Hợp tác Đức
DEUTSCHE ZUSAMMENARBEIT

VIỆN CHIẾN LƯỢC VÀ CHÍNH SÁCH TÀI CHÍNH
NIF

Financial Instruments for Green Growth in Viet Nam

Published by giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Foreword

The term "green growth" was first discussed in 2005 at the fifth Ministerial Conference on Environment and Development in Asia and the Pacific. The conference, chaired by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), identified "a new model of green growth as economic growth while maintaining environmental sustainability". Since then, green growth has been considered one of the most important components of sustainable development — its integration of socio-economic development and environmental protection meets the needs of the current generation without affecting future generations. To achieve green growth, environmental policies need to be integrated with economic policies, ensuring mutual benefits for all parties in the development process.

With the goal of bringing economic benefits together with the restoration and conservation of natural ecosystems and climate change mitigation, green growth has become a priority in many countries. To implement green growth programmes and strategies, countries have applied a number of tools and policies, particularly financial and fiscal instruments and policies such as taxes, charges, economic stimulus packages, funds, green financial products (green bonds, green fund certificates, carbon credits, etc.), and budgets allocated according to the goals of green growth.

In Viet Nam, the government formulated the "National Strategy on Green Growth for the period 2011-2020 with a vision to 2050", which confirms that green growth will be based on the process of growth model renewal and economic restructuring to make the most of comparative advantages, and on improving economic efficiency and competitiveness through the application of advanced technology. These measures will support the development of a modern infrastructure system that uses natural resources effectively, reduces greenhouse gas emissions, increases resilience to climate change, contributes to poverty reduction, and promotes sustainable economic growth.

Following several years of implementation, green growth activities in Viet Nam have achieved several positive results. However, there have been many challenges, including a lack of awareness, a lack of resources, as well as issues regarding coordination between ministries, sectors, and local authorities. In particular, several issues have emerged as a result of an incomplete and asynchronous framework of financial policies and instruments.

In response to these issues, the National Institute for Finance (NIF) has cooperated with the Macroeconomic Reforms/Green Growth Programme implemented by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) to publish "Financial Instruments for Green Growth in Viet Nam". Through research, theoretical analysis, and international experience on green growth, this publication proposes a number of solutions to perfect financial instruments and policies for sustainable development in Viet Nam.

The publication is divided into 4 parts:

Part I: Green growth and financial instruments for green growth; Part II: Tax policies for green growth; Part III: Public expenditure for green growth; and Part IV: Financial market instruments for green growth.

The publication has been edited by Dr. Nguyen Viet Loi, Director of NIF and Mr. Henri Pierre Gebauer, Team leader of the Macroeconomic Reforms/Green Growth Programme.

Contributing authors include:

Part I: Dr. Nguyen Viet Loi – Team leader with Jacqueline Cottrell M.A. M.A., Henri Pierre Gebauer MSc., Assoc. Prof. Dr. Dinh Duc Truong, Dr. Le Thi Thuy Van, Dr. Nguyen Thi Hai Thu, Le Thi Mai Lien MSc.;

Part II: Truong Ba Tuan MSc. – Team leader with Truong Huynh Thang MSc., Nguyen Thi Hai Binh MSc., Pham Thu Hong MSc., Dao Mai Phương MSc. and Dr. Lai Van Manh;

Part III: Dr. Le Quang Thuan – Team leader with Dr. Ho Cong Hoa, Dr. Nguyen Thi Hai Ha, Assoc. Prof. Dr. Dang Van Du, Assoc. Prof. Vu Cuong, Assoc. Prof. Vu Sy Cuong, Nguyen Thi Le Thu MSc.;

Part IV: Assoc. Prof. Dr. Pham Tien Dat – Team leader with Assoc. Prof. Dr. Pham Thi Hoang Anh, Ha Thi Doan Trang MSc., Ngo Anh Phuong MSc., and Luu Anh Nguyet MSc.

