SUSTAINABILITY AS A TREND FOR COMPETITIVENESS CHALLENGES

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ACKNOWLEDGMENTS

The idea behind the book *Sustainability as a Trend for Competitiveness Challenges* came across genuinely as part of my cross-cutting research. The chapters are a reflection of the current linkages and challenges associated with resource efficiency, circular economy, land degradation, and climate change.

Alongside the findings, the book offers suggestions for streamlining sustainability between economic, social, and environmental aspects. The synergies can reshape the present trends in many directions, either positive or negative. In this way, an integrative approach can always provide a more dynamic perspective throughout this process.

The passionate readers in the area of sustainability will be the ones that will most benefit from the multitude of information. In this regard, their feedback is essential in order to develop the current state of research.

Publishing the current work could not be done without the interest and support of Cambridge Scholars Publishing. The exchange of ideas and perspectives provided along the way by the family, friends, and colleagues helped to turn many ideas into reality.

PREFACE

Our current reality is constantly changing and may differ from one year to the next. Due to this situation, neither sustainability nor competitiveness can be left aside from global influences. The available information sources can allow us to assess future development trends. As a consequence, sustainability increasingly started to be part of the international, national, or regional fora. Many times it is seen as a solution for the development pathway.

Adapting to change has become the new trendsetter, being more than just a fancy quote. It is a phenomenon influencing everybody in an interconnected world marked by various typologies of crisis. That is why reaching equilibrium between the economic, social, and environmental aspects has never been so urgent as in our days.

Apart from overcoming inherent implementation difficulties, we have to find suitable solutions and understand existing interconnections. Building a sustainable future can start from this present moment. Thus, we have to ask ourselves if the markets have in place the proper instruments to promote sustainable competitiveness. Another approach is to consider the perspective of a sustainable management approach as a solution to our current problems.

In recent decades, governments, business, and NGOs have started to embrace new approaches. This openness is an attempt to create a more balanced development pathway through concepts like resource efficiency, circular economy, or land degradation neutrality.

Increasing transparency is quoted frequently as a decisive factor for implementing sustainability. Moreover, a sustainable model for transition needs to ensure open access to information and to promote fair international trade. Also, in order to increase sustainability uptake, we have to better understand the cultural traits of any society. This dimension together with other aspects can influence education, gender issues, and consumption–production patterns.

Being aware of the shortage of our natural resources and the price volatility of production prices can determine us to search for new solutions and approaches. Developing a marketplace for innovative solutions, eco-friendly products, and services can be one of the keys for tomorrow's

challenges. From this perspective, competitiveness can stimulate the uptake of sustainability among local, national, and global communities.

All these perspectives are the starting points of the sections included in this book. The aim was to present the concepts of sustainability and competitiveness, and to jointly associate them as a trademark of a free market. The rationale behind this approach was to highlight the relations that could emerge between the two notions and to correlate them as part of a future development path.

Further research needs to be done in redefining the competitiveness aspects. Looking ahead, we have to include sustainability as a core element of the sectoral and cross-cutting planning (e.g., circular economy, adaptation to climate change, and land degradation neutrality).

Going beyond the simple relation of strong sustainability versus weak sustainability, the book proposes to investigate sustainable competitiveness as a linkage between the two perspectives. This approach is an attempt to move ahead to a new sustainability agenda through the lens of sustainable management. The rationale is to identify the environmental, economic, and social challenges that can allow a paradigm shift.

Overall, the book is a reflection on mainstreaming sustainability in other policy areas, but also an invitation for readers to come with new findings regarding the proposed topics.

INTRODUCTION

In recent years, the multiplication of crises has determined the acceleration of natural resources depletion. This process generated negative synergies across countries. A type of ripple effect appeared at the economic, social, and environmental levels, and influenced the stage of development. The emergence of these situations urged targeted actions for obtaining a balanced development.

The current economic model is defined by industrialism, mainly focused on the automatization of production. New approaches have to correlate the technological aspects with human resources, especially as regards the future skills requirements for performing new tasks or jobs.

At this social turning point, sustainability came across as an alternative concept for a balanced approach. Generally, there is a consensus that sustainable development is the solution to implementing a more balanced development and to reach an equitable share of well-being for all.

The data[1] show that the global population increased from a rise of 5% in 1960 to 9% in 2018 (7.8 billion inhabitants), and it is projected to rise to 16% by 2050 (9.7 billion). From this perspective, finding a suitable approach toward resource efficiency is not a smooth system transition when we need to change and challenge our current reality.

The book is proposing a short introspection related to the area of sustainability. It starts with the United Nations' Brundtland Commission Report *Our Common Future* (1987), *Limits to Growth*, and arrives at more elaborated initiatives like *2052: A Global Forecast for the Next 40 Years* (Randers, 2012) or *Shell Scenarios*.

Around the world, the interest in sustainability has gained momentum and support on the part of stakeholders. As a consequence, the sustainability aspects are part of the negotiations process of multilateral environmental agreements and the multilateral trading system.

A key point for this process was the adoption by the United Nations General Assembly (2015) in the 2030 Agenda for Sustainable Development. This strategic document is a milestone and a step ahead in reaching a global consensus to monitor the progress toward the 17 Sustainable Development Goals (SDGs).

[1] http://www.worldpopdata.org/

When it comes to mainstreaming sustainability in other areas, there are multiple approaches. Developing initiatives related to sustainable competitiveness has to be in line with the concept of "doing more with less." This approach is the central pillar of resource efficiency and a circular economy. In this context, a sustainable management approach can give us the chance of achieving a harmonious framework of action.

The sustainability challenges raise many questions related to their cross-cutting impacts and deliverables. The book offers various perspectives regarding the notions of sustainable development and competitiveness. The aim was to capture the economic reality from an angle that identifies new ways of action and solutions for future challenges.

At the global, regional, or national levels, the decision-makers are facing drawbacks in mainstreaming sustainability in their sectoral strategies or programs. Many times, implementing a concrete sustainable development model can be a real challenge.

For each of us, learning to adapt to tomorrow's challenges is a pending issue when it comes to finding the most suitable solutions. Developing the current knowledge base and increasing awareness can avoid a process of general public rejection. We need to engage stakeholders in all the activities associated with sustainable management approaches, like the circular economy, as part of the social business models. In this regard, creating lasting public–private partnerships can be one of the tools to mainstream sustainability and to increase awareness at the societal level.

The book captures the role and impacts of various parameters such as competitiveness, new technologies, and well-being. Also, it connects them with emerging approaches related to the circular economy, resource efficiency or land degradation neutrality (LDN). Following this line, each chapter is offering particular insights for each thematic area.

The first chapter offers an in-depth analysis regarding sustainability and competitiveness. The aim is to connect the two concepts with other emerging sectors and to analyze approaches representative for the chosen theme.

The second chapter briefly describes the international negotiation on trade and environment. Within this section is a reference to the challenges associated with the Agenda 2030 for sustainable development, circular economy, and gender equality.

The third chapter identifies the vectors of change for both sustainable development and competitiveness. Other areas of interest focus on a series of aspects such as the fair-trade approach, sustainable consumption and production, and corporate social responsibility (CSR). This section presents several best practices and case studies.

The fourth chapter is an invitation to further consider sustainable management as an adaptive solution to real-time changes. This section presents the available scenarios and proposes a triple bottom line analysis applicable to the circular economy from a global/regional perspective. Other insights are offered by the relations that can be driven by well-being, sustainability, the role of research, innovation, intellectual property rights, and partnerships in setting the future choices of development.

The motivation behind this theme is the need to design an innovative perspective on sustainable development in relation to sustainable competitiveness. After all, a paradigm shift toward sustainability is a demanding process. From this perspective, finding the right balance within international negotiations is essential in promoting new avenues of development. In order to keep a fair perspective, the proposed connections reflect both opportunities and barriers toward promoting a sustainable management approach.

CHAPTER ONE

SUSTAINABLE DEVELOPMENT AND COMPETITIVENESS AT A CROSSROADS

1.1 Conceptual delimitations

Some time ago, this book started as a research journey for discovering the existing links between sustainability and competitiveness. After investigating various research options, the responses determined new multiple-choice questions. The outcomes mostly depended on the parameters considered in the development equation. The preference for an integrative approach came as a natural and viable option tool for describing the current development stage. Still, in order to have robust outcomes, defining the right "share" of sustainability is always a challenge, especially when a proper implementation is at stake.

The economic dimension described as an engine fueled the production of goods through the use of available resources (human and environmental capital). The consumption and production functions can establish sustainable trends among all the actors from the market.

The key elements proposed in the research helped to extend the area of sustainability. Thus, competitiveness came along as a vital force underpinning economic efficiency, progress, and innovation. The configuration of an optimal way to achieve and maintain competitiveness has to cope with various challenges. Among them can be technology, market volatility, and scarcity of natural resources.

Competitiveness has a meaningful potential impact at the national and international levels. Many times, it has been the driving force behind economic efficiency and progress. Due to its flexible approach, competitiveness is a sequential factor applicable at the same time at the national, regional, or international levels. It directly connects the market potential with the ability of companies to produce sustainable products and services. It can broadly promote sustainability and the circular economy as part of a new paradigm of development.

In order to obtain an optimum level of competitiveness, we must first analyze a mix of factors and situations. An overview of the market potential, the available resources, and the innovative strategies can offer insightful information regarding the new niches of development.

Both sustainability and competitiveness are not outside the evolution of society. Their relation should reflect all three dimensions of the development: economic, social, and environmental. Directly connected to these conceptual areas, we can have areas generically defined as key and emerging enablers (e.g., circular economy or adaptation to climate change).

When it comes to redefining the two concepts through a dynamic approach, we can obtain valuable insights as regards the evolution of perceptions at the societal level. This progress is the outcome of an increased awareness process. Moreover, the public policy cycle makes its contribution by supporting the current and future initiatives, allowing a constant involvement of stakeholders. All these actions have scaled-up the role of the environment within society.

1.1.1 Sustainable development

Over the years, sustainable development has become an iconic concept. Currently, it can be considered as a reference point for everybody searching for an equitable approach. Over time, at the international level several conceptual rebrandings have been proposed such as "eco-development" or "sustainable development." Lately, concepts like "green economy," "circular economy," "resource efficiency," or "low-carbon economy" have come along, targeting various sectors from waste management to energy and climate change.

Within the report issued by the Club of Rome *Limits to Growth* (1972), the authors highlight the future challenges of humankind. If the current linear model of consumption and production remains unchanged and the population increases, our planet will reach its structural limit within the next one hundred years. A crisis point will be felt by all of us even before we reach that moment. The impact will be in relation to land needed to ensure the supply and demand for food resources. Moreover, the exponential growth of the future demands of the economic system will be directly faced by the finite status of the available natural resources. New thinking patterns require actions to tackle the existing trade-off situation. The solution proposed by the authors is in line with the necessity to find equilibrium between environmental protection and economic activity, which can be a stability factor in implementing a sustainable approach.

The document *Our Common Future: Report of the World Commission on Environment and Development* elaborated by the Brundtland Commission (1987) defined what sustainable development is. The report advocates the kind of progress that could reach a balanced approach in terms of "meeting the needs of present and future generations."

The success of the idea of sustainable development at the international level was also laid down by the United Nations Environment and Development Conference in Rio de Janeiro (UNCED) in 1992. On this occasion, the Rio Declaration on Environment and Development was adopted at the UN level, which can be considered as a foundation stone in the history of negotiation processes. For the first time at an international level, twenty-seven principles for guiding the implementation of sustainable development were adopted.

Another important outcome of the conference was the adoption of Agenda 21, a non-binding action plan for deploying sustainable development. This document urged the development of the international law on sustainable development. The aim was to obtain a balance between environment and development, and to further integrate them at national, subregional, regional, and international levels.

A step forward was the initiative of the United Nations Millennium Summit (2000) that adopted the Millennium Declaration, including the eight Millennium Development Goals (MDGs), and set the year 2015 as a reporting timeline. The World Summit held in Johannesburg (2002) acknowledged the importance of sustainable development as a political engagement applicable to all the world's states.

Further progress in the promotion of the sustainability agenda was the declaration "The Future We Want." It was adopted by the UN Conference on Sustainable Development in Rio on 19 June 2012. Sustainable development, the green economy, and poverty eradication were considered as strategic areas for the present and future generations. All three initiatives became cross-connected themes, supporting the need for a future development pathway.

In order to find out the most relevant areas and indicators, the debate on the Post-2015 Development Agenda proposed several interactive dialogues between stakeholders as a working procedure. The specific themes were eradicating poverty, tackling climate change, building resilient economies, peaceful societies, and sustainable development goals (SDGs) for all. After extensive discussions held over two years, in 2015 countries adopted a set of seventeen goals to end poverty, protect the planet, and ensure prosperity for all as part of a new sustainable

development agenda. Each goal has specific targets that have to be achieved by all the countries in the next 15 years.

As a result of the MDGs' partial implementation success, it was time for a new, upcoming, and challenging approach. In this context, the synergies created between MDGs and SDGs were described as a building block in terms of the steps needed for better streamlining environmental protection. For the first time in history, SDGs are part of an agreement for accomplishing a global agenda for sustainability applicable for both developed and developing countries.

The theme of sustainable consumption and production was recognized at Rio+20 as being an essential overarching objective for sustainable development. The adoption of the 10-Year Framework of Programs (10YFP) on sustainable consumption and production (SCP) can be considered as a milestone process. It envisaged a series of actions toward implementing resource efficiency and sustainability, facilitating knowledge exchange, and funding dedicated projects. From a global perspective, the 10YFP entails a global shift in the direction of sustainability. The tailor-made programs target several areas such as sustainable public procurement, consumer information for SCP, sustainable tourism, sustainable lifestyles, and education, sustainable buildings and construction, and sustainable food systems.

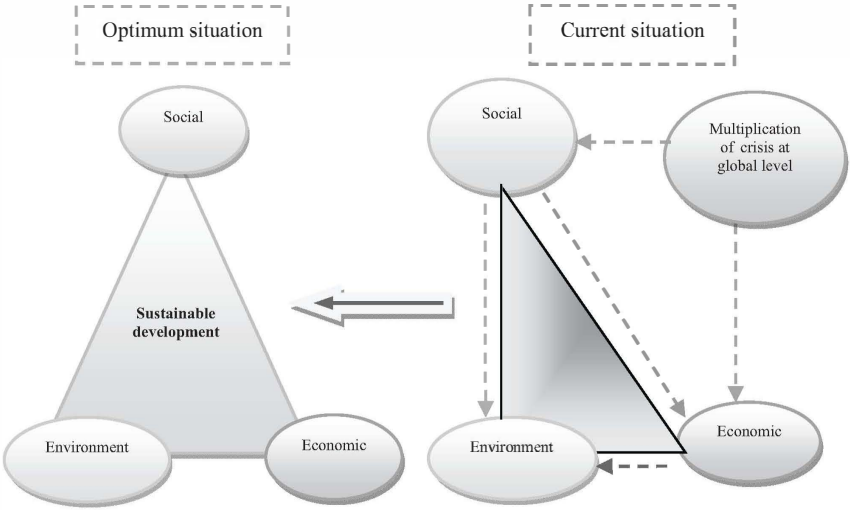
The 10YFP contributes to the implementation of various SDGs, such as goal 4: quality education, goal 8: decent work and economic growth, goal 9: industry, innovation, and infrastructure, goal 11: sustainable cities, and communities, goal 12: sustainable consumption and production and goal 17: partnerships.

Due to the high degree of involvement on the part of all stakeholders, the expectations from sustainable development were high, particularly in creating the premises for a new approach to the economic growth pathway. The classic representation of sustainable development brings to the forefront the need to ensure a dynamic balance between all the economic, environmental, and social aspects. Unlike this goal, the current state of development can often be characterized as a "no-sustainably triangle" as regards to the optimal balance between economic, social, and environmental components.

In order to change the typology described as a triangle of "no-sustainability," we need to implement significant transformations at the national level. This approach can allow achieving equilibrium between all three components, namely economic, environmental, and social. The previous figure points out that the social aspects (e.g., population growth, lack of social engagement) and economic (e.g., ensuring a certain standard

of living for the citizens of a country, increased domestic material consumption) have a significant impact on the environmental capacity. Our current exponential growth determines an irrational resource overexploitation. The imbalances created between all these components have a decisive role in the generation, multiplication, and diversification of crises at national, regional, and international levels.

Fig. 1.1: The classic representation of the sustainable development in relation to the "no-sustainability triangle"



Source: Author's interpretation based on the Brundtland report

From the perspective of methodological rigor, the definition of sustainable development is rather general. It mostly expresses the intergenerational ethics related to the rights of present and future people. As a consequence, the sustainable development law came as an emerging field in international law by incorporating at the same time the areas of economic, environmental, and social aspects.

A step forward was taken in 2002 when the International Law Association adopted the New Delhi Declaration of Principles of International Law Relating to Sustainable Development. This initiative resulted from the need to offer further clarification and guidance on the legal status of the concept. There are various antagonistic opinions, such as on one side the supporters of the concept were arguing that sustainable

development is part of the normative dimension of international law, and from the other side the critics of the concept were arguing that it is only a clear notion that has no normative consistency.

When it comes to the implementation stage, we need proper sustainable development planning in order to achieve tangible results (Ştefănescu et al. 2008). In this way, the private sector could become an active partner in taking over sustainable development by

- promoting the principle of ecological efficiency, sustainable use of economic resources, sustainable consumption and production patterns, and corporate social responsibility;
- ensuring active feedback to public bodies in order to improve the overall framework of strategic planning;
- creating competitive advantages for companies that are widely promoting environmental strategy and environmentally friendly products.

1.1.2 Competitiveness

The concept of competitiveness has multiple perspectives in an attempt to capture all its relevant peculiarities. On the one hand, the classical approach is linking competitiveness with the notion of the absolute advantage of nations in the production of goods (Smith 1776), the cost of opportunity, and relative and reciprocal advantage of the nation when it comes to the gains from trade (Ricardo 1817). On the other hand, the neoclassical approach is focusing on the idea of perfect competition (e.g., perfect information, divisibility of production factors). In this case, countries will specialize in producing the type of goods and services in line with the available production factors (the Heckscher–Ohlin model). Through the Keynesian approach a comprehensive picture of the macroeconomic level is offered, mainly focusing on labor and capital as complementary factors within an economy.

Competitiveness can also highlight the perspective of a "center–periphery" model applicable in the case of the development of various regions (Friedman 1966). Other aspects associated with competitiveness are referring to achieving economic growth as an outcome of increased productivity (Solow's model).

Currently, several international reports aim to provide a quantifiable picture of the degree of competitiveness attained by countries. Thus, from a general perspective the concept can have three-dimension areas,

respectively national, regional, and international, including various impacts and actors.

1.1.3 Competitiveness at national, regional, and company levels

Some analysts have expanded the conceptual sphere of competitiveness to the *national dimension* of a country. The aim is to provide a macro vision of competitiveness as a direct result of globalization. Even if the impacts are difficult to assess, we do not have to underestimate the role played by national economies, because it is a pivotal one. When it comes to international competition, most of the time the competitive advantage is created at the regional or local level.

Due to the new international competitive conditions, the process of adaptation to change could be better supported by the state. This action can be in terms of adopting appropriate economic, social, and environmental policies, developing a smart specialization approach.

Starting from a simple question of why do some countries succeed and others fail in international trade, Porter (1990) attempted to provide a relevant response in this regard. The outcome of this approach was to identify a series of features associated with the competitive advantage (e.g., available natural resources, management practices used, or existing employment relationships).

In any country, the ultimate goal of any national development program is to ensure an increased standard of living for its citizens. In this context, the author emphasizes the importance of linking national competitiveness with national productivity.

In his famous works related to competitiveness, Porter describes the competitive advantage of sectors and industries (clusters) based on relevant aspects. The interactions achieved within the national "diamond" are key determinants for increasing competitiveness.

On the other hand, regional competitiveness can also follow the principles defined by Porter in the case of national competitiveness. In addition to the standard components of the model, one can add other factors, such as the quality of life within a region. This approach should consider the role of local and regional public administrations in stimulating companies to develop competitive advantage by taking into consideration the diversification and specialization that could take place at the regional level.

The EU Regional Competitiveness Index 2016 defines regional competitiveness as:

> the ability of a region to offer an attractive and sustainable environment for firms and residents to live and work.

Competitiveness can be at the level of the product line or sector of the economy influenced by a series of factors related to the company's external environment. In this context, globalization is launching a series of challenges for companies to find suitable real-time responses. Moreover, at the international level there is fierce competition for new markets, natural resources, and consumers.

When it comes to competition, Porter (1998) describes it as a critical element for achieving the success or failure of a firm. The state represents another actor, having a significant factor in managing the whole process effectively. Its imprint on competition is felt directly by the business environment through the quality and quantity of regulations.

1.1.4 Competitiveness: economic prosperity and well-being

Competitiveness is increasing the level of productivity, which is a central pillar of a nation's standard of living.

The report Global Competitiveness Index 2017–2018 of the World Economic Forum offers an overview regarding the determinants of long-term growth. It proposes to further include institutions, policies, and various factors that could stimulate the productivity of an economy.

Another perspective is provided by the report *World Digital Competitiveness Ranking* (IMD 2017). The concept of digital competitiveness refers to a societal change when it comes to the process of adoption and exploration of new technologies by all stakeholders. In this respect, the core elements used refer to knowledge, technology, and future readiness. Moreover, innovation is directly linked with technological and organizational change, as well as with institutional factors.

Achieving an acceptable level of sustainable competitiveness should be seen as a driving force capable of stimulating the development of new best practices and adapting to an ever-changing international environment. (Ştefănescu et al. 2009).

Another possible perspective is the relation between competitiveness and well-being. From this perspective, the pending question is to what extent can the two concepts be connected. Certainly, an environment that ensures proper conditions to create sustainable competitiveness will allow a high level of well-being to be reached.

Generally, the concept of well-being includes aspects related to living standards, quality of life, happiness, and life satisfaction. Still, the measurement of well-being is a pending issue. It is subject to various

interpretations which transform the conceptual definition into a rather difficult task. To have an objective overview regarding its extended conceptual area, one has to search deep into the aspects related to what can make people happy.

The relationship between economic, social, environmental factors, and well-being is advancing a series of debates at the frontline focused on the efficiency of the public policy framework, income security, natural resources consumption, and production patterns.

1.1.5 Cross-cutting concepts

In the last few years, the area of sustainability has been enriched by including new approaches regarding environmental protection:

- *The green economy*

The UNEP's Green Economy Report provided an exhaustive overview regarding the potential of various sectors of the economy to become greener. The concept is defined as follows:

> an improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities (UNEP 2011).

The green economy is not supposed to replace sustainable development, but rather to build on it. The aim is to provide essential insights for the sectoral transition to a new development pathway.

A key role in "greening" economic activity is the ongoing technological development and developing actions to combat the side effects of climate change.

Increasing resilience is a core element in implementing sustainability. Many countries are going in the direction of adopting strategies and action plans for adaptation to climate change and for promoting land degradation neutrality (LDN).

Assessing the progress toward implementing sustainability has always been a concern. The SDG Index and Dashboards Report is offering insights regarding country performance on meeting the SDGs of the 2030 Agenda for Sustainable Development. This approach is proposing to take into consideration the existing spillover effects among sectors (hence the economic, financial, and governance dimensions, and their impact on the environment).

Initiatives aiming to promote sustainability are excellent examples of cooperative engagements at the international or regional level. The Batumi

Initiative on Green Economy (BIG-E)[2] is a pan-European framework aiming to support voluntary commitments toward implementing the goals of the 2030 Agenda for Sustainable Development through the Green Growth Knowledge Platform. The UN Partnership for Action on Green Economy (PAGE) is proposing a holistic approach when it comes to natural capital by encouraging the exchange of good practices among countries. The Green Economy Barometer 2017 developed by the Green Economy Coalition is offering an overview of the existing actions, initiatives, or projects developed in the last years. An essential part of the report is analyzing the market trends and potential in assessing the value of natural capital.

- ***The circular economy as a relation between resource efficiency and sustainable consumption, and production patterns***

The well-known classical linear consumption patterns ("take–make–dispose") are not working any more in a world of finite natural resources. This type of model determines resource scarcity, price volatility, and increased supply risk for companies.

The Ellen MacArthur Foundation proposed a pioneering approach related to circularity and resource efficiency. The main focus is on transforming the status of waste into new products. Following this line, the definition is synthesizing the main elements as follows:

> [the] circular model builds economic, natural, and social capital. It is based on three principles: design out waste and pollution; keep products and materials in use; regenerate natural systems.[3]

Moreover, the report *Towards the circular economy: Accelerating the scale-up across global supply chains* (2014) jointly prepared by the World Economic Forum and the Ellen MacArthur Foundation mentioned among other aspects the link between circular business models and competitiveness aspects. This approach is an attempt to create value per each resource unit used.

Various authors offer other perspectives in defining the circular economy. The conceptual area primarily includes all the economic activities in order

[2] It was promoted by the United Nations Economic Commission for Europe and the United Nations Environment Programme.

[3] https://www.ellenmacarthurfoundation.org/circular-economy/concept

> to extend the service-life of goods, components and materials, through reuse and re-marketing, repair, re-manufacturing and technological updating of goods [...] (Stahel 2014)

On the other hand, Sauvé et al. (2016) are proposing to define the circular economy by referring to the following:

> production and consumption of goods through closed loop material flows that internalize environmental externalities linked to virgin resource extraction and the generation of waste (including pollution)

The World Resource Forum is proposing to describe the conceptual area from the industrial economy

> in which material flows keep circulating at a high rate (in terms of quality, property, function, range of use) without the materials entering the biosphere, unless they are biological nutrients (WRF 2012)

Understanding the linkages created between the circular economy and sustainable development is an important step forward. Changing the traditional design pattern toward a more circular one will stimulate the creation of innovative business models. We have to consider that around 80%[4] of the environmental impact is in the design phase of products.

Recently, the debates on circularity have been evolving toward new understandings that are going beyond waste management. The concept links other policy areas, institutional aspects, and new growth opportunities.

Promoting a circular economy policy can be a business opportunity for all. In this regard, the EU took a step forward by adopting a dedicated circular economy package as part of the efforts to seize the new market opportunities. This initiative included several legislative proposals and a circular economy action plan.

Exchanging ideas and good practices between stakeholders are important steps forward whenever innovative ideas and approaches need to be taken up. As part of the efforts to improve communication, dedicated platforms were created, such as the European Circular Economy Stakeholder Platform, the Platform for Accelerating the Circular Economy – PACE or LOOP Ventures.

