	41.54
Turkey	24.34	24.09	23.44	22.60	23.22	23.86	23.83	22.64	23.50
Thailand	24.05	25.08	26.01	25.99	27.88	28.46	28.33	28.82	26.83
South Africa	21.79	21.65	21.84	21.29	20.94	20.06	19.59	19.41	20.82
South Korea	11.19	11.00	10.76	10.62	11.06	11.31	11.54	11.07	11.07
Colombia	17.43	17.21	17.08	17.06	17.83	17.62	17.24	17.11	17.32
Ukraine	32.22	33.41	33.64	34.17	36.29	35.50	35.51	34.71	34.43
Argentina	23.35	22.90	22.55	22.17	21.74	21.37	21.01	20.85	21.99
Algeria	41.67	41.92	42.35	42.36	42.36	42.48	42.58	42.60	42.29
Canada	9.01	8.81	8.70	8.50	8.61	9.04	8.89	8.92	8.81
Morocco	34.42	34.56	35.53	36.62	36.64	36.57	36.35	36.06	35.84
Peru	37.32	37.55	36.85	36.50	38.16	37.34	37.16	37.10	37.25
Venezuela	29.19	26.92	24.80	24.32	23.38	21.51	20.48	19.76	23.79
Malaysia	22.74	21.93	21.59	21.22	20.76	20.39	20.01	19.60	21.03
Saudi Arabia	22.99	21.82	21.85	21.77	23.05	23.10	22.55	22.09	22.40
Australia	10.26	9.88	10.15	10.17	9.67	9.29	9.36	9.29	9.76
Chile	17.87	17.16	17.06	16.76	17.26	17.52	16.97	16.63	17.15
Kazakhstan	30.05	34.26	34.16	32.51	37.56	39.22	36.72	36.23	35.09
Ecuador	24.68	24.10	23.49	23.48	22.42	21.63	21.20	20.91	22.74
Tunisia	32.17	32.16	31.73	32.13	32.01	31.97	31.21	31.20	31.82

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Table 9. Continued

Country	2004	2005	2006	2007	2008	2009	2010	2011	Average (2004- 2011)
Bolivia	26.72	26.62	26.04	26.10	26.16	26.14	26.37	26.29	26.31
Belarus	44.32	43.10	43.01	41.48	43.14	41.64	40.30	39.71	42.09
Azerbaijan	47.19	39.55	45.23	47.00	45.88	44.17	42.74	41.44	44.15
United Arab Emirates	13.18	12.59	12.24	12.32	12.14	10.91	11.05	11.37	11.98
Switzerland	9.69	9.60	9.43	9.15	9.13	9.32	9.15	9.05	9.31
Israel	15.18	14.77	14.87	14.73	15.68	15.75	15.48	15.58	15.25
Hong Kong	8.96	9.06	8.96	9.01	10.49	10.65	10.85	10.88	9.86
Jordan	40.84	40.72	40.94	40.98	40.73	40.73	40.80	40.91	40.83
Singapore	5.12	5.12	5.17	5.13	5.30	5.30	5.20	5.14	5.18
Turkmenistan	34.59	32.03	29.82	28.08	26.70	25.21	23.93	22.91	27.91
Norway	11.85	11.27	12.25	12.01	12.02	11.95	11.58	11.44	11.80
New Zealand	14.76	14.52	15.36	15.65	15.59	16.35	16.41	16.45	15.64
Croatia	29.57	25.33	26.18	25.66	26.30	27.13	27.53	26.61	26.79
Kuwait	10.75	11.13	11.28	11.73	11.99	11.87	11.98	11.83	11.57

Source: Made by author based on calculations of data in Appendix 2 and 3.

APPENDIX 5

Table 10. Evolution of Growth / Decrease Rate for Population Number, Disposable Income and Food and Non-Alcoholic Beverage Consumer Expenditure, 2005-2011, (%)

Country	2005/2004			2006/2005			2007/2006			2008/2007		
	P	DI	FNBCE	P	DI	FNBCE	P	DI	FNBCE	P	DI	FNBCE
China	0.59	18.93	5.28	0.56	16.87	8.15	0.52	24.27	22.98	0.51	31.75	28.10
India	1.49	13.81	12.25	1.43	10.18	5.42	1.38	21.63	22.21	1.34	11.93	1.75
European Union 27	0.40	4.57	2.68	0.38	6.24	5.90	0.37	15.82	16.03	0.38	10.89	12.90
United States	0.93	3.51	4.39	0.97	1.13	3.13	0.96	4.04	4.61	0.95	4.78	4.28
Indonesia	1.44	6.58	-4.66	1.44	23.90	23.51	1.43	19.66	17.72	1.42	10.83	11.48
Brazil	1.16	30.32	27.98	1.07	22.73	19.14	0.99	24.04	21.83	0.93	17.44	17.48
Pakistan	1.82	14.85	10.58	1.86	10.73	11.14	1.88	10.79	8.82	1.88	0.06	2.29
Nigeria	2.64	26.66	25.79	2.67	7.71	7.51	2.70	32.96	31.36	2.73	4.48	3.18
Russia	-0.49	28.57	20.14	-0.44	28.59	26.52	-0.26	31.48	27.88	-0.11	25.34	32.15
Japan	0.01	-1.21	-5.25	-0.01	-4.34	-4.92	0.01	-1.38	0.15	-0.05	13.53	12.56
Mexico	1.23	18.80	9.21	1.25	8.16	5.69	1.26	7.16	9.76	1.27	5.67	4.06
Philippines	1.89	10.89	9.62	1.80	15.81	13.31	1.73	17.54	16.85	1.68	15.53	14.57
Vietnam	1.17	12.83	9.12	1.12	12.75	10.01	1.09	18.22	22.55	1.07	32.30	37.19
Egypt	1.68	16.30	14.82	1.69	7.67	11.22	1.70	18.12	22.01	1.70	23.15	21.13
Turkey	1.34	21.21	19.98	1.30	6.19	3.33	1.27	22.24	17.87	1.25	9.10	12.05

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Population Number and Consumer Income and Expenditure Dynamics

Table 10. Continued

Thailand	0.73	7.89	12.53	0.49	15.64	19.89	0.29	18.83	18.74	0.16	11.66	19.79
South Africa	1.32	10.33	9.64	1.32	3.20	4.10	1.33	7.62	4.88	1.33	-7.68	-9.17
South Korea	0.21	18.06	16.06	0.49	12.96	10.50	0.47	9.74	8.33	0.72	-11.38	-7.70
Colombia	1.54	20.96	19.49	1.52	6.37	5.56	1.50	25.13	24.94	1.47	14.43	19.63
Ukraine	-0.73	46.97	52.43	-0.67	24.55	25.40	-0.60	30.36	32.38	-0.54	30.03	38.10
Argentina	0.89	15.56	13.34	0.88	11.50	9.80	0.88	20.36	18.35	0.88	21.91	19.53
Algeria	1.49	3.16	3.78	1.61	3.37	4.46	1.71	13.11	13.13	1.79	19.01	19.00
Canada	0.99	12.33	9.84	0.80	11.43	10.07	0.97	11.61	8.98	1.09	4.08	5.39
Morocco	0.90	3.79	4.21	0.90	6.01	8.98	0.89	11.94	15.40	0.94	16.44	16.51
Peru	1.17	8.41	9.08	1.11	7.08	5.08	1.06	14.07	12.98	1.05	21.33	26.85
Venezuela	1.77	33.02	22.69	1.74	20.29	10.82	1.71	31.17	28.62	1.68	36.20	30.93
Malaysia	1.89	10.06	6.12	1.87	12.18	10.47	1.85	19.16	17.09	1.82	16.61	14.10
Saudi Arabia	3.57	6.18	0.78	2.76	9.18	9.30	2.14	15.11	14.72	1.74	14.01	20.73
Australia	1.33	9.04	4.95	1.49	3.72	6.61	0.63	19.77	20.01	2.02	6.87	1.57
Chile	1.05	20.23	15.48	1.02	14.51	13.84	1.00	11.47	9.50	0.97	12.13	15.49
Kazakhstan	0.89	6.00	20.84	1.06	21.56	21.19	1.15	31.54	25.20	1.23	13.83	31.53
Ecuador	1.83	10.07	7.52	1.79	9.08	6.30	1.75	7.45	7.40	1.71	13.26	8.15
Tunisia	0.97	1.33	1.29	0.99	6.81	5.39	0.96	10.28	11.69	1.02	13.83	13.40
Bolivia	1.82	4.27	3.88	1.74	11.44	9.03	1.67	13.28	13.54	1.63	21.90	22.17
Belarus	-0.69	31.15	27.55	-0.61	21.86	21.59	-0.46	25.99	21.52	-0.33	28.22	33.34
Azerbaijan	1.03	31.22	9.99	1.10	17.21	34.02	1.14	30.06	35.14	2.12	44.46	41.04
United Arab Emirates	13.40	10.04	5.17	17.52	10.24	7.19	18.90	-1.00	-0.36	17.27	-1.58	-3.03
Switzerland	0.64	2.13	1.19	0.63	3.02	1.17	0.90	8.87	5.69	1.28	12.62	12.37
Israel	1.78	3.65	0.87	1.78	5.51	6.20	1.79	15.35	14.33	1.79	21.87	29.68
Hong Kong	0.44	4.64	5.86	0.64	6.33	5.16	0.86	9.36	9.91	0.60	2.83	19.76
Jordan	2.29	14.67	14.36	2.31	8.59	9.16	2.26	13.73	13.84	2.21	16.89	16.19
Singapore	2.38	4.88	4.87	3.18	7.21	8.11	4.25	11.88	11.15	5.47	8.27	11.82
Turkmenistan	1.09	-10.57	-17.21	1.13	-14.92	-20.77	1.18	33.66	25.87	1.22	7.51	2.20
Norway	0.68	13.59	8.03	0.81	-4.63	3.61	1.04	17.01	14.71	1.25	9.75	9.92
New Zealand	1.14	13.39	11.53	1.23	-6.43	-1.02	1.04	16.99	19.19	0.96	2.05	1.64
Croatia	0.07	26.93	8.74	-0.05	6.46	10.03	-0.09	16.24	13.94	-0.03	16.87	19.77
Kuwait	4.55	9.29	13.18	5.28	4.21	5.59	5.69	8.90	13.26	5.77	9.15	11.54
Country	2009/2008			2010/2009			2011/2010			AVERAGE (2005-2011)		
	P	DI	FNBCE	P	DI	FNBCE	P	DI	FNBCE	P	DI	FNBCE
China	0.50	13.48	23.35	0.48	12.89	12.36	0.48	20.24	13.43	0.52	19.78	16.23
India	1.32	0.51	-2.67	1.30	21.93	14.52	1.29	11.17	6.16	1.36	13.02	8.52
European Union 27	0.30	-7.65	-9.25	0.24	-2.45	-2.56	0.28	7.82	7.79	0.33	5.03	4.79

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Table 10. Continued

United States	0.88	-3.01	-1.20	0.83	2.75	1.33	0.73	3.76	5.01	0.89	2.42	3.08
Indonesia	1.38	1.55	-1.78	1.34	26.34	23.26	1.30	14.60	12.98	1.39	14.78	11.79
Brazil	0.90	1.23	1.04	0.89	28.41	27.59	0.88	16.07	15.83	0.97	20.03	18.70
Pakistan	1.85	11.05	12.37	1.80	10.48	11.04	1.74	22.23	22.21	1.83	11.45	11.21
Nigeria	2.76	-6.27	-7.25	2.78	-9.60	-10.30	2.81	7.17	6.26	2.73	9.02	8.08
Russia	-0.03	-14.31	-14.43	0.34	17.01	24.12	0.40	19.75	19.04	-0.09	19.49	19.34
Japan	-0.11	9.28	11.35	-0.08	8.17	4.52	0.29	8.53	8.79	0.01	4.65	3.89
Mexico	1.27	-19.94	-20.81	1.26	13.94	17.65	1.25	8.90	9.16	1.26	6.10	4.96
Philippines	1.68	-4.89	-5.81	1.70	11.26	10.35	1.72	13.27	12.49	1.74	11.35	10.20
Vietnam	1.06	4.11	-9.36	1.05	8.70	-7.63	1.04	13.99	13.10	1.09	14.70	10.71
Egypt	1.70	17.58	16.12	1.69	9.18	7.76	1.69	3.06	3.95	1.69	13.58	13.86
Turkey	1.25	-15.10	-12.73	1.26	17.88	17.70	1.28	3.66	-1.52	1.28	9.31	8.10
Thailand	0.14	-3.78	-1.78	0.19	16.80	16.30	0.26	9.17	11.04	0.32	10.89	13.79
South Africa	1.34	4.35	-0.06	1.34	24.98	22.09	1.34	10.52	9.46	1.33	7.62	5.85
South Korea	0.48	-11.96	-10.01	0.46	17.87	20.27	0.75	11.15	6.67	0.51	6.64	6.30
Colombia	1.44	-5.14	-6.24	1.40	20.79	18.13	1.37	12.11	11.31	1.46	13.52	13.26
Ukraine	-0.44	-29.09	-30.64	-0.40	15.38	15.43	-0.36	23.80	21.00	-0.53	20.28	22.02
Argentina	0.88	-6.26	-7.87	0.88	17.00	15.05	0.88	17.99	17.08	0.88	14.01	12.19
Algeria	1.84	-1.84	-1.57	1.87	5.79	6.05	1.89	9.95	10.01	1.74	7.51	7.84
Canada	1.15	-6.62	-1.89	1.12	14.93	13.01	0.99	7.73	8.09	1.02	7.93	7.64
Morocco	1.04	-0.02	-0.22	1.17	-0.35	-0.96	1.32	9.26	8.42	1.02	6.72	7.48
Peru	1.08	0.90	-1.26	1.14	13.20	12.65	1.20	11.33	11.16	1.11	10.90	10.94
Venezuela	1.65	26.21	16.10	1.61	4.96	-0.03	1.57	-20.88	-23.69	1.68	18.71	12.21
Malaysia	1.79	-5.68	-7.36	1.75	17.04	14.83	1.71	14.95	12.63	1.81	12.05	9.70
Saudi Arabia	1.63	8.19	8.40	1.72	9.22	6.64	1.85	8.11	5.86	2.20	10.00	9.49
Australia	2.08	0.67	-3.29	1.57	20.63	21.54	1.40	18.09	17.28	1.50	11.25	9.81
Chile	0.95	-6.70	-5.28	0.94	21.10	17.29	0.92	17.52	15.19	0.98	12.90	11.64
Kazakhstan	2.67	-10.02	-6.05	1.42	21.44	13.68	1.44	19.24	17.66	1.41	14.80	17.72
Ecuador	1.68	3.52	-0.12	1.66	11.72	9.53	1.64	13.56	11.99	1.72	9.81	7.25
Tunisia	1.07	-3.24	-3.36	1.05	4.15	1.68	1.18	3.79	3.76	1.03	5.28	4.84
Bolivia	1.62	7.02	6.94	1.63	5.64	6.58	1.65	16.81	16.48	1.68	11.48	11.23
Belarus	-0.22	-12.17	-15.23	-0.18	11.69	8.10	-0.18	-4.98	-6.36	-0.38	14.54	12.93
Azerbaijan	2.10	15.09	10.80	1.20	8.65	5.12	1.31	17.91	14.32	1.43	23.51	21.49
United Arab Emirates	13.53	-34.31	-40.96	9.37	0.33	1.55	5.73	6.57	9.72	13.67	-1.39	-2.96
Switzerland	1.26	-0.68	1.35	1.05	5.56	3.66	1.12	18.07	16.70	0.98	7.08	6.02
Israel	2.42	-7.42	-7.01	1.84	11.98	10.09	1.87	9.68	10.34	1.90	8.66	9.21
Hong Kong	0.22	-2.13	-0.60	0.74	5.44	7.35	0.67	10.35	10.66	0.60	5.26	8.30
Jordan	2.23	-0.09	-0.11	2.21	10.15	10.34	2.23	5.00	5.29	2.25	9.85	9.87

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Population Number and Consumer Income and Expenditure Dynamics

Table 10. Continued

Singapore	3.06	-5.74	-5.68	1.79	14.77	12.43	2.11	15.02	13.72	3.18	8.04	8.06
Turkmenistan	1.25	-6.19	-11.41	1.27	6.34	0.92	1.28	22.01	16.81	1.20	5.40	-0.51
Norway	1.27	-5.90	-6.47	1.25	8.77	5.40	1.31	12.19	10.81	1.09	7.25	6.57
New Zealand	1.10	-11.65	-7.34	1.20	16.26	16.74	0.86	12.99	13.24	1.08	6.23	7.71
Croatia	-0.12	-11.83	-9.05	-0.26	-3.37	-1.95	-3.10	6.26	2.74	-0.51	8.22	6.32
Kuwait	5.47	-22.10	-22.84	4.96	-2.98	-2.07	4.45	0.27	-1.00	5.17	0.96	2.52

P- Population; DI- Disposable Income; FNBCE - Food and Non-Alcoholic Beverage Consumer Expenditure

Source: Made by author based on the calculation of data in Appendix 1, 2 and 3

APPENDIX 6

Table 11. Food and non-alcoholic beverage consumer expenditure per capita by category, 2011, (US\$ per capita, at current prices)

Country	Food (total)	Food, including:								Non-Alcoholic Beverages (total)	Non-Alcoholic Beverages, including:	
		Bread and Cereals	Fish and Seafood	Fruit	Meat	Milk, Cheese and Eggs	Oils and Fats	Vegetables	Sugar and Confectionery	Other Food	Coffee, Tea and Cocoa	Mineral Waters, Soft Drinks, Fruit and Vegetable Juices
China	441.32	54.67	42.92	45.14	134.51	42.16	24.48	60.81	17.61	19.01	1.58	10.83
India	223.64	63.77	6.84	23.24	15.96	49.26	11.07	37.60	7.93	7.96	1.66	9.18
European Union 27	2,128.43	387.67	125.16	163.17	526.53	346.13	81.87	236.22	173.49	88.20	67.54	141.19
United States	1,972.97	374.33	42.94	121.25	450.31	198.07	50.82	197.87	136.19	401.19	37.94	228.37
Indonesia	593.40	146.83	87.12	71.58	42.85	68.10	40.73	90.73	17.52	27.92	8.76	28.82
Brazil	991.49	252.23	22.07	67.05	253.83	207.02	29.90	68.05	61.10	30.23	32.79	179.94
Pakistan	381.31	96.70	2.43	14.33	40.07	102.15	38.11	36.87	33.33	17.31	7.46	5.73
Nigeria	262.92	68.25	33.70	24.44	50.47	18.56	12.86	27.91	11.01	15.73	18.46	25.78
Russia	1,867.24	280.81	102.74	170.39	578.49	300.43	77.26	197.91	121.88	37.32	53.04	79.53
Japan	3,796.04	380.02	388.45	172.96	347.20	181.42	180.90	456.27	357.31	1,331.51	84.96	110.13
Mexico	1,360.57	274.86	39.65	71.31	338.16	230.58	17.83	207.49	21.43	159.26	22.86	161.31
Philippines	590.10	155.99	80.35	32.88	104.41	45.74	16.99	53.76	42.20	57.78	11.89	12.22
Vietnam	186.22	46.10	30.51	22.48	27.83	16.64	9.85	18.74	7.29	6.78	6.14	8.86
Egypt	932.07	153.49	62.72	61.89	240.98	127.74	86.87	138.03	41.60	18.75	10.90	19.65
Turkey	1,562.13	363.39	31.32	151.41	308.14	222.47	87.26	264.59	112.27	21.28	47.15	80.00
Thailand	805.53	150.94	80.20	87.90	100.49	72.65	30.92	227.92	19.60	34.91	26.57	84.54
South Africa	829.65	182.48	31.11	66.54	231.94	71.02	38.91	96.64	55.90	55.09	35.22	36.43
South Korea	1,409.04	304.31	199.85	100.58	320.00	168.02	15.28	118.55	126.87	55.57	23.20	73.45
Colombia	689.85	130.82	16.65	89.65	148.42	125.20	32.48	75.24	57.37	14.02	32.64	93.31
Ukraine	847.06	146.62	36.75	60.78	243.09	165.17	40.40	92.85	45.25	16.13	28.39	43.44
Argentina	1,156.03	248.80	13.17	85.75	341.93	179.68	23.27	100.88	36.69	125.85	35.89	108.27

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Table 11. Continued

Country	Food (total)	Food, including:									Non-Alcoholic Beverages (total)	Non-Alcoholic Beverages, including:	
		Bread and Cereals	Fish and Seafood	Fruit	Meat	Milk, Cheese and Eggs	Oils and Fats	Vegetables	Sugar and Confectionery	Other Food		Coffee, Tea and Cocoa	Mineral Waters, Soft Drinks, Fruit and Vegetable Juices
Algeria	611.12	195.54	68.44	22.51	130.04	14.63	25.42	94.85	27.19	32.48	121.08	32.34	88.74
Canada	2,571.12	389.82	104.40	341.88	491.82	399.96	21.55	315.41	123.90	382.37	111.61	16.18	95.43
Morocco	678.03	148.89	63.07	44.15	84.34	14.46	84.04	138.86	41.26	58.96	90.93	26.08	64.85
Peru	1,293.58	299.31	76.27	127.70	236.34	183.65	38.07	225.84	37.41	69.00	41.36	24.83	16.54
Venezuela	979.66	164.71	19.61	101.36	220.25	189.33	49.93	115.92	81.09	37.45	164.32	13.55	150.77
Malaysia	928.48	215.88	223.57	57.24	145.39	77.64	29.08	105.03	28.69	45.95	65.50	24.22	41.28
Saudi Arabia	1,448.06	184.63	100.78	165.52	432.09	178.29	64.10	154.12	89.42	79.12	134.97	20.20	114.77
Australia	3,423.31	606.30	150.59	380.69	774.62	451.44	65.30	417.76	433.80	142.80	456.46	129.88	326.58
Chile	1,265.59	309.98	34.00	102.01	292.70	164.41	32.55	155.20	96.11	78.62	136.47	19.46	117.01
Kazakhstan	1,660.82	348.37	115.21	144.03	444.16	225.23	94.40	159.40	93.75	36.28	82.40	34.47	47.93
Ecuador	677.93	126.47	45.85	70.39	149.29	120.71	22.81	110.03	20.00	12.37	47.00	7.75	39.25
Tunisia	717.93	71.30	74.86	82.90	85.61	22.97	71.22	154.42	71.07	83.58	262.07	40.83	221.23
Bolivia	380.58	90.93	0.09	43.69	114.53	55.55	13.29	38.41	14.06	10.02	32.79	14.00	18.79
Belarus	1,164.09	232.22	60.97	82.11	290.04	174.50	109.62	132.10	46.83	35.70	80.91	55.44	25.48
Azerbaijan	1,103.43	216.31	65.07	76.99	249.82	170.15	46.32	185.08	76.59	17.10	80.24	38.35	41.89
United Arab Emirates	2,605.72	407.66	241.14	287.81	641.26	370.95	87.10	334.61	157.44	77.74	283.24	69.00	214.25
Switzerland	4,201.14	718.45	160.64	406.96	984.75	647.54	104.38	534.31	290.93	353.16	407.08	130.27	276.82
Israel	2,728.53	514.88	102.07	229.50	540.69	509.99	55.30	404.43	95.22	276.46	170.71	33.91	136.80
Hong Kong	2,876.88	500.41	591.47	231.75	647.62	205.82	42.85	375.37	81.50	200.09	150.46	16.84	133.62
Jordan	1,292.52	223.32	22.86	109.82	312.60	116.46	83.52	148.19	86.59	189.16	109.02	67.88	41.14
Singapore	1,316.13	271.81	216.11	146.33	219.38	149.64	42.27	165.11	65.80	39.69	88.98	40.68	48.29
Turkmenistan	568.98	106.93	38.86	41.35	184.96	85.05	19.36	44.69	29.67	18.12	36.10	17.66	18.45

continued on following page

Table 11. Continued

Country	Food (total)	Food, including:								Non-Alcoholic Beverages (total)	Non-Alcoholic Beverages, including:	
		Bread and Cereals	Fish and Seafood	Fruit	Meat	Milk, Cheese and Eggs	Oils and Fats	Vegetables	Sugar and Confectionery	Other Food	Coffee, Tea and Cocoa	Mineral Waters, Soft Drinks, Fruit and Vegetable Juices
Norway	4,297.89	633.27	503.90	301.90	982.00	641.69	82.15	353.17	587.31	212.49	150.55	540.24
New Zealand	2,574.19	440.19	99.30	218.06	558.59	397.86	74.60	309.73	356.97	118.89	103.00	351.24
Croatia	2,045.90	364.60	97.65	121.05	667.95	320.03	76.64	240.71	86.25	71.03	72.64	112.86
Kuwait	1,581.36	202.36	147.88	212.26	438.36	215.27	49.70	190.02	70.07	55.44	25.65	89.42

Source: Adapted from Euromonitor International Ltd. (2013), World Consumer Income and Expenditure Patterns 2013, 13th Edition. London, Western and Southern Europe Euromonitor International Ltd, pp. 178-179

Chapter 13

Combining Organic Agriculture and Recreation: Evidence from Italy

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ABSTRACT

The aim of this chapter is to understand the dynamic of agritourism in Italy to evaluate the possible local impacts. The realization of synergies between tourism and agriculture is actually looking at the impacts of rural restructuring, and new geographies of consumption, production, service, and rural culture. Organic agriculture is the reflection of a high demand for healthy foods, which presume the existence of high quality standards and a limitation of chemical substance usage. At the same time, it is proof that organic agriculture is tightly connected to the agritourism and tourism activities. Much of the discussion is focused on the manner in which creating linkages between organic agricultural production and tourism consumption, of both food and rural place, can create interest for farmers and the agricultural sector as a whole.

INTRODUCTION AND BACKGROUND

Agriculture is one of the oldest and basic sector of the global economy while tourism is one of the newest and most rapidly spreading. In the face of current problems of rising food prices, global financial crisis, linkages between agriculture and tourism may provide the basis for new solutions in many countries. At the same time, rural economies are no longer agriculturally centered but are, to varying degrees, in transition to diversified, service based economies. Today the majority

of rural areas do not host agricultural activities alone, but also provide locations for other activities which can integrate with agriculture. Usually, the concept of tourism in agriculture refers to rural tourism but it is multidimensional and there are several different definitions about agritourism and rural tourism (Roberts, Hall, 2004). Agritourism is becoming more and more popular among the consumers, both in terms of demand, being an attractive form of leisure activities, as well as supply, being an alternative form of agriculture, including accommodation on a farm, as well as

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various forms of recreation based on the several qualities and environmental services of rural areas.

The term agritourism is variously understood and interpreted, both in literature and business practice. Agritourism is often identified with rural tourism but it must not be confused with rural tourism. Agritourism is just a part of rural tourism (Sznajder et al., 2009). Rural tourism is a subset of tourism. It should not, however, be considered as an exclusive segment of tourism or in opposition to other tourism market segments (e.g. cultural tourism, food tourism, spa tourism).

Rural tourism, which brings a great number of tourists out into countryside, attracted above all else by the distinctive character of the regional landscape and not alone. Other attractive elements regards those local resources which constitute recreational features and offer potential for spiritual, environmental and cultural growth. The tourist is interested in visiting the sites of production which are typical of a given area in order to learn about food products, production systems, material testimony (old machinery, buildings, etc.), local culture (popular art, crafts, etc.). These resources are for the most part owned by agricultural entrepreneurs and they define also the concept of territorial identity.

Rural tourism constitutes an opportunity for encouraging reciprocal contact between resident populations and visitors, thus generating a rich cultural exchange and significant financial flows in rural areas (Leco et al. 2013; Garrod et al., 2005). Welcoming tourists on the farm is a solution, a secondary activity with roots in agricultural activities (Butler, 1998; Wilson et al., 2006; Philips et al., 2010; Tew, Barbieri, 2012). Recently, increasing the diversification of agricultural activities, agritourism is increasingly inter-related to tourist supply (Saxena, Ilbery, 2010). Actually, agritourism is more often an alternative activity than a complementary activity to agriculture (Roberts, Hall, 2001; Yang et al., 2010; Forbord et al., 2012). Instead of tourist demand permit to offer new opportunity for many inland

areas. The presence of a varied and significant natural and cultural heritage is not enough to make these areas attractive (Sanchez-Zamora et al., 2014). Rural areas are now multifunctional as agriculture improved its role in developing rural community's perspectives in a changing business environment (Jean-Vasile, 2013). The agriculture as primary function of production of necessities has today new purposes such as environmental, cultural, landscape ones, sustained by the community politics. This new functions are known as the multifunctionality of agricultural holdings (Ginaldi, Iseppi, 2011).

Phillip et al. (2010) identified three key relate to the ways that agritourism has been defined: whether or not the product is based on a working farm; the nature of contact that visitors have with agriculture; and the authenticity of visitors' agricultural experience. The agritourism typology proposed is not universal, but rather restricted to a specific geographical/contextual locality. Furthermore, variation in how agritourism is perceived became more visible when using the typology approach to data collection and analysis. In fact also gradually, the term rural tourism has taken over, with agritourism becoming just one sub-sector of a more holistic rural tourism. There are a number of reasons for this (Lane et al., 2013). As tourism developed in rural areas, it is clear that visitors might stay overnight in farms, but much of their time was spent exploring the countryside in general. Even the role of agriculturists as guardians of the landscape has declined: farmers must now often ask planners and conservation agencies for advice and finance to carry out their landscape and nature conservation work. And many smaller farms are opting out of agriculture, and becoming full time tourism enterprises. The large farms that remain tend not to need tourism income. Meanwhile, there has been a surge in accommodation and attraction development in villages and small country towns. It seems normal nowadays to refer to rural tourism, of which agritourism is a part, rather than just to agritourism.

Agritourism is a series of types of products rather than one homogenous entity or concept (Flanigan et al., 2014). Gil Arroyo et al. (2013) completed the definition of agritourism: “farming related activities carried out on a working farm or other agricultural settings for entertainment or education purposes”. In addition the activities offered on non-working agricultural facilities or those in which the setting is only used for landscape purposes (e.g., weddings) should not be promoted as agritourism to avoid further confusion and allow a more fluent dynamic among stakeholders. Recently one important expression is social farming with educational aspects, which play an important function in the development of human resources because they involve all those social groups that live in a situation of any kind of hardship. Indeed, one of the main features is the creation of therapy and rehabilitation in order to promote social integration and employment for disadvantaged people. With the help of social farming, in fact, the aim is to prevent depopulation and to enhance the cultural and historical heritage, through the involvement of vulnerable or disadvantaged groups, in the activity of production. From this point of view, therefore, the farmer becomes a social worker as he contributes to improving the quality of life as well as social welfare. In addition to this the launching of activities that are not based on an instrumental use of animals, as in zootechnics, but on constructing relational events that can lead to an improvement in the patient’s health and lifestyle. These events have been more specifically defined as activities, therapies and education with the help of animals. *Pet therapy* arose from this way of considering animals as having a personality, as being able to play and have fun but also as causing enjoyment in their interaction with human beings.

