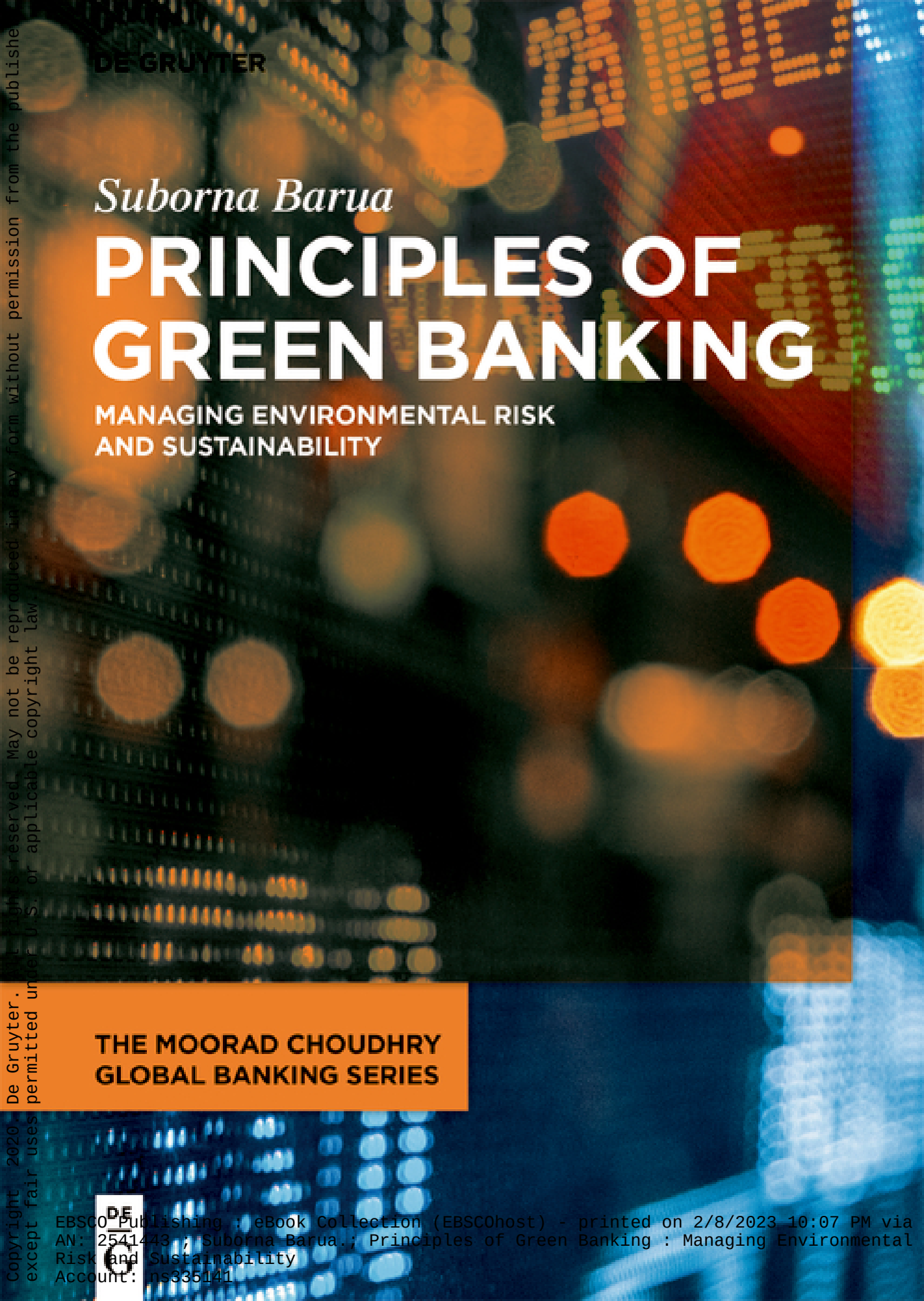

Suborna Barua

Principles of Green Banking

The Moorad Choudhry Global Banking Series

Series Editor
Professor Moorad Choudhry

Suborna Barua

Principles of Green Banking

Managing Environmental Risk and Sustainability

DE GRUYTER

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Professor Dr. M. A. Baqui Khalily
– the mentor and teacher who taught me research

My wife Bipasha, kids Aritrika and Satwik; and my parents Shikha Barua and Subash Barua
– the sources of endless motivation and encouragement in writing this book

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I deeply acknowledge the contribution of some people without whose assistance and motivation this book writing project would have been substantially more complicated.

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In addition, I am sincerely grateful to Professor Dr. Moorad Choudhry – a prolific writer and expert in finance – for his continuous motivation and mentoring while writing this book.

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I must express my gratitude to my family for wholeheartedly supporting me while working on this book.

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Appreciation Message

I am very happy to write this appreciation message for Suborna Barua – the author of the book *Principles of Green Banking: Managing Environmental Risk and Sustainability*. Considering the environmental impacts we have been creating to achieve faster economic growth, the world needs our concerted attention and progress on sustainable development more than ever. It is now realized by humanity that the continuation of our unsustainable behavior has already made mother Earth substantially vulnerable, and as a result, it may become unlivable for future generations. Given this circumstance, the role of financial institutions in protecting the environment is key, for which it is important to understand different dimensions and aspects of their environment-friendly behavior. To this need, Suborna's book on green banking can be considered as a perfect response. I find Suborna's book a significant contribution to the academic literature, since there is a noticeable lack of a comprehensive documentation, particularly in the form of a book, on how banking can be green or environment-friendly. As a professor in banking, I am highly confident that the contents covered in the book will be enjoyable and useful across academics, bankers, and financial services regulators. I find the contents of the book highly valuable and comprehensive, and am confident it can be used as a solid primary material in undergraduate and graduate degree programs in higher education institutions and professional training participated in by bankers and financial services regulators.

Suborna is an emerging and bright academician in finance and economics at the Faculty of Business Studies (FBS), University of Dhaka, with a publication record of over 25 articles in globally top-ranked journals and chapters in books from top publishers. As the former dean of the FBS, it is my immense pleasure to see my colleague write this book and not only make a significant contribution to the academic literature but also foster knowledge on sustainability.

I strongly recommend Suborna's book for all who are interested in expanding their learning on the role of financial institutions in sustainable development. I hope the book receives its due credit.

Shibli Rubayat Ul Islam
Chairman, Bangladesh Securities and Exchange Commission
Professor, Department of Banking and Insurance
Former Dean, Faculty of Business Studies
University of Dhaka, Dhaka 1000, Bangladesh

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Foreword

It should come as no surprise, to those familiar with my published work at any rate, to hear that I believe that banks are a powerful force for good in society. That belief has been harder to sustain in recent years, with the events surrounding the global financial crash in 2008, as well as the multi-billion-dollar fines levied on banks around the world by various regulatory authorities for perpetrating a wide range of misdemeanors on the markets. These things were sad to see, for they spoke of a banking industry and culture that had been led astray from what should always be the primary focus of all banks: serving the customer.

But as we move on from those events, I do wish and hope that all practitioners in banks, as well as banks' wider stakeholders, will see banking for what it always has been, at least since the first modern banks were formed in the fifteenth century and possibly earlier. And that is a simple thing: namely, a process enabling those seeking funds to obtain them, via banks, from those seeking to invest funds. It is nothing more and nothing less than that. But in this role, banks are the key driving force of every country's entire economy. Without a functioning and efficient banking system, economic growth and thereby societal development would be so much slower than what we have observed ever since commerce moved beyond simple mercantilism to the trading environment we observe today.

And this brings us to "green banking." As banks are indeed the key engine of growth in any economy, we can conclude fairly quickly that they contribute not just to economic growth but also to those aspects of growth that make it sustainable and, critically, responsible. Climate change is a very important topic impacting every industry today, and banking is not immune; for example, the United Kingdom banking regulator, the Prudential Regulatory Authority, requires that banks factor in the impact of climate change on their annual capital adequacy stress tests. But this is simply a risk management process. In terms of their business model and day-to-day business practices, an independent observer would be unsurprised to hear that banks need to address this issue so that they also contribute proactively to sustainable development and economic impacts that counter climate change. It's simple common sense.

This is why this title from Suborna Barua is so welcome. The author makes a fine case, explaining not only what green banking is and why it is so important, but also presenting practical examples and recommendations on how a bank can progress in this field. And this all to the good. The economic driver is clear, but there is also a cultural aspect to consider. Again, on this aspect too Dr. Barua's book delivers.

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I am extremely pleased that this book is the kick-off title in the *Global Banking Series*. It is a book on banking that is banking for our times: an urgent call toward responsible, sustainable, positive and society-enhancing development. I commend it heartily to you.

Professor Moorad Choudhry
Surrey, England
March 9, 2020

Contents

Preface

In 2013 I was given the responsibility to coordinate and manage a one-year industry research project on Green Banking Principles and Practices in Bangladesh. The project was jointly funded by Bangladesh Bank – a pioneer in green central banking in the world – and the Department of International Business, University of Dhaka – where I teach as Assistant Professor of Finance. That was the first but perhaps most encouraging research engagement for me on environment-friendly banking or green banking. Bangladesh Bank launched Green Banking Guidelines in 2011 for its own operation and for the entire banking sector of Bangladesh, which were to be implemented in three yearly phases. The research project's aim was to assess the state of implementation of the guidelines in different scheduled and commercial banks. I finished the job successfully and supplied the deliverables for Bangladesh Bank alongside producing academic publications on green banking.

There are several important things I learned from the research endeavor. First, banks hold immense power and influence on economic agents across an economy including governments, firms, and individuals. Since money is the fuel that keeps an economic system functioning, mobilization of funds is a must to ensure an economy grows and develops. Being the main storehouse and mobilizer of funds, financial institutions hold enormous power of "money" by which they can directly and indirectly influence how agents behave in an economy. Second, in many countries, banks are considered the engine of economic growth since they exist to create opportunities for economic agents to utilize their surplus funds and to borrow to offset deficits of funds. Due to at least two features, as I have observed, banks have a superior role in an economy and society in addition to the power of "money": they, unlike other financial institutions, are allowed to accept surplus funds by directly and indirectly selling deposit and savings products; and they have extensive coverage and outreach of people across all levels of a society as they deliver some exclusive services that no other financial institutions provide, for example, day-to-day transaction settlement services, payment services, trade facilitation, and so on. These specialties of banks have helped them impactfully influence how people and firms across the board behave in their day-to-day decision-making, for example, regarding saving, consumption, and investments. I observed that the daily lives of people and firms are enormously touched by banks. Third, an important discovery of the research project was the immense potential of using banks to alter or correct environmentally harmful behavior of economic agents, that is, firms and individuals. Banks can have a direct and profound influence on how the agents transact, consume, save, and invest in their daily operations that no other financial institution can have. This influence can be impactful in saving and protecting the environment for future generations, if it can be properly directed to correct the environmentally damaging behavior of firms and individuals. This role of banks can naïvely be termed "green banking."

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The learning from the green banking research project drove me to delve deeper into the role of banks in environmental protection. Over the last several decades, the aggressively growth-seeking attitude of countries has contributed to major damage to our nature and environment by the rapid consumption of nonrenewable resources, polluting of air, water, and soil by releasing hazardous materials from industrial and nonindustrial activities, and damaging the eco-system by deforestation and permanently destroying living species, and so on. The list could be much longer, but natural law dictates that "nature" returns what you do to it, and we have already begun to feel the adversities of environmental degradation in our lives. The accelerating level of climate change, increasing pollution-driven health complications and death rates, reduction in livable land areas, decline in agricultural productions, and increased frequency and intensity of natural disasters like landslides are some of the long list of adversities. As stated, the most unfortunate aspect is that it is humans who are primarily responsible for almost all these adverse returns of nature. As the degree of adversities grows, it is likely to threaten the existence and lives of the future generations, if appropriate corrective actions are not undertaken right now. It is perhaps already very late; but better late than never. The world now started to realize that the best way to stop the unsustainable behavior of humans, is to induce necessary corrections in their behavior and make a concerted effort toward environmental protection.

Under the circumstances, as one of the most influential economic agents, banks need to join forces in the efforts to protect the environment. Globally, several efforts are underway at the national and international levels, predominantly led by donors and development agencies. However, given the impactful "power" and "influence" banks hold, their role remains limited until now. Some scattered or alienated efforts at the international and national levels can be observed, much of which are yet voluntary in nature. In this regard, two dimensions of problems can be observed: first, the current efforts are considerably lacking in providing comprehensive guidelines or frameworks for banks to follow in their internal and external operations; and second, the mostly voluntary nature of the efforts is found to be largely ineffective in inducing banks to behave in an environment-friendly manner as they can cost banks' financial and business returns.

In this book, I have tried to address the issues I have learned and observed from research and industry engagement with regard to green and environment-friendly banking. While green banking is critical given today's reality, I have found there is a considerable shortage of learning materials, particularly, in the form of a book that covers theoretical and operational aspects of green banking. I have made every effort to provide readers a comprehensive understanding on the theoretical issues of green banking. To the best of my knowledge, this is the first book providing a theoretical foundation on green banking, for example, with regard to its meaning, guiding principles, adoption process, and policy and regulatory aspects. To complement the theoretical discussions, I have tried to present useful real-life

examples, cases, and applications at the end of every chapter. I believe that the readers will be able to have a comprehensive (theoretical and practical) understanding on green banking after reading this book, which is my primary aim of writing it.

Despite the best efforts made, there can be unintentional mistakes, errors, or any form of inconsistencies, for which I bear the full responsibility and sincerely apologize; and surely, I am committed to rectify and improve them in the next editions of the book. I would like to request my readers to advise me of any such errors or inconsistencies found; and to send me any suggestions, guidelines, materials, or comments on the content of the book to improve its depth, breadth, and overall quality. Such efforts from my readers would also help everyone learn about the most updated and correct information and knowledge with regards to green banking.

I am confident that this book will meet the needs of the readers.

Suborna Barua
sbarua@du.ac.bd

Chapter 1
Introduction

The world today is faced with severe environmental complications such as pollution, climate change, and the depletion of resources. The most unfortunate aspect is that much of these environmental stresses are primarily contributed to and driven by human activities. With the aim of faster economic growth and greater economic well-being, over the last centuries, human activities have substantially sacrificed environmental quality and resources, most of which is irrecoverable. This means, most of the environmental damage that human civilization has done to fulfill the objectives of economic prosperity cannot be restored into the original condition and many of the environmental resources consumed can never be renewed. Following the natural living cycle governing our ecosystem, the long-run outcomes of this damage have now begun to worsen the quality of our lives. We are now faced with an increasing level of different environmental threats, for example, climate change and global warming, natural disasters, lack of natural resources like gas to feed industrialization, and scarcity of resources like drinking water that are necessary for living, etc. Unfortunately, the environmental damage and depletion of resources today have reached a stage that might eventually threaten the existence of future generations. How do we respond to this catastrophe? Perhaps, the best way is for everyone to play their part not only to protect the environment but also enrich its quality.

1.1 Economic Agents and Environmental Actions

An economic system in a society is comprised of three main economic agents – individuals, firms, and the government. Whether an economic system embraces environmental actions into its functionalities or it prioritizes maximization of economic benefits and wealth over the environmental protection largely depends on how the system is designed and how the agents behave. Generally, the government's policies and regulations govern the economic system's functioning; in other words, individuals and firms behave as they are allowed or induced to do under a certain policy and regulatory environment created by the government. However, sometimes the economic agents can also act themselves out of voluntary efforts to aid the economic system in achieving social goals and objectives such as environmental protection. Of course, the impacts that an economic agent can make by its actions would greatly depend on how large it is and how much impactful "power" it holds in relation to the society and economy. In the contemporary social and economic system, the biggest power perhaps originates from the power of "finance." Because, in a market-based economic system, money can

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be used to exchange almost everything, firms and individuals that have greater financial wealth can hold larger power to influence the market, the economy, and the society as a whole. In this context, financial institutions, being the storehouse and mobilizer of funds throughout the society and economic system, perhaps are the most influential of all economic agents.

1.2 Financial Institutions and Environmental Actions

The fundamental role of a financial institution is to provide a bridge between the financially surplus and deficit economic units or agents and mobilize funds from the former to the latter. Figure 1.1 shows the fundamental role of financial institutions in an economy. By storing and mobilizing funds in an economy, financial institutions keep consumption and investment activities going and thus allow the economy to grow. Any disturbance in this process would result in a reduced consumption or investments in the economy, which in turn would hamper economic development and prosperity. Therefore, to ensure smooth and proper functioning of this process, the government provides and enforces policies, guidelines, and frameworks either directly or through central banks. Apart from being the main storehouse and mobilizer of public funds as shown in Figure 1.1, financial institutions like banks today have even more power as they provide a range of services without which life would become impossible, for example, transaction services, international and domestic trade facilitation, investment and asset management services, corporate fundraising, and life, health, and property insurances, etc. These powerful functions allow financial institutions to have a significant impact on how

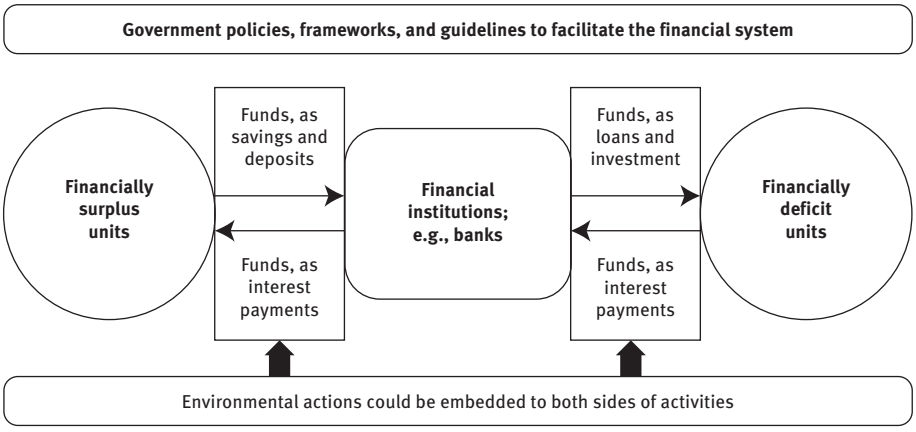

Figure 1.1: The role of financial institutions in an economy and their environmental actions.
Source: Author

the society and economy utilize resources for economic growth and prosperity. As such, financial institutions can play a central role in achieving social goals or objectives such as environmental protection, alongside driving economic development. With respect to environmental protection particularly, financial institutions are yet to play their desired role, as much of the efforts made are found to be on the part of governments and international donor agencies. Recent discussions in the global community on the role of financial institutions particularly point to "banks," as they can undertake actions more powerful than many others to minimize environmental impacts of economic activities and protect the environment for the future.

1.3 Green Banking and Environmental Causes

Since the banking sector is crucial for the economic growth of a country, it can be more effective than others in mitigating environmental degradations. Such banking actions prioritizing environmental goals alongside financial objectives can be broadly termed as "green banking." Although the term "green" can broadly refer to a wide range of social, ethical, and environmental dimensions, green banking primarily refers to banks' activities and their impacts in relation to environment. Green banking in fact can be the fundamental method through which banks can substantially contribute to save the environment. As banks are a major source of finance to firms and individuals and have an outreach at all levels of society, they can exercise immense power in controlling environmental damage. Generally, being a financial institution, banks are viewed as firms not having a significant environmental impact. However, a deeper understanding of banks' activities would necessarily suggest that their environmental impacts through internal (e.g., in-house operations and administrations) and external activities (e.g., lending, investments) are huge, albeit difficult to estimate. Green banking involves pursuing financial and business policies internally and externally that are not hazardous to the environment, and instead help to protect it. Considering the significant level of power banks hold, it is imperative to induce or force them to play a proactive role to save the environment from further damage and degradation and protect it for future generations. To do this, they need to replace their traditional business models with an environment-augmented business model where ecological aspects are integrated, for example, including environmental assessments in lending processes, preferring financing and investment in environment-friendly projects, including energy efficiency requirements in lending contracts, and reducing in-house energy consumption, etc. However, the greening efforts are not something that can be done on an ad-hoc basis; rather they should be evaluated, formalized, and implemented in a systematic manner with a long-term focus to reap the desired benefits in the quickest possible time. It should be noted that, while undertaking greening efforts, banks must conduct cost-benefit analyses of every

effort they undertake to have a clear picture about the likely cost to be borne and benefits to be received in the future.

1.4 Objective of the Book

This book is aimed at providing a groundwork for understanding the operational concepts of green banking. Although there has been a lot of discussion regarding green banking recently around the world, there is a lack of useful resources that provide a concrete operational understanding of green banking. As such, this book can be used for understanding the concepts from theoretical and practical aspects. Furthermore, the discussions in each chapter are presented in plain language so that readers across the board can easily grasp the contents. For many of the discussions, application-oriented cases and examples have been included to give readers directions on practically applying different aspects of green banking in real-life banking operations.

1.5 Organization of the Book

The book is organized into ten chapters, in a sequence that would help readers gather a comprehensive understanding. Following this introductory chapter, Chapter 2 focuses on the links and interactions between environmental risks, sustainability, and banking; Chapter 3 presents the global trends and patterns on environment-friendly banking practices at the country and cross-country levels; Chapter 4 provides a brief conceptualization of the definition and meaning of green banking from theoretical and operational perspectives; Chapter 5 highlights the needs and impacts of green banking practices in the current state of the world; Chapter 6 discusses in detail the ten principles of green banking and offers suggestions on how to integrate them in a bank; Chapter 7 elaborates on the operational process of green banking adoption at the bank level and across departments within a bank; Chapter 8 focuses on how green banking can interact with banks' traditional risks and regular risk management practices; Chapter 9 outlines how regulatory and policy frameworks on green banking can be designed and developed; and finally, Chapter 10 discusses the potential challenges in the green banking adoption process and presents some measures to mitigate them. Each chapter of this book, except Chapter 1, provides thought-provoking discussion questions for readers at the end of the chapter, alongside examples and cases on the application of green banking.

Chapter 2
Environmental Risk, Sustainability, and Banking

2.1 Introduction

Environmental risk and its assessment have emerged as critical for mitigating environmental concerns in the recent decades. The world has traditionally stressed the need for economic growth, with environmental protection considered a lower priority topic. In recent decades, economies and societies are seen to be increasingly concerned about achieving a dual objective – protecting the environment alongside achieving desired "economic growth." Environmental concerns are considered to have a greater significance particularly for developing countries, since they often tend to sacrifice environmental quality to attain higher economic development, and they are generally constrained by necessary resources. However, environmental risk in general is considered one of the global risks the world is currently experiencing. Corporations, being a vital stakeholder to both economic development and environment protection, play a key role in mitigating environmental risk. Sustainability of corporations may be exposed to a significant level of threat, if environmental factors are not brought into the equation alongside financial objectives. In this context, corporations need to have a clear understanding of the types and nature of environmental risk that could arise from their business practices, the processes of their identification and measurement, and effective strategies needed to achieve the dual objective.

2.2 Environmental Risk and Sustainability

The concepts of sustainability and sustainable development have become widespread phenomena and are often used interchangeably. The fundamental sense of these two terms remains the same though practical meaning of them may differ. Sustainability denotes a system property referred to as "quality," yet it is important to note that the definition of sustainability is broad and lacks consensus (Bell & Morse, 2008).

Some general definitions of sustainability include:

> The capacity of a system to maintain output at a level approximately equal to or greater than its historical average, with the approximation determined by the historical level of variability. (Lynam & Herdt, 1989, p. 384)

> Maximizing the net benefits of economic development, subject to maintaining the services and quality of natural resources over time. (Turner, 1988, p. 352)

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Environmental risk can be defined as the actual or potential threat of adverse effects on living organisms and the environment by effluents, emissions, wastes, resource depletion, etc., arising out of an organization's activities. Environmental exposures, whether physical, chemical, or biological, can induce a harmful response and may affect soil, water, air, natural resources or entire ecosystems, as well as plants and animals – including humans – and the surroundings where they live (Crawford-GTS – Environmental Risk Defined, 2019). On the other hand, environmental sustainability is a set of constraints on four major activities regulating human economic subsystems, the use of renewables and nonrenewables on the source side and pollution and waste assimilation on the sink side (Goodland, 1995). Therefore, environmental risk is generated through negative impacts businesses impose on the environment, which eventually threaten environmental sustainability in the long run.

2.3 How Environmental Risk and Sustainability is Measured

As it gradually became a concern globally, several qualitative measures evolved to define and characterize environmental risk and sustainability. Many of these measures are also linked to quantitative terms for more precise specification. However, an appropriate or "universally standardized" metric for measuring environmental risk and their impacts is still developing, which includes indicators, benchmarks, audits, indexes, and accounting, as well as assessment, appraisal, and other reporting systems (Hák, Moldan, & Dahl, 2012).

Environmental sustainability is one of the three components of the general sustainability concept (along with social and economic sustainability). As mentioned earlier, the scope of environmental sustainability is broad, and it is often difficult to choose the right elements for measurements. The relationship between risk and sustainability is such that the lower the risk to the environment, the higher the sustainability. The Environmental Risk Analysis Program at Cornell University defines Environmental Risk as clustered in six areas, namely consumption of energy (fuels), water shortages, disasters, global warming, poverty, and population growth (Hoti, Pauwels, & McAleer, 2004). There are a number of indexes based on aggregated data with distinctive methodologies and considerations to measure environmental sustainability, for example, Environmental Sustainability Index (ESI), Environmental Performance Index (EPI), Well-Being Index, Dashboard of Sustainability, Genuine Progress Indicator (GPI) (Hoti, Pauwels, & McAleer, 2004). In order to understand the measurement of environmental sustainability of economic activities of corporations, it is important to know how corporations create many of the environmental risks.

2.4 Environmental Risk and Sustainability Threats Generated by Corporations

After the first industrial revolution, large-scale production accelerated, which sparked the demand for fossil fuels mostly led by big corporations. Large corporations in developed economies are mostly blamed for greenhouse gas (GHG) emissions, reducing forestland, and environmentally unsustainable practices. Corporations can induce environmental risks through four major elements of nature air, water, soil, and habitat.

Air pollution: Air takes the brunt of the environmental hazards created by corporations through the emission of GHG. Air pollution occurs when harmful elements or certain elements exceed their limit in the air. Industries based on nonrenewable energy, meat-processing industries, lead smelting industries, and private waste management for private industries are some of the top air pollutants. These industries release carbon dioxide (CO_2) – the top contributor to the greenhouse effect – and other toxic substances such as sulfur oxide, nitrogen oxide, carbon monoxide, and volatile organic compounds that are mostly responsible for outdoor air pollution (WHO, 2018). Some industries have been built destroying forestland (e.g., mining and ore extracting), reducing the ability to prevent the effects of GHG, and thus, waning the air pollution drives.

Water pollution: Water is polluted in both freshwater and marine sources mostly by industrial waste. Many industries such as agriculture, chemical, dyeing, and tannery dump oil, detergent, pesticide, plastic, and sewage in the form of untreated waste and byproducts into water bodies (Howard, 2019). In many thermal power plants fresh water sources are used as coolant, which is later dumped into the same water bodies with much higher degrees of temperature. Because of advancements in technology, the pollutants are more visible than before and their impacts are also becoming more apparent. Some of the pollutants dumped by industries can easily be treated, recycled, and avoided, but in most cases corporations do not prioritize such treatments of pollutants. In the worst cases, corporations lobby and outmatch the efforts of proenvironmental groups to minimize water pollution.

Soil pollution: Soil pollution is rather difficult to map, and their cleanups are more time consuming and complex. Industrial activities, agricultural chemicals, and unfitting waste disposal are the primary sources of soil or earth pollution. Furthermore, accidental spills and leakage during the transport of chemicals often aggravate pollution intensity. Any chemical substance handled at construction sites can pollute the soil and its ubiquitous nature can trigger soil pollution in urban areas. In addition, dumping industrial waste in landfills can potentially contaminate ground water or generate polluted vapor, and radioactive substances from power plants and manufacturing units, for example, radium, thorium, uranium, nitrogen can create toxic effects by infiltrating the soil.

Firms, especially the industrial and manufacturing units, may create environmental risk in several ways. Examples of such environmentally irresponsible actions and their potential harms are shown in Figure 2.1. The impacts are already being experienced all over the world regardless of country or society. Many of these impacts have become so intense that lives are lost and communities are under severe threat. Mitigating such environmental damage requires two simultaneous approaches: (i) preventive measures must be taken so that no individual or institution intentionally or unintentionally acts irresponsibly toward the environment; and (ii) contingent measures to stop already occurring damages, correcting the irresponsibly behaving entities, and rehabilitating the communities and people affected. As the world has already seen a great deal of environmental degradation, both measures need to be considered simultaneously to stop the worsening situation.

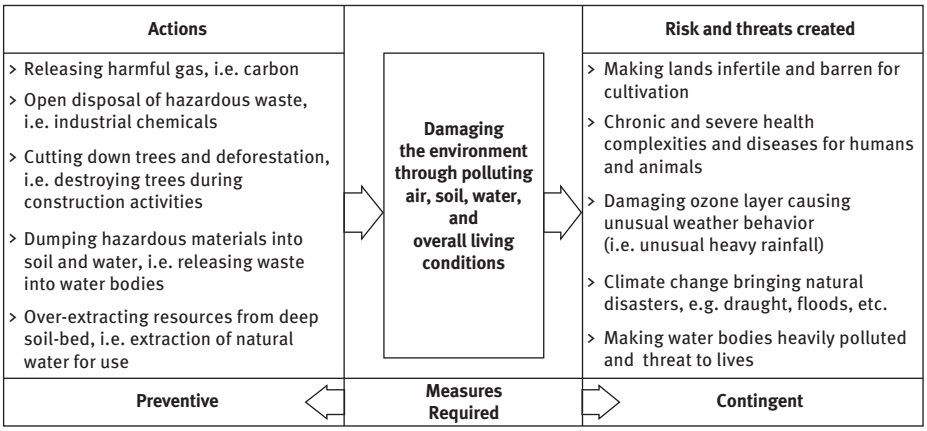

Figure 2.1: Examples of firms creating environmental risk and threatening sustainability.
Source: Author

Corporations create different environmental risks directly by their own operation and indirectly through the consumption of their consumers. These risks could serve as the roots of a future catastrophe impacting plants, humans, and all species. Altogether the consequences are borne by the whole ecosystem and threaten environmental sustainability. While consumers and regulators are also part of the process, corporations are considered as the key source of threats to environmental sustainability.