[4] https://ec.europa.eu/jrc/en/research-topic/sustainable-product-policy

- ***Low-emission development, adaptation to climate change, and land degradation neutrality (LDN)***

The concept of low-carbon development[5] was introduced in the framework of the UN negotiations, particularly in the *Rio Declaration on Environment and Development* (1992). Currently, the term used is low-emission development. It refers to national economic development plans or strategies of the parties aiming to promote a resilient climate growth with low emissions.

At the international level, adaptation to climate change is an emerging area to strategical policy planning. Any intersectoral vulnerability assessment has to take into account the adaptation measures as a core part of any impact. Furthermore, the Adaptation Fund under the United Nations Framework Convention on Climate Change (UNFCCC) is an essential instrument for encouraging the development of vulnerable country parties to implement actions to tackle climate change.

Another perspective is the one developed through land degradation neutrality (LDN). This concept is a core element of the United Nations Convention to Combat Desertification (UNCCD). The initiative represents a step forward in the negotiation process that took place in the framework of the United Nations Conference on Sustainable Development (Rio+20) and the 2030 Agenda for Sustainable Development. In this regard, the Land Degradation Neutrality Target Setting Program under the UNCCD is a practical tool to support countries for implementing a proper land management policy, especially for defining their national baselines, targets, and measures.

Overall, both adaptation to climate change and LDN are interlinked concepts within the policy cycle in terms of assessing cumulative risks. Their contribution to the 2030 Agenda for Sustainable Development is essential when it comes to SDG 13 and SDG 15.3.

- *Trade, fair trade, and CSR*

Shifting the classical model of business toward creating new market opportunities could be analyzed from many perspectives when it comes to promoting sustainable production patterns.

Trade can be one crucial element that could influence the development path. In this regard, the United Nations Conference on Environment and Development (1992), through the Rio Declaration, recognized the role of the multilateral trading system in achieving sustainable development.

[5] https://sustainabledevelopment.un.org/index.php?menu=1448

Progress in the direction of trade openness among countries registered an evolution through the rules of the General Agreement on Tariffs and Trade (GATT) and WTO.

Another way to promote sustainability is by implementing social, economic, and environmental standards. At the international level, there are various standards such as ISO 26000, the Global Reporting Initiative (GRI), Guiding Principles on Business and Human Rights, and the OECD Guidelines for Multinational Enterprises. They are targeting the area of corporate social responsibility (CSR). Following this line, the United Nations developed an initiative called *Global Compact for Business*. The aim was to provide guidelines for promoting responsible business models at the international level.

The concept of corporate social responsibility presents various dimensions such as CSR programs, philanthropy, or other volunteer initiatives. All of them are giving the opportunity for businesses to engage in order to solve various social problems and to acknowledge relevant best practices.

Another initiative aiming to promote sustainability and equity within the framework of international trade is "fair trade." This concept is a social movement toward helping producers from developing countries. This approach has been gaining more ground recently, also in the context of the international trade debates. It is part of the collective efforts to put the right price on natural resources originated from developing countries and to promote sustainable businesses models. In this regard, the World Trade Fair Organization proposed a set of ten guiding principles to be followed in order to actively promote fair trade and to support the local communities from the developing countries.

- ***Cultural dimension***

The multidimensional perspective of sustainable development connects with the cultural aspects as well. Apart from the economic, social, and environmental aspects, we can include under the umbrella of sustainable development political, or even cultural aspects (Ştefănescu M. et al. 2008).

Increasing awareness regarding sustainability can be many times influenced by the degree of openness and readiness by countries toward taking over new perspectives and cultural values.

In the case of international negotiations, there is a direct relation with the cultural values of a country. The openness toward new approaches is not just a question of money for value in order to ensure a market competitiveness position. However, culture can influence people's beliefs

toward embracing sustainability as a management style. We have to take into account that culture, values, and norms are part of every society. Many times, the cultural patterns can define the attitudes toward the perceptions of the impacts on the environment, especially in the case of consumption and production models. Moreover, sustainability can be actively supported by the cultural dimension by increasing awareness regarding the economic, social, and environmental aspects.

The cultural sustainability links well-being at the societal level. It is a horizontal element in assessing various impacts at the policy or project levels. Cultural heritage is part of our living reality in urban areas or outside them, and should be preserved by all of us for future generations. We have to remember that the unique traits of a culture are its capacity to conserve the historic environment and to promote creative design. Also, culture plays an important role concerning international negotiations, including the areas of environment, economics, and social aspects. In order to identify a common approach in dealing with sustainability, we have to further consider all the perspectives and not just the ones related to market operations.

1.1.6 Conceptual delimitation findings

Sustainability and competitiveness are interlinked concepts that are building on each other in order to reach societal well-being. Other perspectives focus on the synergies created among the circular economy, green economy, and low-carbon economies.

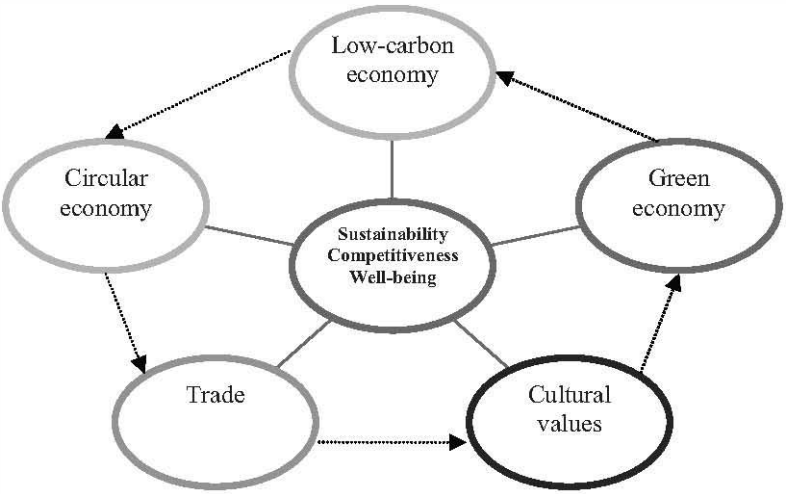
When it comes to defining what synergy is, we have to pay attention to the generated cumulative effects. A significant contribution was provided by R. Buckminster Fuller (1997) who considered that the whole system could act independently from its separate parts. The author splits the word of synergy into "syn" (in Greek this means identical) and "ergy" (in relation to energy) in order to better emphasize the delicate connections created between various fields of activities.

From an overall perspective, the synergic relations can be generically expressed in the equation 1 + 1 = 3, which emphasize the idea that the cumulative impacts of the parts are greater than the single total value. As a rule of thumb, the interpretation of synergy should be following the existing particularities that can appear between each activity. Thus, the cumulative effects can be at the same time both positive and negative due to their permanent interlinks and overlapping situations. From this perspective, we have to pay attention to assessing their impacts in order to use appropriate policy instruments.

Depending on the analyzed area, the concept of synergy can have different meanings in physics, chemistry, or in the context of organizational culture. Synergies are playing an important role in promoting sustainable competitiveness, sustainable circular economy, or implementing sustainable management approaches.

The dynamic relations included in Fig. 1.2 can be subject to further considerations in terms of identifying key enablers for promoting sustainability and competitiveness among them.

Fig. 1.2: Interactions between conceptual areas of sustainability and competitiveness



Source: Author's interpretation

Whenever we are analyzing the effects of synergies we have multiple options to select, such as the relations created among various activities. From this perspective, the book is proposing to define a series of relevant concepts as follows:

sustainable competitiveness is a key enabler for promoting a fair market approach among economic actors when it comes to environmental and social costs

a sustainable circular economy is a step-by-step process that is enabling paradigm shifts in terms of production and consumption, cultural and educational values, trade in natural resources, finance and investments that

are directly contributing in implementing sustainable and competitiveness approaches

a sustainable management approach is a policy instrument aiming to mainstream economic, social environmental aspects as a process adopted by responsible organizations, as part of their efforts for achieving sustainable circular economy and sustainable competitiveness

Given the cross-sectoral inputs, the synergies created between various approaches or sectors are multiple whenever we are targeting circularity as a system approach. Moreover, each chapter of the book is building on the others toward creating positive synergies among the concepts. The proposed approach is the foundation of sustainable competitiveness centered on achieving sustainability in open-market competition.

A sustainable circular economy is in line with the concept of a "sharing economy." It is an attempt to support efficient use of resources and to build "genuine social capital" (JRC 2016b). Still, a sharing economy should further consider aspects related to social equality, such as gender, racial and financial equality, inter- and intragenerational equity, and equality of social opportunities (Murray et al. 2017).

A sustainable circular economy has a strong connection with the area of waste management, especially regarding transforming waste into a resource for industry and creating new products. From this perspective, it is essential to identify the most suitable tools to overcome the technical limitation related to increasing the degree of reusing or recycling of various types of waste in order to close the loop.

Developing the current state of knowledge in the area of competitiveness has a transformative power. It can play a decisive role in all areas of society. Moreover, it can be a viable alternative for supporting positive synergies with other fields of activities.

We must not forget that well-being is directly linked with all the aspects mentioned above, and is the ultimate goal for reaching a sustainable circular economy as part of a global sustainable management approach. However, having a uniform view over well-being is a challenging task because we have to consider various perspectives, such as material well-being, personal well-being, and resilience versus well-being.

1.2 Binomial relation between sustainable development and economic competitiveness

Above all the debates around the classical linear economy model versus promoting a more sustainable, green, or circular economy, we have

to consider the cumulative impacts of our current decisions. Reaching an equitable future development is an action that has to be undertaken today by all of us.

Even if there are plenty of definitions that can give various responses to the question "what does sustainable development mean," currently there is not a straightforward answer.

Most synthetically, this concept aims to achieve balanced development. This objective can be done through new job opportunities, increased productivity, and lower negative externalities. We have to define actions in areas related to intellectual capital, to reduce regional disparities, to apply the precautionary principle in resource management and to ensure conditions for meeting the needs of future generations.

The conceptual perspective focuses on defining specific elements that can be applicable to socio-economic, natural, national, or international dimensions. This angle of analysis offers a multidimensional perspective of sustainability. In this way, we can avoid the confused perception of a "black box" model.

In Pearce's view (1989) sustainable development can be considered as a "loyalty to the future," a kind of "Pareto-type sustainability" in terms of ensuring a fair distribution of well-being among generations.

There are conceptual nuances that can be better understood if we go in the direction of "strong sustainability" versus "poor sustainability." Between the two extremes, the middle way is always an additional option to be considered by decision-makers if the substitution of resources can be possible. The attention paid to the substitution effect is somewhat limited in applicability due to the scarcity and uniqueness of natural resources. Still, it has an essential role in human well-being. In the case of weak sustainability, there is the option to substitute natural capital with the technological one due to the continuous breakthrough innovation process in research and development.

We all know that natural resources are priceless for human development. Unfortunately, the economic activity and our consumption behaviors have directly contributed to spreading the resource scarcity all over the world.

A key catalyst for transforming the present challenges into opportunities is represented by innovation, especially in the case of a better valorization of secondary raw materials, and energy efficiency. Moreover, increasing the products' circularity can represent an opportunity toward linking the design phase with the waste status in order to recreate new products.

As regards the market potential, the report issued by the Business & Sustainable Development Commission *Better Business, Better World*

mentions that actions toward achieving sustainable development goals can have a contribution of more than $12 trillion distributed through various sectors (e.g., food and agriculture, cities, energy and materials, and health and well-being).

Among the drivers of sustainability, several synergies could be relevant to the present research:

- greening the value chains;
- supporting green skills developments as part of the so-called fourth industrial revolution as part of the efforts to reduce the inequalities;
- adopting green fiscal approaches, primarily in the segment of energy and waste;
- enforcing the role of green public procurement as a policy tool for setting a green trend among institutions and companies.

In the equation of sustainability, competitiveness is an essential cross-sectoral factor and a driver of change. Given the significant role played by the two concepts at the national and international level, the book mainly insists on revealing particular elements in terms of their potential impact for changing the old paradigm of development.

The analysis of competitiveness from the perspective of sustainable development brings to the forefront the need to reconfigure the current development model by focusing on new innovative approaches. The achievement of this goal should consider a series of inherent challenges, which are related to the nature of the system's structure and the inertia with respect to change. We must not forget that entropy can happen suddenly within a system, as Nicholas Georgescu-Roegen (1986) emphasized in his research.

When analyzing the progress in terms of competitiveness and sustainability, it is worth mentioning the need to generate positive synergies. This aim can create lasting national competitive advantages. Such an objective involves reconfiguring the current foundations of national competitiveness. This action is not a single-stage process; it has to include both in macroeconomic and sectoral development programs clear references to technology and knowledge-intensive industries.

Achieving a sustainable long-term competitive advantage is correlated with an increase in citizens' standard of living. However, this objective has to be consistent with the protection of vital natural resources. The research and innovation process can play a strategic role in promoting key concepts such as eco-efficiency, sustainable consumption, and production

throughout the life cycle. The niche areas can enable more cost-effective ratio options in the production process.

Implementing more sustainable solutions has to go hand in hand with increasing public awareness regarding the finite natural capital. In this way, we can have qualitative leaps in the case of national competitiveness. In our actions, we should not neglect past mistakes about unsustainable development patterns due to the economic, environmental, and social costs of energy-intensive industries.

In order to identify the best strategic actions, we have to choose a proper mix of relevant factors of competitiveness and sustainable development. Transforming unsustainable trends into sustainable ones can be done through new integrative approaches such as CSR. Other options are to implement proactive environmental policies (hence circular economy, green public procurement) and to better involve stakeholders in the policy process.

Choosing an approach focused on economic competitiveness from the perspective of sustainable development can contribute to achieving a long-term sustainable economic objective. Further on, this perspective has the potential to support the growth of a country or region's living standard.

Before taking any decision regarding the way to go ahead, we have to assess to what extent the economic growth process has sustainable fundamentals or not. In the medium run, the binomial relation between competitiveness and sustainability can be the key to a new accountability oriented approach. The natural resources are the starting point of any production process, being inputs for economic activity. In this regard, so-called weak sustainability assumes that human capital can substitute for the natural capital (Robert Solow and John Hartwick). This perspective is different compared with the one proposed by the "strong sustainability" that states that human capital and natural capital are complementary, but not interchangeable. In the end, the choice depends significantly on the political support and the national priorities established in this respect.

There are many options to define sustainability and competitiveness. The current focus is on the relation between natural and human capital, and their contribution to sustainable growth. The proposed perspective focuses on the following aspects:

- strong sustainability versus strong competitiveness;
- weak sustainability versus weak competitiveness.

Table 1.1: Perspectives on sustainability and competitiveness

Strong sustainability	*Strong competitiveness*	*Weak sustainability*	*Weak competitiveness*
- natural capital cannot substitute the technological capital	- efforts to preserve natural capital	- substitution of natural capital with technological capital	- minimum efforts to preserve natural capital
- increased knowledge regarding the critical resources that are at risk of extinction	- resource productivity is an important enabler for achieving a sustainable growth - steps toward promoting fair trade	- intensive exploitation of natural resources	- export of natural resources (raw or processed goods) - focus on short-term economic growth
- direct impact on human well-being	- interest in promoting circular economy solutions -green public procurement (GPP)	- environmental problems in the case of human health, pollution etc.	- infrastructure deficit - weak legislative framework in place for efficient law enforcement

Source: Author's compilation and interpretation

From a critical perspective, the current paradigm of competitiveness–sustainable development needs to improve in order to be called sustainable. Unfortunately, often there is fierce competition in the international markets for achieving increased profits and market shares. However, in the long run, there is a clear need to move from the unsustainable status quo to new development horizons. The process of transition to other approaches and options requires first of all time, cooperation, and adoption of new methods.

In reality, the cases related to competitiveness and natural resources are subject to various perspectives. These situations can make us wonder about what could be the situation of a country that bases its competitiveness mostly on natural resources. One can notice the paradox that occurs when any country or region is relying exclusively for its economic growth on the natural resources. In the short run, it could register a rapid economic growth. Still, this situation is not a gain in terms of national competitiveness. Practically, in this case, the option is to sell

vital assets without developing a coherent strategy centered on capital-intensive goods produced in its domestic facilities.

The competitiveness based exclusively on natural resources is determining irrational overexploitation. This type of situation will generate a debit for future generations even if the perception is that of economic growth in the short run. The depletion of natural resources without investment in human resources and physical capital to counterbalance this loss will generate a process of impoverishment in the long run (Stiglitz et al. 2006).

We need to change our thinking in assessing sustainability and competitiveness. This paradigm shift is an essential action if we want to promote well-being and at the same time to preserve environmental protection. In this way, further actions will determine returns on investment and increasingly competitive market advantage. Reaching a high level of competitiveness at the national level is directly influenced by several factors. Among them, we can mention the economic aspects (macroeconomic, microeconomic), social implications (education, skilled workforce), democratic leadership (the quality of existing national institutions), and environmental status.

Competitiveness is not a single-factor process. It is a complex system that plays a significant role in promoting environmentally sustainable business practices. It can feed very well into the overall debates on implementing sustainability. Our choices can be twisted in many ways. All these actions are viable options to be further analyzed by practitioners as policy recommendations.

Implementing sustainability can be done through the so-called Bellagio principles, specific guidelines aiming to include the following elements:

- The vision of sustainable development needs to be set and have clear goals that can offer practical information in the decision-making process.
- The assessment of the progress should allow a global system outlook. In this regard, a special focus should be on top priority issues, including well-being, equity and disparity, and economic development.
- The evaluation must be transparent, open to the public participation, and the results easy to communicate to a broad audience.
- The process of evaluation needs a continuous process that requires to have in place the evaluation capacity and other institutional arrangements.

On the other hand, building sustainable competitive advantages can be applicable for each product type and their specific technical aspects (e.g., design, value, resources incorporated, copyright aspects, Internet of things (IoT)). Promoting a green market of products has to involve further analysis of the opportunities, the degree of openness of its customers, their culture, and consumption patterns.

Going in the direction of sustainable competitiveness can trigger positive changes. Any decision should be taken through a common vision designed at the level of each country. Identifying the relevant sectors or emerging development niches should be subject to involving all the stakeholders.

After further introspection, the binomial relation can describe a perspective of sustainable development as being a key driver of competitiveness. Setting this trend is not just a market issue, but also a signal for public policy. Both concepts interconnect with well-being, seen as the main goal of the development.

1.3 The sustainable management approach

Many of us are aware that the adaptation to change needs a specific time to become a reality. The urgency of actions will not allow this time comfort. Adapting to react positively to various types of challenges through collaborative actions, cooperation, and innovation should be the right approach.

When it comes to a multidimensional impact, we have to find the most suitable ways to do it in order to promote a "Copernican shift" for our economic system. Lester Brown (2001) once described this transition as a moment when we need to reconcile progress and development with environmental protection and social aspects.

Given the elements mentioned above, a sustainable management approach could integrate several principles and methods in order to become a viable option for a future development pathway. In this regard, there are several options proposing the following perspectives.

Pressure–state–response model

The integration of environmental data into the economic analysis is the central pillar proposed through the "pressure–state–response" (PSR) model. Through this approach, OECD expressed the causal effects existing between social, economic, and environmental components.

The development of the socio-economic system leads to environmental pressure. If the state of the environment changes there will be consequences

for human health, the availability of natural resources, and loss of biodiversity. All these impacts can generate an unforeseen reaction at the social level.

Triple bottom line approach (TBL or 3BL)

This type of analysis was proposed by John Elkington (1994) as an attempt to identify ways to improve environmental, social, or economic performance through the macroeconomic or sectoral policy decisions adopted in the short and long term. The following aspects are part of the TBL analysis:

- environmental side: the effects of policy decisions on the natural environment;
- economic side: the impact on financial sustainability;
- social side: the impact on the community as a whole.

In order to have a meaningful assessment, a bottom-up approach has to define relevant performance measurement criteria.

The ecocentric model: a nature-centered approach

Among the most representative figures of this approach is Aldo Leopold. According to his model, environmental conservation is an aim in itself; it is not meaning to provide welfare support for future generations. The goal is to optimize the biological structures, which can ensure the necessary energy for their construction and maintenance.

The model of the London School

Giles Atkinson and Eric Neumayer are among the representative figures of this model. The main focus is on the multidimensional aspects of sustainable development. Following this line, environmental sustainability is part of the environmental conservation seen as an enabler for any economic activity.

The London School model proposes a close link between ecological and economic sustainability. Still, there is an apparent dissociation between the environmental objectives expressed in physical terms and the means to achieve them.

Building upon these perspectives, a sustainable management approach can also be linked with the notion of "responsible businesses" as part of CSR. These types of business are models of best practices. They have the capacity to identify the most suitable ways to balance the economic and environmental aspects, and to empower communities. That is why

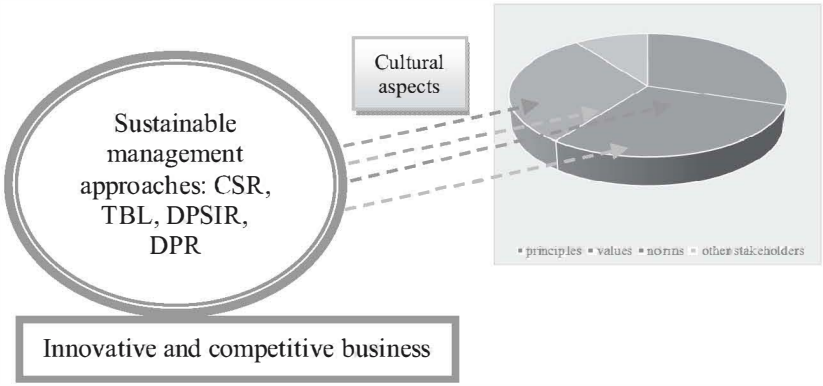
identifying principles, values, and norms are building blocks in creating more sustainable, flexible, and resilient business models. Their contribution is essential in addressing the present and future challenges.

Another perspective is the one offered by the cultural aspects. This dimension can integrate national cultures and values into the sustainable management approach. From this angle, we need an in-depth knowledge of the relationship between the management style and the national cultural traits. This aspect is a prerequisite for defining and implementing sustainability in various countries.

Initiatives such as *Circles of Sustainability* are more than welcomed, being an attempt to integrate the cultural aspects into sustainable development. In this regard, Agenda 21 for culture and the United Cities and Local Governments Executive Bureau started promoting culture as the next pillar of sustainability. Furthermore, the aim is to mainstream the relevant information regarding cultural aspects in the sustainability approaches. Their influence can predetermine the success or failure of any strategy or policy.

Among all sustainable management approaches, there is a dynamic representation of the economic, social, and environmental aspects. Still, cultural aspects and their relation with principles, norms, and values have to be reflected when assessing sustainability. Also, this aspect could be linked in relation to the role of communities and other stakeholders. As shown in Fig. 1.3, in order to develop innovative and competitive business we have to understand the general context of a country and its particular elements, especially the behavior of citizens as regards change and cultural values.

Fig 1.3: A generic representation of the sustainable management approach

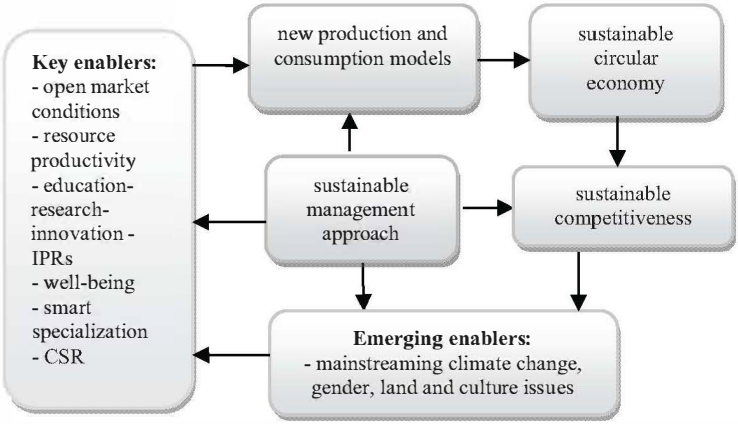


Source: Author's perspective

Defining a sustainable management approach has to consider the present market trends and the impact of future innovative business models. In this regard, we need to identify the most suitable ways for mainstreaming economic, social, and environmental aspects. This decision should be part of the joint efforts toward a more sustainable circular economy and sustainable competitiveness.

This book proposes to implement a successful sustainable management approach. The aim is to prioritize the importance of several factors and to divide them into key enablers and emerging enablers. This direction focuses on new consumption and production models, sustainable circular economy, and sustainable competitiveness. By adopting these perspectives through an open process, we can reconsider the relations existing between products–waste–resource circulations.

Fig. 1.4: Enablers of a sustainable management approach



Source: Author's interpretation

When it comes to the key enablers, they have the potential to drive sustainability up to the next level. Next to these, the proposal is to have a series of factors directly connected with the marketplace conditions, resource productivity, and existing cross-cutting relations between education–research–innovation–IPRs, citizens' well-being, smart specialization, and CSR.

From a horizontal point of view, sustainability and competitiveness are emerging enablers, especially in the case of climate change, gender, land, and cultural issues. Further on, by assessing the various synergies from the

perspective of the key enablers and emerging enablers, we can observe transformative shifts. The proposed sustainable management approach intends to emphasize the cross-connections. Finding equilibrium among all the enablers and involving stakeholders is the key to creating a favorable competitive and sustainable environment.

The role of sustainable management is a challenging one. It aims to ensure the integration of sustainability and competiveness in a complex environment driven by change. In this regard, any actions must have an adaptation component based on identifying suitable ways to address sustainable competitiveness. In the end, any new approach has to be validated by the obtained outcomes.

Another aspect relevant to this book is the role that international negotiations can play in moving forward the agenda of sustainability within the framework of the 2030 Agenda for Sustainable Development. In this context, better assessing the synergies among various sectors has to be acknowledged as a pending issue in order to identify the most suitable solutions.

CHAPTER TWO

MOVING AHEAD TO A NEW SUSTAINABILITY AGENDA IN INTERNATIONAL NEGOTIATIONS

2.1. How do culture and development factors influence international negotiations?

Culture and development are two sides of the same coin closely interlinked with the evolution of our society. The word "culture" comes from the Latin language where is associated with "cultus" meaning "cult" or "awe" intrinsically connected with the evolution and development of society. From another point of view, the term of negotiation has a long history that started in the sixth century BC in Rome. The term *negotium* broadly used by citizens living in a city, both wealthy and free people, was well known among them. On the other hand, the nobility did not use it when referring to private businesses or specific public functions.