At the same time, the publication also received valuable comments, additions and corrections from the following experts: Assoc. Prof. Dr. Nguyen Thi Mui, Assoc. Prof. Dr. Dinh Trong Thinh, Assoc. Prof. Dr. Nguyen Thi Thuong Huyen, Assoc. Prof. Dr. Dang Van Du, Le Xuan Sang MSc., Dr. Pham Xuan Hoe, Dr. Nguyen Duc Do, Dr. Vu Dinh Anh, Do Tat Cuong; and from the Editorial team: Ngo Xuan Thanh MSc., Nguyen Mai Anh MSc., Vuong Nguyet Minh MSc., Nguyen Thi Thu Ha MSc., Le Quyet Tam, Pham Thanh Thuy MSc., Nghiem Thi Thuy Hang and Nguyen Thi Chinh.

Although great efforts have been made in the process of compiling this publication, due to the limited time frame, inadequacies are inevitable. The publication has previously been published in Vietnamese language by NIF in 2020 and expresses the opinions of the authors on green growth and the role of financial instruments and policies for green growth. We believe it will serve as a useful reference source for policy makers, researchers, and international organisations. In the spirit of unity, NIF and GIZ look forward to receiving comments and suggestions to better serve readers in subsequent publications.

Table of Contents

List of Tables

List of Figures

List of Acronyms and Abbreviations

ACEF	Asian Clean Energy Fund
ADB	Asian Development Bank
APEC	Asia-Pacific Economic Cooperation
AQI	Air Quality Index
ASEAN	Association of Southeast Asian Nations
BOO	Build-Own-Operate
BOT	Build-Operate-Transfer
BTO	Build-Transfer-Operate
CBI	Climate Bond Initiative
CDM	Clean Development Mechanism
CELS	Clean Edge Green Energy Index
CER	Certified Emissions Reductions
CH_4	Methane
CIT	Corporate Income Tax
CO_2	Carbon Dioxide
COP 21	United Nations Climate Change Conference 2015
CPTPP	Comprehensive and Progressive Agreement for Trans-Pacific Partnership
CTF	Clean Technology Fund
EE	Energy Efficiency
EIB	European Investment Bank
EPT	Environment Protection Tax
EU	European Union
EU ETS	European Union Emissions Trading System
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GEF/SCCF	Special Climate Change Fund

GG	Green Growth
GHG	Greenhouse Gas
GIB	Green Investment Bank
GIF	Green Investment Fund
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
HCFC	Hydro-chloro-fluoro-carbon
HNX	Ha Noi Stock Exchange
HOSE	Ho Chi Minh City Stock Exchange
IFC	International Finance Corporation
KfW	Kreditanstalt für Wiederaufbau
KWh	Kilowatt-hour
LGX	Luxembourg Green Exchange
MAS	Monetary Authority of Singapore
MoF	Ministry of Finance
MONRE	Ministry of Natural Resources and Environment
MPI	Ministry of Planning and Investment
NIF	National Institute for Finance
NYSE	New York Stock Exchange
ODA	Official Development Assistance
OECD	Organization for Economic Co-operation and Development
PBoC	People's Bank of China
PIT	Personal Income Tax
PPP	Public-Private Partnership
RBI	Central Bank of India
RE	Renewable Energy
REDD+	Reducing emissions from deforestation and forest degradation, conservation of existing forest carbon stocks, sustainable forest management and enhancement of forest carbon stocks

SGX	Singapore Stock Exchange
SME	Small and Medium-sized Enterprise
SO_2	Sulphur Dioxide
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNFCCC	United Nations Framework Convention on Climate Change
VAT	Value-Added Tax
VDB	Viet Nam Development Bank
VEPF	Viet Nam Environment Protection Fund
VGGS	Viet Nam National Green Growth Strategy
VNSI	Viet Nam Sustainability Index
WB	World Bank

Introduction

Henri Pierre Gebauer

Nguyễn Viết Lợi

In the context of the Covid-19 pandemic and the climate emergency, the concept of green recovery is gaining traction. Around the globe, governments are implementing unprecedented economic stimulus measures worth trillions of euros in efforts to boost economic recovery pursuing a green growth agenda.

Major economies such as the European Union and its Member States, the United States, Korea, India, and China have approved expenditure plans and tax measures to promote a green transformation, transitioning to low-carbon economic development by accelerating investment in sustainable infrastructure, green jobs, and measures to bolster economic, social and environmental resilience. The concept of green growth and questions on how to transform economies and channel finance towards a low-carbon and less resource intensive development path whilst ensuring a just transition will increasingly shape the future of economic and social development models in industrialised and developing countries.