In fact, in modern society, which has become extremely individualized and composed of increasingly small family units, animals represent an important part of the human social system and contribute to creating and maintaining a pleasant

and engaging lifestyle for their owners. Animal owners, moreover, are becoming increasingly identified with a social category that is generally sensitive to environmental and animalist problems.

Tourism today is characterized by diversification and enrichment of the tourist product offered where the tourist is not satisfied only in the contemplation of a landscape authentic or romantic, but intends to turn it into an experience to feel a real part (Schmitt, 1999). The regular tourist travels to sites for the purpose of learning and gaining knowledge and information. Most of them, who are educated, employed, in business, etc., and living in cities or towns cannot easily understand the reality of a rural village’s life inside a metropolis. At the same time the confirmation of the *sustainable tourism* in accordance with the principles of sustainability (environmental, economic and socio-cultural aspects). Sustainable tourism, in line WTO conceptual definition (2004), should “.. make optimal use of environmental resources that constitute a key element in tourism development, maintain essential ecological processes and helping to conserve natural heritage and biodiversity; respect the socio-cultural authenticity of host communities, conserve their built and living cultural heritage and traditional values and contribute to inter-cultural understanding; ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed”(WTO, 2004).

Gao et al. (2014) showed that tourist liked most landscape features commonly found in an agritourism farm, especially natural and cultural ones. Among these, the most preferred features they would like to see are wildlife, water resources, historic elements, and farm animals, suggesting that these can serve as farm pull attractions. So the tourist in the agritourism has different motivations and perceptions. The wider concept of sustainable tourism includes *ecotourism*, focussed in a more concentrated way on specific ecosystems and traditional cultures. It embraces the principles of sustainable tourism but contributes actively to

the conservation of natural and cultural heritage; includes local and indigenous communities in its planning, development and contributing to their well-being; expect to minimise negative impacts upon the natural and socio-cultural environment (Quebec Declaration on ecotourism, 2002).

Much has been written about sustainable tourism, but few initiatives have been undertaken to consider the relationship between agriculture, sustainable tourism and ecotourism. Globalization in general and the changes in society, reinforce the need for a change in lifestyle and in production models based on the criteria of sustainability and ethics, in order to ensure a reduction of environmental impact. Interest in organically produced food is increasing in the world because of concerns over environmental and health issues associated with food production. The main motive has been attributed among other issues to the growing demand for food free from pesticides and chemical residues (Sangkumchalianga & Huang, 2012). Organic farming growth in Italy is rapid and the domestic organic market is taking off. Relatively high financial support for organic producers than conventional farms have played an important role in the rapid production development. Italy has the largest number of certified organic producers in the EU (48.269).

As it is shown in an (USADA Foreign Agricultural Service, 2014) document, 'thanks to a favorable climate, agronomic conditions and close geographic access to major export markets, Italy's organic sector is booming, and national organic consumption in 2013 grew by 7.3%. In the EU, Italy ranks second with 1.2 million ha of cultivated organic land, after Spain who takes the lead with 1.6 million ha. Domestic production consists of mainly grains, olive tree, fruits, vineyards, citrus fruit, and vegetables that are exported to neighboring countries.(USADA Foreign Agricultural Service, 2014).

As also has been reviled in the same study (USADA Foreign Agricultural Service, 2014), the

most of the organic food sold in Italy is purchased in supermarkets, followed by specialized shops, and at local farms. The increase of availability of organic products in supermarkets has been one of the reasons for the recent growth of the Italian organic market.(USADA Foreign Agricultural Service, 2014). As continuing the analysis in the same above mentioned study, it is stated that "the supermarkets cannot be the only distribution channel for organic products, as Italian consumers still prefer traditional shops or the direct sale from a local farmer because of the perception of natural and safe production systems." (USADA, 2014). The increase in consumption shows that Italians trust organic productions, as three families out of four nowadays buy organic.

The principal barrier is the price but includes the unfamiliarity of organic food logos, skepticism about organic certification logos, and disbelief that organic food is better (Van Loo et al., 2012). Organic doesn't necessarily equate sustainable but they guarantee healthy food production compared with its conventional counterparts (Gracia & Magistris, 2008; Aertsens et al., 2011), assure environmental protection and emphasise local resources and food system because are based on the key principles enunciated by International Federation of Organic Agriculture Movements (Vaarst, 2010). The segment of organic products occupies an increasingly important place in agriculture assortments. The European Union (EU) introduced a new EU organic logo in 2010 with the aim of harmonizing its organic sector and boosting consumer trust in organic food. This new logo became mandatory for use on all organic food products in the EU in 2012 after a 2 years transition period (EG 834/2007, EG 889/2008, and EG 271/2010). The European Commission reported that two-thirds of Europeans check foods for quality labels; however, recognition of individual quality labels is fairly low. Only 24% of the Europeans are aware of the new EU organic food logo (European Commission, 2012). In addition

numerous different organic food certifications exist across Europe, from both governmental and private organizations.

This chapter, with reference to the Italian context, intends to analyse current tendencies in the field of agritourism and examine those factors that help rural communities to successfully develop organic-agritourism, and to discuss its entrepreneurship opportunities. The organic agritourism is a tool also to the protection of many naturalistic areas of significant beauty and attraction for sustainable tourism. It is necessary to bear in mind that in many cases the agritourism are already within protected zones and parks, set up to protect other natural and cultural resources and this can actually result in the impositions of considerable limitations for the activity of agricultural concerns. It is argued that this type of tourism on organic farms may be a potentially a new form of tourism. This new tourism type can be employed as a strategy for facilitating sustainable agriculture, local development, social-cultural and environmental conservation, wellbeing, and learning. In my earlier study, a proposed “agritourism typology” identifies key characteristics regarding the differences between organic agritourism and conventional agritourism (a working farm; contact with organic agricultural; authenticity of tourists agricultural experience). The survey was in the first phase carried out in 2010 (Privitera, 2010). Actually the aim is evaluate organic agritourism in an analytic way that displays strengths weaknesses and opportunities threats and rediscovers the appropriate strategies which may be suggested. The analytical instrument used in the function of strategic planning for organic agritourism development is SWOT analysis. This type of qualitative analysis helps to clarify the risks and opportunities to make a diagnosis of the current developmental state and prognosis of future development of the situation. In this paper, the usefulness of the application of SWOT analysis as a function of strategy devel-

opment research is presented through a study in the south Italy (Sicily). This research focuses on two parts: on the one hand, the conventional and organic agritourism future development is been analyzed; on the other hand, the effects it will make in the field of rural tourism and eco-tourism.

STUDY CONTEXT: AGRITOURISM AND ORGANIC AGRITOURISM IN ITALY

The Italian government regulates and supports agritourism development, in which an explicit link is made between farms, their produce and the accommodation and catering available, as part of its rural development strategy (Sonnino 2004). Italian government policies to promote agritourism have been seen as a way to help revitalize rural areas by aiding the survival of agriculture in marginal areas, increasing farm income, creating new jobs in rural communities, adding value to regional agricultural products and diversifying tourism opportunities. A key element of regulation is that farming activities must remain the primary source of income for a farm to be authorized to provide agritourism. Italian farmers can be licensed to provide three different types of tourist service: snacks, meals and accommodation. An important element is given by the qualification of the host.

The national framework law (Law 96/2006; sentence Court of Cassazione 2.10.2008 n. 24430) explicitly defines the farm as a “reception and hospitality exercised by farmers (...) through the use of your company in relation to connection with the activities of cultivating the land, forestry and breeding of animals”. This legislation offers the possibility to diversify widely the supply. Farmers can conceive and propose activities that are not necessarily made entirely within the firms, in collaboration with public entities. Clearly, the Italian legislature’s intention to consider the farm a tool to support a multifunctional model

of agriculture by promoting sustainable forms of tourism considered for rural areas (Mastronardi, Cipollina, 2009).

In Italy, regional regulations establish the precise dimensional limits. In Lombardy, for example, guests are daily maximum sixty (Regional Law 10 of 8.6.2007), while the number of beds permitted in Calabria are thirty to which are added ten places in tent/camper (Regional Law 30 of 4.12.2009). In other countries (e.g. China), the farm, regulated by the legislation of the business, can reach very large numbers (Yang et al., 2010).

The Italian Ministry of Agriculture, Food and Forestry has issued criteria for the classification of unitary agritourism (Decree Official, 54 of 6 March 2013), the model typically Italian. This classification, on a national basis, responds to a need strongly felt by the operators, the existence of heterogeneous classifications at the regional level in fact caused confusion in the public, creating difficulties especially for the image of Italian farm to overseas markets.

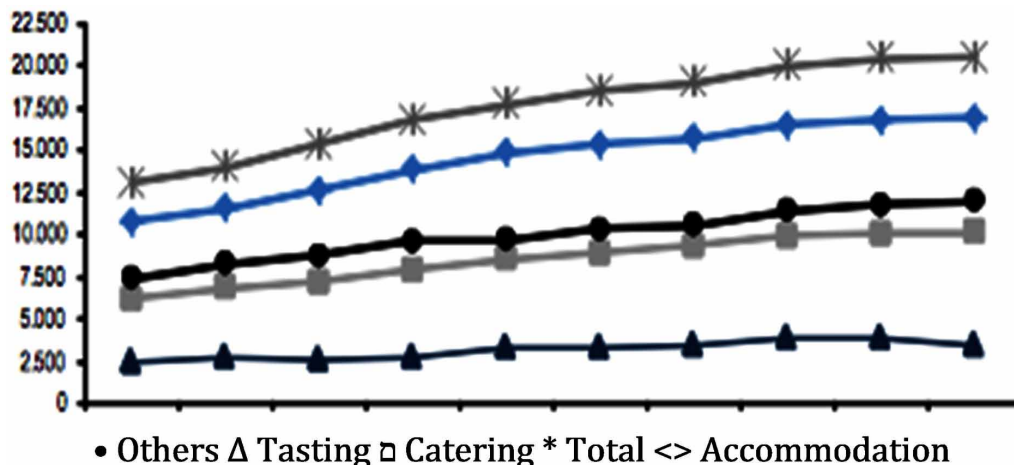
The classification methodology unit is constituted by a grid of evaluation of homogeneous parameters of the farms, which take into account the level of comfort of the hospitality, the quality of the environment, of characteristics of the company and services that is able to offer in terms

of enhancement of local products, the landscape and the territories. The ministerial measure also provides a national brand of the farm ("agriturismo Italia"), with level indication as to the hotels, to better identify and characterize the Italian farm to the consumer.

As it is already stated in literature (Ginaldi and Iseppi, 2011; Privitera, 2010), the phenomenon of agritourism has reached a consistent level of diffusion in Italy. The most recent official statistics (ISTAT 2013; ISNART (2013) refers to about 20,500 authorised enterprises nationwide (figure 1), with a ten-year increase of 57.3%. In particular, in the ten-year period 2003-2012, the entire sector shows an overall growth regarding accommodation, in terms of farms (57%), beds (67.4%) and places in campsites (84.2%); catering, regarding farms (63.8%), and the number of seats in restaurants (59.3%). To meet the expectations of the incoming visitors, tasting activities are organized by 67% of the operators, walks by 55%, followed by cultural activities, bike rides and cooking classes. Many entrepreneurs rent bikes, horses, canoes, organize excursions to natural attractions and to nearby monuments.

Educational farms offer services to a wide variety of groups through a large range of activities, such as cultural or scientific programmes and

Figure 1. Kind of agritourism – 2003-2012



courses linked to farming. In this sense, nature, forests and traditional agricultural activity represent an important innovative development compared to what farms used to be. Cultural and artistic attractions basically consist of art trails and gardens that reflect the trend of enhancing parks and estates with contemporary art in synergy with nature. In many rural villages and small towns there are museums, churches to visit. This initial take-off phase, with many operators entering into the sector without proper planning or proper training, is nowadays over. The low and decreasing utilization rate of the last two years, also in comparison with other segments of the tourist sector, confirms that the Italian agritourism movement needs a higher level of professionalism and a better organization (Santucci, 2013). The results highlight that agritourism is increasingly used as a diversification strategy to uphold a more diverse and sustainable rural economy, and it is expected to yield a number of economic as well as non economic benefits to farmers, visitors, and communities. In this sense, agritourism has been suggested to help family farms stay in business, protect the agricultural heritage, enhance the productivity of farm resources through their recreational use, and even to improve the economic situation of local communities. In fact the rising interest in the consumption of typical/local products and gastronomic tourism, seen not only as a way of getting to know products but also a tool of social relationships and experience of tastes contribute to close “new” tourist. Today, with the numerous changes linked to globalization, the tourist sector has undergone radical transformations that have influenced the choices of the demand. The tourist appears increasingly oriented by a return to nature, the search for choices that are eco-friendly, tradition and spirituality (Nesci, Privitera, 2011). But, it’s important to tell, we are watching the commodification of rural world, landscapes, traditions and territorial identity. These elements are used in promotional messages, but they appear less central in business choices (Ciervo, 2013).

Actually, in Italy, many farms have changed their production in organic consequence were born too organic agritourism (certificated to produce and sell organic products). The label is given to them by the AIAB, the Italian Association for biological agriculture.

Italy has both a National and Regional legislation for the implementation and application of the EU legislation concerning organic production. In this case, the legislative Decree No 220/1995 and Ministerial Decree No 18354/2009 provide the legal framework for the application of Regulation (EC) No 834/2007. In June 2007 the European Council of Agricultural Ministers agreed on a new Council Regulation on organic production and labeling of organic products. This Council Regulation as a European general law defines the main goals, principles and general rules which are applied for organic production sector. As it is stated from the beginning of the document (European Union, 2007) the main goal of this legal framework was to set a new course for the continued development of organic farming. Also among its concerns are included sustainable cultivation systems and a variety of high-quality products, environmental protection, biodiversity and high standards of animal protection and consumer confidence. An organic production for being considered as organic it must respect the natural systems and the some other cycles.

According to the same EU’s document criteria (European Union, 2007) a sustainable production should be achieved as far as possible with the help of biological and mechanical production processes, through land-related production and without the use genetically modified organisms. Foods may only be marked as organic if at least 95% of their agricultural ingredients are organic. (European Union, 2007). Also for the organic ingredients in non-organic food, the same EU’s regulation (European Union, 2007) states that they may be listed as organic in the list of ingredients, as long as this ingredient has been produced in accordance with the organic legislation. In order

to ensure better transparency, the code number of the control body must be indicated (European Union, 2007).

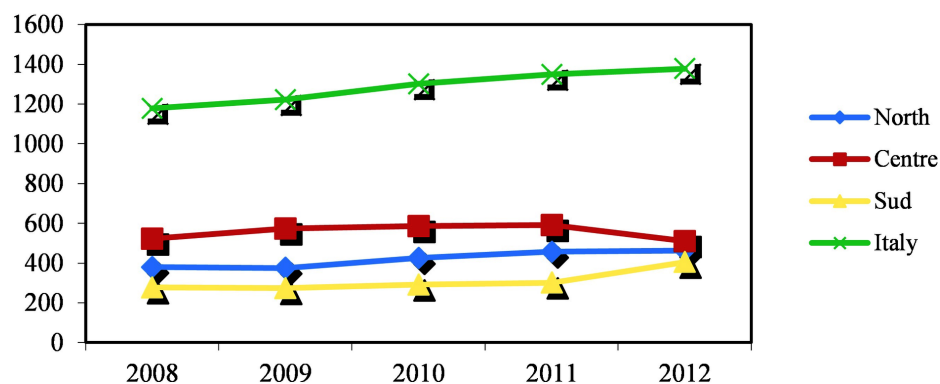
In this context, ICEA - the main Italian Organization for the certification of organic products - launched its certification “ECO BIO Tourism” to enhance the tourist structures that identify their hospitality with a lifestyle based on the principles of human and environmental sustainability such as the preservation of rural Italian heritage through the use of organic farming, protection of ecosystems and biodiversity conservation, the promotion of food tasting slow. The certification program provides, in fact, that the *Eco organic farm* in addition to adopting organic farming methods, adopt a policy of energy saving and use of renewable energy, allocate part of the farm to natural habitats, create environments that ensure the survival and reproduction of flora and wildlife, realize green spaces for greater integration of the company with the ecological context and landscape and to improve the enjoyment by guests.

Among the requirements stands out most qualifying the use of linen in the textile and the use of certified organic products, detergency and clean to guarantee the total well-being of the host and of nature. These kind of touristic farms are the result of the constant efforts of organic farmers to guarantee the reduction of pollution, maintenance of soil fertility and biodiversity, and also the preservation of the rural landscapes

that still today constitute the cultural identity and geomorphology of many Italian regions. The logo guarantees that practically everything the guests receive will be organic. Many farms have installed renewable energy systems, are collecting and utilizing rain water, have insulation made from natural materials and use only natural paints. Some have beds with no metal parts, sheets and towels made from natural textiles and offer rooms free of smog.

Organic agritourism links tourism, food production and the environment. It can create new markets for organic food and it has the potential to change people’s dietary choice towards fresh organic food. According to the Census of Agriculture (2010) the distribution of the number of organic farms (including agritourism) per municipality in the country indicates that, of the 8,077 municipalities in Italy, 61.8% have at least a holding organic farming on their territory. Increased on organic farms is also the ability to diversify company activities, because the activities related to agriculture and animal husbandry are practiced by about 17% of certified farms, more than three times the value found for the universe of companies. In 2012 are 1,523 enterprises registered (Biobank, 2013) with a rise of 29.2% compared to 2008 (figure 2). The regions with the highest number of organic agritourism enterprises are in the central Italy: Tuscany (17.5%), Emilia-Romagna (13.4%).

Figure 2. Dynamic of organic agritourism in Italy
Source: ISTAT, 2013



In Italy the demand side for agritourism has not been fully investigated despite the relatively high number of studies of the supply side. Tourism studies indicate that local cuisine, including wine, is among the attractions most favoured by tourists in Italy. Specially to agritourists, Ohe and Ciani (2010) found that agritourism experienced rapid growth in the number of beds available and of those tourists who stayed overnight during the last decade, while the operation rate of agritourism is much lower than that of tourism in general. The market for agritourism domestic demand accounted for more than half of the total agritourism demand. The remaining demand was filled by inbound tourists from European countries. In addition the potential demand for rural tourism can be seen in the impacts of visitor numbers and tourism spending in Italian's protected areas, many of which are national parks. National Parks have strong brand image and obtain marketing benefit: similar brand images could be created by skilled marketing for other – though not all – rural areas.

A result that emerges from the research of Italian Observatory Agritourism (2010) about the factors considered essential from tourists to characterize the structure of an authentic farm:

- The farm must be immersed in the green and nature; the surrounding area should be nice and quiet as an opportunity to stay in a rural location and the access to experience of rural life.
- The structures must be consistent with the rural outdoor setting.
- The food should be natural and local, and the cuisine should be characterized preparations made by the same operator. In fact the perceived food image play a significant role in tourist satisfaction. The tourist require food which offers a connection with territory, history and traditions.
- It is important, of course, the presence of an agricultural activity, if possible with the presence of animals; many potential us-

ers, especially families with children and young people cannot imagine a farm without any kind of animal.

- The farm must be inhabited and alive: that is, with a farmer and with its activities; the only apartments for rent (green holiday) is not considered a farm. Activities that allow for participation in agricultural activities increases happiness of the tourists.
- **Attractive Location:** Most of agritourism in the various countries are close to hilly area, cultural sites, sea sites, etc.
- **Convenience Price:** Convenience is one of the important aspects in tourism business. People prefer convenient and assessable location than hotel or resort.
- **Countryside Accommodations:** Agritourists not expect high quality of accommodation facilities like urban style. They expect countryside but well maintained, clean and pollution free accommodation facilities.
- **Educational and Cultural Value:** Agritourism also has the potential for informal agricultural education between the owner and people, which has little to no direct contact with agriculture.
- **Entertainment Value:** Recreation of the tourists is essential in every type of tourism including agritourism. Participation in rural festivals: many tourists have curiosity regarding to rural festivals.
- **Purchasing Opportunities:** Tourists want to purchase agricultural production from farm site. They expect quality of agriculture products and fresh products in lower rates than products available in urban area.
- **Interact with Rural Community:** Many urban people do not have relations with rural peoples but they want to establish relation with them. Therefore, they want to interact with rural people and agritourism in an opportunity for this. (Italian Observatory Agritourism, 2010)

All these reasons are in part similar to that tourists want to enjoy to the parks take place during the time of their stay various activities, preferring to first make hiking with approval ratings near 50%, then sports (16.2%), taste typical food and wine (8, 7%), go to the rediscovery of traditions (7.9%), another 17.3% to be understood by this expression activities that are possible because inherent with the type of natural environment in which you combine activities (religious tours, marine activities, etc.). Actually increases the weight of the green tourism, and in 2012 the areas of Italian country are green holiday destination for 7% of tourists (Isnart, 2013).

STRATEGIC MODEL FOR ORGANIC AGRITOURISM AS A CASE STUDY

The organic agritourism study has been realised referring to the farm analysis founded on enterprise's literature and official documents. It was conducted in the south Italy, in the Sicily region (table 1), where are present 91 organic agritourism (Biobank, 2012). The sampling frame was thus designed collecting information through the Internet, databases, tourism agencies and expert knowledge. It is the 43.9% of total farms, which is purely indicative but representative. The region of Sicily has a consolidated propensity for tourism, with unique resources, whose exploitation depends on an adequate improvement in the infrastructures together with specific market strategies. Over the past ten years has almost doubled the number of organic farmhouses that continues to fuel the engine of food-wine tourism, increasingly important component of the tourism "made in Italy".

All of these tourism recreational activities in Sicily had a marked seasonality, with June to September being the predominant season. Indeed, the Sicily region enjoys a warm coastal climate without extremes of temperature and is one of the sunniest spots in the country, which allows almost all the tourism recreational attractions to be open

Table 1. Sicily area study in Italy

Key Issue of Agritourism
Work opportunities and reduction of the number of the young peoples who know rural areas
Synergy between farm and territory
Hydrogeology equilibrium and conservation
Promotion and sell organic products
Increase in popularity and improve image
Increase in biodiversity
Animal welfare
Protect diversity of ecosystem, natural conservation and landscape
Environmental management of the farm
Development and rise of local tourism
Protecting and improving the rural buildings

Source: Author based on Privitera, 2010

all year long. Sicily extends over an area of 25,711 sq. km. making it the largest island in the Mediterranean, and also the largest Italian Region. Its coastline measures 1,484 km, making up 20% of the national coastline; hilly areas account for over 60% of the total Regional area, mountainous zones account for a quarter and plains account for the rest. According to the latest classification 90% of Communes are situated in areas of medium-high seismicity. Protected nature areas extend over an area of 2,707 sq km and make up 10.5% of the Regional territory and 9.3% of the protected areas of the whole country. As for marine reserves, these cover an area of 760 sq km, which is equal to 2.7% of the corresponding national figure. The largest marine reserve in Sicily, the Egadi islands, extends over an area of 54,000 hectares, most of which is part of the "partial reserves", where there is tight control over sports fishing and boating, and also over the "economic and social promotion zone". Using SWOT analysis, we provide an overview of the importance of links with respect to marketing and the development of organic agritourism with sustainable tourism and specially ecotourism. In order to understand the perception and the mental

imagines that lead the enterprise's choices, it has been supported by a subjective evaluation's pattern concerning the main territorial parameters (environment, society, infrastructures, productive and business system) and several interviews on open demand with the entrepreneurs. The SWOT analysis is a really important tool to outline the current situation. We implemented the SWOT analysis to identify developing opportunities for this innovative agritourism sub-sector, focusing mainly on the transferability of innovation about ecotourism on the enterprise systems.

The methodology is essentially inductive, based on a qualitative and quantitative analysis. Specifically, it is grounded on: a) indirect observation: economic and geographic literature, web sites, statistical data, on different levels of spatial scale concerning organic and social agriculture, rural development, rural tourism and agritourism, environmental protection, solar energy, biofuel, energy saving; b) participant observation by a research on the field conducted in 2010 and revised in earlier time.

The exploding success of tourism recreational activities in the organic agritourism in Sicily and the increasing demand for nature gives these attractions an advantage in the tourism sector (table 2).

The attractiveness of ecotourism depends on its environmental well-being, so the agritourism could have a benefit. Generally elements as ecosystem, biodiversity and local flora or fauna are representing important factors in ecotourism development, but the recent elements as the lack of financial investments, added to the visitor pressure to the environment has accentuated the decline of the visiting quality experience and landscape degradation.

As literature (Humaira, 2010) argues for an area to become a ecotourism destination, not just a stop off point, structured networks and collaborative agreements between public and private sector actors are essential in other words community involvement is a key part of the success of the tourism market (Humaira, 2010).

On the one hand, conservation and protection of rural landscape, by safeguarding the places and local knowledge and traditions on the other hand its enhancement, increasing its heritage value, through tools capable of disseminating knowledge. In fact, is a major request to create and leverage functional partnerships with cultural, heritage or green sections.

In this context, it may help to provide value-added services for tourists, including a wide range of activities starting from providing directions and creating awareness about possible rural tourism destinations and historical places or cultural activities, with a high degree of novelty which differentiate them from other touristic destinations. All of the key actors must to begin to take more proactive measures in order to ensure that ecotourism is carefully planned and implemented. The desire to offer something extra in addition to holiday farm stays, made the owners travel around to learn and implement what an actual eco-tour is. This is being maintained, with further customer satisfaction surveys. Indeed, managers could exploit information technology to maximize the costless opportunity of social networks, community and visibility online for promotional or commercial purposes. Specifically, educational farms present a weak market image that could be overcome by using these effective and efficient tools. The infrastructures are a critical point. In fact the proximity to a generating market or gateway is fundamental. One of the general conditions for the rural tourism destinations to be competitive is that they must be easily accessible and market for potential visitors using reliable and versatile transportation systems. Actually in the Sicily but in general in the South of Italy the public transport and the roads are insufficient and not support rural tourism. It is necessary that all the stakeholders involved taking initiative at the highest level of decision in order to develop appropriate actions in field. Supporting and financing the rural tourism could represent a highly competitive method

Table 2. SWOT analysis of organic agritourism

Strengths – Innovation made especial in rural farm – Innovation to preserve and maintain the ecosystem – Natural conservation of landscape – Promoting and sell of organic food products – Locations insides national parks with architecture rural house – Authentic entertainment and cultural, learning involvement experience	Weakness - Increasing in-puts costs - Lack of international pressure group activities - Infrastructure - Increasing potential in English speaking workforce
Opportunities - Availability of young and know ledged workforce - History and culture of Italy - Increasing inbound demand on rural/ food tourism - Support of tourism policies - Decrease of buries on internal travel	Threats - Increasing competition - Beurechratic obstacles - Economic crisis in European countries - Public-private partnership - Developing infrastructure - Weak government support behind the farms

Source: Author tabulation based on the results of the research

in valuing the already existing marketing efforts in the field.

In this context it is recommended that all the rural communities to have a welcoming centre where visitors may find useful information and details about the local attractions, fun activities, and competitive accommodations, and where they also could ask questions about the referential visiting places in the area. These could be a success factor also to identity of both entrepreneurs and territory.

In order to increase the awareness of a touristic destination, a quality brand and countries label may have a highly contribution in identifying the target market segments. As for having a highly degree of effectiveness, a touristic brand should unify both the rural's functions and the emotional benefits under one inclusive identity in order to create an indelible impression the tourists 'mind. Another stronger position of agritourism in Italy is its history and culture. There are many historical sites and museums in different cities, also in Sicily. Especially the "pristine landscape and picturesque nature" have been recurring themes. Often mentioned was the typical architecture of rural houses, as well as the historic attractions near. Organic agritourism benefits from the or-

ganic producers activities in the markets in rural areas where the population is after sparse and demand is relatively law. In this context, selling farm products is an important activity in ensuring a larger proportion of holdings' incomes rather than loosing farmers revenues into long food chains, where retailers holds the benefit. A short food supply chain improves the live standard for the organic producers by bringing producers and suppliers closer together, and reducing the costs. Belief in the organic philosophy it's important.

The idea came from the continuous involvement of the family in social initiatives; the underlying goal is to spread the organic and biodynamic philosophy with the "social farm" as the eventual aim. The driving force was the will to diffuse the organic lifestyle as a natural means of living. As mentioned before, rural tourism development is one of the rural development approaches conforming to the principles of sustainability. The most important factors to plan for organic agritourism are attractions and recreation resources in rural environment. Most of rural tourism attractions are natural attractions. All of these suggestions represent possible challenges for the management to work on, but there are some other threats caused by external factors that are more difficult to ad-

dress. Promotion may be managed by marketing the cultural attractions as the “alternative experience” compared to the usual sea holiday typical for the region. Engaging in brand management could help to overcome this weakness.

FUTURE RESEARCH DIRECTIONS AND CONCLUSION

Undoubtedly agriculture represents an effective engine for growth, and an important vehicle for prosperous livelihood for most agriculture-based countries. The constraints in the rural areas include: unequal distribution of land, inadequate infrastructure, ineffective public-service delivery and insufficient participation by rural people in most public sector development programs. Moving ahead towards sustainable development will remain impossible without addressing these issues through sustainable farming practices. Organic agriculture is a good reason. Dedicated efforts are needed to strengthen the agriculture sector and achieve higher growth. Potentially efficient and equitable solutions for increased agricultural growth includes increasing current yields as well as promoting diversification to high value-added crops and activities, especially by the small-farm sector. In addition, non-farm income sources (like tourism) deserve due attention.

In addition, organic agriculture offers small to medium size farms in particular, many advantages. The development of agritourism, and more in general eco tourism linked to quality local products and to the territory they represent, is an opportunity for the success of organic production from a multidisciplinary viewpoint, if adequate funding is made. However, tourism is a competitive and very dynamic market by itself, and any entrepreneur which intend to be an organic producer must seek wisely all the opportunities when intend to start up a new business and to plan the business very carefully. The results suggest that need improve relationships between farmers, people and institu-

tions that are closely associated. The governments should educate and encourage people by providing the necessary information but the point of view of a government may heavily influence opinion and activity of people but not to speak on creating acceptable behaviour towards environmental issues, consumption, etc. Entrepreneurs tend to prioritize economic gain but is of particular importance in determining strategy more joint involvement of stakeholders in tourism.

An integrated approach, as suggested from others research (Cawley, Gillmor, 2008), is to be developed to promote organic agritourism as part of an eco tourism development strategy. In this context it's relevant to provide all the necessary information about the relationships existence between territory, tourism activities and organic agritouristic businesses development. In addition to the necessity for studies of the demand in order to assure business success. As (Cawley, Gillmor, 2008) argues it becomes particularly important during the planning phase as it provides decision makers with a means of rapid assessment, essential to enable them to choose the most appropriate intervention policies (Cawley, Gillmor, 2008). In addition, this research may be useful in developing policy and undertaking promotional measures for intensifying rural tourism sector, as it has a place within the current focus of rural development in Italy and in the others countries.

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KEY TERMS AND DEFINITIONS

Conventional Agritourism: An enterprise that links value-added to agricultural production with act of visiting a farm for the purpose of enjoyment, education or active involvement in the agricultural activities.