Marcus Tullius Cicero (106 BCE–43 BCE) mentions in the letters addressed to his son Marcus, about having a life of honesty and virtue (entitled *De Officiis* in Latin and *On Moral Duties* in English), that

> diplomacy in the friendly settlement of controversies is more desirable than courage in settling them on the battlefield. (1913)

From a general point of view, negotiation is an integral part of life having the capacity to change the perception and evolution of situations. Different perspectives may appear in any international negotiation depending on the matter in question or the expectations of each party. Nevertheless, we have to acknowledge the cultural differences as the starting points of any negotiation process. Being aware of these elements is an essential part of any negotiation process, especially in the case of values, attitudes, beliefs, and identities. Moreover, international negotiations have their dynamic in which cultural diversity is playing a core part in obtaining successful outcomes, including the diplomatic aspects.

The cultural factor in international negotiations can stimulate the diversity of opinions and perspectives, and can have a relevant contribution within the debates related to the future development pathway. Moreover, culture and development impact other aspects associated with the negotiation process. In any international negotiation, we have to recognize the influence of various factors: cultural differences, the need to find common points, and a compromise situation following the line "agree to disagree."

Given the fact that international negotiations take place in an intercultural context, there are additional elements to be further taken into consideration. Sometimes international negotiations are taking place in very different technical settings, being a reflection of a mix of preexisting factors such as the inherited past relations, the global economic competition, or other types of situations.

Every negotiation process has a specific degree of "sophistication" that is depending on the formal or informal procedural rules that have to be followed by all involved parties. Additionally, international negotiations can frequently have significant costs and risks associated with the situation of not obtaining the desired outcomes. Due to these characteristics, many international negotiations are incredibly delicate and require a lot of patience, tact, skills, and practical experience.

Each negotiation process has its original, unique, cultural, and procedural context since it operates in absolutely particular circumstances. Overall, any negotiation has its cultural specificity and functionality. In this context, the approach of cultural diversity varies as regards the geographical areas[6] analyzed: Japan is a space lacking diversity; the USA is a place of homogenization of diversity; Europe is going more into the direction of the integration of diversity.

Overall, negotiations between different cultures lead to differences and implications determined by national cultural traits. Sometimes a type of "cultural myopia" determines the tendency to maintain a personal style of behavior as being the best, and to expect or to impose it on others. Any other culture is perceived as being outside the norms of the native culture and results in promoting stereotypes as regards other cultures and nationalities.

Due to the diversity and complexity of the global economic area, the transnational environmental impacts require specific strategies and tactics, based on an intercultural approach.

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[6] Helen Bloom, Philippe de Woot, Roland Calori, Euromanagement: *A New Style for the Global Market, Insights from Europe's Business Leaders*, Kogan Page, 1994, ISBN-13: 978-0749412074

In the game of negotiation, all the parties want to obtain the best possible compromise. Before any negotiation expectation becomes a reality, all the parties have to know the rules, be adaptable to other cultures, and have the right abilities. The negotiation strategy is part of the agreed objectives in order to achieve concrete results and to consolidate future relationships with the negotiating partners.

A situation of "multipolarity" can appear within international negotiations in terms of the influence that more than two nation-states can have at any given period. In this case, a considerable number of representatives can intervene from parties and at different hierarchical levels (e.g., experts, political, or diplomatic levels) in order to reach a final consensus. Sometimes these types of negotiations can take place in parallel, or in opposite directions having an incredibly complex character.

In this regard, there are various typologies of negotiation that can define different perspectives, such as the following:

- Distributive negotiation is following a gain/loss pattern. Generally, this process is aiming to have a single negotiation issue. As a consequence, it is not possible for a party to win without the other losing.
- Integrative negotiation is aiming to promote a win/win pattern. The outcome is respecting the aspirations and interests of each partner by their mutually beneficial agreements. It is going in the direction of obtaining an acceptable compromise for all parties.
- Bilateral negotiation is generally occurring between two parties that are involved in the process.
- Multilateral negotiation is involving several parties and experienced a significant development with the emergence of the UN system in 1945 (San Francisco Conference).
- Commercial negotiation at the level of private actors (to negotiate contractual clauses).

Negotiation has a vital role to play in promoting sustainability in international fora. Furthermore, the process of negotiation is a dynamic and complex one applying to each sector of activity, both to public and private actors. The style of negotiation is tailored-made to the formal procedures existing in place, to the cultural diversity, or the designed agenda.

The international negotiations follow particular sets of rules in accordance with the international law, the involvement of stakeholders, or different opinions of groups of parties. For example, within the framework

of the High-level Political Forum on Sustainable Development, all the parties and stakeholders had the chance to be involved in the UN platform for the global follow-up and review of the 2030 Agenda for Sustainable Development. A similar situation is applicable in the case of other UN conventions in economic, social, and environmental areas.

Many times, obtaining robust results is a matter of reasonable negotiation. This process has a transformative power in reaching a global fair distribution of resources. Closely connected to this aspect, the concept of culture has an important role to play in any international negotiation. Without a clear understanding, the outcome of any negotiation may be null or unsatisfactory.

Culture should not be perceived as a barrier, nor as a superficial notion; it is the quintessence of the development stage of any country. Each culture has its traditions and customs that can allow us to identify different approaches to the negotiation process. Careful research of the cultural aspects can determine successful outcomes for all parties.

We have to acknowledge that the negotiation process tends to become one of the most widespread types of formal and informal interactions. The negotiation strategies are not outside the general principles of communication. That is why we can affirm that the negotiation strategies have differentiated applicability depending mostly on the social and moral norms of the parties involved within this process, under the applicable legal requirements.

2.2. What is at stake for the environmental and economic negotiation diplomacy?

The history of our social evolution is part of the whole evolutionary process further linked with the invention of coins, a moment that was the starting point for exchanging goods between traders. Since 640 BC, coins have recorded a widespread use that culminated around the seventh century in China where for the first time the notion of money made of paper appeared as a parallel alternative to the existing coins. Their history can offer a fair idea of the culture of societies and their leaders, closely connected with the development of the negotiation process.

The evolution of money is part of the overall society's progress. The ups and downs of the economic cycle are present during many periods of history. Starting with the Dutch tulip mania crises (seventeenth century), continuing with the Great Depression from 1930, and arriving in more recent times to the digital commodities, the prices of natural resources have been fluctuating over time being very volatile. Lately, there have

been interesting debates around the idea of comparing the tulip market evolution with the one of cryptocurrency (the bitcom boom). It is a gap of more than 400 years between the two events, but still a pending issue as regards putting the right price tag on natural resources.

Sellers and buyers are coming together through a direct or indirect process of negotiation for obtaining the best possible outcome. A combination of actions and decisions is used to obtain a compromise situation satisfactory for all parties. Sometimes, who wins and who loses can be a matter of pure luck. From this perspective, there are remaining questions regarding how sustainability can have a real impact on the market and in people's lives or how we can create value-added out of it. Thus, it is necessary that a further system design has to be able to provide a comprehensive framework for better uptake of sustainability.

An essential role in creating robust cooperation at the international level is represented by the negotiation that has the potential to steer a transformative decision-making process. In this case, the success of any negotiation has to take into account the cultural impact that is likely to manifest regardless of the relational terms or how the process takes place. Other essential aspects are related to the transmission of information in the international fora, the degree of involvement of stakeholders, the openness, and awareness of the general public.

The process of mainstreaming environment and economic aspects has never been an easy topic. Finding common ground is the key to obtaining successful outcomes. However, from this perspective, there are several questions to reflect upon, such as: what is at stake when the environmental and economic negotiations are working together in order to define a common line? Can we link the environment and economic activity through trade facility promotion? What is the role of diplomatic negotiation? All these elements are the starting points of this section aiming to identify the linkages existing between sustainable development and competitiveness.

Changing times require brand new approaches in the case of countries relying on exporting their natural resources. As a consequence, the ups and downs of an open, globalized market impact the national level directly. These types of effects are also felt by the importing countries that can be affected, especially in the case of lacking resources for ensuring constant welfare for citizens.

In this context, protecting natural resources and building up sustainable business are not just mere words; they are core elements of the present and future growth. In this equation, trade and competitiveness are playing an essential role in promoting a sustainable approach at the international level.

When it comes to natural resource distribution, the conclusion is rather straightforward that not all countries have the same level of resource endowment. The decisions to promote intensive natural capital or technological capital exports as part of the so-called competitiveness advantage directly reflect the development stage of any country. Thus, these particular aspects highlight the structure of short-term and long-term growth of any economy.

The trade in natural resources also has to deal with complex aspects such as environmental externalities or spillover effects, the scarcity of resources existing in some sectors, including the presence of some critical raw materials in different areas, or price volatility.

For having an overall understanding of what exactly are the natural resources, the report of the World Trade Organization is considering them as being

> stocks of materials that exist in the natural environment that are both scarce and economically useful in production or consumption, either in their raw state or after a minimal amount of processing (WTO 2010).

Due to their finite status, there are many debates focused on the linkages between their depletion and the increased production process. The impact on markets is far from being easy to quantify, and it is not certain whether technological growth will be a viable alternative to tackle the scarcity of natural resources.

Climate change, land degradation, deforestation, and other side events are directly affecting the availability of natural resources and can be pointed out as market failures, especially in addressing natural resources' depletion and increased environmental costs.

Apart from the aspects mentioned above, there is a need for developing countries to diversify their national economic structure and not to rely exclusively on natural capital-intensive exports as the main base for their competitive advantage.

The possibilities around trading natural resources envisage efforts toward environmental protection. Generally, restricting exports measures (hence: export taxes, quantitative or import restrictions) are rather low in the resource-based countries.

In this situation, there is a paradox because generally, the gains from the export of natural resources are lower when compared with intensive technological export. In this case, by promoting a fair price tag could reflect the overall ecological and social costs of resources, including the impacts suffered by vulnerable communities.

In many countries, national income is relying on existing natural resources. Thus, based on the data from World Bank, the GlobalEconomy[7] proposed a classification of the countries by comparing their natural resources income in relation with the GDP (the scoring ranges between max. 49.95% and min 0%). The top five countries are the following:

- Liberia (49.95%);
- Kuwait (44.66%);
- Iraq (42.44%);
- DR Congo (32.70%);
- Suriname (29.02%).

From the above enumeration, the majority of the listed countries are developing ones endowed with abundant natural resources. Each country[8] has its national particularities when it comes to the export of natural resources:

- *Liberia*[9] exports gold ($229 M), cocoa beans ($101M), rubber ($101M), and crude petroleum. Even if it is one of the fastest growing economies in the world, this trend is not present in the domestic economy.
- *Kuwait* has centered its export on crude petroleum ($25.7B), refined petroleum ($7.23B), petroleum gas ($1.54b), cyclic hydrocarbons ($1.07B), and ethylene polymers ($794 M).
- *Iraq* is exporting crude petroleum ($41.5 B), gold ($2.42 B), refined petroleum ($327M), tropical fruits ($114M), and recovered paper.
- *The Democratic Republic of Congo* struggled with various domestic conflicts/wars. The country also has other types of deposits such as refined copper ($2.37B), cobalt ($760M), diamonds, especially alluvial resources of diamonds ($378M), crude petroleum ($236M), and cobalt ore ($191M).
- *Suriname* is exporting gold ($1.02B), refined petroleum ($138M), rough wood ($69.1m), bananas ($53.2M), and rice ($42.4M).

[7] https://www.theglobaleconomy.com/rankings/Natural_resources_income/

[8] The data is quoted from AJG Simoes, CA Hidalgo. The Economic Complexity Observatory: An Analytical Tool for Understanding the Dynamics of Economic Development. Workshops at the Twenty-Fifth AAAI Conference on Artificial Intelligence. (2011)

[9] https://oilprice.com/Geopolitics/Africa/Why-Liberia-Has-Not-Been-Able-to-Break-its-Resource-Curse.html

Export of natural resources is also generating social inequalities among the local communities due to the uneven income distribution or difficult access to the land's resources. Due to this situation, in the last period, the global trading pattern has shifted its approaches. The main reasons are related to the accession of new states joining the WTO, including the cases when new products or types of energy are being traded on the global market.

The increasing debates on climate change are bringing into the foreground new issues related to green and renewable energy, and the subsidies that certain countries are providing. Due to this aspect, many stakeholders argue that this situation can generate an unfair competitive advantage between countries. Also, there are contradictory opinions over whether it is not a case of protectionism that should be further addressed by WTO.

All in all, we are facing a trade-off situation due to the imperfect market mechanisms that are in place, both on the demand and the supply sides.

The application of the general principles of the multilateral trading system was agreed back in 1947 to govern trade in goods with the aim to ensure a common ground for all countries.

The area of the environment was emerging in 1994 when, through the Ministerial Decision on Trade and Environment, the WTO's Committee on Trade and Environment (CTE) was created. The progress registered by the negotiations on the environmental goods and services commitments under the General Agreement on Trade in Services (GATS) started in January 2000. Moreover, the Doha Declaration (2001), in paragraph 31(iii) mentions

> the reduction or, as appropriate, elimination of tariff and non-tariff barriers to environmental goods and services with a view to enhancing the mutual supportiveness of trade and environment.

This approach aims to facilitate access to products and services that can improve energy efficiency, reduce greenhouse gas emissions, and promote air quality, water, soil, and natural resources conservation.

Streamlining the process of negotiation in the area of trade and climate agenda is the key to obtaining long-run sustainable outcomes. As part of this collaboration between various institutions, the Intergovernmental Panel on Climate Change has a vital role in identifying relevant mitigation and adaptation technologies (e.g., the initial list included wind and hydropower turbines, solar water heaters, tanks for the production of biogas, and landfill liners for methane collection).

Table 2.1: Demand and supply side for natural resources

Demand side	Supply side
Demands from the open market, including manufacturing stock exchanges	Imperfect market conditions (in the case of cartels established among various actors, existing monopolistic situation)
High demand, especially from the parts of manufacturing sector	Supply at risk: finite resources, the presence of some critical raw materials in areas of conflict (wars, migration)
Scarcity of resources existing in some sectors	Uneven geographical distribution of natural resources
Price volatility	- Increased costs associated with the extraction and transport of natural resources - The impact of the national policy and regulatory framework
Demands for promoting climate-friendly products, for implementing adaptation, and mitigation measures in order to increase resilience	- The Intergovernmental Panel on Climate Change, working on identifying relevant mitigation and adaptation technologies - Protecting intellectual property rights and licenses
Trade with endangered species	- Adverse impacts on biodiversity (habitats and birds) - Applicable rules under the International Trade in Endangered Species of Wild Fauna and Flora (CITES)

Source: Author's interpretation

From the point of view of the rules, there is a correlation between the WTO and UNFCCC. Article 3.5 of the UNFCCC and Article 2.3 of the Kyoto Protocol emphasize the need to have in place proper climate change measures, but not to affect the international trade or have other social, environmental, and economic impacts.

Obtaining sustainable outcomes in the trade negotiations will generate gains and positive changes for the vulnerable communities affected by climate change (e.g., investments in irrigation to combat desertification).

According to WTO[10], approximately 20% of specific trade concerns raised in the Technical Barriers to Trade Committee referred to measures related to environmental protection[11]. The environmental database of WTO[12] mentions around 5,468 environment-related notifications, 11,449 environment-related measures and 7,869 are subject of the environment-related trade policy review entries. This trend reflected the total number of environmental-related notifications, an increase of 15.9% in 2017.

Acknowledging the role of trade and environmental protection, WTO and UNEP launched a dialogue on healthier environments through trade in January 2018.

Another area where there is a close collaboration between trade and environmental protection is the one on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Exemptions from the Article XX of GATT are referring to the conservation of plant or animal species:

> (i) measures necessary to protect human, animal or plant life or health (paragraph b); and (ii) measures relating to the conservation of exhaustible natural resources, if such measures are made effective in conjunction with restrictions on domestic production or consunption (paragraph g)

All the parties should consider maximizing opportunities and synergies among various conventions in the global policy agenda, both on trade and environment. Moreover, the proper implementation of conventions can be achieved by countries through technical assistance and capacity-building.

The multilateral trading system is playing an essential role in promoting sustainable development and contributing to tackling the side effects of climate change, biodiversity preservation, and promoting the green economy.

The negotiation process is continuously adapting to current realities and challenges. Referring to international trade, the declaration that accompanies the 2030 Agenda for Sustainable Development mentions in para 68:

> International trade is an engine for inclusive economic growth and poverty reduction, and contributes to the promotion of sustainable development.

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[10] https://www.wto.org/english/tratop_e/envir_e/envir_req_e.htm

[11] Cases are related to control of hazardous substances, chemicals and heavy metals; to energy efficiency of equipment and electrical appliances; resource management, waste, reuse and recycling of vehicles, electrical and electronic products; others concern wood, fishery and seal products.

[12] https://edb.wto.org/

Trade and investments are interlinked concepts as regards shared responsibilities in setting the line toward a more sustainable pathway in international negotiations. Sustainable production and trade have an essential role in the process of selling and buying products or services. Furthemore, we have to ensure consumer protection, social responsibility, and to respect the integrity of the environment.

Providing relevant feedback is essential in order to allow all the stakeholders to express their opinions in the negotiation process. For this purpose, a series of initiatives started as a tool for enhancing cooperation and exchange of ideas:

- *Trade for SD Forum (T4SD)*[13] is an initiative that is working closely with the UN institutions, especially WTO and UNCTAD.
- *The Environment and Trade Hub* (2015) represents an initiative of the UNEP and the United Nations Forum on Sustainability Standards (UNFSS)[14] aiming to reach sustainable development goals, including a broad collaboration with various stakeholders.
- In 2014, several WTO Members[15] launched the *Green Goods Initiative* in connection with the Environmental Goods Agreement (EGA) for specific environmental products, such as wind turbines and solar panels.

The WTO 2017 Public Forum has emphasized the vital role that trade is playing in achieving the SDGs in relation with other sectors of the economy, adoption of clean technologies, addressing hunger, food security, nutrition and sustainable agriculture, well-being, jobs, and sustainable growth.

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[13] The envisaged areas are related to strengthening the integration of the business sector of developing countries and economies in transition into the global economy; improving the performance of trade and investment support institutions for the benefit of SMEs and enhancing the abilities of trade support institutions to better support them; improving the international competitiveness of SMEs.
More information: http://www.intracen.org/itc/about/how-itc-works/our-role-in-the-un-and-wto/

[14] UNFSS is a platform for international dialogue on voluntary sustainability standards, led by five collaborating UN agencies: UN Environment, the UN Conference on Trade and Development (UNCTAD), the Food and Agriculture Organization of the UN (FAO), the UN Industrial Development Organization (UNIDO), and the ITC.

[15] https://www.wto.org/english/tratop_e/envir_e/ega_e.htm

The environmental goods and services sector is subject of negotiation within the framework of the Transatlantic Trade and Investment Partnership (TTIP) between the EU and the USA.

Given the increasing role of both fields of activity, trade and environment can work together in promoting sustainable production patterns, thereby actively contributing to supporting vulnerable communities.

2.3. Challenges to achieve the full potential of the 2030 Agenda for Sustainable Development

Currently, we are living at a crossroads as regards the limits of the classical development model. The changing times are bringing new challenges due to rapid technological innovation uptake, research, consumption, and production patterns. However, the increased well-being has a cost to the planet, especially in the case of natural resources depletion and pollution. On top of this, people are facing wealth disparities, inequalities regarding the access to education, health, freedom, and other dimensions of development.

In a global and interconnected world, the challenges of development are multiple and we have to consider new ways of actions and thinking. As Ban Ki-moon, the former UN general secretary said on the occasion of the 21st UN climate summit:

> We have only one planet. There is no Plan B because there is no planet B. (2016)

The drivers to advance the negotiations under the UN General Assembly are related to many aspects. Among them are the aspirations to have a fair global distribution of well-being and to progress in terms of taking into consideration the environmental costs as part of the development process. All these elements, together with an extensive consultation process of stakeholders, actively contributed to reaching a universal international agreement on the 2030 Agenda for Sustainable Development (2015).

Stating as a core principle "leave no one behind" and to "reach the furthest behind first," the 2030 Agenda is sending a clear engagement message toward combating discrimination and inequalities across society. Another element of progress was represented by the international multistakeholder consultation that lasted around two years. This approach transformed the 2030 Agenda in a more transparent process whereas the MDGs had no prior public consultation in drafting the final document.

SDGs are drivers of change tailored to help countries in their efforts to mainstream sustainability at all levels. The targeted areas are diverse starting from eradicating poverty, eliminating hunger, providing affordable energy for all, and arriving at building up a more equitable and sustainable world.

The integrated approach proposed is the key to "seek to realize the human rights of all," mainly that the 17 SDGs directly or indirectly are referring to human rights aspects. Given the cross-cutting approach of the agenda, its core elements are the following:

- A total of *17 SDGs* and 169 targets applicable to all countries by 2030;
- *Means of Implementation (MoI)*---concerning the resources and partnerships needed to achieve SDGs;
- *Follow-up and review (FUR)*—monitoring and guiding the implementation process being in line with the cross-cutting principle "leaving no one behind."

At the global level, the High-level Political Forum (HLPF) is carefully monitoring the global progress toward the accomplishment of the 2030 Agenda (including follow-up and review). The core theme of the HLPF 2019 is "Empowering people and ensuring inclusiveness and equality." The mechanism of the Voluntary National Review (VNR) is the implementation means of HLPF aiming to ensure a fast track record of the SDGs. Also, countries can apply a Universal Periodic Review (UPR) that is a peer review mechanism of their VNR (for HLPF 2019,[16] forty-seven countries are planning to conduct VNRs).

When it comes to inputs, they are provided to the HLPF by the Regional Forums for Sustainable Development (RFSDs) in order to allow a proper follow-up and review of the implementation of the agenda in various regions. In this case, the main focus is represented by learning and exchanging best practices among countries.

The proposed reporting system of the agenda is a complex one. This system could sometimes raise questions about the real national political engagement and the proper implementation of SDGs. In this context, identifying the drivers of change and challenges that countries face is an essential step ahead for implementing sustainability. The transition from a business-as-usual to a more sustainable model should be progressive.

[16] https://sustainabledevelopment.un.org/index.php?menu=4444

In the category of drivers of change are several cross-cutting elements that have the potential to generate positive synergies among other sectors, such as the following:

- Human rights, combating discrimination, access to services, promoting well-being and equal economic opportunities for all can allow a positive change throughout countries (these elements are reflected directly or indirectly in SDGs).
- Research and development, innovation, and technological uptakes can have the potential to promote sustainable consumption and production patterns and to contribute to the natural resources' depletion.
- Promoting resilient infrastructure and sustainable cities can contribute to combating the effects of climate change, reduce waste, protect biodiversity, water conservation, and reduce and restore land degradation.
- Financing for SDGs is a core part of forging partnerships and projects for sustainable development.

When it comes to challenges, finding the proper implementation tools is sometimes tricky due to countries' specific national priorities and culture. Overcoming all the hurdles and setting sustainability as a national trendsetter agenda needs political support and engagement among all the stakeholders. Furthermore, according to the Sustainable Development Goals Report:

> Conflict has become the most insurmountable barrier to poverty eradication and sustainable development. War, violence, and persecution worldwide led to the displacement of 65.6 million people from their homes by the end of 2016. (2017)

Other aspects relevant to the current research are related to the global economic trends, weak governance, or political instability that is still present in many countries of the world. There is an ongoing need for a better engagement at the national level in terms of achieving SDGs because only 16 countries from 39 countries[17] mentioned strategies toward implementing the principle of "leaving no one behind" into their Voluntary National Review. Thus, among the policy areas can be mentioned social protection, development strategy, productive sectors, and technology.

[17] https://sustainabledevelopment.un.org/content/documents/20549CDPbp201846.pdf

All the 17 ambitious SDGs are proposing particular objectives achievable until 2030 for both developed and developing countries. Still, the question remains how all of these actions could be carried out within the current development model. Many countries are basing their development strategy relying exclusively on natural resources. Due to this approach a situation has been created that is putting pressure both on the environment and on the growth potential of the economic system. The current development path has to transform in order to tackle the effects of synergies among all the goals.

Achieving the full potential of the 2030 Agenda for Sustainable Development should subscribe to a common framework agreed among all the stakeholders, as part of a paradigm shift toward sustainability. The progress in the implementation of SDGs could be a success only if a coherent public policy approach is in place. Thus, we need clear financing mechanisms that are periodically under revision. Furthermore, we have to keep an eye on the dual actions of SDGs, a situation that can send mixed signals of progress. For example, targeting a quantitative GDP growth can be in opposition with the objectives of environmental protection, reduction of inequalities, well-being, or sustainability.

We need to identify possible new ways toward weighing the goals to obtain relevant results from a cross-cutting impact perspective in order to match the long-term vision of development. A more in-depth look at the synergies that can appear among SDGs in various areas of activity could offer valuable insights regarding future actions. Ensuring a decent level of well-being and lifestyle could be one of the aspects concerning the synergies among all SDGs.

Reaching the full potential of the 2030 Agenda for Sustainable Development cannot be done by ignoring the competitiveness aspects. This element can steer the development of a greener marketplace, to promote collaboration, innovation, and to allow more information for consumers' choices. Moreover, competitiveness has links with trade, sustainable consumption, and production patterns. All these elements can actively contribute to a fair resource distribution among society.

Finding suitable tools and identifying synergies among various sectors sometimes can be a difficult task. Still, the solution is to follow a step-by-step approach and to map the enablers of sustainability and competitiveness.

Reporting on sustainability should better reflect the key national achievements related to SDGs implementation. The emerging areas should not be left a part of the synergies identified in the framework of the 2030 Agenda for Sustainable Development.

Finding the right approaches to engaging in mainstreaming sustainability is a learning curve. Only through practice can we decide what is relevant for society, how we will design our future, and how we will shape our situation as humans.

Until now, there has not been a perfect way to tackle sustainability. There are successful cases that have better defined their objectives and actions at the national or local level. The key is to involve all the stakeholders in this process. The targeted actions can be in the area of increasing the level of awareness related to sustainability as a whole. In our search, we have to consider every single factor or synergy as being an essential step ahead in implementing sustainable development.

The 2030 Agenda for Sustainable Development is a multifaceted approach that leaves space for national priorities to actively feed into the proposed global targets framework. A pending point is the one referring to the potential effects of synergies that can appear among various thematic fields generating a mixed progress outlook. This issue could be subject to further debates whenever the review of the post-2030 agenda takes place.

2.4. The other face of "closing the loop" in the sustainability area

In order to integrate sustainability into our reality and not just to treat this concept as a negotiation or policy aspect, we need to find the right tools for its implementation. Taking a further look at the current consumption and production patterns, it is not easy to decide the right direction which we should go in as a society.

Generally, the consumption and production patterns are directly linked with our increasing needs for more and more sophisticated goods, even if the environment already overpassed its bio-capacity to generate new resources for industry. This situation is describing a reality when more products are placed on the market, increasing waste and pollution. These are the general lines and are part of what is called the linear economy—a model mostly based on exponential consumption.