Air pollution caused by corporations has devastating effects on environmental sustainability. CO_2, methane, fluorinated gases, and nitrous oxide trap the heat in the air and result in a higher global temperature, a consistent long-run trend that leads to climate change and a warming environment. Since the Industrial Revolution, levels of CO_2 have increased nearly 38% as of 2009 and methane levels have increased

148% (Voiland, 2016). As a result of this continuing trend, glaciers have already begun to melt, and the sea levels have begun to rise. It is estimated that the resulting climate change could cause the sea level to rise by 1 to 4 feet by the end of 2100, submerging many coastal regions in different parts of the world. Also, as a result of increasing temperatures, many living entities such as coral reefs, polar bears will go extinct. The rising temperature will also cause more extreme weather conditions, frequent floods, drought, and cyclones.

Toxic chemicals released in the air have severe health hazards. According to the World Health Organization (WHO, 2018), poor quality outdoor air caused an estimated 4.2 million premature deaths in 2016. These substances create smog, which produces eye irritation and is linked to cancer, heart disease, stroke and respiratory diseases such as asthma. Animals and plants consume waste and chemicals dumped into water; these toxic chemicals are then mixed into the food chain and affect all the habitats in the water bodies and animal world. Toxic substances from freshwater and oceans thus find their way into the human body as humans consume fish and animals. This process disrupts not only marine life but also the entire ecosystem's sustainability. Moreover, rising ocean temperatures also cause coral bleaching – a condition that results in reduced growth rates and reproductive capacity, increased susceptibility to diseases, and elevated mortality rates of coral communities – which further threatens the ecosystem through affecting the species that rely on live coral for food, shelter, or recruitment habitats (e.g., fish).

Furthermore, contamination of soil affects plants, animals, and humans alike. Humans, particularly children, are more susceptible to exposure to contamination as they often play outdoors, which takes them into close contact with the soil. Soil pollution could spread diseases through direct and indirect contact. For example, mercury and cyclodienes from waste disposal are known to induce higher incidences of kidney damage. Soil pollutants can cause death by direct contact, inhalation, or ingestion of groundwater contaminated by soil. Human-caused pollutants can pose a greater threat by contaminating groundwater aquifers used for human consumption, which gives rise to many waterborne diseases and causes congenital disorders in humans. In some instances, the presence of many perilous chemicals triggers some radical changes in the soil chemistry. The long-term consequence can be virtual elimination of some of the primary food chain and agricultural fertility of the soil. This seriously disrupts the ecosystem by taking away the food source from consumer species and productive capacity of the earth. According to Díaz, Settele, and Brondízio (2019) around one million animal and plant species are susceptible to extinction, many within this decade. On top of that, three-fourths of the land-based environment and about two-thirds of the marine environment have already been significantly altered by human actions.

All things considered, even though a small fraction of large corporations produce much of the environmental risk, the burden is being borne by all. If pollution is not tamed to an acceptable level and the trend is not reversed, future generations

are likely to face an unlivable environment. Therefore, adequate management of environmental sustainability must accompany economic growth and short-lived development.

2.5 Measuring Corporate Environmental Impacts

Although there are some commonly used ratings or indexes to measure corporate environmental impacts, none of them stand fully perfect, comprehensive, and full proof. One of the most widely used is the ESG (environment, social, and governance) rating reported and published by corporations in many developed economies such the United States, Australia, the UK, and other European countries. Developed by the world's top financial information services companies, such as Thompson Reuters, the three-element based composite matrix is used for measuring the sustainability and ethical standing of a business. The matrix ratings help corporations evaluate their businesses and investments from ESG perspectives in addition to considering financial and strategic objectives. Individual elementwise and composite ESG performances of local and international companies are often included in annual reports, sustainability reports, and other public reports published by the corporation. In the ESG matrix, Environment is one of the three elements; the rating for the "environment" component depends on several subelements, such as a corporation's contribution to and impacts on climate change, sustainability, and biodiversity and water management. Some rating companies add nuclear power related measures, when relevant risk is involved. There are a number of third party ESG information providers internationally; some of the well-known ESG report and rating providers are: Bloomberg ESG Data Service, Corporate Knights Global 100, Dow Jones Sustainability Index (DJSI), Institutional Shareholder Services (ISS), MSCI ESG Research, RepRisk, Sustainalytics Company ESG Reports, and Thomson Reuters ESG Research Data (Huber & Comstock, 2017).

Thomson Reuters quantify the ESG score based on a weighted score on qualitative information. To calculate ESG scores for a company, it collects 400 ESG measures based on subsets of 178 criteria. After assigning weights to each category, the total score is calculated. Table 2.1 shows the three elements and their subelements used to derive ESG scores by Thompson Reuters. Scores are assigned for each subelement and then the weighted-average overall ESG score is calculated using the subelement-wise weights.

Another metric like ESG is Sensefolio. Sensefolio aggregates data in three components – financial news, ESG/sustainability reports, and social media posts. Total score is calculated taking an equal weight for each component. Scores are calculated on a continuous basis, which means Sensefolio scores remain updated "nearly" real-time. Sensefolio uses an internal natural language processing (NLP) algorithm to assess the degree of a company's ESG reports, financial news, and social media texts.

Table 2.1: ESG metric elements of Thomson Reuters.

Pillars	Environmental	Social	Governance
*Categories**	– Resources (20, 11%) – Emissions (22, 12%) – Innovation (19, 11%)	– Workforce (29, 16%) – Human rights (8, 4.5%) – Community (14, 8%) – Product responsibility (12, 7%)	– Management (34, 19%) – Shareholders (12, 7%) – CSR strategy (8, 4.5%)
Indicators	70 key performance indicators from data point values		
Data points	More than 400 data points		

**In parentheses, first component indicates the number of indicators used under each individual category, and the second component % term is the weight used for each category to derive the overall ESG Score.*
Source: Thomson Reuters (2017)

Using keywords lookup developed by the Sensefolio team, each review and social media content is automatically read and allocated to a pillar of ESG classification. All information under each component is then aggregated for a certain company.

2.6 Environmental Sustainability and Banks

In many economies, particularly in the developing ones, banks serve as the major financial intermediary, that is, the key vehicle to channel thousands of small funds to wholesale corporate borrowers for investment and working capital purposes. In the banking mechanism, corporations serve more as demanders of large funds than as suppliers, while the demand for funds is met by pooling funds from individual, institutional, and government savings. However, over time, the bank business model has evolved rapidly and gone beyond the traditional business of collecting deposits and lending funds. The existence of banks today has become a necessity for normal operation of economic systems, where banks keep the system running not only by mobilizing funds but also by delivering important functions such as transaction services, cash management services, and agency services. In today's modern economic system, the existence of banks is essential, and no economy can run without them. Therefore, banks hold dual power, which no economic agent holds or can ever hold – the power of "finance" by mobilizing large funds to the "deficit" units and the power of influencing the existence of corporations and individuals in society through other services (e.g., transaction and payment facilitation). If this dual power role can be strategically aligned with environmental protection, it could have a powerful and multiplier contribution to environmental sustainability.

Banks are in a very critical and strategic point to ensure these approaches. More intervention from banks can be made in designing and applying "preventive," as well as "contingent," measures to a lesser extent. For example, enforcing environmental protection compliances before approving a project's financing can work as a preventive measure. On the other hand, imposing new compliance requirements (i.e., Effluent Treatment Plant [ETP] installation) for the already approved loans being utilized in environmentally harmful activities can be an example of a contingent measure. However, it is true that enforcing such requirements in extending further facilities for already approved financing is extremely difficult for banks due to covenants and agreements made at the time of financing. Therefore, it is much easier to introduce and enforce such requirements in new contracts.

If we consider the traditional business model of a bank, it can play a role in protecting the environment at both ends, fund suppliers and fund borrowers, as shown in Figure 2.2. However, such intervention or role-playing scope is limited at the fund suppliers' end and banks have very little to do except initiate motivation and awareness programs or pay a "premium price" for environmentally responsible savers or fund suppliers. However, in the disbursement window, banks have a crucial role and probably are the only institutions that can really change the behavior of the borrowers through coordinated measures using the power of "finance."

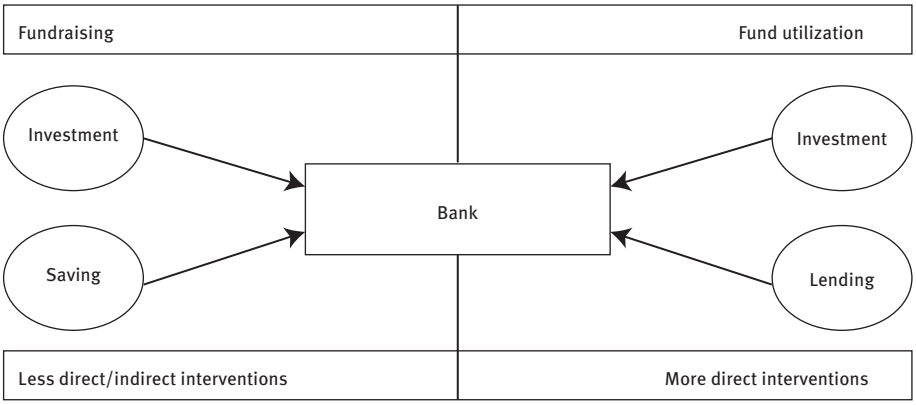

Figure 2.2: Banks have a more active role in lending and investment to protect the environment.
Source: Author

Firms, either small or large and across industries, are greatly dependent on banks for financing their continuing operation and expansion of their businesses. Thus, banks can play a pivotal role in influencing the borrowing firms by convincing and imposing requirements to comply with that ensure minimal levels of damage to the environment, while at the same time compensate in other ways. Of course, many banks might argue that the application of such requirements may substantially

reduce the volume of business. This is because firms may have to carry implicit and explicit incremental costs due to such compliances that might encourage customers to switch to less compliant banks or to look for financing alternatives to the banking sector. However, enforcement of environmental protection clauses may also increase costs for banks as a greater commitment of physical, human, and financial resources might be needed. Although Schmidheiny and Zorraquin (1996) observed that banks are not hindering the achievement of sustainability outright, Jeucken and Bouma (1999) argued that their role might hamper sustainable development because (1) they choose shorter-term payback periods in contrast to long-term investment needed for sustainable development, and (2) investments incorporating environmental side-effects usually have lower short-term rates of return.

The ultimate approach is to bring a common shift of environmentally responsible behavior in the entire financial services industry that must be initiated by the regulatory authorities. This can be achieved through mandatory and voluntary compliance requirements to be ensured by banks. Commercial banks particularly should think more of long-term sustainability of the business rather than short-term gain. The alarming environmental degradation today may lead to damage of the entire human civilization in the long term and eventually banks will also be affected. Therefore, if banks take forward steps today, in the long term the planet will sustain, people and society will live, and so will their business, no doubt.

Figure 2.3 depicts a three-dimensional relationship between the fund price, environmental risks, and compliance requirements of financing projects by commercial banks. Banks should normally price higher and enforce more compliance requirements for financing projects with higher levels of threat to the environment. The pricing should be adjusted with perceived and estimated credit risk and social risk increased due to potential environmental damage in both the short and long term. The risk estimation and adjustment should be made while assessing and appraising a possible financing proposal. At the same time, banks should follow "the higher the potential environmental damage, the higher the compliance requirement" policy. For

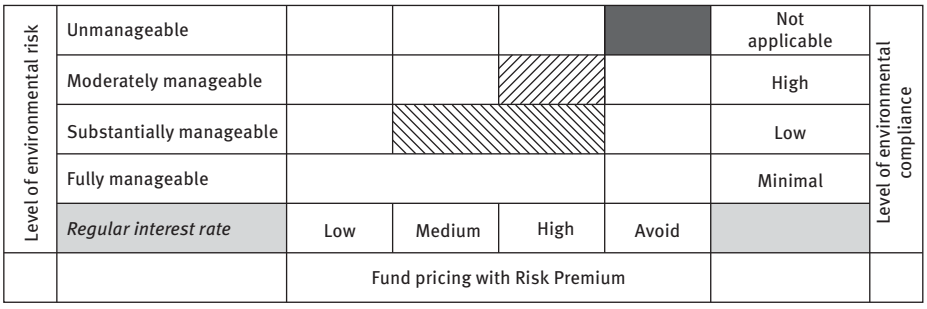

Figure 2.3: Environmental risk, compliance, and bank fund pricing.
Source: Author

example, banks can make it mandatory for a potential borrower to collect environmental clearance from governmental environment offices or agencies before approving a financing proposal. However, banks must avoid financing projects that severely damage the environment.

Apart from the banks' role in terms of traditional lending-savings business, there are additional effective ways to promote environmental sustainability in today's modern business world. All things considered, the general roles of banks in minimizing environmental risk can be broadly categorized into three interrelated approaches.

2.6.1 Financing

By being selective and customizing financing processes, banks can encourage and push borrowers and savers to be more environmentally responsible. Some of the funding-related measures implemented by banks throughout the world are as follows:

- Providing concessional rates for loans taken for environmentally beneficial purposes, such as renewable energy, recycling products, waste management, etc.
- Allocating a separate pool of funds in order to finance environment-friendly initiatives. Such allocation can increase the loanable funds for green initiatives, while shrinking fund availability for environmentally unsustainable corporations.
- Considering environmental risk as an integral component in the credit risk measurement, monitoring, and management framework. Just like banks apply higher interest rates for borrowers with higher credit risk, they can also add risk premium to the "price" of loans based on the likely environmental impacts of the fund utilization. In necessary cases, banks can also decline loan applications if the adverse environmental impacts are beyond the acceptable limit.
- Developing and offering planned schemes to drive households for more sustainable living. Such initiatives can increase customer awareness and increase the demand for products that have positive environmental impacts or that are produced following environment-friendly production processes. This shift in market demand for "green" goods could significantly influence producers or corporations to respond with environment-friendly business endeavors.
- Including environmental standards clauses in the investment and borrower evaluation framework based on the likely environmental impacts of proposed projects. Furthermore, such considerations can also be made in the decision-making processes of the banks' upper management level. Such environmental considerations could be aligned to global standards such as ESG standards, Responsible Investment, Equator Principle, Global Reporting Initiative, Sustainability Accounting Standards Board (SASB), and Sustainable Development Goals by the United Nations.

2.6.2 Engaging

Banks can play a vital role in bringing together all relevant actors in the financial sector in the endeavor for environment protection. This requires connecting and encouraging all stakeholders – customers, suppliers, and employees – in best practices for environmental protection, which align with external stakeholder objectives such as green groups and global environmental agencies. Some measures that could have significant influence could include:

- Activating programs for spreading awareness and education on environmental risk among customers and other stakeholders, which can eventually trigger shifts to environment-friendly products and services.
- Encouraging employees to green their daily operation, for example, less use of paper and plastic and encouraging the use of eco-friendly and recycled papers and materials.
- Reducing reliance on the traditional paper and energy intensive bank marketing and stakeholder communication channels, for example, billboard, leaflet, and letters, rather using online and virtual marketing and energy-saving electric billboards, etc.
- Formulating environment-friendly banking guidelines for all and providing employee training for avoiding environmentally harmful actions and adapting to greener practices. This way, employees themselves can serve as vanguards for environmental sustainability at individual and organizational levels.

2.6.3 Internal Practice

Apart from engaging with stakeholders, banks themselves can impact the demand side by changing their environment-friendly practices in their operation, for example, through greening their procurements, daily operations, and infrastructure development. This way, banks themselves can adopt environment-friendly practices and green their internal operation. Some of the measures banks can adopt could include:

- Creating green buildings with efficient water and waste treatment systems and solar power equipment
- Using energy-efficient electrical goods such as lights, tiles, refrigerators, air conditioning, and heating systems
- Following paperless internal communication, training, and approval processes that currently depend heavily on paper-based methods
- Utilizing efficient architecture in office buildings to save heat, light, and power

2.7 In the Endeavor to Go Green

As banks have dual power of "money" and "outreach," they can substantially influence corporate behavior by direct or indirect enforcements or the encouragement of environmental responsibility. Furthermore, they should lead the way by greening their own internal operations. A wholesome effort by banks to do both could be termed environment-friendly banking, or in other words, green banking. This way, banks can significantly promote environmental sustainability like no other economic agent can.

Discussion Questions

1. Prepare a list of consumer practices that have direct impact on environmental sustainability and outline how financial institutions could have a role in minimizing them.
2. Based on the ESG Risk matric, how can banks measure the environmental impacts of small and medium enterprises?
3. How do you think banks can intervene for eco-friendly practices where banks' dual power is limited by lower levels of financial inclusion?

Application in Focus – I

ESG and the Push for a Responsible Financial System

There is an increasing level of impactful measures undertaken by financial institutions, international agencies, and governments. An increasing awareness of environmental, social, and governance (ESG) issues, coupled with visible impacts of ESG on corporate performance is pushing banks, asset managers, and investors to integrate sustainability data into decision-making more than ever. A high-level expert group established by the European Union (EU) on sustainable finance published its recommendations for a financial system accommodating sustainable investments that proposed including ESG criteria in the mandates of the European Supervisory Authorities (European Commission, 2018). According to the Morgan Stanley Capital International (MSCI) data, a majority of available ESG indexes performed better than non-ESG counterparts in 2018 (Benstead, 2018).

As another example of visible and impactful progress, the asset value of sustainable and impact investment under management increased by 38% from $8.7 trillion in 2016 to $12 trillion in the United States in 2018 (SustainAbility Trends, 2019). In another effort in the United States, 415 investors, holding $32 trillion in assets, have demanded governments strengthen their nationally determined contributions to meet the goals of the Paris Agreement (Jessop, 2018). In another effort, the five-year Climate Action 100+ initiative, currently backed by 370 investors with more than $35 billion assets under management, drives the signatories with greenhouse emitters to improve climate change governance, reduce emissions, and strengthen climate-related financial disclosures (Herd & Hillis, 2019). Such awareness is calling investors around the world who are found to be shifting toward "portfolio de-carbonization." In a latest initiative in September 2019, the United Nations Environment Programme Finance Initiative (UNEP FI) together with 28 banks

launched the Principles for Responsible Banking to foster the adoption of target-oriented sustainable measures in the banking industry around the world and facilitate banks to go green.

Application in Focus – II

Evaluating Commercial Banks' ESG Performance Using PIMCO ESG Frameworks

PIMCO, the world's premier fixed-income investment manager, applies their self-developed sector-specific ESG metrics to evaluate the environmental, social, and governance profile of issuers. PIMCO's ESG assessments specifically designed for commercial banks incorporate material sustainability topics and accounting matrices outlined in the provisional SASB provisional standards, which is used to evaluate large global banks. Additionally, PIMCO carefully assesses each bank's integration of ESG factors in their underwriting processes as well as the company's historical records of regulatory compliances and litigations. Individual banks are assessed and scored across 12 criteria, as shown in Table A2.1. The individual scores for each factor are then accumulated to form the overall ESG score for an individual bank. The ESG scoring method here places greater weight on governance (60%) and social (25%) factors and relatively less weight on environmental (15%) factors.

Table A2.1: PIMCO's ESG metric factors applicable for commercial banks.

Environmental (15%)	Social (25%)	Governance (60%)
Sustainable lending impact	Systemic importance/regulatory environment	Culture/business conduct
Environmental and sustainability plan	Integration of ESG in underwriting/product safety	Risk management/risk appetite
Green bonds issuance	Financial inclusion and capacity building	Accounting quality
	Customer privacy and data security	Board quality
		Human capital (training, expertise, incentives)

Source: SASB (2019)

Governance (60% of PIMCO ESG Score)

The assessment of culture/business conduct of a bank incorporates some backward-looking quantitative SASB measures such as the volume and severity of legal and regulatory settlements and forward-looking inputs on the bank's internal business culture and ethical performances. Risk management includes the risk appetite of a bank and its ability to manage those risks over a cycle; it further includes stress tests – of the provisional SASB standards for commercial banks – which measure the bank's ability to sustain in an adverse economic scenario,

and how the bank management balances between short-term returns and long-term solvency, how the bank's loan portfolio and loss rates have performed over a cycle, and the bank's merger and acquisition appetite and whether banks have been able to set and meet its related targets. The assessment of accounting quality is done by evaluating whether a bank's disclosures are credible enough, considering regional differences in accounting standards and treatments, and sometimes there might be incentives to optimize risk-weighted assets to report high capital ratios. Board leadership and quality assessment provides a measure for board effectiveness. Diverse boards with deep expertise and knowledge in banking, risks, and compliance requirements, with a track record of replacing underperforming board members receive a higher score for board effectiveness. The assessment of human capital evaluates the quality of the nonexecutives' employees, by considering whether the bank hires the top tier candidates or graduates and whether they are given enough training and development opportunities.

Social (25% of PIMCO ESG Score)

The elements of systemic risk management and regulatory environment disclosure from the provisional SASB standards are included in the systemic importance factor. Systemic importance weighs on ESG assessments whether and how banks' business activities create negative externalities. The financial inclusion factor in underwriting assesses a bank's commitment to providing access to financial services to the underserved market segments in an optimal manner. In terms of customer privacy and data security, scores are provided to banks depending on how much investments they have made to ensure data security and their record of any data breach.

Environmental (15% of PIMCO ESG Score)

Sustainable lending impact includes lending exposure particularly to energy, oil and gas, basic materials, and mining sectors/industries, in line with SASB provisions. Trends on lending and underwriting exposure to environmentally harmful projects are considered under this parameter of sustainable lending impacts. The environmental impact and sustainability plan factor includes a bank's credit risk to loan portfolio arising from climate change, green-house gas reduction commitments, and explicit sustainability targets, with an extra scoring opportunity for explicitly mapping the bank's revenues to Sustainable Development Goals (SDGs). Green bonds issuance gives a bank extra points for actively funding environment-friendly investments through green bonds.

Source: SASB (2019); from SASB website, accessed 27 November 2019 at: https://www.sasb.org/wp-content/uploads/2019/03/ESG-Integration-Insights-Q217-PIMCO-030519.pdf

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Chapter 3
Trends in Environment-Friendly Banking

3.1 Introduction

Before going deeper into the concepts, theories, and practices of green banking, it is important to know how environment-friendly banking evolved over time. This chapter provides a brief review of the evolution and current trends of practices in environment-friendly banking around the world. The chapter sheds light on environment-friendly banking efforts underway at the international and national levels to constitute a comprehensive understanding.

3.2 The Evolution of Environment-Friendly Banking

The roots of the environmental movement can be traced back to the seventeenth century. However, concern for environment, natural resources, and sustainability did not gain momentum until the nineteenth century when climate change came into focus. The history of environment-friendly banking can be dated back to the early 1970s when investors around the world started considering environmental and social factors in their investment decisions (Hasnain, 2015). This shift was driven by some hazardous incidents such as the Chilean hydropower project and Papua New Guinea's mining project, which underscored the importance of environmental issues in financing and investment decisions. Due to the increasing environmental consequences of large projects, the World Bank recruited their first environment specialist in 1971 to incorporate environmental issues in financing and investment decisions.

In the 1980s, with the launching of the "Green Fund," Triodos Bank became the pioneer of environmentally conscious banking. The fund was created in the Amsterdam Stock Exchange for exclusively financing eco-friendly projects and socially responsible ventures. Many other significant milestones during the decade led the environment to be a key point of consideration at the micro and macrolevel of decision-making, for example, the establishment of the Intergovernmental Panel on Climate Change (IPCC) in 1988, and the Collevecchio Declaration in 2002 (Hasnain, 2015). In the early 1990s the International Finance Corporation (IFC) adopted environmental review and started adding environment specialists to superintend the due diligence processes in their financing and investment processes and projects. In 1992, the United Nations Environment Programme Finance Initiative (UNEP FI) was formed through a partnership between the United Nations and some key global financial institutions to work collectively to promote sustainable finance and protect the environment. Collective efforts globally were expedited through the launching of the International Environment Standards by the

https://doi.org/10.1515/9783110664317-003

International Organization for Standardization in 1996 (Brorson, 2006), which are collectively known as ISO-14000.

The IFC, along with a small group of banks, started formulating a common guideline in October 2002 and by June 2003 they framed a voluntary set of principles named the Equator Principles (Wörsdörfer, 2015). These principles serve as one of the benchmarks for determining, assessing, and managing social and environmental risks in investing worldwide. Meanwhile, the Kyoto Protocol entered into force in 2005, which is an international treaty committing state parties to reduce greenhouse gas emissions (Poppick, 2017). Through this protocol, banking companies entered a new form of market, allowing members to trade quotas for emissions among themselves.

In the United States the green banking concept was originally developed as part of the 2008 Obama–Biden Transition team's strategy to expedite clean energy development. In the following year, Congressman Chris Van Hollen introduced the Green Bank Act with the aim of establishing a green bank under government ownership (Lalon, 2015). After the Beijing International Green Credit Forum in 2012, the IFC launched an informal and exclusive group for banking regulators and environmentalists known as the Sustainable Banking Network (SBN). The underlying objective was to create an enabling regulatory environment for banks to shift their focus toward sustainable banking practices. Having such a regulatory environment generally provides an appropriate framework to begin with and appropriate economic incentives to the banks (Raihana, 2015).

Today, environment-friendly banking is a significant part of banking practices and investment. Through the global initiatives on resolutions and regulatory guidelines, environmental consciousness serves as a catalyst for green banking throughout the world. Banks, be it a unit bank, specialized bank, commercial bank, or an investment bank, now have some implicit or explicit policies and strategies to deliver environment-friendly banking. In addition to the global initiatives, several compliance and reporting standards at the national and international level further contributed to encouraging banks to be environmentally responsible.

3.3 Global Patterns for Environment-Friendly Banking

As of 2019 more than 240 financial institutions, including banks, insurers, and investors are working with UNEP FI to promote sustainable finance. Furthermore, 96 leading financial institutions from 37 countries have adopted the Equator Principles (UNEP FI, 2019). Lately banks have been integrating ESG matrices into their risk and return assessment of which environment is the first ingredient. For many global banks, ESG Reporting is also being made part of sustainability reporting. Environment-friendly banking is considered more important than ever and "environment" is considered one of the Millennium Development Goals (MDGs) that expired in 2015 (Goal 7); a significant financing commitment was delivered by the World Bank, the International

Monetary Fund, and the Organization for Economic Cooperation and Development (OECD) toward achieving these goals. Later, the MDGs were followed by establishing the Sustainable Development Goals (SDGs) in 2015, which also featured a few measurable targets related to sustainability (Goal 6, 7, 8, 13, and 15).

The SDGs are set to be achieved by 2030, and many of the global banks have already redirected their financing pattern to achieve these goals alongside UN-partnered international financial institution. Several global banks, for example, Citigroup, Bank Audi, and Standard Chartered started reporting their efforts and initiatives to achieve the SDGs alongside the ESG performance matrices. In 2018, 26 banks from five continents started redefining banks' purposes and business models to align with the UN SDGs and the Paris Climate Agreement. In addition, initiatives like the Kyoto Protocol have been adopted globally to control Greenhouse Gas emissions. Banks with global exposure need to adhere to these international principles and agreements on environment-friendly banking. However, these international initiatives sometimes overlap with the national-level regulatory frameworks.

The SBN is increasingly taking the catalyst role for sustainable banking with 37 current member countries holding nearly US$85 trillion in assets. Although participating countries themselves decide their level of involvement and commitment in the process, collective learning, capacity building, and knowledge sharing among the member countries are found to be effective in constructing common practices of sustainable banking practices among the member countries. Out of the 37 members, 22 member countries have already developed national frameworks on sustainable banking with the support of the IFC/SBN.

As we can see from Table 3.1, most of the SBN countries are clustered around South Asia and Africa and are largely from Latin America. Countries from North America, Australia, and East Asia are yet to have any guideline or are in the process of having a guideline for sustainable banking.

3.4 World's Greenest Banks

Table 3.2 shows Bloomberg's latest available ranking of the world's greenest banks based on efforts of financial institutions to invest in clean energy and reduce wastage and their carbon footprint. Bloomberg New Energy Finance and Bloomberg ESG Teams collect annual and corporate social responsibility reports, website data, and other publicly available information about financial institutions to develop this ranking. Green banking performance in 2012 was influenced in part by expiring US wind-energy tax credits and cuts in European investment that pushed big US banks like Citi to the top of the chart. However, it did not sustain in 2014. The list published in 2014 by Bloomberg shows Banco Santander being at the top, which also held the position in the past few years. While European banks dominate the list, some of the banks also belong to the United States and Canada.

Table 3.1: Sustainable Banking Network membership status by region.

Region	Have a guideline	Currently in dialogue
North America	– Mexico – Panama	– Costa Rica – Dominic Republic – Honduras
South America	– Brazil – Peru – Ecuador – Colombia	– Chile – Argentina – Paraguay
Africa	– South Africa – Kenya – Nigeria – Ghana – Morocco	– Egypt
Asia	– Pakistan – China – Mongolia – Bangladesh – Nepal – Indonesia – Philippines	– Iraq – India – Kyrgyzstan – Thailand – Laos – Vietnam – Philippines
Europe	– Turkey	
Oceania	– Fiji	

Source: Adopted from the IFC website[1]

In a recent international initiative in September 2019, the Principles of Responsible Banking were signed in the UN Assembly in New York. A total of 28 financial institutions working under the framework of the UNEP FI conceived these principles, while 130 banks around the world so far have signed them. One of the fundamental goals of the principles is to define the banking industry's roles and responsibilities to create a sustainable future in harmony with the UN's SDGs and the Paris Agreement. The signatories agree to adopt six principles: alignment, impact and target setting, client and customers, stakeholders, governance and culture, and transparency and responsibility through the following three key steps over the next four years of signing – analyzing positive and negative impacts, target setting, and implementation and reporting on progress.

1 Adopted on March 2019 from https://www.ifc.org/wps/wcm/connect/77fa3852-4bc0-4f92-8f58-fd93ee5bce3c/SBN+Map_20190514.pdf?MOD=AJPERES

Table 3.2: Green bank ranking 2014.