Ecotourism: Its focus is on the experience of natural resources and the flourishing of environmental and cultural enjoyment, understanding and appreciation.

Organic Agritourism: An enterprise that links value-added to agricultural production with act of visiting a farm for the purpose of enjoyment, education or active involvement in the agricultural activities.

Rural Tourism: Include activities of visitors travelling in farms and all aspects of leisure appropriate in the countryside. In addition it include the culture, experience folklore, natural landscape and historical landmarks.

SWOT Analysis: SWOT is an acronym of four words: Strengths, Weaknesses, Opportunities, and Threats. A SWOT analysis assesses tourism potential and helps managers to decide what type indicator will be useful in monitoring trends and progress towards achieving the tourism goal of the company or destination.

Chapter 14

Rural Romanian Education: Issues of the Reform and Foreign Language Teaching

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ABSTRACT

This chapter presents an overview of the Romanian rural education system with an emphasis on the projects implemented in the rural areas, foreign language teaching being a major part of these projects in this sector which, among other shortcomings, is affected by a serious shortage of qualified teaching staff. It examines the recent developments in the educational rural process highlighting the education policies adopted by the Romanian government as part of the intergration program in the European Union. As well as describing the present state of this educational component, it proposes a number of solutions to the identified issues that could be put into practice for the benefit of the system.

INTRODUCTION

Within the context of the Romanian education reformation in the last decades required by the integration of our educational system into Europe, a thorough analysis of its implementation and effectiveness is required. The purpose of this chapter is to evaluate the outcomes of certain projects whose aim was to improve the quality of the rural education which represents one of the major components of our national education. As the European integration has been a target of all

reforms applied to all policies, economic, political, educational and cultural, foreign language teaching plays a main part in this process. Consequently, our main objective lies in examining the current state of the rural education, particularly of foreign language teaching, started from the analysis of the projects and studies dedicated to this field.

Therefore, the chapter will be structured as follows:

- A general overview of the present state of the Romanian rural education;

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- A selection of the most important projects implemented in the system, strictly aiming at rural education;
- Some solutions to the problems that were identified by our analysis.

Special mention should be made of the fact that in our country all educational levels (pre-school, primary and secondary) follow the National Curriculum conceived by the National Council for Curriculum and approved by the Ministry of Education, without making the distinction between the urban and rural regions of the country. This common framework as regards the subjects and their contents is justified by the requirements of modern education which has to provide students with general competences and skills meant to correspond to the present society's development.

BACKGROUND

As the reformation of the Romanian educational system is concerned, it constitutes the objective of a coherent and unitary policy guided by the Ministry of National Education. As stated in the introductory note to "The Strategy of Pre-academic Educational Development during 2001 and 2004", "The systemic, effective and coherent reform that generates an added value to the educational process which aims at the personal and professional development of each pupil and student who will be the future citizens of our country" (2002) represents the mission of the Ministry of National Education. This, however, involves a wide collaboration of all institutions and stakeholders in order to achieve the goals of the reformation program.

One of the institutions involved in this program that should be taken into consideration is the Institute of Educational Sciences in Bucharest. It has taken part in the implementation of various projects in schools at different levels all over Romania and published a series of reports reflecting the present state of the measures adopted in the educational

field as well as their effects on the quality of the instructional process. Consequently, a group of researchers coordinated by Mihaela Jigău, achieved a clear diagnosis of the rural education, as part of the national education system, trying to identify the dysfunctions and difficulties that it has to face, highlighting their consequences on the quality of the educational system. Special mention should be made of the fact that the shortcomings identified in the rural educational sector are not only due to the intrinsic nature of the system, but also to the larger economic and social context. A generalized phenomenon that characterizes Romania is poverty generated by the transformations undergone by all the components of our society during the transition period from the inefficient centralized socialist economic and political system to the market economy and capitalism. Besides that, the latest socio-economic changes have deepened the differences between the urban and rural areas which have been reflected in all fields of life, resulting in a poorer performance of rural education. One of the most serious aspects derived from this context is weak financing of rural schools in comparison with the urban ones. As Jigău (2000, pp. 7- 8) points out, "as far as education is concerned, along with a general chronic sub-financing and a reduction of the population's request for educational services, we witness a series of negative phenomena regarding the equality of chances to education, considered from a triple perspective: equality of access, opportunities and results." Briefly speaking, all these can be summarized as follows:

- Poor infrastructure in rural areas;
- Low number of educational institutions;
- Poor logistics of schools;
- Reduction in the number of students who graduate compulsory education;
- Decline in the number of students enrolled in high schools;
- Insufficient number of qualified teachers in rural schools. For instance in the academic

year 1998/1999 according to the Ministry of Education, the proportion of the unqualified teaching staff in the urban areas was 6.9%, while in the rural ones, this proportion was 22.8%. This can be seen in the table below:

It should be noted that the situation has not significantly improved over the years. Ten years later, in 2010/2011, according to a "Report on the pre-academic education state in Romania" issued by the Ministry of Education, even though a positive tendency was observed, the rural sector continued to be understaffed: "A positive tendency of the qualified teaching staff was recorded at all educational levels. The greatest growth was recorded in the secondary education, while in the pre-school educational system there still is a great number of unqualified teachers. In spite of the observed improvement, the educational system in the rural area still has to cope with a considerable shortage of qualified teachers." (2011, p.3).

Table 1. The situation of unqualified teachers in rural areas according to subjects

Subject	Percentage
Foreign languages	72.5%
Romanian language and literature	27.0%
History	26.6%
Music	22.1%
Geography	19.9%
Drawing	16.4%
Physical education	14.4%
Biology	11.5%
Mathematics	7.4%
Physics	6.6%
Chemistry	5.2%
Native language	2.8%
Technological education	1.4%

Source:(Jigău, 2000, p. 88)

The facts mentioned above lead us to the conclusion that this deficiency of the rural education system triggers medium and long term effects on the quality of the labor force and human resources in general.

As (Jigău, 2000) reinforces, "the significant reduction of the participants in the educational process represents the consequence of:

- The devaluation of the economic situation of the majority of the population, especially in the rural area;
- The lack of perspective on the labor market in cities and a weak diversification of economic activities in the rural area;
- The depreciation of the importance of education by the people in general." (pp.7,8).

Alongside the problems identified in the research performed by the Institute of Educational Sciences coordinated by M. Jigau, we may take into consideration other several factors that jeopardize rural education in Romania, namely the increase of the school dropout rate or the falling of primary school enrolment which may result in the growth of the illiteracy rate especially in some rural areas. Nevertheless, official statistics show that in rural regions children generally tend to limit their studies to compulsory education.

In addition, it should be noted that low salaries and the continuous decline of the social prestige of the teaching profession in Romanian society contribute to the shortage of qualified teachers in rural education. Let us mention that, as Jigău states, the category of unqualified teaching staff also includes university graduates who teach outside their specialties. (Jigău, 2000:35).

This fact is illustrated by the percentages in the table below, which offers a complete image of the rural educational institutions:

It is important to specify that the very high percentages of unqualified or improperly qualified teachers as shown in the three right columns included in the table above may be explained by

Table 2. Distribution of school units with unqualified teaching staff

School Units that Function With	Kindergardens	Primary Schools (I-IV Grades)	Secondary Schools (I-VIII Grades)	High Schools	Vocational Schools
teachers without a university degree	45.1	30.8	85.5	81.3	91.7
teachers qualified in other specialities than the ones they teach	47.6	43.5	96.7	98.3	100.0

Source: Authors`own design

the fact that there is a low number of such schools in rural areas, most of them being concentrated in the urban ones. For instance, according to the last statistics of the Ministry of Education in 1997, cited by Jigau in 2000, out of 2859 communes (administrative territorial units containing several villages) only 174 communes have their own high school and 111 communes have their own vocational school. That is why, students who want to continue their studies have to commute or to move to the urban areas.

In conclusion, the shortcomings observed in rural education can be both quantitative (an insufficient number of qualified teachers) and qualitative (poor training of the teaching staff), which raises serious issues regarding equal opportunities in education and has repercussions for the effectiveness of the educational system in general. In this sense, the evaluation of students' achievements may be a barometer of the state of affairs characterizing rural education at the present.

As concerns the compulsory education, the results of the national evaluation in 2014 show that from the total number of candidates, which was 165 188, 29.2% (46 703) did not manage to pass it, as their score was below 5 (the inferior limit), but it is important to underline the fact that the structural reforms implemented in the system led to significant percentage of students who obtained scores between 5 and 10 (70.2%).

In relation to the baccalaureate (last secondary school examination) results, they reflect a serious crisis of the Romanian system of education, as

the graduation rate in the session June-July 2014 was 59.22% for a number of 151.294 candidates, according to the Ministry of Education.

The situation is almost similar if we take into consideration the teachers' national examination for obtaining the compulsory teaching certificate after university graduation: out of 9 196 candidates 63.35% passed the examination, which represents a slight improvement (by 12%) in comparison with 2013, when 51.26% of the teachers succeeded in passing it.

In the context of the above mentioned economic problems, the rural educational system in Romania is seriously underfunded and understaffed. As a result, foreign language teaching, performed by 72.5% of unqualified teachers, poses special problems in spite of the supportive policies adopted by governments up until now. Taking into consideration the main goals mentioned in the "Communication from the Commission to the European Parliament, in European Commission" in 2008, a document included in "Policy Review on Teacher Education for Inclusion", we may state that foreign language teaching is still trying to adjust to the following requirements:

- To increase the focus on ensuring all pupils gain the competences they need in the rapidly changing knowledge society;
- To increase the commitment to provide high-quality learning for every student enrolled in all educational levels, improving equity in all school systems;

- To improve the quality of teachers and school at all levels;
- To help school leaders focus on improving the teaching and learning process. (2010, pp.7-8)

It is true that the various reforms implemented in the educational system in general and in the rural one in particular have lead to significant improvements that are reflected in an updated curricula, modernization of teaching aids and learning materials, better teacher training, professional conversion programs, a more effective approach to assessment, better recruitment of the teaching staff etc. At the same time, the major deficiencies of the rural system, which directly depend on the level of the general or regional economic development, could not be eliminated. These are the result of the fact that the Lisbon goals concerning teacher quality in Europe could not be practically achieved by the governmental policies of several member states of the European Union, including Romania, although all ministers agreed in 2007 to the implementation of the program. The main objectives adopted in Lisbon refer to:

- 4.1. *Teacher quality is the most important within-school factor affecting student performance.*
- 4.2. (...) *to make the teaching profession a more attractive career choice, and to improve the quality of teacher education and to provide initial education, early career support (induction) and further professional development that is coordinated, coherent, adequately resourced and quality assured. Teachers should have sufficient incentives throughout their careers to review their learning needs and to acquire new knowledge, skills and competence, including in languages.*
- 4.3. (...) *to improve the balance between theory and practice in initial teacher education, and to present teaching as a problem-solving or research-in-action activity linked more to children's learning and progress. Staff*

should have time for training and professional development and this should be accredited. In some countries, teachers' working conditions, including remuneration, were cited as key issues.

- 4.4. (...) *to adopt a career-long and practical approach to teacher education; and create school environments in which teachers learn from each other. (2010, p.8)*

In the context of Romania's integration into Europe, foreign language teaching has become a priority both in urban and rural areas as "language teachers (of any language) play a major part in achieving the European Union's objective that all EU citizens should have linguistic competence in their own mother tongue and two other languages." (Vez, 2008, p.2) In the attempt to reach the European teaching goals, the national foreign language curriculum pays great attention to "the themes of language and culture" laying emphasis on one of the most important aims of foreign language instruction, that is "acquiring the ability to communicate in several languages and being able to experience several cultures constitute for every European today": (José Manuel Vez, 2008, p. 5)

These objectives continue the guidelines specified in "European Profile for Language Teacher Education. A Frame of Reference" (Kelly and Grenfell, 2004), being in the process of implementation in the rural educational system:

- Foreign language education should be based on multidisciplinary and interdisciplinary approaches;
- Theory should be seen as a whole made up of 'knowledge' and 'skills', the first one referring to knowledge about language and teacher training, while the second one refers "the social and
- Professional context in which practical teaching takes place and the professional competences needed to teach effectively." (Kelly and Grenfell, 2004, p. 5).

- Emphasis on creative and flexible teaching, implying the combination between theory and practice, that is “linguistic and cognitive dimensions can be taught alongside the humanistic and affective implications of real learning situations as the design of a learning process adequate to the educational context.” (Kelly and Grenfell, 2004, p. 5).
- Improvement of the teaching process should be based on continuous peer observation and self-evaluation which can be achieved through the cooperation of different education units and departments.

To sum up, the fact that foreign language teaching in rural areas is the most affected field as far as the number of qualified teaching staff is concerned, the crucial approach should focus on the quality of the instructional process. As (Cerghit, 2008) suggested there are two inter-related dimensions that constitute the essence of any qualitative educational process that should be taken into consideration by every teacher:

- “The (academic or specialty) scientific competence, that is the manner in which the teacher understands to teach his/her subject;
- The psycho-pedagogical competence consists in: the ability to perceive the learning situations, awareness of the students’ mental (and physical) capacities, didactic skills, teaching styles, clarity and expressiveness of communication, the ability to use feedback, the manner in which the didactic principles are valued.” (Cerghit, 2008 pp. 306, 307).

Projects Implemented in the Rural Educational System in Romania

The Ministry of Education has always continued the reform of school education in Romania by

means of educational policies whose main aim has been to contribute to the development of the Romanian society, ensuring the right to education each child by developing educational programs tailored for the acquisition of key competences specific to the knowledge and information society.

As a result, the main priorities of all educational approaches undertaken by policy makers have focused on improving the educational act in every single classroom, so that the students indeed become direct beneficiaries of all the financial and human efforts coordinated by the responsible institutions. Given the fact that education is recognized by the Constitution as a national priority and taking into account the main coordinated of the National Development Plan, the education reform has been based on the following core objectives:

- Increased quality of education as a basis for developing the knowledge society in Romania;
- Providing training for human resources through pre-academic education and life-long learning;
- Students’ personal development in terms of life-long learning;
- Development of social cohesion and increase of citizen participation in programs for developing communities socially and economically. (www.edu.ro, 2002, p.1)

To accomplish these objectives, the Ministry of Education followed the the objectives and priorities recommended by OECD, World Bank, UNESCO, UNICEF, as well as other recommendations provided by the experts in education in the Instituted of Educational Sciences, who have continuously conducted research studies in order to have a complete image of the Romanian educational system reform.

Therefore, the policies of the Ministry of Education have focused on the following strategic priorities:

- Achieving equity in education;
- Providing basic education for all citizens in order to develop key competences;
- Sustaining education based on the students' personal and professional needs from the perspective of sustainable development;
- Opening the educational and vocational training system to the society, the social, economic and cultural environment;
- Ensuring complementarity of formal, non-formal and informal education; setting life-long learning as a major dimension of the educational policy;
- Improving the quality of the teaching-learning processes, as well as of the educational services. (www.edu.ro., 2002, p. 2).

The above mentioned priorities could only be achieved through education programs and projects, the stakeholders involved in education being fully aware of this fact. As a result, the following programs which included several projects have been developed in the Romanian educational system, lots of foreign language teachers from the rural education system, and not only, being part of them:

- Providing basic education for all citizens. Training Key Competences, which consisted in the the following projects:
 - "Providing basic education through formal education";
 - "Training key competence of democratic citizenship and motivating active participation and the social and political life in order to ensure social cohesion";
 - "Expansion of computerized learning".
- Laying the foundation of the educational offer based on the students' personal development needs in terms of sustainable development and assurance of economic and social cohesion – program which included five projects:

- Assuring equity in education, program that consisted in four projects:
 - "Education quality assurance in rural areas and in deprived areas";
 - "Education for national minorities";
 - "Supporting students with high potential in their academic achievement";
 - "Education for children with special educational needs".
- Improving the quality of the learning and teaching processes as well as of the educational services, program whose targets were achieved by means of the following seven programs:
 - "The national curriculum";
 - "Improving school evaluation performance and assessment";
 - "Assuring the quality of educational services through institutional development";
 - "Initial and continuous training of teaching and non-teaching staff employed by schools";
 - "Initial and continuous training of school managers";
 - "Strategic guidelines in the field of educational scientific research";
 - "Strengthening the teachers' social status – the condition for increasing the quality of the educational act".
- Education through extra-scholar and extra-curricular activities included six projects, shown below:
 - "Education for health";
 - "Civic education";
 - "Cultural-artistic and scientific education";
 - "Ecological education";
 - "Education through sports";
 - "Road Education".
- Monitoring lifelong learning seen as a major dimension of the educational policy. Assuring complementarity of the formal,

non-formal and informal education. This program consisted in one project that is:

- “Lifelong learning. Adults’ education.”
- The reform of the institutional management and administration systems which are part of the pre-academic national educational system
- Ensuring the material basis for the pre-academic education included the following five projects:
 - “Providing schools with material resources”;
 - “School libraries”;
 - “School rehabilitation”;
 - “School investments”;
 - “The patrimony of the pre-academic educational system”;
- Harmonizing the legislative framework
- European integration and international cooperation consisted in four projects, as follows:
 - “Participation in the European educational training programs Socrates II and Leonardo da Vinci II”;
 - “Continuous training of teaching staff in the pre-academic system, as part of the Council of Europe Program”;
 - “Bi- and multilateral collaboration in the field of education”;
 - “Collaboration within the Stability Pact for Southeastern Europe”.

The project “Professional development of teachers in rural areas through mentoring activities” emerged as a natural initiative in a contemporary society that requires continuous development of human resources in education and, consequently, the permanent increase of the quality of the educational offer.

People who benefited from this project were 6000 teachers from compulsory education in rural areas from five counties in Romania that were

selected based on the low results obtained by the students in the national exams.

The project aimed to ensure access to quality education for students in rural areas all over Romania.

The program was designed and structured to provide flexibility and was adapted to the particular conditions of each school which was part in it. Activities took place in school, avoiding damage to the educational process and daily program and participants dislocation from their rural area of residence.

Another advantage was that all teachers in a school were included in the same training program, with a program that facilitated the consolidation of the school working staff.

The series of the eight training modules developed in the project was conceived as course, which further became a valuable resource that teachers can use in their teaching - learning - assessment daily activities and included the following modules:

Teaching Strategies Seen from a Transdisciplinary Perspective

The module was aimed at training participants to implement interdisciplinary, multidisciplinary and transdisciplinary teaching strategies in order to develop general and specific skills needed to all subjects studied in schools. The main specific skills that this module developed were:

- The proper use of specialized terminology;
- The establishment of learning outcomes in relation to key and general competences of each curricular area, and to specific competences of each subject;
- The development of teaching strategies seen from an interdisciplinary, multidisciplinary and transdisciplinary perspective.

Formative Assessment in the Context of Learning

The module aimed at developing specific skills to teachers so that they become able to teach in an effective way. The main components of this module were:

- Modernization of the assessment process;
- Coherent integration and usage of assessment criteria and methods;
- Proper use of assessment instruments and techniques;
- Correct interpretation of the results obtained by the students during the formative assessment process;
- Objective exploitation of the students' achievement in order to differentiate and adapt the learning process to students' needs.

Teaching and Learning Styles

This module's purpose was to increase students' achievements through the development of teachers' competences that had in view the adaptation of teaching style to learning styles in order to improve the student - teacher relationship. The most important parts included in this module were:

- The correct understanding of the concepts used by teachers;
- The use of suitable teaching methods and strategies, adapted to individual learning styles;
- The identification of the most effective ways of supporting the students in order to develop their learning motivation.

Educational Communication

The module was designed to create an effective model of communication among institutions in

order to reduce communication barriers. Some of the specific skills developed by this module were:

- Using defensive projective nonviolent persuasive, paradoxical languages;
- Applying communication to specific games and drama used in education;
- Recognizing the peculiarities of communication in groups of children, adolescents and adults;
- Identifying and reducing communication barriers.

Educational Counseling

The module aimed to develop teachers' educational counseling techniques and skills, in order to support the learning process, by means of developing the following skills:

- Focus on exploring students' personal resources;
- Integration of communication and relational skills in class management;
- The appropriate use of information for achieving success in the teaching – learning process;
- Developing communication skills with parents and the local community.

Quality in Education

The module's purpose was to develop teachers' skills in planning and implementing quality management in education and the specific skills that were developed were:

- School analysis in terms of quality indicators;
- Design and implementation of quality self-improvement based on the self-evaluation of schools;
- Ensure the participation of all stakeholders in the quality implementation process.

Personal and Professional Development of Teachers

The module's target was to train teachers to use learning strategies that allowed them to solve career problems, to increase their motivation to study and strengthen self-esteem, the specific skills developed by this module being:

- Application of learning theories in career development;
- Managing emotions as a dimension of personality and support in conflict management;
- Correct use of methods for developing and strengthening self-esteem, self-knowledge and self-image.

Institutional Management and Project Management

The module's goal was to develop skills and competencies needed to become pro-active managers to increase teachers' substantial knowledge, understanding and application of theoretical concepts and best practices on educational management. Specific skills that the module developed were:

- Exercising managerial functions at different levels in a school environment in general;
- Organizing management processes of educational institutions to become efficient systems;
- Practicing effective and proactive leadership in the double role of managers and educators;
- Developing projects in order to harmonize the institution to produce the changes by means of accessing appropriate funding sources.

Besides these projects, one of the greatest in importance was The Project for Rural Education which lasted six years, from 2003 to 2009, the target group being only teachers and student from the rural system. The direct beneficiaries of the project were students and teachers in rural areas, the authorities and local communities, training providers as well as policy makers.

The main objective of this project had the following components:

- Improving access to quality education for rural students;
- Obtaining better school results;
- Increasing the graduation percentage;
- Increasing the percentage of students who enroll in other forms of education.

Some of the specific objectives of this project were:

- Professional development of teachers in rural areas and providing career development opportunities for teachers in these areas;
- Ensure materials and basic teaching materials in schools in rural areas;
- Strengthen school-community partnerships in rural areas;
- Strengthen the capacity for monitoring, evaluating and implementing new strategies in the rural education system.

The project was structured into four main components, as follows: improvement of teaching and learning in rural schools (component 1), improving the partnership between the school and local community (component 2), strengthening the capacity for monitoring, evaluation and policy development (component 3) and strengthening the management capacity of the Project Management Unit for Rural Education (component 4).

The first component mainly dealt with training teachers from rural schools and it consisted in four subcomponents which were:

- Professional training of teachers in rural areas through activities in schools;
- Creating opportunities for professional development of teachers in rural areas;
- Ensuring the minimum functioning conditions of rural schools;
- Providing the necessary teaching materials for schools in rural areas.

All the teachers who were involved in the project had to attend general training modules such as student-centred interactive teaching, students' continuous assessment, let's get to know our students and adapting the curriculum to the rural context, as well as specific training modules that included: simultaneous teaching methods, Romanian language as a second language, computer use in teaching and learning, remedial teaching in reading and mathematics classes and educational management.

The project started from the assumption that every student can learn and the teachers' task is to identify learning experiences that motivate students and help increase school performance. The mentoring program was based on a model of individualized professional development at the school level and/or commune level. The modules were based on an interactive and differentiated instruction so that in addition to curricular objectives to promote critical thinking, active learning and individual learning styles.

As a result of implementing this project, all teachers who benefited from the training modules mentioned above had the chance to become more familiar with new ideas on how to improve their teaching methodology, as they were trained to find and use optional educational resources that can be used to improve knowledge of classroom management, instructional strategies, teaching methods and student assessment. The training

program offered support to teachers in implementing the new teaching strategies, providing them and their schools with a variety of resources for improving the teaching and learning activities in the rural areas they belong to.

Therefore, we can consider the project was a very successful one, and as Benoit Blarel, World Bank Director for Romania stated "The success of the Rural Education Project in Romania is due to the dedication shown by the Ministry of Education of Romania, Project Management Unit and the World Bank team. This is testimony for the Romanian accomplishment in the successful implementation of innovative solutions to solve important issues." (<http://go.worldbank.org/ZV-T2OUY9K0>)

SOLUTIONS AND RECOMMENDATIONS

As the shortage of qualified teachers, especially in the field of foreign languages, represents an obstacle to the reformation of the Romanian rural educational system, the governmental educational policies with the general support of the local inspectorates throughout the country have been oriented to the improvement of the quality of the instructional process. Among the measures that have been taken to tackle the problem are a series of professional conversion programs initiated by the Ministry of Education in collaboration with several universities. Such programs are designed for teachers qualified in specialties affected by the reduction of the number of classes taught per week due to the structural changes of the national curriculum. They enable teachers to re-skill themselves and obtain the necessary knowledge and competencies to teach the new subjects required at present. As there are not enough certified foreign language teachers to fill the vacant posts in the rural educational system, the programs are mostly intended for these specialties. Participants study compulsory modules which include language

and literature studies and didactics for different periods of time, depending on the program they are enrolled in. They also complete their studies with pedagogical disciplines.

Another solution that may be resorted to, particularly when rural schools have difficulty in filling the vacancies with certified teachers, consists in the examination session for unskilled individuals who want to teach in primary and secondary schools, the session being organized by the local inspectorates at the of August. Candidates have to take written examinations whose focus is to check the degree of knowledge in point of the content of the subjects that they intend to teach and their pedagogical skills.

We believe that, in collaboration with the universities and the local inspectorates and administrations, students enrolled in the Long Distance University Studies, as they attend courses over the weekend, may be offered substantial scholarships with a view to teaching in rural schools.

We also consider that the adoption of a policy for equipping schools with buses will enable qualified staff to teach extra classes in the proximity schools that are understaffed, on the condition that they should be highly paid.

To meet the needs of rural education, a major measure already implemented by the Ministry of Education was the merger of small rural schools with a low number of students, which led to the formation of district educational centers. This was possible in the context of the transportation facilities provided by the government, which was part of the policy mentioned above.

Moreover, in dealing with the shortfall of teachers in the rural educational system, the suggestion is that governmental policies should consider an important phenomenon mentioned by (Ingersoll, 2001): "Supply and demand theory holds that where the quantity of teachers demanded is greater than the quantity of teachers supplied, there are two basic policy remedies: increase the quantity supplied, or decrease the quantity demanded." (Ingersoll, 2001 p. 525).

Basing our recommendations on the suggestions of the researchers in the field, the analyses of the institutions involved in the implementation of the educational reform as well as on our experience of practicing teachers, we believe that the following strategies may enhance the quality of the teaching and learning process in rural areas:

- To increase salaries in the educational system in order to attract qualified teachers in the field; it is a fact that nowadays university graduates tend to avoid the teaching profession because it is low-paid;
- To introduce differentiated salaries for expert teachers and all those implied in the improvement of the educational process;
- To reward teachers whose students' obtain very good results in national evaluations or various school competitions with incentives or higher salaries than those of the less motivated teachers;
- To reward the teachers working in problematic rural areas with higher salaries than those teaching in normal conditions;
- To create special conditions for teachers in high-need areas (for instance, banking loan policies for constructing houses in those communities or receiving a land allotment). It is a fact that, due to the low-standard living conditions in a rural area, teachers are more likely to commute to nearer towns or to leave rural schools;
- To increase funding for high-poverty schools where facilities, teaching aids and materials are precarious;
- To develop more mentoring programs for beginning teachers and those with deficient qualifications to help them reach a good level of competence in teaching;
- To provide teachers with enough release time for study and good lesson planning;
- To reduce bureaucracy and the demand for excessive paperwork because, as noted by (Spring, 1996), "the satisfaction that teach-

ers have gained from autonomous decision making and creativity has been threatened by expanding bureaucratic structures and attempts to control teacher behavior in the classroom” (Spring, 1996 p. 41);

- To encourage teachers to focus their efforts on the instructional process by limiting their extracurricular responsibilities;
- To diminish centralization by implementing policies based on teachers’ participation in school decision making;
- To allow teachers full autonomy and initiative in the classroom. We should mention that teachers autonomy, consisting in the opportunity to choose their teaching material, to select and organize of the content of the taught subject, must take into consideration the performance curricular standards imposed by the Ministry of Education, as part of the national curriculum approved and issued by this institution.
- To develop partnerships between rural schools and universities willing to implement research programs in schools;
- To improve teachers’ collaboration with parents and encourage them to take part in school decision making whenever necessary;
- To enhance the quality of the instructional process by shifting the emphasis from the teacher to student-centered classes by using communicative approaches, task-based activities and modern assessment techniques and strategies;
- To provide more access to in-service teacher education programs in order to keep teachers up to date with the latest developments in their field;
- To increase the exchanges among schools, by allowing teachers to share their classroom experience with their peers;
- To develop access to teaching resources.

In conclusion, the opportunities to education not matter the area of residence should be the objectives of flexible policies that must take into account the whole context of social, economic and cultural factors that contribute to the development of a state. There is an inter-connection between the development of the educational rural system and the other sectors of Romania’s economy: the improvement or regression of one of these sectors has effects on education. In the line with such interdependencies, the rural areas in Romania benefited from the implementation of both SAPARD and PHARE “Rural and political cohesion” programs oriented to providing specific solutions to the needs of rural areas.

FUTURE RESEARCH DIRECTIONS

The medium and long term development of the rural educational system is part of the general program adopted by the Romanian state which is in agreement with the strategy of the European Union regarding smart, sustainable and inclusive growth of all European countries. The European Commission Europe 2020 “is proposing five measurable EU targets for 2020 that will steer the process and be translated into national targets for:

- Employment;
- Research and innovation;
- Climate change and energy;
- Education;
- Combating poverty.

They represent the direction we should take and will mean we can measure our success” (Europe 2020, 2010, p.3).

All the targets mentioned above are interrelated equally contributing to the development of the rural educational system.

It is worth mentioning that the Commission Europe 2020 has put forward seven directions to be followed:

- “Innovation Union” to ensure access to funding in order to put into practice innovative ideas that will create job opportunities and better products and services;
- “Youth on the move” to develop the education system in order to facilitate the young people’s access to the labor market;
- “A digital agenda for Europe” to provide households and companies with high-speed internet connection;
- “Resource efficient Europe” to lower carbon-based economy and increase the use of renewable sources of energy;
- “An industrial policy for the globalisation era” to encourage the development of SMEs and their participation in the globalized market;
- “An agenda for new skills and jobs” to provide people with lifelong learning opportunities in order to develop the skills required by the continuously changing labor market.
- “European platform against poverty” to increase the job offer for the vulnerable and disadvantaged so that they live in dignity and become active members of the society.

With regard to the rural education, we consider that the greatest importance should be paid to the second guideline as the quality of the labor market primarily dependson the quality of the instructional process. Moreover, a highly performant educational system provides young people with equal chances to their insertion in the labor market.

As one the requirements of the labor market refers to knowledge of foreign languages, many of the actions should follow the objectives below:

- Emphasis on and awareness of the European values in foreign language teacher education;
- A curriculum combining both academic study and practical experience;
- A common body of concepts and terminology leading to a common core of knowledge, skills and values;
- Permanent foreign language teachers’ career development opportunities;
- Developing a critical awareness about the teaching processes used in the classroom;
- Adopting up to date classroom techniques and activities based on interactive, group, and peer-assisted learning by means of interdepartmental cooperation and team working and networking;
- Making use of methodological approaches depending on to particular contexts and situations;
- Creative use of teaching theories;
- Focus on interdisciplinary approaches (Kelly, 2004).