Closing the loop of irrational resource consumption is requesting new patterns of thinking. As Albert Einstein once said, "we cannot solve our problems with the same thinking we used when we created them."

Changing our old perspective is a prerequisite if we want to design a more sustainable future. First of all, this action requires time to have proper communication tools in place. Second, we need an increased adaptive capacity together with the active involvement of stakeholders. Following this line, the Second World Circular Economy Forum (October

22–24, 2018, Yokohama, Japan) acknowledged the role that the circular economy can have in relation with climate change, sustainable management resources, waste, innovative business solutions, and financing instruments. Still, there are emerging areas that had to fill the knowledge gap with new actions, such as:

- The need to have in place a *global shared long-term circular economy vision.* In this regard, the Forum identified the SDGs as having a key role in building a global Circular Economy Strategy (2050).
- The circular economy plays an important role in promoting *sustainable business, trade, and job creation.* Discussions focused on various issues such as removing harmful trade barriers, reducing environmental impact through less transport, and promoting resource efficiency throughout the supply chain. Another issue was the need to harmonize the trade regime from the circular economy perspective.
- Creating *a stronger international leadership* in relation to the circular economy. In this context, the forum highlighted the role that various UN institutions (UN General Assembly, UN Environment Assembly) or regional bodies (e.g., Regional 3R Forum in Asia-Pacific) can play in the process of implementing circular economy.
- Following the line of increasing cooperation, on the occasion of the 20th EU–China Summit[18] a joint *Memorandum of Understanding on Circular Economy Cooperation* was signed in July 2018.

The transition from a linear economy toward a more circular and greener one can be the pathway of a new sustainable framework. The circular economy can offer technically feasible solutions focused on resource efficiency. Thus, various systemic challenges associated with our modern development have to overcome the material limitations.

Following the last evolutions, the Stockholm Resilience Center raised an alarm that we have overtaken four out of nine critical "planetary boundaries."[19] From this perspective, the circular economy can actively contribute to combating climate change disturbances. Following this line, the study *Reconfigure: The Circular Economy—A Powerful Force for*

[18] http://europa.eu/rapid/press-release_IP-18-4521_en.htm
[19] https://www.ecologyandsociety.org/vol14/iss2/art32/

Climate Mitigation mentions that implementing circular economy measures "could cut EU industrial emissions by more than half[20] by the 2050s."

Increasing resource efficiency is a popular idea associated with the "closing the loop" movement. This concept started to be applicable all over the supply chain, from ecodesign to the waste phase of products, and became the trademark of the circular economy pattern. All in all, closing the loop is the expression of the transition from the linear model "make, use and dispose" toward a more circular model based on transforming waste into new resources and byproducts ready to be reused by industry. Starting from the 1970s when the "cradle-to-cradle" approach first appeared, the concept is increasingly part of the efforts to promote resource efficiency. Moreover, it emphasizes the idea to create continuous cycles where products and their components made from virgin materials are easily dissembled, used, or reused for creating new products.

Going in the direction of the circular economy is a win-win situation for everybody. Within this type of approach, resource consumption and waste generated could be reduced and transformed into new products.

From a pure perspective, the core issue is more related to design than to waste management. In this regard, further research needs to fill the implementation gap, especially as regards the design for recyclability that should be coherent with the one for energy efficiency. Finding the equilibrium between the two aspects can offer new technical solutions when it comes to increasing the rates of reuse or recycling of products.

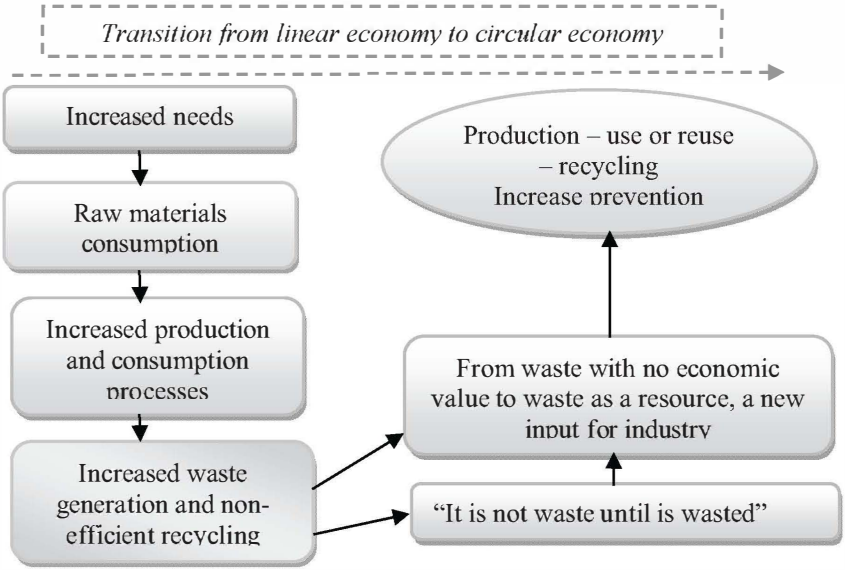
As shown in Fig. 2.1, changing the paradigm of the linear economy is demanding a rethink of the traits of the current consumption, of what defines the waste status and to increase prevention measures. From consumer needs to the waste generated, the ecodesign plays a vital role in so-called resource efficiency of the product's lifecycle management.

We need to make progress in implementing the circular economy. The Circularity Gap Report (2018) estimated that the global circularity was around 9.1% for 2015. Due to this value, further actions have to be in the direction of promoting resource efficiency at various levels (public, private, national, regional).

Applying a closing-the-loop approach cannot be made without increasing the efforts toward innovation throughout the life chain. The aim is to create sustainable products that are easily transformed and circularized in brand new products. By considering resource efficiency per product, we can have an assessment of the value of resources used and their ease in being further integrated into new products. By gathering all the information, we can have an overview of the supply chain.

[20] https://www.ecologyandsociety.org/vol14/iss2/art32/

Fig. 2.1: From linear economy to circular economy



Source: Author interpretation based on the literature review

Other milestones associated with sustainability include the need to increase communication and transparency regarding resource depletion. Thus, by promoting transparency and initiatives in the area of fair trade and CSR, we can offer a new perspective regarding the circular economy.

Each day, new products are made from natural resources in order to support an increasing consumption model. The pending question is whether their country of origin can benefit from the exported resources. Generally, the most endowed with natural resources are the developing countries and their exports are mostly in this area.

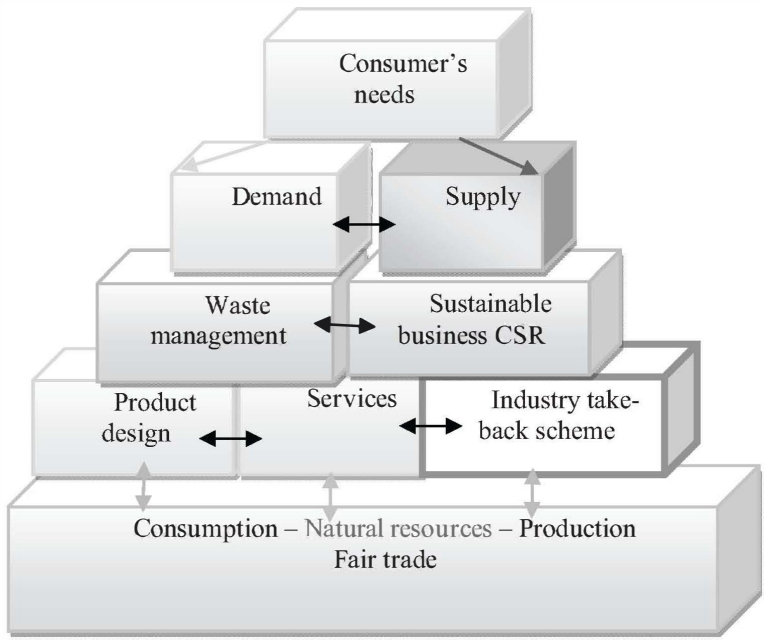
Other perspectives associated with closing the loop aim to create added value from the existing resources. Furthermore, concrete results can result from implementing fair trade as a business case and disclosing information in accordance with the guiding principles of CSR.

Any new change needs time in order to be taken up by society. It is not all about saving resources and reducing environmental impact; it is also about creating new business opportunities, skills, and jobs. The main goal is to obtain a fair distribution of revenues that could create the premises for reducing the gap of development through the right approach to

competitiveness. The relation is not directly straightforward, but it has the potential to enable positive changes as one country is advancing in smart specialization.

The needs of consumers set the market trends in accordance with the supply and demand. The other side of the closing-the-loop concept can incorporate not just the design of products, but also the whole value chain. The aim is to promote sustainability through business and consumer choices in relation to natural resources consumption.

Fig.2.2: Other sides of the "closing-the-loop" concept



Source: Author's interpretation

In the equation of development, fair trade has a vital role to play when it comes to access to raw materials. This approach can offer not just a stimulus for the development of local business, but is also applicable to environmental protection. Moreover, the available criteria aim to promote standards and norms for fair trade that are developed by different organizations (e.g., Fairtrade Foundation). The purpose is to offer a

guarantee of origin for the raw materials provided to the international markets, to obtain fair prices and to promote sustainable products.

All the above initiatives have to rely on creating so-called responsible consumers. Going in this direction has to identify further solutions to current challenges, such as if the classical trade is not so fair, how should it look from a sustainable perspective?

Many times, our unlimited needs are setting consumption and production patterns based on overexploiting natural resources. This trend line has to stimulate a better valorization of resources through the whole process. Better defined rules and norms can help to promote a more sustainable approach.

Changing our behaviors can be done by implementing take-back schemes aiming to collect used materials and products in order to transform them into other products and to ensure a new lifespan. The idea behind this is to change the perception of the consumer as regards waste toward creating a new resource, a commodity available for processing. The waste coming from one company can be the material input for another company. In this way, a problem offers the solution for developing industrial symbiosis platforms or other initiatives for sharing resources.

Prevention of waste is an integral part of the circular economy. It can be applicable starting from consumers and arriving at business by creating donation schemes, fiscal stimulus (e.g., each plastic bottle collected can be associated to a system that could transfer the money to public transport tickets or to create dedicated bonds as is the case in climate change).

Practical solutions in implementing a circular economy are available when all the stakeholders are eager to produce a real change at the societal level. Protecting the environment does not mean stopping economic development. On the contrary, both can jointly work to promote a fair distribution of resources, to create new market opportunities and jobs. All these actions can be beneficial to stakeholders, but especially in the case of vulnerable communities.

The circular economy needs to reach an optimum resource efficiency in order to increase the knowledge base and to overcome the technical barriers related to materials' chemistry and physical properties.

2.5. Emerging areas in sustainability

Recently, the area of sustainability has become more flexible. This concept is taking some upward trends as regards gender equality, vulnerable communities, rural development, land degradation neutrality (LDN), and adaptation to climate change.

Still, there are differences between men and women in terms of access to natural resources and ecosystem services. These discrepancies are due to various factors such as ownership, knowledge, rights, and cultural norms. Creating a level playing field was one of the main elements of the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) adopted in 1979.

The inclusion of gender equality in the area of sustainability marked a new beginning in the history of women's rights in line with the principle of leaving no one behind. The Beijing Declaration and Platform for Action marked the adoption of a global action acknowledging women's role in relation to various processes, such as:

> Eradication of poverty based on sustained economic growth, social development, environmental protection and social justice requires the involvement of women. (Beijing Declaration and Platform for Action, 1995)

In many countries, the status of women is among the most vulnerable ones. This situation is directly affected by the side effects of climate change as women are often dependent on the land activities for ensuring the necessary food for their families. In this case, women are more sensitive when it comes to access to primary resources for their subsistence. In many communities, women are still playing a pivotal role in using and taking care of the land for ensuring the family's survival.

Lately, there have been debates regarding identifying the most appropriate tools for gender mainstreaming. This process is not easy to do, because it requires attention, commitment, and the involvement of all stakeholders. Also, defining cultural patterns could offer valuable insights when it comes to implementing gender issues.

Generally, agricultural activities and access to natural resources are vital for local communities. Taking note of this situation, the United Nations Convention to Combat Desertification developed the concept of land degradation neutrality. It is an initiative that addresses land problems through the implementation of sustainable management practices. Among the objectives of the convention is the one aiming to facilitate parties to take over the topic of land degradation within the development of their National Adaptation Plans (NAPs).

We have to be aware that land degradation has significant social impacts. The data mentions that by 2025 almost 1.8 million people[21] will be directly affected by this phenomenon. This situation is also due to the

[21] https://www.unenvironment.org/ru/node/332

inappropriate land working practices that have reduced land productivity. In a world where there will be around 9.7 billion people in 2050, we will have to identify new solutions in order to avoid crises.

Fair access to land resources has to be a priority objective at the policy level. Acknowledging the role that gender issues have in relation with access to resources and combating land degradation, COP 13 of the convention adopted the first gender action plan (2017).

Other important issues for the vulnerable communities are poverty eradication and adaptation to climate change. Both areas require actions at international level in order to create equal opportunities for all. Furthemore, the gender dimension should be part of assessing the impact of the use of resources, especially for ensuring a fair level of knowledge for men and women in coping with the side effects of climate change or other events.

In developing countries, the role of women is demanding for ensuring daily food for their family. In this situation, women represent almost 43%[22] of the agricultural labor force. In this context, defining and implementing tailored-made smart solutions to empower women from rural and urban areas is essential when it comes to tackling the effects of climate change or biodiversity loss.

Proper ecosystem management and conservation can allow a fair distribution of benefits for all the stakeholders, be they women or men. Following this line, the Convention on Biological Diversity (CBD) through the adopted Gender Plan of Action (2008) highlights the need to have the full participation of women in the policymaking process as regards biological diversity.

Another area that needs more attention is the gender mainstreaming approach to climate change, especially when it comes to social implications. Adaptation and reduction of the effects of climate change should be integrated as a standard response when referring to gender issues. Moreover, the National Determined Contributions[23] could refer more to the gender aspects when it comes to national climate plans. A step ahead was the adoption of Decision 3/CP.23[24] (2017) that established a gender action plan on climate change.

Developing gender-responsive policies should be made within the existing national policy framework. Building coherence in relation to gender issues should support women in leadership, decent work, and close the gender gap concerning payment inequalities. In this regard, the first

[22] http://www.fao.org/docrep/013/am307e/am307e00.pdf
[23] https://unfccc.int/resource/docs/2017/tp/07.pdf
[24] https://unfccc.int/resource/docs/2017/cop23/eng/11a01.pdf#page=13

initiative aiming to stimulate the participation of women in trade was endorsed by the WTO through the Joint Declaration on Trade and Women's Economic Empowerment on the occasion of the WTO Ministerial Conference in Buenos Aires in December 2017.

Improving the current management systems by including the gender issues into policies and procedures is the aim of the UN Women Gender Equity Seal Certification System and Implementation Strategy[25]. This is a step forward in the direction of offering guidance for stakeholders interested in this field of activity.

Initiatives such as the UN Knowledge Gateway for Women's Economic Empowerment[26] can allow direct access to information and create new cooperation opportunities.

Finding the right approaches in dealing with all these aspects require everyday actions and identification of solutions in the case of each sectoral synergy. Recovering the gaps of development can be the solution, especially by promoting sustainable business through fair trade or other initiatives in the area of sustainability (e.g., sustainable sourcing programs).

All these areas are increasingly emerging in the sustainability framework, but mainly as regards the need to find new solutions to old problems.

We need a more in-depth analysis in line with the approach of closing the loop. This concept cannot become a reality without taking a further look at the countries of origin for various natural resources, or raw materials used for providing our modern products.

[25] http://www.sa-intl.org/_data/n_0001/resources/live/GenderEquitySeal.pdf
[26] https://www.empowerwomen.org/en

CHAPTER THREE

ENVIRONMENTAL, ECONOMIC, AND SOCIAL CHALLENGES FOR A PARADIGM SHIFT

3.1 Analysis of the main vectors of change in achieving sustainable development

The development path is playing an important role in redefining the vectors of change toward sustainable development. Currently, the global economic recovery is raising concerns in terms of its capacity to achieve the SDGs, as stated in the report *World Economic Situation Prospects* (UN 2018). Apart from all these prospects, the economic aspects can steer a positive change and send a sustainability signal to society.

The main focus of the current global conditions should be toward developing competitive niche areas. The aim is to create more cost-effective investments and to promote smart product and service specialization. Generally, one country's lost competitiveness opportunity represents a gain for other countries. However, achieving a sustainable long-term competitive advantage is the key to increasing the living standards and to protect natural resources.

Increasing awareness regarding the finite natural capital can actively contribute toward implementing new sustainable solutions. Thus, identifying proper alternatives could allow the achievement of a harmonious development.

The relation between competitiveness and sustainable development is marked many times by antagonistic perspectives. Unfortunately, fierce competition often determines an intense rivalry for obtaining net benefits. In the long term, there is a clear need to move from the current status quo to new perspectives. This transition toward other approaches or options requires a continuous learning process and cooperation. What is most important is the adaptation on the part of all actors involved to change and adopt new methods.

By twisting the role a little between the two concepts, we can have additional insights. We can consider sustainable development as a sensitive

determinant of competitiveness. This direction can allow us to support the achievement of long-term sustainable economic development. As a result, we will reach a higher degree of competitiveness. This trend can increase the standard of living, resource productivity, and recirculation of materials. The benefits can be tangible in terms of allowing a better adaptation in an ever-changing international environment. Thus, both competitiveness and sustainable development can help in this regard. The key is to identify the best strategic options for redefining the present and future development.

In order to transform unsustainable trends into more sustainable ones, we need new management practices and proactive environmental policies. In the long run, the binomial relation between competitiveness and sustainable development can be one of the keys to a more equitable future. This choice depends significantly on the political support and national priorities.

Table 3.1: The SWOT matrix of sustainable development and competitiveness paradigm change

Strengths	*Weaknesses*
• Increased level of awareness and knowledge regarding the environmental issues among stakeholders • Diversified level of knowledge as a direct contribution made by the scientific community • Increasing the role of the multilateral international negotiations that could result in better connecting environment and trade aspects • New approaches toward mainstreaming gender issues concerning climate change, desertification, and biodiversity • New emerging circular business models, industrial symbiosis platforms, IoT • New technologies providing competitiveness advantages in terms of resource productivity and savings	• Lack of coordination among all the stakeholders • A better assessment of the costs and benefits of not implementing measures in the areas of sustainability and competitiveness • Difficult implementation due to the low understanding of the concepts from a practical point of view • Direct impact on the well-being of the population • Competition with other fields as regards financing

Opportunities	*Threats*
• Promotion of sustainable consumption and production patterns • Research for developing new technologies to help in promoting resource-efficient practices • Identifying new perspectives as regards ecodesign for circular recyclability vs. ecodesign for energy efficiency • Green public procurement for promoting resource efficiency as a horizontal principle • Education for the circular economy as part of the sustainability approach	• Climate change, biodiversity loss, land degradation processes • A constant increase in vulnerable communities • Lack of engagement and support in adapting and mitigating impacts concerning climate change • Lack of natural resources due to their overexploitation and non-promotion of circularity at the product level • Lack of interest from consumers to support the circular economy's approaches • Uneven access to the latest technologies that could result in loss of competitiveness and fewer engagements as regards sustainability at country level

Source: Author's own interpretation

The *vectors of change* represent the binder when it comes to achieving a balance between the two components in the future. The vectors of change toward sustainable development are the ones analyzed in terms of opportunities that can be appearing at the market level. In this regard, an indicative list is presented below in Table 3.2.

This analysis emphasizes the relations between several factors from different sectors, as well as the synergies that may occur at a certain point in time. Furthermore, overcoming challenges associated with national or regional competitiveness should be aiming to reduce the development gaps and inequalities. As a consequence, the most appropriate policy responses can generate positive synergies in many countries. The involvement of stakeholders is part of development vision, especially in the case of new behaviors and attitudes.

The vectors of change toward sustainable development are related to the economic, environmental, human capital, and niche factors. They can be considered as an example as regards the pathway development at a

particular moment in time. Furthemore, their potential impact could be part of a cost–benefit analysis.

Table 3.2: Vectors of change toward sustainable development

Economic factors	Environmental factors	Human capital factors	Niche factors
Macroeconomic stability – increasing the standard of living of the population	Income from natural resources as a percent of GDP Global Green Economy Index (GGEI) Environmental Performance Index (EPI)	Education, lifelong learning Adaptation to new skills demands Effective management of the effects associated with aging populations	To promote sustainable consumption and production patterns through the implementation of eco-technologies and circular economy approaches
Creation of new sustainable investment opportunities	Active protection of natural capital	Promoting the strategic triangle "education, research, and innovation"	Increasing the competitiveness aspects at national, regional, or international level

Source: Author's own interpretation

The concept of competitiveness has various perspectives, such as:

- The *social aspect of competitiveness* mostly driven by the area of corporate social *responsibility*, public–private partnerships;
- The *environmentally friendly aspect of competitiveness* focused on research, development, innovation, and eco-technologies;
- The *economic aspect of competitiveness* aiming to promote long-term competitive advantages that could allow increased well-being and standard of living for the citizens of a country.

In the case of sustainable development, I support the idea that we have to take into account the relation created between synergies and the culture pattern that is particular to a country at a given time. Thus, the interpretation

of sustainable development should be seen as the sum of all aspects, processes, actions, and changes that can take place in an economy.

The relations between competitiveness and sustainable development are part of the market conditions. In the case when asymmetric shocks are appearing at the national level, we are witnessing a domino effect at the international level as well. Due to this situation, in many cases a shift can be observed in terms of dealing with the long-term objectives that are left aside or postponed as a policy priority. We must seize the current moment in order to address the main issues caused by increased market volatility and to attract extra-budgetary funds.

In the case of mature economies, the process of recovery is more rapid whenever various crises are occurring within the market place. In each economic cycle, there are some options according to the existing national priorities. The ups and downs generated by a series of unforeseen external shocks should not necessarily change the long-term vision of a country. It is more an adaptation issue as regards changing the perspective toward new solutions. Moreover, the choice of adopting a sustainable development approach is the start of a new stage of development.

The latest transformations caused by the fourth industrial revolution are bringing a new interpretation of what the role of competitiveness is, especially in relation to resource-efficient technologies and the reduction of the number of workers needed to perform specific repetitive work tasks. The new industry 4.0 concept is even stronger in advocating the need to have real-time data for implementing the IoT within the cross-industry strategic partnerships.

In this context, the interaction between the economic, environmental, human capital, and niche factors are setting the scene for new synergies. Their distribution can influence the degree of success in redefining the relationship between sustainability and competitiveness.

According to The Conference Board data for the period 2016–2018, a substantial growth of GDP was registered by various developing countries such as India (on average by 6.97%), other developing Asian economies (on average by 5.40%), and China (on average by 4.30%). Meanwhile, the US had an average increase of 2.30%, Europe 2.33%, Japan 1.33%, and another mature economies 2.7% (Annex III).

Increased levels of efficiency in consumption and production can have a direct impact on the global market. Setting the right signals is very important for all the stakeholders in order to "green" the supply chain. For achieving this goal, we have to take a look at how green countries are.

The Global Green Economy Index (GGEI)[27] assesses the actions taken at the global level in areas such as leadership and climate change, efficiency sectors, markets and investment, and environment. In this regard, the top ten best performers (Annex IV) are the following countries: Sweden (0.7608), Switzerland (0.7594), Iceland (0.7129), Norway (0.7031), Finland (0.6997), Germany (0.6890), Denmark (0.6800), Taiwan (0.6669), Austria (0.6479), and France (0.6405).

When it comes to a broader overview, the Environmental Performance Index 2018 (EPI) places Switzerland (87.42) at the top of the list due to the good score obtained for the health of the environment (water and sanitation, air quality, water resources), and the vitality of the ecosystem (biodiversity and habitat). The next countries in line are France (83.95) and Denmark (81.60). Additional information is given in Annex V.

Another area that has the potential to create positive synergies is the strategic triangle "education– research–innovation."

When it comes to education, the International Commission on Financing Global Education Opportunity (2016) mentioned that

> Developing countries spend 2 percent of GDP on education costs that do not lead to learning (ICFGEO 2016)

Following this line, the World Bank data[28] presents the share of education in total consumption (based on $PPP values) by region (2010):

- East Asia and Pacific: 6%;
- Latin America and Caribbean: 4%;
- South Asia: 3%;
- The Middle East and North Africa: 2%;
- Sub-Saharan Africa: 2%;
- Eastern Europe and Central Asia: 2%.

Due to the reduced attention paid to education, we are close to a global learning crisis, especially in the low- and middle-income countries. Education is part of the social system directly impacted by the economic imbalances and demographics challenges related to population and migration. All these aspects are estimated to generate and exacerbate the challenge of learning in the coming years. Overall, there is a constant need for support in research and innovation, especially in defining the most

[27] The GGEI value is assigning values between 0.7608 and 0.3304
[28] http://datatopics.worldbank.org/consumption/sector/Education

appropriate approaches and future needs of education for sustainability. A lifelong learning process is vital for adapting to future challenges.

Another angle of the analysis offers an overview of the vectors of change toward promoting sustainable competitiveness and environmental protection. In this regard, the Global Sustainable Competitiveness Index (GSCI) captures the relevant elements of competitiveness through 111 measurable indicators grouped into five subindexes (natural capital, resource efficiency and intensity, intellectual capital, governance efficiency, and social cohesion).

The figure below offers insights on the top ten best performers on sustainable competitiveness (Sweden, Norway, Iceland, Finland, Denmark, Ireland, Switzerland, Austria, Latvia, and Estonia). Additional information is included in Annex I.

Fig. 3.1: Sustainable competitiveness world map

Legend: dark areas indicate high sustainable competitiveness, lighter shades lower competitiveness

Source: http://solability.com/the-global-sustainable-competitiveness-index/the-index

We need to increase the global efforts toward promoting sustainable competitiveness, especially in the case of Asian and African countries.

When it comes to the status of circularity, according to the report *Industry 4.0: Empowering ASEAN for the Circular Economy* (ERIA 2018) Singapore and Malaysia are champions of the circular economy. The two countries have the highest scores in terms of readiness for implementing smart technologies such as digital equipment (3D printing), robotics, systems using IoT, and advanced analytics throughout the supply chain.