Overall Rank	Bank	Overall score out of 100	Country	Clean-energy investments score	Reducing environmental impact score
1	Banco Santander	85.1	Spain	95.8	76.7
2	BNP Paribas	82.3	France	95.6	76.4
3	Unicredit	81.8	Italy	94.3	69.4
4	Royal Bank of Canada	81.5	Canada	95	58.2
5	Goldman Sachs Group	81.1	United States	98.1	74.7
6	Mizuho Financial Group	78.8	Japan	83.1	77.2
7	HSBC Holdings	78.7	United Kingdom	97.7	59.2
8	Mitsubishi UFJ Financial Group	78.3	Japan	95	56
9	Skandinaviska Enskilda Banken	77	Sweden	79.6	71
10	Credit Suisse Group	76.9	Switzerland	97.3	54.3
11	JPMorgan Chase	76.9	United States	91.6	75.9
12	Deutsche Bank	76.3	Germany	90.4	76.6
13	Bank of America	75.9	United States	93.3	68.7
14	Canadian Imperial Bank of Commerce	74.9	Canada	88.2	43.9
14	Intesa Sanpaolo	74.9	Italy	74	77.1
16	Macquarie Group	73.9	Australia	92.7	46.7
17	Banco Bradesco	73.5	Brazil	78.3	62.4
18	National Bank of Canada	73.2	Canada	79.6	58.2
19	Standard Bank Group	72.5	South Africa	76.8	62.3
20	Bank of Nova Scotia	72.1	Canada	87.3	44.8

Source: Bloomberg, 2014

3.5 The State of Environment-Friendly Banking in Selected Economies

Regionally, governments around the world are diverting resources toward sustainable growth and development through different initiatives, for example, through legal provisions delegating environmental rights and responsibilities and enactment of necessary regulations and acts (e.g., Green Bank Act in the United States, Framework Act on Low Carbon, Green Growth in Korea) to take legal cover on the environmental issue at the macrolevel. Some countries have even developed separate ministries, agencies, and legal entities (e.g., Ministry of Environmental Protection, China). Measures in different countries at the government level include investments in renewable energy, green parks and protection areas, directives on environmental impact assessment (e.g., Environmental Impact Assessment, Canada), and access to environmental information for citizens (e.g., EU Directive for Aarhus Convention). In some countries tax rebates, reductions, and other fiscal incentives motivate sustainable financing. Furthermore, the SBN map presented in Table 3.1 shows that several countries, mostly from Asia and Africa, have formulated some forms of environment-friendly banking frameworks.

3.5.1 China (Asia)

China is currently the largest emitter of greenhouse gases followed by the United States. In China, banks are the primary sources of funding to enterprises, mobilizing more than 2.7 times higher funds than issuing stocks and bonds in the capital market. As a result, the Chinese banking industry holds greater "power of money" and opportunities to promote sustainable development and growth. In 2007 the Central Bank of China, People's Bank of China, and Ministry of Environment Protection of China jointly launched the Green Credit Policy. This extensive policy provides a framework for green credit to be provided by Chinese banks (Bai, Faure, & Liu, 2013). The policy describes three aims:

- To strengthen commercial banks in the management of environmental performance
- To establish an environmental information sharing scheme between the environmental regulatory departments and financial institutions
- Creating provision to identify the violation of the policy

The China Banking Regulatory Commission (CBRC) issued Green Credit Guidelines in 2012. This guidance also provided a regulatory framework to be followed by commercial banks in green lending. These guidelines are more general, leaving space for banks to develop their own policies. The guidelines are applicable to national and foreign credit supplied by Chinese financial institutions. The guidelines also illustrate the vital role of the banking sector in preserving the environment and

promoting sustainable economy and the potential environmental risks attached to investments and lending.

In addition to domestic greening efforts, China has also extended its role on environment in the international market. China currently holds more than a 50% share in the recently established the Asian Infrastructure Investment Bank (AIIB) (Hasnain, 2015). As the driving nation in the AIIB, China has committed to consider environmental issues in the operation of the bank, for example, lending and investments, and to learn from the existing multilateral development banks about good practices in governance structure and paying attention to environmental issues.

3.5.2 Bangladesh (Asia/South Asia)

Bangladesh is one the most vulnerable countries exposed to climate change and the eighth largest country in terms of population. Bangladesh Bank – the central bank of Bangladesh – formulated green banking guidelines in 2011 and established a separate and dedicated green banking and the corporate social responsibility (CSR) department in 2013. In line with the instruction from Bangladesh Bank, most commercial banks have already implemented green banking practices through three phases. Figure 3.1 illustrates the phased implementation required by Bangladesh Bank with each phase requiring one year to be fulfilled and the last phase to be implemented by December 31, 2013.

Phase I (to be implemented by 31.12.2011)	Phase II (to be implemented by 31.12.2012)	Phase III (to be implemented by 31.12.2013)
> Policy formulation and governance > Incorporation of environmental risk into credit risk management (CRM) > Initiating in-house environmental management > Introducing green finance > Creation of Climate Risk Fund > Introducing Green Marketing > Online banking > Supporting employee training > Consumer awareness and green events > Disclosure and reporting of green banking activities	> Sector-specific environmental policies > Green strategic planning > Setting up green branches > Improvement in in-house environmental management > Formulation of bank-specific environmental risk management and guidelines > Rigorous programs to educate clients > Disclosure and reporting of green banking activities	> Designing and introducing innovative products > Reporting in standard formats with external verification > Reporting green banking practices on a quarterly basis

Figure 3.1: Green banking policy framework by Bangladesh Bank.
Source: Bangladesh Bank

As one of the members of the Sustainable Banking Network, Bangladesh Bank has extensively contributed to promote green banking actively through its own initiatives, notably launching a US$11.85 million Green Banking Refinancing Scheme on August 3,

2009 to fund renewable energy projects in the country, which served immensely to solve the existing power shortage in the fast-growing economy. Apart from providing and supervising the phased guideline for green banking, Bangladesh Bank itself has taken many in-house initiatives to green its international operation. Some of them are as follows:

- Connecting all departments and branches PC (almost 3,100) with head office through LAN/WAN
- Launching and implementing Bangladesh Automated Cheque Processing System (BACPS), Bangladesh Electronic Fund Transfer Network (BEFTN), and Automated Clearing House, which substantially saves paper, energy, and time
- Online facility for credit information bureau
- E-recruitment, online salary and digitalizing most of the paper-based operations of office activity
- Training program for green banking practice for internal employees

All scheduled banks in Bangladesh now have their own green banking policy approved by the board of directors and the Green Banking Unit. As of 2016 US$395.11 million was financed by the scheduled banks in green financing across more than 11 Sectors (Hossain, 2018).

3.5.3 India (Asia/South Asia)

The Reserve Bank of India (RBI) is taking the lead in terms of greening the financial system. The RBI has also worked with the Securities and Exchange Board of India regarding Green Bonds. The first initiative was the RBI's circular on corporate social responsibility, sustainable development, and nonfinancial reporting role of banks, issued in December 2007.

RBI has a Priority Sector Lending Programme (PSL) with the objective to allocating credit to vulnerable sections of society. The PSL has primarily focused on enabling access to finance for agriculture, infrastructure, education and micro, small, and medium-sized enterprises (MSMEs). In 2012 the RBI reviewed the priority sectors and added access to clean energy. In 2015 the PSL was further extended to include two new categories and address sustainable development. These two categories included social infrastructure and renewable energy projects.

The Small Industries Development Bank of India developed National Voluntary Guidelines for Responsible Finance for Financial Institutions in cooperation with the German Society for International Cooperation (GIZ). The National Voluntary Guidelines for Responsible Financing were launched in 2015 by the Indian Banking Association. This industry-led guideline serves as General Green Lending Guideline for Indian Banks.

India has recently joined the SBN but have not yet formulated a separate guideline for sustainable or environment-friendly banking. The Reserve Bank of India – the Central Bank – is still in dialogue with SBN in formulation of a policy for green banking. Furthermore, no Indian bank has yet adopted the Equator Principles in determining, assessing, and managing environmental and social risks and none of the banks in India have yet signed the UNEP FI agreement.

There are some microlevel initiatives as well. Six Indian banks have voluntarily agreed to incorporate the principles of the "Collevecchio Declaration on Financial Institutions and Sustainability" where financial institutions commit to sustainability, do no harm, accountability, transparency, and sustainable markets and governance. Among the government-owned commercial banks, the State Bank of India is the first bank to initiate the concept of green banking. The bank significantly invested in renewable energy, for example, wind farms for electricity. Also Punjab National Bank, Bank of Canara, and Bank of Baroda, which rank in the top four in terms of profitability, have also diverted considerable investment and in-house initiatives toward environmental-friendly banking (Nath, Nayak, & Goel, 2014). Among the privately-owned banks, ICICI Bank, Axis Bank, HDFC Bank, and Kotak Mahindra Bank are notable for green initiatives and investments. Among others, YES bank received the "Sustainable Bank of the Year (Asia/Pacific)" Award – FT/IFC Sustainable Finance Awards 2012, London second year in a row.

3.5.4 Korea (Asia)

In South Korea the development in green finance is led by the government itself, rather than by the Central Bank. In August 2008, then president Myung-Bak launched the national green growth strategy in August 2008 by declaring green growth as the center pillar of the country's future growth. The declaration was followed by the issuance of the Five-Year Plan for Green Growth (2009–2013) as part of the National Strategy for Green Growth. The Bank of Korea and Financial Services Commission, who oversee supervision of the financial sector, did not play a direct role on green banking. The Korea Development Bank (KDB), a state-owned policy directed investment vehicle, started to invest in green industries in 2009 and issued the green bond in 2019. South Korea is also hosting the Green Climate Fund (GCF), which was launched in 2013. The GCF is financed by developed economies and was created in order to help developing countries, especially those who are vulnerable to climate change.

Fiscal agencies have also been instrumental in allocating credit at preferential terms to priority sectors through dedicated funds. The government started using fiscal funds to enhance energy conservation following the second oil crisis in the late 1970s and established an Energy Rationalization Fund in 1980. It was financing low rate interest loans for energy saving projects. The government also created the

Renewable Energy policy initiative in 2009 aimed at supporting SME's, nonprofit organizations, and public institutions. It provided them with low interest loans to encourage investment in energy efficiency and conservation enhancing equipment. The government further provided subsidies to commercial banks to eliminate the difference between two interest rates.

3.5.5 United States (North America)

Many believe that the green banking concept officially originated from the United States in 2003 due to the issuance of Equator Principles. However, the United States has not been a member of the SBN but the country has been the pioneer in setting up a green bank in 2011. Although the idea of a green bank was conceived in 2008, the bill advocating the creation of a state backed bank to support green investment did not pass in the Senate. Later at the state level, Connecticut developed its first green bank, followed by New York in 2013. These banks are public or quasi-public financial institutions that use innovative financing techniques and market development tools in partnership with the private sector to accelerate deployment of clean energy technologies (Coalition for Green Capital, 2016). Table 3.3 shows the impacts induced by the Green Bank Network – a membership-based network of nine green banks in the United States.

Table 3.3: Green Bank Network impact as of June 2019.

Capital	Investments sector	Results
Total invested or committed by the GBN: $14.9 billion Total value of the projects supported: $50 billion Overall leverage ratio (Non-GB$ invested per GB$ invested): 2.4:1	Renewable Energy – 59% Energy Efficiency – 15% Others – 27%	Annual CO_2 emissions avoided: 25.5 million metric tons

Source: Green Bank Network (2019) from its website accessed 26 November 2019 at: https://greenbanknetwork.org/gbn-impact/

Further to the green banks, many commercial banks in the United States are marching ahead to environment-friendly banking practices. Some of the examples include:

- Beneficial Bank in Philadelphia opened two new branches with eco-friendly designs aimed at improving energy efficiency. Eco-conscious highlights include installing:

  - heating systems with a 93% efficiency rating and reducing energy consumption by 13%.
  - LED and CFL light bulbs to reduce energy consumption by up to 50%.
  - ceiling tiles made of 65% preconsumer waste and 15% postconsumer waste.
  - PVC free furniture (e.g., chairs, tables) that are green guard certified and use an average of 30% recycled materials.
  - Low-flow toilets and automatic faucets that reduce water usage by up to 40%.
- Union Bank – a California-based bank – now offers commercial customers a mobile app that can be downloaded directly to their iPhone, Android, or Blackberry devices. The application allows customers to perform many of the regular banking transactions (e.g., payments settlements, debit/credit card related order placements and tracking), which encourages them to save resources and paper through online banking and reducing dependency on physical paper-based branch banking.
- On February 18, 2010 at a press conference in Farmingdale, New York, TD Bank announced they had become carbon neutral and unveiled a plan to construct green buildings with low energy consumption and make a significant investment in renewable energy from sources like wind, solar, and low impact hydropower. TD Bank has TD stores instead of branches; many new stores are reported to have technology that reduces energy consumption by about 50% and strive to earn Leadership Energy and Environmental Design (LEED) certification for new facilities. Green banking on the customer side includes mobile-banking applications for iPhone, iPad, Android phones, and Blackberry's – features that save energy and paper.
- New Resource Bank is more favorable toward small businesses for green investment based in San Francisco. The bank is committed internally and externally to energy efficiency. New Resource Bank is on a green mission to lower their own carbon footprint with an ambitious IT energy reduction program and conservation program within their bank operations. In terms of external operation, the bank preferentially caters to businesses that are involved in green technology. New Resource Bank offers online banking and highly competitive deposit rates if any customer opens solar CDS deposit accounts, from which funds are used to finance solar projects.
- First Green Bank is a community bank headquartered in Mt. Dora, Florida. The company is known for its focus on environment-friendly banking practices. The company operates in five branch locations in Central Florida with their LEED platinum certified headquarter located in Mt. Dora.
- Bank of America goes green by accelerating its financing through the issuance of five green bonds as of October 2019 with a value of US$2 billion. Being the first financial institution to issue a corporate green bond, Bank of America has raised about US$6.35 billion for renewable energy projects. The investment

areas of the bonds issued include projects focused on solar and wind power technology. The bank has undertaken environmental business initiatives that demonstrate its commitment to the environment and supporting sustainable and low carbon businesses through lending, investing, capital raising, advisory services, and other financial solutions for their clients around the world. As part of this effort, as of October 2009 Bank of America has disbursed over US$140 billion in financing for low carbon, sustainable business activities since 2007.

3.5.6 Brazil (South/Latin America)

Since the beginning of the century, the financial sector of Brazil has made significant and proactive progress with respect to the integration of socioenvironmental aspects into regular business decisions. Brazil as a nation has also been on the frontline in terms of international sustainability agreements for the financial sector, for example, the Equator Principles, Principles of Responsible Investment, and Principles of Responsible Insurance (FEBRABAN, 2014). The Central Bank of Brazil has recognized the consideration of socioenvironmental risks in operations of financial institutions.

In 2007 the Brazilian Banking Association (FEBRABAN) and Ministry of Environment formulated voluntary guidelines titled "Green Protocols for Public Banks" and for private banks in the following year. The protocol made commitments including green/social financing, environmental and social risk management (ESRM), internal environmental management, and awareness building among stakeholders. Subsequently, the participating banks, the government, and some nongovernmental organizations (NGOs) jointly developed a set of indicators in compliance with the Protocol under the direct patronage of the banking association. Based on these indicators, all banks started to report their level of compliance in regular intervals, generally per annum. In 2011 the Brazilian Central Bank (BACEN) asked banks to exhibit how they consider exposure to socioenvironmental damage in their internal capital, as part of the Implementation of Basel III, Adequacy, and Assessment Process (ICAAP). In April 2014 BACEN issued a new resolution requiring banks to have an environmental and social risk management system. All the initiatives undertaken for the Brazilian financial sector were for implementation by 2013, and the country has successfully done so by the deadline. Table 3.4 shows the implementation timeline for the different initiatives.

It should be noted that in 2012 another Latin American country, Colombia's banking association, Asobancaria, had also developed and adopted its own Colombian Green Protocol as a set of voluntary guidelines for major commercial banks in Colombia.

Table 3.4: Timeline for greening Brazilian financial system and economy.

Year	Investment	Credit and banking	Insurance
1995		Green Protocol signed by state-owned banks	
2001	Creation of the first Sustainable Responsible Investment Fund in Brazil		
2003		Equator principles released	
2005	Principles of Responsible Investment (PRI) as well as the Brazilian Corporate Sustainability Index (ISE) released		
2007	Creation of Brazilian PRI Network		
2009		Green Protocol signed between the Ministry of Environment and Financial Institutions	
2011			Green Protocol signed between the Ministry of Environment and Financial Institutions
2013			Principles of Responsible Insurance (PSI) released

Source: FEBRABAN (2014)

3.5.7 Nigeria (Africa)

Access Bank PLC has been the pioneer in sustainability banking in Africa. Access Bank, in partnership with the UNEP FI and Netherlands Development Bank (FMO) convened a CEO roundtable with the theme "Moving Frontiers – Sustainable Finance" in Nigeria in September 2011. During the conference, leading banks showed commitment to integrating sustainability into their business operation (UNEP FI, 2011). This gradually influenced public policies to develop an industry standard for sustainable banking practices.

A Strategic Sustainability Working Group (SSWG) was instituted under Bankers' Sub-committee on Economic Development and Sustainability to immediately begin the work on the agreed upon initiatives in the 2011 roundtable to drive the process. The Banker's committee approved the adoption of the Nigeria Sustainable Banking Principles (NSBP) by banks, discount houses, and DFIs after one year in July 2012. The Nigerian Central Bank appreciated this initiative as a pledge to deliver positive

development impacts to the society and issued these principles through a statutory circular in September 2011 to facilitate their implementation. Dutch Entrepreneurial Development Bank (FMO), IFC, and an independent adviser facilitated this overall development. The Principles have been adopted to drive long-term sustainable growth while focusing on development priorities, safeguarding the environment, and delivering quantifiable benefits to society and the real economy. These principles were further reinforced by sector-specific guidelines for agriculture, power, oil and gas, steel, and mining industries. The NSBP is comprised nine principles as outlined in Table 3.5.

Table 3.5: The Nigeria Sustainable Banking Principles.

1. Managing environmental and social risk in business decisions
2. Managing the bank's own environmental and social footprint
3. Safeguarding human rights
4. Promoting women's economic participation/empowerment
5. Promoting financial inclusion of communities and groups with limited or no access to the formal financial sector
6. Meeting the imperatives for good governance, transparency, and accountability
7. Supporting Capacity Building in the sector
8. Promoting collaborative partnerships to accelerate sector progress
9. Reporting to take stock of sector progress and attendant needs

Source: Central Bank of Nigeria[2]

The central bank issued sustainability reporting formats in March 2014 as a uniform format to monitor implementation progress at individual bank and industry levels. It further ensured appropriate intervention to help resolve implementation challenges. Compliance to the reporting formats also provides an objective, fair and equitable basis for possible incentives. As such, CBN's decision to supervise the implementation of the principles has made adoption of NSBP as quasi-mandatory, if not obligatory.

3.5.8 Netherlands (Europe/EU-15)

The Netherlands has been termed as a model country for environment-friendly banking. At the government level, the Netherlands launched the Green Fund Scheme in 1995, a tax incentive scheme to encourage green initiatives. The scheme is comprised of three components:

2 Obtained on March 2019 from the Central Bank of Nigeria website https://www.cbn.gov.ng/out/2012/ccd/circular-nsbp.pdf

- Green Project Scheme: This provides the conditions governing the projects
- Green Institution Scheme: This regulates the role played by financial institutions
- Tax Incentive for investors: This mobilizes the flow of funds

Triodos Bank, a green banking pioneer, is based in the Netherlands and is the first of its kind to embed a three-way approach (People, Planet, and Profit) in its banking philosophy. It not only provides full disclosure of lending and investment activities relating to environmental issues but also compensates 100% of its own CO_2 emissions.

Banks in the Netherlands maintain a "Green Fund," which allocates separate funds after meeting strict requirements imposed by the Green Institutions Scheme. Most banks offer private savers "green savings accounts" and investors "green investments options." The money pooled from these options is labeled as green money and banks are fully responsible for investing a minimum of 70% of this money on "certified" green projects. Banks offer a lower return to the savers/investors on their investments in green options and in return charge lower interest on the green projects financed under the scheme. In turn, the savers/investors of green options are compensated with tax incentives in the form of tax reduction of around 2.5% (the Netherlands NL Agency, 2010). Therefore, private savers and investors still make good returns in comparison to other investors under the scheme.

3.5.9 United Kingdom (Europe/EU-15)

For the United Kingdom, the term "ethical banking" is often used to exhibit the engagement of the banks in sustainable and environment-friendly banking. Among many of the government supported initiatives in the UK, the Green Investment Bank is one, which also gets extended support from the European Commission. The bank so far has invested 15 billion pounds sterling (about US$8.48 billion) in Green Infrastructure and currently investments stretch over five sectors. The UK government initially launched the bank with initial funds of 3 billion pounds sterling for four years; however, it was later privatized in 2017 and acquired by the Macquarie Group.

Triodos Bank also has a significant portion of environment-friendly investment in the United Kingdom and established formal partnerships with The Soil Association and Friends of the Earth among others. Meanwhile, Global banks, for example, Barclays, Lloyds Banking Group, and Standard Chartered have embedded environmental risk management systems and reporting standards in their own operating procedure.

3.5.10 Australia (Oceania)

The Australian government has demonstrated its commitment through confirmation of the Paris Agreement on Climate Change and adopting SDGs. As a part of this commitment, the Australian government established the "Australian Sustainable Finance Initiative (ASFI)" in 2018, prioritizing social equity, environmental protection and overall well-being. ASFI brings together leaders from the country's major banks, superannuation funds, insurance companies, financial institutions, and academia to develop a Sustainable Finance Roadmap, in consultation with diverse sectors and stakeholders. The Roadmap, to be launched in 2020, will recommend pathways, policies, and frameworks to enable the financial services sector to contribute more systematically to the transition to a more resilient and sustainable economy, consistent with global goals such as the UN SDGs and the Paris Agreement on climate change.

Apart from this, several banks have taken initiatives toward sustainable development, for example, HSBC ANZ, Bendigo, Commonwealth Bank, Westpac, and MECU. Many others have adopted policies that are environmentally friendly and reduce the risks of climate change, for example, by following caution in lending to climate or carbon sensitive assets. However, the banking sector commitment and actions toward greening the economy and achieving sustainability remains below par compared to many other developed and developing countries. This raises a concern since Australia is considered a major contributor to environmental damage and climate change via air, soil, and water pollution.

3.6 Conclusion and Key Takeaways from the Global Green Banking Efforts

Despite increasing efforts to promote environment-friendly banking globally, the progress remains slow. The characteristics of the global and country level efforts presented in this chapter can tell us a lot about the pertaining reasons behind the slow progress. For example, the global and country level initiatives appear to be mostly voluntary not mandatory, leaving no option for enforcement by the respective regulatory authorities in cases of lack or denial of participation by financial institutions. Furthermore, country-level initiatives are mostly tailored solutions for each country and therefore, a growing lack of uniformity across countries serve as a building block in developing a global momentum for environment-friendly banking. In many countries, no nation-wide uniform guideline or regulatory framework is available, and initiatives are undertaken by individual commercial banks in a scattered manner according to their own choice and preferences. One of the most important traits seen is that many developing countries (e.g., Bangladesh) are performing better than developed ones (e.g., United States) – particularly the rich countries that damage the environment the most.

Discussion Questions

1. How do you think green banking practices will be utilized for Climate-Induced Disaster Management financing and climate impact mitigation and adaptation?
2. What can be the positive and negative interaction effects between government policies, central bank regulations, and international agency guidelines while aiming to adopt green banking practices?
3. Considering the level of greenhouse gas emissions, which regions need to play a more proactive role in terms of green finance and how do you think banks can play a role in mobilizing green finance?

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Chapter 4
The Meaning of Green Banking

4.1 Introduction

The term "green" has a wide use and has been in popular discourse due to global outcry for environmental preservation and against climate change impacts. Globally there are several similar if not overlapping definitions of green banking, which are mostly associated with environmental, social, and governance (ESG), corporate social responsibility (CSR), and sustainable banking. They all have some direct bearing on the kind and scope of activities undertaken by banks, not limited to reporting or compliance requirement.

The term CSR is the broadest and oldest of the three terms and it is related to the term socially responsible investing (SRI). The origin of SRI dates to the 1950s as investors started using screening to prevent investment in "nonethical" businesses in line with religious beliefs. The SRI eventually evolved a separate kind of investment strategy incorporating environmental, social, and governance factors into investment decisions. SRI uses a mix of negative (value driven) and positive (risk and return driven) screening techniques to maximize financial returns. SRI ultimately encompasses the "Triple Bottom Line" approach of ecological, social, and economic criteria.

The evolution of ESG was led by the growing importance of corporate governance in the performance of a company. The term traces back to the initial work of the United Nations Global Compact on financial markets and sustainability issues. ESG factors are considered as a subset of nonfinancial indicators, which are dedicated to evaluating corporate behavior to the environment and society. The subtle trade-off between financial and nonfinancial performances (e.g., environmental) can be consequential in large companies. As a result, nonprofit organizations like the Sustainability Accounting Standards Board (SASB) started promoting a culture of reporting financial and nonfinancial ESG performances to convey the idea to stakeholders to assess the "sustainability" contribution of a firm. For banks, such broad performance evaluations can encourage them to innovate new products, new services, and business models. Aligning ESG can eventually lead to sustainable banking practices. However, sustainable banking is not limited to the commitments to sustainability through environmental aspects, rather it should be considered as a broad term encompassing sustainability issues relevant to a wide range of stakeholders. Stakeholders expect information regarding social and governance performances. Social performance includes working conditions, customer security, privacy, etc., and governance performance includes systemic risk management, management of legal and regulatory environments, etc.

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In the late 1980s the term "green economy" emerged as a concept and subject of discussion. To define it in the simplest of terms, a green economy is resource efficient, socially inclusive, and supportive to the ecosystem. In this concept, public and private institutions join forces to reduce emissions and pollution, preserve the ecosystem, and prevent the loss of biodiversity. This conceptualization eventually led to the idea of "green growth," which became popular in the later years of the first decade of the twenty-first century. The World Bank (2018) defines green growth as a growth pattern that is efficient in the use of natural resources, clean as it minimizes pollution and environmental impacts, and resilient as it accounts for natural hazards and the role of environmental management and natural capital in preventing physical disasters.

As a symbol of environmental consciousness in the world, the notation "green" became popular over time. Using the same notation, the concept of "green banking" emerged as a way of introducing this "greening" into the world of "banking." The following sections define green banking from academic and operational backgrounds. In the first part green banking is defined from an academic perspective, following a discussion in the later part on the definitions from the perspectives of organizations that are dealing with the issue.

4.2 What Green Banking Means

The concept of green banking can be attributed to Triodos Bank (established in 1980), which originated in the Netherlands and started with environmental sustainability in the banking sector as a founding principle from the very first day. In 1990 the bank launched a "green fund" for funding environment-friendly projects (Sharifi & Hossein, 2015). The main concept of green banking was formally introduced in 2003 with a view to protecting the environment and introducing environment-friendly laws to regulate the banking industry. Afterward, the Equator Principles (EPs) were launched and the principles were initially adopted by some leading global banks including Citigroup Inc., the Royal Bank of Scotland, and Westpac Banking Corporation. The green banking forces further accelerated in 2009 when the United States introduced the Green Banking Act with an aim of establishing a green bank under government ownership.

To date, there is no commonly accepted definition of the term "green banking" outlining its precise meaning and scope. Over the past 10 years, there are numerous scientific publications related to the importance of various aspects of green business – green marketing, corporate entrepreneurship to achieving sustainable banking, etc. (Zhelyazkova & Kitanov, 2015). Green banking can be considered under the broader concept of sustainable banking and can be used to explain the connection among the various organizational initiatives (including human resources, marketing, internal resource management) to achieve sustainability in the services banks offer. The available definitions of green banking are discussed below in two broad categories: theoretical and operational.

4.2.1 Theoretical Perspectives on Green Banking

Various academicians have defined green banking in their own ways. This section summarizes these definitions.

According to Bhardwaj and Malhotra (2013), green banking refers to the banking business conducted in such areas and in such a manner that helps the overall reduction of external carbon emission and internal carbon footprint. To aid in the reduction of external carbon emissions, banks should finance those projects that use green technology and that can effectively reduce pollution. Banking has never been considered as a polluting industry but in recent times banks are financing projects that are leaving a massive carbon footprint due to their massive use of energy (e.g., lighting, air conditioning, electronic/electrical equipment, IT, etc.), high paper wastage, lack of green buildings, etc. Therefore, banks should adopt technology, processes, and products that result in a substantial reduction of their carbon footprint as well as developing a sustainable business (Bhardwaj & Malhotra, 2013). All these efforts can be highly impactful not only to ensure sustainability but also to fight some of the biggest problems the world faces today, for example, climate change. Almost every country is trying to make new commitments and adopt new strategies to mitigate the risk of climate change that is caused by human behavior and activity. Like every other socially responsible corporate citizen, banks also have an important role to play in mitigating climate change risk. Although banks traditionally are not considered to have environmental implications, they can affect the environment by their internal and external operations. These potential impacts have given birth to the term "green banking."

Lalon (2015) argues that the main concern of green banking is to minimize the paper use in banking works as it may have direct impacts on deforestation. This means any orthodox bank can become a green bank by directing its core operations toward the betterment of the environment while playing an intermediary role between economic development and environment protection by promoting environmentally sustainable and socially responsible investments (Lalon, 2015). According to Lalon (2015), green banking can be practiced in two different ways:

- In-house green banking, which includes creating a clean and hygienic banking environment, green building, reforestation, online banking, waste management, installation of solar panel on the rooftop of the bank and using high mileage vehicles, reducing sound pollution, using webcam for video conferencing instead of physical meetings, online statements, and emailing documents, etc.
- Practice of green banking in the business areas by financing projects like biogas plants, renewable energy projects, bio-fertilizer plants, effluent treatment plants (ETPs), projects having ETP, etc., and specific environment-friendly projects such as green infrastructure or transports.

According to Bahl (2002), Yadav and Pathak (2013), and Ahuja (2015), green banking can also refer to the banking system, which conducts its business in certain areas that will help the overall reduction of external carbon emissions and internal carbon footprints. Banks can contribute to reducing their external carbon footprint by financing projects that use or promote green technology and reduce pollution. Green banking can help create effective and far-reaching market-based solutions to address a range of environment-related problems including climate change, deforestation, air quality issues and biodiversity loss, and act in customers' benefit at the same time. Islam and Das (2013) also defined green banking to promote environment-friendly practices and reduce the carbon footprint of one's banking activities, which involves a two-pronged approach. First, it should focus on the green transformation of internal operations of banks by adopting appropriate ways of utilizing renewable energy, and automation and other measures to minimize the carbon footprint from banking activities. Second, banks should adopt environmentally responsible financing by weighing up environmental risks of a project before making financing decisions, and specially supporting and fostering the growth of "green" initiatives and projects (Islam & Das, 2013).

In a similar perspective, Masukujjaman, Siwar, Mahmud, and Alam (2015) define green banking as a stream of banking in which environmentalism is adopted as the operational base of banking activities like a conscious being (e.g., a registered banking organization is regarded as an artificial being) in a society. In green banking, banks persuaded those customers to undertake green projects and avoid as much paperwork as possible and rely on online/electronic transactions. It also creates awareness among the bank customers about integrating environmental and social responsibilities in their business practices.