Green finance is growing at a fast pace, enabling significant investment in environmentally sustainable and climate related projects and infrastructure worldwide. The implementation of green fiscal instruments, which are considered the most efficient economic governance tools to promote green growth, are being applied across an ever-increasing number of jurisdictions with the aim of correcting price signals and incentivising low-carbon and environmentally sound development.

As in many rapidly developing countries, Viet Nam's carbon-intensive growth model in the past decades, coupled with rapid urbanisation, population growth and climate change, has led to mounting environmental challenges. Increases in wastewater, solid waste and rising levels of air, water and soil pollution are taking an increasing toll on society: the natural environment, public health, and the economy have all been seriously impacted.

To tackle the limitations of its economic growth model, the Government of Viet Nam introduced policies to restructure the economy and reform the growth model with a view to promoting economic efficiency, quality and competitiveness. The National Green Growth Strategy (VGGS) 2013-2020 with a vision to 2050 and the corresponding National Action Plan on Green Growth 2014-2020 set an ambitious framework for a shift towards green growth and an inclusive green economy. The VGGS sets forth a comprehensive set of fiscal and financial instruments, which have since been introduced by the Government of Viet Nam and have been key in inducing a gradual transformation towards a more sustainable growth model.

This publication explores specific experiences and lessons learned by countries around the world from their implementation of green growth strategies, policies and instruments with a focus on fiscal and financial instruments. More importantly, the publication analyses the status of green growth in Viet Nam focusing on results, impacts, and bottlenecks

in the implementation of green fiscal and financial instruments. The chapters are structured according to fiscal and financial policies and instruments in the areas of revenue, public expenditure, and market-based financial instruments.

The publication sets out the potential benefits of expanding and deepening the application of green fiscal and financial instruments to transform the growth model of Viet Nam towards green growth and a low carbon development. In this context, the Ministry of Finance (MoF) is playing a key role in promoting and implementing green fiscal reform measures in close coordination with the Ministry of Planning and Investment (MPI), the Ministry of Natural Resources and Environment (MONRE), the Ministry of Industry and Trade (MoIT), the State Bank of Viet Nam, relevant government ministries, central agencies and local authorities.