Another perspective of economic competitiveness is the thematic cluster's approach aiming to support the development and cooperation

among the members. The multiplication of the cluster is enabling the development of regions or cities. Thus, clusters from various geographic areas (e.g., local, regional, national, cross-border, and global levels) or the ones acting in horizontal sectors (e.g., branch or sector) have the unique opportunity to cooperate and to share resources as part of their business model. There are many types of clusters active in different sectors. For example, the technological clusters are centered on an enterprise level. Due to their activity, these clusters are a gravity pole for other interested companies. The dynamic Internet of things (IoT) can be a driver for further increasing the ICT clusters and uptake of cross-industry strategic partnerships for increasing competitive advantage (e.g., the IBM Watson IoT Platform that is used by Mueller Inc., a company active in the manufacture of steel buildings and roofing).

Competitiveness is a driving force when it comes to promoting sustainability at the global level. Furthemore, the responsible businesses can have an essential role in achieving the SDGs and act as drivers of change in a tough competitive market.

Going in the direction of strong sustainability and competitiveness will need a paradigm shift that should be more adaptable to the international markets.

3.2 Competing for resources vs. fair trade

In the equation of consumption, the process of globalization and the constant increasing of the global population are adding an extra layer of pressure as regards current and future development. Changing the old paradigm of development is always a challenging task, especially in the case of fierce competition over raw materials. During history, there were cases when this type of situation transformed itself into a source of conflict as it was in several resource-rich colonies from Africa, Asia, the East Indies, and the New World.

A solution to this unsustainable trend can be the technological shift seen as an alternative to the resource depleting processes. Still, there are some technical limitations related to chemical or physical characteristics of materials that should be taken into consideration. When promoting the circularity of products in order to reduce waste, we have to identify the most suitable solutions to overcome inerrant barriers. Directly linked to this aspect, particular attention should be paid to creating and supporting the development of a market for secondary materials. A resource-efficiency approach can offer solutions to old problems, especially in the case of critical raw materials.

From a practical point of view, the envisaged areas of actions can be as

- supporting circular business models in the areas of bio-based products, reused, or recyclable byproducts, renewable energy that can replace the materials designed to last only one life cycle;
- the extended life cycle of products and components through repairing, upgrading, reselling or a dedicated guarantee system;
- promoting industrial symbiosis platforms based on sharing resources among connected industries in order to increase their utilization rate.

Implementing a resource-efficiency approach has a positive impact on the competitiveness and sustainability of any country, especially its trade aspects. In the case of some raw materials it is feasible to substitute them with other materials, but this option is not always possible or economically viable. This is the case of the intensive utilization of phosphorus and other minerals. Very soon there will be a shortage of available quantities for industry.

The FAO report *How to Feed the World in 2050*[29] (2009) estimated that there is a need to increase food production by 70% in order that "every human being has access to adequate food."

As years are passing, food is becoming an essential resource for humankind's survival. Lately, food resources are becoming perilous and due to this situation, they are linked more and more with the issue of environmental protection. Going in the direction of minimizing and preventing food waste can actively contribute to the global efforts made toward promoting sustainable consumption and production patterns.

As part of the actions of implementing sustainable development, the fair-trade approach came as a robust solution. In this way, each developing country can better promote its natural products and help the local communities.

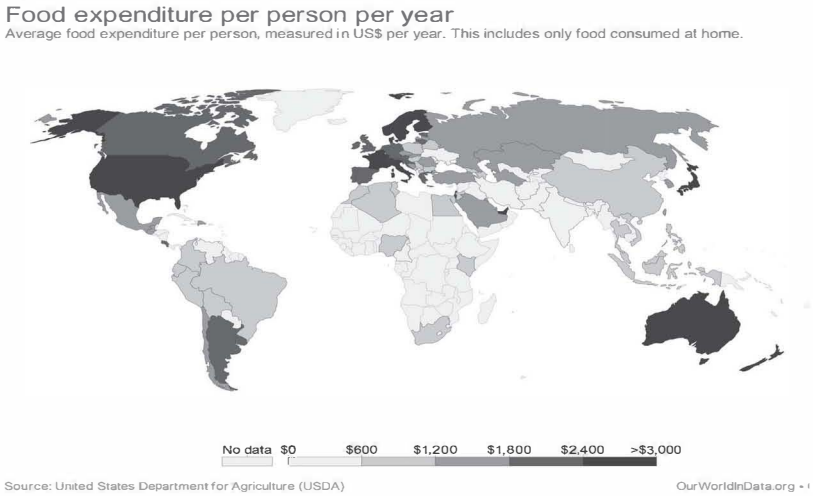
According to the report *The State of Sustainable Markets 2018: Statistics and Emerging Trends* jointly prepared by the International Trade Center, the International Institute for Sustainable Development, and the Research Institute of Organic Agriculture, at the international level there are around 14 voluntary sustainability standards[30] (e.g., bananas, cocoa,

[29] http://www.fao.org/fileadmin/templates/wsfs/docs/expert_paper/How_to_Feed_tbe_World_in_2050.pdf

[30] Voluntary Sustainability Standards (VSS) are developed at local, national or international level by public and private organizations areas related to environmental and social improvements.

coffee, cotton, palm oil, soybeans, cane sugar, tea, and forestry products). Through this, the wording of the standards is ensuring that purchases made by consumers are the outcome of sustainable production processes. Also, countries that are applying this type of standards are actively contributing to the accomplishment of the SDG 12, by promoting sustainable consumption and production patterns.

Fig. 3.2: Food expenditure per person per year



Source: https://ourworldindata.org/food-prices

Overall, at the international level the agricultural land for certified commodities is increasing. The report mentioned above emphasizes that the cotton-certified and cacao areas were tripling between 2011 and 2016, followed by palm oil and tea-certified areas, which doubled during the same five-year span. Despite this positive trend, there was some decline in the case of palm oil between 2015 and 2016 (11.5% less than in 2015).

In 2016 more than 57.8 million hectares[31] were registered as organic-certified, representing around 1.2% of all agricultural land worldwide.

Following the need to have more integrated information, Trade for Sustainable Development launched a new platform called the Sustainability Map[32]. This initiative is part of the efforts to provide a mapping of the sustainability initiatives landscape.

[31] Data from the State of Sustainable Markets 2018: Statistics and emerging Trends
[32] https://sustainabilitymap.org/home#2

The voluntary sustainable standards are linking trade and the best available technology (BAT) or practices for promoting certified organic products. More sustainable trade is an important step to be further considered in the context of future resource shortages.

Other areas of actions target protecting land sustainability and integrity. In this regard, at the international level apply a series of initiatives, such as the following.

A Global Consensus on Responsible Land Governance

In the framework of the United Nations Convention to Combat Desertification (UNCCD)[33], the parties have defined land degradation neutrality (LDN) as being:

> A state whereby the amount and quality of land resources, necessary to support ecosystem functions and services and enhance food security, remains stable, or increases within specified temporal and spatial scales and ecosystems.

The concept of LDN is the main instrument of UNCCD, aiming to offer equilibrium between the expected losses of productive land with the recovery of degraded areas. In order to accomplish it, the land use planning can actively contribute to conserve, sustainably manage, and restore the land. LDN is part of the 2030 Agenda for Sustainable Development aiming through Objective 15.3[34] to reach zero land degradation by 2030. Currently, 100 countries are part of the LDN Target Setting Program, and around 119 are committed to setting national targets.

The commitments related to LDN are promising steps forward. Still, we have to be cautious as regards the emerging competition between land resources and the exploitation for obtaining more goods and services from the available land. This situation can be the source of potential social and political instability, exacerbating poverty, conflict, and migration.

In order to obtain consistent progress, active multistakeholder engagement has to be a part in the implementation of LDN at the national, regional, and international levels.

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[33] It was adopted in 1994 being a legally binding international agreement aiming to promote sustainable land management.

[34] Target 15.3 states: "By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world."

Voluntary Guidelines on the Responsible Governance of Tenure of Land, Forests, and Fisheries in the Context of National Food Security

The guidelines were officially endorsed by the Committee on World Food Security on 11 May 2012 as the outcome of intergovernmental negotiations. Among the goals, a special emphasis was on the following aspects: to ensure food security for all, to support the efforts toward the eradication of hunger and poverty, to achieve sustainable livelihoods, social stability, housing security, rural development, environmental protection, and sustainable social and economic development.

The guidelines represent a document equally applicable to everybody including vulnerable and marginalized communities. This initiative sets out the principles and internationally agreed standards on responsible governance of tenure. Furthermore, this reference document can be used by every country in designing policies, legislation, programs, and other project-based activities.

United Nations Declaration on the Rights of Indigenous Peoples and the principle of Free, Prior, and Informed Consent

The General Assembly adopted this declaration on 13 September 2007; it is the most comprehensive international instrument on the rights of indigenous peoples. Among the goals, the declaration is the one that states

> shall provide effective mechanisms for prevention of, and redress for [...] any action which has the aim or effect of dispossessing them of their lands, territories, or resources.

This declaration ensured that the state consults the indigenous peoples in good faith for the issues related to their lands, territories, or resources, including their relocation, and the storage or disposal of hazardous materials on their lands or territories.

From a general perspective, competing for resources and promoting a fair-trade approach is intricately linked to access to land. In this context, supporting new business models based on sustainability in the area of organic products, locally produced and fair-trade food can help not just consumers, but also the communities from developing countries. It is a win-win solution that can better consolidate actions toward greening the supply chain following the sustainability principles.

The existing initiatives related to voluntary sustainable standards are steps forward, especially for ensuring the same level of information for all stakeholders. These standards have a pivotal role in supporting the sustainability uptake at the level of the marketplace. Moreover, through

them, many vulnerable communities are helped to create new jobs and to develop their abilities.

The regulations related to land are offering a commonly agreed understanding of the rights and obligations. In this context, the LDN is offering a dynamic perspective concerning the synergies with other sectors such as climate change, biodiversity, and finance. Still, we need a deeper political engagement regarding better protection of land and its resources for future generations.

3.3 Sustainable production and consumption—a twofold challenge

We are living in different times to what used to be a planet rich in resources capable of supporting a type of "consume more and more" model. According to Earth Overshoot Day[35] during 1970–2019 we exceeded the planet's capacity by consuming the equivalent of 1.75 earths. Additionally, around 70%–80% of all people are expected to be living in urban areas by 2050 that will generate new challenges, which are rising in terms of implementing sustainability in relation to new drivers of change.

The last periods have brought intense technological development and the multiplication of production and services affecting the environment and human health directly. Even if technological developments are challenging the present business models and practices, we all have to think in terms of finding opportunities for a new type of growth. Shifting the current model of consumption and production is an urgent call for action when it comes to "greening" the value chain. Joint efforts could address this within the frame of the 2030 Agenda for Sustainable Development, especially through SDG 12.

In this context, we need to establish the strategic fundamentals of competitiveness and sustainability, as well as their roles in the global arena. All these aspects urge concrete actions. A new approach related to innovation proposes is needed to reduce the inequality gaps and to promote more equitable development. We have to leave behind the "no-sustainability triangle" described as increased resource consumption, overexploitation, and lack of social engagement. The solution is to address the synergies that appear between competitiveness and sustainability; that is why finding the binder between them is the key to obtaining sustainable

[35] https://www.overshootday.org/newsroom/past-earth-overshoot-days/
https://www.overshootday.org/newsroom/press-release-july-2019-english/
http://www.overshootday.org/take-action/cities/

outcomes. Many times, the need to be competitive is the primary condition for achieving economic progress, but it is essential to choose the best means to support it wisely.

When it comes to implementing sustainable consumption and production, we are facing a twofold challenge on demand and supply as described in Table 3.3.

Table 3.3: Challenges related to sustainable production and consumption patterns

Demand side	Supply side
Objective 1: The need to protect the environment	
Availability of sustainable products and services for consumers	– Implementing sustainable management approaches, innovation in technology, sharing platforms (industrial symbiosis, IoT) – The need to have available dedicated funds or to facilitate new investments
Objective 2: The need to promote resource efficiency—"doing more and better with less"	
– Increasing consumer awareness regarding consumption patterns – Education for responsible consumers and choices	– Information platforms – Implementing efficient production technology, urban mining, sharing platforms (industrial symbiosis, IoT)
Objective 3: The need to have an equitable approach on economic-environmental-social matters	
– Education for responsible consumers and choices	– Engagement toward sustainability reporting and promoting other private-public initiatives. – Understanding the environmental and social impacts of products and services provided for consumers

Source: Author's interpretation

Implementing sustainable consumption and production patterns is vital for achieving the objective of decoupling economic growth from resource use. All in all, there is space in terms of improving the current level of

circularity of the consumed resources. One of the ways can be to increase the awareness of all the stakeholders from the supply chain.

According to the Flash Eurobarometer 456 Report *SMEs, Resource Efficiency and Green Markets* (European Commission 2017), the participants indicated the future resource efficiency actions for the next two years as being in the following areas: energy savings (59%), waste minimization (57%), and materials savings (51%). As we have seen, the areas that could be subject to increasing resource circularity are multiple. It is always important to find the right triggers to steer sustainability and competitiveness.

From this perspective, if we have to define the future we have to decide and agree how we want to design it; should it be like a new social contract and human-centered, or should it be more focused on technology? Finding the middle way is always a challenge when the changes are taking place at the same time at so many levels, requiring real-time adaptation on the part of everybody.

There are also different approaches regarding the so-called gender consumption patterns in the global market. In this context, it is essential to consider the social and cultural elements, values, and perceptions of the risks of climate change. Also, we have to keep in mind that the challenges of the future are also affecting the labor market due to the implementation of new technologies. The new paradigm will put additional pressure on public and private sectors in terms of increasing the education skills needed for all individuals.

Lately, the UN Security Council has recognized climate change as representing a human security challenge. Also, the foreseen impacts including desertification, droughts, floods, and food insecurity are presenting grave threats for everybody.

In light of the new international discussions for implementing sustainable patterns, many challenges lie ahead. The scarcity of resources is the starting point of the circular economy approaches, such as industrial symbiosis business models, which are promoting waste as a new resource for industry. In this regard, the OECD defines an industrial symbiosis process as being

> a shared utilization of resources and by-products among industrial actors on a commercial basis through inter-firm recycling linkages. (OECD 2012).

Industrial symbiosis networks are creating positive synergies among various industries. This type of business model has a pivotal role in "greening the supply chain" by creating opportunities for sharing

production resources. Generally, implementing industrial symbiosis can be done between different companies or inside the same company by exchanging byproducts through a common shared infrastructure.

According to the study *Analysis of certain waste streams and the potential of industrial symbiosis to promote waste as a resource for EU industry* (COM 2015), we can further consider three types of industrial symbiosis:

- product residuals/waste reutilized by the same company;
- product residuals/waste reutilized by another company;
- product residuals/waste sold on the market.

Many times, the relations created within a network of industrial symbiosis are complex and can be managed in geographical proximity or by using electronic platforms. The industrial symbiosis platforms are good examples for promoting waste as a resource among various industries. They are actively contributing to the implementation of the concept of a circular economy. These types of business models are going beyond technical barriers; they are searching for new resources or approaches which could allow the recreation of new products. Their operational working style can generate positive synergies that are relevant both to sustainability and competitiveness.

The figure below presents the primary interactions that can take place among the actors involved in an industrial symbiosis network.

Among the drivers of industrial symbiosis, there are the following elements:

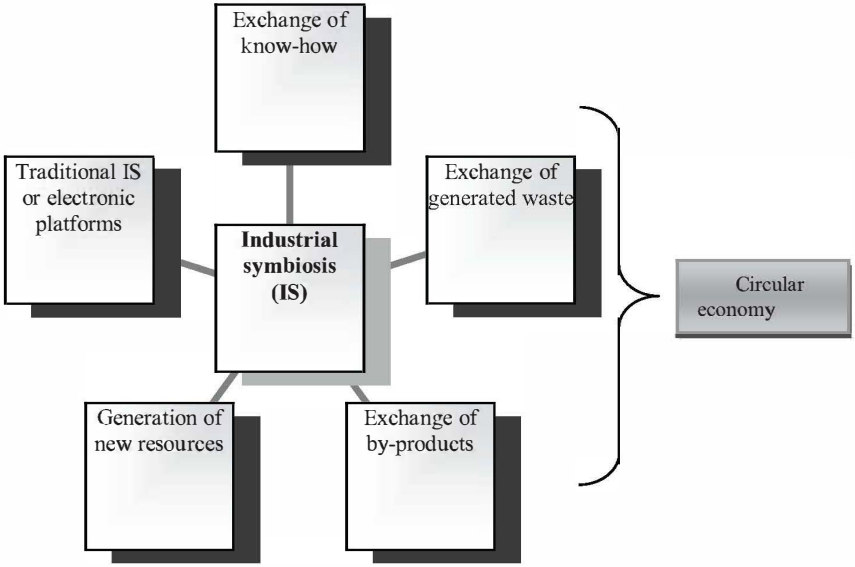
- Economic: increasing the competitive advantage as being part of an IS, accessing new green markets, implementing innovation, and research technologies;
- Environmental: creating new resources from the waste generated or byproducts;
- Social: connecting businesses with local public authorities and universities, building trustful relations to the advantage of all parties.

In order to implement the industrial symbiosis, we first have to overcome the initial investment costs and create a good collaboration among all the stakeholders.

Promoting sustainable consumption and production is a double challenge when it comes to "doing more and better with less" resources.

Finding equilibrium between these approaches has to be centered on the issue of natural resources' scarcity and on redefining the status of what is waste and what is not.

Fig. 3.3: Representation of the industrial symbiosis relations



Source: Author's interpretation

When assessing the future, we have to be aware that the circularity concept is not a panacea. There are some existing technical limitations related to the chemical and physical properties of substances. Also, the legislative status of waste when it ceases to be waste and becomes a byproduct is still hindering an efficient recirculation of the same material several times. Furthermore, industrial symbiosis networks can be an excellent example of a driver for promoting green growth and circularity of resources. This business model has the potential to steer positive synergies, to support best practices in the area of sustainable production, and to create new job opportunities.

3.4 CSR reporting as a solution for mainstreaming sustainability

Recently, new concerns have appeared in relation to creating a better information exchange between business, stakeholders, and the public arena. All these rationales have triggered the emergence of new approaches, such as sustainable or green business and reporting standards for measuring the companies' engagement in implementing CSR. The new perspective has an impact on the classical model of business by changing the parameters. Currently, the emphasis is on the need to have more sustainable, transparent, and ethical reporting, especially concerning sustainable production practices.

Every decade has its contribution to creating a better world for everybody. The business involvement toward social changes is very different nowadays compared to the 1980s when the role of stakeholders was acknowledged for the first time and associated with the idea of CSR. In the 1990s there was a general agreement regarding the role of CSR, but after the 2000s the concept registered an important success with an increasing number of companies reporting their actions in various areas related to their business.

Many times, CSR is associated with the activities of companies. The interest expanded to NGOs and even public institutions as part of the engagements to communicate information in a more transparent way. The conceptual area is under continuous evolution toward new approaches. Guiding this process of transformation is essential in order to obtain real sustainable outcomes. Thus, the development of standards has followed the need to have more information regarding the impact of activities and initiatives associated with organizations' behavior. There are a series of voluntary international standards that are helping and guiding companies toward their engagement in the area of CSR.

Generally, at the international level, the concept of CSR has similar applicable principles but is still not a formal piece of legislation. The exception is the EU that since 2014 has a special directive[36] in place regarding the disclosure of nonfinancial and diversity information applicable to companies that have more than 500 employees. From 2018, the companies provide information regarding their policies, risks, and results concerning the social and the environmental impact, employee rights, and diversity in the workplace.

[36] Directive 2014/95/EU amending Directive 2013/34/EU as regards disclosure of non-financial and diversity information by certain large undertakings and groups

Table 3.4: International standards applicable to CSR

No.	*Name of the standard*	*Core areas of sustainability*
1.	ISO 26000	This was published in 2010, aiming to assist organizations in their efforts to contribute to sustainable development. It offers guidance on fundamental principles of social responsibility: *accountability, transparency, ethical behavior, respect for stakeholder interests, respect for the rule of law, international norms of behavior, and human rights.*
2.	Global Reporting Initiative (GRI)	This is an international independent standards organization that started to apply sustainability reporting from 1997. GRI is continuously collaborating with UNEP and the United Nations Global Compact. *GRI is a global standard for sustainability reporting that is disclosing sustainability performance information. Also, GRI is the first and most widely adopted set of global sustainability standards for reporting.*
3.	Guiding Principles on Business and Human Rights	This initiative was adopted in 2011 by the United Nations Human Rights Council. It includes *31 principles for addressing the issue of human rights and transnational corporations, and other business enterprises.*
4.	OECD Guidelines for Multilateral Enterprises	The OECD adopted the declaration and the guidelines in 1976. It is a set of recommendations addressed by governments to multinational enterprises operating in or from complying countries. The guidelines refer to business ethics concerning employment and industrial relations, human rights, environment, information disclosure, combating bribery, consumer interests, science and technology, and competition taxation.

5.	The United Nations Norms on the Responsibilities of Transnational Corporations and Other Business Enterprises	This was adopted at the 22nd meeting of the Subcommission on the Promotion and Protection of Human Rights (Aug. 13, 2003). The norms address various areas of human rights that apply to business.
6.	Equator Principles (EP)	These principles guide the risk management framework adopted by the financial institutions concerning environmental and social risks applicable to projects. The aim is to provide a minimum standard for the systems of due diligence. The EPs apply to all industrial sectors and are adopted by 37 countries.
7.	UN Global Compact	This was launched in 2000, having a mandate established by the UN General Assembly. This initiative aims to encourage businesses worldwide to adopt sustainable and socially responsible policies, and to report against them. *It proposes a set of ten principles for business in the areas of human rights, labor, the environment, and anticorruption.* The main scope was to accomplish "effective UN-business partnerships."

Source: Author's compilation

The area of CSR is becoming more and more complex due to new perspectives offered by the international environment. Lately, there has been an increasing awareness regarding the environmental aspects as part of the overall debate on the efficient use of natural resources, and how companies are relating to their waste management.

There are several criticisms against this concept such as the one arguing that CSR changed the traditional corporate value by setting "unrealistic expectations" (Henderson 2001). It created the need to allocate a dedicated budget for CSR reporting that only big companies can afford, or sometimes they can use it just as a communication tool in favor of "green washing" when it comes to describing the envisaged sustainability actions.

Overall, together with other sustainability approaches, CSR can have a positive impact in terms of public perception. Still, there is a need for a deeper engagement when it comes to develop relevant initiatives that could have a quantified impact on local communities.

The activities associated with CSR can actively contribute to the implementation of sustainable development as part of a new paradigm shift. From this perspective, ranking companies as champions of sustainability is a challenging task. In order to have a fair view, the Dow Jones Sustainability Indexes (DJSI)[37], launched in 1999, analyze the shareholder involvement in the management risks from the economic, social, and environmental points of view. The first ten performers are represented by the following industries: *automobiles and components, banks, capital goods, commercial and professional services, consumer durables and apparel, consumer services, diversified financials, energy, health care, equipment and services, food and staples retailing, food, beverages, and tobacco.*

The range of industries listed above can make us wonder about what specific actions do they have in common apart from their interest in promoting CSR as one of the core policies.

As industry drivers for sustainability, companies implement several innovative approaches, such as:

- Adopting a circular economy approach at the company level, especially in the case of recycling and reuse of resources (e.g., Pirelli & C SpA);
- Innovation, robust corporate governance, management skills, environmental and social impact assessments, and transparency in relationship with stakeholders (e.g., Peugeot SA, Itochu Corp, Waste Management Inc.);
- Effectively integrating sustainability with ethical principles, reputation for integrity (e.g., Bancolombia SA, SGS SA);
- Managing a capable workforce, joint R&D efforts, operational eco-efficiency (Thales SA);
- Integration of lifecycle environmental impacts in product design and manufacturing, product innovation, responsibly sourcing raw materials, resource efficiency and lean manufacturing processes, climate strategy (e.g., Owens Corning, Hyundai Engineering &

[37] DJSI is attributing a maximum score of 82 points for the economic, environmental, and social dimensions. More information is available at the following link: https://www.robecosam.com/images/review-presentation-2018.pdf

Construction Co. Ltd, Signify NV, Siemens AG, CNH Industrial NV).

In the above-listed companies, their performance was assessed by following a set of criteria such as supply management chain, innovation management, corporate governance, operational eco-efficiency, product stewardship, climate strategy, human capital development, occupational health and safety, and talent attraction and retention.

The environmental dimension is part of the overall required specificities. Overall, it is in line with the existing environmental policy/management systems, climate change strategy, operational eco-efficiency, resource conservation and resource efficiency, water-related risks, risk detection, and building materials. Some companies are pioneers when it comes to integrating ecodesign in their product development processes.

The social dimension offers the perspective of the existing relations with the human capital: human capital development, talent attraction and retention, occupational health and safety, ethics, labor practices indicators, and human rights.

Another perspective is offered by the *KPMG Survey of Corporate Responsibility Reporting 2017*[38] with a particular focus on various reports made by 4,900 companies. Generally, the GRI standard is the most used among companies that were participating in this survey. In 2017 the situation was as follows: 67% of world's largest companies (G250) have established targets to cut their carbon emissions, 42% are acknowledging the SDGs, and 90% are considering human rights as being a global business issue.

For expressing the whole spheres of sustainability in relation to the economic, environmental, and social dimensions, one can observe that "there is no one-size-fits-all solution." Many times it is all about adaptation as regards finding and implementing the proper tools to perform it.

CSR is offering a business tool to build trust and engagement toward stakeholders, to be aware of the impact on the environment but also on the local community. The approach proposed is built on the idea of sustainability, and responsibility is part of the economic process.

[38] https://assets.kpmg.com/content/dam/kpmg/xx/pdf/2017/10/kpmg-survey-of-corporate-responsibility-reporting-2017.pdf

3.5 Best practices and case studies

This section is offering good insight related to the best available practices that can be considered good examples due to their impacts and outcomes. Moreover, implementing sustainable circular approaches were never as stringent as they are in present times. Creating circular resource closed loops are still challenging actions due to the need to have clear analysis in terms of product flows within the supply chain, mapping the technical barriers, design issues, and cost benefits.

When it comes to sustainability and resources efficiency, the circular economy can be considered descriptively as continuous building blocks. On top of that, a circular economy makes sense if there is in place a dedicated secondary products market where active companies and responsible consumers can interact as part of the demand and supply, similarly to another marketplace.

Following this rationale, an indicative list of case studies that are relevant for the book's themes can be found below.

Promoting raw materials as a sustainable tool

Unilever launched an initiative in 2017 called *Sustainable Sourcing Program for Agricultural Raw Materials (2017)*[39] aiming to buy agricultural raw materials from sustainable agricultural practices by 2020. This objective is emerging from the Unilever Sustainable Agriculture Program that started in 1998. Following this, any supplier has to respect the principles included in the Unilever Supplier Code and should qualify for providing "sustainably sourced" products (e.g., specific certification schemes applicable to farmers).