All in all, the foreign language educator plays a major role in the quality of the educational process especially in rural areas where the lack of properly qualified teacher remains an issues specific of this sector. As noted by Kelly (2004) “Language teachers play a major part in achieving the European Union’s objective that all EU citizens should have linguistic competence” (Kelly, 2004 p.10).

CONCLUSION

Our analysis tried to offer a general image of the Romanian rural education system highlighting both its strong and weak points.

As concerns its positive aspects, special mention should be made of the educational programs adopted by the Romanian Ministry of Education during the reformation period as a system as a whole. The concrete measures taken by the policy makers led to a radical change of the educational system structure as well as school management. Thus, the formal centralized system was replaced by decentralization and autonomy in the decision-

making process at all educational levels which resulted in the following:

- The whole national curriculum was adjusted to the new requirements of the newly-established Romanian democratic society;
- Introduction of alternative textbooks (in the communist system each subject was studied using an only textbook imposed by the ministry);
- The implementation of various national and international projects that allowed Romanian schools to share and benefit from the experience of other European schools (under the former dictatorship the schools were isolated and had no contacts with schools from Western countries);
- Teachers benefited from refreshment courses meant to upgrade their knowledge and classroom practices;
- Local inspectorates organized various courses for foreign language teachers in order to give impetus to using the communicative approach to language teaching;
- Fringe benefits for teaching staff in the rural areas.

Despite the educational policies adopted by the ministry, there were and there still are numerous dysfunctions of the educational system, most of them affecting the rural areas. It is important to emphasize that they are mainly caused by the incoherence and discontinuity of the educational policies implemented by the authorities:

- Tendency to experimentalism rather than continuation of the previously applied reforms;
- The incapacity of decision-makers to formulate and conceive long-term strategies meant to offer a consistent development of the educational system;

- Limitation of local school autonomy due to their financial dependency on local administrative and political institutions;
- Weak attention given to school financing programs;
- Education does not seem to be one of the main priorities of the Romanian governments. For instance, even though there is a national pact for education which stipulates 6% of the GDP for education, in 2013 the government budgeted only 3.6%;
- Under the pressure of the economic factors, the rural teaching staff does not benefit any longer from their previous advantages;
- The political factors do not show interest in adopting measures to increase the salaries in the educational system which does not motivate graduates to choose the teaching profession.

In order to overcome the deficiencies mentioned above, Romania should still struggle to adjust its educational system to the requirements of the European Union, by conceiving medium and long term strategies in the light of the European guidelines issued by the European Commission in 2010 (p.14):

- Efficient investments in all training and educational systems (from pre-school to academic level);
- Integrated approach of all educational segments in order to improve achievements in the educational fields; this approach should aim at developing key-competences and reducing early school dropout;
- Orientation of the educational system to the labor market demands;
- Development of counseling and apprenticeship programs in order to facilitate the acceptance of graduates on the labor market;

- Improvement of the ICT services, especially in rural schools to allow students and teaching staff fast access to knowledge and information;
- Implementation of more programs and projects in order to facilitate the funding of the educational system, particularly in rural areas.

We consider that the present chapter can be a useful tool for those interested in the educational policies that aim at improving rural education and particularly the process of foreign language teaching in rural areas because it identifies and analyzes the specific dysfunctions of this field and provides teachers, mentors, inspectors and curriculum designers with concrete measures to be applied.

The focus on the enhancement of foreign language teaching quality of our approach led to finding out the best solutions to particular problems, a fact which can help all stakeholders to benefit from them when conceiving their educational programs and practitioners to perform their activities more effectively.

We hope that our study will highlight some of the educational issues related to rural schools and provide new insights on how to deal with and improve the dysfunctions of the system.

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ADDITIONAL READING

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KEY TERMS AND DEFINITIONS

Dysfunctions of the Rural Educational System: Specific issues of rural schools due to a weak economic development of rural regions, low funding governmental policies and shortage of qualified teachers.

Education Policy: Principles, laws and strategies adopted by education policy-makers that govern the education system.

Educational Projects: Independent enterprise or part of a program thoroughly planned to achieve previously set aims in education, involving the collaboration of several members and institutions.

Highschool Enrollement: Can be achieved after passing the “Capacity examination”, a national assessment, which consists in written tests and is organized by the local inspectorates under the guidance of the Ministry of Education. In order to graduate highschool students must take the Baccalaureate examination, which is a national examination organized by the local school inspectorates under the surveillance of the Ministry of Education.

Professional Conversion Programs: Academic programs adopted by the Romanian Ministry of Education that allow teaching staff to become certified in another teaching field that is required by the labor market.

Romanian Educational Reform: A set of educational policies adopted by the Romanian Ministry of education beginning with 1990 up to the present. Their main purpose was adapting the Romanian educational system to the requirements imposed by the European Union and Bologna Process.

Romanian Educational System: Various educational levels subordinated to the county inspectorates and to the Ministry of Education. It includes pre-school, primary, secondary and highschool in both urban and rural areas as follows; pre-school education enrolls children from 3 to 6 years old; primary education includes children from 6/7 to 10/11 years old; secondary education trains students from 11 to 14/15 years old; highschool enrolls students from 14/15 to 18/19 years old.

Rural Educational System: Various educational levels functioning in rural areas subordinated to the county inspectorates. They include pre-school, primary, secondary and highschool.

Unqualified Teaching Staff: Highschool graduates, university undergraduates and academic graduates who teach other subjects than the ones they are certified in. They work in schools, most of them being part of the rural system.

Chapter 15

Green Economy and Sustainable Development

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ABSTRACT

The analysis presented in this chapter contributes to research on alleviation and adjustment costs to climate change and requisite investments, the negative influence of agriculture on the environment, and the intricate character of the connections between development, poverty, and environment. In this chapter, the author is particularly interested in exploring the function of trade in bringing forward a green economy, the economic advantage of cutting down environmental externalities, and the sources of sustainable development. This study is grounded in the considerable body of scholarship examining the positive connections between trade and the green economy, effects of climate change and ecosystem deterioration, and the entailments of degenerated environments for the poor. The results of the current study converge with prior research on the sound performance of the Earth's ecosystems, the function of non-state participants in the climate regime, and the necessity for policies to attain greener growth.

1. INTRODUCTION

Applying new conceptual and methodological approaches, this study advances to the next level research on the rate of green capital accumulation, the damaging environmental consequences of agriculture, the environmental effects of economic growth, and the model and carrying out of policies that advance environmental and sustainable development results. The main objective of this paper is to explore and describe the necessity to moderate global warming by cutting down emissions of damaging greenhouse gases (GHGs),

administration of sustainable development, and green growth governance. The purpose of this article is to gain a deeper understanding of the green economy in the circumstances of sustainable development and poverty elimination, market pressures that support the fossil-fuel based economy, and the active character of the green economy. This paper seeks to fill a gap in the current literature by examining the consequences of a greener economy on labor markets, the political economy of the development mechanisms, and the function of countries and markets in a transition to a green economy. Although researchers have discovered

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some important findings regarding the fostering of sustainable patterns in agriculture, the intricacy of ecosystem behavior, and the international consequences of greening the world economy, there is still a great deal that is unknown and that requires further empirical inquiry.

2. THE INTERNATIONAL EFFECTS OF GREENING THE WORLD ECONOMY

The overexploitation of natural resources and the emerging degrees of pollution are progressively surpassing planetary frontiers. The harm to economies and to community generated by environmental deterioration may undo earnings in development and poverty decrease. The green economy provides occasions to bring about adequate work and enhance social inclusion. Economic growth, job production and revenues rely on natural capital and systems. The green economy should be differentiated by earnings in job quality, decreases in poverty and enhancements in social inclusion. The international growth pattern is baseless from environmental, economic and social views. More relevant accumulations of greenhouse gases in the atmosphere involve substantial economic expenditures. Extreme weather events connected with climate change enforce important negative economic expenditures on community. (ILO, 2012) Fossil fuel diminution and climate change clarify schemes on energy security. Energy consumption and production links various socio-economic processes unswervingly associated with CO₂ emissions. Cutting down our carbon reliance demands more profound structural alterations in an economy. The shift from a fossil fuel energy organization to a non-fossil fuel supported energy one is needed. Both developed and developing countries are identifying means to speed the shift to more environmentally harmless energy systems. Sustainable energy shift will be limited by path-reliance and technological lock-in. The

possible non-achievers of the energy-associated structural change are likely to be compact and instant. Institutional and political determinants establish the circumstances for behavioral alteration for sustainability. Greening the economy is demanded to overturn the danger from international environmental degradation. (Hezri & Hofmeister, 2012) Growth is a decisive determinant of poverty decrease and enhancements in social indicators. The connections between the economic and social supports of sustainable development are usually positive. Economic growth generates environmental degeneration. Much of environmental degradation is led by market breakdowns and wasteful policies. Green growth schemes are an important component of carrying out sustainable development. Green growth focuses on making growth operations resource-efficient, cleaner and more flexible. Environmental protection can influence economic growth unswervingly. The employment of environmental goods is mainly characterized by market collapses. The possibilities for fast income growth due to green growth schemes originate from market failures. (Hallegatte et al., 2012)

The transition to a greener economy provides considerable opportunities to create decent employment and ameliorate social inclusion, and involves alterations in employment models and income distribution. Growing and interconnected environmental provocations may have important negative entailments for economic growth and social improvement. Ecosystem assistance and biodiversity are seldom conveyed as market indicators into business decision-making. The burning of fossil fuels and biomass combustion explain the wide preponderance of GHG emissions. High-income nations are the most relevant diffusers of GHG emissions per person. In developed and developing countries low-carbon growth policies should be endorsed. There is an intrinsic trade-off between the targets of economic action and environmental sustainability. The expenditures connected with the externalities related to policy inaction are significant. Extreme weather can

have a harsh consequence on the economy and community. Intensive resource usage accelerates energy and commodity costs. Green jobs notably cut down negative environmental effects of economic activity. (ILO, 2012) Economic growth and emerging incomes are a precedence in both developed and emerging countries. An important dissociating of advance from ecological damage is technically and economically attainable. The collective consequences of more people with substantial standards of living constrain the boundaries of global ecosystems. The situation for cutting down economic disparities may be more relevant than that of restricting or overturning growth. Countries must resketch schemes and institutions to cover human demands in less ecologically worrying manners. Reconsidering the concept of human welfare should be essential to the theory of the green economy. (Fiorino, 2014) African states are extremely reliant on natural resources. Their utilization has sustained paces of economic growth. A green economy may provide chances for activating resources toward a low-emission, climate-flexible development route. Schemes and investments to support and augment natural capital assets can be useful. A green economy must approach accomplishing inclusive growth and improving economic growth's role to poverty elimination. Employment creation is an important challenge for sustainable development. Economic shift in Africa must approach the essential challenges of employment. Soil productivity is declining because of environmental deterioration. Capacity-constructing, education and knowledge shift are requisite for enhancing food safety and augmenting sustainability. African countries are reliant on natural resources which may shape the foundation of economic activity. When GDP growth is adapted to clarify the damage of natural capital, growth may be irrelevant. When resource reduction is considered, national savings display a negative tendency in several African nations. (Economic Commission for Africa, 2012) South Africa confronts several challenges in engaging in

a shift to a more sustainable development route: accomplishing an economy which is low carbon, not so resource demanding and socially overarching necessitates wide-ranging structural changes in South Africa. (Death, 2014) Economic entities have to be reconstructed to be greener and more socially overarching. There are enforcement gulfs in the ability of global regimes and governments to make alterations occur on the ground wide-rangingly. However, rising designs of environmental administration at the international level have been strengthened. (Puppim de Oliveira, 2012)

The seeking of sustainability in forest environments relies significantly on the institutions regulating social, economic and environmental alteration. The advance towards the authentication of the source of tropical timber may determine forestry's sustainability. The regulation of illicit felling and global trade in timber is a key aspect of sustainable forestry. Conservation and human requisites can be associated as component of sustainable development. Conservation policy should be comprehended within the fabric of political ecology. Conservation aims technical betterment and stricter self-regulation regarding its social schemes and procedures. Environmental modification is an inherent part of the development process. (Adams, 2009) "Green mercantilism" is the fostering of schemes that provide nations an unjust benefit to increase exports and restrict imports of clean energy technologies. Green mercantilist schemes affect other countries but often advantage the nation that practices them. Green mercantilism misrepresents the present allowance of clean energy production and can notably restrict necessary clean energy innovation. Green mercantilist practices cut down the stimulants and capacity of companies to invest in essentially more relevant clean energy technologies. Green mercantilists employ financial aids to reduce export expenditures, and tariffs and customs duties to raise import prices. Green mercantilist states may necessitate foreign companies aiming to access their market to move R&D facilities or shift their

technologies to internal companies. Foreign countries can artificially acquire clean energy technology potentials by restricting external investments and possession of national companies. (Stepp & Atkinson, 2012) There is a growing request for assessments of investments required to reduce GHG emissions and for evaluations of the financial entailments of climate scheme. A shift to a green economy may necessitate immoderate financial resources and force out productive investments. Climate scheme first brings forth energy resources and then a decarbonization of energy provision. A carbon tax corrects emissions and recompenses the assimilation of GHG from the atmosphere by allowing a financial aid. The optimum investment in R&D may be moderate if contrasted with aggregate investments. Carbon taxes bring about considerable fiscal revenues in OECD countries. Carbon tax revenues are substantial in developing economies and in resource-based countries. The shift to a green, low carbon, economy is generated by worldwide carbon taxation. Policy cuts down investments in the collective capital goods. (Carraro, Favero, & Massetti, 2012)

Sustainable development must be grounded in environmental safety and social insertion, but human-caused climate change and advancing unfairness are a critical menace. Green growth seeks to accomplish an equilibrium between economic growth and environmental sustainability, aiming to incorporate the economic and environmental supports of sustainable development into economic advance organization and enforcement. Governance is at the origin of the triumph of a green growth policy. The green growth operation in a country could be unswervingly influenced by its lagged degree, regional distribution, domestic resolution and structural reforms. Adjacent consequences can have a significant role in increasing green growth in a certain country. (Huang & Quibria, 2013) Business leaders have identified the rhetorical capacity of sustainable development. Development signifies the formation of social change that enables people to accomplish

their human potential. Triumph in cutting down poverty indicates that it can be overwhelmed for several persons, households and communities. The essential incentive of environmentalist interest about development is the magnitude of human requests on the biosphere. Human effects on climate are superposed on natural fluctuation. The menace of multidimensional international crisis has determined a crisis of development, of environmental value and of dangers to the material advantages sustained by natural biogeochemical operations and sinks. The poor often undergo deteriorated environments, and may be instrumental in their additional degradation. Development and environmental deterioration may shape a devastating snare for the poor. There are both ethical and functional responsibilities for making sustainable subsistence safety. The standard for dialogue about environment and progress is the human necessities of the poor. (Adams, 2009) Nearly all advanced economies should encourage growth to cut down deficits and debt. Fiscal policy is mainly restrained by the requirement to intensify trust in the sustainability of public debt. A plausible scheme to stimulate investment in welfare-improving activities that require public backing to be commercially feasible would be a strong tool to build up growth. Schemes projected to create a green economy undertake various externalities and market breakdowns. Environmental interferences will alter relative prices and the structure of request. All policies planned to increase demand when the economy is functioning below capacity incur expenditures. In a demand-deficient medium, businesses are chiefly confined by an absence of perceived request. (Zenghelis, 2012)

Greening growth can mitigate the risks from climate change and environmental deterioration. Negative motives for carbon-intensive growth hamper green technologies from advancing competitive benefit. Green technologies may cost more at the beginning or are more vulnerable investments than ordinary options. Policy stimulants supplied by governments for clean-energy

development have sometimes been eliminated. Rising expenditures from climate change are influencing economic forecasts. More relevant inter-agency arrangement and strategic integration is necessitated to establish shared green-growth targets between areas. Agricultural growth should be more overarching and unbiased with maintaining current high-value ecosystems. Diminishing financial aids for input-intensive agriculture may release funding to cause private investment. A planet that is 2°C heater than in pre-industrial period will undergo intensified rainfall and more persistent and severe weather events. Forests have a principal function in climate governance and carbon sequestration. The green investment provocation for forests is to supply schemes and stimulants that help prevent unsustainable deforestation. (Green Growth Action Alliance, 2013) Green development focuses on political economy, analyzing who has the capacity to determine how the environment is handled. The principles of sustainability require not only improvement of the development process. The progress of sustainable development beliefs has had an influence on the consciousness that infuses development theory and action. Ecology leads considerably to sustainable development with its rigorous account and investigation of the living environment. Sustainable development must be worldwide in purview and internationalist in expression. Debt, impecuniousness and population growth limit the strength of developing countries to take on environmentally robust schemes. Developmentalism both supports theories about the appropriate route of economic change in industrialized nations, and functions as a pattern for “developing” countries. Environmental deterioration advances with revenues and economic growth. In slow-growing states new technologies can diminish degrees of specific pollutants. The manner policy-makers react to environmental deterioration is significant. Growth generates the prospect of “win-win” occasions through poverty decrease and enhanced environmental situation. Growth determines risks

of relevant side consequences if markets cannot retain environmental values. (Adams, 2009) Climate change is determined by human-induced greenhouse gas emissions, primarily from fossil fuel combustion and alterations in land employment. Climate developments influence fiscal situations through their direct consequence on tax bases and expenditure strategies. The switch to a low-carbon emission design necessitates substantial investments in unconventional energy sources. Green investment is a relevant backer to electricity and energy generation, and is an important determinant of the energy sector, being present on a comparable degree to financing fossil-fuel capacity. (Eyraud et al., 2011)

The decreasing attainability of natural resources, degenerating environmental conditions and changing climate entail that the world cannot continue its present growth route. Governments should advance and carry out policies to facilitate and handle green transformation. Green growth entails a long-run shift of economic and industrial designs, and a manner of capturing short-term chances. A transition from the resource-intensive economic organization to a low-carbon, resource-efficient economy is necessary. Green growth may involve policies that lead to the goals of development and poverty decrease. Eco-innovation stands for invention that highlights the cutting down of environmental effects, often incorporating innovation in social and institutional organizations. Accomplishing an effective shift to a greener economy may necessitate a more significant level of revolutionary or disruptive innovation. More trenchant solutions that entail alterations to the technological system are required to allow the dissociation of growth from environmental constraints. (Beltramello, Haie-Fayle, & Pilat, 2013) Green growth involves reformation to low-carbon energy, climate elasticity, and reaction to climate shocks. The climate system is a joint resource whose soundness is influenced by emissions of greenhouse gases. Green growth should be developed on localized endeavors of long-run develop-

ment. Green growth attempts should characterize better urban administration and management and finance. Several green growth endeavors join to react to requests of the developing country clients. (Sachs & Someshwar, 2012) Intentional scheme and investment decisions should be considered by governments to green their economies (they have a blend of policy tools available to green them). There is rising global practice in the plan and enforcement of green economy schemes in both developed and developing nations: almost all of them take on economic instruments that supply stimulants for green investment. (Allen, 2012)

New sources of income and employment that reduce poverty and are environmentally sustainable are needed. The business sector must contribute long-term investments and unleash innovation for structural transformation. Faster and sustained economic growth and development is the main objective for most emerging and developing countries. The green growth model requires certain specific policies and institutions to be in place. Developing countries raise concerns that the green growth paradigm might slow down their growth and lead to job losses. (Bauer et al., 2013) Green growth must insist on how to organize the low-emissions energy systems shift, and must take into account how the greening of the energy area can be the growth generator for the whole economy. Important decreases in greenhouse gas emissions necessitate relevant innovation to supply the alternative energy resources demanded. Private investors have displayed increasing ebullience for green growth innovation. The elimination of financial aids on fossil fuels can boost net economic prosperity and cut down greenhouse gas emissions. Emissions prices can supply economical methods of diminishing greenhouse gas emissions. Government investment in advancing green jobs in a moment of recession may confine low-carbon production and consumption models. Depending on international trade of renewable energy or low-emissions goods to handle GDP and jobs increase is a green growth policy with

restricted applicability. The solution to green growth lies notably in finding how the alterations needed to decarbonize the energy system modify the likelihood for the economy's capacity to bring about wealth. (Green Growth Leaders, 2011) Increasing inhabitants and economies are attaching substantial constraints on the environment. Environmental sustainability and social insertion are main political priorities for developing nations. Substantial growth performance may not cause outstanding levels of development. Sustainable development undertakes an equilibrium between economic development, social fairness and environmental safety. Foreign funds could encourage sustainable development via economic growth, natural resource utilization and energy power, and increase sustainable development of aid recipient nations. The degree of economic growth is a critical component in accomplishing sustainable development. (Huang & Quibria, 2013)

Agroforestry brings about a dynamic and sustainable land-employment system, varies biological resources, raises economic advantages, and enhances social results. Greening forestry may give rise to green jobs and augment livelihoods. Sustainable forestry necessitates concerted attempts from all stakeholders entailed in the sector. The planet's forests are composed of a principal natural resource unswervingly influenced by international economic processes. Worldwide energy consumption is led by carbon-intensive fossil fuels. Renewable energy is progressively cost-competitive with ordinary sources. Biomass has an outstanding function in developing nations in the reduction of energy poverty. Renewables generally produce more occupations than fossil fuels. The improvement of renewable energy sources has entire positive net employment consequences. The development of the renewable energy system has not replaced fossil fuels. Renewables employment has expanded to a relevant degree within the energy area. The variegation of the economic foundation of zones that are extremely reliant on the fossil fuel system should be followed. (ILO,

2012) The effects of climate change endanger international economic soundness and safety. The public sector should encounter the climate change adaptation necessities of unsafe communities. The private sector has a compatible function in assisting communities adapt. Climate change can function as an accelerator for positive economic change. Climate change solutions demand a better equilibrium among growth, resource usage and fairness. Financing early green economic growth can assist protect the effect of climate change on unsafe communities. The connections between human and environmental welfare, economic and social soundness, and the long-run gainfulness of the private area supply the basis for green economic growth. Businesses undertake climate-unsafe communities in the developing regions. Climate change's damaging impact on present food scarcities and price rises is disturbing. The interconnections of worldwide markets make economies unsafe to climate change. (United Nations, 2011) Global trade is a strong medium for expanding green economy benefits among countries at the worldwide level. Reciprocally supportive trade, environment and development schemes are necessary to advance sustainable development. Trade chances provided by an international green economy can improve economic growth and lead to national environmental and developmental goals. Specific national schemes and actions employed to boost a green economy may have a harmful effect on trade. The international challenge of diminishing the influence of human development on the environment is augmented by fast population growth. The fossil fuel energy strength, and natural resource strength, of economic growth should be considerably cut down for the purpose of sustainably handle natural and environmental systems. (UNCTAD, 2011)

Sustainable economic growth necessitates an equilibrium between the environmental effect of economic growth and the assimilatory strength of the environment. The carrying out of substantial profit and relevant consumption has determined

the natural resource reduction and environmental contamination. Policy and regulation rectify the areas where the market is unsuccessful in the allowance of insufficient resources. Energy taxes are chiefly planned to curb energy consumption. Green energy concerns renewable energies. Energy efficiency and preservation are notable determinants in the decrease of environmental influence of the energy area. The green economy and its spread are viable with innovation and positive sustainable development technologies. Information and communication technology (ICT) provides chances to increase to the effective enforcement of a green economy. The constraint from climate change and environmental degradation indicates the demand of developing the green economy throughout the world. To green the economy necessitates financing new energy and production technologies. Green constraint displays the rise in interest over the environment. (Heshmati, 2014) Switching to a green economy has robust economic and social grounds. The benefits of greening the world's economies are concrete and substantial. Increasing climate-changing emissions display a rising menace of uncontrolled climate change. The fuel price shock and an associated outburst in food and commodity prices reveal structural weaknesses and risks which are unanswered. A green economy is low carbon, resource successful and socially overarching. Attaining sustainability depends almost completely on setting the economy right. The greening of economies is a mechanism of growth, a net source of appropriate jobs, and a key scheme for the abolition of relentless poverty. The switch to a green economy relies on the characteristics of each state's natural and human capital and on its respective standard of development. (UNEP, 2011) The rising degree of consumption and production affects progressively the planet's resources and ecosystems. The present design of economic growth is *socially, environmentally and economically* baseless. The shift towards a green economy is a leading medium to satisfying the targets of sustainable development. Nature and its

implicit value should be considered in resolutions in a green economy. Natural capital stocks supply fluxes of ecosystem services. Natural capital is a crucial component for a broad range of economic areas. Various areas in the economy have distinct degrees of reliance on nature. The private sector has an essential function in the switch to a green economy. The growth in the nature-based economy tends to cause the generation of an outstanding amount of new jobs. A switch to a green economy entails greening a series of main areas that are especially significant for the poor and can be partly responsible for abolishing poverty. Industrial, infrastructure, and energy area activities can cause a considerable deterioration of ecosystems. (ten Brink et al., 2012)

3. THE FUNCTION OF COUNTRIES AND MARKETS IN A TRANSITION TO A GREEN ECONOMY

Several microfinance institutions (MFIs) are seeking an environmental bottom line. MFIs that are the most proactive in environmental management are chiefly stimulated by social responsibility. Microfinance rating agencies analyze the environmental efficiency of microfinance institutions. Advocates of green microfinance recognize competitiveness as a significant reason for MFIs to involve in environmental management. Ecological responsibility is intimately linked with the MFI's social undertaking. Microentrepreneurs can be employed in activities that bring about environmental risks, with regard to pollution or unsustainable employ of natural resources. The economic advantages of environmental management are finite. An MFI interested in establishing its clients' environmental risks and preparing them on moderation answers should attain new abilities and advance new processes. The determination to go green relies on the cost/advantage analysis that the MFI does. Handling environmental problems could assist microentrepreneurs in enhancing productivity and

understanding business chances. MFIs' reason for going green would pursue the ethical responsibility of carrying out a social task of poverty mitigation and sustainable human development. Increasing constraint on MFIs may not be a suitable process to support a positive ecological reactivity. (Allet, 2014) Powerful carbon-pricing indicators and eliminating fossil-fuel financial aids can advance long-run funding for green technologies and mitigate the hurdles to investment. The dependence on public-sector investment must be cut down to secure sustainable green growth. Green technologies may have more relevant capital expenditures during the earlier phases of development. Activating private finance at scale necessitates that the risks of green investments be diminished to the same degrees as those encountered by alternative, ordinary investments. The gradational cost gulf between standard and green investments should be substantiated and filled. The public sector is inclined to fill the gradational green cost gulf through policy-support processes. Pre-investment activities can bring about tempting investment circumstances for expanding investment for green growth. (Green Growth Action Alliance, 2013) Macroeconomic policies that are successful in enhancing private investment are effective for green investment, augmenting GDP growth and diminishing the cost of capital. Green investment concerns the investment needed to cut down greenhouse gas and air pollutant releases. Carrying out green stimulus funding has been decelerated by the intricate arrangement and processing needed for releasing public investment. Green investment advances when its cost, corresponding to established fossil fuel technologies, is cut down by higher oil prices. Feed-in-tariffs and carbon evaluation processes are likely to assist GI. (Eyraud et al., 2011)

Systemic eco-innovation is a premise of the green economy: it may assist the society retreat from the present hydrocarbon-based technology system. Business patterns are a significant aspect of how eco-innovation is taken to the market and

distributed. Policy can affect and further the rise of new business patterns that are successful in determining eco-innovation. In business patterns for eco-innovation, economic value is extremely relevant. Environmental advantages are an outstanding aspect of business patterns for eco-innovation. The environmental advantages related to specific green business patterns may rely on the manner in which the products are employed. The attainability of backing physical infrastructure may be a critical element for eco-innovative solutions. Policy plans can have a relevant function in addressing and distributing business patterns for eco-innovation. Systemic change necessitates a full-scale switch in the technological system of an economy, and is at the center of wide-ranging and intricate eco-innovations. (Beltramello, Haie-Fayle, & Pilat, 2013) Innovation is an essential determinant of the shift towards green growth. Green growth signifies advancing economic growth and development, and guaranteeing that natural assets supply resources and environmental assistance. A green growth policy acknowledges the significance of natural capital in production. Green innovation is intensifying outside the zone of climate change, flourishes in a robust environment for innovation, and should be employed throughout the economy. Most signs of green innovation concentrate on the moderation of environmental constraints. Global contest is necessary to drive down the expenditures of green innovation and advantage from the international operation of experimentation. Access to funds is difficult for companies involved in green innovation, as a consequence of the imperfection of the market. Direct support can centre on certain obstacles to green innovation. Economic tools can be employed to supply stimulants for consumers to purchase greener products. The growing relevance of regions must be considered when planning the governance system for green innovation schemes. National green innovation schemes may require to be adjusted for areas that are not R&D-intensive hot places. (OECD, 2011) The impact of foreign funds on sustainable development is conveyed through

economic growth as driven growth. Foreign funds could put forth an indirect impact on sustainable development through natural resource utilizations. Sustainable development indicates that human activity must be restricted to the carrying (finite) strength of ecosystems. An increased international cooperation with wider global integrative action may lead to a sustainable development process. The relevant, ascertained impact of foreign funds on growth may be directed through sustainable development. Growth supplies a solid basis for environmental safety and social development. (Huang & Quibria, 2013)

Fast economic growth and abundant emissions may not generate green growth. States with lower degrees of green development tend to grow quicker and greener. More open schemes lead to considerable CO₂ emissions and natural resources reduction. Economic development should remain within environmentally and ecologically viable limits. "Greening" the economy indicates a deep shift that demands broad structural reforms and policy changes. The world should be greener and maintain its present growth pace. Strategic climate schemes should accomplish the interaction between economic development and environmental safety. (Huang & Quibria, 2013) By directing investment towards green growth, states can prevent being involved in high-carbon investments. Where green growth has been advanced notably, investments have been assisted by internal backing mechanisms and governance. There are obvious advantages and expenditures in shifting to a green growth economy. Climate finance can intensify the shift to a low carbon economy in developing countries. Additive cost finance advantage the recipient developing countries and can generate outstanding possible gains for the contributor state. Renewables may be more capital concentrated than the high carbon option. Carbon finance is not a determining element for several renewables investments that bring forth carbon credits. (Project Catalyst, November 2010) Social and political adequacy of green growth schemes

needs increasing and emphasizing advantages and co-advantages. Economic production is unswervingly reliant on the reserve of natural resources and on environmental condition. The positive effect of environmental schemes on economic production functions through an enhancement in environmental conditions. Green growth schemes are policies that undertake sub-optimalities. Concerning diffusion, environmental schemes have income and distributive consequences. Green accounting that incorporate the estimate of ecosystem services provide a much relevant standard of trade-offs. (Hallegatte et al., 2012)