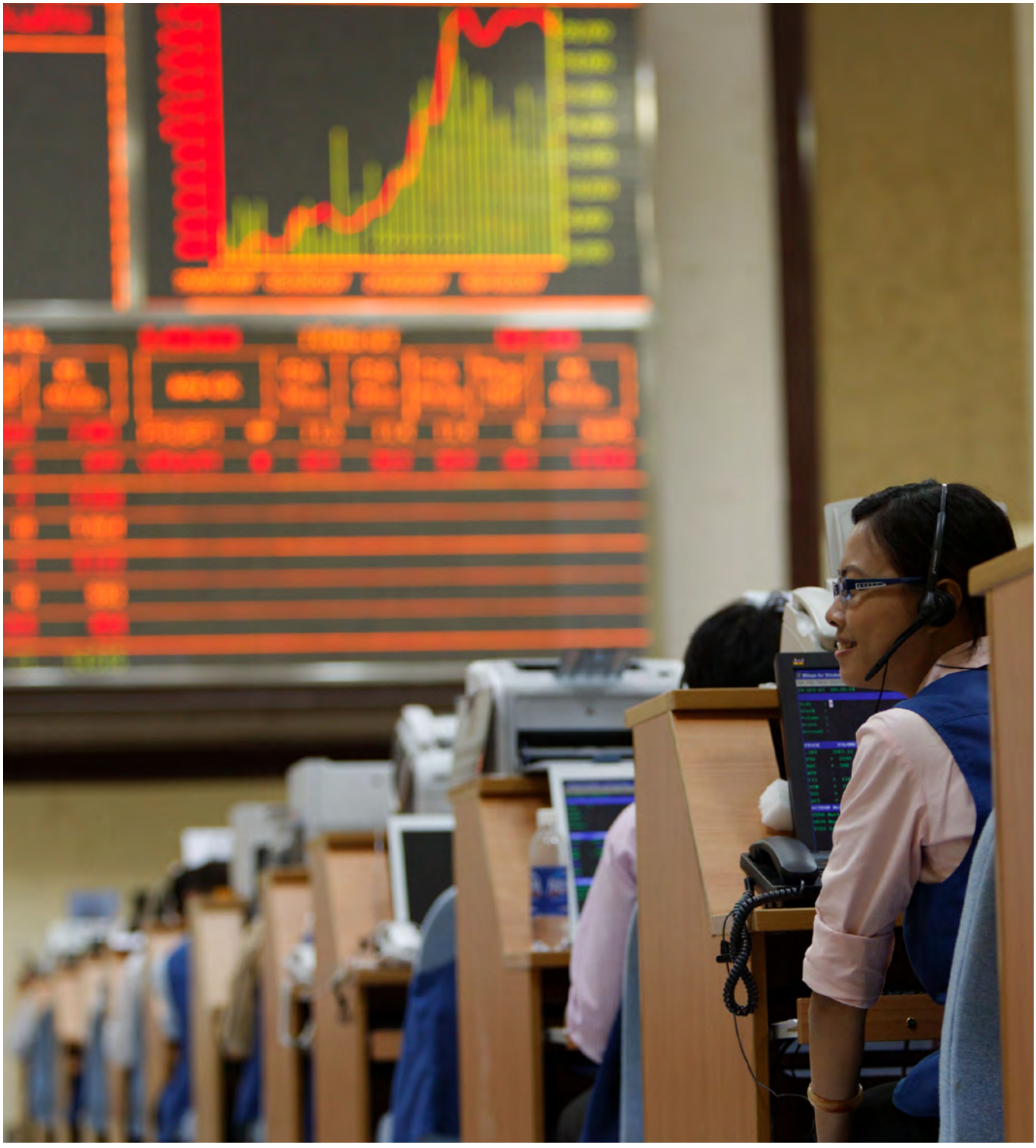
The authors, senior government officials, and seasoned academics are developing specific recommendations — to be considered in the Sustainable Economic Development Strategy (SEDS) for period 2021-2030 and the Viet Nam Green Growth Strategy for 2021 to 2030 — to further inform Viet Nam's economic reform process.

The chief editors would like to express their sincere thanks to the editorial team of dedicated NIF and GIZ staff, economic experts, and scientists who guided this publication through to completion.

Henri Pierre Gebauer
Team Leader
Macroeconomic Reforms/Green Growth Programme, GIZ

Nguyễn Viết Lợi
President
National Institute for Finance
Ministry of Finance

Part I



Green Growth and Financial Instruments for Green Growth[1]

The brown economy — grow first, clean up later — is an economic model that has been implemented by many countries for many years. It relies on fossil fuels while ignoring social problems, environmental degradation and depleted natural resources. The fact that countries focus on exploiting natural resources without paying proper attention to efficiency has enabled economies to achieve high growth rates in the long term. However, this has done great harm to the environment, resulting in air pollution; over-exploited water resources and oceans; land degradation; deforestation; biodiversity loss; and increasing greenhouse gas emissions such as CO_2, SO_2, CH_4, causing climate change on a global scale. In this context, the green economy — an economic model to achieve economic growth while maintaining environmental sustainability — emerged and became a trend that is attracting increasing interest in many countries. To achieve the green growth goal, countries have applied several tools and policies in which financial instruments play a key role in mobilizing and allocating resources to serve the process of promoting green growth towards sustainable development.

In part I, the research team focuses on a number of issues concerning green growth, including: the criteria to measure green growth and the trend of green growth in the international context. It provides a general overview of the financial instrument system for green growth with a focus on green securities and green financial markets, the role of financial instruments in the market, and the trend of using key financial instruments for green growth in a number of countries. An overview of green growth and financial instruments for green growth in Viet Nam is also provided.

[1] Dr. Nguyen Viet Loi, Jacqueline Cottrell, M.A. M.A., Assoc. Prof. Dr. Dinh Duc Truong, Dr. Le Thi Thuy Van, Dr. Nguyen Thi Hai Thu, Le Thi Mai Lien MSc.h.