Due to the increasing consumption, the cacao market is encountering challenges in the long term. Moreover, *cacao* is placed in third place after coffee and tea when it comes to a Fairtrade certified product. For example, Ghana[40] became the second largest global producer of cocoa being the world's supplier of Fairtrade products. Together with Côte d'Ivoire, they are providing about 68% of the Fairtrade cocoa in global markets.

The sector was strongly supported by the state, which is providing seed production, disease control, quality conformity, and marketing. Still, given the existing pressure over the sector's resources, there are discussions related to the implementation of Ghanaian sustainability standards for the whole industry.

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[39] https://www.unilever.com/Images/scheme-rules_tcm244-409273_en.pdf

[40] https://www.bioversityinternational.org/news/detail/moving-towards-a-sustainable-cocoa-sector-in-ghana/

The cooperatives involved in the Fairtrade Premium have benefits such as stable income, but this status requires additional investments for increasing the current production capacities. Still, Fairtrade can have a contribution in terms of stimulating the production of cacao, but the conditions for cocoa-farming households and cooperatives in Ghana should be improved.

Circular economy

Giving a second life to waste is one of the leading technical issues that should be further developed. For example, IRENA[41] estimated that 78 million metric tonnes of solar photovoltaic (PV) material would end up as waste by 2050. The report mentions the following countries as those mainly affected: China (20 million metric tonnes), US (10 million metric tonnes), Japan (7.5 metric tonnes), India (7.5 metric tonnes), and Germany (4.3 metric tonnes).

Acknowledging the role that cities play in promoting sustainable production and consumption patterns, twenty-four cities[42] have signed a common Zero Waste Declaration[43] stating their efforts to engage in

1) reducing the municipal solid waste generation per capita by at least 15% by 2030 compared to 2015;
2) reducing the amount of municipal solid waste disposed to landfill and incineration by at least 50% by 2030 compared to 2015, and increasing the diversion rate away from landfill and incineration to at least 70% by 2030.

The circular economy is not left aside; it is part of the area of public procurement. Some countries have made significant progress in this regard having in place dedicated policy documents (e.g., the Netherlands' Green Deal Circular Procurement Initiative, Nantes' Responsible Purchasing Promotion Scheme (France), and procurement of refurbished school furniture in Aalborg, Denmark).

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[41] http://www.irena.org/publications/2016/Jun/End-of-life-management-Solar-Photovoltaic-Panels

[42] Auckland, Copenhagen, Dubai, London, Los Angeles, Milan, Montreal, New York City, Paris, Philadelphia, Portland, Rotterdam, Sydney, Tel Aviv, Tokyo, Toronto, Vancouver, Washington D.C., Catalonia, Navarra, Newburyport, San Jose, Santa Monica, Wales.

[43] https://www.c40.org/other/zero-waste-declaration

Sustainable business, industrial symbiosis, smart textile recycling

The concept of industrial symbiosis refers to companies that are sharing nontoxic byproducts in order to reduce their waste and to generate new products in other industries. The examples are many, starting with the classic example of Denmark's Kalundborg and arriving at more complex electronic ones (such as Ireland's Smile project). Another example of industrial symbiosis well known for integrating various industries is Iskenderun Bay in Turkey (fifty-one member companies from 28 different sectors).

Supporting actions toward a circular economy is an important step forward. Initiatives for circular startups like BlueCity (the Netherlands) are exchanging waste as input for their products.

MUD Jeans business model leases out jeans for a monthly fee, and after 12 months the customer has the option to change them for a new pair and will receive a discount. The returned jeans will have a second life being recycled into new pieces of clothing. The company is operating in the Netherlands, Germany, and Norway, and has almost thirty retail stores as partners in other countries.

All stakeholders need to engage in promoting the circular economy within the textile and clothing industry. Companies such as Globe Hope, Sort Slips Hvidt Slips, and Deadwood are successfully going in this direction.

Meanwhile, others built their business model based on materials from outside the industry (Freitag and FeuerWear). Also, C&A[44] is promoting a circular fashion approach by designing clothes "with their next use in mind" having in place a Cradle-to-Cradle Certified™ standard.

The carpet manufacturer Desso started its efforts toward implementing a circular economy in 2007 in their industry. Currently, it has developed some cradle-to-cradle-certified carpet tiles.

Other companies are promoting product repair for increasing the circularity of materials. The shop iRep is repairing mobile phones and tablets. On the same line, the shop iRepair is providing services for repairing iPods and laptops in addition to phones and tablets.

Tackling climate change and protection of biodiversity as a business style

An increasing number of companies are realizing the need to have clear actions for tackling the side effects of climate change. Following this line, forty-three fashion companies launched the Charter for Climate Action at COP 24 held by the UNFCCC in Katowice, Poland (December

[44] http://sustainability.c-and-a.com/sustainable-products/circular-fashion/circular-fashion-products/

2018). This initiative is aiming to reduce the climate impact of fashion sectors throughout the value chain and to contribute to the Paris Agreement. This charter is advocating an initial industry target to reduce their aggregate GHG emissions by 30% by 2030 through various measures (phasing out coal-fired boilers or other sources of coal heat within the companies and their direct suppliers starting from 2025).

The H&M group[45] is taking a step forward in the sustainability approach and commits to a climate-neutral supply chain for tier 1–2 by 2030. Also, the company is committed to using 100% renewable energy in its operations.

The Toyota Motor Corporation launched an initiative called Toyota Environmental Challenge 2050 aiming to contribute to the accomplishment of a harmonious society concerning nature. The main areas envisaged for action are the following: zero CO_2 emissions, implementing a recycling-based society and systems, promoting a future society in harmony with nature, reduction and optimization of water usage, and zero carbon emissions from vehicles.

As part of the concerns associated with biodiversity, several initiatives were developed such as the one called the dolphin safe label that is used by the US to reduce dolphin fatalities due to the fishing activities related to catching tuna. This standard is still subject to a WTO decision due to the narrow interpretation of the US Dolphin Safe standards as regards the protection of other species. This is a compelling case where further developments will be followed.

Blockchain technology and circular supply as part of the concerns

All-new digital technologies are the outcome of the latest developments in the areas of computing power, bandwidth, and the wide spreading of digitalization. According to the World Trade Report 2018, the new technologies had actively contributed to reducing the international trade costs which declined by 15 percent between 1996 and 2014 (WTO 2018).

Among the trends that have the potential to deliver some new opportunities for business, the Gartner Top 10 strategic technology for 2019[46] mentions autonomous things (e.g., robotics, vehicles, drones, appliances, and agents), augmented analytics, and AI-driven development of various processes. Following this line, the White Paper from IBM

[45] https://about.hm.com/en/sustainability/sustainable-fashion/climate-emissions.html

[46] https://www.gartner.com/smarterwithgartner/gartner-top-10-strategic-technology-trends-for-2019/

Global Business Services *Internet of Things in the Industrial Sector*[47] is taking a closer look at the supply chain and the smart services enabled by the IoT. New approaches can offer new benefits such as condition monitoring, performance-based maintenance, predictive maintenance, uptime guarantees, outcome-based equipment-as-a-service, asset performance management, the sale of spare parts and consumables, cross-selling of related products, and monetizing the data itself.

Some countries have already taken steps forward in the direction of implementing blockchain in the public service. In this regard, since 2012 Estonia has been using blockchain for health records, and judicial and security purposes, and Dubai implemented a Global Blockchain Council in 2016.

Other initiatives are targeting various areas related to resource efficiency.

- BHP Billiton and Everledger initiated a collaboration to track the origins of "blood diamonds." Through a blockchain system, the input materials, quality, quantity, and their origin are traced electronically through a dedicated system.
- IBM together with Energy-Blockchain Labs plan to develop a carbon credit management platform for the Chinese carbon market. This blockchain application will allow a cost reduction of around 20–30%[48].
- Earth Dollar is aiming to preserve natural capital and to enhance the SDGs implementation, including overcoming poverty. Other examples of cryptocurrencies aimed to promote sustainable approaches are Eco Coin and bitNatura.

In many cases, the blockchain technology links a smart contract to a digital transaction. Thereby, finding the right tools for promoting circular economy initiatives requires a certain degree of innovation in implementing new approaches. The new technologies can provide relevant solutions to overcome old problems on both production and consumption sides.

Another perspective of the debates on sustainability is related to waste and the sustainable circular economy. When it comes to the policy area, an

[47] https://www-01.ibm.com/common/ssi/cgi-bin/ssialias?htmlfid=WWW12371USEN

[48] https://www.ccn.com/ibm-develops-blockchain-platform-to-fight-carbon-emissions-in-china/

important case study was China's[49] decision to ban the import of various recovered materials. This initiative started in 2013 when China increased the number of inspections for checking the quality of imported scrap (the so-called "Green Fence" campaign). The efforts for improving the quality of waste were marked by new controls in the upcoming years so that in 2015 new inspections were in place for checking that the handling of material complies with the conditions stipulated in the approved licenses.

In 2017, the Chinese authorities put a particular focus on post-consumer plastics, unsorted mixed paper, textiles, select trace metals, and on controlling permit fraud. As a consequence, many quantities of foreign scrap materials were subject to confiscation, and the authorities arrested suspected people. Also, fees were doubling in the case of imported scrap in order to stop the flood of mixed waste.

Starting in 2018, the effects of China's ban were subject to discussions under the World Trade Organization where the US demanded cancellation of these discriminatory measures. As a response, China decided to extend the ban by including stainless steel (applicable by the end of 2019).

This case can be considered as an example of a ripple effect when it comes to the side effects of policy measures, especially in the case of the US market. This game changed the rules and generated a trade war especially because of a special decree where every form of transportation coming from the US to China became subject to additional individual inspections.

Other countries started to implement various bans, such as Thailand's actions toward banning scrap plastics for two years or the decision of some Vietnamese ports to temporarily stop receiving scrap imports due to overcapacity. The next affected country in the line was Malaysia, which planned to introduce an extra tax for recovered plastic.

Currently, in this case we are facing a trade dispute that is impacting both environmental and social areas directly. Finding the middle way is a challenging task, especially in situations when technical barriers or standards are imposed. Future opportunities for the recycling industry or industrial symbiosis networks have the potential to get to the edge of a new horizon.

Any new policy initiative has to be seen in a broader social context, especially the labor market preparedness to embrace new jobs and to acquire new skills. One relevant example is the *Solidarity and Just Transition Silesia Declaration* signed by 50 countries during COP 24 held by the UNFCC in Katowice, Poland (December 2018). The purpose

[49] https://resource-recycling.com/recycling/2018/02/13/green-fence-red-alert-china-timeline/#2018

focused on the need that climate policy would allow "a just transition of the workforce" and would create "decent work and quality jobs." Still, this initiative should not be regarded apart from the issues of sustainability and competitiveness between fossil fuels and renewable energy industries. The struggle between new and old development perspectives is more than evident in many cases.

The above-listed examples demonstrate the need to implement clear visions and to intervene when the situations are going not in the right directions. Due to the multidimensional effects, one single policy action can influence not just the environmental debates and actions, but also the negotiations from the social and economic areas.

In order to have robust results, all the sectors could engage in implementing a sustainable circular economy and resilient climate measures. From this perspective, redefining sustainability and competitiveness trends is an issue of adapting to new approaches and situations. Synergies can influence the outcomes in many ways, but still, a coherent general perspective should be clear.

Proper implementation of a sustainability agenda can be achieved only by promoting circularity as a core part of the overall policy cycle. The 2030 Agenda for Sustainable Development has a central role to play, but its objectives should allow more coherence and avoid sending mixed messages between sectors.

CHAPTER FOUR

NEW PERSPECTIVES ON SUSTAINABLE MANAGEMENT

4.1 Sustainable management as an adaptive solution

Reaching optimum well-being at the social level is a desideratum that has to overcome various challenges, including the ones related to efficient use of natural resources. Additional effort is required from the part of all of us, not just in the direction of decoupling the economic development from resource consumption, but also regarding the associated impacts. Every agreed action can have positive benefits, especially in the case of scarce resources or existing environmental risks.

The current reality needs new visions in line with the 2030 Agenda for Sustainable Development. Actions toward mainstreaming economic, social, and environmental aspects are more and more included in the policy planning. To obtain relevant outcomes, we have to broaden our knowledge and to engage in building a more sustainable circular economy and sustainable competitiveness.

Research and innovation have their contribution to increasing the circularity of resources. Flexible organizations have a central role to play in the decoupling process by implementing adaptive corporate and process cultures. At the same time, their targeted actions can promote sustainable management as a strategic policy tool.

Mainstreaming sustainability is more than an objective. This action can be done through several approaches presented in other chapters of the book such as CSR, TBL, DPSIR, and DPR. Moreover, by choosing a sustainable management approach, we can better focus on new consumption and production models, sustainable circular economy, and sustainable competitiveness.

Above all the concepts and approaches, we need to identify the proper tools for redefining the current development pathway. Thus, this chapter focuses on the main findings of sustainable development and competitiveness.

Generally, the questions about the future can have multiple answers transposed in several impact scenarios through which we can assess the several hypotheses. Since the early 1970s, Shell's global long-term scenarios (2050) have been offering an interactive perspective as regards the future energy trends by assessing a broad spectrum of elements. Their scenarios are targeting different areas, such as:

- *The Sky* is presenting an ambitious scenario in terms of meeting the goals of the Paris Agreement. It is mainly analyzing the technology and macroeconomic options needed in 2070 to achieve a lower-carbon energy system.
- The scenario *New Lens* explored the long-term global energy evolution, being completed by additional scenarios: *Mountains,* which describes "a view from the top" of the current global status quo of power, where *Oceans* is presenting "a view from the horizon" as regards the power shifts, competing interests, and compromise aspects considered as alternative socio-political pathways. Also, the *New Lens on Cities* is assuming that "around three-quarters of the population is expected to be living in cities" by 2050.

All the proposed scenarios are referring to low-carbon technologies such as wind and solar, and carbon capture and storage as having a significant role in the future for reducing the total anthropogenic GHG emissions and reaching the goals of the Paris Agreement.

On the other hand, the latest report *The Circular Economy and Benefits for Society* issued by the Club of Rome (Wijkman and Skånberg 2015) is proposing a more in-depth analysis in terms of the likely effects on carbon emissions and job opportunities in Finland, France, the Netherlands, Spain, and Sweden in line with circular economy. The proposed measures are targeting specific areas as follows:

- To enhance energy efficiency, so each country would become 25% more energy-efficient;
- To scale-up the share of renewable energy in the energy mix;
- To obtain a more material-efficient, circular, and performance-based economy by substituting half of the virgin materials used with recycled materials and doubling the product lifetime.

The mix of measures described above can allow a reduction of carbon emissions of around 10–50% which can support the creation of new jobs (Annex II).

Another perspective is proposed by the Global Scenario Group (GSG) developed by the Tellus Institute and the Stockholm Environment Institute (SEI) in 1995. It brings together a group of experts and researchers who are trying to establish a link between the size of the globalization process and the global uncertainties of the future. The driving forces behind this approach are included within the "proximity" and "basic" categories. Thus, the first category includes the long-term values, desires, aspirations, knowledge, needs, and processes, and the second category comprises population size and growth rate, economic volume and models, technological choices, governance, and the quality of the environment.

The GSG is proposing three types of scenarios as an attempt to evoke future trends, as follows.

- *Conventional Worlds* describes the present dominant forces of globalization that are determining unsustainable patterns of consumption and production that are present in the developed countries.
- *Barbarization* explores the risks associated with the "conventional worlds" strategies that are determining a general crisis and the erosion of civilized norms.
- *Great Transitions* examines a world that is embracing new values and institutions.

In the continuous search for assessing future trends, several types of research are proposing future development pathways. The book *2052: A Global Forecast for the Next Forty Years* (Jørgen Randers 2012) captures the main challenges related to society's development. The author estimates that the world GDP, the value of goods and services will double in the next years determining an increase in the average consumption regarding the size of the population.

If we want to obtain long-term sustainable outcomes, our current consumption and production patterns have to change. This aspect was part of the discussions held during the Rio+20 Conference in terms of the contribution to sustainable development, poverty eradication, and preserving natural resources.

Extensive adoption of sustainability has the potential to lead to profound social transformations. Generally, any new consumption pattern requires time when it comes to dealing with behavior, cultural values,

education, and information. As a result, any new process has to respect the environment, be socially inclusive, and economically efficient.

Promoting sustainable products and services can create positive synergies in other areas such as reducing economic disparities by creating new decent jobs, increasing wages and gender equality, promoting resource efficiency, and minimizing the impact on the environment. Thereby, innovation has a vital role in defining a paradigm shift when it comes to optimizing the ratio between resources invested per product used.

Integration, collaboration, and sharing of byproducts among various industries are part of a sustainable management approach. There are companies such as Phillips that have already made a transformative shift from a product to an innovative service model.

The material circularity contributes to decoupling the economic growth from resource consumption. In this regard, it can be associated with a mix of instruments such as closing loops through recycling and reuse of products, renewable energy sources, and implementing efficiency measures aiming to reduce the overall level of resource consumption.

Following this line, the triple bottom line analysis applicable to a circular economy is part of a global perspective. The main elements are included in Table 4.1.

Table 4.1: Triple bottom line factors applicable to circular economy from a global/regional perspective

TBL factors	Indicators	Countries/ regions/global	Value (%)
Economic	Real GDP growth	Global	3.7%
	World raw materials exports	Global	9.41%
	World raw materials imports	Global	12.94%
Social	Green jobs	Global	2% of global GDP
Environmental	CO_2 and GHG emissions	Top 10 emitters	73.01%
Cross-cutting	Degree of circularity	Global	9.1%

Sources: Author's compilation from various databases and reports: IMF[50], WITS World Bank, UNEP, CAIT Climate Data Explorer, Circularity Gap Report

[50] https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/OEMDC/ADVEC/WEOWORLD

Generally, high-income countries consume more extracted materials than other countries. This situation is also due to the direct correlation between GDP and material footprint (as GDP increased over the last decade so does the material footprint) resulting in a growth pattern that is present in industrialized countries. Currently, China has the world's largest material footprint followed by the USA.

When it comes to the export and import of the world's raw materials, the database of the World Integrated Trade Solution (World Bank) classified the top countries and regions as shown in Table 4.2.

Table 4.2: Export and import of the world raw materials, 2017

No.	Country	Exports (US$) 000's	Product share
1.	*World*	*1,675,824,141.59*	*9.41%*
2.	Europe & Central Asia	594,609,540.80	8.81%
3.	East Asia & Pacific	549,706,393.23	11.92%
4.	China	277,219,246.81	17.65%
5.	North America	192,049,301.50	6.54%
6.	USA	158,344,173.98	6.38%
7.	Japan	84,748,341.23	15.82%
8.	Germany	82,000,706.91	7.84%
9.	Netherlands	67,308,106.60	13.57%
10.	India	63,871,494.20	19.47%
	Country	**Imports (US$) 000's**	**Product share**
1.	*World*	*2,086,049,557.70*	*12.94%*
2.	Europe & Central Asia	588,380,523.31	9.42%
3.	Middle East & North Africa	409,141,021.91	51.31%
4.	East Asia & Pacific	332,105,342.70	31.37%
5.	North America	247,934,791	13.95%
6.	Sub-Saharan Africa	159,492,332.70	53.88%
7.	Russian Federation	147,618,030.48	43.57%
8.	Australia	145,726,697.26	61.18%

9.	USA	142,936,574.45	10.54%
10.	Saudi Arabia	126,455,216.70	66.76%

Source: WITS database[51], World Bank

When it comes to exports and imports of the world's raw materials, the region of Europe and Central Asia has a leading role within the global trade. As regards the countries, China (17.65%) and the USA (6.38%) are ranked as the top two providers of raw materials through export activities. On the other hand, the Sub-Saharan Africa region (53.88%) is leading the import of the world's raw materials.

The data mentioned above correlated with the findings of the report of WTO (2018) emphasize that the prices of primary commodities registered an average increase of 17% in 2017 applicable to several categories (food and beverages, agricultural raw products, energy, minerals, and nonferrous metals).

The consumption of resources is a given reality, but new alternatives can ensure effective implementation of the circular economy.

Social component of the TBL

According to the report *Towards a Green Economy, Pathways to Sustainable Development and Poverty Eradication* (UNEP 2011) investments in the green market can generate a contribution estimated to be around 2% of the global GDP. That is why green jobs are an important part of the transition toward sustainable consumption and production patterns. ILO[52] mentions that the synergies between social and environmental policies are precisely the drivers for ensuring future workers' incomes. In supporting this trend, the report emphasizes the positive evolutions registered during years, such as:

> Across the world between 1999 and 2015, GDP grew by almost 80 percent, real wages improved by 42 percent, child labor fell and female labor force participation increased (ILO 2018)

Despite all the efforts, there are still countries and regions in poverty with significant inequality gaps. According to the report *Atlas of*

[51] https://wits.worldbank.org/CountryProfile/en/Country/WLD/Year/2017/TradeFlow/Export/Partner/all/Product/UNCTAD-SoP1, https://wits.worldbank.org/CountryProfile/en/Country/WLD/Year/2017/TradeFlow/Import/Partner/all/Product/UNCTAD-SoP1

[52] https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_628654.pdf

Sustainable Development Goals 2018: From World Development Indicators (World Bank Group 2018)[53] many countries are experiencing challenges related to development gaps, such as:

- North America is 3.5 times richer than the world average but is registering a reduction in terms of relative income per capita. A different situation as compared with the region of South Asia and East Asia and Pacific where there is an increase in terms of relative incomes.
- In China and Indonesia around 25 million extremely poor people are registered (2013).
- India had more than 260 million people in extreme poverty in 2011.
- In Sub-Saharan Africa, more than 390 million people lived on less than $1.90 a day in 2013.

Environmental component of the TBL

This part of the TBL analysis presents the current model of economic development based on resource and carbon-intensive activities. The aim is to steer the need toward adopting a more sustainable management approach.

Among the largest emitters of GHG, CAIT Climate Data Explorer[54] includes the following countries:

- China (26.83%, 11,735 $MtCO_{2e}$ contribution to global emissions);
- USA (14.36%, 6,279.8 $MtCO_{2e}$ contribution to global emissions);
- EU 28 (9.66%, 4,224.5 $MtCO_{2e}$ contribution to global emissions);
- India (6.65%, 2,909.1 $MtCO_{2e}$ contribution to global emissions);
- Russian Federation (5.03%, 2,199.1 $MtCO_{2e}$ contribution to global emissions).

The cumulated emissions of the top ten countries (including additionally Indonesia, Brazil, Japan, Canada and Mexico) represent around 73.01% or 31934.5 $MtCO_{2e}$.

When it comes to per capita CO_2 emissions, according to Ourworldindata[55], we are witnessing a north-south divide. Most of the

[53] http://documents.worldbank.org/curated/en/590681527864542864/Atlas-of-Sustainable-Development-Goals-2018-World-Development-Indicators

[54] https://www.wri.org/blog/2017/04/interactive-chart-explains-worlds-top-10-emitters-and-how-theyve-changed

[55] https://ourworldindata.org/co2-and-other-greenhouse-gas-emissions#the-long-run-history-cumulative-co2

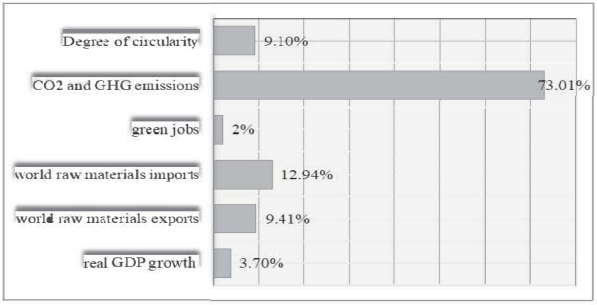
countries from Sub-Saharan Africa, South America and South Asia have per capita emissions below five tonnes per year (many of them have less than 1–2 tonnes) as compared to the northern countries that have more than 5 tonnes/person (with North America above 15 tonnes).

TBL findings

Based on the elements presented above, the TBL analysis is proposing to better portray the synergies created among various factors. Moreover, we have to pay attention to a constant increase in global CO_2 emissions, which is determining their accumulation in Earth's atmosphere and generating effects that are difficult to be quantified in the long term.

Increase the global circularity can reduce the material footprint and thus allow a decoupling process between economic growth and the consumption of resources (especially raw materials). Implementing this approach can contribute to a fair distribution of resources and the creation of new jobs.

Fig.4.1: Representation of the TBL factors



An increased global level of material circularity will create more synergies between all the TBL factors, resulting in the reduction of GHG emissions associated with various activities. By including the circularity of resources and materials as the core of a sustainable management approach, we can have a better perspective as regards material inputs and outputs. Also, the estimated savings can allow the development of new sustainable products and green jobs.

Improvements as regards the values of material productivity[56] (Annex VI) have also been registered in the case of the EU Member States for the

[56] It is measured as euro GDP per kilogram of material consumption (DMC).

period 2000 to 2015. Higher levels registered in countries affected by the economic crisis, such as Spain (around €3.16/kg in 2015) and Cyprus (around €2.09/kg in 2015). For the period analyzed, the EU-28 has registered an increase in material productivity by 72% since 2000.

Still, according to the European eco-innovation index and Eurostat data, some of the lowest growth rates across the EU-28 were in Malta (around €1.89/kg in 2015) and Romania (around €0.7/kg in 2015). As regards the material consumption at the EU-28 level, the Eurostat data registered a reduction of 11% within the period 2000–2015.

Overall, the positive results obtained at the EU level have to correlate with the fact that many of the countries are highly industrialized economies and actively implement common environmental policies.

All the trends mentioned above emphasize the idea that there is room for improvement as regards both the material productivity and global consumption. The progress of one region can be an example of good practice for other regions. Further common actions can have the capacity to determine a process of reducing the economic disparities, protecting the environment, and limiting the shipment of waste to other regions of the world.

Overcoming the technical barriers for increasing circularity is a pending issue that could be carried out through new digital technologies. The opportunities associated with global e-commerce should not be minimized, especially since according to the WTO report (2018)[57] a total value of US$ 27.7 trillion was registered in 2016 compared to US$ 19.3 trillion in 2012.

Finding new solutions can be seen as a unique opportunity in any economic crisis. Many times, targeted actions have determined positive synergies in other sectors, including in the case of the environment. The new digital technologies and e-commerce can offer solutions for tackling the scarcity of natural resources and reducing environmental impacts.