Corporate environmentalism has affected notably the manner mainstream sustainable development (MSD) is projected and distributed. Corporate environmentalism advanced as a policy to meet shareholder requests for environmental and social responsibility, being a reconsideration of a corporate scheme that indicates contest for markets, financing and label values. Ordinary processes of contest between companies are a determinant of corporate alteration towards more sustainable types of production and activity. There has been substantial involvement in corporate social responsibility (CSR) as a task of the sound company concerning human rights, social progress and environment. MSD concentrates on the capacity for expansion of the market to arrange social interplay and human involvement with nature. Market environmentalism aims to make markets function better for community and environment. Capitalist economic growth tends to adjust to the prerequisites of ecological sustainability. In processing sustainable development through ecological improvement, policy-makers are left with relevant freedom. (Adams, 2009) Non-state participants are decisive actors in the improvement and administration of global environmental law. EU climate law and scheme have been advanced with crucial inputs from non-state participants. The climate regime supplies irrelevant scope for non-state participants to involve with carrying out. The legal discussion on climate change in

the US is relevantly concentrated on domestic topics. Global environmental law and scheme are notably created with a decisive input from civil community. The significance of international and transnational webs of non-state participants is a prominent aspect of the international environmental system. (Savaresi, 2014) Innovation is a vital element in accomplishing sustainable and aggressive economic development eventually. Innovations are essential in advancing toward the GHG decrease goals in all areas. Sustainable economic growth relies upon continuous investment in new technological and organizational/labor-associated processes of managing production. Policy determinants are among the handles of eco-innovative conduct. The climate change scheme blend in EU nations is constituted of energy-oriented policies and certain carbon dioxide instruments. The effectiveness of schemes should include the innovation inducement result. European climate scheme relies on energy in order to carry out decarbonization of the economy. In order to achieve European goals, distinct cut and corresponding schemes should be planned and enacted. The fostering of higher carbon and oil costs should be associated with schemes with a more relevant technological push. (Mazzanti & Rizzo, 2014)

Ecological improvement constitutes a disruption with trenchant environmental assessments of political economy, provides no miraculous solution to the egotism of corporate power and affected governance, is based on the idea of the nation state (institutions can alter and participants within them can become aware), and may be a policy for making insignificant rectifications to the traditional growth pattern. Market betterment and successful enabling governance are crucial components in the post-Rio “green” development assistance docket. Developmentalism is the unavoidable operation of change and improvement. The transition in governmental and business operation entailed by ecological improvement is related to the switch in public values. MSD rests on lasting economic

growth, acknowledging the likelihood of the biophysical boundaries within which the economy and international community perform. The visions of environmental economics indicate the demand to clarify stocks of both human-made and natural capital individually. Natural capital has supplied an uncomplicated and sound setting for dialogue within the sustainable development tendency. (Adams, 2009) Short-run earnings supplied by resource extraction may not transfer into entire gains with regard to savings to sustain future economic growth. African economies should identify manners to encourage and maintain growth while accomplishing positive adjusted savings. Africa makes adjustment endeavors decisive for assisting national economies and enhancing human well-being. A green economy seeks to cut down environmental risks by advancing investment in resource preservation and improving natural capital stocks and their flexibility. A route to a green economy demands capitalizing on African economies' natural capitals, taking advantages of occasions for industrial growth, and setting up schemes and institutions. (Economic Commission for Africa, 2012) The decision towards a greener economy tends to generate outstanding changes in employment and income. The number of jobs produced at all levels of the greening practice is a task of the magnitude of request and investment, of business and of the employment flexibility. The transition to a green economy may influence employment and income stages and diffusion. Alterations in costs can have powerfully differentiated effects on households of various income levels. Employment and social consequences of the shift to a green economy will be affected by the economic system and the sectoral constitution of economies. The economic provocations resulting from sectoral adaptations as a reaction to greening the economy vary. The international agricultural industry is an outstanding polluter and an essential consequence of land deterioration. The topic of greening in agriculture must incorporate socio-economic, environmental and climate

interests. At the center of agricultural greening is the conception of ecosystem administration and farming. (ILO, 2012)

Mercantilist states may develop their clean energy industries by limiting market access by foreign-owned companies. Nations are likely to employ criteria as a green mercantilist instrument to obstruct or confine foreign firms' access to their markets. Green mercantilism harms the undertaking to convert the international economy from fossil fuels to clean energy. Clean energy revolution is central to making clean energy less expensive than fossil fuels without long-run financial aid reliance. Unceasing public subsidies are demanded for green mercantilist-assisted technologies to stay competitive and acquire greater market portion. Green mercantilism harms clean energy innovation by restricting the magnitude of the international market and preventing foreign firms from investing in innovation. Green mercantilism menaces to confine the progress of the clean technology the world demands. Countries should react in situations where their concerns are being harmed by green mercantilist schemes. (Stepp & Atkinson, 2012) If unapproached, climate change will bring about substantial direct economic harm. States affected notably by climate change will confront challenges in their endeavors to be active global trade and investment partners. Several business actions as a consequence to climate change may worsen regional exposure to climate change effects. Climate change attaches relevance and necessity to businesses' environmental and social responsibility undertakings. Firms should regulate their natural resource management operations with the necessities of unsafe people inside the local community. Firms find it provoking to include climate risks into their undertakings and value chains. Developing countries are unsafe to climate change and have restricted funds with which to adjust. Regional firms located in climate-vulnerable countries would be most impacted. (United Nations, 2011) The green economy must be comprehensive and development-led, undertak-

ing present social and economic instabilities within and among states. The global economy strives with critical environmental and natural resource limitations. Market tendencies display a forward-moving green economy transition. A growing number of companies incorporate social interests into their business processes and interplays with stakeholders. International growth in renewable energy sources is instrumental in global principal energy supply hugely surpasses growth in fossil fuel based energy sources. Successful models to durably assist the advance of the green economy will necessitate reforms. (UNCTAD, 2011)

Greening the economy can give rise to positive results for augmented wealth, growth in economic production, appropriate employment, and decreased poverty. Biodiversity supplies economies with significant resource components and control services so as to achieve a secure operational environment. A green economy transition acknowledges and proves the importance of natural capital, and invests in it and bolsters it up for sustainable economic development. Green agriculture switches both industrial and subsistence farming in order to achieve ecologically robust farming practices. Augmenting energy supply from renewable sources diminishes the threats from rising and volatile prices for fossil fuels. Government supervision and pricing schemes are relevant in steering industries and consumers on a more resource-efficient route. (UNEP, 2011) Biodiversity preservation and sustainable management of ecosystems is an important component in schemes to eradicate poverty. Ecosystem services are affected as a consequence of biodiversity damage and ecosystem deterioration. The function of nature in development has generated a restricted concern on short-run benefits with the loss of long-run wealth and practicality. Sound and flexible ecosystems supplying constant fluxes of various advantages support a country's long-run development and prosperity. Evaluating non-market ecosystem services is indispensable for deciding

to preserve or alter ecosystems. Diverse means of ecosystem estimate produce dissimilar effects with various meanings and entailments for the economy and society. Operating with nature may provide economical clarifications to undertake various policy targets and demands. (ten Brink et al., 2012)

4. THE MODEL AND CARRYING OUT OF POLICIES THAT ADVANCE ENVIRONMENTAL AND SUSTAINABLE DEVELOPMENT RESULTS

Economic recessions are determinants of creative destruction in groundbreaking areas. Immense chances occur as the world endeavors to be resource-efficient and carbon-restricted. Green energy-efficient fabric can assist nations in meeting climate goals. Green schemes do not necessitate relevant public spending. The public sector has to consign some resources to make a powerful green investment scheme plausible. Low-carbon architecture investments are of the type that several institutional investors tend to be enthusiastic to have in their portfolios. Plausible green schemes can increase trust and augment economic activity. (Zenghelis, 2012) Significant degrees of finance mobilization may not mean relevant levels of environmental or social advantage. Notable private-sector investment has been effective in green plans when risk degrees were cut down to admissible levels. Economic growth can be maintained with dramatic boosts in natural resource productivity and decreases in carbon emissions. Greening investment is a prerequisite for a steady, dynamic and sweeping global economy. The gradational expenditures of greening growth are irrelevant compared with the costs of inactivity. The shared political decision should be beefed up to promote public schemes to motivate green investment and economic growth.

The fast rate at which green strategies are advancing is an optimal chance for investors to enter a developing market. (Green Growth Action Alliance, 2013) The transition to clean energy will enhance environmental quality by cutting greenhouse gas emissions and influence sustainability by decreasing energy use. Cities and countries are progressively acknowledging the relevance of consumption-oriented economic development, and should take into account establishing green building standards with arrangements for regional buying and hiring. Green business stimulants and green criteria and regulations are rather simple to establish. Stakeholders in regional economic development may form their green economy through policy. (Chapple, 2008) The financial-economic crisis is a distress at the landscape stage. At the niche-level, several green innovations fight against current regimes. Certain green niche-innovations are undertaking the take-off stage of sustainability transitions in some countries. Climate and energy schemes may be shifting to the wrong route as a reaction to financial-economic demands and descending public attention. Environmental and climate policy tools are not enough to carry out sustainability switches at the necessary scale and rate. (Geels, 2013)

Green business patterns confront a series of obstacles on their way to enforcement. Customer request is a crucial determinant of eco-innovations. Market circumstances can be disadvantageous to eco-innovations, and are chiefly formed by the function and conduct of end users/consumers, companies, and the public area. The distribution of eco-innovations may be restricted due to the direct investment that is required. Business development and marketing abilities are greatly appreciated by groundbreakers in green business patterns. In-house resources are the most significant origin of financing for firms to advance their eco-innovations and present them to the market. Unpredictability over the triumph of innovative enterprises grounded on green business patterns may be extreme for risk-averse financial entities.

Access to finance is the most serious obstacle to advancing and commercializing eco-innovations. Supply side policy decisions have a crucial function in supporting most kinds of eco-innovations. Schemes to improve access to funds for green business patterns are needed. (Beltramello, Haie-Fayle, & Pilat, 2013) Growth determined by the accumulation of environmentally rapacious capital ultimately ruins itself. Beyond boundaries to growth established on resource reduction, one must focus on externalities. Investing in environmental value entails a decreased function of pollution in production and an enhancement in global production circumstances. Carrying out green growth entails incorporating natural capital amidst the factors of production. The introduction of the relevance of natural capital in the economy impacts the spreading of current revenues. With green growth, one encounters an economy of practicality in which there is financing in efficiency of usage. The enforcement of green growth necessitates clear trade-offs in the cost of fossil fuel paid by families and professional retraining. The carrying out of green growth involves an alteration of the risk assessment scale employed within the financial system. Green growth requires an acceleration of innovation to determine a wider view of efficiency. The energy shift must include carbon pricing for the purpose of preserving the natural regulatory strength of the climate. (Jouvet & de Perthuis, 2014) Adaptation spending should be intimately incorporated into the broader development plan and financial development fluxes. Smart international finance may sustain the shift of developing countries to a green growth economy. An important portion of the investment capital in climate associated activities fluxes to moderation. The global community should develop the climate finance architecture towards its long-run funding goal and to enhance its effectiveness. Advancing to “green growth” would determine the manner governments evaluate the funding demands in their economies. (Project Catalyst, November 2010)

A green growth scheme must moderate the temporal trade-offs in environmental scheme pattern through shorter-term economic co-advantages. Establishing the price right can determine co-advantages regarding economic growth and social prosperity. Supplementary taxation or diminished subsidization can have powerful negative distributional effects, and enhance poverty. Green schemes are adjusted to carry out environmental advantages which may boost welfare. Environmental schemes can generate economic advantages and lead to growth by rectifying current sub-optimalities and market collapses. Prosperity and green accounting are crucial instruments to help project green growth schemes. (Hallegatte et al., 2012) Ecological economics considers socio-economic systems as inseparably related to environmental ones. Sustainable development entails trade-offs between environmental, economic and social sustainabilities. Ecological systems operate at a grading of scales (the socio-economic effects of ecosystem change tend to be more elaborate). The trade-offs that sustainable development needs are intricate, natural systems may supply adequate barriers for sustainability analysis, and the effects of environmental deterioration are socially and spatially distinguished. Deep ecology highlights the transcendental characteristics of nature. The bio-centrism of deep ecology may weaken the moral foundation of most development undertaking. All connections between environment and human beings are political. Sustainability provides an ethical analysis of the development process. The natural environment endures deterioration at the hand of the abundant masses of the poor. The environment is not unbiased in its consequences on the poor. (Adams, 2009) Environmental schemes risk causing de-localization and innovation. Environmental scheme is a potential determinant of de-localization. Well-planned policies might generate more significant innovation and economic performances. A replacement of solid fuel energy sources toward the employ-

ment of natural gas has brought about outstanding energy efficiency betterments. Cogeneration may be a notable gradational advance that could augment GHG decrease. The important reduction aims established by the EU may finish up mainly creating a de-localization of production. Oil and carbon costs may constitute an important policy of action for cutting down GHG emissions in the energy area. (Mazzanti & Rizzo, 2014)

Agriculture is relevant in maintaining subsistence, diminishing poverty and leading to economic growth and development. Altering the economic medium demands a holistic series of schemes to surmount a wide range of obstacles across the investment scene. Governments can advance green private investment via stimulants and sound and reliable policy and market fabrics. African nations should stimulate zonal economic integration and reduce prospective limitations on FDI outflows. A green economy shift can be determined by unified action entailing policy and decision makers from several elements of government. The green economy provides occasions for African nations to induce investments in environmental resources and renewable energy. Trade schemes can be employed to enhance African economies' access to green technologies. (Economic Commission for Africa, 2012) Agricultural greening should be tackled with a perspective to increasing sustainability. Investment in livestock as a component of greening policies makes available the feasibility of subsistence variegation. Within sustainable agriculture, several low-impact and organic cultivation practices are likely to have more significant labor prerequisites. As organic farms are set up, they may be more successful and take on labor-saving technologies. Low-impact agriculture brings forth more significant degrees of employment than conventional farming. The greening of agriculture provides rural workers the likelihood of enhancing their incomes. Government backing can be key in advancing sustainable agriculture. The rural poor undergo

the greatest effect of climate change. Many jobs in green agriculture should foster environmental targets. The greening of the agricultural area provides vital occasions for socio-economic and ecological development. Forests are indispensable suppliers of ecosystem services and determinants of economic growth. The increasing request for land and forest yields clashes with endeavors to preserve present forests. The increased contest for land from farming and infrastructure can restrict the space for additional forestation. (ILO, 2012) Access to, and the diffusion of, environmental products are unequal. The development process is both a reaction to and a result of environmental change, entailing the alteration of social and economic connections. Climate changeability is fundamental to a grasp of desertification. The poor undergo deterioration in the shape of challenges to wellbeing and subsistence sustainability. Forest management indicates the material concerns of strong participants. Structures and resolutions by participants at a series of levels are significant in forest-cover alteration. Tropical forest damage may exhibit tremendous challenges concerning biodiversity preservation. The social aspects of forest scheme are an important constituent of sustainability. (Adams, 2009)

Purchasers in the developing world are compelled to deal with climate change. Purchasers across the world are progressively aware of and affected by climate change. Climate change worsens current functional and supply chain risks, and may be a strong accelerator for altering the manner economic growth and poverty mitigation are undertaken. Public investment and schemes are central to notably dealing with climate change adjustment in unsafe communities. The uncertainties and market volatility arising from climate change will influence how firms do business. The changing climate alters economic development and worsens societal pressures. Proactive, positive connections with the complete series of local private and public sector participants shape

a powerful basis for successful corporate commitment on climate change adjustment. Adjustment to a changing climate addresses both economic risks and opportunities. (United Nations, 2011) The green economy brings about more relevant degrees of request for environmental technologies in developed and emerging markets. Access to green technologies is significant to dissociate economic growth from damaging models of resource employment. The advancement of sustainable and organic agricultural processes has a relevant function in a green economy. International connections through trade and investment require chances to distribute and encourage green technologies. Trade and the financing that accounts for it can be strong positive determinants of green growth. The interest in green protectionism is outstanding to the interaction of trade and green economy schemes. Trade pressures could rise as countries switch to a greener economy. (UNCTAD, 2011) Without considering the possible negative effects of climate change or crucial loss of ecosystem services, worldwide economic growth will be confined by augmenting shortage of energy and natural resources. By advancing investment in essential ecosystem services and low-carbon increase, the economic growth is typified by a notable disconnection from environmental effects. The association of request and supply side measures diminishes the fragility of the global economy to inherent energy price shocks, and conduces to constant economic growth. By employing sustainable public procurement methods, governments can bring about high-volume and lasting request for green goods and services. (UNEP, 2011)

Ecosystems can assist in protecting against the natural calamities which are designed to enhance thanks to climate change. Advancing nature and ecosystems-based clarifications can recuperate lost advantages and augment current ones. The ascending degree of consumption and production will affect notably the planet's resources and ecosystems. Preventing inadequate trade-offs is a

crucial constituent of any scheme to a green economy. Ecosystem destruction carries expenditures for business and society. Eco-efficiency may be a win-win occasion for undertaking economic and environmental challenges. The switch to a green economy will not occur with only a negligible rise in current greening and green activities. (ten Brink et al., 2012) The capital markets distribute capital in a manner that weakens sustainable development: they do not integrate companies' entire social and environmental expenditures. Economic growth in several regions of the globe is crucial to pull people out of pennilessness. Investors may not preserve sound financial returns if confronted with increasing climate change and ecosystem failure. Finance does not circulate in backing the types of activities that typify a sustainable economy. The design of global growth has caused a broader allocation of possession of stocks and shares. The fast pace of population growth will affect the sustainability of the international economy. Population magnitude alone may not prevent the likelihood of a sustainable economy. Unreasonable or inadequately handled waste generates environmental destruction and the using up of natural resources. Dwindling on fossil fuels will have a drastic consequence on the global economy. Overexploitation of renewable resources through direct overuse or habitat destruction can cut down their strength to replenish themselves. Employing and preserving renewable resources responsibly is essential to conserving a sustainable economy. The warming result of greenhouse gases will appear the world over. (Forum for the Future, 2011)

5. CONCLUSION

The implications of the developments outlined in the preceding sections of this paper suggest a growing need for a research agenda on the increasing impact of multiple climate effects on current circumstances of poverty, weaknesses produced by climate change, and corporate determinants

for ecological reactivity. The current study set out to identify the business risks and chances that climate change creates for firms, the positive impacts of sustainable farming on production and food safety, and the entailments of poverty for environmental deterioration. My paper contributes to the literature by providing evidence on the function of nature in the economy, economic harm as a result of environmental deterioration, the reciprocity of economies with nature, and the relevance of climate change for the world's poor. These findings highlight the importance of examining the intricacy of nature's endeavor to economic development, social expenditures related to environmental deterioration, and associations between environment and human prosperity. My analysis complements the growing literature on the productive and employment capacity of a green economy, the effect on economic growth of increasing GHG emissions, the feasible business and innovation occasions available in the switch to a green economy, and the environmental effects of development. The findings of this study have implications for the need of depending upon new and peculiar schemes as successful environmental management instruments, the economic impacts of shortage of natural resources, and the rise of sustainable development.

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KEY TERMS AND DEFINITIONS

Climate Change: An outstanding time fluctuation in weather models happening over long periods of time.

Environmental Deterioration: The degradation of the environment through reduction of natural resources.

Green Economy: The economy that leads to cutting down environmental risks and ecological shortage.

Organic Farming: Vegetable and livestock production employing natural sources of nutrients and natural processes of crop and weed supervision.

Sustainable Development: An organizing standard for human existence on a limited planet.

Chapter 16

Improved Irrigation Management for Sustainable Agriculture

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ABSTRACT

Studying the future of food and farming, scientists have called for sustainable intensification to simultaneously raise yields and increase efficiency in the use of inputs and reduce the negative environmental effects of food production. Sustainable intensification requires sustainable agricultural techniques such as improved water management practices that result in higher, stabilized, and diversified agricultural production, and greater resilience to climate change without the deterioration of natural resources and the environment. This chapter is devoted to the role of irrigation development in Serbian agriculture and its contribution to the development of the green economy in the Republic of Serbia.

INTRODUCTION

To feed the increasing global population, food production will have to double within the next 40 years, and the achievement of this objective depends largely on the availability of water and on irrigation systems. Irrigation is of particular importance for small-scale farmers that provide the majority of the global food supply. Small-scale farmers often occupy marginal land and depend mainly on rainfall for production. This makes them highly sensitive to climate variability. Without

reliable access to water and the means to manage water effectively, small farmers are unable to turn agriculture from a subsistence activity into an income-generating business (UN, 2011a).

On the other side, according to OECD data, a 55% increase in global water use is projected between 2000 and 2050. By 2050, nearly half of the world population will live in severe water stressed areas. This is in addition to water quality deterioration and the occurrence of more frequent and severe droughts as the results of climate change (UN, 2011b).

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Improved irrigation methods, technologies and management models play an important role in boosting water use efficiency and water productivity. This requires the agreement of stakeholders at all levels on institutional and management reforms, and substantial investment in irrigation technologies and infrastructure.

Agriculture is among the key sectors of the economy of the Republic of Serbia, with the share of 10.3% in total GVA (15.8% together with the food industry). Food and agriculture take share of 24.1% in total export (Statistical Office of the Republic of Serbia [SORS], 2013a).

More than 1.4 million people live and work on family farms and about 26 thousand people work on the farms of legal entities and entrepreneurs (20% of total population). Nearly half of 621,445 agricultural holdings with land are smallholder family farms, with less than two hectares of utilized agricultural area, while another 29% of farms operates on land size between two and five hectares (SORS, 2013b).

However, production and market capacities of the agricultural sector are much higher. Serbia has 5.05 million ha of utilized agricultural land (agricultural holdings' areas - enterprises, farm cooperatives and family holdings, and those other than of agricultural holdings - communal trodden land, pastures and other lands) of which 4.21 million ha or 83.4% is cultivable: 3.282 ha (65.0%) are arable land and gardens, 292 ha (5.7%) orchards and vineyards and 641 ha (12.7%) are meadows (SORS, 2013a). FTAs with EU, Russia and CEFTA countries have created significant export opportunities for Serbian agriculture.

Trend analysis of annual air temperature for the period 1951 - 2012 indicates that rise in temperature is present on the whole territory of Serbia and it is the most intense in the lowland agricultural regions in the north of Vojvodina province, in the wider vicinity of Belgrade and on the east, in the fertile Negotin plain. Summer 2012th was twenty-third consecutive warmer summer than average (Serbian Environment Protection Agency, 2013).

Uneven and insufficient precipitations threaten the achievement of high and stable agricultural yields. Precipitation deficit accompanied by high temperatures and heat waves have resulted in an increase in the frequency and intensity of drought. Revenue losses arising from decrease in yields in the agricultural sector due to drought registered in Serbia after 2000 years, ranging between 0.7 billion dollars (drought in 2000) and 2.1 billion dollars (drought in 2012) (Gulan, 2012).

IPCC climate change projections indicate a further increase in air temperature and decrease in precipitation in the region of Southern Europe, including Republic of Serbia (Republic Hydro-meteorological Service of Serbia, 2007).

Irrigation systems upgrading and construction is one of the key mechanisms of adaptation in agriculture and as such it must find proper place in the National Adaptation Plan and the relevant sector strategies, and access to adaptation funds (Tyagi, 2014; WWF-EIC, 2012).

In the context of adaptation to climate change irrigation is used as a tool to compensate the deficit of moisture in the soil as well as to optimize the benefits of the expected extension of growing seasons and mitigation spring and autumn frosts.

Studies have shown that in the local climatic conditions and with the application of appropriate agricultural inputs and techniques, irrigation can increase yields by 50 to 80%, and in the years with a severe drought for 2 to 4 times in some crop species (Dragović, 2001; Maksimović & Dragović, 2004; Obradović, Teofanović, P. Petrović, M. Petrović, & Ružičić, 2012).

According to 2013 statistics, which monitors irrigation on agricultural land of business entities and cooperatives, 85,593 ha were covered by irrigation systems of which irrigated area was 53,086 ha (62%). The share of irrigated land in utilized agricultural area was 1%. Total water abstracted for irrigation was 88,130 thous. m³. Most was pumped from rivers (91%) while the rest was abstracted from the groundwater, lakes, reservoirs and public water supply network (SORS, 2014).

Agricultural census (2012) has a broader scope of research and in addition to legal entities and entrepreneurs includes family farms. According to these data, in 2011/2012 production year, 12% of agricultural holdings irrigated 99,773 ha. Family farms mostly use groundwater for irrigation, so in total abstracted water groundwater sources predominated, accounting for 51.6%; surface water sources outside holding accounted 31%, surface water sources at holding 6.7%, public water supply network 6.5% and other water sources 4.2% (SORS, 2013b).

About 3.6 million ha of cultivable land in the Republic of Serbia is suitable for irrigation (of which 1.6 million ha without any prior reclamation measures) (Official Gazette of the Republic of Serbia [OG RS], 11/2002).

The Government recognized the need to engage in irrigation development and began an ambitious project of rehabilitation and upgrading of irrigation systems in 2012.

Experts draw attention to the hydrological constraints, which will be aggravated by climate change, and emphasize the importance of taking care of a water productivity, and efficiency and sustainability of new and upgraded irrigation systems.

This could be achieved using a set of best practices in soil and water management and substantial investments and innovations in crop genetics and irrigation technologies.

Water charges issue is also very important as well as tackling of illegal water abstraction (mainly involve drilling an unlicensed well or exceeding a consented abstractable volume from wells that are licensed). Water charges should provide water service costs recovery and reflect the scarcity of water resources as well as the other environmental impacts of irrigation, contributing to resource use efficiency.

A dialogue between water managers, agricultural planners and stakeholders is needed to identify and properly implement solutions. In order to provide this dialogue it is necessary to

undertake some important institutional reforms in the water management sector, including formation and functioning of water users associations.

All the above-mentioned issues will be the subject of analysis in this chapter aims to contribute to better understanding of the role of irrigation in the development of sustainable and climate-smart agriculture.

BACKGROUND

Ikerd (1993) defined sustainable agriculture as “capable of maintaining its productivity and usefulness to society indefinitely”. Such agriculture must use farming systems that “conserve resources, protect the environment, produce efficiently, compete commercially and enhance the quality of life for farmers and society overall”.

It should be noted that there is no single path to sustainability. All farming systems, from intensive conventional farming to organic farming and others that fall between the two extremes, have the potential to be environmentally sustainable (OECD, 2001).

Sustainable agriculture contributes to green growth, which implies that: 1) productivity must be increased in a sustainable manner, 2) well functioning markets must provide clear price signals that reflect the scarcity value of natural resources, and 3) property rights must be defined to encourage optimal use of resources, both individually and collectively (OECD, 2011).

The UN-Water conference (Zaragoza, 2011) identified water as the driving force of the green economy and agriculture (efficient irrigation) as one of four priority questions relating to water in which change is necessary towards a green economy.

Agriculture is the major user of water, accounting 70% of the world's freshwater withdrawals. For producing almost 50% more food by 2030 and doubling production by 2050 with no improvements in land and water productivity, the global

water consumption for agriculture will need to increase by 70-90% (UN, 2011a).

However, the growth in water demand for non-agricultural uses adversely affects the availability of water for agriculture. Climate change effects - rise in temperature and precipitation variation, including more frequent and severe extreme weather events such as droughts, will further aggravate this situation, affecting rain-fed agriculture as well as the recharge rates of aquifers and watersheds.

Obviously, there will be considerable pressure in the future to improve the water use efficiency in agriculture. There is a number of technological and management measures that to improve the efficiency and sustainability of agricultural water use.

Improved irrigation efficiency (conveyance efficiency and field application efficiency) is one of the most important. Water consumed in agriculture is less than 50% of the water withdrawn due to conveyance losses, on-farm application efficiencies and system losses (UN, 2011a).

According to some Greek experiences, average conveyance efficiencies are estimated at 70% for earthen channels, 85% for lined channels and 95% for pipes (Karamanos, Aggelides, & Londra, 2005).

Large differences appear when comparing furrows with sprinkler and drip systems. The furrow systems have an efficiency of around 55%, sprinklers 75% and drip systems 90% (Dworak et al., 2007).

For innovations aimed at irrigation efficiency, it must be ensured that they do not lead to increase in water use (irrigation area), and deterioration in ecosystem services providing (e.g. riparian biodiversity lost related to canal lining).

Improved irrigation efficiency, irrigation scheduling based on the remote sensing, crop-related soil management techniques that optimize crop patterns, increase soil water retention and reduce crop water needs by optimal management

of the leaf canopy, deficit irrigation and wastewater reuse in agriculture crucially contribute to water use efficiency (European Environment Agency, 2012; Poláková et al., 2013).

Most of these activities require a high initial investment and/or advanced knowledge and skills, which are not available to the majority of small farmers.

Smallholder farms are essential in the transition towards a green economy. Worldwide, there are 525 million small farms, 404 million of which operate on less than two ha of land (Nagayets 2005).

Irrigation enables farmers to invest in high quality inputs and to grow higher-value crops. Incentives to raise irrigation efficiency may only be strong when the value added generated by additional water input is high. However, irrigation system managed by private entity or farmers' association may bring greater economic and environmental benefits than farmer owned systems, through sharing costs and responsibilities among its members (OECD, 2010).

Gathered in associations of agricultural producers, water users or local resource management groups, smallholders are far better prepared, with the assistance of advisory services R&D organizations, NGOs, government institutions and international organizations, to enter into joint investment and innovation.

Governments should provide public support for investment in irrigation efficiency, including water metering. Several other technological tools, such as remote sensing and irrigation scheduling, may be used by the public authorities in developing information relevant for land managers (remote sensing) or be integrated in the paid advisory services provided to farmers (irrigation scheduling) (Poláková et al., 2013).

Crop-related and other land management measures (buffer strips, wetlands, ecological focus area, etc.), that directly target sustainable water use, are of particular importance to adaptation to climate change, including water scarcity

and droughts, and have significant mitigation potentials, by preserving existing carbon stocks in agricultural soils and reducing nitrous oxide emissions associated with agricultural land use.

Developing payments for a range of ecosystem services related to soil, water, climate and biodiversity, and promoting public-private partnerships in this area is another important incentive policy option (Poláková et al., 2013).

Improved cross-sectoral and multi-stakeholder dialogues at national, basin, and local level, based on Integrated Water Resources Management (IWRM) concept is therefore needed.

However, it will be very important that farmers face the right signals to increase water use efficiency and improve water management. Ensuring that charges for water supplied to agriculture at least reflect full supply costs, and strengthening institutions and water property rights, are among the key policy instruments to address the sustainable management of water resources in agriculture (OECD, 2010).

Trade and consumers responsibility for the efficiency and sustainability of agricultural water use also exist and they express it through reducing food waste and practicing sustainable and responsible diet (Battilani, 2012). Water labels and footprint are considered as the tools that can help consumers to identify more water efficient products.