Sometimes, a green bank can simply be considered as a normal bank, which considers all the social and environmental/ecological factors with an aim to protect the environment and conserve natural resources (Rao, Menezes, & Danush, 2015). In this case, they can also be called an "ethical bank" or a "sustainable bank," with the purpose of taking care of the Earth's ecology and environment while performing banking activities (Gupta, 2015). However, like every other traditional bank, they can be regulated by the same regulatory authorities, but they should be evaluated in the context of the additional agenda they consider in their businesses.

In other studies, Deepa and Karpagam (2018) and Gupta (2015) identified that green banking promotes environment-friendly practices and reduces the carbon footprint from banking activities, for example by using online banking instead of branch banking, paying bills online instead of mailing them, opening up accounts at online banks instead of large multibranch banks, and finding the local bank in the area that is taking the biggest steps to support local green initiatives. Agrawal (2014) highlighted four major avenues for adopting greening banking – greening a bank's processes, products and services, strategies and other activities. These efforts should aim to change client habits in the banking sector for sustainable

development in future. Sharifi and Hossein (2015) and Tara, Singh, and Kumar (2015) argue that green banking should aim to make banking processes and the use of IT and physical infrastructure as efficient and effective as possible, with zero or minimal impact on the environment.

Among other studies, Mehedi, Kuddus, and Maniruzzaman (2017) define green banking as pollution free banking that uses operating instruments or products which do not destroy the elements of the environment. Banks are liable internally for their own in-house operations and their external operations, which includes green financing in different industries that have an effluent treatment plant and have passed the social feasibility test of the bank. Studies suggest several green banking products and processes, for example, green mortgages, green loans, green credit cards, online transactions, green savings accounts, green checking accounts, green money market accounts, remote deposit, waste management, roof gardening, and green financing (see, e.g., Ahuja, 2015). All things considered, a green bank can be an ethical or a sustainable bank that considers the impacts of its operations, and its various products and services for the current as well as future generations.

4.2.2 Operational Perspectives on Green Banking

Although green banking was first introduced in the early 1990s, it came into the spotlight after the UN introduced sustainable development goals. Since then, organizations at different levels are working to promote this initiative, including the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP), the World Bank, various national and international banks, central banks and nonprofit organizations, etc. This section summarizes definitions and perspectives of such organizations.

According to the UNEP (2016), G20 countries have already made the case for green banking by increasing allocations of bank capital to green assets, individual institutional leadership and public commitments, new sector-wide green banking protocols, growing support for international voluntary principles, and the implementation of targeted policy and regulatory actions. But the process is slower in those countries that are still at the earlier stages of financial system development. The UNEP also recognized two categories of actions for the G20 countries:

- Mainstreaming environmental factors across bank strategy and governance, risk management functions, as well as culture and skills
- Mobilizing private capital for green investments, including funding through loan originations and credit provisions, retail savings products, as well as intermediation and capital markets activities

Unlike the UNEP, the UNDP (2019) is more focused on “green bonds” that mobilize resources from domestic and international capital markets for climate change

adaptation, renewables, and other environment-friendly projects. These bonds are not different from conventional bonds, their only unique characteristic being the specification that the proceeds be invested in projects that generate environmental benefits.

At the bank level, ABN AMRO was the first bank in Europe to join green banking forces by issuing a certified Climate Bond. The bond proceeds were to be used to finance loans related to residential and commercial buildings that meet certain energy efficiency or low carbon criteria (ABN AMRO, 2019). ABN AMRO finances mainly those projects that have the following features: low carbon infrastructure – commercial and residential, marine renewable energy, and solar energy. They have already invested about $2,900 million for the cause (ABN AMRO, 2019).

Deutsche Bank aimed to go green by being one of the largest financiers of renewable energy projects worldwide. Demographic changes, increasing natural resource demands, urbanization, and the growing significance of environmental aspects are creating a growing need for investment in all types of infrastructure. The World Economic Forum estimates that $5.7 trillion worth of green infrastructure may be needed by 2020 in order to realize environmental policy objectives in sectors such as agriculture, transport, power and water. Deutsche Bank is actively advising and supporting various companies to invest in these areas. Until, now they have arranged approximately €3.9 billion in project finance for renewable energy projects generating over 3,480 megawatts of power (Deutsche Bank, 2019).

According to the Standard Chartered Bank's Green Banking Report (2014), the bank considers green banking as an integral part of their sustainable growth program. To the bank, green banking is not confined to using less energy and raising money for good causes, but rather sustainability and green banking is embedded in their brand promise. For the bank, green banking affects every single thing they do, including the way they make decisions, the contribution they make to local economies, and the impact that they have when they bank people and companies driving investments, trade and the creation of wealth across Asia, Africa and the Middle East (Standard Chartered Bank, 2014).

In a similar approach, another international bank, the Hong Kong Shanghai Banking Corporation (HSBC), has adopted sustainability trends in their businesses. According to them, green banking means focusing on sustainable finance, sustainable supply chains, and creating employability and financial capability for all (HSBC, 2019). In each of these areas, they have begun to take genuine strides forward. They have set out a series of commitments to contribute to the global transition to a low-carbon economy. They have also pledged long-term support to help people access education and training so they can acquire the skills they need to succeed in today's workplace. And through their partnerships with customers, NGOs and other key stakeholders, they are encouraging responsible business in global supply chains.

The conceptualization of green banking is found to be no different among the central banks also. According to the Reserve Bank of India (IDRBT, 2013), green

banking is considered efforts to make internal bank processes, physical infrastructure, and information technology effective toward the environment by reducing its negative impact on the environment to the minimum level. Bangladesh Bank – the central bank of Bangladesh – also holds a similar perspective on the meaning of green banking. The bank considers green banking as a long-term change that can protect the environment by minimizing environmental risks and impacts of external and internal banking operations.

4.3 Further Examples of the Conceptualization of Green Banking Internationally

Bangladesh Bank – the central bank of Bangladesh – is the first central bank in the world that has taken real green banking initiatives. According to a definite agenda in its vision and mission to play a specific role in green banking, it aims to safeguard the planet from adverse environmental impacts. To the bank, green banking is not limited only to in-house green activities but extends to facilitating green financing. The bank's green financing policy through due diligence checklists under Environmental Risk Management (ERM) guidelines is not intended to squeeze investments; rather it is for promoting sustainable practices among the borrowers. Green financing under green banking practices is considered a crucial tool that greatly contributes to the transition to resource efficient and low carbon industries (Millat et al., 2012). The policy guidelines for green banking have been devised by Bangladesh Bank with a long-term focus to build a green economy, which, in turn, is fundamentally based on financing and investments, for example, in renewable energy (solar, wind, geothermal, marine including wave, bio-gas, and fuel cell), green buildings (green retrofits for energy and water efficiency, residential, and commercial assessments, green products and materials, and LEED construction), clean transportation (alternative fuels, public transit, hybrid and electric vehicles, car sharing and carpooling programs), water management (water reclamation, grey water and rainwater systems, low-water landscaping, water purification, storm water management), waste management (recycling, municipal solid waste salvage, brown field land remediation, sustainable packaging), and land management (organic agriculture, habitat conservation and restoration, urban forestry and parks, reforestation and afforestation and soil stabilization) (Millat et al., 2012).

Banco do Brazil is incorporating sustainability in a cross-sectional way into their strategy, as they seek to align the provisions of the UNEP on green economy. As a key agent of the financial system, they consider it as their crucial responsibility to direct the investment of funds and assist the transition to a green, low-carbon and inclusive economy, with an assertive risk management and preparation of innovative models of fundraising. In their planning, they consider climate change implications and prioritize businesses that take advantage of the opportunities of a low-carbon economy. In addition, they identify sustainable production chains that may encourage a green economy,

especially to meet the needs of emission reductions undertaken by the Brazilian government (Banco de Brazil, 2017).

China has also joined global forces on green banking initiatives by primarily engaging in green finance. Green finance refers to financial services provided for economic activities that are supportive of environmental improvement, climate change mitigation, and more efficient resource utilization. The bank aims to build a green financial system through environment-friendly financing, operation, and risk management for projects in areas such as energy savings, clean energy, green transportation, and green buildings (People's Bank of China, 2019). The bank's perspective on the green financial system involves an institutional arrangement that utilizes financial instruments such as green credit, green bonds, green stock indices and related products, green development funds, green insurance, and carbon finance, as well as relevant policy incentives to support the green transformation of the economy. According to the bank, a green financial system is expected to mobilize and incentivize more social (private) capital to invest in green industries, and to more effectively control investments in polluting projects, which would be beneficial for not only the transition to a green economy and the development of an ecological civilization, but also technological progress in environmental protection, new energy sources, energy savings and other fields, which eventually will help accelerate the creation and development of new growth drivers (People's Bank of China, 2019).

South Korea is also going green, keeping pace with the global trend. The Bank of Korea – the central bank of South Korea (Republic of Korea) – believes that financial companies should make efforts on green financing, though it is not profitable right now, as a CSR activity. They consider green financing to pursue economic growth, environmental improvement, and the development of finance industry simultaneously; and as a kind of targeted financing that induces sufficient funds to flow into the target through the intervention of public agencies in the market process, as the autonomic mechanisms of the market are estimated to not prove sufficient funds to green economic activities.

Apart from the country-based cases, there may also be examples on how green banking is conceptualized by international forums and agencies. The Sustainable Banking Network, established in 2012, is considered as a premier for conceptualizing green banking at the cross-national level. The SBN is a unique community of financial sector regulatory agencies and banking associations from emerging markets committed to advancing sustainable finance in line with international good practice. The Network facilitates the collective learning of members and supports them in policy development and related initiatives to create drivers for sustainable finance in their home. This community engages in green banking initiatives by encouraging green bonds. The emergence of green bonds has been recognized by the United Nations as one of the most significant developments in the financing of low-carbon, climate-resilient investment opportunities, and mitigating other environmental issues, such as natural resources depletion, loss of bio-diversity, and air, water or soil (SBN, 2018).

4.4 Conclusion

Green banking is a relatively new term. A concrete definition that would explain every aspect of green banking has still not been found. This chapter gives a brief idea about how differently academicians and practitioners perceive green banking. Given the similarities and differences in the academic and operational definitions of green banking, green banking can be defined as environmental-friendly banking where a bank incorporates green policies through the organogram and integrates them into action in their internal and external activities, induced by either voluntary or regulatory measures or both. In adopting green banking as a form closely similar to ethical or sustainable banking, banks try to implement green initiatives in all of their day to day activities and agree that these green initiatives should be reflected in every decision that the organization makes. The definitions examined suggest that banks should not consider green financing to be the only weapon for green banking, rather it has a much broader aspect to cover.

Discussion Questions

1. Given the definitions, prepare a list of features of green banking and explain how each feature can be adopted by a traditional bank.
2. Do you think green banking fully covers the tasks of corporate social responsibility? Justify your opinion.
3. Research yourself and try to develop how green banking is currently perceived in developed and developing countries. Do you think developed countries are doing enough to adopt and promote green banking relative to developing countries?

Application in Focus

Triodos Bank – A Pioneer in Green Banking

Triodos Bank, originated from the Netherlands, takes pride being the pioneer in ethical and environment-friendly banking. Established in 1980 in the Netherlands, the bank opened its branches to Belgium, Germany, the United Kingdom, and Spain. To be an ideal in green banking, the bank offers a wide range of environment-friendly banking products and services. It finances projects and companies it believes act in the best interest of people and the environment. It publishes details of every loan it makes through its website (Jones, 2017). In its mission, it specifies commitment to promote the quality of life by offering sustainable financial products and promoting sustainable development. It its vision the bank outlines a triple bottom line approach – banking for people, planet, and profit.

Depositors can open a conventional savings account and mobilize ethical funds and environment-friendly venture capitals with the bank. Unlike other banks, it follows a "positive screening" process to filter out potentially harmful businesses and projects and promotes lending to businesses and social causes that are beneficial to the society and ecology. In line with this

principle, it denies lending to sectors such as tobacco, arms, and fossil fuel, and preferentially lends to sectors such as organic farms, renewable energy, and social development. Apart from green and ethical practices in external operations, it considers similar principles in internal operations also. For example, environmental considerations are also ingrained in the bank's "procurement policy" by which the bank has contributed to the development of a socially and environmentally responsible supply chain. Since 1980 the bank has served over 700,000 customers; in 2018 alone, it financed 513 sustainable energy projects across Europe, which has helped deliver power to 2.5 million households and avoid 985 kilotons of CO_2 emissions. Table A4.1 illustrates the aggregated lending to the environmental sector in 2018.

Table A4.1: Triodos Bank sustainable lending in 2018.

Sector/project	Total amount (in '000 Euro)
Organic farming	151,898
Organic food	121,437
Renewable energy	1,741,750
Sustainable property	768,687
Environmental technology	101,672

Source: Triodos Bank Annual Report (2018)

With a view to informing stakeholders on its green, ethical, and sustainable banking practices, the bank annually discloses all relevant data and information through its environmental statistics section in annual reports. All things considered, Triodos Bank may be deemed an ideal sustainable or green bank.

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Chapter 5
The Need and Impact of Green Banking

5.1 Introduction

This chapter discusses in detail why green banking is particularly needed, how it already has an effect on organizational, national, and international levels of banking, and why it is central toward achieving sustainable development. The chapter will highlight why, above all, banks are the key institutions that can truly change the way private economic agents do business and how they can create meaningful impacts through green banking practices.

The banking sector globally has responded to environmental concerns through different measures at the organizational, national, and international levels. At the organizational level, some banks have not only developed their own policies but also driven themselves to be purely environmentally and socially responsible banking institutions, for example, Triodos Bank (Netherland) and GLS Bank (Germany). At the national level, central banks – sometimes in partnership with or leadership of government offices – have undertaken initiatives to design national standards in line with international environmental standards. Banks worldwide have begun to consider sustainability as an integral part of their investment decision process.

Among other industries banking companies create bridges between the surplus units and the deficit units in an economy. Not just as an investment vehicle, banks also play a crucial role in an economy through payment systems and trade facilitation. In addition, banks contribute significantly to creating jobs by offering employment directly for themselves and through encouraging investments. Due to the wide-ranging role and impacts banks have in any economy, it is considered crucial to green banks' operation to achieve sustainable development. In order to adopt green banking practices, it is imperative to shift toward addressing social challenges in addition to earning financial returns.

Käufer (2011, p. 86) puts her perspective on sustainable banking as follows:

> If banking 1.0 is characterized by a focus on high profitability, and banking 2.0 is characterized by regulations that respond to the negative externalities of banking 1.0,then banking 3.0 is characterized by the potential of banks to leverage their position in an economic system to address societal challenges. To deal with the challenges of this century more effectively, economic institutions will need to move from a 2.0 to a 3.0 approach. . . . It requires the players to evolve from initial ego-system awareness to an eco-system awareness that includes the health and well-being of the whole.

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5.2 Banks and Sustainability

Sustainability encompasses social, economic, and political challenges for humans. Sustainable development means the type of development that is environmentally compatible, economically realistic, and socially responsible (Barua & Chiesa, 2019; Chiesa & Barua, 2019). Businesses, as economic agents, are required to provide adequate and timely attention toward environmental dimension in their operations and evaluating their ethical and moral considerations on a simultaneously continuing basis. Businesses need to step away from the traditional "profit only" approach to the "triple bottom line" attitude, where "Planet, People, and Profit" are integrated together to drive environmentally sustainable development (Pintér, Deutsch, & Ottmár, 2006).

As mentioned earlier, banks serve three major purposes that allow them to influence all economic agents (i.e., individuals and firms) at all levels of human society:

- Banks collect deposits from households and firms and use these funds to invest and facilitate trading. This way banks, on one hand serve as intermediaries between people and organizations with surplus and shortage of capital and on the other hand, manage the risk of their partners and projects (Peeters, 2003).
- Banks manage and diversify their investment to minimize unsystematic risk. This way the risk of investments is spread over a pool of other investments.
- Banks facilitate transaction services that serve as the basis for the society we live in today, for example, payment mechanisms across geographies and levels of society and security, and guarantee services against transactions and trade.

The role of banks in environment protection is enormous considering the three major activities they perform to support economic systems and activities. Banks can generate environmental impacts through either its internal or external activities as shown in Table 5.1. Internal activities, for example, through energy consumption, paper usage, and amount of waste generated during regular operation, can leave significant and adverse impacts on the environment. External activities have even greater impact, for example, products and services offered by banks can have a large negative impact, when they are directed toward environmentally harmful investments, consumption of nonrenewable resources, and damaging ecosystems directly and indirectly. Combining the internal and external activities, banks take a significant share in environmental impacts, which perhaps no exact methodology has been able to quantify and measure as of today.

Considering the internal and external operational activities of banks, there can be internal and external driving forces that can motivate the greening processes of operations. Internal stakeholders such as employees, shareholders, and directors can play a leading role in greening bank operations either voluntarily or as a compliance requirement. On the other hand, governments, competitors, development organizations, and social and green bodies can continuously motivate or enforce

Table 5.1: Driving forces and actors of green processes for banks.

Internal actors	**Actions from the actors**
– Employers – Shareholders – Directors	– Environmental awareness – Economic goals – Revenue growth – Individual goals – Attitude reputation – Brand different types of risks
External actors	**Actions from the actors**
– Government – Customers – NGO's and society – International institutional demand	– Demand – Pressure – Regulation – Requirements – Subventions

Source: IFC (2002)

environmental compliances and requirements to persuade banks to green their operations. These driving forces, however can be commonly effective for not only banks but also other financial institutions (e.g., insurers, investment banks, and private equity).

5.3 The Need for Green Banking

The need for green banking can be interpreted from regulatory and banking business perspectives. The regulators have their own rationale for setting and enforcing green banking standards to adhere to international resolutions, aiding government in development, creating a more contributing banking sector, and achieving sustainability. On the other hand, banks have their own reasons to adopt greening, such as acquiring competitive advantage from new markets, managing risks, and building up an eco-conscious corporate citizen image.

5.3.1 Regulatory Perspective on the Need for Green Banking

Banking sector regulatory structure, mandates, objectives, and scopes generally differ across different economies. However, regardless of the differences, the rationale for adopting green banking practices on the part of regulatory bodies is found to be primarily guided by three key factors: systemic risk, climate change concerns, and sustainable energy.

(i) Systemic risk potential

Banks are likely to face a greater legal and credit risk when they invest in unsustainable business activities. This consequently may lead to systemic risk if trust in the system becomes endangered. In a wider context, banking companies may not directly bear consequences from environmental degradation but investing in environmentally risky investments may ultimately threaten their institutional stability and survival, which in turn may trigger contagion effects at a larger scale on the society. For example, in many economies (e.g., Latin America, Australia) mining and forestry industries and their related industries occupy a large share of total employment; the livelihood of the people directly employed and their dependents largely depend on the nature of investments in these sectors. However, these projects are not only risky in operation but also are likely to generate huge social catastrophe if their environmental impacts are not properly managed. As is the case in many economies, environmental implications of such operations are not well mitigated regardless of how developed an economy is (e.g., mining in Australia), which can disrupt regional stability and give rise to political tension in the case of a broader market failure. On many occasions, such projects exceed their estimated cost and risk, which results in borrower default and substantial regulatory fines. Therefore, banks' lending or investing in such projects can face significant risk of borrower default or loss of capital due to environmental impacts and regulatory actions, which eventually may substantially lower banks' financial strength and performance. The impacts can go sector-wide or systemic when environmentally risky industries dominate economic activities and banks heavily finance and invest in such industries.

Generally, socially and environmentally risky projects are likely to face greater frequency of litigation from social groups due to their abuse of resources or violation of one or more compliance requirements. Similarly, change or introduction of new legal provisions can also dramatically change business practices in certain industries that are already unsustainable in nature. Thus, to avoid such systemic risk arising out of regulatory changes or litigation, proponents of sustainability issues advocate that financial regulations should explicitly aim to guide the banking sector to adopt green and sustainable banking as a means to develop a resilient, stable, and responsible banking system.

Considering the systemic risk involved, banking sector regulators globally have a responsibility to provide support and guidance in the form of setting mandatory and voluntary regulations and standards so that banking as a whole integrates sustainability factors in their operations and decision-making processes. Banking regulators in several countries in developed and developing countries are found to enforce and motivate banks to assess environmental risks of lending and investment projects, which in turn reduces banking sector exposure to unsustainable businesses. For example, China, Brazil, and the Netherlands have extensive guidelines and have augmented interactions with banks to assess social, environmental,

and financial risks. These often require more disclosure to the stakeholders regarding their exposure to systemic environmental risks.

(ii) Climate change concern

In general, climate change is referred to as the long-term shift of weather patterns. Lately climate change has been a global concern. Various agreements such as the Paris Agreement have been undertaken to reduce the carbon footprint and reduce other greenhouse gases (GHGs). Historically shifts in the weather pattern have been caused by solar radiation, volcanic eruption, and movements in plate tectonics, etc., which are mostly out of control for humans. By the middle of the last century there was growing evidence that the high amount of carbon dioxide and other GHGs released by human activities triggered global warming. The adverse impacts of climate change include sea level rises, higher than normal temperature and rainfall, higher intensity and frequency of extreme weather events, and so on. A growing body of literature suggests that erratic weather patterns negatively affect ecology and the society. Such impacts often change the course of economic activities, while hazardous economic activities are simultaneously held responsible for triggering climate change. Being the guardian of the "power of money," banking regulators globally have a strong responsibility to respond to climate change impacts and redirect bank operations (e.g., finances and investments) toward more resource efficient and low carbon economic activities. Regulatory guidelines and timely supervision to implement them can allow the country to combat climate change impacts over a longer period. Realizing the urgent need to act, bank regulators in many economies have begun to incorporate climate change concerns in their regulatory framework to encourage shifting to a low-carbon and resource-efficient economy. Furthermore, supranational organizations like the United Nations are undertaking major global projects to modify the roles of financial institutions including banks in achieving Sustainable Development Goals (SDGs) and climate impacts mitigation and adaptations (e.g., the Principles of Responsible Banking launched by the UNEP-FI in September 2019).

(iii) Sustainable energy needs

Energy sources and availability are a must in fostering economic development and growth. Countries that have become global economic leaders and achieved enormous economic growth rely heavily on fossil fuels such as crude oil, natural gas, and goal. However, these resources are nonrenewable and a heavy and increasing level of consumption of these fuels can significantly reduce availability of these resources for the future generations. Furthermore, consumption of fossil fuels often generates heavy pollution and environmental hazards; for example, many countries dependent on coal for power generation and industrial energy produce a substantially higher amount of carbon into the air and cause health hazards to the community. In addition, heavy reliance and overabundance of these resources can give rise to "resource curse" – a paradox that denotes the abundance of natural resources

often results in less economic growth, less democracy, and worse development outcomes than countries with fewer natural resources. Moreover, the distribution of these energy resources through the grid network and long pipeline is often not feasible to distant and detached places, which makes many island and underdeveloped nations resource starving. Realizing the danger of heavy reliance on nonrenewable energy, global leaders now put a greater than ever importance on renewable energy (RE) sources. RE sources such as solar panel, biogas, wind power, and hydropower, etc., solve the energy crisis potential as these sources keep reproducing energy from the natural ecosystem, emit almost zero to no carbon or other GHGs, and can be easily distributed and delivered to distant places without any physical connectivity. As a result, world leaders and international organizations, like the United Nations and the World Bank and regional organizations such as the European Union and governments, in many countries have already begun their energy transition to satisfy full energy demand from renewable sources taking fossil fuel resource consumption down to zero in the long run. The transition toward RE requires not only a long time period but also substantial financing and investment. Hence, banks – as a key source of financing and investment – have a larger role to play in this transition. Banks can encourage financing RE generation projects and reduce lending and divest from fossil fuel-based projects. Going beyond individual bank efforts, bank regulators at the national level can formulate a national guideline, regulatory framework, and standards aiming for diverting financial resources from fossil fuel-based projects to RE based projects, which can systemically shift the banking sector contribution to a sustainable economy. Such national level efforts would not only contribute to sustainable development but also significantly promote environmental protection. For example, Bangladesh Bank – the central bank of Bangladesh – established a refinance scheme for renewable energy-based projects on several occasions (e.g., in 2009 and 2014) to promote sustainable energy sources.

5.3.2 Banks' Perspective on the Need for Green Banking

Like any other business, banking companies strive to maximize shareholders' wealth. Banks in some parts of the world have established themselves and dedicated their business for ethical banking. As the importance of a green economy and green business grows and pressure from civil society, lawmakers, and consumer group amplifies, the need for green banking gains further momentum. From a business perspective, banks have at least four major reasons that can be identified that justify the need for green banking practices: corporate social responsibility and environmental considerations, economic benefit opportunities, reduction of sustainability risks, and achieving competitive advantage (Hasnain, 2015).

(i) Corporate social responsibility

At the core of the green banking concept, banks are part of society and have social responsibilities toward the society in which they exist. Blind pursuit for maximizing wealth at the cost of the environment and goodwill shall make banking companies unsustainable and undesirable to the community. Also, banks can not let go of the blame of harming natural resources and ignoring negative externalities arising from their business. Being an important juncture between fund providers and fund receivers, banks can be powerful agents for fostering a sustainable environment, social justice, and human rights. Apart from the fund mobilization role, banks can take voluntary steps such as employee training for eco-friendly practice, forestation, and education and awareness for customers. These actions can enhance goodwill for banks and increase market acceptability for them.

(ii) Opportunities for economic benefits

Economic benefits can be realized largely through innovation in financing and bringing resource efficiency into operation. Financing in green projects will bring new additions to the investment portfolio, which can reduce portfolio risk, and being sustainable in nature will reduce other external risks (e.g., reputational). Resource efficiency will bring down operating costs, resulting in a higher profit to be realized for shareholders. From a different point of view, green banking can be an outcome of service innovation (Peeters, 2003). Banking activities are innovation driven, which can be realized in different ways, for example, offering financial lending and investment products for fuel cell and ecotourism companies. Green process innovation can be explained as altering internal operations, that is, introducing new procedures and methods that serve the idea of sustainability, for example, digitalizing information system, introducing paperless options, creating green infrastructure, and recycling resources. These efforts may not only raise operating efficiency and profitability but also ensure environmental sustainability. Furthermore, complying with global and environmental standards or the introduction of Environment Management Systems (EMS, ISO 14000) can increase the creditworthiness of the banks and minimize environmental risk potentials. All things considered, banks can leverage their efforts to achieve dual objectives – greater efficiency alongside building an environment-friendly image, which in combination can lead to a greater level of economic and financial return in the long run.

(iii) Sustainability-driven risks

Green banking inherently has sustainability and energy conservation concerns. Taking sustainability risk into account can improve the method of assessing and managing financial risks. The level of sustainability impacts of the invested project and business operation has direct correlation with the credit payback capacity or probability of default. Ignoring sustainability risks for business can lead to increases in operating cost, agency cost, reputational damage, and environmental litigation.

All these can jeopardize the loan paying capacity and credit rating of the borrowing entity and the lending bank. More specifically, nonincorporation of environment criteria in the financial model can lead to three types of risk for banks – credit risk, legal risk, and reputational risk.

– *Credit risk*
Credit risk may emerge if borrower obligations related to social and environmental safety are not properly considered at the time of the approval of a loan application. In such cases, costs relating to the compliance of mandatory standards may severely disrupt the cash flow, which eventually can reduce a borrower's ability to make payments timely. For example, often in approving industrial loans, factors like potential changes in environmental regulations, imposition of pollution costs, and setting new emission limits arise and are not evaluated and included in the loan approval process. Potential negative externalities and possible third-party litigation claims can remain often out of the project or borrower risk analysis. For example, businesses may become infeasible to operate after incorporating new regulatory provisions due to lack of further capital funding; real estate can lose its market value due to the environmental hazard in the project-surrounding land area; businesses can lose their license to operate if worker health risk due to environmental impacts goes beyond the tolerable limit. Environmental risks can vary across industries; for example, tobacco manufacturers are often blamed for the reduced longevity of their workers and making the land infertile for agricultural and alternative production; and mining and oil extraction companies often face serious oil-spilling accidents that cause substantial damage to the nearby environment and habitats. Furthermore, collaterals undertaken by banks against a corporate or industrial loan can also lose value due to environmental incidents, such as contamination of goods in collateral at the production sites. All things considered, environmental implications of projects financed or to be financed can significantly raise the credit risk of the project and the borrower, and therefore, banks need to green their operations in order to avoid this.

– *Legal risk*
Banks may face substantial legal risk if they violate environmental rules and regulations. For example, a bank may face severe fines or legal costs if it possesses assets as collateral that are contaminated or can cause serious damage to the environment upon disposal; a borrower involved in exploration or extraction of the mineral resources may be legally obliged to clean up the site; or community and environmental rights' proponents may file litigation claims against the financing bank to prevent the continuation of negative impacts on the ecosystem and environment. In addition, banks having ownership in such projects can be held legally liable to pay for required compensations against the negative environmental impacts.

– *Reputational risk*

Environment preservation emerges as a global concern, and environmental groups around the world are becoming more active to unfold the unethical practices and involvement of banks. Global bodies like the United Nations are diverting efforts to measure and expose the roles and involvement of financial institutions in environmentally damaging projects to the public. General and public awareness of such issues can make serious reputational risks for banks. As the level of understanding, education, and awareness among the general public expands, people may deny traditional and environmentally damaging banks; for example, depositors may prefer to save with, and borrowers may choose to borrow from environmentally responsible banks. If these practices become systemic, reputation and market value of the environmentally damaging banks can fall substantially and thus, threaten their survival and growth of business. Realizing the need, many banks globally are becoming increasingly interested in building an environmentally conscious image, further including social and environmental risks in their decision-making. For example, the statement of Barclays Bank:

> Barclays has a strong and long-standing commitment to managing the environmental and social risks associated with its lending and financing activities. We recognize that the bank's potential adverse environmental and social impacts are frequently indirect, arising from the provision of financial services to business customers operating in sensitive sectors. We believe that appropriate risk management of these environmental and social impacts is not only the right thing to do, but ensures the longevity of our business and our ability to serve our clients.
>
> (Barclays ESG Report 2018)

(iv) Competitive advantage factors

Resorting to eco-friendly strategies, banks can gain competitive advantage through low cost leadership and differentiation (Jarin, Rahat, & Kashem, 2014). Greening the banking system can take three forms: greening the indoor facilities, greening the banking processes, and greening the external communication and services. Indoor initiatives such as building design to increase the usage of natural light, solar plants, cross ventilation windows, highly reflective roof materials, recycling materials, and LAN printer can save electricity, water, and paper usage to save costs. The cost advantage in turn can help in reducing product price and improving profitability.

As an example of greening banking processes, incorporating efficient inventory management and efficient CBS (Core Banking Solution) can bring resource efficiency in the banking operation, which can contribute to reducing cost and generating price advantage. Furthermore, in terms of external communication and services, publishing and promoting them in different media can boost brand image of a bank as a more environment conscious alternative by differentiating from other competitors. Switching to e-banking, providing customers alternatives such as e-forms and statements, and providing services from recycled materials such as bio-sourced debit and credit cards can make outdoor services eco-friendly. This way green banking can

achieve low cost leadership and differentiate a bank from its competitors, which will eventually help attain competitive advantage.