Avoiding past mistakes in terms of unsustainable development patterns will have positive impacts on economic, environmental, and social areas. We are in a moment when we need to find a suitable alternative that could allow achieving a harmonious development at the level of all sectors. In order to make it a reality, we have to identify the relevant tools for transforming unsustainable trends into sustainable ones. Further actions on environmental matters, sustainable consumption and production patterns, thematic clusters, and CSR can be the next solution.

[57] https://www.wto.org/english/res_e/statis_e/wts2018_e/wts2018_e.pdf

4.2 Innovation as a driving force for a sustainable management

Innovation is a crucial driver for an economy that wants to be a competitive one at the international level. The premises of this objective can steer the creation of innovative goods and services with low impacts on the environment. In order to obtain relevant outcomes in this direction, the actions should target various areas such as acquiring educational skills, and increasing the level of technological intensity in order to promote efficient material consumptions.

Innovation is also about creating value, but in a more equitable way through sustainable and green finance. Thus, financing the future economy has to consider many perspectives by providing key benefits to the environment and local communities. In order to obtain relevant outcomes, it is essential to match the long-term policy objectives with the available sustainable finance. Further options can be also considered as regards shifting toward green taxation.

The innovation process mostly depends on various factors that can determine positive synergies among sectors. In this regard, the relation between education, research, and innovation can be a sustainable binder. The prerequisite condition is to have dynamic collaboration and exchange ideas with all stakeholders.

From this perspective, any sustainable management approach has to take into consideration the innovation process as a whole and to adapt its needs to the financial aspects. Developing initiatives in this area are essential steps toward implementing practical sustainability as well.

The globalization process impacts innovation in many ways. One of them is the ability to acquire new skills as part of improving collaboration across countries and cultures. Overall, innovation is far from being a one-stage factor. The various influences are due to many preexisting social-educational, economic, industrial, and technological conditions. For example, at European level the innovation process is analyzed in relation to a multitude of factors such as education, ICT, R&D expenditure, innovative SMEs, human resources, financing, company investment, entrepreneurship, and employment.

The European Innovation Scoreboard 2018 presented an overview regarding the leaders that are driving this process. When it comes to eco-innovation, the main aspects taken into consideration refer to the following aspects:

- eco-innovation inputs with a direct reference to investments (financial or human resources);
- eco-innovation activities at company level (existing indicators and standards);
- eco-innovation outputs analyzed with the eco-innovation activities undertaken;
- socio-economic outcomes of eco-innovation (employment, turnover, or exports);
- resource efficiency outcomes;
- implementation of sustainable and green finance (e.g., environmental and climate aspects, shifting taxation from labor toward the environmental aspects).

As can be seen in Table 4.3, innovation and eco-innovation leaders are countries that are putting at the core of their policies the need to offer better support to sectors that are capable of creating competitive advantages in the long run.

Table 4.3: Innovation and eco-innovation index at the EU level

Name of category	Country	Value	Name of category	Country	Value
Leaders of innovation	Sweden	0.71	**Eco-I Leader**	Sweden	144
	Denmark	0.67		Finland	141
	Finland	0.67		Germany	139
	Netherlands	0.65		Luxembourg	139
	UK	0.61		Denmark	120
	Luxembourg	0.61		Slovenia	117
Strong innovators	Germany	0.6	**Average Eco-I performers**	Austria	113
	Belgium	0.59		Italy	113
	Ireland	0.58		Spain	112
	Austria	0.58		Portugal	105
	France	0.55		UK	105
	Slovenia	0.47		France	99
				Ireland	99
				Netherlands	88
				Malta	86

Moderate innovators	Czech Republic	0.42 0.41	**Countries catching up with Eco-I**	Belgium Czech Republic	83 82
	Portugal	0.4		Lithuania	82
	Malta	0.4		Greece	77
	Spain	0.4		Croatia	75
	Estonia	0.39		Slovakia	74
	Cyprus	0.37		Latvia	73
	Italy	0.36		Romania	65
	Lithuania	0.33		Hungary	63
	Hungary	0.33		Estonia	62
	Greece	0.32		Poland	59
	Slovakia	0.29		Cyprus	45
	Latvia	0.27		Bulgaria	38
	Poland	0.26			
	Croatia				
Modest innovators	Bulgaria	0.23			
	Romania	0.16			

Source: European innovation scoreboard 2018 and the eco-innovation scoreboard and the eco-innovation index, 2017

Compared to 2010, there is an increase of 5.8% in the level of the EU's average innovation performance. This trend is estimated to increase by an additional 6% in the next two years.

Depending on the stage of development, there are inevitable gaps as regards innovation and eco-innovation. Efforts should be made in the direction of catching up with the leaders. In the long run, there may be only two possible development options. In the optimistic scenario, the national priorities are changing toward more viable investments in the deficient areas in order to recover the existing development gaps. Another pathway can be the pessimistic scenario where the discrepancies become more acute, generating a typology of the "center–periphery" model, where many countries are lagging behind others.

Nowadays information has become a valuable asset for us. Still, we have to be cautious because it can drive unforeseen changes within any country. Its potential is beneficial insofar as it allows the transition to new conceptual approaches and development pathways. Access to proper information and technology can create competitive advantages. Moreover, it can allow a quick takeover of sustainability as a management practice and can contribute to reducing inequalities.

Achieving sustainable long-term economic growth is not just an objective that should be marked as accomplished in the short run. It should

be an approach focused on the development of niche areas. Their influence can increase the degree of openness in the case of a national economy. Also, sustainable long-term economic growth should preserve its competitive and sustainable capacity at the international level. Following this line, by implementing a sustainable long-term competitive advantage, we could actively contribute to increasing the living standards of citizens somewhat in a more consistent way based on the protection of vital natural resources.

At the international level, special attention should be on the lost niche market opportunities, especially concerning digitalization, artificial intelligence, or e-commerce. The asymmetric impacts of emerging technologies can influence long-term development. Development gaps may occur due to the economic, social, and environmental disparities among countries. Not having in place adequate management strategies can generate not just digital or technological gaps. Many times, human resources will miss having the required skills and adapting to a more competitive marketplace. The social pressure could impact the efforts made in the area of innovation for sustainability.

In this context, the research and innovation processes have a strategic role in promoting key concepts such as eco-efficiency, sustainable consumption, and production patterns throughout the whole product life cycle. Further innovations toward discovering new sustainable solutions can save finite natural capital. Increasing awareness has to go hand in hand with implementing active measures concerning education, research, and innovation. In this way, we have the chance to witness a smooth transition to a knowledge-based economy.

4.2.1. Research and innovation—a glimpse at the challenges

The evolution of society is intrinsically connected with overall technological innovation. Economic growth was one of the outcomes of an intense process of production and consumption that generated imbalances in many parts of the world. As a consequence, further efforts have to overcome global challenges such as climate change, poverty, migration, and health. Shaping the role of technology as part of a more sustainable future is a key approach applicable both for research and innovation.

Progressing toward implementation of a new development pathway is part of the available research. Competitiveness and sustainability have a role to play in building long-term competitive advantages.

Increasing competitiveness is a matter of utmost importance for any country that wants to be an active partner in global trade. In this regard, we

need to identify strategic areas that can create sustainable competitive advantages. This aspect is essential for developing applied research activities in line with national priorities and market needs. Research and innovation can create positive synergies among sectors at the national or regional levels.

The interest toward mainstreaming the economic, environmental, and social aspects are in conjunction with a proper impact assessment in order to also steer skills development in the areas of research and innovation. Thus, the core part of any process of innovation is a targeted research action aiming to improve technologies, processes, products, and services.

The areas of education, innovation, and research have their contribution to the goals of the 2030 Agenda for Sustainable Development. Furthermore, science, technology, and innovation (STI) are key enablers for the implementation of the SDGs, especially within the framework of the UN Technology Facilitation Mechanism (TFM). Their cross-sectoral influences contribute to the development of other thematic areas from other sectors.

The Addis Ababa Action Agenda states, among the commitments concerning sustainable development, the following:

> adopt science, technology, and innovation strategies as integral elements of our national sustainable development strategies (para. 119, UN 2015)

Currently, there is not a single dedicated mechanism for assessing the progress made in these areas. One possible option could be to report under the Voluntary National Reviews. According to the IATT background paper *Science, Technology and Innovation for SDGs Roadmaps*:

> countries were still at very early stages to position STI strategies as integral elements of the national sustainable development strategies. (Technology Facilitation Mechanism 2018)

In order to have real benefits from the two processes, a series of barriers should be overcome by doing the following:

- Ensure access to funding sources for international projects that have an active component dedicated to research and innovation.
- Increase information and promote clusters in the areas of education, research, and private sectors.
- Increase the role of research and innovation in reducing the digital/technological divide among countries.
- Facilitate collaboration between enterprises, universities, and research institutes.

- Bridge the gap of knowledge and create new job opportunities.

Research and innovation should be applicable not just for the current needs of society, but mostly to contribute to its success tomorrow. Both processes can influence the development status of any country if their importance is acknowledged as being a national priority. Moreover, they can generate improvements in living standards, as well as arrive at solutions to social and environmental challenges.

For obtaining useful results on research and innovation, there is a need to have in place coherent policies on education, industry, and competitiveness that can jointly work. Only by implementing convergence strategies and approaches can we identify the most suitable ways to monitor changes in ecosystems, and to identify the most relevant alternatives.

Active involvement of universities, research institutes, and private partners can have an active role in building hubs of knowledge and clusters with innovative capacities that can give us a glimpse of society's future.

4.2.2. Innovation and intellectual property rights—an interlinked perspective

Innovation can accompany progress as an aim for obtaining sustainable economic growth. In this regard, overcoming diverse challenges related to the so-called economy of knowledge is a difficult task for every country. From another point of view, innovation can actively contribute to stimulating collaborations and shared actions for "greening" the supply chains. This ongoing process can bring a broad spectrum of opportunities for stakeholders.

Intellectual Property Rights (IPRs) can offer multiple benefits not just for inventions, but also to the development of the current status quo of knowledge, and to build up sustainable competitive advantages in relation to trade. Proper implementation can trigger innovative solutions for current social challenges. Furthermore, the IPRs are targeting the largest part of private research investments in new technologies. Their potential contribution to development is important. Following this line, the latest WTO[58] report (2018) estimates that the global exports of IP-related services increased by 10% in 2017.

[58] https://www.wto.org/english/res_e/statis_e/wts2018_e/wts2018_e.pdf

The aspects associated with patents, trademarks, industrial designs, and copyrights are all enforced by IPRs. This mechanism is ensuring conformity and guarantees the quality of products. At the same time, providing a fair return on investment (ROI) for the legal holder has also to be provided. Thus, patents are ensuring the protection of legal rights and can be subject to further agreements with a third party interested in obtaining a license.

The effectiveness of IPRs has an essential role to play regarding the development of new cutting-edge technologies. Through the IPRs mechanisms, companies have the opportunity to develop and protect new products, but also to benefit from the research investments.

Changes in product development are reflecting the needs of consumers. Many times, demand urges a shortening of the time between research, invention, and final products. Setting the right signals for sustainable products is linked with consumers' needs, available technologies, and future market trends. From this perspective, the IPRs are part of the overall efforts toward resource efficiency.

The history of IPRs[59] is marked by the adoption of the Paris Convention for the Protection of Industrial Property (1883) and the Berne Convention for the Protection of Literary and Artistic Works (1886).

WTO's Agreement on Trade-related Aspects of Intellectual Property Rights (TRIPS) legally enforces the IPRs. Furthermore, TRIPS can be considered as a marking point in international trade. It is the first initiative of this type targeting the areas of protecting ideas, knowledge, and innovation. The TRIPS Agreement allows dynamic interactions to take place in the framework of the multilateral trade liberalization, national trade policies, and companies.

WIPO GREEN represents a more recent initiative. It is an international platform managed by the World Intellectual Property Organization (WIPO). The main aim is to encourage green innovation, synergies, and technological transfer among public and private sectors. Moreover, the platform has a dedicated database and a network for activities related to IPRs (e.g., license, collaboration, joint ventures, and sales).

The intellectual assets connect the resources and efforts that one country is making in protecting knowledge that can further generate competitive advantages. Thus, IPRs have a vital role to play in economic activity and the innovation process.

Even if the IPRs system has a special regime, it still has to comply with the various national protection systems. Enforced protection can be a stimulus for economic development and can create new job opportunities.

[59] https://www.wipo.int/edocs/pubdocs/en/intproperty/450/wipo_pub_450.pdf

A properly enforced IPRs system is incentivizing researchers, inventors, and other stakeholders to produce more resource-efficient products. From this perspective, IPRs can contribute to the ultimate goals to promote fair well-being for any country.

The IPRs system has an increasing role when it comes to building a sustainable competitive advantage and to increase the country's ability in the framework of global trade. IPRs are the connection point between innovation, competitiveness, and trade. It is more and more associated with the imports and exports of high technology and to the need to integrate the sustainability area as an emerging enabler.

4.3 Well-being and sustainability—a way forward

Over time, the subject of sustainable development has marked a continuous transformation and reconfiguration process. Currently, there are various methodological and conceptual approaches aiming to mainstream sustainable development. Despite all these perspectives, there are still various questions to be mentioned as being relevant for this topic, such as: to what degree can an increased consumption satisfy people's needs in order to allow a proper social welfare distribution? What could be the price to pay for reducing consumption of goods to a self-sustaining level for environmental protection? The answers and actions are different as regards choosing the right approach. For example, Fred Hirsch mentioned in his book *Social Limits to Growth* (1974) that private consumption generates social externality similar to the pollution costs.

By following all these rationales, this section outlines several perspectives of well-being and sustainability associated with various concepts such as life satisfaction, happiness, and economic prosperity.

The aspects related to well-being started to be investigated by many researchers as part of the efforts to define and assess what can be associated with this concept (Stiglitz et al. 2009; Allin and Hand 2014; OECD 2017). Moreover, Stiglitz et al. (2009) mentioned the necessity of shifting attention from growth toward sustainable human well-being and to further consider indicators that could better reflect the quality of life.

McGregor et al. (2017) investigated the mainstream of opinions regarding well-being. Their proposal focused on five levels of the economic system such as an instituted process, an open system, a structured and layered system, core internal relations, and a new resource agency.

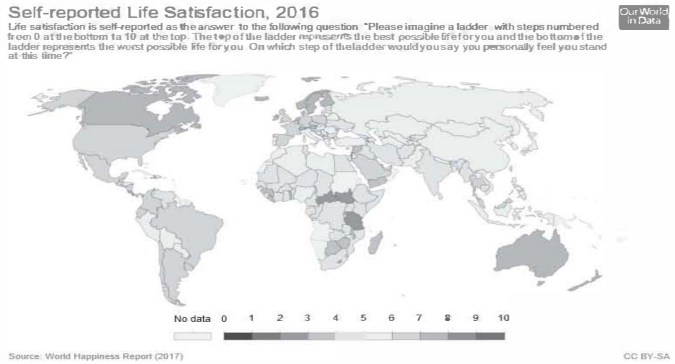
Wealth distribution and life satisfaction are pending issues in terms of possessing the right tools to ensure people's basic needs. Moreover, the

existing inequalities among regions and countries determine insecurity, migration, and competition for access to resources. All these challenges can affect the implementation of sustainable approaches.

Measuring well-being through GDP per capita it is not reflecting the happiness of people. As an alternative, the World Happiness Report 2018[60] ranks the northern countries of Europe for the period 2015–2017 in the top ten for happiness: Finland (7.632); Norway (7.594); Denmark (7.555); Iceland (7.495); Switzerland (7.487); the Netherlands (7.441); Canada (7.328); New Zealand (7.324); Sweden (7.314); Australia (7.272).

Still, an increase in the national GDP does not mean an automatic increase in happiness level in the case of all the countries; there is not a direct correlation between them.

Fig. 4.2: Self-reported life satisfaction



Source: https://ourworldindata.org/happiness-and-life-satisfaction

Another outlined perspective is the "degrowth concept" described as a radical change applicable in various areas. In the case of the environment, degrowth is seen as a possible path to reduce the human pressure on ecosystems by adopting behavioral changes (e.g., car-free, shared platforms). Moreover, the concept is challenging the modern pattern of life "work more, earn more, sell more, and buy even more." This approach is proposing to have an equitable redistribution of wealth, to respect the global environmental actions, and to reconsider consumption patterns.

The unlimited growth of material consumption and production is a myth not being self-sustained by the existing natural resources. Thus,

[60] https://s3.amazonaws.com/happiness-report/2018/WHR_web.pdf

achieving a high level of well-being and a sustainable future are bound to the implementation of proper policies and public–private initiatives.

Synergies between social protection and environmental policy can positively influence well-being. Competitiveness has a role to play as well. It can generate robust outcomes for society if it is part of an overall sustainable management approach. In this regard, digitalization has an impact on consumers, having the capacity to steer many changes as regards future consumption patterns.

The new devices can offer real-time information and customized offers to consumers for goods and services. Apart from this, there are other positive aspects for everybody such as reduced cost of cross-border financial services, the possibility to master the language barriers or to find new ways of delivering services ("sharing economy" e-platforms). The mobile applications contributed even more to overcoming the barriers for implementing the sharing economy in the business world. Another meaningful invention is 3D printing. Currently, this device directly influences the value chains of products from prototype to development stage, and to research for new, alternative solutions to the traditional manufacturing methods.

The benefits of digital technologies are scalable in many sectors. However, there are concerns in terms of privacy, security threats, or losing competitiveness in trade relations. All these aspects are at risk of happening in many countries due to the digital divide or improper protection of intellectual property in trade activities.

Implementing new technologies will have an impact on competitiveness, sustainability, and also well-being. We will have to take a further look in terms of how effective they are when it comes to environmental protection (e.g., how the blockchain is impacting energy consumption or climate change).

Well-being is not a single-factor driven process; it is more an emerging area, a building block that connects with growth, job creation, a good environmental status, and health. In this equation, the circular economy has an important role to play in relation to both the material and environmental sides of well-being. By optimizing the uses of products, we will be able to have additional savings, reduce material consumption, and tackle other negative impacts associated with environmental degradation.

Still, well-being does not mean transforming our society into an automatic one, full of artificial intelligence where no human interaction will happen. Along the way of changing one perspective for another, we have to keep an eye on the foreseen actions that should be acceptable for all stakeholders. Implementing a 100% artificial intelligence society can

generate a process of human alienation in terms of perceiving and adapting to future reality.

At this time, we are beginners in implementing coherent policies on artificial intelligence. At the international level, around twenty-five[61] countries identified actions in this particular area. Their interests are very different such as military elements (e.g., the US Department of Defense Artificial Intelligence Strategy), technological and industrial aspects (the European Commission adopted the Communication Artificial Intelligence for Europe in 2018), or proposing a more holistic approach (e.g., the State Council of China adopted the Next Generation Artificial Intelligence Development Plan in 2017, targeting sectors from education to security). Following this trend, Canada and Japan took a more ambitious step ahead by developing dedicated strategies for artificial intelligence. Both countries are expressing a clear engagement toward the new technologies.

From this perspective, we will have to better define the development pathway in relation to artificial intelligence, ethics, and well-being. The synergies that can be created will be even more difficult to be managed in the near future in relation to digitalization.

Well-being is a desired vision at society's level that can allow reaching a good standard of living. Promoting a sustainable management approach and involving all the stakeholders in defining this vision can actively contribute to redesigning a better future. Overcoming various types of barriers could be done through a joint effort on the part of all stakeholders. The aim is to find suitable solutions that can create positive changes throughout society.

In the long run, we all have to think about moving the current development status quo to new horizons that are going beyond fierce competition, profits, or other associated interests. New emerging perspectives like the sharing economy can offer innovative solutions to old problems. However, the process of transition to other approaches and options needs time, as well as a lifelong learning process, cooperation, and adoption of new methods by all stakeholders.

4.4 Partnerships for sustainability and fair competitiveness

Raising the general level of public awareness about the policy area has to be in line with the general aim to ensure transparency and dissemination

[61] https://medium.com/politics-ai/an-overview-of-national-ai-strategies-2a70ec6edfd

of information. There are several means to be in touch with multiple ranges of stakeholders. One of them is to build partnerships for sustainability and fair competitiveness. The areas of interest have to reflect the current main problems in order to be considered as inputs in the policy cycle.

An irrational long-term consumption can have a boomerang effect not just on the environmental side, but also on the economy and society. This is an example of a problem that needs further cooperation among stakeholders. The aim to achieve sustainable economic growth is not feasible in the absence of sustainable production patterns.

Rethinking the current development paradigm is more stringent than ever. It is a direct consequence of past decisions, taken over the last years. Focusing on new approaches could bring into the general debate the main benefits of sustainable development and competitiveness. This approach should consider the impacts of innovation and the synergies that can appear within the thematic clusters or industrial symbiosis networks. Promoting sustainable consumption and production actions will become even more demanding in the upcoming years, as part of the response to the future challenges.

Sustainable development and competitiveness are challenging approaches in terms of proper implementation. At the international level, their influence is increasing within the scientific, governmental, and social communities. Moreover, sustainable development can be briefly described as an umbrella concept. Competitiveness determines shifts in many areas as markets are becoming more and more globally integrated. In this regard, competitiveness can play its part in changing the current consumption and production patterns.

In order to obtain relevant outcomes, we have to identify the areas that can create positive synergies and anticipate future developments. Therefore, connecting what we know with what we do can determine the degree of success or failure for any chosen approach. In the end, what we have to do is to pay attention to the impacts of our chosen perspectives at the macro or micro level.

The preparation for the adoption of new perspectives has to be done by each of us. Society as a whole needs to have a higher implementation rate of sustainable management practices. The engagement of stakeholders is essential throughout this process. In this regard, the SDG 17 as a horizontal element has the capacity to support the implementation of the 2030 Agenda for Sustainable Development. The main areas are related to finance, information and communications technology, capacity-building, trade, and monitoring. From the perspective of the SDG 17, the partnerships

for sustainable development can be a core part of any multistakeholder initiative. The involvement of stakeholders is often voluntarily.

The *partnerships for sustainability* have the potential to steer new collaborative actions in various areas:

- Promoting sustainable business practices and exchange of the best available technologies through cross-industry strategic partnerships, particularly in line with the concept of Industry 4.0;
- Scaling up the sustainable and green financing, innovation, and involvement of the private sector in various thematic areas;
- Changing the perspective toward waste as a resource and promoting resource efficiency as a horizontal principle in line with a sustainable circular economy;
- Distributing resources and well-being in society in a better way;
- Building mutual trust and better cooperation between public and private stakeholders (business, governments, and civil society);
- Promoting a fair, sustainable competitiveness approach within the marketplace;
- Reskilling people and upgrading the educational curricula in accordance with the new market of the fourth industrial revolution, addressing development of creativity and digital skills as relevant aspects in the learning process.

The development of new pathways and methods requires time and determination in order to allow a smooth transition to new approaches and structural transformations. Through the right partnerships for sustainability, we can trigger fair competitiveness that is beneficial for all of us in the long run.

The process of mainstreaming sustainability has to find its proper implementation tools. One option can be to develop public–private partnerships across sectors. In this regard, we have to consider the role of the key and emerging enablers in implementing sustainable management. This approach can stimulate the development of new cooperation models among stakeholders in the supply chain (e.g., industry-led and NGO initiatives, projects, multistakeholder institutions and platforms).

Fair competition can stimulate sustainability. Its impact is in the stage of adopting new technologies at the level of production. Furthermore, it can stimulate sustainable production practices and new developments in the research area.

Additionally, an increased level of awareness among stakeholders is associated with education, culture, and a perception of the costs and

benefits. The impact of these factors reflects the openness of any country toward its citizens.

In the long and medium run, we need to reconfigure our fundamentals of competitiveness on a more sustainable basis. The aim is to find solutions to new challenges associated with the profound transformations taking place in the international trade system. In this case, partnerships among all stakeholders are part of a global solution, especially in promoting fair trade and voluntary sustainability standards. All these initiatives are binders in terms of reaching equilibrium between economic, social, and environmental elements.

Finding solutions to future challenges has never been an easy action. Still, establishing a permanent, interactive, and open dialogue with all actors can help in promoting competitiveness, sustainable development, and economic prosperity. Overall, the topics under discussion are multiple and can focus on the future dynamics of the jobs market, the necessary skills, and the need to have in place financial schemes in the case of artificial intelligence.

The transition to new approaches has to allow a more active social dialogue in promoting equal employment opportunities for all and creating new means for promoting well-being.

As part of the future trends, it is essential to identify the strategic niches that are capable of providing a competitive and sustainable advantage. Thus, it is an indispensable step to achieve positive synergies among sectors at the international level.

Exploring the potential in terms of competitiveness and sustainability is another step of action. In this respect, stakeholders are the ones to present their visions in identifying ways to increase well-being, the current standard of living, and happiness.

The new types of partnerships can steer positive changes across society. Their developments should take into account the existing national policy priorities. The proposed objectives and actions can contribute to defining a vision of a favorable investment environment, open to fair competitiveness and environmental protection.

We have to be aware that any future decision can have adverse environmental, social, and economic effects. Thus, the proposed approach is relevant to the current challenges but has to be chosen wisely and assessed accordingly in terms of various impacts, additional costs, and resource efficiency.

CHAPTER FIVE

CONCLUSIONS

There comes a moment in time when any development pathway is reaching its inflection point, urging a refining of the objectives of its current baseline. Defining the long-term milestones can sometimes be a taught exercise of imagination, a long journey toward unknown challenges. We need to be aware that finding the right tools for a paradigm shift is an essential step. Increasing awareness has to overcome the fear of change in order to avoid what Alvin Toffler once called a "maladaptation to change."

The new global challenges associated with the fourth industrial revolution mostly focus on the diffusion of technology, research, and innovation, but we should not forget about the social dimension. Technological progress cannot be stopped or left aside because it is part of our economic development. We have to ask ourselves if what neoliberal believers called an "invisible hand" can be a real solution for society. If this will be the case, the whole process should allow a fair distribution of well-being following the "will of people." Any chosen action has to ensure the desired public good for all of us.

From a general point of view, we need coherence and a new type of global collaboration. The aim is to have a fourth industrial revolution designed in a more humane and equitable approach concerning technological development. A constant speed-up process is the emblem of the new development. This line can raise serious concerns related to preserving the cultural values, and individual preparedness toward adopting new behavioral patterns.

The concept of sustainable development is part of the debates related to future global trends. Many times, the questions focus on the need to identify ways to implement a sustainable management approach. The ultimate goal is to overcome inherited drawbacks and to promote sustainable competition. Being aware of the complexity, diversity, and variability of our environment is essential in obtaining successful outcomes. For proper implementation, we have to identify the adaptation

component of every future action. In this way, we can mainstream sustainability and assess the impacts.