IRRIGATION IN THE REPUBLIC OF SERBIA: STATES AND CHALLENGES

Land Availability

From the aspect of the soil physical properties related to water, i.e. the character of natural moistening of the soil profile as the basic criterion for the evaluation of the suitability of the soil for

irrigation, the soil in Serbia, which covers an area of 88,361 sq km is classified into three basic orders (Mrvić et al., 2013; Škorić, Filipovski, & Ćirić, 1985):

- **Automorphic Soils:** Comprise 75% of the country's territory and are characterized by receiving moisture exclusively from precipitation which generally doesn't remain in them for long. Humus accumulating soils are of great significance for intensive agricultural production: chernozem, which covers 12% of the country's territory, then cambisol (12.4%) and vertisol (7.7%).

Chernozem is the most productive soil and it is found on loess and loess-like sediments, alluvium and aeolic sand in Vojvodina, and in smaller areas in Mačva, Stig and near Belgrade. It is well-equipped with humus, and with providing the optimal moist through irrigation, it gives high and stable yields in diverse plant production. It falls within I land capability class.

Eutric cambisol is developed on different substrata and appears mostly on the altitudes of 100-500 meters, in Mačva, Šumadija, Posavina, the valleys of Velika Morava and Južna Morava, in the Ključ and Timočka krajina, on the mountain of Fruška Gora and on Kosovo and Metohija. It falls within II land capability class. With favourable water and air regime in the A horizon and well equipped with humus, it is suitable for growing fruits but also for diverse agricultural production.

Vertisol falls within III land capability class. It is found on neogenous lake sediments, on the altitude of 200-600 meters, in the valleys of Central Serbia, Kosovo and Metohija and in the area of the Vršac Mountains in Vojvodina. By implementing hydro- and agro-melioration on vertisols, one can achieve high yields of grain and sugar beet, and vertisols can seldom be used for growing vegetables and vines.

- **Hydromorphic Soils:** Cover 23.7% of the national territory and are characterized by occasional or constant over-moistening under the influence of surface or underground waters and additional moistening from streaming or flood waters. The geological substrate of hydromorphic soils consists of pond loess, alluvial deposits of different mineral composition, and partially, lake sediments. Intensive agricultural production can benefit from fluvisol (7.9%), as well as semigley soils (humofluvisol, semigley) and humogley, which together take up around 10% of the territory.

Fluvisol belongs to a class of undeveloped hydromorphic soils and can be found in the alluvial plains near larger rivers. With hydromelioration and adequate fertilization it can give high and stable yields of agricultural crops and vegetables. It falls within III land capability class.

Semigleyic soils (humofluvisol and semigley) and *humogley* can be found in alluvial plains and boglands, mostly in Vojvodina, along the rivers Tisa, Begej, Tamiš and Danube. When meliorated, they give base for achieving high yields of grain, industrial plants and vegetables. They fall within III land capability class.

- **Halomorphic Soils:** originate under the dominating influence of highly soluble salts, which accumulate due to additional moistening of the soil by salted and/or alkalized groundwaters, occasionally also surface waters. Agricultural production is possible on this type of soil after desalinization by irrigation.

Solonchak and *solonetz* are the two basic types of halomorphic soils in Serbia, and together they make up 1.3% of the national territory. They can mostly be found in Vojvodina: *solonchak* can be found in Bačka, and to a significantly lesser extent in Banat and Srem, while *solonetz* is most often

found in Banat. They fall within class VII land capability class.

Agricultural land made up 65.8% of the territory of the Republic of Serbia, in the year of 2011. In accordance with the geophysical conditions which primarily determine the land's capability, the share of agricultural land within the total surface differs from region to region, and so this share in the region of Vojvodina is 82.5%, it is 67.2% in the region of Belgrade, 60.1% in the regions of Šumadija and Western Serbia, and 57.6% in the regions of Southern and Eastern Serbia (SORS, 2012).

In the year 2012, arable land comprised 4,215 thousand hectares (83.4% of used agricultural land) and consists of fields and gardens (3,282ha), perennial plantations (orchards 238ha and vineyards – 54ha) and meadows (641ha) (SORS, 2013a).

Around 3.6 million hectares of land is suitable for irrigation. The first two classes of soil suitable for irrigation without limitation (class I), and soil suitable for irrigation with certain caution due to the presence of degradation processes in the past (classes II and IIa) contain 1.6 million hectares. The soil classified into classes I and II according to suitability for irrigation (1.36 million ha) is mostly found in Vojvodina (in Bačka it comprises 86% of the soil suitable for irrigation, and approximately 50% in Banat and Srem), while the soil classified into class IIa (0.24 mil ha) is mostly located in the central and southern parts of the country. This is the most productive soil, which must be protected by appropriate measures and instruments of land policy as it is the most valuable national resource. The soils in class III are conditionally suitable for irrigation and require previous partial (class IIIa) or complex hydro- and agro-melioration (classes IIIb and IIIc) (OG RS, 11/2002).

Water Availability

With specific availability of *domicile surface waters* of about 1500m³ per resident per year,

the Republic of Serbia is classified into Europe's poorer regions in water. In areas highly deficient in water, such as Šumadija, Lower Kolubara, Northern Bačka and Kosovo, the availability of domicile waters per resident is lesser than 500m³ per year (Đorđević, 2009). These are also areas with developed agriculture and high water demand. High quality water resources are distributed in edge mountain areas (Drina, Starovlah Mountains, Šara, Prokletije, Vlasina), which indicates the use of transit waters and/or the use of complex transit water systems for integral water management.

In the territory of the Republic of Serbia, an average water flow of about 508.8 m³/s is formed, i.e. around 16.03x10⁹ m³ per year, with an average specific runoff of 5.7 l/s per km². The specific runoff varies from 30 l/s per km² in the mountain areas in the southwest (Šara, Prokletije) to less than 1 l/s per km² in the fertile valley in the upper north of the country (Bačka). In Pomoravlje, Kolubara, Šumadija, the southern Central Serbia and parts of Vojvodina, as well as Kosovo and Metohija, specific runoff ranges from 2 to 4 l/s per km². The sum of all domicile low monthly waters in the Republic of Serbia lowers to only about 55m³/s, and in the extreme to even less than 50m³/s (OG RS, 88/2010). An extension in the lasting of the low water periods is expected, as well as a drop in the level of low waters due to more frequent and longer draught periods as well as increased needs for water in the conditions of climate changes.

Due to insufficient domicile waters, the Republic of Serbia is referred to *transit waters*, especially for the functioning of multipurpose regional hydrosystems in Vojvodina. The inflow of transit waters into the territory of the Republic of Serbia is ten times larger than the water flow of domicile waters and is about 5.163 m³/s (162x10⁹ m³/year). However, the total water flow in the low water period falls to less than 1,500 m³/s (OG RS, 88/2010). The low water levels of Danube on the Bezdan water intake, during which the gravitational fall of the water into the

HS Danube-Tisa-Danube is reduced/impossible, i.e. when even the pumping station cannot work in full capacity, are becoming more frequent and longer (Savić & Bezdan, 2009).

It is justified to assume that increased demands for water in the conditions of climate changes, especially in the basins of Danube and Tisa, will intensify the problems in the hydrosystems' functioning. It is therefore necessary to take measure for reducing specific water usage, i.e. increasing water efficiency, among other also in the process of irrigation, having in mind the planned intensification of investment in this area, and also to increase transborder cooperation in the matter of using the water from the basin.

Groundwaters are, just as surface waters, distributed disproportionally in time and space and they are insufficient for the needs of different users. The total capacity of the existing *groundwater sources* is about 23 m³/s, of which about 13 m³/s comes from alluvial aquifers, about 3.9 m³/s from the basic water-bearing complex, around 4.2m³/s from karstic springs, and around 2m³/s comes from neogenous karstic formations (OG RS, 88/2010). There are hydro-geological conditions for using groundwater for irrigation from alluvial plains in the Podunavlje, lower basin of the Tisa, southern Srem, Mačva, Posavo-Tamnava and Pomoravlje, but the exploited amounts must be adjusted to the needs of other users, and the quality of groundwater, but also river waters which recharge the groundwater aquifers must be controlled, due to their exposure to pollution from industrial and mining facilities and the settlements on the river banks (Institute of Water Resources "Jaroslav Cherni", 2001).

Starting from analysis of availability of water resources in the vegetation period, including waters that could be obtained by leveling and artificial recharge and the possible use of waste waters in regions poor in water in the basins of Južna Morava and Šumadija, the Institute of soil science, Belgrade, has a few years ago published the results of its analysis which imply that, for the

needs of irrigation, including the limited use of water from the Danube, about 400 m³ of water can be engaged per second, which would cover about 450 thousand ha of irrigated area. For irrigating areas up to 800 thousand ha, it would be necessary to obtain compliance from other countries in the basins of the Danube, Sava and Tisa rivers (Božić, 2012).

Agricultural Production Structure

A variety of natural conditions and resources allow the use of various production systems in Serbian agriculture within a region and the success in securing the sustainable agriculture development at the regional level are provided through coordinated activity of agricultural and environmental policies and stakeholder cooperation at all levels (Popović, Sarić, & Jovanović, 2012).

Intensive crop and vegetable production and modern, capital intensive fruit plantations use the advantages of fertile soil and the traffic accessibility of the plains and the river valleys. Fields of the highest quality are located in the plain areas of Vojvodina, Mačva, Veliko Pomoravlje, Zapadno Pomoravlje, Stig, Ključ and the Negotin lowland. The fields contain mostly cereals (63%), followed by fodder plants (15%), industrial plants (14%) and vegetables (8%).

Cereals have a dominating share in the structure of arable land use in all regions, while the second place in Vojvodina is taken by industrial plants, and in the areas south of the Sava and the Danube rivers, it is fodder plants. Among cereals, the most widespread are maize (67% of the cereals' area) and wheat (25%). The most of these crops are sown in the north of the country, in Vojvodina (59% of the total area under maize and 49% of the area under wheat). Vojvodina also contains 94% of total area under sugar beet, 93% of total area under soya, 90% of total area under sunflower and 67% of total area under tobacco (SORS, 2013a).

The regions of Šumadija and Western Serbia have the highest share in area under fodder plants (42%) which is in accordance with the fact that this is the leading area in animal husbandry, with the highest number of cattle and livestock units in the country (SORS, 2013b).

This region also has the highest share in total area under vegetables (39%), although well-known vegetable farming areas also lie in the regions of Southern and Eastern Serbia (29%) and Vojvodina (24%). In the last years, the production of early vegetables has been intensifying in the area of the City of Belgrade (7%).

The highlands in the south, west and east of Central Serbia have very good climate and other agro-ecological conditions and tradition in growing diverse continental fruits, especially plums, apples and raspberries. These areas contain 86% of the country's total area under orchards. The area under raspberries has been extended in the last decade, and it has a great export potential, mostly on the EU market.

However, with the opening of the Russian market to import of Serbian fruit in the 2000s, especially for apples, major changes take place in the technology of fruit growing and zoning of the production. Modern plantations, areas of several tens to several hundred hectares, equipped with irrigation systems are rapidly appearing in northern Vojvodina and on the slopes of the Fruška Gora Mountain. The production of apples and sweet cherries is intensified in the periphery of Belgrade. Peach is being increasingly cultivated in Srem, cherry in Southern Serbia, and the number of certain plum cultivars (especially those meant to be exported fresh to Russia) has also been increasing in Vojvodina.

A successful turnaround in the viticulture sector, in the direction of strengthening family owned wineries and their inclusion into the wine roads and cultural routes has contributed to the recovery of the wine sector, but has also set new demands in growing vines and the production of wine.

Precision viticulture adjusts the use of production practices, including irrigation, specific natural conditions and the needs of vines on a certain location (Popović & Živanović Miljković, 2012).

Meadows and pastures are concentrated in the hill and mountain areas in the west, south and east of Central Serbia, and they represent a valuable, but an insufficiently exploited potential for the development of pasture animal husbandry.

Water Demand for Irrigation

The norms of irrigation are set for ten zones in the territory of Serbia according to their affiliation to meteorological stations for which, based on the local climate conditions and plant characteristics related to transpiration, the need for water for most widespread cultures in the structure of sowing on area covered by irrigation systems has been calculated, including midsummer, postseasonal and interseasonal cropping. The irrigation norms in the vegetational period (April – September) are: for wheat 1,750 – 2,100 m³/ha, maize 3,500 – 4,200 m³/ha, sugar beet 4,250 – 5,100 m³/ha, lucerne 4,450 – 5,300 m³/ha, other cultures 3,500 – 4,250 m³/ha and midsummer crops 1,700 – 2,150 m³/ha.

Based on these irrigation norms, the structure of sowing, type of watersource, way of water abstraction, and losses in water distribution systems (5-15%) a hydromodule of irrigation in the interval of 0.5 – 0.6 l/s per hectare has been determined. Thus set needs for irrigation water at the safety level of 80% range from 325 mm (Sremska Mitrovica) to 375 mm (Novi Sad – Rimski Šančevi) (OG RS, 11/2002).

The irrigation systems on the agricultural holding of *business entities* and *agricultural cooperatives* covered, in 2013, a total of 85,593 ha, but only 53,086 ha (62%) was irrigated. The share of irrigated within the used agriculture area was only 1%. Total water abstracted for irrigation was 88,130 thous. m³ (SORS, 2014).

According to the results of the 2012 census, in the production year of 2011/2012, a number of 71,947 agricultural holdings (legal entities, entrepreneurs and family farms) irrigated a total of 99,773 ha.

In the structure of the irrigated land of business entities and agricultural cooperatives, fields and gardens take up 95.3%, permanent crops participate with 4.6% and meadows and pastures with 0.1% (SORS, 2013c). On the level of all agricultural holdings (agricultural census data), the share of fields and gardens is smaller (85.1%), to the benefit of permanent crops (14.4%) and meadows and pastures (0.6%) (SORS, 2013b). It is obvious that family farms use irrigation systems to a greater extent to irrigating highly profitable fruit (and vegetable) cultures, while economy of scale in the agricultural production on big farms of business entities and agricultural cooperatives ensures the cost-effectiveness of irrigation of less profitable cereal crops.

Viewed by irrigated crops on the level of all agricultural holdings which use irrigation, the largest irrigated areas are under cereals and maize for silage – 36,154 ha (36.2% of the total irrigated area), but this represents only 2.1% of the sown area under these crops. Unlike them, vegetables, melons and strawberries (outdoor) are irrigated on 19,865 ha which makes 19.9% of the total irrigated area, but also 63.8% of the total area under these cultures which are highly dependent on water (SORS, 2013b).

Water Master Plan (2002) predicts an increase of irrigated surfaces to about 800 thousand hectares in 2021, which would create adequate framework for sustainable intensification and improvement of the structure of agricultural production and export in the leading agricultural zones in the country. The necessary water withdrawal for these irrigation areas are 2,679x10⁶ m³ per year.

Having regard to the informations on available water resources and possibilities of agricultural development in different agricultural regions,

policy makers (*National strategy for sustainable use of natural resources*, OG RS, 33/12) have proposed irrigation development by 2030 on the area of 271.5 thous. ha (of which 211 thous. ha in Vojvodina) and for this purpose should be directed 678×10^6 m³ of water per year.

Water Productivity and Water Use Efficiency

The climate conditions, soil physical properties related to water, the genotype specificity of grown plants and applied agro-technology are the factors which influence water use in the process of plant growing. The range of variation in water productivity (expressed in yield per cubic meter of used water) for different cultures is therefore significant, both in irrigated and non-irrigated production.

The relative increase in yield shows distinct regional differences. In Central, Northern and Eastern countries, relative yield increase due to irrigation is less than two (=100% increase relative to non-irrigation), reflecting the supplementary and temporary character of irrigation in these countries. On the contrary, in Southern countries, the relative yield increase is considerably higher by orders of magnitude (>5). These extremely high relative yield increases reflect the severe limitation of agricultural production by climatic water scarcity (having very low yields without irrigation) and show that in these regions irrigation is of substantial importance to maintain agricultural production (Wriedt, Van der Velde, Aloe, & Bouraoui, 2009).

Research has shown that irrigation in the climate conditions of Vojvodina has the supplementary character, i.e. it is an addition to natural precipitation and it positively influences the increase and stabilization of yield of the grown plants, especially in draught years. The effect of irrigation is different by years depending on the amount of precipitation and their distribution in the vegetation period. In favorable years

this effect is lacking or is very modest, while in years with serious draught, irrigation increases the yields of agricultural plants by two or more times (Maksimović & Dragović, 2004; Pejić, Maksimović, Milić, & Rajić, 2010).

As mentioned in the Introduction, the rise in annual air temperature after 1990 is significant and it is the most intense in northern Vojvodina, the wider City of Belgrade area and the Negotin lowland. According to the data from the Agricultural advisory service of Negotin, the experiences of the farmers who have in the previous decade used an irrigation system on 450 hectares in the droughty area of Negotin lowland testify of double or even five times bigger yields compared to those averagely achieved in production without irrigation (maize 11 tons/ha – twice as much as the average 5-6 tones/ha, water melon 60 tons/ha compared to average 10 to 15 tons/ha, wheat 5.5 tons/ha compared to 1.5 tons/ha).

Having in mind the projected climate changes in the future, the deficient domicile waters disproportionally distributed in space and time, and the transit water which are under growing pressure from different users in the upstream countries, it is clear that water users will have to govern their decisions on water productivity and efficient water use.

An increase in water productivity in the irrigation process, viewed from the aspect of water saving, i.e. increasing the efficiency of water use, can be achieved through irrigation efficiency increasing and/or adjusting the structure of production/production practices in the direction of reducing the grown cultures' need for water, as well as improving management practices in irrigation.

These questions did not, up until recently, receive the adequate attention in the Republic of Serbia, due to underdeveloped irrigation and small water consumption in the sector. With irrigation development, and the advancement of the EU joining process, the questions of rational water use and sector modernization from the technological and institutional aspect are receiving higher sig-

nificance and they must take an adequate place in legislation and strategic development documents in the area of water management.

The strategy of development of water infrastructure is directed towards integral systems which enable simultaneous and interdependent answer the questions of using and protecting the waters, regulating water regime and protecting from water, with respect to ecological and social demands of the environment. The irrigation infrastructure is an integral part of these systems.

The irrigation on the territory of the Province of Vojvodina is mostly based on transit waters and complex multipurpose hydrosystems: HS Danube-Tisa-Danube (HS DTD), HS Northern Bačka, HS Banat and HS Srem. In the framework of current development level, HS DTD provides water for irrigating 360,000 ha, and regional systems provide for about additional 72,560 ha which makes up a total of 432,560 ha. Irrigation systems, affiliated with the named hydrosystems are built on 90,278 ha, but are in working state (fully or partially) on about 47,000 ha, and functioning on about 30,000 (OG APV, 22/2011).

Regional hydrosystems and regional irrigation systems in Central Serbia, according to data from the year 2007, cover about 22,714 ha, and are functioning on less than half of the covered area.

Another 45,000 ha (around 19,000 ha in Vojvodina and around 26,000 ha in Central Serbia) are covered by privately owned technically completed and technically uncompleted irrigation systems (Ministry of Agriculture, Trade, Forestry and Water Management of the RS, 2011).

Water conveyance efficiency depends on the type of canal – the greatest loss appears when transporting water in earth canals, slighter loss in canals coated in water-resistant materials, and the smallest losses appear in conveyance through pipes. The replacement of open canals with pipelines under pressure can contribute to significant savings in irrigation water. Irrigation systems owned by business entities and agricultural cooperatives in the Republic of Serbia are

to a greater extent affiliated with pipeline than canal conveyance. According to data from the year 2013, the length of the canal network was 555 km, while the pipeline network was 1,361 km (SORS, 2014).

Field application efficiency depends on the choice of irrigation method. The most efficient is drip irrigation, followed by sprinkler irrigation and the least efficient is surface irrigation.

The structure of the irrigation method used by mentioned business entities is relatively favorable as well. Out of the total irrigated area in the year 2013 (53,086 ha) sprinkler irrigation was used on about 93%, drip systems were used on 6% and surface irrigation on 1% (SORS, 2014). When family holdings are included in the analysis, the situation becomes significantly different. A large number of small family farms uses the surface method for irrigating vegetable cultures, while in fruit growing (especially in growing berries) the drip system is being used, so according to the 2012 census, out of a total 99,773 ha of irrigated land, 60.6% is being surface irrigated, 12.2% is being sprinkler irrigated and 27.2% uses drip systems (SORS, 2013b).

The lack of financial means for investments in the development of water infrastructure as a whole, and especially investments in irrigation system maintenance and improvement during the last two decades has resulted in a drastic drop in their efficiency and exploitation level. According to the estimate from the annual business program of the Public Water Management Company *Waters of Vojvodina* for the year 2014, during the past 20 years, in the territory of Vojvodina, there was being done 30-70% of work envisaged by actual standards for water system maintenance, which brings a poor functioning state of these facilities and a drop in their work efficiency of up to 50% (PWMC “Waters of Vojvodina”, 2014).

Most irrigation systems are built before the 1990-ies on the estates of former large agricultural companies and cooperatives, many of which are

today, after a number of unsuccessful privatizations, in the process of restructuring or bankruptcy.

The Government and the Province Administration finance capital investments in canal network upgrading and they subsidize purchasing mechanization and irrigation systems to farmers, through budget sources (including water benefits) and through international credits (The World Bank, Arab Investment Funds). However, water use efficiency must be achieved through institutional reforms, associated with irrigation management, with focus on the questions related to water charges.

Strengthening the private sector in agriculture has contributed to a rise in investments in modern irrigation systems, but these are still rare examples of big investors in intensive agricultural production and modern orchard plantations and vineyards. Smaller producers, due to lack of investment and market instability, are still restraining from entering into water user associations and participating in irrigation system management and financing.

Many of the measures for sustainable use and protection of land and water from degradation and measures of adaptation to climate change are an integral part of good agricultural practice and agricultural producers' tradition, but the full effect of these measures can only be expected if they are programmed and implemented in an organized manner, and supported from the state and the agricultural advisory service (Popović & Vasiljević, 2013).

The Republic of Serbia has accepted numerous obligations in these fields by opening the EU accession negotiations and ratification of international conventions on climate change and to combat desertification (UNFCCC, UNCCD).

The purchase of modern equipment and irrigation technology improvement, as well as the use of new cultivars and hybrids, adjusted to changed climate conditions, contribute to a growth in productivity and income on the long run. Water-related R&D organizations and institutions, with

help from European funds, intensify the activity in this area. As these are expensive investments and advanced knowledge and skills which are mostly not available to smaller producers, associations of farmers and water users and the agricultural advisory and expert services play a significant role in their diffusion and implementation.

Water Allocation and Water Charges in Irrigated Agriculture

Water use rights are initially determined by the decision of an authorized entity of state administration, which is issued in the form of certificate, license or authorization for a certain amount of abstracted water. When determining the amount of water that can be abstracted based on the authorization, the availability of water resources, water purpose, ecological demands and the other users' need for water from the same source are all being taken into account.

The policy of water allocation is usually balanced between two principles: *sector and social groups equality* in water use rights for the purpose of creating income, and *water use efficiency*, which means that water is directed there, where the greatest income per unit of used water is created (FAO, 2004).

According to the Law on Waters (OG RS, 30/2010 & OG RS 93/2012), the waters in the Republic of Serbia are a public asset and are state-owned. All land owners and users must acquire a water permit from an authorized public entity in order to use the water, except for those who will, for the benefit of their household, use: 1) atmospheric water, gathered on the land within the borders of their holding, 2) waters that spring on the mentioned land and retain in its boundaries, 3) groundwaters used on the holding for drinking by humans or animals or for sanitary needs. The water permit is issued for a limited amount of time, no longer than 15 years.

The use of water for providing drinking water to the population, for sanitary and hygienic needs, drinking water for animals and for state defense has a priority above other uses. An authorized state entity can temporarily limit water use rights in the cases of: endangered water quality or quantity, and natural balance of aquatic and riparian ecosystems or reduced safety due to adverse effects of water due to natural phenomena; major damages of water facilities, irrational and non-economical water use which is not in accordance to the water permit; and in other cases which have for a consequence any water shortage or reduced safety from adverse effects of water. The rights gained by a water permit are not transferrable to a third party without the approval of the issuing authority.

Full cost recovery of water services, which takes primacy in the politics of the price of irrigation water in the world, and especially in the European Union (one of the basic demands of the Water Framework Directive – WFD) refers to full economic cost recovery (operation and maintenance, including major repairs and capital costs, and the following opportunity ecological and resource costs (foregone opportunities which other users suffer due to the depletion of the resource beyond its natural rate of recharge or recovery) (Bogaert et al., 2012; Svendsen & Turrall, 2007). Attention must be paid so that the water charges do not burden the farmers' income in a measure that would jeopardize vital economic, ecological and social interests of not only small farmers, but also whole rural regions and the society as a whole.

Setting an appropriate price level high enough to internal use the external costs, fair enough to not exclude user groups from water use, and well-designed enough to affect water consumption is, therefore, a highly complex task and can be considered to be more political than economic in nature (Interwies, Kampa, & Görlach, 2005). Any substantial increase in cost recovery should be discussed and agreed on with representatives of farmers as part of an overall package of man-

agement reform, linking increased charges with guarantees of improved water service (Murray-Rust & Snellen, 1993).

According to the Law on Waters (OG RS, 30/2010 & OG RS, 93/2012) and the following annual Regulation on the charges for water (OG RS, 15/2014), irrigation water users in Serbia must pay: 1) charge for using irrigation waters, and 2) charge for using water facilities and systems.

The charge for using irrigation water (area-based or volumetric tariffs, if the users have a metering device) has a character of compensating opportunity (resource) costs. This charge is paid by all users who have the obligation of acquiring a water permit, whether they abstract water directly (in which case this is also the only water charge they pay) or if they use the service of abstracting and supplying water by a provider.

The information on the methodology for determining this charge, i.e. on in which it compensates for the lost gain due to the inability of other users to use the water, is not available. Another problem attached to this charge is a large number of users of irrigation water who abstract water without a permit. The overexploitation of groundwater in northern Bačka that threatens drinking water reserves is only one of the consequences of illegal use of groundwater for irrigation.

The charge for using water facilities and systems consists of several separate charges which are accumulated depending on the type of the water intake structure, i.e. its position in the hydrosystem:

- **The Charge for Using Water Facilities of Irrigation Systems:** Which is mixed (two-part) in structure and contains a fixed component, which is determined according to the installed capacity (RSD/ha) and a variable component, determined according to the engaged capacity (RSD/1000m³). Tariff level is different depending on the region where it is applied (AP Vojvodina, City of Belgrade, the rest of the country). For wa-

ter delivered by a *high pressure pumping station*, the users pay an additional charge *by installed capacity (l/s)* in the pumping station for his irrigation area. The tariff level is different by the aforementioned regions.

- **The Charge for Using Facilities in Regional Irrigation Systems and Other Water Facilities:** It is also two-part in structure and contains a fixed component determined by installed capacity (RSD/ha) and a variable one, determined by engaged capacity (RSD/1000m³). The level of the tariff for both components is unique for the whole country.
- **The Charge for Using Facilities in the Hydrosystem Danube-Tisa-Danube (DTD):** A two-part tariff, by installed capacity (RSD/ha) and engaged capacity (RSD/1000m³). The amount of the tariff by installed and by engaged capacity (if there is no metering device) is not unique and it differs by type of production (different amounts for field crops, and for vegetables and fruit and other permanent crops) on the irrigated areas, while only in the case of possessing a measuring device is part of the tariff by engaged capacity charged in a single amount. In cases where water facilities of irrigation systems, or regional irrigation systems use water from the DTD hydrosystem, must the users additionally pay this charge, besides the aforementioned ones.

We can conclude that the structure of water charges in irrigation sector in Serbia is rather complex. It is the result of both the presence of various irrigation systems of different complexity, but also the intention ensuring, to a realistically possible extent, the satisfaction of needs for cost recovery, including the resource (but not the ecological) component, and the price influence to rational water use. Regarding tariff rate models,

we can see the intention of promoting the use of water metering, as well as the mixed rates for water services associated to using water facilities and systems, whereby a number of tariffs is differentiated by spatial criteria and those associated to irrigated area are differentiated by a production criteria (hydrosystem DTD).

The limitation for achieving better results in exploiting this type of tariff structure is the lack of metering devices, especially in the case of smaller irrigation systems. According to PWMC “Waters of Vojvodina” data, only 13% of users who use water for irrigation based on a contract with the PWMC (and who thereby pay the charges envisioned by the law) have a metering device. The results of using a thus defined system of irrigation charges are unsatisfactory. The existing tariff levels do not even provide coverage of operation and maintenance costs. Capital investments in the revitalization and development of irrigation infrastructure, including hydrosystems water facilities are financed from other budget income and foreign credits.

Irrigation Management

The institutional reforms of the irrigation sector in the world are during the last few decades increasingly associated with the involvement of water users in irrigation management, along with the government (*Participatory Irrigation Management – PIM*) or reallocation of the responsibility and authority for irrigation management at different hydraulic levels (distributary canal commands, or for entire irrigation systems or tubewell commands) from government agencies to non-governmental organizations, such as water users’ associations (*Irrigation Management Transfer – IMT*) (Vermillion & Sagardoy, 1999).

The World Bank experts have defined the process of institutional reforms in the area of irrigation as a *continuum of reducing government involvement and increasing participation by user associations and private sector service providers*,

where attention is moved from individual institutional models to the *mix of models* that can offer the best water service (Darghouth et al., 2007).

Water users associations (WUAs) usually run tertiary or eventually distributary canal network of irrigation systems, in which case they hire by contract, during the season or with full work time, a few technologically competent persons for activities in network operation and maintenance, cleaning canals and collecting water charges.

On higher hydraulic levels, the state, i.e. the government agency or the water users association/federation of WUAs, if the IMT process has been enforced on the higher levels, usually bring in a professional third party by contracting out one or more operation and maintenance functions through short-term, task-specific service contracts or longer, comprehensive management, including different longterm public service delegation arrangement (Darghouth et al., 2007).

According to the Law on Waters, water management is in the jurisdiction of the Republic of Serbia. The Republic carries out the management through the Ministry of Agriculture and Environment Protection (MAEP), i.e. the Republic Directorate for Water within this ministry, and other related ministries, province administration, local communities and public water management companies.

The Government's *Water Council* provide expert opinion on water management legislation and strategic development documents. In order to ensure public participation in water management, by decision of the Government of RS, in accordance with the Law on Waters, the *National Conference for Waters* has been founded (OG RS, 55/2011). The National Conference consists of the representatives of local communities at river basin level, water users' associations and citizen associations.

Integral water management, including management, construction and maintenance of water facilities for the use and protection of waters, protection from waters and water monitoring

as well as the development of water planning documents at the river basin level (except for the Danube basin) are, as activities of public interest, entrusted with *public water management companies*, and are financed by water charges and other budget revenues in accordance with annual water management programs, issued by the Government (on the territory of an autonomous province it is the authorized organ of the province government, and on the territory of the City of Belgrade authorized organ of the city government). Public water management companies may perform other business activities if it does not impede performing the basic activities.

Part of the work on maintaining water management facilities is entrusted by the public water management companies to *water management enterprises*, organized mostly on a territorial principle. The public water management companies sign multiannual contracts with these enterprises, which are operationalized by annual work programs (annexes to the base contract).