5.4 Green Banking to Achieve the Sustainable Development Goals

The SDGs, also known as the global goals, are 17 collective goals adopted by all UN member states in 2015 and intended to be achieved by 2030 (UNDP, 2019). Banking, more specifically green banking, can help the UN member states, particularly developing countries, in addressing a number of these global goals by channeling necessary financial resources (Barua & Ahamed, 2016; Barua, 2019). There are at least three goals that can be addressed by Green Banking the most:

- *Clean water and sanitation (Goal 6):* Banks can help progress by greening indoor operations and delivering green financing to the demand side, supply side, and pollution abetment projects (OECD, 2018). Supportive policy action and financial sector design will be conducive to clean water financing at the microlevel, such as financing installation of tube wells (Desai & Prakash, 1972), and financing desalinization projects or wastewater treatment plants without significant change in the financial architecture.
- *Affordable and clean energy (Goal 7):* While aggregate demand for energy is growing fast as our economic activities expand, outcry for reduction of fossil-fuel based energy dependence is on the rise. Investment in renewable energy (RE) projects such as solar, biogas, wind, or thermal-based power plants does not incur any harm to the climate and ensures a sustainable source of power. Many developed (e.g., European countries) and developing countries (e.g., India, China) are now actively investing in RE generation projects. In developing countries like Bangladesh, governments are also planning to produce electricity out of solid wastes (Sovacool & Drupady, 2012). Banks can jointly finance these projects where energy demand substantially exceeds supply. According to the International Energy Agency (2017) about 1.1 billion people globally – or 14% of the global population – still do not have access to electricity, and investing in green energy sources can not only provide access for them but also ensure sustainable sources of energy.
- *Climate action (Goal 13):* Climate financing can be an instrumental way that green banking can help to achieve climate action goals. Banks can support climate impact mitigation and adaptation actions undertaken by national level governments and international organizations or donor agencies. In developing countries, especially the ones that are vulnerable to sea level rises, salinity, and extreme weather conditions, banks, as part of their green banking practices, can come forward with financial support to the government and development stakeholders to support climate induced disaster management. This can help countries significantly cut down dependence on foreign aid or assistance.

– *Life on land (Goal 15):* UNDP (2016a) provides several solutions for how banks can protect and benefit living organisms on the land including innovative products such as green bonds, impact investment, and environmental trust funds. Banks, as part of green banking practices, can allow investors to finance projects that have potential to generate climate or environmental benefits. Such investments can serve the purposes of financial return and measurable environmental impact (UNDP, 2016b). Banks can also form trust funds, a legal entity, and investment vehicle that can mobilize and manage the collection and allocation of financial resources from across a large pool of investors, which are to be used for environmental purposes.

5.5 Conclusion

Banks need to go green. The push to go green may emerge voluntarily or through regulatory efforts or a combination of both approaches. Going green not only benefits banks economically but also has a broader positive external effect on environmental protection. In order to leave a better world for the generations to come, there is no alternative to saving the environment. To this end, banks have a much larger role to play than what they do today.

Discussion Questions

1. Do you think banks should or need to adopt green banking in the absence of a supporting public policy?
2. What can be the direct and indirect (e.g., opportunity cost) costs of going green for banks? Evaluate if such costs would be justified in the long run.
3. List all 17 SDGs and recommend at least three actions or strategies for banks to follow in order to support the progress toward each goal.

Application in Focus

Public-Private Partnership to Finance RE Access

In 2012 Nepal had established the National Rural and Renewable Energy Programme (NRREP) for financing small-scale RE projects. The NRREP has a single financial intermediary – Central Renewable Energy Fund (CREF) – that manages the program funds including subsidy and credit. The role of financial management has been entrusted to a corporate bank named the Global IME Bank. The Global IME Bank works as the "handling bank" for all the NRREP funds with two specific roles. First, it disburses subsidy-based finance under subsidy policies of the Alternative Energy Promotion Center's (AEPC), which promotes RE and related technology within targeted groups of rural Nepalese Society, the poor, women, and some other marginalized groups. Second, it also acts as a lender to

seven partner banks selected by AEPC to deliver credit-based finance for investment in off-grid RE technologies. Cooperatives and Microfinance institutions at district and village levels collect loans from the seven partner banks to invest in RE technologies such as microhydropower system, and biogas plants. The overall program mechanism provides a unique opportunity for the government, donors, and private commercial banks to work hand in hand to increase RE access to rural areas in Nepal. This program shows how commercial banks can play a key role in mobilizing funds for sustainable investment and have a significant sustainability impact on society and the community.

A detail of the case can be found at Walters et al. (2015)*, accessed 25 November 2019 available at:* https://www.nrel.gov/docs/fy15osti/64460-1.pdf

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Chapter 6
The Principles of Green Banking

6.1 Introduction

Green banking is a relatively new concept in the global banking industry. Although there are diverse avenues of improvements of the concept in the future, based on the available practices by banks worldwide, some general guiding principles can be developed to be followed by banks. This chapter outlines the guiding principles and discusses how banks can better bear them while adopting green practices.

6.2 Global Initiatives and Principles on Sustainable Finance

Over the last two decades, some development can be observed globally in terms of sustainability initiatives and guidelines with the aim to integrate environmental, social, and sustainability issues in financial products, processes, and systems. Table 6.1 presents the guiding principles of the key initiatives currently available at the international level. These global initiatives and principles, in addition to country-specific regulations and principles, have significantly furthered the concept and practices of green banking throughout the world. However, it is important to note that the global initiatives and principles are largely voluntary, that is, financial institutions or agents voluntarily join hands to adopt them into practices.

6.2.1 Equator Principles

The 10 Equator Principles, initiated by the Equator Principles Association for project finance, were launched in June 2003 as a risk management framework for determining, assessing, and managing environmental and social risk associated with commercial projects. The Equator Principles can be applied globally to four broad types of financial products across industries: (1) project finance advisory services, (2) project finance, (3) project-related corporate loans, and (4) bridge loans. Currently, 101 financial institutions from 38 countries have adopted these principles.

6.2.2 The Principles of Responsible Investment (PRI)

The Principles of Responsible Investment (PRI) is the outcome of an international network of investors who agree upon six principles to integrate environmental, social, and governance (ESG) considerations into institutional investment decisions and

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Table 6.1: Key sustainable finance principles at the international level.

The Equator Principles	The Principles of Responsible Investing	The Principles of Responsible Banking	The Principles of Collevecchio
1. *Review and categorization:* Proposed projects shall be categorized based on environmental and social risks.	1. Incorporating environmental, social, and governance (ESG) issues into investment analysis and decision-making processes.	1. *Alignment:* To align business strategies consistent with individual's need and society's goals.	1. *Commitment to sustainability*: To integrate sustainability into corporate strategies and prioritize sustainability objectives.
2. *Environmental and social assessment:* Categorized projects shall go through assessments, and measures to minimize and mitigate adverse impacts shall be documented.	2. Being active owners and incorporating ESG issues into ownership policies and practices.	2. *Impact:* To continuously increase positive impacts while reducing negative impacts	2. *Commitment to "Do No Harm":* Preventing or minimizing the environmentally and socially detrimental impacts through greening portfolios and operations.
3. *Applicable environmental and social standards:* The assessment process should comply with relevant host country regulations.	3. Seeking appropriate disclosure on ESG issues by the entities in which we invest.	3. *Clients and customers:* To work responsibly with customers to encourage sustainable practices and create shared prosperity.	3. *Commitment to responsibility:* Bear full responsibility of the environmental and social impacts of their transactions.
4. *Environmental and social management system and the Equator Principles' action plan:* Financial institutions' clients will have to develop and maintain environmental and social management system and plan.	4. Promoting acceptance and implementation of the principles within the investment industry.	4. *Stakeholders:* To consult, engage, and partner with relevant stakeholders to achieve society's goals.	4. *Commitment to Accountability:* Financial institutions must be accountable to its stakeholders.
5. *Stakeholder engagement:* Clients will exhibit effective stakeholder engagement with affected communities.	5. Working together to enhance our effectiveness in implementing the principles.	5. *Governance and target setting:* To deliver commitments through effective governance, culture, demonstrating ambition, and accountability through setting pubic targets.	5. *Commitment to transparency:* Robust disclosure and being responsive to stakeholders' need for information.

6. *Grievance mechanism:* Clients will establish grievance mechanism designed for affected communities. 7. *Independent review:* Independent environmental and social experts will carry out regular independent reviews. 8. *Covenants:* For noncompliant projects, the signatory financial institutions will work to restore compliance. 9. *Independent monitoring and reporting:* Independent environmental and social experts will deliver monitoring and reporting. 10. *Reporting and transparency:* Clients will ensure assessment reports are publicly accessible and report greenhouse gas (GHG) emission level and project specific biodiversity data.	6. Regular reporting on activities and progress toward implementing the Principles.	6. *Transparency and accountability:* To periodically review implementation of the principles and be transparent about contribution to the society.	6. *Commitment to sustainable markets and governance:* Active support to public policy and market mechanism conducive to sustainability.

Source: Compiled by author from:
The Equator Principles (July 2020) at: https://equator-principles.com/wp-content/uploads/2020/01/The-Equator-Principles-July-2020.pdf;
The Principles of Responsible Investment at UN PRI: https://www.unpri.org/pri/an-introduction-to-responsible-investment/what-are-the-principles-for-responsible-investment;
The Principles of Responsible Banking at United Nations EP FI: https://www.unepfi.org/wordpress/wp-content/uploads/2019/09/PRB-Guidance-Document-Final-19092019.pdf;
The Principles of Collevecchio at: https://www.banktrack.org/download/collevecchio_declaration_with_signatories/030401_collevecchio_declaration_with_signatories.pdf

practices. The network was initiated by the United Nations Environment Programme Finance Initiative (UNEP FI) in 2007. The PRI academic network also conducts research on responsible investing in the institutional sector. It currently has over 7,000 signatories spanning across 135 countries.

6.2.3 The Principles of Responsible Banking

A relatively recent initiative is the launch of the Principles of Responsible Banking in 2019 by the UNEP FI during the annual United Nations General Assembly, with official endorsements of 130 banks from 49 countries. The set of six principles provide a framework for banks to make positive contribution to the society. These principles encourage banks to align their operation at "strategic," "portfolio," and "transactional" levels with sustainability considerations. The call for banks' social and environmental commitment embedded into these principles fundamentally bases on the Paris Climate Agreement and the sustainable development goals.

6.2.4 The Principles of Collevecchio

BankTrack, a nongovernmental organization in the Netherlands released the Collevecchio declaration, which stresses on accountability of social and environmental externalities. Released in 2003 the declaration states the role of financial sector in sustainability issues through a set of six principles. The declaration calls for immediate steps to implement the principles by financial institutions to preserve the social license to operate. The declaration and principles have been endorsed by 100 civil society groups so far.

The globally recognized principles presented in Table 6.1 provide an important fact; these principles are mostly applicable to financial institutions collectively and not specific to banking practices, except the Principles of Responsible Banking. Furthermore, the principles are broadly accommodative to social, governance, and environmental goals, while green banking is purely specific to environmental considerations. The Principles of Responsible Banking offers broad-based principles to be followed at the organizational level and requires further specification to transform them into actual, impactful, and regular operation of a bank. While broad-based principles can help define banks' long-term strategies, mission, and vision and thus serve as the guiding principles for a bank's business model, it is perhaps more, if not equally, important to have principles that can be adopted to daily operation of a bank.

6.3 The 10 Principles of Green Banking

Given the available experiences of green banking practices and literature and the need for operational level principles, a set of 10 organization-level principles can be considered to generally fit any bank's mandate for green banking. For a better understanding, the 10 principles can be classified into two major classes (Table 6.2): (i) principles that should follow by the board or management of banks and (ii) principles that should be considered at the green banking operational level. These principles, in complement to the currently available major principles as outlined in Table 6.1, can be considered for adopting green practices at a bank's organizational level. In adopting green banking in their regular business model, a bank must agree on and abide by these principles.

Table 6.2: The 10 principles of green banking.

Management/Board level principles	Operational level principles
(1) Long-term orientation	(6) Valuing environmentally responsible clients
(2) Planet and people before profit	(7) Environmental risk-based project valuation
(3) Green-augmenting vision and strategy	(8) Favorable fund pricing
(4) Continuity of management priority	(9) Adoption of a formal approach
(5) Considering resource commitments as investments	(10) Responsible environmental accounting and disclosure

6.3.1 Management/Board Level Principles

These principles are pertinent to the top management executives and the board of directors of a bank and need to be agreed and reflected upon while making policy and strategic choices and decisions about greening business practices.

Principle 1: Think Long Term
Adoption of and transitioning to green banking can not be achieved overnight. Banks must leave the short-term profit-making motive and concentrate on sustainable business in the long term. They must realize that an environmentally secure and safe planet in the long term would not only benefit their clients but also create safer and sustainable business for them as well. The value of this potential benefit in the long run outweighs the benefit that they expect to generate in the short run. A long-term focus is necessary because much of the green initiatives in banking undertaken either voluntarily or by regulation would take significant time to deliver the desired benefits. For example, the introduction of a new green credit or savings product can take

time to become well-perceived and well-known to target customers; to be able to generate enough business and profit; bank management and employees may take time to adapt psychologically, morally, and practically to the changes in banking processes into an environment-friendly manner. Moreover, there can be resistance from stakeholders, particularly, large environmentally harmful borrowers, which might need substantial time to mitigate or resolve. Thus, starting from preparing green baking policy and strategy documents and implementing them in business requires a long-term approach.

Principle 2: Planet and People Before Profit
It is realized now that business strategies and policies targeting only "profit" may not be sustainable for long. As a vital institutional member of society, banks must act more responsibly and ethically than anyone else, caring more for the society, people, and the earth. If the earth is safe, the society and people are also safe and that make the world a more sustainable place for business. This realization must be reflected in the principles of bank stakeholders, particularly top management executives and the regulator of banks. If banks and their stakeholders in principle agree to prioritize the protection of the planet and people before profit while making decisions and implementing them, it would eventually help achieve green practices effectively. It needs to be realized that this principle may not seem financial beneficial in the short run but can have multiplier effects on financial and social returns for banks in the long run.

Principle 3: Fitting into Vision and Strategy
Banks must incorporate the green banking and environment-friendly banking concepts into their vision, mission, and strategy in order to assist the entire organization in marching towards becoming a full-fledged environmentally responsible entity. As such, corporate policy and strategy documents should include green principles as a primary mandate to follow and be communicated to all stakeholders. The board, management, executives, and the organization must agree on a comprehensive priority on environment-friendly banking policy and practices. In addition, every member of the organization must be given thorough orientation and training on this common "green" vision commitment so that they can practice it in full while acting for the organization.

Principle 4: Continuous Management Priority
A major obstacle in implementing green practices in the bank business model is the potential loss of continuing priority by the management and the board. The top heads of a bank need to realize the importance and impacts of green banking and thus consider it while making every decision they make on the bank's in-house operation or dealings with external parties. In other words, starting from strategic and policy decisions, the day-to-day internal and external activities of a bank need to give environmental protection a top priority. It should be noted that such priority

needs to be maintained throughout the bank's organizational structure on a continuous basis and should not be considered a one-off action. Maintaining environmental protection as a top priority agenda in all business activities and decisions in the long run will eventually help in making green banking practices the new "normal" model for regular banking business.

Principle 5: Resource Commitments Viewed as Investment
Several studies suggest that in many countries green banking frameworks have not been adopted in full due to the perception that dedicating physical, financial, and human resources for this has no visible financial or nonfinancial outcome (Rahman & Barua, 2016). Greening bank practices may require substantial financial investments and engagement of human resources, for example, altering bank infrastructures such as head office and branch offices to make them environment friendly, introducing technology-based platforms for banking process to reduce paper and human involvement, and training on green banking for all bank employees including those who are responsible for delivering green banking services to customers and those who need to perform in-house operations such as ensuring regulatory compliance. These investments can often be substantially large and go beyond the means of small-scale banks. As a remedy, banks can undertake such investments in phases instead of trying to make them all at once. This means banks need to have a detailed phase by phase plan which in the end will result in an effective integration of green banking practices in the long run. Banks need to understand that much of the benefits of green practices can take a longer time to be visible and therefore any resources being committed by them today for formulating and adopting a full-fledged green model must be viewed as a pure "investment" not merely an expense. This again reiterates the need for taking a long-term approach when considering the transition toward green banking practices.

6.3.2 Operational Level Principles

These principles are primarily pertinent to key managers and all staff of a bank who are engaged in implementing green banking practices at the operational level. These principles need to be agreed and reflected on while making day to day business decisions and delivering environment-friendly banking products, services, and processes to customers.

Principle 6: Value Environmentally Responsible Clients
Banks deal with client groups of diverse background and industry. To adopt an environment-friendly business practice, they should differentially value environmentally responsible customers and deliver preferential services to the clients who act or intend to act responsibly to the environment, for example, providing premium or privilege services at the counters and charging less processing fees might motivate

clients to become more active with their green behavior, concessional loans, or longer grace periods for repayments for environmentally-responsible corporate borrowers can encourage them to continue their efforts, and reduced charges for transaction settlement through virtual platforms instead of paper-based methods can induce customers to act to save trees. That said, in all external transactions and communications, banks should offer preferential treatments for environmentally responsible clients and bank top management and all employees need to agree on this principle morally and practically.

Principle 7: Environmental Risk-Based Project Valuation

While assessing and appraising any project or firm or asset, banks must assess its involvement with the environment, and the nature and magnitude of damage the project may create to the environment. Banks need to critically evaluate the level of risk and cost associated with any investment to be undertaken with the money lent to a borrower. Then, banks need to incorporate this risk and cost in valuation of the project, and all relevant environmental information should be clearly published in the investment appraisal report with as much detail as possible. Generally, such environmental risk and cost adjustments should reduce the value of the investment, which can make the investment unattractive to the bank and the client. In other words, an investment proposal normally profitable or feasible may become unattractive financially and socially once environmental risk and costs are adjusted for. One way of such adjustment can be adding a premium for environmental risks to the cost of capital to be used in financially evaluating the investment proposal; a higher cost of capital including such a premium would lower the value of the investment. Similarly, a checklist method can be used by a bank to qualitatively evaluate the environmental implications of an investment, which can help the bank understand whether or how much the investment is socially beneficial. Application in Focus at the end of this chapter provides an example case on how to incorporate environmental risk in project evaluation.

Principle 8: Favorable Fund Pricing

Interest rates for projects with considerably low or minimal environmental impacts and for clients who act responsibly to the environment should be kept lower than usual. On the other hand, environmentally responsible clients may be offered higher interest rates on their deposits than those who do the opposite. The fund pricing policy of a bank needs to integrate and reflect this principle on a continuous basis. In order to integrate this principle into regular banking operations, banks will have to set parameters and qualifications to define an environmentally responsible borrower, for example, a corporate borrower that has to pollute the environment to be able to continue manufacturing or production activities but does not have an adequate pollution management or abatement system in place can be defined as an environmentally-irresponsible borrower. Similarly, any institutional

buyers of deposit products who have environment-friendly production system in place or offer environmentally beneficial products or services can be considered an environmentally responsible client for a bank. Banks need to have enough data and information access about current and potential borrowers and depositors in order to be able to do such evaluation. This might be done as an integral part of the standard credit appraisal and depositor financial standing evaluation process.

Principle 9: Adopting a Formal Approach

A clearly written vision and strategy incorporating green practice will help all stakeholders realize the importance of and their roles and responsibilities regarding green banking practices. Therefore, while adopting green banking practices, banks should formulate a comprehensive formal and written green banking policy framework, its link with the corporate goal and vision, and the roles and responsibilities of all stakeholders to fit into the regular business practices effectively. The document should also outline the duties and responsibilities of key functional managers including the board of directors and the top management executive team. All bank staff members should follow these documents while delivering their duties in day to day banking operations and decision-making. As a firm approach of formalization, a bank may also set up an independent committee or department on sustainable or green banking, which will assist all other functional departments, key management staff, and the board of directors in formulating formal written policy and strategy documents and regularly monitoring their actual implementation. It should be noted that the department or the committee shall not be seen as a one-off body but rather be considered as a formal regular body like every other functional department (e.g., credit risk management department) or committees (e.g., audit committee) in place within a bank.

Principle 10: Responsibility of Environmental Accounting and Disclosure

Environmental accounting has recently been the focal point of professional accounting bodies to make firms more responsible to the environment and society. Therefore, in going green, banks should disclose all material data and information related to their environmental implications and their mitigation strategies for any negative impacts, for example: the level of investment or expense a bank has made for environmental protection, the number and type of green banking products under offering, the number of environment-friendly projects financed, the volume of green finance a bank has disbursed, and the degree and nature of environmental concerns lying with their currently financed projects etc. This reporting should be an integral part of the annual reports and may also be released as a separate statement to all stakeholders at a preferable frequency within a fiscal year. Banks need to have a self-developed or regulatory-guided standardized format for reporting their green practices. The format should be easily understandable by all stakeholders and should include measurable data and information so that environmental and bank stakeholders are able to

specifically measure the progress of a bank toward greening their business. Banks need to consider such disclosure practices as an integral principle and should make their best effort to follow it in practice.

6.4 Putting Principles into Practice

In order to ensure application of the above principles into actions, banks should follow an "AAA" approach, where banks first "agree," then "accommodate," and finally "act" (Figure 6.1). In this approach, the first task is developing agreement of all bank staff, top management executives, and the board members on green banking principles. Once they agree in principle to divert efforts for greening business practices, they should "accommodate" the principles into bank's policy, strategy, and business plan documents. The consideration of green banking principles in these documents should result in a set of feasible and performable action plans or guides in a bank's day to day banking operation and decision-making. Once this is done, it is time for implementing those action plans or guides in actual business. A bank's staff members, key managers, and the board members at this stage need to practically "act" in a manner that will reflect the action plan into actual business practices.

Figure 6.1: The AAA approach for adopting green banking principles.
Source: Author

Consider an example that offers clarity on the AAA approach; a bank's top management and the board of directors in principle decide not to lend to firms or projects that pollute the environment beyond an acceptable limit. This newly adopted principle should then be circulated or communicated throughout the organogram to all bank staff members; key managers and employees of the banks, who may also be requested for comments or opinion on the new principle, which then can be incorporated to modify the principle. Thereby, the bank's top management can develop a generally "agreed" principle to be followed throughout the bank's operation. Once the principle is agreed, the bank now needs to have a clear, comprehensive, and performable action guide in place that bank employees and management should follow to reflect the principle in their practices. To "accommodate" the principle, the bank develops an updated or a new measurable credit evaluation framework or guideline where every proposed and existing borrower or project financed must be evaluated based on environmental impacts criteria. The framework will provide details on how and what to consider environmental implications while

evaluating a proposed borrower or a project. Once the framework is complete and bank employees are trained on the new guideline or framework, it is time to practically "act" on this; credit evaluation managers in the credit risk management department should begin applying the framework in actually evaluating their existing or potential borrowers or projects. This would help eliminate environmentally harmful borrowers or projects, which would eventually help the bank to green its banking practices.

6.5 Conclusion

The principles of green banking are a new paradigm of principles for bankers, as they are to be considered in addition to their regular principles of banking. Thus, integrating these principles into a bank's operations may take substantial time and learning processes. It should be noted that the principles discussed in this chapter should be considered to have a visible environmental impact on bank operations. However, even if a bank decides to adopt green banking partly, integration of one or some of the principles into practice can still help.

Discussion Questions

1. In each country's context, find a full or partial green bank. Make a list of the principles and prepare a checklist to identify which of the principles are agreed to and practiced by the bank. Evaluate the bank's activity considering the principles followed and those not followed.
2. Consider yourself a top management executive in a bank. Prepare a sample green banking policy outlining some specific action plans for external and internal activities of a bank. Prepare an office to introduce these policies and inform the bank staff at all levels of the organogram.

Application in Focus

Environmental Risk in Project Evaluation: A Case of a Power Plant

New Vision Power Limited (NVPL) – a power generation company – is considering setting up a 120 mega-watt coal-based power plant on the outskirt of Ho Chi Minh city in Viet Nam. The planned power plant is to take one year for setting up and is expected to have a five-year lifetime. NVPL is aiming to draw a loan from a local bank to finance the US$45 million total investment required, with the following (Table A6.1) estimated cash flows to be generated once the plant is launched for commercial operation. The loan is to finance 60% of the project at a cost of 15% and the rest of the project cost is to be supplied by equity at a cost of 11%.

Table A6.1: Cash flow stream for a coal-fired power plant.

Year	Cash flow (US million dollar)
2020 (Project investment)	45.0
2021	5.6
2022	12.3
2023	15.7
2024	17.2
2025	19.5
2025 (Salvage value)	5.5

Standard project discount rate without environmental risk considerations:

$$60\% * 15 + 40\% * 11 = 13.4\%$$

Present value of cash flows without environmental risk considerations:

$$\frac{5.6}{(1+.0134)^1} + \frac{12.3}{(1+.0134)^2} + \frac{15.7}{(1+.0134)^3} + \frac{17.2}{(1+.0134)^4} + \frac{19.5}{(1+.0134)^5} + \frac{5.5}{(1+.0134)^1}$$

$$= 49.00 \text{ (US million dollar)}$$

Standard project net present value (NPV) without environmental risk considerations:

Present value of cash flows – Initial investment = 49.00–45 = 4 (US million dollar)

Because the power plant is to be coal-fired, it is expected to have significant adverse environmental impacts through pollution of air and nearby land and waterbodies. The credit risk management department of the concerned bank now aims to incorporate environmental risk into its risk assessment and produces an environmental risk profile in addition to other risks using the format shown in Table A6.2 after a detailed investigation.

Based on the environmental risk profile prepared and the experience of the bank credit risk management team on similar projects, the evaluation team decides a penalty risk premium of 3% is to be included in the standard project evaluation model. Considering this penalty risk premium,

New project discount rate with environmental risk considerations: 13.4% + 3.0% = 16.4%

Present value of cash flows with environmental risk considerations:

Table A6.2: Environmental risk profiling of a coal-fired power plant project.

Risk ID – 01: ***Environmental Risk***

Risk Description:
The project is expected to release ingredients that are harmful for the environment of the project location. Such cases of environmental degradation may take place by releasing carbon dioxide (CO_2), solid waste, liquid waste, and organic waste.

Risk Likelihood:
VERY HIGH. The power plant is expected to be coal-fired. Coal, being one of the top polluting ingredients of all, is expected to generate a very high level of CO_2 emissions. The power plant is expected to use water to cool its turbines from the nearby waterbody where the used water would be re-released into the waterbody. Moreover, the plant would create such hazardous and nonhazardous solid waste to be released that would damage the surrounding land quality.

Risk Impact:
HIGH. Substantially high CO_2 emissions due to coal use would quickly worsen the air quality in the surrounding 3 to 5 kilometers area. It is expected to have long-term damage to health quality of the human and animal inhabitants living in the impact area. Used water released in the waterbody is expected to damage the ecosystem in the waterbody and is highly likely that fish and other water-based species would be destroyed soon and will not grow any further. Any waste released into the surrounding land is going to spread germs and diseases, in addition to worsening the land quality for agricultural or human-living purpose.

Risk Mitigation

Recommended Preventative Actions:
The project should come with all feasible waste management activities. All necessary preparations should be taken such as water treatment plant (WTP), sewage treatment plant (STP), and recycling plant. Moreover, the practice of reuse and reduce must be in place and must be monitored critically without fail at the time of implementation and operation.

Recommended Contingent Actions:
The project needs to employ a team to ensure the preventive actions such as treatment plans work properly and that the wastes are properly managed. Also, there should be an adequate number of staff to ensure 100% cleanliness of the environment so that waste ingredients are not thrown out abruptly.

$$\frac{5.6}{(1+.0164)^1}+\frac{12.3}{(1+.0164)^2}+\frac{15.7}{(1+.0164)^3}+\frac{17.2}{(1+.0164)^4}+\frac{19.5}{(1+.0164)^5}+\frac{5.5}{(1+.0164)^1}$$

$$= 44.91\ (\text{US million dollar})$$

Thus, project NPV without environmental risk considerations:

$$\text{Present value of cash flows} - \text{Initial investment} = 44.91 - 45.00$$

$$= -0.09\ (\text{US million dollar})$$

The evaluation process shows that after incorporating penalty adjustment for adverse environmental impacts of the coal-fired power project, the project becomes financially infeasible or unattractive. Conversely, under a normal scenario that does not take environmental implications into account during the evaluation process, the project might look feasible. Based on this assessment, the project should not be financed by the bank.

Reference

Rahman, S. M., & Barua, S. (2016). The Design and Adoption of Green Banking Framework for Environment Protection: Lessons from Bangladesh. *Australian Journal of Sustainable Business and Society*, *2(1)*, 1–19.

Chapter 7
Green Banking Intervention and Adoption Process

7.1 Introduction

In addition to understanding the need and potential impacts of greening banking practices, banks need to have a clear idea on how green banking practices can be adopted into their regular business operations. This chapter elaborates on fundamental steps that can be followed by any bank that wants to go green in its operation. Furthermore, the chapter also discusses some strategies to modify a bank's operating activities – externally and internally.

7.2 Green Banking Adoption Process

In adopting green banking into a bank's business model and making it truly operational, banks should proceed steadily with a very systematic process with adequate timeline-based milestones. This would help banks avoid causing a disruption to their regular business activities that may cause substantial damage to the performance of the bank. Based on the experiences of global practices, Table 7.1 presents a generalized process in proceeding toward adopting full-fledged green banking practices. However, banks should keep in mind that steps involve overlapping activities.

Table 7.1: The process of green banking adoption.

Step	To do
1	Board and management agreement on green principles
2	Commit and release adequate resources
3	Design relevant policy guidelines and documents
4	Train and make aware stakeholders and develop capacity
5	Implement policies and put green banking into practice
6	Become a green bank or green practicing bank

Source: Author

Essentially, becoming a bank with green practices or adopting green banking in full force is not a short-run phenomenon. It may take a substantially long time; therefore, banks should progress slowly but with a target deadline. The Green Banking Adoption Cycle involving the six overlapping steps above can be seen in Figure 7.1.