We are living in times when a multiplication of crises is taking place all over the world. This situation is generating synergies that are difficult to be quantified in the medium or long run. As a consequence, we are witnessing trade-off situations between environmental protection and economic development.

This book starts from a perspective aimed to investigate brand new avenues in tackling sustainability. Moreover, it advocates the need for a deeper understanding of the interdependences created between sustainable development and competitiveness.

One way to promote sustainability is by supporting initiatives in the area of competitiveness as part of the overall debate on resource efficiency, circular economy, and land degradation neutrality. This approach is in line with the concept of "doing more with less" and contributes to reaching optimum well-being.

Achieving the full potential of the 2030 Agenda for Sustainable Development can be a challenging task when assessing implementation. At the international level, there are many approaches showing the multitude of aspects related to sustainable development. Currently, sustainability is implemented by countries through different national frameworks and means. In this approach, some of them have defined particular priorities as well as several available financial resources. The degree of success will determine the real outcomes obtained in terms of social well-being.

Mobilizing all the stakeholders in promoting a paradigm shift toward sustainability can ease the whole process. Moreover, reaching coherence among all the SDGs is vital for proper implementation. For real progress, we should avoid contradictions and mixed messages, especially in the case of SDGs that are aiming for dual actions. We need to avoid gray areas such as targeting a quantitative GDP growth while this aim can be in opposition to the objectives of environmental protection, reduction of inequalities, and sustainability. Following this line, ensuring a decent level of well-being and lifestyle should consider the synergies created among all SDGs.

From this perspective, a sustainable management approach can create a harmonious framework of action on all three dimensions of sustainable development. Other factors can contribute as well. The international negotiations can pave the way for promoting new avenues of development. However, for obtaining robust outcomes, it is advisable to have more coherence between trade and environmental negotiations. Better

integration of synergies has to be in line with the new development opportunities at the social level. In this regard, culture also has a role to play as regards sustainability. Many times, it can influence the negotiation outcomes.

If we have to answer to the question of how circular is the global circular economy, we will have to consider multiple factors. The process of decoupling resources from environmental impact is part of the debate related to the available investments and skilled workforce.

In order to have better living conditions for the population, we have to implement resource efficiency as a policy. In this way, it can actively contribute to the efforts to curb GHG emissions. Furthermore, creating a long-term environment could stimulate the development of performance-oriented companies even more.

Circularity can be a binder between competitiveness and sustainability aiming to reach well-being. Other contributions are possible through other concepts such as LDN, climate change, and gender mainstreaming. All of them can equally contribute to mainstream sustainability from different angles of actions.

The new technologies are demonstrating their practical benefits. However, we will have to analyze who is benefiting in the game of competitive advantage in the case of trade and environment. Since distance is not a drawback anymore, the alternative offered by online commerce can be an excellent opportunity in the case of developing countries.

We will have to further consider the technologies' breakthrough effects on capital, labor, and institutions, and on new patterns of trade. Moreover, research, innovation, and IPR protection is significantly increasing the role of technology in our society.

Digital technologies are transforming every single aspect of our lives and are requiring adaptation on the part of all actors. The impacts on society are very diverse. Every single day, new market opportunities appear due to global trade. The question is, are we prepared to observe them and to take action. In many parts of the world, we witness a constant pressure on the job market in terms of the appropriate educational skills. On the other side, global trade leaves a place for companies to generate positive synergies for society through fair competition, increased productivity, and innovation when it comes to resource efficiency.

The high speed of technological change puts additional pressure on the policymakers. Due to this situation, they have to find the most suitable solution in the case of new situations. In this case, putting well-being as the ultimate goal of the economy, we will be able to assess synergies and

impacts from a cross-sectoral dimension in a more realistic way. If we broaden the perspective focused on economic growth with new indicators such as life happiness, environmental performance, or sustainable competitiveness, we can gather valuable insights for designing future policy recommendations.

The current research embarked on several key perspectives for defining sustainability and competitiveness, as follows:

- Transparency, engagement, and responsibility in relation to public policy
  - Level playing field conditions for all stakeholders should exist in accordance with the principles of nondiscrimination and "leaving no one behind." Furthermore, increased local community involvement can support the development of new circular business models.
  - Open policy dialogue with the public and private stakeholders will develop shared priorities, approaches, and better communication regarding SDGs implementation. This can be through dedicated national stakeholder's platforms or international events such as the 3rd World Circular Economy Forum in Helsinki, Finland June 3–5, 2019.
  - The importance of the adaptation component for every foreseen action needs to be highlighted. It should be part of the new means of monitoring, verifying, and reporting progress of various global, regional, or industry-led initiatives in the economic, social, and environmental areas. The aim is to increase transparency and to disclose relevant public information.
  - Going to the next level of social engagement can be achieved through global initiatives (e.g., the *New Plastics Economy Global Commitment*[62], which rallied 250 businesses, governments, and other international organizations). Moreover, building new forms of alliances and leadership platforms (e.g., Alliance of CEO Climate Leaders, Alliance to End Plastic Waste) can forge better cooperation between public and private sectors.
  - The transition from a linear economic growth model toward a more circular one facilitates the promotion of a sustainable management approach. The aim is to increase the level of

[62] http://www.labelsandlabeling.com/news/industry-updates/industry-signs-new-circular-plastics-economy-initiative

resource productivity, to obtain savings, and to reduce environmental impacts.

- Responsible business cannot exist in the long run without responsible consumers. The aim is to have a better understanding of impacts related to consumption and production alongside the supply chain. In this regard, it is advisable to implement material flow analysis in order to assess the product-level circularity.
- Actions in the areas of education, research, development, and innovation are essential policy triggers. In this regard, implementing strategic partnerships for sustainable development are important steps forward for every country. Specialization of the workforce for new job opportunities will require the development of new abilities in many sectors. The areas of the green and circular economy have the potential to create new jobs.
- The business sector has a vital role in promoting sustainability. Their involvement is part of the ultimate goal of reaching well-being at the social level. Their involvement is important in the SDGs process, in the elaboration of standards for sustainability, or in relation to the peer review mechanism.

➤ Well-being and synergies

- Well-being is not a single-stage factor; it is a cumulation of factors aiming to create better conditions for increasing the standard of living.
- Better rethinking is needed as regards the role and limits of new technologies (e.g., AI, IoT) at the global level in relation to well-being, ethics, education, gender issues, and sustainable circular economy.
- Cross-sectoral synergies need to be better assessed as they have a pivotal role in reviewing the implementation of the 2030 Agenda for Sustainable Development.
- Designing tailor-made approaches through research, development, and innovation will promote well-being and fill the gaps of knowledge when it comes to synergies.

- Sustainable competitiveness, resource efficiency, trade, IPRs, and gender
  - Building national sustainable competitive advantages should be done by considering the finite status of raw materials. The concept of the new Industry 4.0 offers cross-industry strategic partnerships in order to correlate real-time data with the IoT in a more resource-efficient way. Thus, it is essential to identify new niches of development (e.g., fair trade).
  - In designing cross-sectoral policies in the area of climate change and resource efficiency, LDN should smooth the international cooperation aspects by including their potential impact on trade. This type of measures should be in line with the WTO rules.
  - The role of the circular economy needs to be better assessed. The aim is to promote more sustainable international trade, especially in the case of trade agreements.
  - Better enforced IPR mechanisms will generate benefits for countries. It will facilitate trade and diversification of competitive advantages. Also, it will stimulate education, research, development, and innovation.
  - National waste management planning and its capacity to promote circularity should be reviewed.
  - Mainstreaming economic, social, and environmental aspects in relation to gender equality aims to take further steps toward developing gender-responsive national policies. Another action can be to define consumer behavior on gender aspects. In this way, we can have more insights related to their willingness to adhere to the concept of sustainability. Also, supporting initiatives, such as the Joint Declaration on Trade and Women's Economic Empowerment can actively feed into the implementation of the 2030 Agenda for Sustainable Development.
  - Further support is needed for fair-trade initiatives set up by the developing countries.

Treating waste as an economic asset has the potential to steer new business opportunities (e.g., industrial symbiosis platforms, car-sharing, IoT). What is essential in broadening the circularity is to have in place a functional market for secondary raw materials. In this way, the circular economy can become a reality and stimulate the adoption of a sustainable management approach at all levels.

Sustainability and competitiveness can go hand in hand toward promoting well-being for all. This binomial relation can influence future market trends and behaviors. Redefining the current actions should be the outcome of active cooperation among all stakeholders. In the end, the aim is to achieve robust long-term growth and overcome inherent obstacles.

Another area of interest related to sustainable competitiveness is the need to ensure fair information disclosure among economic actors in dealing with environmental and social costs. The CSR[63] can be the tool for promoting transparency and also reporting circularity.

Trade cannot be left aside, because it has an essential role in promoting sustainable production patterns. The digitalization process and new technologies uptake can steer resource efficiency and reduce environmental impacts. The efforts toward resource efficiency and a fair distribution of resources among countries are not only for one sector or category of countries.

On the other hand, sustainability can be a trigger for competitive challenges as well. It is capable of stimulating new market trends and business models. From this perspective, finding new perspectives related to sustainability can actively contribute to the overall debate related to the future pathway.

Even if there are still many things that should be done all over the world, the current situation is an opportunity for redefining development. The economic cycle has its ups and downs. Recession periods are good times for reflections toward new opportunities and for taking brave decisions.

Generally, the need to be competitive is the condition for achieving economic progress. We will have to ask ourselves if this aim is the key to real well-being. Reaching a certain standard of living does not automatically mean well-being. However, the win-win options have to integrate all three dimensions of sustainable development. The chosen approaches have to be balanced and analyzed in the case of any policy or funding assessment.

The transition from a linear model "make, use, and dispose" toward a more circular one will change consumer behaviors and perceptions. Waste plays a central role in the resource efficiency debate. Actions toward transforming waste into new resources and byproducts are seen as steps toward sustainable circular businesses. For obtaining relevant outcomes,

[63] The updated French Code of Commercial Law[63] included requirements for large companies regarding the circular economy. More information: https://www.ecovadis.com blog/french-law-report-ghg-emissions/

we need to design a system capable of mainstreaming sustainability and competitiveness.

Another aspect that could be the subject of further thinking is referring to the core areas necessary in defining competitive advantage. There is a need to identify other relevant factors apart from the ones offered by low costs of natural resources production and human capital. New niches are emerging in the case of smart technologies and resource efficiency. All of them can actively contribute to embarking on the vision of a balanced development for all.

Reducing the inequalities among countries is one major challenge for the fourth industrial revolution. We have to define wisely our approach toward well-being and a more sustainable circular economy at the global level. Only by realizing that many times "imagination is more important than knowledge," we can figure out new solutions for emerging issues. The message of Albert Einstein is more real than ever and can quickly be followed by all of us.

Changing our perspective requires new approaches when referring to sustainability and competitiveness. We have to focus more on creating values from the existing materials and products. In this transition stage, technology plays a central role. All along our journey toward sustainability, we should not forget about the human and cultural components. They are essential in building a culture of trust as a trait of a future sustainable and competitive economic model.

ANNEX 1:
TOP BEST 10 PERFORMERS ON SUSTAINABLE COMPETITIVENESS

No.	Name of country	Overall index score
1.	Sweden	60.5
2.	Norway	58.2
3.	Iceland	57.6
4.	Finland	57.4
5.	Denmark	57.2
6.	Ireland	55.4
7.	Switzerland	55.3
8.	Austria	54.8
9.	Latvia	54.2
10.	Estonia	53.7

Source: http://solability.com/the-global-sustainable-competitiveness-index/the-index

ANNEX 2:
PROPOSED SCENARIOS FOR A CIRCULAR ECONOMY

The renewable scenario	*The energy efficiency scenario*	*The material efficiency scenario*
50% reduction in carbon emissions	30% reduction in carbon emissions	To cut carbon emissions in all the countries by between 3% and 10%
15,000 new jobs in Finland and Sweden	15,000 new jobs in Finland and 20,000 people in Sweden	50,000 people in Finland and Sweden
50,000 new jobs in the Netherlands	100,000 new jobs in the Netherlands	More than 100,000 in the Netherlands
100,000 new jobs in France and Spain	200,000 new jobs in France and Spain	More than 200,000 in Spain and more than 300,000 people in France

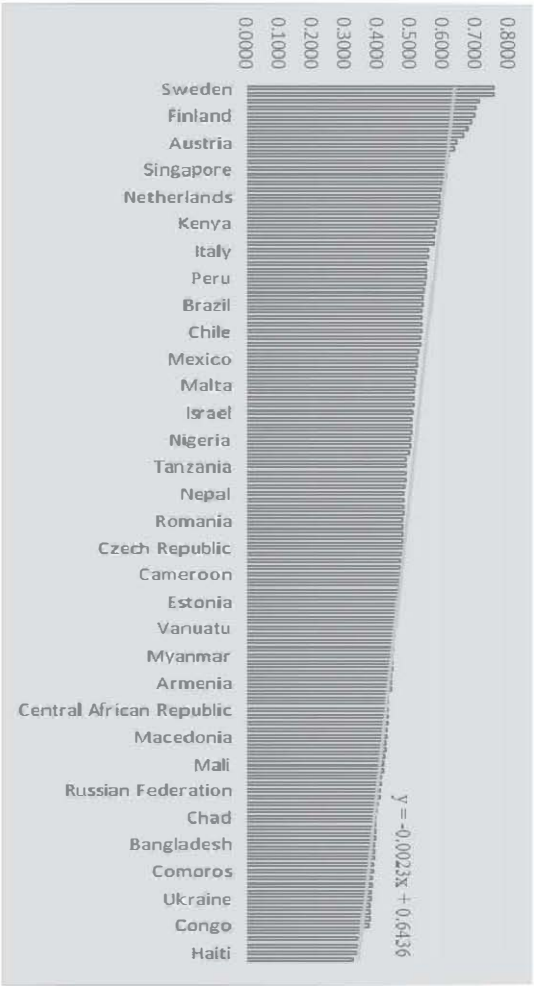
Source: Report *The Circular Economy and Benefits for Society*, Club of Rome

ANNEX 3:
GROWTH OF GDP BY MAJOR REGION, 2016–2018

Countries	2016	2017	2018	Average change %
US	1.60	2.30	3.00	2.30
Europe	2.00	2.60	2.40	2.33
Japan	1.00	1.70	1.30	1.33
Other mature economies	2.30	3.00	2.80	2.70
China	3.90	4.20	4.00	4.03
India	7.90	6.30	6.70	6.97
Other developing Asian economies	5.10	5.50	5.60	5.40
Latin America	−1.30	1.20	1.90	0.60
Sub-Saharan Africa	1.40	2.90	3.60	3.27
Russia, Central Asia, and SE Europe	1.20	3.20	2.60	2.63

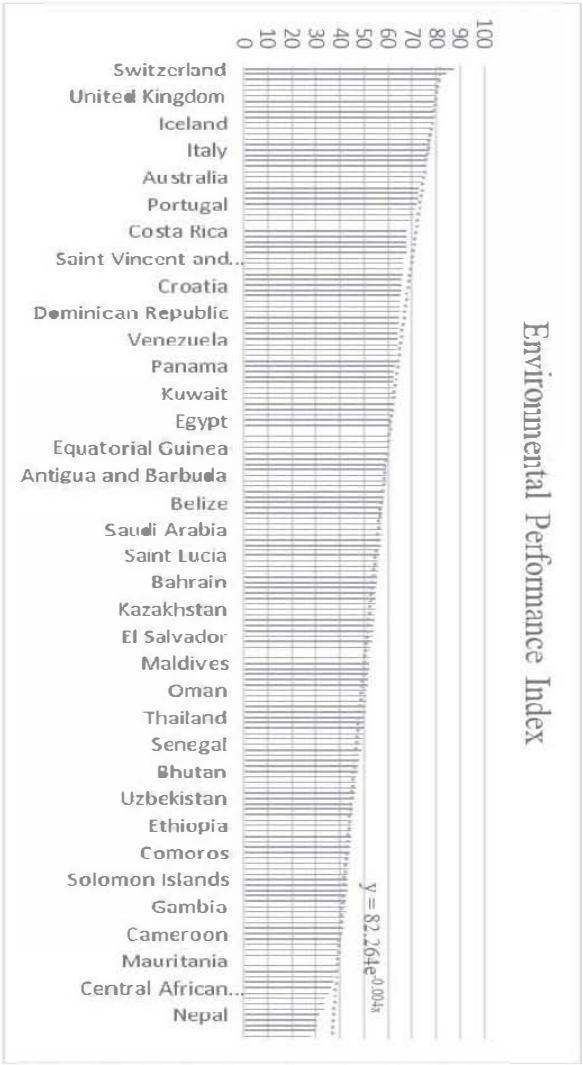
Source: The Conference Board Total Economy Database™ (adjusted version) March 2018 and own calculation

ANNEX 4:
GLOBAL GREEN ECONOMY INDEX (GGEI), 2018



Source: https://dualcitizeninc.com/global-green-economy-index/

ANNEX 5:
ENVIRONMENTAL PERFORMANCE INDEX



Source: EPI 2018, https://epi.envirocenter.yale.edu/epi-topline

ANNEX 6:
CHANGE IN RESOURCE PRODUCTIVITY AT THE EU LEVEL

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Change in Resource Productivity (2000–2015)
EU28	1.27	1.31	1.38	1.41	1.41	1.47	1.52	1.56	1.58	1.69	1.82	1.81	1.98	2.05	2.09	2.18	0.72
ES	1.11	1.14	1.13	1.10	1.14	1.17	1.23	1.29	1.48	1.72	1.95	2.20	2.73	2.87	3.09	3.16	1.85
CY	0.74	0.80	0.76	0.90	0.87	0.92	1.00	0.95	0.68	0.84	0.93	0.94	1.26	1.61	1.94	2.09	1.82
IE	0.75	0.80	0.87	0.81	0.80	0.85	0.86	0.91	0.95	1.15	1.40	1.56	1.72	1.58	1.71	1.85	1.46
IT	1.39	1.49	1.57	1.77	1.67	1.67	1.73	1.93	2.01	2.10	2.30	2.43	2.88	3.24	3.18	3.27	1.35
CZ	0.79	0.84	0.92	0.94	0.95	1.01	1.05	1.13	1.14	1.20	1.29	1.28	1.46	1.51	1.55	1.60	1.02
SI	0.90	0.96	0.98	0.93	1.00	1.08	0.98	0.95	1.11	1.22	1.31	1.49	1.73	1.76	1.73	1.78	0.97
PT	0.80	0.78	0.84	0.97	0.91	0.99	0.95	0.97	0.92	0.99	1.11	1.18	1.29	1.48	1.50	1.48	0.86
HU	0.87	0.86	0.96	0.97	0.85	0.77	0.99	1.29	1.19	1.44	1.65	1.71	1.97	1.77	1.47	1.59	0.82
LV	0.48	0.54	0.56	0.61	0.62	0.62	0.66	0.69	0.81	0.86	0.75	0.74	0.82	0.80	0.86	0.87	0.79
PL	0.65	0.69	0.76	0.76	0.78	0.80	0.84	0.83	0.84	0.90	0.94	0.81	0.98	1.05	1.09	1.16	0.77
UK	2.00	2.06	2.21	2.26	2.31	2.48	2.61	2.68	2.78	2.94	3.01	3.02	3.23	3.26	3.30	3.52	0.76
FR	1.55	1.70	1.76	1.83	1.73	1.87	1.91	1.94	1.98	2.12	2.27	2.28	2.37	2.43	2.54	2.71	0.74
DE	1.31	1.42	1.49	1.54	1.58	1.70	1.74	1.83	1.86	1.81	1.95	1.90	1.99	2.03	2.07	2.23	0.71
LU	1.92	2.04	2.02	2.01	2.08	2.18	2.27	2.54	2.92	2.78	3.01	3.28	3.33	3.30	3.32	3.27	0.70

SK	0.96	0.97	1.00	1.07	0.96	0.99	1.11	1.30	1.21	1.28	1.40	1.38	1.66	1.78	1.68	1.64	0.70
DK	1.09	1.13	1.23	1.17	1.17	1.09	1.10	1.19	1.27	1.45	1.66	1.47	1.54	1.67	1.70	1.83	0.68
LT	0.91	1.10	1.00	0.96	0.95	1.00	1.08	1.04	1.00	1.25	1.23	1.23	1.44	1.25	1.39	1.46	0.62
NL	2.15	2.23	2.53	2.58	2.59	2.75	2.88	2.90	2.85	2.84	2.94	3.09	3.24	3.52	3.49	3.27	0.52
AT	1.11	1.14	1.12	1.20	1.21	1.20	1.23	1.27	1.36	1.39	1.45	1.45	1.55	1.62	1.60	1.68	0.51
FI	0.68	0.69	0.71	0.68	0.72	0.73	0.74	0.79	0.79	0.88	0.85	0.88	0.93	0.89	0.97	1.02	0.50
BE	1.65	1.65	1.77	1.82	1.83	1.86	1.71	1.76	1.76	1.88	2.01	1.97	2.26	2.33	2.24	2.42	0.47
BG	0.45	0.44	0.47	0.50	0.48	0.52	0.52	0.57	0.57	0.68	0.70	0.65	0.68	0.70	0.66	0.65	0.46
HR	1.27	1.10	1.02	1.02	0.96	1.05	1.05	1.16	1.05	1.22	1.43	1.50	1.69	1.59	1.73	1.77	0.40
GR	1.18	1.20	1.27	1.19	1.30	1.29	1.43	1.07	1.16	1.30	1.39	1.40	1.49	1.61	1.55	1.60	0.36
SE	1.26	1.29	1.31	1.35	1.40	1.29	1.49	1.46	1.47	1.56	1.50	1.48	1.51	1.47	1.46	1.48	0.17
EE	0.68	0.73	0.67	0.57	0.57	0.65	0.66	0.61	0.67	0.61	0.64	0.67	0.73	0.70	0.74	0.79	0.17
RO	0.65	0.45	0.50	0.50	0.53	0.51	0.55	0.52	0.47	0.56	0.64	0.60	0.65	0.65	0.72	0.70	0.08
MT	1.77	1.82	2.01	1.75	1.77	2.14	1.81	2.32	2.71	2.52	3.14	2.41	2.17	2.54	1.92	1.89	0.06

ABBREVIATIONS

ASEAN	Association of Southeast Asian Nations
BAT	Best available technology
BIG-E	Batumi Initiative on Green Economy
CBD	Convention on Biological Diversity
CEDAW	Convention on the Elimination of All Forms of Discrimination Against Women
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CSR	Corporate social responsibility
CTE	Committee on Trade and Environment
DPR	Drivers–pressure–response model
DPSIR	Drivers–pressure–state–impact–response model
EPI	Environmental Performance Index
FUR	Follow-up and review
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
GDP	Gross domestic product
GGEI	Global Green Economy Index
GPP	Green public procurement
GRI	Global Reporting Initiative
GSCI	Global Sustainable Competitiveness Index
HLPF	High-level Political Forum
IL●	International Labor ●rganization
IoT	Internet of things
IPRs	Intellectual property rights
IS	Industrial symbiosis
LDN	Land degradation neutrality
MDGs	Millennium Development Goals
MoI	Means of implementation
NAPs	National Adaptation Plans
●ECD	●rganization for Economic Co-operation and Development
PAGE	UN Partnership for Action on Green Economy
RFSDs	Regional Forums for Sustainable Development
SDGs	Sustainable Development Goals

STI	Science, technology, and innovation
TBL	Triple bottom line analysis
TRIPS	Trade-related Intellectual Property Rights
UNCCD	United Nations Convention to Combat Desertification
UNCED	United Nations Conference on Environment and Development
UNCTAD	United Nations Conference on Trade and Development
UNFCCC	United Nations Framework Convention on Climate Change
UNFSS	United Nations Forum on Sustainability Standards
VNR	Voluntary National Review
WEF	World Economic Forum
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

GLOSSARY

Blockchain[64] is a decentralized and distributed digital record of transactions ("distributed ledger") included in "blocks" that are then "chained" to each other using cryptographic techniques. The information included in a blockchain has a time-stamp, and transactions are recorded, shared, and verified on a peer-to-peer basis.

Byproduct is a secondary product that resulted from an industrial process (e.g., manufacturing, chemical reaction, waste recycling).

Cluster is a group of companies working closely together in order to improve their processes.

Environmental services includes sewage services, refuse disposal, sanitation and similar services, reducing vehicle emissions, noise abatement services, nature and landscape protection services, and "other" environmental services.

GATS[65] can be described as a milestone process in terms of creating a reliable system of international trade rules in accordance with the principle of nondiscrimination, promoting trade, and development through progressive liberalization. Currently, there are 140 countries as parties to GATS.

GATT was a multilateral trade agreement between 23 countries having as its objective the removal of tariffs between the members and to actively contribute to international trade. It was the first worldwide multilateral free trade agreement and was in place from June 30, 1948, until January 1, 1995. A turning point in trade was the eighth round of GATT (Uruguay, 1986) that enlarged the scope of the agreement to intellectual property, agriculture, and dispute settlement. On that occasion, the World Trade Organization was created as the successor body to the GATT.

Industry 4.0 is associated with the fourth industrial revolution in relation to the processes of automation and data exchange.

Internet of Things (IoT) is a global infrastructure for exchanging information and communication technologies for advanced services.

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[64] Definition adapted after WTO report "The future of world trade: how digital technologies are transforming global commerce," 2018

[65] https://www.wto.org/english/tratop_e/serv_e/gatsqa_e.htm

SDGs: The 17 Sustainable Development Goals are a core part of the 2030 Agenda for Sustainable Development adopted in 2015. They target the following areas:

- Goal 1: End poverty in all its forms everywhere
- Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture
- Goal 3: Ensure healthy lives and promote well-being for all, at all ages
- Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
- Goal 5: Achieve gender equality and empower all women and girls
- Goal 6: Ensure availability and sustainable management of water and sanitation for all
- Goal 7: Ensure access to affordable, reliable, sustainable, and modern energy for all
- Goal 8: Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all
- Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation
- Goal 10: Reduce inequality within and among countries
- Goal 11: Make cities and human settlements inclusive, safe, resilient, and sustainable
- Goal 12: Ensure sustainable consumption and production patterns
- Goal 13: Take urgent action to combat climate change and its impacts
- Goal 14: Conserve and sustainably use the oceans, seas, and marine resources for sustainable development
- Goal 15: Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation, and halt biodiversity loss
- Goal 16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all, and build effective, accountable and inclusive institutions at all levels
- Goal 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development

WIPO is one of the UN specialized institutions and was created in 1967. According to the Convention Establishing the World Intellectual

Property Organization its aim is "to encourage creative activity, to promote the protection of intellectual property throughout the world."

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