The attempt at developing the local service provider market by privatizing water management enterprises did not give the desired results. Unsuccessful privatization and the reduced scope of work on maintaining water facilities due to budget restrictions have led most of these companies into financial difficulties. Under-equipped, and without recent references, these enterprises are not able to compete with foreign companies on public tenders. In order to overcome this situation, the MAEP has started an initiative on overtaking owner rights on public capital of water management enterprises by the state, and then transferring the majority owner rights to public water management companies. The structure of ownership in the capital of water management enterprises, after the enforcement of this model, is that 47% of the capital will be owned by the Republic of Serbia, and 53% will be owned by the PWMC (The Government of AP Vojvodina, 2013).

The Law on Waters predicts the establishment of water users associations (in accordance with

separate law) in the river basin subunits, i.e. the meliorating district or its part, in order to ensure the conditions for different forms of water use (irrigation, fish ponds etc.) or protection from adverse effects of water. Draft *Law on water users associations in agriculture* is mostly directed towards regulation of landowners or users associating in order to co-financing construction and financing operation and maintenance of minor irrigation schemes. The associations are left the possibility of performing economic or other forms of activities which provide profit, in accordance with the law that regulates activity classification, under conditions defined by the Law on Associations. The possibility of forming WUAs federations is also predicted.

The first steps towards forming water users associations have been taken within the World Bank *Serbia Irrigation and Drainage Project* (2006-2014). According to the final Project Implementation Status Report (March 2014), construction activities are completed on two of the planned ten minor irrigation schemes while the activities on three other schemes are ongoing. The original target is not met, due to late adoption of the Water Law and development of WUA related legislation. Draft WUA Law has been prepared and publicly disclosed and discussed, and 28 WUAs fully established thus laying grounds for further activities in the irrigation sector (The World Bank, 2014).

SOLUTIONS AND RECOMMENDATIONS: THE ROLE OF POLICY, INSTITUTIONS AND INCENTIVES

By starting EU accession negotiations in early 2014, the Republic of Serbia has accepted the obligation to harmonize national legislation to EU aquis. By adopting the Law on Waters, the EU's Water framework directive has been transposed. The Law on Waters made room for adoption of

a larger number of subordinate legal acts and planning documents in this and related areas, mostly in the area of environment protection. An advancement in harmonization is visible, but there are delays in adoption of subordinate legislation and planning documents as well as serious limitations which slow down this process and demand a phased approach.

For a territorial water management unit, the Law on Waters determines the water area, which is comprised of one or several adjacent river basins and subbasins or their parts in the territory of the Republic of Serbia, together with affiliated groundwaters. The signing countries of the Convention on cooperation for the protection and sustainable use of the river Danube (the Republic of Serbia being one of them), have committed themselves to enforcing the obligations which arise from EU's Water framework directive within the activities pertaining to the Convention.

Water management is based on the following plan documents: Water management strategy in the territory of the Republic of Serbia, plans on water management on the level of water areas and the Danube river basin; annual water management programs; 4) plans on protection from adverse effects of waters and protection of waters from pollution. It is important to state that within the projection of water management development, determining the needs for water and the ability to provide sufficient amount of water of certain quality for different purposes, as well as the water balance, have been predicted. The adoption of many of these documents is delayed, which impedes integrated water management.

The adjustment of the structure of costs and the scope of payers in the water price policy with the demands of the WFD will contribute to improvement of water service quality, increasing water use efficiency and protecting water resources and ecosystems. However, this process must take place gradually, over a longer transitional period, bearing in mind economic limitations and social burdens (Vasiljević & Popović, 2014). In the

medium term, irrigation will still rely on budget subsidies and foreign sources of investment into the water infrastructure, which must be followed by strong institutional reform of the sector.

Independent of the existing solutions associated with the transition of public owned water management enterprises into state ownership, it is necessary to work on promoting the irrigation service provider market in order to ensure a core reform of public water management companies and to create conditions for strengthening water users associations and their overtaking irrigation systems management on the higher hydraulic levels.

For many small agricultural holdings in Serbian agriculture it is of great significance to ensure the legal basis for founding and functioning of the WUAs and the financial and advisory support from the state and international creditors for minor irrigation schemes construction and management. With help from the World Bank, field electrification is being co-financed in order to reduce irrigation energy source costs, and within the annual programs on work on protection, regulation and use of agricultural land, the state is financing the construction of a water intake structure with a primary network and following equipment (the construction of the field network is financed by the users) and it co-finances the purchase of new irrigation equipment (OG RS, 30/2014).

Coordination of the measures of policies of the environment and climate, agricultural and spatial policy on protection of waters and ecosystems and adaptation to climate changes, is necessary for an efficient response to the challenges of pollution, degradation and extreme weather conditions (Popović, Nikolić, & Katić, 2011; Popović & Mijajlović, 2013; Popović & Živanović Miljković, 2013).

The obligations of programming and implementing of measures of sustainable use and protecting the land and waters through a multi-sector and participative approach on the level of the water area, arise from international conventions and demand international cooperation and ensuring

advisory and financial support. The harmonization of agricultural policy with the EU CAP will strengthen the role of farmers in the preservation of natural resources and the environment (cross-compliance, ecological focus areas, agri-environment-climate measures, organic farming, Natura 2000 and WFD payments etc).

FUTURE RESEARCH DIRECTIONS

According to the UNEP working definition, green economy is that which results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. The world encourages the so-called green growth during the last few years, i.e. investments from public and private sources which ensure a growth in income and employment rate with reduction in carbon emissions, increase in energy and resource efficiency and prevention of loss in biodiversity. The implementation of this type of investment is made easier by adjusting adequate regulatory mechanism and it is financially supported by budget means.

The improvement of irrigation technology, use of new cultivars and hybrids adapted to climate change, and purchase of modern equipment and mechanization ensures key contribution to a growth in productivity and income in agriculture. Science offers solutions for reducing the costs of irrigation and increasing the efficiency and sustainability of irrigation systems, while simultaneously ensuring rational and ecologically suitable water and energy use. Projects such as the automated determination of irrigation norms and irrigation time based on high precision satellite data (EU FP-7 ENORASIS, with participation of a certain number of institutions from Serbia) or the domestic project of developing a mobile robotized solar power generator for running irrigation pumps (SOLAR by the “Mihajlo Pupin” Institute, Belgrade) offer interesting solutions to irrigation system users. It is up to the state to recognize the

significance of these activities and ensure support to the users in accepting and implementing them, having in mind the constantly higher requests for a sustainable use of natural resources.

CONCLUSION

The agriculture sector in the Republic of Serbia is one of the pillars of national economy. The development of irrigation is a precondition for improving the structure of agricultural production and achieving high and stable yields, which would guarantee scope, quality and continuity in export and justify the investment in higher quality inputs and modern storage and processing capacities.

Considering the existing level of the constructed, and especially the level of the used irrigation network, it is clear that the development of irrigation will demand substantial investment into the revitalization of the existing and the construction of a new irrigation networks, the functioning of which will demand far more water withdrawn for this purpose.

Having in mind the scarce reserves of domicile surface and groundwaters and the growing limitations in using transit waters in the future, as well as the decades long subinvesting into capital facilities of complex configurations in large river systems for the use, regulation and protection of waters, the projectors and the users of the revitalized and the new irrigation systems must respect the demands of efficient water use and water productivity. New price policy in this sector, which should be followed by adequate institutional reform and improvement in water service will contribute to rational water use.

The transition of water management enterprises into state ownership on one side, and the formation of still weak WUAs, in the lack of complete legislative support does not give many elements for positive expectations in the sense of a more visible advancement of the Republic of Serbia in reducing the role of the state in irrigation manage-

ment to the benefit of water users associations and service providers from the private sector. However, if this phase is understood as a forced stabilization phase in still turbulent transitional conditions, which will strengthen the foundations for a more visible advancement in the near future, then the success of the irrigation management reform can be seen with more optimism.

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KEY TERMS AND DEFINITIONS

Climate-Smart Agriculture: Agriculture that sustainably increases productivity and resilience, reduces/removes GHGs, and enhances achievement of national food security and development goals.

Ecosystem Services: The benefits people obtain from ecosystems. These include provisioning services such as food, fresh water and genetic resources; regulating services such as flood and disease control; cultural services such as spiritual, recreational, and cultural benefits; and supporting services such as soil formation and retention, nutrient cycling, water cycling, and provisioning of habitat.

Green Economy: Economy that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities.

Integrated Water Resources Management (IWRM): A process, which promotes coordinated development and management of water, land and related resources, in order to maximize economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.

Irrigation Efficiency: Technical efficiency of irrigation systems that consists of conveyance efficiency (refers to the percentage of abstracted water that is delivered to the field) and field application efficiency (indicates how well an irrigation system performs in transporting water to the plant roots).

Irrigation Scheme: A large scale network of structures, pumps, canals, channels and pipes that can be used to abstract water from authorised water resources and distribute irrigation water to one or more irrigation systems, and which includes associated land, buildings, equipment, access roads and infrastructure which are necessary to operate, maintain and repair the scheme.

Irrigation System: A hydraulically distinct network of structures, pumps, canals, channels, pipes that may be used to abstract and/or convey, distribute and apply irrigation water to a defined land area, and which includes associated land, buildings, equipment, access roads and infrastructure which are necessary to operate, maintain and repair the system.

Sustainable Water Management (SWM): Managing water as an economic good in a way of achieving efficient and equitable use, and of encouraging conservation and protection of water resources.

Water Productivity: The ratio of net benefits derived from e.g. crops, livestock and industrial systems to the amount of water used in the production process (product units/m³). In general, increasing water productivity means increasing the volume of benefit from a unit of water input.

Water Use Efficiency: The ratio of useful economic or product output of a system or activity to its water input (m³/product units). Water use efficiency would imply using less water to achieve the same or more goods and services.

Water User Association (WUA): A group of water users who pool their financial, technical, material and human resources for the operation and maintenance of an irrigation system. A WUA usually elects leaders, handles disputes internally, collects fees, and implements maintenance. WUA are fundamentally a participatory, bottom-up concept.

Chapter 17

A Comparative Analysis of the LAG Tara Oasului and Tara Oltului as Romanian Management Strategies

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ABSTRACT

This chapter attempts to contribute to a better understanding of the operation of the local action groups in Romania, having in view that little has been written about this so far and that it represents a new strategy of local management in the rural environment. Romania also urgently needs to elaborate and implement a national agenda for change, which should respect and overtake the regulations and the criteria of the LEADER program. The Local Action Groups (LAGs) represent a strong driving engine of progress in the rural areas, and the involvement of all factors that are part of LAG is essential for a good development. This study analyses the factors that could contribute to a harmonious development and comes with recommendations for other LAGs wishing to access the available funds through the LEADER program, starting from the case studies of LAG Tara Oltului and LAG Tara Oasului.

INTRODUCTION

Romania is the last EU Member State of the EU that introduced the concept of local action groups in the rural environment, as part of the LEADER program, in the year 2009 respectively, while, in the European Union the first local action groups emerged in the year 1991. At present, in Romania there are 163 accredited LAGs, while at the European Union level there are 2,451 (European

Network for Rural Development, 2014). Romania is situated on the 6th place in EU as regards the LAGs number (Annex 1), but on 12th place as regards the propensity of the European states to the association into LAGs, calculated as ratio of the LAGs number to the number of inhabitants (Annex 2).

From the analysis of the last indicators available at the level of the European States, we found strongly positive correlations between the LAGs

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number and the agricultural area (+0.84) as well as the LAGs number and population (+0.78), as well as the absence of any correlation between the LAGs number and the GDP/capita (-0.1.) (Annex 1).

The Local Action Group (LAG) is a form of public-private partnership, more exactly, an agreement between the representatives of the public sector (town halls, county councils, etc), private sector (economic operators, cooperatives, service suppliers, credit institutions, etc.) and of the civil society (associations, foundations, religious institutions, physical entities, etc.). Thus, a partnership has been created between the private, public and civil sector and a better representativeness of interests is ensured. According to the National Plan for Rural Development, the territory covered by LAGs in Romania in the year 2012 was around 14,398 km², area, which comprises 1,805 communes and 79 towns, representing 63% of the eligible territory for the implementation of the LEADER program.

This chapter highlights LAGs importance for the development of the rural environment and the value added that these bring to the rural space emancipation. The LEADER program represents an action modality at rural level permitting the local partners to choose a package of measures adjusted to the priorities identified on their territory and transpose them into development strategies. Their goal is to put into value the local, genuine potential of the territory. The case studies we focused on are the LAG Tara Oasului and LAG Tara Oltului in Romania. Both are characterized by the presence of isolated less-favored areas. Through the LEADER program, we found human and material resources for the increase of the GDP level/inhabitant. The two LAGs are located in different zones of the country, mainly mountainous and hilly areas, with agriculture as main economic activity and the local efforts are intensified for putting into value the agricultural potential. The analysis addresses the problems identified at the

level of the targeted local action groups and a series of recommendations are proposed based on good practice examples in the European Union.

The capacity for rural development of Romania is still insufficiently put into value. The rural area represents 92% of Romania's territory, and two-thirds of it consists of agricultural land (The Presidential Commission for Public Policies in Agriculture Development, 2014). Although the arable area totals 13.7 million ha, Romania is placed on 6th position in the EU. The land area is highly fragmented. The average farm size is placing Romania on 3rd position, among the smallest in the EU, after Malta and Cyprus. Romania's production is almost 10 times smaller than the EU average.

The year 2013 is a turning point for the Romanian agriculture. For the first time in the last 20 years, Romania had a surplus of 324 de million euro in the trade with agri-food products, as opposed to the same period of the year 2012, when it had a deficit of 745.5 million euro (Ministry of Agriculture and Rural Development, 2014). This increase is not due to any new technology applied, or to any special endowments, but it is rather due to extremely favourable weather conditions. The main partner in the agricultural trade of Romania in the year 2013 was the European Union, in the conditions in which Italy is the main country where most of the agri-food products were exported.

The problem is that Romania does not have a developed processing industry, and that is why around 70% of exports consist of unprocessed or primary production. Romania is exporting finished products only in proportion of 32% compared to Poland, where the exported finished products represent 82%. The endowment of a Romanian farmer, comparatively to the endowment of a farmer in the EU, is around 25-26 times smaller, as regards the tangible assets, mainly equipment. This results from the land fragmentation at national level. If we speak about the irrigation system, out of the 3 million hectares settled equipped with

irrigation facilities, only 50% are considered viable. Moreover, the storage premises do not cover even 20% of farmers' needs for the vegetables and fruit production.

Over half of the number of farmers registered at APIA are persons over 60 years old. Only 7% is the share of young farmers in total farm managers. The situation is not better in education either. The number of agricultural high-schools decreased by over 80% in the last 15 years. Thus, only 2.5% of farmers have basic or complete agricultural education. As a result, labour productivity in this sector is almost four times lower than the European average, although the population employed in agriculture represents about 30% of Romania's population, the highest percentage in the European Union.

Rural economy is dominated by an agricultural sector characterized by a high share of subsistence farms, producing mainly for self-consumption and only partially for the market, a problem that cannot be ignored (Redman, Mikk, 2008). Redman (2008) considers that Romania as a New Member State of the EU has made progress in the evolution of its rural development policy, but the low capacity and the individualistic way of management from top to bottom of the Ministry of Agriculture and Rural Development remains a great handicap.

Technology represents another factor of major differentiation between Romania and the other European Countries. The differences reside in the nature of technology used for farming the land. A large part of the planting and cultivation activities are made manually, especially on the small farms, which are considered subsistence farms.

The farms or the persons owning tractors used for the agricultural farms do not meet the standards imposed by the European Union, as their average operation period is by far obsolete. On the subsistence and semi-subsistence farms, the mechanical devices are not present. From the data centralized at the level of the Ministry of Agriculture and Rural Development, in the agricultural machinery fleet in Romania, there were

registered under 200 thousand tractors, under 25 thousand small grains harvesting combines, under 75 thousand sowing machines of different types at the end of the year 2013.

What is Romania doing in order to catch up with Europe? Romania will benefit, in the period 2014-2020, from financial sources for the modernization of market-oriented farms, for the modernization of the processing sector, for the sale of agricultural products, for animal welfare and risk management in agriculture.

Romania has in view a smart growth of this field, not only a growth based on the weather conditions. That is why, in the next period, Romania will support the maintaining and the improvement of the water and soil resources, as well as the diminution of gas emissions with greenhouse effect and it will support the shift to an economy with low carbon emissions.

The European experts have signalled out the need for building up some new management strategies in the rural area, more pragmatic and closer to the local needs, under LEADER form, even since the debates generated by the sustainable development challenges. To this very concept they referred in the Report "*Our Common Future*", from 1987. There, the sustainable development received the unanimously accepted definition, "development which has in view meeting the needs of the present, without compromising the possibility for the next generations to meet their own needs" (WCED, 1987).

The Commissioner for Agriculture and Rural Development, (Boel, 2005, p. 50) stressed out the need to create new opportunities in the rural zones which could generate new jobs for the young people and women. The Director of the European Commission for Rural Development, Constantinou (2008), also raised the problem of the rural area's capacity to generate jobs and pointed out to the real opportunities of the rural areas, from the growth potential in new sectors to the role of being a reservoir of natural resources.

(Tvrdonova, 2008, pp. 31-34) observed that the success of the LEADER approach resides in the following aspects: focus on the human capital through knowledge, training, entrepreneurship, as well as the participation of the private groups, such as women and young people, because these have a specially important role in rural development. In addition, the increase of rural areas' integration is exclusively made through society information. The improvement of governance through coherent programming, global approaches, integration of the strategies at regional and sub-regional level is equally important.

(Tvrdonova, 2008, pp. 31-34) also showed that LEADER is rather a form of governance than a form of administration. This is based on local partnership, which plans, implements, monitors and assesses the decisions formulated in the local development strategies of the region's identity. Nevertheless, (Lukesch and Schuh, 2008, pp. 27-30) consider that the Leader approach must face the risks and challenges in order to be really successful. For example, the LAGs that reached maturity might confront themselves with the problem of "premature ageing". With successful experiences from the past, these are not motivated anymore to start new programs and to develop the region with other strategies or partnerships, both at national and international level.

Even since 2005, Ahner highlighted the importance of the transnational cooperation as means to promote the innovation and the exchange of good practices. Cooperation taking place under Leader + at present, is a proof of the wish of the rural actors to look over beyond the national boundaries in order to work together for a better life of the rural people.

(Lukesch and Schuh, 2008, pp. 27-30) consider that, in the future, the cooperation between the rural and the urban areas will develop more and more, and the investments in the urban projects will be as significant as those in the rural. Moreover, in many regions, the local partnership will have to integrate new partners and collaborators

in order to complete the projects under way. The experience makes a difference here, which is an enormous challenge in the regional, national and European networks. The efforts of the European Network for Rural Development focus on the assessment of the social return on investments (SRI) through LAG, by putting into balance the economic, social and environmental benefits and the value of the effectively invested financial resources (EIFR, 2014 a.).

The focus is laid on the description of changes brought about by the creation of LAGs in the first stage. The results are measured by certain indicators, such as: increase of competence, increase of emotional welfare, increase of the support relationships, development of skills, etc. In some cases, these indicators should be available even on the sites of investigated LAGs. In the third stage, the analysis focuses on the perception indicators, on the feedback received from the involved actors and citizens. Within this analysis, we will put into value a few of 5 advantages presented by the new SRI method. On one hand, it can be applied at any level, from a single local project, to a Natural National Reserve or it can be realized by external evaluators or as a self-assessment exercise in order to explore the efficiency of some specific activities or by networks as a whole. On the other side, it can be adapted to the circumstances specific for the activity and to the local or national context; it is focused on the measurement of the effective results in the field, and the resulting values are measured through a transparent process. The greatest asset is that the results are easy to communicate and to be understood by the stakeholders.

As for Romania, there are a few studies dedicated to the social impact of the LEADER program. Redman (2010, p.1) characterizes Romania's Government before the 1990s as not interested in the rural area development. The only programs existing at that time, targeting the rural areas, were those for the electric power implementation and "planning". The goal of the "planning" program resided on the rationalization of labour force in the

rural environment. Even in the post-communist period, the Romanian Government had to face huge challenges in the formulation of the rural development policies.

The high GDP values are usually associated to a high living standard. Yet the situation at regional level has to be investigated in order to better differentiate the urban areas from the rural areas. The European Union cohesion policy attempts to reduce the disparities among the different EU zones. The zones benefitting from the support granted under the convergence goal are those that have the GDP smaller than 75% of that of the EU. Most of the funds were granted for this segment in the programming period 2007-2013, which means 8.15% of total allocated funds allocated. (Mosora, 2012, p. 44)

Mosora (2012, p. 45) finds that the LAGs are optimum instruments for reducing the discrepancies at regional, national or European level. Including the small towns in a LAG is beneficial for the diminution of the intraregional disparities, as these have more funds that could be invested in the rural zones.

According to Vasile Deac, representative of the network RuralNET, what is important for the period 2014-2020 is not only the “absorption of the funds in any situation, at any risk”, but mainly the assessment of the impact of financing measures upon the beneficiaries. The goal is to solve the beneficiaries’ needs and problems as well as those of the ordinary people. (Damoc, 2013)

Anyhow, this is also the position expressed by Marton Balogh, regional director of the Civitas foundation, which stressed that both in the case of ‘soft investments’ (in people), and in that of the ‘hard investments’ (in infrastructure), the results should be assessed in function of the improvement of life’s quality and not on the basis of some physical indicators.

The extent to which the European Funds brings a real contribution to the rural areas’ development still remains a controversial issue. Adrian Miroiu-Lamba, director at the Romanian Rural

Communes’ Association (RRCA)), considers that the European funds have already brought their contribution to rural development, stimulating the young people to repopulate the villages and develop new businesses in the rural environment. (Damoc, 2013)

MAIN FOCUS OF THE CHAPTER

How Did LAG-s Tara Oltului and Tara Oasului Emerge?

Tara Oasului and Its Local Action Group. In the year 2009, the Association the Local Action Group Tara Oasului was established, led at present by the mayor of the commune Turt, CiupacIoan. This commune benefits from the non-refundable financial support under the conditions imposed by the National Program for Rural Development (NPRD) 2007 - 2013, Axis 4 LEADER, Measure 431.2 – “Functioning of the Local Action Groups, Acquisition of Skills and Territory Animation”. The present initiative group is formed of 54 members. The public partners represent 32%, and the private partners together with the civil society 68% (LAG Tara Oasului, 2014).

Microregion Țara Oașului is situated in the North-East of the county Satu Mare, more exactly on the cross border area with Ukraine and close to the cross border area with Hungary. It is made of 13 communes. The relief is predominantly mountain and hilly of low altitude and combines different types of geo-morphical units (LAG Tara Oasului, 2014). In the composition of GAL Tara Oasului there are 35 villages with a total population of 55,299 inhabitants. The microregion area totals 755.30 km², with a density of 73.21 inhabitants/km² (LAG Tara Oasului, 2014). According to the statistical data available in the Local Development Plan, the population of Tara Oasului microregion had a generally decreasing trend in the last 20 years, which led to the ageing of the population in the region.

Figure 1. The map of the Local Action Groups
 Source: Author based on LAG Tara Oasului, LAG Tara Oltului, 2014



Local Opportunities and Challenges in Tara Oasului

The forests cover 34.48% of the total area of the micro-region, over the percentage from the country level and is made mainly of forests with soft and strong essence: beech, oak, hornbeam, holm, to which are added certain areas with young resinous woods. The main crops in the territory are the fruit trees (plums, apples, pears) in the hilly zone and other crops (maize, wheat, oats, potatoes, etc.) in the plain zone. The strawberry crop is traditional in this territory. Some years earlier, the areas under strawberry crops in most communes in the micro-region represented over 98% of the area cultivated at national level. In the last years, the zone experienced an alarming decrease of the areas cultivated with strawberries, determined by natural factors, such as the depreciation of the soil quality and economic factors like: local labour force migration, lack of processing means for obtaining products with value added products and selling markets.

Agriculture is the basic branch in the micro-region Tara Oasului. The highest number of persons are working in agriculture (between 60%-80%). The most frequent crops are: maize, wheat, barley, oats, but also sunflower, hemp and vegetables. Animal husbandry is an important source of income in the region: bovines, sheep, pigs, goats, horses. The cropping areas represent a real potential for the development of ecological agriculture, having in view that the fertilizers used, both in the past and at present, are natural bio-degradable.

Producers are not associated into producer groups, and the lack of means for a modern agriculture practice, as well as the highly fragmented land properties, result in a very low labour productivity. Moreover, the farm services are not at the European standard and do not add value to the region (Microregion Tara Oasului, 2014).

There is an extremely reduced number of local firms which are developing productive activities through which certain local resources are valorized (agrifood products, wood, fruits), mainly

in fields such as the production of beverages, milling, bakery, wood processing, processing of metal fittings, plastic materials. A part of the beverages producers, who are members in profile associations, are an important component of the local industry, the *Turtuica* being a well-known brand at national level. In some communes there are communal mills for wheat, maize and even an oil press.

The local industry is very weakly developed, and the non-agricultural activities, are represented by stone quarries as more important units and other production units based mainly on services in the field of carpentry, repair of vehicles, etc. Among the organizations registered as commercial companies over 90% are micro-units (Microregion Tara Oasului, 2014).

Tourism as an activity of the economic operators in the micro-region is almost inexistent, disregarding the huge potential for tourism development in the zone. The number of the accommodation structures is sometimes insufficient, mainly in summer (Micro-region Tara Oasului, 2014).

Tara Oltului and its Local Action Group. Opposed to Oas, the Local Action Group Tara Oltului was founded before launching this axis under NPRD. The process was started in the year 2006, when a study was made regarding the agriculture's opportunity in the region. The event was organized by the Association "PrieteniiAvrigului" (Friends of Avrig) from Avrig, county Sibiu, in partnership with the Committee JumelagePlerinsurMer from France (Britanny). After the interaction between the Romanian farmers in Tara Oltului and the territory Gal Pays de St. BriecSud, the leader of the initiative group was elected, who was Badea Marius, private partner, this knowing the region very well, as well the situation of the agriculture in the region. Badea Marius together with a group consisting of 11 partners, made all approaches for obtaining the legal status in 2009. The LEADER selection Committee is 85.7% on private basis 14.3% on public basis.

Tara Oltului is situated in the development region Center. As territorial division, the whole zone is located in two counties: Sibiu and Vâlcea. As structure, it is made of seven administrative centers: one town and 6 communes. In LAG Tara Oltului 20 are found.

Local opportunities and challenges in Tara Oltului. As a territorial aspect, the zone has altitudes ranging from 300 to over 2,500 meters. In this zone, the highest peaks of the Fagaras Mountains are found. The River Olt, together with its affluent are crossing the zone, which facilitates the agriculture in the area. The region is not excessively industrialized, the air quality being very good, and the pollution is very low (LAG Tara Oltului, 2014), similarly to Tara Oasului. The largest land areas are the hayfields, representing 35.3% of the total area, then the forests 33%, and the arable lands represent only 18%.

The population density is of 23.85 inhab. / km², and the percentage of the population under 20 years old is of 27.14%. Population over 60 years old represents 18.46%, and the active population prevails, representing 55.4% of the total population.

The local economy of the Tara Oltului was developed on basis of the geographical position, the natural resources, and of the handicraft tradition in the zone. If we take into consideration the employed population as synthetic indicator, the industrial activities prevail as share in the economy of the area, followed by the sector of services and agriculture. Tara Oltului is known for its old tradition in industry, the crafts that are organized and specialized by professions. The zone benefits from the necessary resources for the development of some profitable economic activities. The absence of producers' associations, of the natural exploitation associations, the wrong information of the citizens and the lack of their training led to a stagnation or even to a decline of the economy (LAG Tara Oltului, 2014).

Industry is a weak point in Tara Oltului. Town Tâlmaci is the only one benefitting from an industrial zone. 90% of the industry present in this local action group is found here. Industries are active in the manufacturing of textile materials, mainly car bonnets, threads, water bottling, a unit for the windows double pane, one unit for tents manufacturing. (LAG Tara Oltului, 2014).

Axis LEADER represents the fourth axis in the categories of the financing measures, which can be accessed through The National Rural Development Plan 2007-2013 (NRDP). The specific of the axis LEADER – the ‘bottom-up’ approach – represents a modality of action which permits the local partners to choose a coherent group of measures adjusted to the priorities identified on their territory and transpose them into development strategies, in order to put into value the local, genuine potential of the territory.

1. Elaboration and Implementation of the “Bottom-Up Approach”

Population is directly involved in decision making at LAG level. The creation of the feeling of

belonging to the group for all actors can lead to a homogeneous functioning, and the problems are detected more quickly and solutions of the problem are fast found, fact which will benefit all the actors.

In LAG Tara Oasului, the local action group emerged in the year 2009 at the initiative of the public and private actors, representatives of the local communities among which schools and churches, but also actors from the private environment or specialists at national level. The body thus created is knowledgeable in all fields in which the activities will be developed. The direct involvement and the collaboration of the authorities permits a better collaboration among the actors and this way, a shorter reaction time.

In LAG Tara Oasului, Measure 322 – Improvement of basic services for the rural economy and population and putting into value of the rural inheritance was successfully implemented. In the session of projects’ submission in March 2014, two projects were approved for the communes Bixad and Vama from the county Satu Mare, which had as a goal the development of sale markets for selling traditional food products and

Table 1. Comparative analysis of LAGs Tara Oasului and Tara Oltului

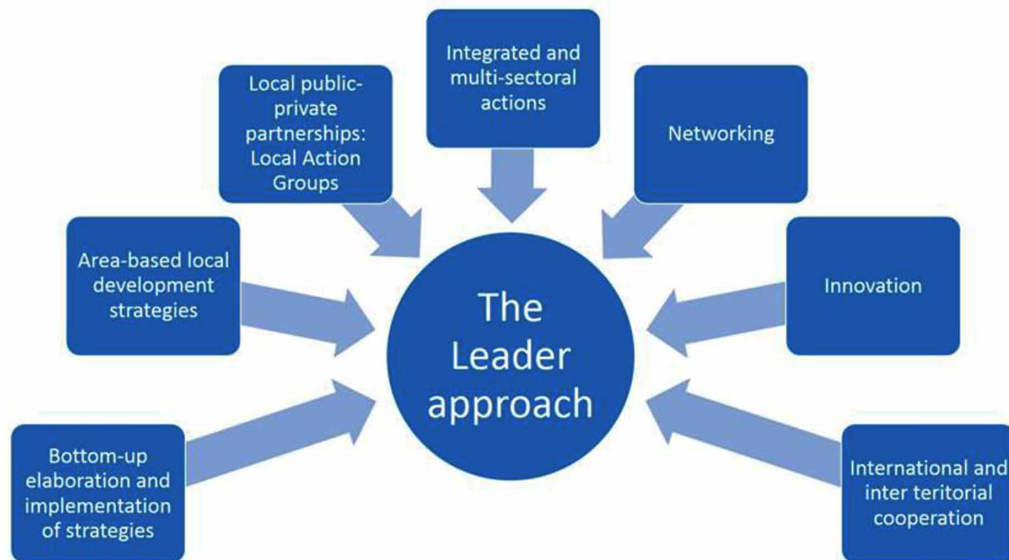
No.	Context	LAG Tara Oasului	LAG Tara Oltului	Difference
1	Funds absorbed through LEADER program	2.216.476 EUR	3.230.774 EUR	1.014.298 EUR
2	Absorbed funds/inhab	40,1	90,3	50,2
3	Nr. inhabitants /LAG	55.299	35.773	19.526
4	Area	775,3 km ²	1200 km ²	424,7 km ²
5	Density	73,21 inhab/km ²	29,81 inhab /km ²	43,4 Inhab/km ²
6	Birth rate increase	Negative	Negative	Negative
7	Towns	1	1	0
8	Communes	13	6	7
9	Villages	35	20	15
10	GDP /capita (thou.lei, 2011)	Satu Mare: 17,8	Sibiu: 28.5	
		Maramures: 17,1	Vâlcea: 20, 3	

Source: INSSE, 2014; Own calculations on the basis of information from the Local Development Plan, LAG Tara Oasului, 2014, GAL Tara Oltului, 2014

A Comparative Analysis

Figure 2. The LEADER approach

Source: The European Commission, 2014



Source: European Commission, 2014

crafts. The cumulated value of these two projects is over 45,000 euro. The actors from the public, private environment, but also those from the non-governmental organizations were involved even from the stage of project approval.