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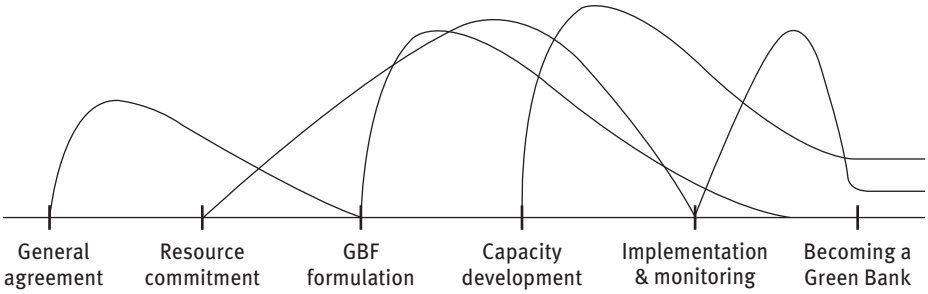

Figure 7.1: Green banking adoption process.
Source: Author

The green principles and practices must be agreed to not only by the board and management but also by all employees in a bank over time. This common agreement on green banking together with incorporating it into corporate vision and strategy should be achieved before formulating formal and written green banking policies and frameworks. Failing to do so may create gaps between the role and expectations of board, management, and employees. However, once a common agreement is reached at a considerable level, a bank should begin to commit resources to start initial green banking adoption activities. Such activities may involve developing a green banking framework (GBF) (including policies and guidelines), setting up a separate green or sustainable banking division, and assigning dedicated staff to work on green banking preparation, etc. Therefore, such a commitment of physical, financial, and human resources on a needs basis involves activities that span over a period until green banking guidelines or policies are implemented in full.

The preparation of a GBF, particularly the development of guidelines and policies, is a crucial job as it works as the blue print of green banking practices, roles of stakeholders and management, a detailed work plan, etc. This guideline must offer as much detail and be as specific as possible since this is the main document that will guide the entire green banking adoption afterward. The preparation of this GBF requires some commitment of human, financial, and physical resources, and requires a substantial amount of time. Such a framework may include several documents such as a bank's own green banking policy, sector-specific green banking policy for financing and investment, and green reporting framework, etc.

Once the preliminary broad policies and guidelines are finished, comprehensive and robust training and awareness activities should begin. In this case, a bank should make its employees aware first and then train them so they are prepared to deliver with green practices in their regular job, as well as realize and conceptualize their roles and responsibilities regarding this. The second phase of awareness and training programs may encompass other stakeholders including client groups, strategic partners, etc. As we can see from Figure 7.1, training and awareness is a never-

ending task. A bank must continue to make aware every party related to its business to ensure that the environment in which it operates is well motivated and responsible for protecting the environment. This will also ensure that new clients and employees who join the bank become environmentally aware and ready to act. After most of the required green banking documents are completed and necessary resources are committed and released, a bank should start adopting the policies and guidelines in practice into its regular business activities. Such implementation activities may involve thousands of work packages introducing and enforcing environmental compliance requirements for borrowers, reducing carbon emissions and paper usage, rating projects using environmental risks, etc. Such implementation should be introduced with an adequate time budget on a pilot basis first for a substantial period before going in full force. Periodic observations, field studies, and reviews should be made by top management to ensure an error-free green banking practice that does not disappoint the bank's clients, employees, and all other stakeholders. Therefore, all relevant documents should be finalized with learning from the pilot basis implementation and then finally the bank should go green in full force.

However, implementation activities are certainly an on-going process. It must be conceptualized that green banking practices are not a "project" rather it is a "regular business," and therefore, their adoption needs to have a long-term focus. For structured understanding of the activity flow, the step-by-step process of green banking adoption is elaborated on below.

Step 1 – Board and management agreement on green principles

The board and management of a bank must agree on the green banking adoption and the principles necessary to do that before everything else. The agreement on green banking should be formalized through written documents. This common agreement on green banking must be in conformity with the mission and vision of the bank; thus, bank's mission and vision might need modifications if necessary. The board should also make sure that everyone in the organization agrees with the green banking principles and practices. Initially, the board should take responsibility for educating and making aware the bank's employees and other stakeholders. Every bank employee throughout the organogram should have a clear understanding about the principles and practices of green banking.

Step 2 – Commit and release adequate resources

After agreeing on common terms for green banking, a bank must commit to assign adequate resources to support the decisions. These resources may include the development of separate and detailed frameworks, a separate department or division, and financial and human resources, etc. Implementing green banking in a bank's day-to-day activities may require different sets of tools; the bank should have a firm commitment to deliver those and make sure all the needed materials for green banking are

available and accessible to staff at all organizational levels. This step can be taken before the previous one is fully implemented, because that is how the management can maintain their dedication for the cause. Delays in commitment may cause delays in the implementation process. Physical resources required in this phase may include office space and facilities for a separate green banking department or division. Financial and human resources can include allocating new budgetary funds for running the new green banking department or division and spending for the green banking causes and appointing or rotating employees including a managerial supervisor to handle the green banking activities. The green banking division or department should be vested with the responsibility to ensure proper implementation of green banking policies in banking operations and maintenance of the same in the long run. As the business environment is continuously changing, resource requirements for green banking may change. Considering these changes, the board and top management should update the resources from time to time until green banking is fully integrated into the banking system.

Step 3 – Design relevant policy guidelines and documents

Once the board and top management are committed to the cause, a bank needs to design actual policy guidelines that the whole bank would follow. These guidelines must be formulated by considering a bank's mission and vision and must be aligned with the bank's goals and strategies. Conflicting guidelines might cause barriers to the implementation of green banking and may slowdown the progress. The guidelines for green banking are to be the blueprint for practicing and implementing green banking. These documents should be available and accessible to all stakeholders and would help them learn about their roles and responsibilities in assisting banks to adopt green banking practices. Therefore, these documents must be very thorough, detailed, and in a language that is easy to understand, with specific directions about how green banking can be incorporated in the day-to-day banking activities. The guidelines should have directions on green practices for every department of a bank. Given the significance of these documents, a bank's board and top management should allow and facilitate as much time and effort needed to design a set of comprehensive policy guidelines. A comprehensive set of guidelines may include several documents, for example, a bank's own green banking policy, sector-specific green banking policy for lending and investments, and green reporting frameworks, etc.

Step 4 – Train and make aware stakeholders and develop their capacity

Green banking is a new concept; therefore, most of the stakeholders may not know about it, and it is management's responsibility to make them aware. Top management should organize a series of events necessary to inform all stakeholders about the green banking guidelines, processes, and initiatives the bank is currently

adapting to. The board may arrange regular training, workshops, opinion exchange, sessions, and conferences for their employees and other stakeholders such as clients, investors, and partners. It is crucial for all stakeholders to be aware of green banking, as it would allow them to comply with and actively contribute to the process. Full commitment to the green banking cause requires better knowledge about the depth of the issue; capacity development programs for all stakeholders encompassing a range of activities can empower everyone in the process to engage and contribute to the greening process of a bank.

Step 5 – Implement policies and put green banking into practice

After all stakeholders become aware of and educated about green banking principles and policies, the implementation process may begin by a bank incorporating green banking in all their internal and external activities; for example, a bank may green its external operation by financing projects with low carbon emissions or offering green saving products, and may make their internal operations environment-friendly (e.g., using paper-free transaction platforms or increasing the use of energy-efficient lighting and building materials). Such greening processes can also be incorporated in other secondary activities of a bank, for example, in agency functions, general utility services, developmental functions, and other services including online banking, credit card services, and around the clock services. In order to effectively implement, a bank needs to dedicate enough resources and efforts for research and innovation to formulate new green products, services, and processes to replace its existing traditional operations. A brief discussion on such green practices across different banking activities is detailed later in this chapter.

Step 6 – Become a green bank or practicing bank

Implementing green banking in all kinds of activities may require a substantially long time. But once the implementation is done, the bank then can be termed a "green bank" or a "green practicing bank." After having all the difficult parts of the job done in the previous step, the fundamental task of the bank now is maintaining the green momentum and regularly reviewing and following up on the on-going processes and progresses. The green banking policy guidelines and frameworks developed may require updates from time to time, and the bank at this stage needs to review them on a regular basis and update them as necessary, consistent to the changes in the business, industry, economy, and the international market. Furthermore, the bank continues to divert resources and efforts for research and innovation to formulate new green products, services, and processes. At this stage, new stakeholders can join the bank who may not have any idea about green banking; the bank should educate and make them aware accordingly. In a nutshell, a bank will do a timely follow-up and act accordingly to ensure green banking processes remain fully functional and updated.

7.3 Greening Traditional Banking Activities at the Operational Level

Environmental concern is at the center of green banking policies and strategies. As an extremely important part of the economy, banks must reconsider all their activities so that green banking can be adopted and implemented across the board. Banking activities include a range of activities such as accepting deposits from clients, granting loans, collections and payment of checks, purchase and sale of stock exchange securities, administration of wills and trusteeship, remittance of funds, etc. These activities can be broadly categorized into external and internal activities. This section will discuss how green banking can be integrated in all these banking activities.

7.3.1 External Activities

External activities include activities performed primarily for or aimed at bank customers, therefore, they mainly affect the market. Such banking functions targeting customers can be primary and secondary, depending on what products and services are delivered by a bank to its customers. Primary functions include only deposits and lending activities while secondary activities include any other supporting or complementary activities.

a. *Primary functions:* Primarily banks act as a means of accepting deposits from those who have surplus funds (i.e., collecting funds) and lending money (i.e., distributing funds) to those who have a shortage of funds. Green banking can be integrated in both primary activities. For this transformation, banks first need to follow the six-step process that is discussed in this chapter. Several modifications in primary banking functions can be introduced including the following:
   - Introducing and promoting low-cost green checking, savings, and money market accounts, and remote deposits. Funds raised by these schemes will be used only for green projects or projects that have a low carbon footprint.
   - Providing low rates and easy access to green loans or credits in sectors or projects such as renewable energy (e.g., solar and hydropower), biogas, effluent treatment plants, and other pollution-minimizing activities like projects to install Hybrid Hoffman Kilns in brick production fields. Such loans at the retail level can be given to acquire or finance low-emission assets or products, for example, smart-home mortgage, electric vehicles, and eco-friendly air conditioning.
   - Carry out detailed climate and environmental risk assessment of projects and financing only those that meet environmental safeguards/sustainability guidelines.

b. *Secondary functions:* Banks also perform various secondary functions for their clients, which include among others agency functions, general utility services, developmental functions, and some other modern functions.

Agency functions are performed by banks on behalf of their clients to deliver client needs, for example, collecting or paying for checks, drafts, bills of exchange, salaries, bills, taxes, subscriptions, rent, insurance premiums, dividends and interests to or from third parties, etc. Banks also may undertake investment functions and purchase and sell treasury (e.g., government-issued bills and bonds) or privately-issued securities (e.g., shares, debentures, corporate bonds), and act as executors of wills, trustees, attorneys, and administrators on behalf of their clients. General utility services delivered by banks include transaction services to general people, providing safe vault services, international trade financing and process documentation, acting as a referee to the financial standing, business reputation and respectability of their customers on enquiries made by third parties, providing travel supports such as travelers' checks and international currency cards. Banks also perform financial intermediation functions by helping clients raise, transfer, and mobilize funds from one country or market to the other as an intermediary or an underwriter in some cases. Apart from the three categories explained above, there are many more functions performed by today's banks that are particularly driven by technological development. Many of today's banking services can be available or subscribed to through e-wallets or banking apps on mobile phones, pads, tabs, and computers. For example, due to the introduction of advanced technological applications in banking services, FinTech or Financial Technology is taking the traditional banking business model to a whole new level. One such big change, for example, is the introduction of the open banking system in Europe and Australia, where, with the help of FinTech, customer data can be securely released to FinTech firms who would analyze and research them to design more niche or customized and client-friendly products or services for banks to offer to their clients.

Based on the global practices, some examples of how green banking can be integrated in the secondary banking functions are outlined below:

- Introducing green credit cards that donate between 0.1%–0.5% of the transaction amount to environmental causes managed by banks or any third parties
- Enabling full-fledged banking services through user-friendly applications or e-wallets based on technological platforms like mobile phones, tabs, pads, or computers, which can help in reducing the use of paper and energy consumption
- Introducing green ATM booths requiring lesser use of air conditioning and lighting by utilizing natural daylight or minimal energy-saving lights
- Green securitization for issuing or facilitating to issue green certificates of deposits(CDs) or debt securities (e.g., forest bonds) that utilize money in energy efficient, proenvironmental projects

- Banks can develop indices that consider the future environmental opportunities and threats; for example, Merrill Lynch has developed an energy efficiency index that focuses solely on energy conservation and demand side management

7.3.2 Internal Activities

Internal activities are performed by banks within the organization to facilitate and support external operations, and thus, these activities have a direct impact on banking performance. Some examples of such activities can include

- Lending administration that prepares loan documents and carries out internal evaluations
- Human resources administration that includes hiring, training, and employee-related issues
- Executive administration at the decision-making level performed by top management that mainly communicate with board members and handle confidential information
- Management of physical assets such as scanners, telephone systems, and fax machines maintenance
- Treasury management for managing banks' self-investment such as securities and foreign exchange
- Asset liability management that includes internal risk management activities
- Managing branch network and geographical coverage
- Managing activities in different functional areas such as finance and accounts, information technology, procurement, logistics and transportation, and in-house cleaning and hygiene maintenance

Some examples of how green banking can be adopted through internal activities are outlined below:

- Banks can introduce green waste management systems by releasing less paper waste in their daily activities and increasing use of virtual alternatives and/or recyclable paper materials.
- Building infrastructures owned and used by banks can be built using green infrastructure rules where all ingredients used will be environment-friendly and include features like rain gardens, permeable pavements, green roofs, infiltration planters, trees and tree boxes, and rainwater harvesting systems.
- Banks can go green by introducing roof gardening and indoor tree plantation to fight deforestation problems.
- Banks can start using energy efficient equipment, making less use of air conditioners and lights by bringing civil structure changes to have more daylight for use. Furthermore, the use of solar energy can be increased and solar panels can be installed on rooftops.

- Promoting awareness among employees and arranging related events throughout the year.
- Banks' transport and logistics can start replacing traditional high carbon emitting vehicles with low or zero emission vehicles such as electric cars or vans.

To fully incorporate green banking into all types of banking activities, a bank may have to change its decade old traditional policies and strategies by introducing a completely new set of policies and frameworks. The changes are difficult to initiate all at once as they will change a bank's business model substantially. To convert into a full-fledged green bank, one needs to introduce the changes on a cluster basis through a steady, step-by-step process. Once these changes come into force, banks will start realizing benefits from green banking in various forms, for example, lesser cost of energy, higher customer satisfaction, greater efficiency at work, and a sustainable working environment.

7.4 A Functional Department Approach to Green Banking Integration

Banks' organizational structure can vary widely based on customer orientation, region, legal environment, and functional areas. To be a full-fledged green bank, green banking practices need to be adopted in every functional department of the organogram, as a partial adoption may not yield the desired level of environmental and financial impacts. Figure 7.2 shows the typical functional departments and top management committees of a bank.

In the following discussion, some examples of how green banking practices can be introduced by functional departments are highlighted. It is important to note that the examples presented are indicative only and not exhaustive; the primary aim is to provide an idea on how each functional department of a bank may help begin greening their activities, which combined in turn would help a traditional bank to become a green bank in the long run.

- *Board of directors:* The board of directors (BOD) can provide the highest contribution to adopt green banking practices. Green banking or sustainability can be integrated in the mission statement itself (e.g., Connecticut Green Bank[1]) or through the vision statement additionally (e.g., Sound Community Bank[2]). This demonstrates banks' firm commitment to sustainability and care for the environment. The BOD can also help guide the bank by producing a separate green banking policy, and sustainability or environmental, social, and governance

1 Details available at: https://ctgreenbank.com/about-us/

2 Details available at: https://www.soundcb.com/about-us/vision-statement-corporate-values.html

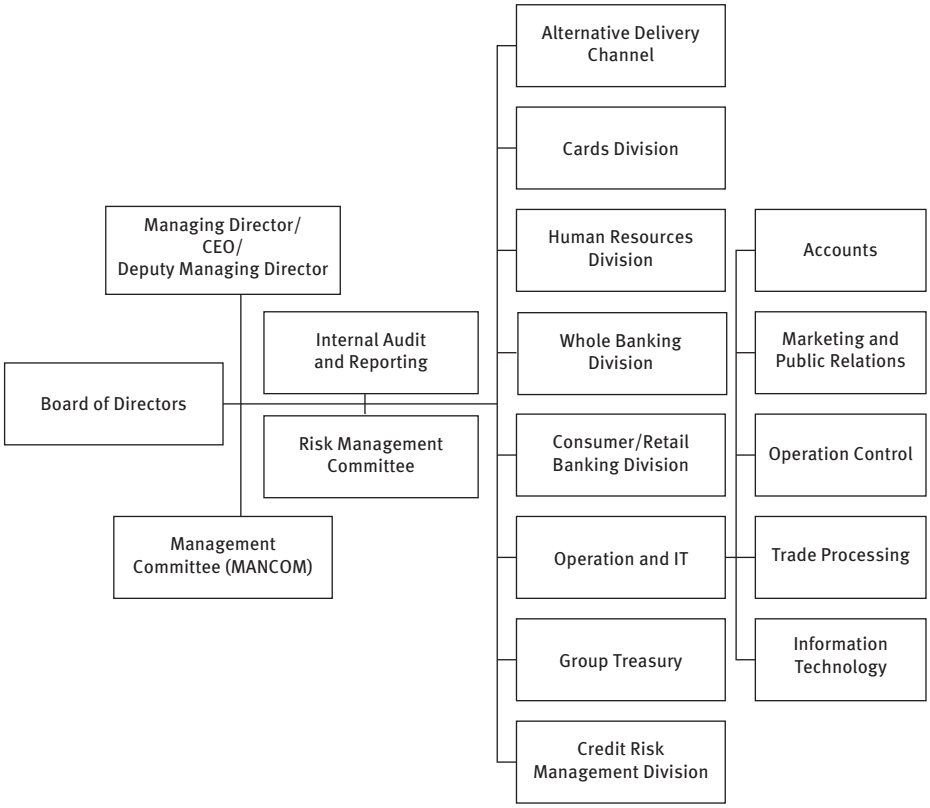

Figure 7.2: A typical structure of functional departments in a bank.
Source: Author

(ESG) policy (e.g., Bank of America[3]). The policies formulated should be in line with the regional or national GBF, if there is any. The management committee and top executives (e.g., managing director, chief executive officer, deputy managing director) of banks would fundamentally share responsibility with the BOD and contribute to the adoption of green banking practices through policies and strategy changes.

– *Internal audit and reporting committee:* In addition to the traditional financial and operational audits, banks can launch environmental audits though this committee to evaluate the level of environmental compliance and management systems in place. For example, ISO 14001 provides voluntary international standards for environmental management systems. The committee can also choose to report

3 Details available at: https://about.bankofamerica.com/en-us/what-guides-us/environmental-sustainability-governance-and-policies.html

the green banking practices following international reporting standards, for example, the Global Reporting Initiative (GRI), ESG Frameworks, and the Principles of Responsible Banking, etc.

- *Risk management committee:* Further to the regular risk management, the committee can formulate and implement an appropriate environmental risk management policy necessary to a bank's appetite. For instance, Barclays has a dedicated environmental risk management team as part of credit risk management in group risk.[4] The risk standard is also included in its wholesale credit risk control frameworks.
- *Human resource division:* Human resource divisions can adopt green practices on multiple fronts. For example, it can define and communicate sustainable banking to existing and new employees (e.g., FinTek Consulting). This can foster the sustainability culture in the office and aid necessary strategic development. Moreover, it can reduce the amount of wastage often associated with the talent acquisition process. It also plays a crucial role in training employees on green banking.
- *Wholesale banking division:* The wholesale or corporate division has a high-impact contribution to adopting green practices as it handles large credits or loans, mostly at the institutional level. The division can introduce and supply green loans/finance products for its large or institutional clients. For example, HSBC[5] provides green term loans, green revolving credit facilities, and green asset finance products to its corporate customers. Thus, mainstream products and services can go through green transformation that is generally handled by the wholesale banking division.
- *Consumer/retail banking division:* Like wholesale banking, the retail banking division may introduce green credit/finance and savings products for its retail consumers. There can be a wide range of green and environmental features added to retail products and services; for example, banks in North America can modify their existing retail products and introduce green mortgages, building and construction loans, home equity loans, and auto loans that would be featured with the protection of environmental interests and/or release of low emission and pollution.
- *Alternative delivery channel:* Alternative products and services' delivery channels (ADCs) such as ATM/POS, kiosk, internet banking, interactive voice response (IVR), and agent banking, etc., save time and resources through less paper use, however, they are often heavily energy consuming. Banks can introduce energy efficient ADCs that would not only replace paper-based transaction and physical visits to the branch but are also energy efficient.

4 Details available at: https://home.barclays/citizenship/the-way-we-do-business/environmental-risks-in-lending/

5 Details available at: https://www.business.hsbc.uk/en-gb/corporate/gb/campaign%20sub%20page/energy-sustainability

- *Cards division:* Banks issue and manage their card products, for example, debit, credit, prepaid cards for customers, which can also contribute to the greening process. Banks can issue green card products (e.g., Barclaycard Breathe card), launch voluntary participation programs (e.g., climate credit card from RoboBank) for the card users, and simply donate through different campaigns (e.g., Coop Debit and Credit Card from CFS in the UK). GreenCard Visa is the world's first credit card to offer an emission offset program. Moreover, the card issued for customers can be made from biodegradable or recycled materials.
- *Credit risk management division:* The division is primarily responsible for analyzing and reviewing different risk aspects of a loan application. The inclusion of environmental risk in the risk matrices can filter harmful projects and help impose an additional premium for the environmentally risky projects.
- *Treasury division:* The treasury division can aim toward investing a substantial portion of its funds into environment-friendly securities and assets such as sustainable and green bonds. The Climate Risk Fund can also be developed as an additional reserve for usage.
- *Operations and information technology:* IT Infrastructure provides a lot of opportunities for bringing efficiency to overall banking services, management, and energy consumption. LAN communication, centralized data centers, automatic clearing, and cloud and resource consolidation can reduce the bank's carbon footprint; however, banks need to ensure the use of technology does not consume too much energy.
- *Accounts division:* Accounts departments can introduce greening efforts by reducing paper-based documents, using scrap paper, LAN, and virtual communication of accounts and reports.
- *Marketing and public relations division:* Green marketing and efficient management of public relations can play a key role in branding a bank as an environmentally conscious bank. According to the Nielsen Global Survey on Corporate Social Responsibility (2014), about 55% of consumers were willing to pay extra for products and services from companies committed to positive social and environmental impact. Promotion through digital mediums and active communication with bank customers can further encourage eco-friendly consumption and transaction.
- *Operations control division:* In-house green development such as energy efficient building and lighting, water conservation system, solar panel installation, building with green forests, etc., may bring eco-friendly operations in the office environment.
- *Trade division:* Green trade finance and the application of green technology in facilitating international trade can help initiate environment-friendly practices in this department. Banks can also participate in the Green Trade Facilitation Programme (TFP), which is part of the EBRD's (European Bank for Reconstruction and Development) initiatives for green transformation in trade processing.

7.5 Green Banking Intervention in a Basic Bank Business Model

A bank's primary business is raising funds through savings and deposit products and mobilizing them as credit or loans to borrowers or investors. This section provides an idea of how the lending activities of a bank can be intervened through adoption of green banking practices. Figure 7.3 presents a basic three-dimensional relationship between bank fund (loan) price, environmental risks, and relevant compliance requirements. A bank's fund pricing and compliance enforcement would depend on the degree and likelihood of environmental damage and its manageability associated with the usage of a loan for a particular project. Banks should normally price higher and enforce more compliance requirements when financing projects with a greater threat to the environment. The pricing should be adjusted with perceived and/or estimated risks to be generated from potential environmental damage in the short and long term. The risk estimation and adjustment should be made while assessing and appraising a possible financing proposal. Similarly, a higher likelihood of environmental damage should attract higher compliance requirements and fund pricing (e.g., for chemical-based industries). Compliance enforcements can include, for example, banks making it mandatory for all potential borrowers to gain a new or special environmental approval from government agencies before approving a financing proposal. While there is no unified model for the "premium" to be added to the interest rates, it would certainly depend on many factors, for example, bank characteristics, borrower characteristics, and economic characteristics. In addition, banks should avoid financing projects that have a high likelihood of severely damaging the environment (e.g., coal mining).

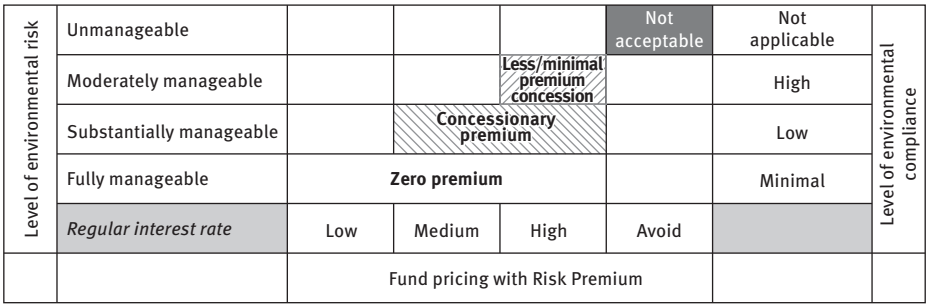

Figure 7.3: Green banking intervention in a bank's lending activities.
Source: Author

7.6 Conclusion

To fully incorporate green banking into all kinds of banking activities, a bank may have to change its mission, vision, and existing organizational policies and augment them with greening features. Furthermore, they will have to introduce a completely new set of organizational policies and frameworks specifically on green banking. Once the green banking policies, guidelines, and frameworks come into force, banks will start reaping benefits out of it in various forms. These benefits may include lower costs of energy, higher customer satisfaction, a greater work efficiency, a sustainable working environment, etc. However, banks must remember that the true benefits of green banking can be realized only when new policies and practices are fully integrated into their daily operations effectively and efficiently.

Discussion Questions

1. Should green banking adoption be a top-down or a bottom-up approach? How do the steps of the green banking adoption process align with both approaches?
2. Discuss the role of effective communication in green banking adoption.
3. In contrast to Figure 7.3, design a bank's business model on deposit and savings activities, and explain how green banking intervention should affect this business model.

Chapter 8
Green Banking and Risk Management

8.1 Introduction

The financial sector is also prone to significant environmental impacts. For example, a study from the London School of Economics (LSE) estimated that the value of global financial assets at risk from climate change is about US$2.5 trillion (Dietz, Bowen, Dixon, & Gradwell, 2016) while another estimate by *The Economist* suggested it is around US$4.2 trillion (EIU, 2015). The overall financial and investment risks can broadly be classified into six main areas: physical, secondary, policy, liability, transitional, and reputational (Ernest & Young, 2016). Therefore, environmental protection and more sustainable business activities by financial institutions like banks are the key to reducing estimated impacts. Banks are generally exposed to a wide range of risks, as the standard textbooks and practitioners suggest (e.g., interest rate, liquidity, credit risk), and green banking practices can significantly influence their degree and magnitude. Green banking can significantly reduce not only environmental risks but also other traditional risks faced by a bank. While the call for greening bank business practices increases worldwide, it is important to understand why and how it impacts other banking risks.

8.2 Environmental Risk and Banks

Environmental degradation today is greatly intensified by human activities. Although all activities, and all businesses, impact the environment to some extent, industrial and manufacturing businesses are the major contributors to environmental degradation. Mitigating such environmental damage requires taking two broad approaches simultaneously (Figure 8.1): (i) preventative measures: enforcing mechanisms beforehand so that no economic agent intentionally or unintentionally acts irresponsibly to the environment, and (ii) contingent measures: stopping or mitigating existing damage by correcting the irresponsible behavior of economic agents and helping the communities affected recover.

Financial institutions are the primary drivers of environmentally responsible corporate behavior by influencing financing and investment decisions (Rahman & Barua, 2016). Banks can ensure these approaches work, perhaps, more on the "preventative" than "contingent" measures. For example, banks can do this by enforcing environmental compliance before approving a loan (preventative) or by imposing new compliance requirements (e.g., effluent treatment plant (ETP) installation) for loans already approved (contingent). Sometimes, it is difficult to enforce contingent measures, as parties to a loan contract are bound by mutually agreed covenants, and borrowers are

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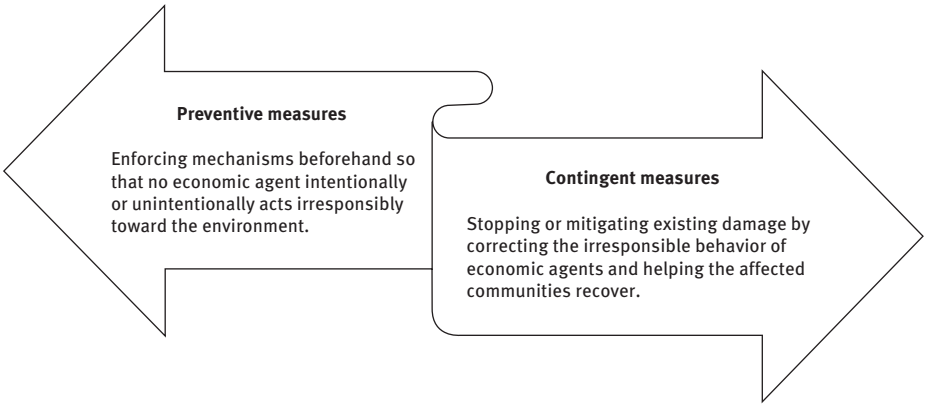

Figure 8.1: Banks' approach in mitigating environmental damage.
Source: Author.

usually reluctant to make changes in the middle of their investments. Considering the traditional business model of a bank, environmental considerations can be adopted in the "supply" and "demand" sides. However, such intervention is relatively limited on the supply side (savers or depositors), apart from the initiation of motivation and awareness programs and by paying a "premium price" for environmentally responsible savers or lenders. On the demand side, banks have a greater role to play in changing the behavior of borrowers.

8.3 Green Banking and Traditional Bank Risks

Green banking in the long run can help mitigate a variety of risks. Failing to consider environmental concerns can add to existing risks, directly or indirectly, that banks normally face as a financial institution (Mazahrih, 2011). It is difficult to provide a clear estimate of the economic value of risk impacts arising from ignoring environmental considerations either at national or regional levels. However, environmental contribution to the risks banks normally face can adversely affect banks' income, profitability, and the value of assets and liabilities. There are many sectors or industries that have significant environmental impacts (e.g., agriculture, mining, cement and steel manufacturing, energy and power, etc.), and risks arising from the environmental impacts widely vary across sectors or industries. Considering the heterogeneous nature of risk exposure, banks in many developed (e.g., the UK, the US) and developing countries (e.g., China, India) now consider environmental concerns in their risk management practices. Below is a basic perspective on how environmental considerations relate to different bank risks.

Credit risk: Lending activities ignoring environmental concerns can add to credit risk when customers (i) experience a loss in the value of their assets, and (ii) face unfavorable changes in environmental regulations and compliance requirements, which raises the cost of environmental management (Hong, Suhong, Xing, & Muyuan, 2016; Mazahrih, 2011). Extreme weather conditions such as heavy storms may damage physical assets and infrastructure financed by borrowing, causing an immediate increase in the probability of default. Changes in environmental regulations may force businesses to change their environmental management practices, the direct cost of which can be large enough to affect business performance. Many firms can cease operating simply because they can not afford to comply. For example, the cost of an ETP installation may be enough to induce a small-scale borrower to not proceed with a specific project. Therefore, when assessing a borrower's application, banks generally fail to consider that the credit risks may be effectively higher when environmental concerns are ignored and not considered, as there can be large-scale implied expenses related to environmental damage, loss of market share, and third party liability claims (Sahoo & Nayak, 2007). However, the extent or nature of the credit risks may vary across industries or sectors. For example, lending to mortgage financing in the real estate sector can have a higher risk due to the possibility of falls in asset values owing to environmental degradation. Again, the security or collateral quality for loans may become poorer due to environmental damage, for example, contaminated land in the agricultural sector. In the UK many banks consider environmental concerns while making lending decisions (McKenzie & Wolfe, 2004; Thompson, 1998).

Legal risk: Banks, like other business entities, face legal risk if they do not comply with relevant environmental regulations. Legal risk for banks can arise in two forms: (i) the possibility that a bank would fall short of compliances with regard to environmental regulations aimed at the banks themselves; and (ii) indirect pressure on banks to ensure their clients comply with environmental requirements, which otherwise would result in a penalty for banks. Banks must comply with several rules, regulations, and guidelines more strictly than any other form of business. When there are set environmental management regulations adopted and employed by relevant government agencies and financial services authorities, banks are certainly always at risk of falling short of compliance requirements by their activities. In many cases there may be a risk of direct lender liability for clean-up costs or claims for damages if banks have taken possession of the contaminated or hazardous assets (Sahoo & Nayak, 2007). In the UK and the United States, regulations like CERCLA enforce large fines and penalties on banks for their customers' failure to adequately protect the environment (Hong et al., 2016).

Reputation risk: Again, not considering environmental impacts arising from a borrower's operations can result in negative publicity for the borrowers and the banks, creating reputation risk for banks (Thompson, 1998). Banking business is inherently

prone to reputation risk. Given the increasing level of awareness of the environment in society, the reputation of banks may be adversely affected if they engage in business with big clients or projects that are socially, environmentally, and ecologically damaging. For example, financing of coal projects in Australia by big banks is highly criticized by many social and community groups. Often, pressure groups such as Greenpeace take the lead and call banks' activities into question publicly, which may cause severe and immediate damage to the reputation of banks. In addition, banks that do not care for the environment may lose deposits from environmentally aware clients, as they may be more inclined to switch to banks that are more environmentally responsible. Investors (i.e., savers) worldwide increasingly prefer environmentally responsible investments (Gupta & Goldar, 2005). Therefore, reputation has become a function of sustainable banking, and green business practices not only protect, but can also improve, the reputation and image of banks, resulting in increased goodwill value.

Market risk: Banks may be exposed to market risk as a result of adverse movements in the value of marketable securities they hold for investment or trading purposes. In recent times investors have become more careful in putting their money into the securities issued by environmentally responsible companies. Stock market investors are also now equally concerned about environmental degradations and are ready to act against industries and institutions that do not comply with desirable environmental practices (Gupta, 2003; Goldar, 2007). This growing preference has led to exchanges introducing separate market portfolios or indices. For example, the FTSE4Good Environmental Leaders Europe 40 Index in the London Stock Exchange is composed of European companies with leading environmental practices; the Cleantech Index has been introduced in different markets, such as Australia, which is composed of 59 top companies doing business in clean technology and services; and the Solactive Green Bond Index. An increasing number of environmentally responsible investors globally tend to deny the securities of the companies that significantly have an impact on the environment or do not take necessary measures to protect the environment. The market price of securities moves depending on news or information released publicly on corporations, which means that news or information on environmental damage created by companies can attract seriously negative reactions from investors. Therefore, holding and investing in such marketable securities can create market risk, as they may lose value abruptly depending on investors' reactions to any negative news or information. For example, there are cases where news of a company's activities causing environmental damage has resulted in a decline in bond values (Heim & Zenklusen, 2005).

Funding risk: Banks fund loans primarily through deposits from the public, although they may borrow from other institutions. People in many countries have started to shift their deposits to responsible banks, despite these banks often

providing lower returns. This can lead to difficulties in financing if large depositors make the shift and banks find it difficult to attract new large-scale depositors. Moreover, borrowing from other institutions may also be less likely if those other institutions prefer to provide funding to responsible banks only. As a result of growing environmental awareness, many institutions have started to prefer banks that are green in their business practices, offer green banking products, and lend to environmentally responsible clients. In addition, due to the rise in multilateral and supranational initiatives on sustainable financing, banks are increasingly able to access low-cost and longer-term funds with fewer conditions from multilateral financial agencies, for example, the International Finance Corporation (IFC). This means that banks that are green can attract a greater supply of funds financing at a lower cost now compared to those that do not care for the environment.

Liability risk: Banks' liabilities generally include deposits and external borrowings. However, a "third-party" liability can be created when collateral possessed by the banks from borrowers against loans made become impaired and the borrower is unable to pay out its other creditors. Such third-party liabilities generally stem from legal obligations and can result in fines, penalties, and damage costs. For example, a mortgaged coal mine can produce a large liability for the bank in the form of clean-up costs and community payments, if a major accident breaks out, pollutes the surrounding area, results in human injury, and the borrower is unable to pay. However, sometimes corporations take out insurance to reduce the risk of such liabilities.

Asset risk: A bank's portfolio of fixed properties can be a major source of environmentally-created asset risk, particularly due to real estate ownership. Many assets owned by banks can have significant and heterogeneous levels of environmental exposure and sensitivity, for example, land and infrastructures owned in coastal areas, lands becoming unusable due to environmental degradation and therefore losing value, and quick depreciation of property values due to excessive heat and rainfall. The potential consequences can lead to direct and indirect losses (Willis, 2008). Direct costs can include, but are not limited to, major clean-up costs or payments to relevant parties and losses in the real value of assets on the bank's balance sheet. Indirect costs can be produced in several ways such as properties becoming unusable resulting in a higher replacement, relocation, or substitute rental costs, interruption in business operations, and losses in rental income. For example, a national bank in California was facing a clean-up cost that might exceed $2.5 million arising from damage caused by nine oil wells in which the bank had ownership (Willis, 2008). Overall, such environmental consequences can devalue equity positions for the banks.

Figure 8.2 summarizes how environmental implications can result in diverse effects through different traditional risks faced by banks; in other words, much of the environmental implications of traditional business practices actually have links with

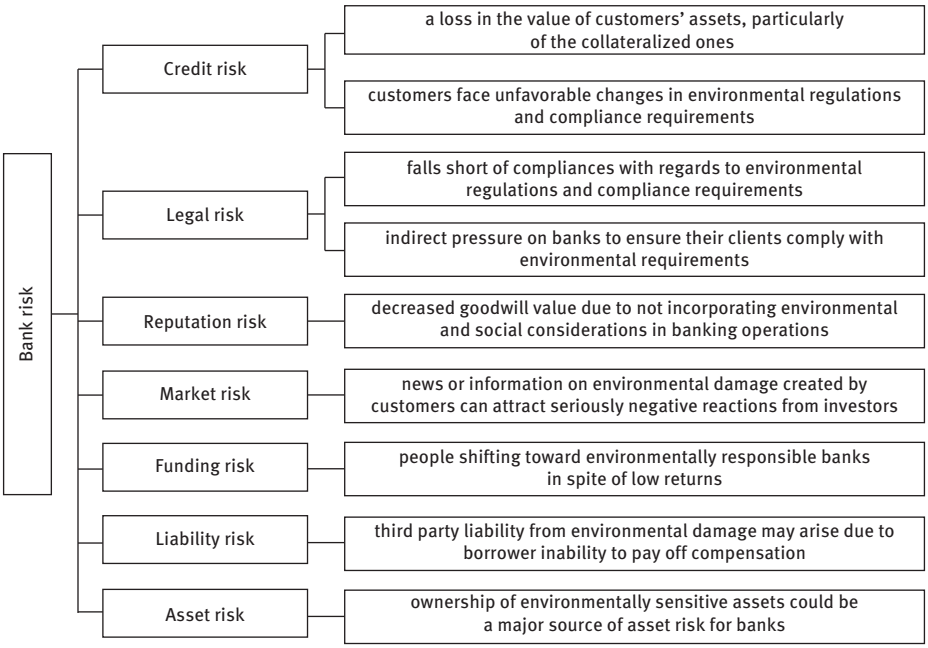

Figure 8.2: How different risks can affect banking activities due to environmental issues.
Source: Author.

traditional bank risks, and poor environmental management can have a multiplier effect on the other risks threatening banks' regular business performances. Green banking practices in this regard would be significantly beneficial as a greater commitment and action toward environmental protection would reduce not only environmental risk, but also other risks faced by banks.

8.4 Conclusion

Banks normally face a diverse range of risks, although not all of them are linked to green practices. Despite this, green banking can effectively help banks reduce many of these risks and boost business values substantially, which can result in greater market share and power. As such, ignoring green practices can result in a higher likelihood and impact of these risks, which in the end can worsen bank balance sheets and income statement positions. It can be inferred that if environmental outcomes raise the risk impacts, they have the potential to significantly reduce income, profitability, and asset-liability values. While the practice of green or environment-friendly banking is growing rapidly, there remains several challenges. For example, there is some reluctance to prioritize sustainability, a lack of knowledge

and awareness among bankers and customers, the unavailability of valuation methods for the costs and benefits of green banking, and the lack of a standardized framework at international, supranational, or regional levels. It is likely that it will take some time to mitigate these challenges and enable banks to change the way they do business. Given that banks can not become full-fledged "green banks" overnight, they need to begin acting now to protect all three objectives: people, planet, and profit.

Discussion Questions

1. Do you think a full-fledged or large degree of reliance on green products and services can increase portfolio risk for a bank?
2. What risks and their impacts are likely for banks if their clients are involved in environmentally damaging investments?
3. Consider all the risks that can arise for banks from environmentally harmful international and external operations. Develop and recommend suitable methods or strategies to measure (e.g., quantify) each of the risks.

Application in Focus

Natural Capital Risk Exposure of the Financial Sector in India

According to the Natural Capital Risk Exposure of the Financial Sector in India report developed by Trucost (2015), banks and investors in India are exposed to $1,375 billion of natural capital cost due to the loans and investments they have made to companies with environmentally-damaging business activities. The report was commissioned by German International Cooperation (GIZ) and conducted by Trucost as the consultant.

Natural capital refers to assets such as water, timber, land, a stable climate, and a clean atmosphere on which business and society depend to prosper and grow. The report finds that the total annual natural capital cost of companies financed by India's banks is approximately 90,496 billion Indian Rupee (INR), equivalent to 2.9 times the credit originally provided to those companies. If companies had to pay these costs, many of them would become bankrupt, and for most of them, banks would not be able to recover their loaned funds. This would have severe impacts on financial health and performance of those banks.

It is important to note that Indian banks are far more exposed to natural capital risks than the equity investors since they largely finance environmentally high impact sectors; the sectors having the highest natural capital costs include food, power, and agriculture. The main impact is found to be due to higher water consumption and greenhouse gas emissions.

The report recommends that financial institutions should quantify the natural capital costs of their loans and investment portfolios in order to mitigate these risks. In particular the quantified potential natural capital costs of prospective loans and investments should be considered with a greater priority while evaluating loan and investment proposals. They should evaluate the risks if these costs are internalized by companies as a result of regulatory enforcement, compliance, or climate-related events.

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Chapter 9
The Green Banking Regulatory and Policy Framework

9.1 Introduction

Green initiatives undertaken by banks can be voluntary or on a mandatory compliance basis. Increasing public awareness about risks posed by climate change and the political commitment to address the challenges in recent years has brought the role of central banks under focus in addressing environmental risks and supporting the development of green finance (Volz, 2017). However, the role of supervising and regulating banks may not be delegated to central banks alone; banks themselves have self-driven responsibilities in greening their business practices. Because of differences in mandates, core objectives, and varying interagency cooperation, the role of central banks toward green banking diverges to a different degree. Because of these differences, a number of regulation and policy frameworks can be found in different countries and are still developing in many others (McDaniels & Robins, 2018). This realization subsequently led to initiatives such as the Sustainable Banking Network (SBN) and central banks' and supervisors' Network for Greening Financial System (NGFS).

9.2 Approaches to Green Banking

Based on who takes the lead, there may be two approaches to introduce green banking practices: (i) by enforcement of the financial services regulator and (ii) by a bank's own voluntarily endeavor. If the regulatory authority of a country does not have such guidelines or motivations, any commercial bank can have its own green banking practices that can give it a competitive edge in the market with better reputation and sustainable business volume. To bring a paradigm shift into the entire financial services industry, a regulatory approach is certainly a better option. However, the regulatory guidelines, acts, and laws may also include voluntary and mandatory clauses where the voluntary compliance component should become at minimal level over time. What an individual commercial bank should do to bring green practices into their own regular business activities and what a regulatory approach should be are discussed in the later sections of this chapter.

Again, based on the nature of response, green banking involves two more approaches. First, green banking, focusing on the green transformation of internal operations of all banks, which means all banks should adopt appropriate ways of utilizing

https://doi.org/10.1515/9783110664317-009

renewable energy, automation, and other measures to minimize the carbon footprint from banking activities. Second, in the external operation, all banks should adopt environmentally responsible financing; weighing up environmental risks of projects before making financing decisions; and supporting and fostering growth of upcoming green initiatives and projects. In-house green activities include increasing dependency on renewable energy, following green architecture, using energy saving technologies such as LED, CFL, etc., using energy efficient digital devices, reducing use of paper, etc. On the external issues, green activities in financing include; carrying out environmental risk assessment of projects, financing only environment-friendly projects, providing green loans to promote solar energy, biogas plants and effluent treatment plants, promoting growth of mobile banking and online banking, including environmental sustainability support initiatives in corporate social responsibility (CSR) programs, etc.

Based on the approaches, a Lead-Response Matrix can be designed (Figure 9.1) that depicts green banking initiatives or lead can be taken by commercial banks themselves or can be imposed by the financial services regulators. However, such initiatives may involve green banking policies and practices for banks' internal and external operations. Voluntary practices either internally or externally can be designed by banks themselves or be induced by the regulators. Mandatory clauses are usually formulated and imposed by the regulators regardless of response. However, the financial services regulator itself can start green practices in its own operations before or while encouraging scheduled banks to do the same. This would encourage and motivate commercial banks to comply with the call of the regulators Therefore, green banking practices in the entire financial services industry can be depicted as shown in Figure 9.2.

Lead-Response Matrix		**Response type**	
		Internal	*External*
Lead or initiative	*Voluntary*	*By Self/Regulation*	*By Self/Regulation*
	Mandatory	*By Regulation*	*By Regulation*

Figure 9.1: Green banking lead-response matrix.
Source: Author

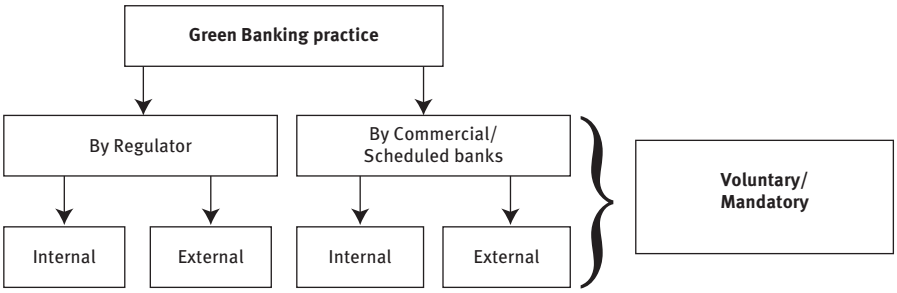

Figure 9.2: Approaches to practice green banking.
Source: Author

All considered, either by force with legal frameworks or providing incentives the regulator must induce banks to accept more types of projects without raising interest rates and thus scarifying some of their profits. Of course, social pressure may also be highly effective in this case and thus when enough investors, consumers, and businesses want to invest in sustainability, banks develop products that meet their requirements. Therefore, to encourage and induce the banking system to initiate green banking requires proactive action from the financial services authority or the regulator of the banking system (such as a central bank) in a country. A two-fold action strategy should be pursued by the regulator – mandatory provision by law and motivational tools through incentives.

9.3 Sources of Green Banking Policy

Based on the financial market structure, the level of sophistication of regulatory frameworks varies across countries or regions. Green banking practice in a financial system thus can vary based on its mandate, independence, and economic system. The frameworks followed by commercial banks may be mandatory, voluntary, or quasi mandatory. In some countries (e.g., Korea, Indonesia), the chief catalyst for green growth is often the government. In others, it may be the central bank or a combined effort of the government and central bank where the original initiator can be any of them. On many occasions, banks can have their self-developed green banking policy out of their business strategy to deliver innovative products and services to their clients and diversify their existing business portfolio. All things considered, the policy frameworks for green banking can emanate from four major sources as shown in Figure 9.3.

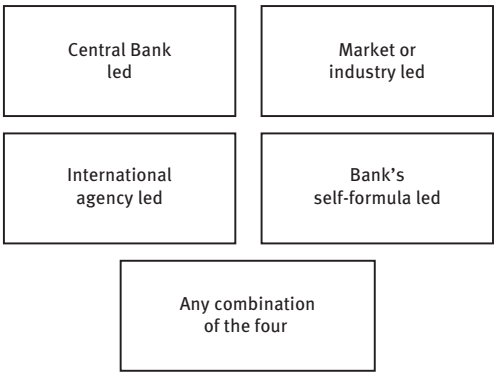

Figure 9.3: Sources of green banking policy frameworks.
Source: Author

9.3.1 Central Bank-Led Policy

Green banking policy most commonly originates from central banks. Central banks can actively promote green banking by directing banks through formulating timeline-based detailed guidelines, taking allocative strategies, and several other secondary tools. Central banks in cooperation with other intergovernmental and development agencies can enforce the green banking policy. The policy initiatives carried out by central banks are often made mandatory for banks to comply with. For example, green banking guidelines issued by Bangladesh Bank required all scheduled banks to implement the policy in three phases by the end of 2013 with the interval of one year on each phase. (See Application in Focus for a summary of Bangladesh Bank's green banking policy guideline.)

9.3.2 Market/Industry-Led Policy

The policy for green banking can originate from the banking industry or sector itself, which is often issued on a voluntary basis for banks. The Brazilian Banking Association (FEBRABAN) developed a green banking guideline in 2008, which was then adopted by five state-owned banks and other commercial banks the following year.[1] In India in 2015 the Indian Banking Association launched National Voluntary Guidelines for Responsible Financing, which was also industry led.

1 Banco Central do Brasil. (2014). Resolution No. 4,327, April 25, 2014.

9.3.3 International Agency-Led Policy

International agencies such as the United Nations Environment Programme Finance Initiative (UNEP FI) and the Sustainable Banking Network provide guiding principles for forming environmentally responsible banking or green financing policies. Also, globally important banks are found to come together to form policy frameworks and guidelines on environment-friendly banking, which later can be considered as guiding principles for other banks across the regions. Some of the notable efforts include the Equator Principles (2003), Global Reporting Initiatives (2002), Global Impact Investing Network (2007), Global Alliance for Banking on Values (2008), and recently formulated Principles of Responsible Banking (2019). Membership in these initiatives requires member banks to comply with sustainability requirements and report their progress toward sustainability at regular intervals.

9.3.4 Banks' Self-Formulated Policy

Banks might choose to formulate green policy for themselves and publish their performance and contribution through their annual reports or a separate green banking report published at a regular interval throughout the year. Such voluntary efforts can be either simultaneous or not to any mandatory policy imposed by the central bank or the government. Banks might choose to focus on policy for greening their internal and external operation partly or in full with a view to introducing unique products and services, capture a greater market of responsible customers, building a reputation as an environmentally responsible bank, and diversifying their existing business portfolio. For example, Barclays has developed a Sustainability Policy and Green Product Policy. They also have an environment, social, and governance (ESG) framework in accordance with the GRI Standards, and they publish the ESG report annually.

9.4 Green Banking Instruments for Central Banks

Central banks have several policy instruments to influence investment decisions of banks and shift funds away from environmentally destructive activities. Traditional monetary policy tools can be modified in order to accommodate greening processes such as differentiated bills, discount rates, and capital reserve requirements. Some unconventional policy tools can be employed to facilitate the process such as creating a Climate Risk Fund and supporting the Green Bond Market. Furthermore, central banks can use their persuasive power to encourage banks to address climate and environment risks in their operation and provide detailed guidance on how to green their internal and external products, services, and processes. At least four

broad areas of activity (Figure 9.4) for central banks can be considered to develop green banking practices sector wide.

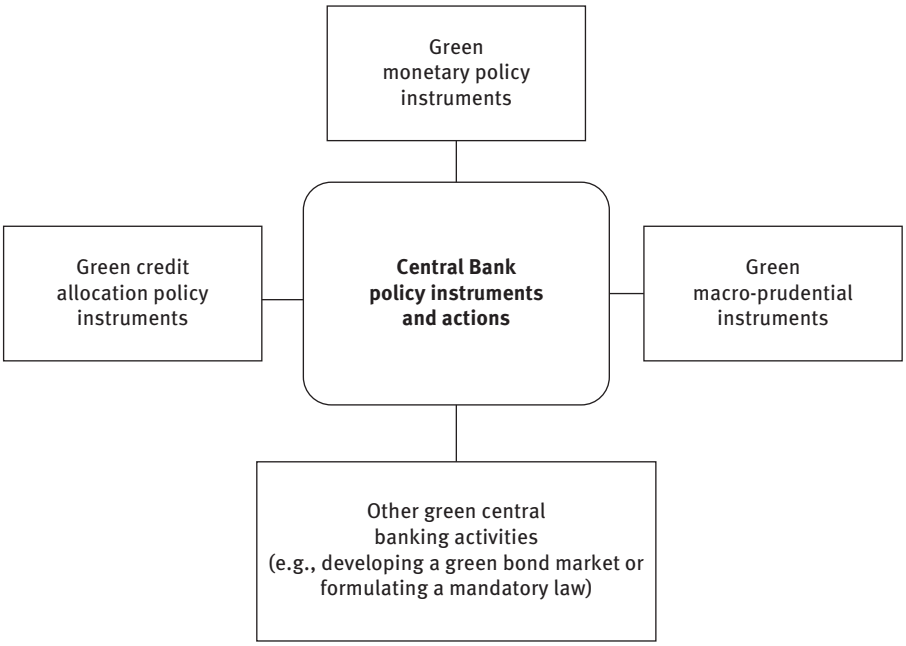

Figure 9.4: Central banks' instruments and actions on green banking.
Source: Author

9.4.1 Green Monetary Policy Instruments

Central banks generally use three policy instruments as part of monetary policy to regulate money supply in the economy – interest rates, differential reserve requirements, and open market operations. These traditional monetary policy instruments can be augmented to incorporate green or environmental considerations so that policy impacts ultimately help in environmental protection by altering money supply in the economy.

- *Interest rates:* Bank rates (e.g., federal fund rates in the United States), also known as policy rates, are a monetary policy tool widely used by central banks to regulate money supply in the market. This rate is also known as discount rate as it implies the cost of funds raised by commercial banks from a central bank. As part of greening efforts, central banks may include environmental aspects when setting interest rates. For example, a central bank can allow differentiated bank rates for green banks. Such rate differentiations can be based on the degree of greening a

bank has been able to introduce; full-fledged green banks can face lower bank rates while banks that have low or no greening efforts would face higher bank rates. It would mean a lower cost of funds for greener banks in the market; however, it must be stipulated that funds raised are used to finance environment-friendly investments.

- *Differential reserve requirements:* Reserve requirement is a compulsory requirement for commercial banks to maintain a certain portion of deposits as reserve with the central bank with or without interest in the form of cash or other approved securities. This reserved proportion of deposits can not be lent to customers. Therefore, reserve requirement is one of the regular monetary policy tools used to control money supply in the economy. Differentiated reserve requirements can be introduced to banks where they would be allowed to hold a lower reserve against funds raised through green savings and deposit accounts, on the condition that the extra lending ability must be used by banks to mobilize greater investment to environment-friendly borrowers and projects.
- *Open market operation:* Central banks engage in the open market buying and selling of financial assets (e.g., securities) to regulate the money supply in the market. As part of greening efforts, central banks can issue green treasury securities first and then give preference to these securities when engaging in buy-sell activities in the market. This would ensure higher liquidity for green treasuries, which can encourage investors to invest more in these securities. A sizable market for green securities can mobilize a significant amount of funds to environment-friendly investments undertaken and implemented by a government.

9.4.2 Green Credit Allocation Policy Instruments

Green credit allocation refers to directing credit to one or more preferential sectors in order to increase the flow of funds in those preferential sectors and thus passively supporting the growth of the sectors. Such stances are executed in some countries (e.g., priority sector lending in agriculture) as per the legal mandate by the central bank. Central banks can take different forms of actions in order to reduce investment in "brown" or environmentally harmful industries and channel the funds to green or environment-friendly industries. Green credit allocation policy instruments can be undertaken by central banks as a sole initiative or in consultation with market stakeholders and later be implemented with support from all stakeholders. At least three policy instruments can be considered in this regard.

- *Targeted refinancing lines:* Targeted refinance lines offer refinancing for commercial banks at preferred terms for a specified or range of asset classes, which can include green or environment-friendly projects and investments (e.g., sustainable farming, solar power generation). By providing subsidized interest

rates, central banks incentivize refinancing loans to priority sectors, which can include environment-friendly sectors (e.g., renewable energy). Targeted refinancing lines have been used as a policy tool by many central banks, although they became less prevalent after the 1980s. The tool is more effective in economies where the secondary bond market is not well developed and refinancing options are limited. However, refinancing schemes have the potential for market distortion in the financial system in the long run. The discretion to select projects remains with commercial banks. Bangladesh Bank – the central bank – provided a range of refinancing schemes since 2009, subsidizing green lending in addition to energy-efficiency projects.

- *Minimum and maximum credit quotas:* Minimum or maximum credit quotas require banks to allocate a fixed share of loanable funds to a specified sector, geographical area, or a cause. They are also sometimes called credit floors, lending requirements, and window guidance. The tool is mostly implemented with priority sector lending programs. In the context of green banking, central banks can permit higher credit quotas for projects, sectors, or regions, where there is a potential for environmental benefits and lower quotas where environmental harms are associated. Furthermore, a higher credit quota can be used with the objective of greening the economy by requiring a certain portion of their overall lending to go to a priority sector or cause and setting a maximum quota for sectors that have negative environmental impacts. The tool does not provide incentives but rather sets a requirement from a central bank. General lending quotas have been proven to be successful in promoting economic development in East Asian countries and thus may prove to be effective to promote green banking (The World Bank, 1993).
- *Central bank assistance to development banks:* In many countries, there are specialized "development" banks to finance specifically long tenured development-sector projects. Development banks can help the green transition of the economy, and central banks can support development banks to pursue this objective. Development banks are often government owned and can help markets reduce risk and leverage private capital (New Economics Foundation, 2019). They can further play a role in market making and shaping by implementing green finance standards and issuing tradable green securities like green bonds.

9.4.3 Green Macroprudential Policy Instruments

Deteriorating environmental conditions stemming from climate change will have its impact on financial markets now as well as in the future. The insurance sector in many economies is likely to have the biggest impact from increasing environmental

risk and eventually disrupting financial stability of the market. Environmental regulations may also sometimes pressure carbon-intensive industries to shoot up the cost of operation, which can turn carbon intensive assets into "stranded assets" leading to systemic risk. Such possibilities can be addressed by macroprudential policies, as is done in case of assets distressed by financial crises (Bank of England, 2016). Macroprudential policies here refer to the roles of regulators to address and contain the systemic risk to prevent macroeconomic costs associated with financial instability.

- *Stress testing:* Stress testing can be the right primary step to evaluate and attune green macroprudential policy instruments to test whether banks are able to withstand various scenarios that are likely to arise as a result of policy implementations. Such stress testing can be highly effective to evaluate particularly the scenarios that are likely to induce financial instability in banks. For example, carbon stress testing can be used to quantify the exposure of financial institutions to carbon intensive and sensitive assets. Based on the identified vulnerabilities, capital buffers, risk weights, caps, and floors can then be adjusted to mitigate systemic risk and maintain financial stability. In Brazil, banks are required to conduct environment and social stress testing and incorporate environment and social risks into capital requirements. Banco do Brazil set a general framework for types of risks that can be included in the risk assessment.
- *Disclosure requirement:* The impact of climate change or environmental degradation can be correctly reflected in the price of assets in the financial market, when effective disclosure practices of climate-induced risks are in place. The Financial Stability Board's Task Force on Climate-Related Financial Disclosures recommends mandatory disclosure requirements for all financial organizations in their public filings (TCFD, 2016). Similar requirements can be made mandatory for all types of environmental implications arising out of financial assets. Improved transparency improves pricing of risks and allocation of capital and provides grounds for macroprudential regulation and climate-related stress testing.
- *Counter-cyclical capital buffers:* If the environmental policies are enforced strictly and stringent emission targets are placed, a carbon bubble may become inevitable. In such situations, counter-cyclical capital buffers can mitigate the adverse effects emanating from the bubble. Counter-cyclical capital buffers are generally designed to provide a cushion when the financial cycle turns up or during a feedback loop.
- *Loan-to-value (LTV)/loan-to-income (LTI) caps:* Loan to value or loan to income is a ratio of loans given to a project and the total value or income generated from the same project. Setting a cap on the LTV or LTI can limit the loan amount to be disbursed against the asset value. Differentiated LTV caps based on the degree of carbon intensiveness and environmental cost of certain activities or projects may be used as a tool to reduce investment in brown sectors and encourage green investments. The tool may become more effective with

the introduction of new environmental regulations or innovations in green technology.