The local taxes imposed to the private actors, who will sell the products on those commercial places, will be collected at the local budget and will be able to finance other projects in the future. The NGOs will be able to use this example of good practice for other villages in the local action group, but also outside this through partnership programs. LAG Tara Oasului must not limit itself to these projects, but it should develop others also, inspired from the international examples of good practices.

In LAG Tara Oltului, under the same measure 322, the project dedicated to the rehabilitation of an already existent building and the change of the

destination into Museum of Popular Art has been successful. The project value is of over 95.000 euro. The beneficiaries of the project are all actors from this LAG. The town hall gains notoriety and appreciation due to the big number of visitors who will come to see the village museum. The NGOs will benefit, due to the capacity to keep alive the image of the traditional village and of the popular art which will be transmitted to the next generations. The private environment has to benefit from this project through the rehabilitation of this building, which will mean demand for jobs for the people in the zone.

On the basis of the needs found at the level of Tara Oltului measures will be taken to improve life quality. Among these, there are projects: Streets modernization, modernization of the Culture House Arpasu de Jos or the equipping of the public service for water and sewerage supply.

An example of good practice is given by Italy, where the focus was also laid on other branches, such as handicraft and traditional food, contributing to the stimulation of local gastronomy, the restoration of more nature pathways and archeological sites:

- Italy –LAG Valle delCrocchio. The 27 de municipalities from LAG Valle delCrocchio are affected by problems typical for the rural regions, such as depopulation, young people's migration to the big cities or unemployment, phenomenon met mainly among women. Although agriculture is the main activity and source of income in the region, the exploitation of other sectors for the zone promotion is also desired.
- Strategy LAG Valle delCrocchio. It is centered upon a package of measures dedicated to tourism quality, connection of the hospitality sector to agriculture, promotion of the agrotourism, restaurants, boarding houses and development of cultural attractions. In addition, the handicraft and traditional food contributed to the stimulation of the local gastronomy. With the help of children's creativity, advertisements of good quality were created and cultural events were organized for the considerable improvement of the region's image. Activities were designed meant for nature and culture exploration, as well as development of an archeological museum and the restoration of many roads in the natural environment and of the archeological sites.
- Problems met: the difficulty in coordinating the numerous actors, having different interests and concerns, for example public goods, profit, personal prestige. But this barrier was fought against with much energy and diplomacy, until a consensus was

reached from all participating parties. An example is the multitude of ideas coming to support the rehabilitation of the roads in nature. (European Commission, 2009, pp. 58-61)

2. The Territorial Approach is an Approach Based on a Zone with the Following Characteristics (European Commission, 2014):

Between 10,000 and 100,000 inhabitants. The region must comprise between 10.000 and 100.000 inhabitants. In case of LAG Tara Oasului, by the way of territorial structuring, and by the density of population, the conditions were naturally met. As regards LAG Tara Oltului, in order to fulfill this condition, the elimination of the town Avrig was necessary, although it is in the territorial center of the action group.

The low size. The geographical zone on which is spread the local action group cannot be very vast, exactly to be able to facilitate the cooperation between villages and communes. LAG Tara Oasului has in its componency 35 villages and it lies on an area of 755.30 km², with a population density of 73.21 inhab /km² (LAG Tara Oasului, 2014). In case of LAG Tara Oltului, the area is of 1.200 km², and the population density is 24 inhab/km². This LAG is made of 6 communes, but also one town. Thus, the whole LAG sums up 20 localities (The local development plan LAG Tara Oltului, chap. 1).

Homogeneity and cohesivity. In order to create a common strategy for the territories included in a LAG there should be considered factors as the general relief of the zone, the share of agricultural lands in the total area. In the strategy, there must be taken into consideration also other types of land which can be farmed, as: the forestry domain, natural resources of the soil, the mineral water

resources or the tourism potential of the zone as well as the degree of zone's development and industrialization.

Agriculture is the basic branch of the micro-region TaraOasului. Because of the soil degradation and labour force migration, the share of this crop is very small, but it is a real potential for increasing. In this respect, a good example is offered by Finland, where there was applied the strategy "grandma's hut".

Example of good practice in Finland:

- **Finland:** LAG Pomoottori ry. The low level of agriculture and the precarious industry determines the rural population to get oriented towards the urban zone. Thus, the population in the zone is continuously diminishing, and the old people are those who revive the empty villages.
- **Strategy LAG Pomoottori ry:** The priority resides in the repopulation of the region and implicitly the tourism stimulation. There are inaugurated residential developments starting from the so called model "grandma's hut", which resides in small houses, well compacted (60–80m²) and which are fitted perfectly for the small families or the single persons. There were made tests and patterns referring to the houses' sizes with the goal to meet reasonable enough conditions for a dwelling, with the support coming from the local people.
- **Problems Met:** The costs for the cabins were higher than the expected ones, but lessons have been learnt for the expenses reduction (European Commission, 2009, pp. 24-27).

In Tara Oltului situation is similar. Character is predominantly hilly and mountainous. In this development zone there are the highest peaks in Romania, but one of the biggest rivers in Romania,

Olt. The predominant crops are those of potato or maize, but the priority is animal raise. The growing of the fruit trees is an important component of agriculture. Most cultivated are the plums, apple-trees and pear-trees. These crops are then processed into palinka (a beverage homemade). In LAG ȚTaraOltului, the tourism potential is very high. This is not exploited at the maximum capacity, and the accommodation facilities in the zone are limited. Through the rehabilitation of the mountain cabins there will be developed accommodation facilities also in the communes or villages at the feet of the mountains. The small traders will gain through the big wave of tourists in the area. IN LAG Tara Oltului theOlt river potential is not put into value, on which different leisure centers can be established for fishing and other leisure activities. A good example is offered by Belgium in this respect, where river Ourthe brings a plus of value, significant in the region:

- **Belgium:** LAG OurtheMoyenne. The zone of this LAG is very little put into value from the tourism point of view and they pay a small attention to the local traditions through which society tries to survive.
- **Strategy LAG OurtheMoyenne:** To maximum exploit the advantages brought by the River Ourthe through: the designing of a visitors' center on the river bank, the development of the fishing conditions the guides' training for the fishing, the improvement of the river management .
- **Problems Met:** The lack of the expertise in the fishing industry and the enormous administrative work, due to combining the economic, cultural and environmental goals (European Commission, 2009, pp. 12-14)

Identity and common traditions. In order to create and strengthen the feeling of affiliation to

a group, a geographical zone is looked for which should believe in the same values. In the hilly zone of Tara Oasului, people are employed mainly in silviculture and wood processing. The popular wear is an element uniting people in the region. The tradition by which palinka is distilled in the zone is famous in the entire Romania and not only. In certain area, the region has also a mountain character, and animal raising is an old occupation in the region. The folk songs and the ensembles of dances in this zone are a reason for identity and pride for the whole community of the Olt. Unfortunately, all these national treasures are not exploited so that the region become attractive for the tourism. An example in this respect is offered by Austria, where it was intensively actioned for the tourism promotion:

- **Austria:** LAG Gesäuse Eisenwurzen. The region is characterized by structural problems, as are; the small population density or the lack of jobs for the qualified persons. The lack of tourism infrastructure, but also the well-developed tourism in the neighboring regions are affecting the development degree of the tourism in the zone.
- **Strategy LAG Gesäuse Eisenwurzen:** The mobilization of five working groups for the following niches: investments in tourism infrastructure, training of tourism guides, interaction with the tourists, stimulation of marketing through the launching of a web page for the promotion of geo-tourism in the area, as well as the development of some events' sessions. There were also tried synergies, as vacations and school holidays with an educational activity within the farms. Practically, a geological exhibition was organized, it was produced a video film about the formation of the carstic zone in the region, four roads which include attractions of tourism interest and a 3D model of cyber flight upon the mountainous region.

- **Problems Met:** Difficulty to persuade the mayors in the municipalities to invest in projects from new branches, unexploited until the respective time. The big number of actors led to a bigger time for decision, due to personal interests. (The European Commission, 2009, pp. 6-8)

Common needs and common expectations. People who live in a certain community, have, usually, the same needs and expectations. In the case of a LAG the situation is the same. Once identified a common need, the local action group is able to collaborate to find the optimum solution. The needs the people have can be solved through projects for road infrastructure consolidation, water supply, gases, or sewerage system. Examples of development projects through Measure 322 in LAG Tara Oltului are the renovation, development of villages, improvement of the basic services for the economy and rural population and the putting into value of the rural inheritance. All these projects are helping to the meeting of a certain need the people in these zones have. Together with the projects' implementation, the life quality in the zone is increasing, tourism is starting to flourish, and new funds or new investors start to be attracted to these zones.

In LAG Tara Oasului, Measure 322 was accessed for the acquisition of a mini-excavator in the Commune Târșolț, county Satu Mare, for the acquisition of a microbus for the public transport to the Townhall Tarna Mare or for the acquisition of a multifunctional device for the snow removal and maintenance of the green areas.

Both regions could have France as a model, where a series of other measures were taken, which were not taken into consideration by the two investigated LAGs:

- **France:** LAG Pays de la Touraine Côté Sud. The lack of the natural resources exploitation is the main problem in this region. Beside the many castles, the architectural

heritage, that archeological and pre-historical one represent a real treasure for the zone Pays de la Touraine CôtéSud.

- **The Strategy LAG Pays de la Touraine CôtéSud:** There were produced five films, each of 26 minutes, under the form of a documentary series, the goal of these films is the promotion of the region, by exposition of the information about the flora, fauna, culture and history in the zone. There were enterprised sports activities and leisure time for the discovery of the richnesses of this region, such as: cycling tours through the region.
- **Problems Met:** The coordination of actors in different sectors, each putting on first place his own interest. The discussions before the start of the projects helped to a better conciliation among the participants. (European Commission, 2009, pp. 28-31)

Coherence and critical mass. Coherence could result from the nature of the farms, of the lands which they cultivate, but, which, usually do not have the necessary critical mass for personnel or funds for development. This is the moment in which LAG-s can intervene in order to reduce the discrepancies between two or more development zones. The regions are not seen as separate entities anymore, but as a whole which could access more easily the structural funds put at the disposal. At the moment of integration of more zones in a certain space, the priority or the necessity for a zone can become a priority for another zone also.

Without predefined limits. A local action group is not established on the natural delimitations of the relief forms. The territorial dimension is given by the land area specificity, of the people and of the zonal character. A LAG can exceed the administrative territorial limits of a county. The phenomenon happens in the case of both investigated LAGs.

The commune Remeti is part of LAG Tara Oasului, which is located on the administrative territorial area of Maramures county.

More communes from LAG Tara Oltului are on the territory covered by county Vâlcea. These communes are Câineni, Boișoarași Titești.

3. The Public-Private Partnership in the Local Action-Groups (LAGs)

The public-private partnership in the local action-groups (LAGs) has the task to identify and implement a strategy for local development, to make decisions regarding the allocation of financial resources and to administrate them. The most active rural actors in the local initiatives are (European Commission, 2014):

The business environment is a good indicative of the living standard, which the people in a certain zone have, and it helps to the increase of the GDP/capita.. The comparative analysis of the business environment shows that the Tara Oasului is more developed than Tara Oltului, having with almost 500 units more (Table 2). This higher number of companies presuppose a driving engine at the basis of economic growth of the rural zones. The micro-enterprises more easily adjust to some market situations, due to the limited number of employees. The Local Development Plan for the LAG Tara Oltului specifies that 244 of companies do not have any employee, that is 44% of the total number of the firms, although these firms are registered in the Trade Register. So, they do not develop any activity and do not generate any profit.

The GDP/capita analysis is not possible for the 2 zones mentioned, the data being available only at county level. This, we use the INSSE data only as benchmarks for the creation of an overall picture of the investigated LAGs. In 2011, GDP/capita in Satu Mare and Maramures was relatively similar, i.e. 17.1 thousand lei per capita and 17.8

Table 2. Number of enterprises and PFA in the micro-region Tara Oasuluiși ȚaraOltului

LAG	Total enterprises, of which:	Micro-enterprises with 1 - 10 employees	Enterprises with i 10 - 49 employees	Enterprises with 50 - 249 employees	Enterprises with over 250 employees
Tara Oasului	775	710	55	10	0
Tara Oltului	277	269	5	3	0

Source: Local Development Plan of the microregion Tara Oasului 2011-2015, pp. 52-53, Local Development Plan of the microregion Tara Oltului, pp. 43-44

thousand lei inhab., by about 10.7 thousand lei / inhab. less than in Sibiu and by around 2.5 thousand lei/ inhab. less than in Vâlcea, at an exchange rate of 4.26 lei/euro in early 2011.

An example of good practice is that in Denmark, where the partnership public-private worked successfully, and after that, jobs were created and young people were attracted in the education sector.

- **Denmark:** LAG Nordjylland Vest. The main problem is the isolation from the rest of the developed regions, both from the social point of view and that of the transport network.
- **Strategy LAG Nordjylland Vest:** The building of a school RanumEfterskole, through which there 26 new jobs were created and 120 young people were attracted in the education sector.
- **Problems Met:** Were related to co-financing and were solved through a loan from the bank and the help from the municipality. The difficulty for attracting the students was improved through the creation of a publicity campaign strongly developed by television and radio. The collaboration between the citizens and the public actors was difficult at the start, but with tact and patience they found solutions and obtained results. (European Commission, 2009, pp. 18-20)

4. Multi-Sectoral Integrated Actions

The needs of a certain zone are exploited and integrated in such a manner, such as to permit sectors' development, those needing the help, most. In order to include more points of view and resources, the local action group must bring more points of interest or groups with common interests, and their collaboration to be fruitful in a constructive manner (European Commission, 2014).

The investigated zones have a great tourism potential to be exploited. Together with the investments of funds in related sectors, the tourism sector is developing and is creating new areas of activity, as the performing of services or shops to satisfy the demand increasing due to the tourists' visits. Moreover, there can be developed projects mainly destined to tourists, as are the memorial houses or the markets in which to be sold products specific to the zone or traditional products.

Projects are already developing in both LAG-s. For example the lodging house in Puturoasa is developing, from commune Vama, or it is made a recreational center in locality Vama, within LAG Tara Oasului. Such programs are being developed also in ȚaraOltului: The Culture House Arpașu de Jos is modernized and streets are rehabilitated to facilitate the access of the tourists in the area.. These development projects will lead to the attraction of a big number of tourists. LAG itself will grow through the application of this priority and of the LEADER program.

5. Creating Contracts

The local action groups are a network themselves. It must exist cooperation also beyond the limits of the local action group. This can mean cooperation with other LAG-s from the same zone, different zones, different counties, or, even cross border ones. These partnerships facilitate the creation of new links between the parts involved in the local action groups from different zones (European Commission, 2014).

Initiatives developed in a LAG must not stop to its boundaries. Products cultivated in a certain zone, having a character preponderantly agrarian can be traded in another LAG, which does not benefit from this natural resource, offering at its turn a resource which is to be found in small quantities in another zone. Thus it is realized an equitable exchange. The lack of the available information for the collaborations at the actors level within LAG-s do not permit us establish connections, economic relationships or cooperation among the LAGs' members. As result, the limits of this research do not permit this analysis.

6. Facilitating the Information

Strategy of the local action groups must present a certain degree of innovation and of risk, in order to be eligible. Innovation must not be treated strictly through the approach in which a product is placed on the market or a new service, as well.. Innovation means also the putting into practice of some concepts which were never used until present in that region (European Commission, 2014).

LAG-s analysed do not have self-assessment criteria, to quantify the innovation degree. Zones analyzed are predominantly rural, and the population does not have access to education, thus, their innovation capacity is reduced. The only information available are of the novelty in itself of the application of LAG Tara Oasului and LAG Tara Oltului and of the report Global Innovation Index, which is placing Romania on place 55 of the total

of 143 analysed countries. The Score obtained by Romania was de 38.08 from a maximum number of 100 points, which means a reduced capacity of the innovation at country's level. It must be taken into consideration the fact that this score includes the big cities and the capital of Romania where the innovation degree is a big one. Under these conditions it cannot be made a differentiation between the two LAG-s.(Global Innovation Index 2014)

7. The Inter-Territorial and International Cooperation

Cooperation involves a local action group which is developing a common project with another Leader group or a group having a similar approach, in another region, in another member state or even in a tertiary country (European Commission, 2014).

The Cooperation LAG Tara Oltului seems to be relatively productive. Representatives of LAG Tara Oltului and Association pour le Développement du Pays de Saint-BrieucSud (Brittany – France) signed in 2010 the document of collaboration for the program „Food and energy crops”. The Program “Food and energy crops” has as objectives: development of potato crop and the cultivation of the energy crop *Miscanthus* -, as well as exchanges of know-how, with the goal of valorizing the common knowledge regarding the potato crop. The goal is to form up farmers technicians for the increase of productivity and the improvement of the quality, and also the development of some energy crops in order to respond to the energy requirements of the territory Tara Oltului (mainly Avrigh area). Also, in the year 2010 it took place in the region Saint Brieuc, France, the Forum of the Partner French and Polish LAGs. 27 LAGs from France, Poland were present, as well as from Tara Oltului. At the Forum, LAG Tara Oltului was invited to present an example of good practices in cross border collaboration between the LAGs (LAG Tara Oltului, 2014). Unfortunately, in LAG Tara Oasului is not to be found any partnership, any region, or another member state.

Exemple of good practice is that in Finland:

- **Finland:** LAG Sameboat. The main characteristic of this region is depopulation, phenomenon to which is contributing also the lack of infrastructure.
- **Strategy LAGSameboat:** The project was implemented in 4 LAGs from different regions by the young people through an appeal for the financing in the goal of increasing the attractiveness of the region. Within this project it was made not only an exchange of ideas, but all 4 LAG-s had common activities and each contributed with its own experiences -. Cooperation with other regions in Finland helped the zone of the LAG Sameboat fight against isolation and depopulation, by organizing more activities as: championships, musical performances, foundation of clubs and new groups of young people, according to hobbies and interests. Two projects were about the promotion of a traditional sport, for which were granted outfits and specific facilities. This has subsequently become popular in the Finland Islands and competitions were organized among the young.
- **Problems Met:** The big distances between the LAGs made the visit of the young people's groups more difficult. As in this ring of isles both Swedish and Finnish is spoken, encouraging the cooperation between the young people was a real challenge. (European Commission, 2009, pp. 21-23)

The Comparative Analysis of the Social and Economic Impact of the LAG-s Tara Oasului and Tara Oltului

The LAG from Tara Oasului has an absorption of 2.2 mil. euro, representing almost 2/3 of the absorption of Tara Oltului of 3.2 mill. euro, without omiting the fact that the population in Oas is twice

bigger than that of Olt, and the total area from Oas is twice smaller in Tara Oltului. Neither of the two LAG-s has absorbed funds on all measures which they had at the disposal. (Table 3).

The analysis of funds attracted through LAG per capita inhabitant reveals the fact that the gap between the two LAG-s is obvious. Both the total absorbed funds and those calculated per capita inhabitant of LAG Tara Oltului are much bigger than those absorbed by the LAG Tara Oasului.

MEASURE 111: Professional training, knowledge information and diffusion was dedicated to a number of 58 farmers in all development zones on the Romanian territory. It is an important component as the persons who are specialized in a certain domain can bring a plus of value to it and can contribute to the harmonious development of the zone. Only Tara Oasului utilized Measure Măsura 111 for the development of two projects dedicated to the young farmers .

MEASURE 112: Setting up young farmers has as a goal the development of the agricultural farms, which produce mainly vegetable farm products and livestock for human consumption and animal feed. There were 4 projects for Tara Oasului and 10 projects for Tara Oltului, the value of the projects being by 7,000 euro higher on the average for the inhabitants of Tara Oltului.

MEASURE 121: Modernization of the agricultural farms with the operational goals dedicated to the promotion of investments in the agricultural farms in the vegetal sector and of animal raise for the realization of new constructions and or modernization of the farm buildings already existent, purchase of new machinery and devices, starting plantations, etc. The measure was accessed in LAG Tara Oasului as the farm sector is more developed in the region Oas than in Olt. Tara Oasului invests in industrial equipment for the farm

A Comparative Analysis

Table 3. The measures for which European funds were accessed with the help of LAG in Tara Oasului and Tara Oltului

Measure	Tara Oasului		Tara Oltului	
	N0. projects	Allocated Funds	N0. proiecte	Allocated Funds
111 Professional training, information, knowledge diffusion	2	15000	0	0
112 Setting up young farmers	4	100000	10	320000
121 Modernization of farms	10	151039	0	0
141 Support to semi- subsistence farms	0	0	20	165000
312 Support for the creation and development of micro-enterprises	10	721477	12	842374
313 Encouraging tourism activities	7	714262	12	654864
322 Improvement of services for the rural economy and population	13	449634	22	1213536
421 Implementation of cooperation projects	2	65064	1	35000
TOTAL	46	2151412	77	3230774

Source: LAG Tara Oasului, 2014, LAG Tara Oltului, 2014

sector. Accessing the LEADER axis means a good development on the agricultural plan, and the investments which totalize over 150,000 euro can be used by the members of other LAG-s. LAG Tara Oltului did not access the funds put at the disposal because the parcels of land are fragmented and the farmers' associations are inexistent. In the zone Tara Oltului the agricultural farms are not frequent, the majority of the people practicing the subsistence agriculture. Due to lack or of the small number of, these funds were not accessed.

MEASURE 141: Support to semi-subsistence farms has as a goal the support for the people practicing agriculture only as a means to ensure the daily food. This measure was accessed only by LAG Tara Oltului through 20 projects . In this area there are more sub-

sistence farms than in LAG Tara Oasului, where there are more farmers and people associated into farmers groups.

MEASURE 312: Support for the creation and development of micro-enterprises has as general goal the sustainable development of the rural economy through the encouraging of the non-farm activities, in the goal of creating jobs by creation of new companies which need employees. Both development zones accessed the same measure. Ratio between the number of people who are in each zone held in view and the number of projects handed is similar. Measure 312 must be accessed by LAGs in the future as well in order to develop a complex economy based not only on agriculture or animal raising, but on obtaining products with value added. The projects were implemented in

LAG Tara Oasului for the making of a line to fabricate pellets for the procurement of a bulldozer-excavator. In Tara Oltului the funds were used for the factories for the processing of plastic masses or for wood processing. The projects value differs from one region to another. The average in Tara Oasului and Tara Oltului being of around 70,000 euro per project.

MEASURE 313: Encouraging tourism activities has as general goal the development of tourism activities in rural zones which could contribute to the ensuring of alternative incomes as well to the increase of the attractiveness of the rural space. Both groups of local actions accessed these funds, as both have a very high tourism potential which is not exploited at real maximum capacity. Tara Oasului accessed more funds through less projects. More precisely, with almost 60,000 euro more having only 7 projects in comparison to LAG Tara Oltului.

MEASURE 322: Improvement of services for the rural economy and population has the following goals: improvement of infrastructure, improvement of access to basic public services for the rural population, the increase of the number of renovated villages and increase of the number of the patrimony objectives. Tara Oltului performed in the accessing this measure being able to implement a number of almost two times bigger of projects. The total absorbed funds were 2.7 times bigger than in Tara Oasului. The average value of projects was higher by approx. 20,000 euro in Tara Oltului. All these projects developed, are reflected in the living standard of the people, in their access to the running water networks, or natural gases. Through the implementation of such projects, the life's quality in the rural increases, with a direct impact upon the attractiveness for tourists or for the families wishing to settle in the rural area.

MEASURE 421: Implementation of cooperation projects with other Local Action Groups which are on the country's territory or outside the national boundaries. The common actions, which are encouraged, could include the exchange of good practices with other LAGs, exchange of managers (twinning) or joint development works, also jointly coordinated. Both groups developed partnerships, experience exchanges or exchange of good practices, which has led to new ideas put into value by both participating parts. Cross-border cooperation or the national cooperation brings unique opportunities for the LAGs.

Problems Raised by LAG Representatives in Romania

The LAG representatives in Romania require:

- To facilitate the access of private beneficiaries of the Measure 121 – Modernization of farms, 123 – Adding value to farm-forestry products; 312 – Support for the creation and development of micro-enterprises; 313 – Encouragement of tourism activities, as well as of the beneficiaries of these measures financed in the axis LEADER conditions, from the NRDP, to the advancements foreseen in contracts of non-refundable financing signed with APDRP, through the issue of banking guarantee letters necessary for these beneficiaries by the guarantee funds
- Flexibilization of payments representing operation expenses in function of each LAG activity
- Flexibilization of the project's value, after the launching of an appeal for selection in the sense in which they could submit projects with a value of maximum 200,000 euro, as each LAG foresaw in the Strategy;

- Acceleration of the analysis of projects submitted by the LAG-s. At present, from the moment in which it is opened a section, until it is made a report of selection for the projects, a month and a half is necessary, and the verification of projects by the County Offices is taking even 5 months. A possible solution could be the acceleration of the process at county level by employing some competent persons to deal with the verification of the projects.

Challenges of the LEADER Axis in Romania

Innovation and experiment represent the biggest challenge in implementing the LEADER Axis in Romania. Concretely, this refers to the search for new answers. More exactly, innovative approaches to the issues present in rural development, through the promotion of creative ways and innovative paths for the exploitation of the natural and cultural resources with the respecting of the environmental conditions and of the principle of sustainability. The projects linked to the revitalization of the crafts, techniques, initiatives regarding the renewable/alternative energy, waste management, ecological technologies, ecological products represent only some of the possible examples for innovation and experiment (Ministry of Agriculture and Regional Development, 2014).

Implementation of LEADER approach in Romania was introduced 'step by step' along 5 years, as the elaboration of strategies for local development represent a challenge and a task consuming time, through a learning by doing process for training and interconnecting.

Another barrier is represented by the reduced degree of awareness of the local communities as regards the potential of the approach LEADER. At present, only a few of local groups present potential as future local action groups. It is needed

the change of the mentality to wait for decisions from the central level to that of making decisions at local level, in which all representatives should be involved and at the same time to feel the satisfaction of the involvement in the rural development of their own territories.

CONCLUSION

The local action groups represent an engine to capacitate the local private-public energies and development of the rural zones in Romania. Efficiency of the program was demonstrated at European level, and in Romania the results are visible at local level. Program LEADER, through its ascending approach of the problems with which the rural zone confront themselves, has the capacity to offer the best solutions to the specific problems.

From the analysis of the last indicators available at the level of the European states, we found strong positive correlations between the number of LAG-s and the agricultural area and between the number of LAG-s and population, but also the absence of any correlation between the number of LAG-s and the GDP/inhab..

The investigated LAGs in Oas and Olt are concrete examples that the LEADER approach is a consistent model and in Romania also, after it proved its functionality at European level ever since 1991. Through the involvement into LAG-s, villages, communes, which do not have the capacity for a sufficient development, are uniting and work together to develop as a whole. Through the projects developed LAG-s help to the increase of the people's living standard, to the creation of new jobs and to the reduction of the unemployment, to the promotion of tourism infrastructure, by putting into value the rural cultural patrimony. The ascending approach, materialized through the involvement of the actors public, private and

of the nongovernmental sector in a single entity offers local solutions and open new opportunities for public-private management.

Both investigated regions accessed funds available through the program LEADER. The comparative analysis revealed the fact that LAG Tara Oltului managed to access of 1.5 times more funds than the LAG Tara Oasului. This means that the degree of absorption per capita in Tara Oltului was over two times bigger than in LAG Tara Oasului. More exactly, each inhabitant in LAG Tara Oltului benefited from 51 EUR more as opposed to one person living in LAG Tara Oasului. The public actors in LAG Tara Oltului attracted more funds through the renovation, development of the villages, the improvement of the services for the rural population and the economy and the putting into value of the rural inheritance. In this case, the funds accessed are of almost 1.5 times bigger in LAG Tara Oltului than in LAG Tara Oasului, and the number of projects submitted was of 1.6 times bigger in LAG Tara Oltului than in LAG Tara Oasului. The social efficiency of the LAG Tara Oltului is significantly bigger than in LAG Tara Oasului. LAG Tara Oasului benefits from 55.3 EUR/inhab. And LAG Tara Oltului from 90.3 EUR/inhab.

At the level of both local action groups, a better self-assessment of own resources is recommended, depending on their own needs and interests. Volunteering is a variant too seldom used, although it is a factor bringing plus value to LAG efficiency. For the improvement of the LAG performances Tara Oltului and LAG performances in Tara Oasului there are to be recommended workshops, individual sessions based on the specificities of each of them, transparency and dialogue, starting from the already accumulated experiences from the previous projects. Innovation is a weak point for each of the regions, which means that in the future this characteristic must be exploited at maximum capacity, with long time effects.

LEADER approach as local management strategy and the development of new LAG-s remains

a priority for rural Romania. Moreover, there must be respected also the Recommendations of the European Commission, which remarks the fact that there are problems as regards the public acquisitions system, corruption or the conflicts of interests. In order to create the efficiency of LAG-s, the competition and cooperation between them, we recommend the application of new methods for assessing the social efficiency of the investments through the LAG, which, of course needs time, resources, expertise in choosing the methodology and the designation of an expert responsible for this goal

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KEY TERMS AND DEFINITIONS

Local Action Groups (LAG): Are “entities representing public-private partnerships, constituted from representatives of the public sector, private, civil, designated from a rural homogenous territory, which will have to accomplish a series of requirements regarding the competency, covered territory and will implement an integrated strategy for territory development” (AFIR, 2014).

Sustainable Development: Is the development that has in view meeting the needs of the present, without compromising the possibility of the next generations to satisfy their own needs.

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