- *Sector-wide differentiated risk weight:* Assigning higher risk weights to carbon-intensive assets or sectors can be another macroprudential response because future environmental policies might reduce their value. It also provides a credit guiding element by giving a negative incentive to divert their investment from carbon-intensive or environmentally costly assets. Furthermore, banks are likely to face increased capital requirements as a proportion to total risk-weighted assets due to higher bank exposures to such sectors or assets.
- *Large exposure restrictions (by counterparty, sector, and geography):* Exposure restrictions based on geography, sector, or counterparty can limit the volume of financing with a high-risk exposure. In the context of green banking, the limit exposure can be imposed on carbon intensive assets, which may lose value in the event of a shock such as the bursting of a carbon bubble. Also, in the event of an environmental shock such as sea level rise or intrusion of saline water, which reduces the asset value in the coastal areas; similar declines can happen to asset values due to air quality degradation in densely populated regions.
- *Identification of systemically important financial institutions (SIFIs) and capital surcharges:* Very large banks around the world (SIFIs) are required to hold additional capital given the systemic risk they are exposed to. Exposure to climate change risk or carbon intensive assets can be added to the selection criteria used to categorize SIFIs.
- *Making carbon certificates acceptable as banks' legal reserve:* Accepting carbon certificates as part of commercial banks' legal reserves will broaden the market for carbon certificates (Rozenberg, Hallegatte, Perrissin-Fabert, & Hourcade, 2013). This will essentially reduce the capital cost for low-carbon projects and make them relatively more lucrative than carbon intensive projects. The idea first came into discussion when the Bank of England perused quantitative easing (Harvey, 2012).
- *Green quantitative easing:* Quantitative easing through bulk financial asset purchases by central banks from commercial banks and other financial institutions is an unconventional monetary policy tool and was first used in the early 2000s to combat deflation when the nominal interest rate hit zero lower bound in Japan – a situation when the nominal short-term interest rate in the economy is zero or near zero (Volz, 2017). In the context of green banking, the bulk asset purchase may include green financial assets such as green bonds.

9.4.4 Other Green Central Banking Initiatives and Activities

Apart from three categories of policy instruments, central banks may opt for some other initiatives, for example, developing and enforcing green banking guidelines

and Environment and Social (E&S) Risk Management guidelines, and developing separate green asset markets (e.g., green bond market).

- *Green banking guidelines:* Central banks, in the capacity of regulators of the banking system in an economy, can develop a complete and comprehensive Green Banking Guideline (GBG) at the national level. The guideline can be enforced as mandatory or quasi mandatory for scheduled banks to comply with. Central banks may also render and facilitate industry-led green initiatives (e.g., launched by banking associations) to be mandatory or quasi mandatory. The central bank, Bangladesh Bank, developed a comprehensive green banking guideline in 2011 and required banks and nonbank financial institutions to comply with it by 2013; it further required all financial institutions to issue 10% of their CSR budgets to the Climate Risk Fund. In a similar approach, the China Banking Regulatory Commission (CBRC) issued a Green Credit Guideline (GCG) (Volz, Böhnke, Eidt, & Knierim, 2015).
- *Active development of green bond markets:* Central banks often take numerous steps to develop financial markets, especially securities markets. Central banks can actively contribute to the development of green securities markets where the issuance of securities like green bonds will be facilitated to mobilize large funds to green projects that are financed in compliance with green bond guidelines. It would, however, require defining criteria for projects that qualify for green bonds, the use of proceeds, and standards of disclosure (New Economics Foundation, 2019). In India, for example, green bonds issuance started since 2015 to support green energy transition.
- *Research on green growth and finance:* Regulatory authorities are in a unique position to conduct research on green finance and growth. With a quality research department and wide access to market data, research outputs of central banks can play a key role in fostering green banking culture.
- *Offering capacity building workshop for bankers:* Transition to greening or assessing environment and social implications may require a clear and detailed orientation or understanding among bank staff. Central banks may conduct workshops, training, seminars, and other educational activities for bankers on green banking and environmental and social risk assessment.
- *Participation in international networks dedicated to green finance:* Voluntary networks such as the Sustainable Banking Network (SBN) and/or the Central Banks and Supervisors Network for Greening the Financial System (NGFS) can allow central banks and banking associations to promote sustainability locally and globally, share the best practices, and contribute to better environmental risk management practices with a country.
- *Moral support and persuasion:* The convening role, expertise, influence, and soft power of central banks may promote and pursue commercial banks to launch green products and foster sustainable growth practices (Chandavarkar, 1987). Continued consultation and motivation by central banks can help commercial

banks realize the potential positive impact of green banking to save the planet alongside earning profit. By including climate and environmental challenges in the agenda, central banks can convey their significance and immediacy-to-act to the market actors and provide moral support to the banking sector.

9.5 The Green Banking Policy Framework for Commercial Banks

A green banking framework with policies and guidelines should be as specific and comprehensive as possible. For an individual commercial bank to be environmentally responsible there may more than one policy guideline depending on its business needs. However, a set of such policies and guidelines that may be common for any bank can be drawn as follows:

9.5.1 General Green Banking Policy

The general policy would guide the design and practices of green strategic planning, board and management priority, regular banking services, in-house greening activities, environmental reporting, green products and promotion, training and awareness, etc. This policy document is for the bank's own practices and therefore the contributions of board, management, and all employees must be considered while designing it. Some suggested contents of a Green Banking Policy are shown in Table 9.1.

Table 9.1: Example content of a Green Banking Policy document.

For a bank's internal operation	For a bank's external operation
– Reducing dependency on grid power by shifting to use of solar power and other renewable energy sources to the maximum feasible extent – Following green architecture while constructing bank offices – Using energy saving technologies such as LED, CFL, etc. – Use energy efficient digital devices – Reducing use of paper by adoption of online automated work practices – Conducting energy audit regularly to monitor carbon footprint, etc. Financial support to climate risk fund, etc.	– Environmental risk assessment of projects – Financing only those that meet environmental/sustainability guidelines – Provide green loans to promote solar energy, biogas plants, effluent treatment plants, and other energy saving practices like Hybrid Hoffman Kilns in brick fields – Develop green products for clients – Promote mobile and online banking – Include environmental sustainability support initiatives in corporate social responsibility (CSR) – Financial support to climate risk fund, etc.

Source: Author

9.5.2 Sector-Specific Environmental Policies

The sector-specific policies would guide environmental risk assessment, measurement, and rating methods while evaluating a project for financing. These policies should also include how the rating or results obtained would be incorporated in valuation or appraising a project under consideration for financing. Since the nature and magnitude of environmental implications differ across industries and sectors, comprehensive specific environmental policies should be designed separately for each sector. Of course, some common components may be there. These policies will be complementing the Green Banking Policy.

Since it is difficult to design "one size fits all" common policy documents for all due to the varying nature of businesses and markets they cater to, a benchmark guideline for such policies should be designed by regulatory authorities of a country. This would help banks in a country not only follow a common practice nationwide but also act as a guide to formulate customized policies for its own based on specific business characteristics. An example of such a benchmark policy framework will be discussed in the following section.

9.6 A Regulatory Approach to Commercial Green Banking Policy Formulation

A regulator is involved in the formulation and design of benchmark green banking policy guidelines and its implementation, monitoring and supervision over time. Central banks or financial services authorities should dedicate separate departments or team of officials to ensure the guidelines are well complied with by commercial banks. In addition to enforcing or encouraging commercial banks to adopt such practice, the regulator should adopt it first in its own operation. Therefore, a separate in-house policy also should be designed by the regulator to bring green practices in its own activities. Figure 9.5 shows where the regulatory intervention plays a role with respect to the regular business model of a commercial bank. It means, for all business activities performed that are in common among banks, the authorities should develop benchmark policy guidelines, laws, or acts.

9.7 The Limits to a Sustainable Development Role of Central Banks

In light of the central banks' potential contribution toward greening the banking system, one needs realize the associated limits, too. Volz (2017) identifies that while central banks can be proactive in promoting environment-friendly banking, there are at least three ways in which central banks may not be the appropriate catalyst.

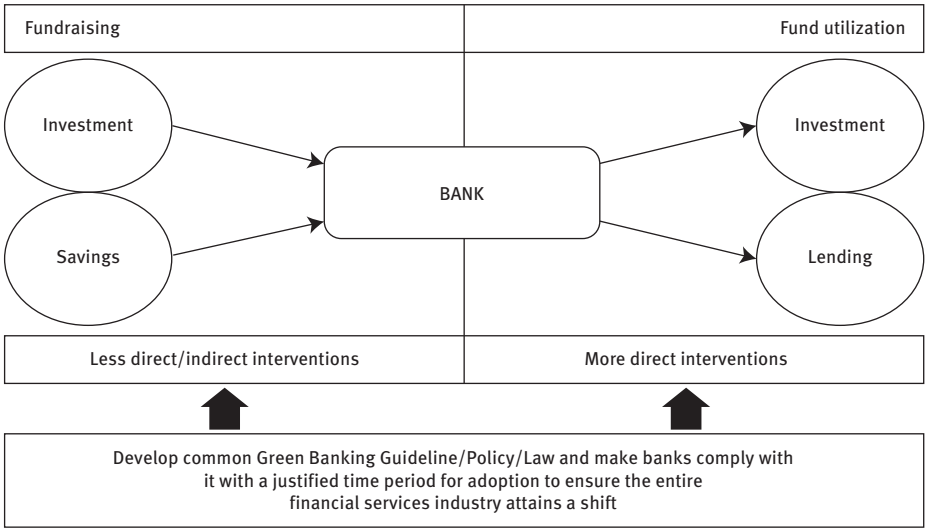

Figure 9.5: Regulator intervention with policy frameworks.
Source: Author

9.7.1 Conflicting Objectives

In many economies, central bank mandates are limited to price, financial, or monetary stability. Incorporating environment and climate change risks into the existing frameworks can often be conflicting, complex, or difficult and subject to critical analysis, for example, due to quantification difficulty. Even if a central bank wishes to achieve environmental goals, it will need to be equipped with appropriate instruments without compromising other goals. In cases where central banks have safeguarded macroeconomic and financial stability according to its objectives, adding environmental goals to central banks' mandate can be overlapping since it is implicitly included in the preexisting mandates. Furthermore, the extent to which central banks should use their tool to play a "proactive" sustainable development role is disputed since prioritizing the green sector may sometimes become the cause of financial instability, as such a role can push the whole sector to be much too focused on sustainable banking models reducing business diversification benefits.

9.7.2 Interference and Conflicts of Interests

It is rather debatable whether enormous power should be vested to an unaccountable institution. A broad consensus is developed that central banks should be awarded with institutional independence to appropriately pursue their goal and they should

be immune to any political interference. There can be political interests in preventing green policy considerations by central banks, if they are expected to have large negative impacts on carbon-intensive, highly profitable firms or projects. This can happen even where a central bank is delegated with constitutional power or requirements to deliver environmental goals. For example, although Article 127(1) from the European Treaty on the functioning of the European Union states that price stability should be the prime objective of the European System of Central Banks (ESCB), it also annexed the requirement to fulfill the need to support economic policies to achieve the objective mentioned in Article 3 of the treaty. Article 3 includes objectives such as sustainable development and improvement of the quality of the environment. This essentially opens up the question as to what extent political authorities and people at large want the ESCB to support the environmental goal.

9.7.3 Resistance to Change from Within the Central Banking Community

Vesting the central bank with the need to solve environmental problems might prove to be counterproductive and overwhelming. Traditionally, central banks work with objectives pertaining to macroeconomic and financial stability. The central bankers are heavily trained to ponder and work based on these fundamental objectives, leaving little room for understanding environmental considerations to fit in. Central banks often have enough tools to impact capital allocation to green investments, but central bankers may resist if it requires them to be deviated significantly from their primary duties and responsibilities of safeguarding the economy and market. Furthermore, a central bank's intervention often dynamically changes, which is dependent on the structure and needs of the financial system and the government's other development policies (Groepe, 2016); therefore, central banks might have little room for involvement in environmental objectives.

9.8 Conclusion

A central bank is the forerunner of a financial system. The entire banking system in an economy is governed by a central bank, often in guidance and consultation with the government. Central banks often must function in line with the government's goals while maintaining the objective of financial and monetary stability in an economy. It is true a proactive action by central banks through policy stances, guidelines, and regulatory frameworks in consultation with banking stakeholders can be the best approach to begin the banking sector-wide adoption of green banking. However, this can be often challenging as central banks may indeed have little room for and make less of a priority of including environmental considerations while dynamically managing the daunting task of economic, financial, and price

stability. Despite, considering the growing significance of environmental protection and a vital potential role of banks, central banks today perhaps must rethink and redesign their portfolio of objectives and fit the environmental considerations into it.

Discussion Questions

1. What can the impact be of using monetary policy instruments for stimulating green finance on other investments of banks?
2. How can green policy features conflict with or contradict traditional banking policies?
3. Design a sample architecture of a national financial system, identify the key policymakers and regulators in the system, and outline some possible policy prescriptions for each policymaker or regulator in order to facilitate greening the whole financial system.
4. What can the policy and regulatory responses from the government be in systemically facilitating a green financial system in a country?

Application in Focus

A Central Bank Initiated National-Level Comprehensive Green Banking Guideline: An Example from Bangladesh Bank – The Central Bank of Bangladesh

Bangladesh is considered the primer in bringing environment-friendly practices with a "Structured Framework," which is substantially comprehensive and robust. The Green Banking Policy Framework designed by Bangladesh Bank includes almost all aspects that a country should consider while introducing full-fledged green practices in the entire banking industry. For these exemplary initiatives for the world, Dr. Atiur Rahman, the then governor of Bangladesh Bank was awarded the Best Central Bank Governor for 2015 in the Asia Pacific Region by the UK-based *Financial Times* owned magazine *The Banker*. Bangladesh Bank has policy frameworks for its own operations and for commercial banks to follow. As an emerging market central bank, Bangladesh Bank has made remarkable progress in implementing several initiatives to make its activities environmentally responsible. Some of the initiatives can be cited here:

- Renewable power source for the head office and reduction of paper use
- All departments of Bangladesh Bank head office and its nine branch offices have already been brought under computer networks (LAN and WAN) with interconnectivity of around 3,500 computers nationwide
- Implementation of Bangladesh Automated Cheque Processing System (BACPS), Bangladesh Electronic Fund Transfer Network, and Enterprise Resources Planning (ERP)
- Introduction of Online Credit Information Bureau (CIB) and verification services, and Enterprise Data Warehouse (EDW) for an electronic Data Bank
- Launching of web-based E-tendering, E-Recruitment and Human Resources Management, Electronic Payment System and E-Pass System for visitors

For commercial banks with a mandatory approach, Bangladesh Bank introduced this structured Green Banking Policy guideline in 2011 with a three-year target for implementation by the scheduled banks. This policy guideline is complemented by the Environmental Risk Management

Guidelines 2011 (Bangladesh Bank Circular, 2011: 2013). The contents and structure of the benchmark policy guideline for commercial banks designed by Bangladesh Bank has been presented for reference in Figure A9.1.

Phase 1	Phase 2	Phase 3
Deadline: *December 31, 2011*	**Deadline:** *December 31, 2012*	**Deadline:** *December 31, 2013*
To Do	**To Do**	**To Do**
1.1 Policy formulation and governance 1.2 Incorporation of environmental risk into credit risk management (CRM) 1.3 Initiating in-house environmental management 1.4 Introducing green finance 1.5 Creation of Climate Risk Fund 1.6 Introducing Green Marketing 1.7 Online banking 1.8 Supporting employee training Consumer awareness and green events 1.9 Disclosure and reporting of green banking activities	2.1 Sector-specific environmental policies 2.2 Green strategic planning 2.3 Setting up green branches 2.4 Improvement in in-house environmental management 2.5 Formulation of bank-specific environmental risk management and guidelines 2.6 Rigorous programs to educate clients 2.7 Disclosure and reporting of green banking activities	3.1 Designing and introducing innovative products 3.2 Reporting in standard formats with external verification *4.0 Reporting green banking practices on a quarterly basis*

Figure A9.1: Three-phase green banking benchmark policy by Bangladesh Bank.
Source: Millat, Chowdhury, and Singha (2012)*; Bangladesh Bank (2013)*

The Bangladesh Bank circular requires banks to adopt green strategic planning for 2013 and beyond (Bangladesh Bank, 2011; 2013a). Vision and mission must be incorporated in the strategic planning covering in-house green banking activities and green financing practices. Banks will formulate appropriate policies for selection of unit/project and location under different categories based on proper analysis of environmental risks and concentration therein as per the Environment Conservation Act (ECA) 1995, Environment Conservation Rules (ECR) 1997, Environmental Risk Management guidelines, green banking guidelines, and other relevant instructions issued from time to time. Banks will also prepare sector specific environmental guidelines taking ECR 1997, Environmental Due Diligence (EDD) checklists and current environmental and climate change condition into consideration. Banks will prepare sector specific environmental guidelines only for sectors covered in the respective bank's portfolio.

The above benchmark policy guideline is mandatory for all scheduled banks to comply with. Therefore, Bangladesh Bank periodically examines the status of compliances and banks are doing quite well (see Millat et al., 2012, Bangladesh Bank, 2013b; Rahman & Barua, 2016; Chowdhury & Habib, 2014). However, as it is difficult to implement green banking in a short period of time due to several challenges, studies suggest that on average 60% of compliance with the above policy has been achieved as of now and Bangladesh Bank has extended two more years' time to facilitate its implementation by banks. Several challenges have been found

that are impeding the implementation including very low priority, the idea being too new to adopt so quickly, lack of knowledge and awareness, less commitment of resources, etc. Bangladesh Bank has been working on resolving these issues. The benchmark policy to be designed by a regulator for the entire financial services industry will vary from country to country. Therefore, it is difficult to develop a "one size fits for all" benchmark policy framework model for all countries. However, the model framework designed and implemented by Bangladesh Bank can be a good example and be used as a model to start over for other countries' financial regulators.

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Chapter 10
Green Banking: Future Challenges and Way Forward

10.1 Introduction

The traditional view of economic development overlooking environmental and social costs has already begun to flip around. There is an increasing level of awareness and commitment from development agencies, governments, corporations, and individuals to save the environment while trying to maximize economic well-being. The world must progress toward and achieve sustainable development to have a more liveable future. To feed and maintain the journey of sustainable development, there is no alternative to mobilizing enough financial resources. As financial institutions like banks have immense influence on the lives of people and organizations, it is crucial to make them environmentally responsible or environment-friendly in how they do their business. Realizing this need, an increasing number of banks are committing to the adoption of environment-friendly business practices, that is, green banking practices in their day-to-day operations. In the process of greening the conventional banking procedures, multiple challenges can arise from within a social and operational context. This requires a green bank to take multiple variables under consideration in comparison to a nongreen bank, which makes the operational framework perhaps a little more difficult and complex to deliver.

10.2 Challenges in Green Banking Adoption

There can be several challenges faced by banks and other stakeholders engaged in the process of initiating and integrating green practices in the banking business. Some of the key challenges are highlighted in the following discussion.

10.2.1 Lack of Awareness and Education

There is a significant lack of awareness among people about how greening banking procedures and practices may help achieve environmental standards and bring sustainability in the long run. The understanding gap lies among all stakeholders including bank staff, top management, and customers (Rahman & Barua, 2016). However, some customers presume green procedures are a mandatory requirement forcing banks to take environmental risks into consideration while engaging in new business (Islam, 2018). Alongside customers, awareness among

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employees as well as top management is a must in order to effectively adopt green banking practices. Much of the understanding and awareness gap, however, can be attributed to less education opportunities and sharing of knowledge available in the banking industry, as the concept is relatively new, lacks well-organized learning materials, and receives less attention compared to hard topics (e.g., asset liability management, liquidity management, credit risk management) in banking discussion and networking events (e.g., industry conferences, annual meetings). The understanding and education gap is seen to be equally present among commercial banks and central bankers.

10.2.2 Potential High Cost of Implementation

To effectively implement green banking policies, there are explicit and implicit costs. To green business operations, there can be a need for significant investments to begin with green banking, for example, infrastructural changes, installation and operational cost of solar panels, establishment of green branches, cost of virtualization, and cloud computing, etc. Again, there are operating costs that are also likely to arise while adopting green practices, such as the cost of screening before loan approval, indirect costs and compliance with green banking policy restrictions, expenses for training employees associated with green banking products and operations, etc. Much of the operating costs would be not one-off and rather would occur on a regular basis. The large investment needs and increased operating costs can discourage bank management and central banks to pursue green practices.

10.2.3 Too New to Implement Fast

As green banking is a relatively new concept in the banking world, molding existing operations that have been in practice for decades in order to achieve a new set of goals is quite challenging. In order to transform operational practices in either an individual bank or banking sector-wide, the process of transformation has to be slow and follow a step-by-step procedure to result in expected outcomes. Proper understanding of concepts, procedures, and standards must be in place among all stakeholders before going for actual implementation and adoption in practice (Rahman & Barua, 2016).

10.2.4 Less Opportunity of Diversification

As green banks require their borrowers to maintain a high level of social and environmental standards, it eventually limits the number of customers who qualify under such screening process. With a shrunken customer base, banks are likely to have less credit diversification opportunities and greater pressure on their level of profitability. Furthermore, a lack of diversification can also increase the level of credit portfolio risk.

10.2.5 Start-Up Phase

As green banking is a new concept, banks intending to comply with green policies are still in an early stage. It can take several years to fully adopt green practices and start making enough impacts. As a result, the very few currently full-fledged green banks have not yet faced the real market competition while those who are still developing are not ready to compete in the market (Srivastava, 2016).

10.2.6 Less Priority by the Board and Management

Studies suggest that top management and boards put less priority on compliance to green banking policies, primarily because they do not want to divert their attention from issues that are more critical for regular banking business, they are concerned that green banking is likely to cause new operational complexities, and that such efforts are likely to result in a higher operational cost (Rahman & Barua, 2016). In existing banks with green practices, most efforts are primarily driven by the interest of regulatory requirements set by the central banks rather than actual intention to go green.

10.2.7 Inadequate Commitment of Resources

As previously mentioned, due to the lack of prioritization of green banking, a lower amount of funding is directed to this area of operations for necessary capacity building, research, and infrastructural development. Green banking procedures require highly qualified and trained human resources to perform with care. Banks often do not engage required funds and/or have skilled manpower with experience and knowledge on green practices; and often skilled human resources are found to be rarely available across the sector or economy. On many occasions, banks are unwilling to invest enough financial resources to develop human resources in-house.

10.2.8 Policy Uncertainty and Externalities

As the concept of green banking is relatively new and does not generate direct profit for banks on an immediate basis, the banking community needs to follow a clear and feasible national-level policy framework on issues like clean energy, infrastructural investment, and renewable energy (UNEP, 2016). However, if there is ambiguity or lack of clarity in the national level long-term goal with regard to environmental benefits and protection, banks as a key part of the society and business would not have the motivation or drive to become environment-friendly. Furthermore, as greening banking is likely to increase operating costs and lower returns for customers, it may create arbitrage opportunities for nongreen banks with lower operating costs. Customers may take the opportunity and become more inclined toward nongreen products with a view toward earning a better return.

10.2.9 Maturity Mismatch

Matching the maturity of assets and liabilities is a complex asset-liability management technique followed by banks on a daily basis. A very crucial challenge for green banks is to match the tenure of green liabilities to the maturity of long-term green loans. Often, benefits to be generated from green loans can take relatively longer periods than deposits collected or compared to nongreen loans, which can make maturity matching more difficult.

10.2.10 Lack of Quality of Environmental Information and Consistent Standards

Adequate and quality data is always at the heart of green banking practices. To be able to evaluate credit proposals or carbon-intensive investments, assets, projects, or firms, banks must have access to enough quality data and information on likely environmental implications of the investments. Data and information required needs to be available in a timely manner on the potential borrower, the project, the asset, and the industry; for example, banks occasionally can use environmental, social, and governance (ESG) indicators of firms regarding their performance as per the social and environmental standards, sourcing the data from third-party data management agencies like Thompson Reuters. However, on many occasions, data on a specific borrower or project or investment in the context of a specific country may be unavailable as none of the existing data providers have comprehensive coverage. Furthermore, there can also be challenges in communicating measurable and easily understandable environmental information with consumers and shareholders with regard to a bank's own performance in achieving the sustainability goals (UNEP, 2016). While green banking adoption requires adhering to the standards available at national or international

levels, a lack of consistency in standards and guidelines available across countries and at the international level makes it harder for banks to identify and follow green practices. Differences across standards, guidelines, and definitions often may make banks confused and generate large degree of heterogeneity about the nature and type of environment-friendly practices across countries.

10.3 Some Ways to Overcome Green Banking Challenges

Overcoming the challenges to green banking adoption requires continued efforts with a long-term perspective, as much of the challenges are complex to mitigate or resolve and thus may take a significantly long time. Some crucial ways that can be considered to mitigate and manage the challenges are outlined below.

10.3.1 Consistency in Green Banking Framework

The process of identifying and progressing toward green banking is significantly constrained due to the absence of a framework or standard or guideline that is uniform and consistent across nations (UNEP, 2016). The existence of a uniform and measurable global framework with specifically defined goals can ease the process of measuring how a bank is progressing toward greening its business and increasing the quality of green products. This would enable banks to know exactly what they are going to achieve and how in a manner consistent across countries or across banks within a country.

10.3.2 Promotion and Education

There should be an increased level of awareness and understanding on the need, process, and significance of green banking business among all relevant stakeholders (e.g., bank staff, top management, central bankers, regulators, customers). Education and promotion events such as training, workshops, seminars, and awareness campaigns can be organized on a regular basis throughout the year by potential green banks, banking industry associations, central banks, and other national and international agencies. A coordinated effort of all these relevant parties instead of standalone initiatives at the national level can have a multiplier effect in the promotion and adoption of green banking. However, banks may wish to educate their staff and top management by organizing in-house events.

10.3.3 Prioritize and Commit Resources with a Long-Term Approach

Green banking should be made a top-level priority by bank management and regulators, considering it is equally as important as other core banking matters. Banks should aim long term and allow enough time to adopt green banking effectively in all aspects of banking practices. In order to achieve this faster, banks need to commit and release necessary financial and nonfinancial resources over time as needed in different steps and phases of green banking adoption. With a top-level priority and a long-term approach, investing enough resources should be able to yield the desired impacts in the quickest time possible.

10.3.4 Emphasize Research, Innovation, and Development

Commercial and central banks need to undertake serious research on different aspects of green banking, for example, how best to integrate green practices, what the likely impacts are if a green practice is put in place, etc. Quality research on a continuous basis would help banks develop appropriate policy and strategic responses in making green practices more effective. Similarly, research can help central banks gain understanding of critical policy issues, for example, determining the current level of progress on green practices, examining the sector-wide and economy-wide need and impacts of green banking, and stress testing and simulation of specific green banking policies under consideration. Commercial banks and central banks should dedicate necessary financial and human resources to produce impactful research outcomes. Furthermore, continuous research on green banking can be highly useful in developing unique and innovative green products, services, and processes that green banks can use to gain competitive advantage in the market, lower the cost going green, and finally improve profitability.

10.3.5 Regulatory and Policy Coherence

Coherent regulatory and policy frameworks should be formulated and provided by central banks to foster nationwide green or environment-friendly banking practices. The frameworks should provide clarity on the fundamental definition of what green banking means and the processes that are to be uniformly followed nationwide. Furthermore, the frameworks can include critical issues, for example, financial and nonfinancial incentives (e.g., tax benefits) for eco-friendly banks, mandatory or binding regulatory green banking requirements, voluntary standards and guidelines such as sustainable banking principles, the facilitation of green securities, and management and disclosure of data and information on environmental implications of banks' practices and of relevant customers, projects, and assets.

10.4 Conclusion

Being a relatively young concept, the development of understanding and adoption of green banking requires substantial time. It is not something that can be done overnight. Going green by banks can have significant positive impacts on environmental quality; however, this realization needs to be embedded within relevant stakeholders of the banking community across all countries. Due to structural and economic differences, the understanding and adoption process may not be the same across economies; yet the very fundamental concepts should remain uniform. Based on a consistent framework, green banking needs to be popularized among commercial and central bankers. In order to achieve this, while moral perusal is necessary, it is also important to provide adequate policy priority and support by regulators and governments so commercial banks find it financially feasible to adopt into their practices.

Discussion Question

1. Develop a list of potential challenges to be faced by a commercial bank or the central bank in your country, make a checklist of responsible stakeholders who can address those challenges, and suggest a potential action plan for each stakeholder to mitigate the challenges collectively.

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List of Acronyms

ADCs	alternative delivery channels
AEPC	Alternative Energy Promotion Center
AIIB	Asian Infrastructure Investment Bank
ASFI	Australian Sustainable Finance Initiative
BACEN	Brazilian Central Bank
BACPS	Bangladesh Automated Cheque Processing System
BEFTN	Bangladesh Electronic Fund Transfer Network
BOD	board of directors
CBRC	China Banking Regulatory Commission
CBS	Core Banking Solution
CIB	Credit Information Bureau
CREF	Central Renewable Energy Fund
CSR	corporate social responsibility
DJSI	Dow Jones Sustainability Index
E&S	Environment and Social
ECA	Environment Conservation Act
ECR	Environment Conservation Rules
EDD	Environmental Due Diligence
EDW	Enterprise Data Warehouse
EMS	Environment Management System
EP	Equator Principle
EPI	Environmental Performance Index
ERM	Environmental Risk Management
ERP	Enterprise Resource Planning
ESCB	European System of Central Banks
ESG	environment, social, and governance
ESI	Environmental Sustainability Index
ESRM	environmental and social risk management
ETP	effluent treatment plant
EU	European Union
FEBRABAN	Brazilian Banking Association
FMO	Netherlands Development Bank
GBF	green banking framework
GBG	Green Banking Guideline
GBN	Green Banking Network
GCF	Green Climate Fund
GCG	Green Credit Guideline
GHG	greenhouse gas
GIZ	German Society for International Cooperation
GPI	Genuine Progress Indicator
GRI	Global Reporting Initiative
ICAAP	Implementation of Basel III, Adequacy, and Assessment Process
IFC	International Finance Corporation
IPCC	Intergovernmental Panel on Climate Change
ISS	Institutional Shareholder Services
KDB	Korean Development Bank

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LEED	Leadership Energy and Environmental Design
LTI	loan to income
LTV	loan to value
MDG	Millennium Development Goal
NGFS	Network for Greening Financial System
NRREP	National Rural and Renewable Energy Programme
NSBP	Nigeria Sustainable Banking Principles
NVPL	New Vision Power Limited
OECD	Organization for Economic Cooperation and Development
PRI	Principles of Responsible Investment
PSI	Principles of Responsible Insurance
RBI	Reserve Bank of India
SASB	Sustainability Accounting Standards Board
SBN	Sustainable Banking Network
SDG	Sustainable Development Goal
SIFI	systematically important financial institutions
SRI	social responsible investing
SSWG	Strategic Sustainability Working Group
STP	sewage treatment plant
UNDP	United Nations Development Programme
UNEP-FI	United Nations Environment Programme Finance Initiative
WTP	water treatment plant

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