1.1. Green growth and trends in the international context

1.1.1. Concepts of green growth

The concept of green growth (GG) — economic growth that also achieves significant environmental protection — has come to occupy a prominent position in the policy discourse of international institutions and national governments. In the face of the environmental and climate crises which have been unfolding since the 1950s, which have called for better and more effective development strategies than "grow first, clean up later", the GG paradigm has come into its own. GG and green economy (GE) have increasingly come to dominate international policy dialogue due to their appeal as win-win development strategies able to sustain economic growth without negatively impacting on sustainability while incorporating the necessary policy tools for policymakers to achieve these aims.

a. Rethinking development: from "grow first, clean-up later" to sustainable development

Sustainable development and the GG paradigm replaced earlier approaches to economic development, such as the "grow first, clean up later" model based on the Environmental Kuznets Curve (EKC). The EKC suggests that policymakers focus on the economy and GDP growth until a certain level of income is achieved, when individuals in their societies start to question the trade-offs between environmental quality and consumption and opt to invest in environmental quality in preference to higher consumption. The theory has many shortcomings: not least that poor communities may not be able to access suitable political representation to express their concerns about environmental degradation, or communities may fail to link human health impacts to environment problems (World Bank 2011). Moreover, the approach is somewhat contradictory, as pollution has immediate and obvious negative impacts on welfare — indeed, poverty and environmental degradation are mutually reinforcing (Sheng 2017).

Sustainable development is defined as: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (UN 1987, paragraph 27). The concept emphasises intergenerational justice and social, environmental and economic progress as equal and integral pillars of development. Although this definition is widely recognised, the implications of sustainability in practice for the preservation of natural capital are unclear.[2] Nonetheless, by 1992 the term had been mainstreamed in policy discourse in the Rio Declaration on Environment and Development and the Agenda 21, and is central to the Sustainable Development Goals and the Agenda 2030.[3]

Although sustainable development describes a normative framework for development, it does not specify the mechanisms by which it should be achieved. The international community therefore struggled to operationalise sustainable development and identify a practical formula for integrating social, economic and environmental dimensions (Samans 2013). This has been an underlying driver of the rise of GG and GE approaches, which not only describe an end result but also deliver concrete policies and strategies to achieve it.

b. Green shoots: green growth in the Asia-Pacific region

The term green growth was first coined at the Fifth Ministerial Conference on Environment and Development in Asia and the Pacific (MCED). The conference defined a "new paradigm of green growth which meant pursuing economic growth while maintaining environmental sustainability" (MCED 2005, p.5). South Korea hosted the conference and

[2] Proponents of strong sustainability contend that the substitution of natural capital with other types of capital is limited, while proponents of weak sustainability suggest that natural capital and other types of capital are perfectly substitutable.

[3] See: https://sustainabledevelopment.un.org/sdgs

has since been a pioneer of GG at international and national levels.

The MCED highlighted the need for environmental policies to be integrated with economic policies to achieve win-win outcomes for development by greening production and consumption and boosting eco-efficiency, regarding the environment as a driver of growth, rather than a burden. The MCED's GG paradigm also took social equity and poverty reduction into account (MCED 2005).

The only policy instruments explicitly referred to in the MCED outcome document were green fiscal policies (GFPs) and economic instruments. Other policy objectives were formulated on a more general level.[4]

c. Mainstreaming green growth and inclusive green growth

In the wake of the 2008 financial crisis, international organisations picked up on the GG narrative. Many countries responded to the crisis with green Keynesianism — green stimulus — to power the recovery. In Asia, this trend was particularly clear. The Republic of Korea dedicated 81% of its fiscal stimulus of USD 30 billion to green growth projects, while China spent more than any other country on green fiscal stimulus — USD 221 billion, 38% of the global total (HSBC Global Research 2009).

In 2009, the OECD published a Declaration on Green Growth. This was followed by a flagship report in 2011, which defined GG as "fostering economic growth and development, while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies" (OECD 2011, p.9).

The OECD identifies the overarching goal of GG as the establishment of incentives and institutions to bring about innovations which improve resource management, boost productivity, and encourage economic activity in socially beneficial (i.e. green or environmentally neutral) sectors and emphasises decoupling economic growth and environmental degradation. The OECD acknowledges that GDP growth is a poor measure of economic progress and has developed a set of GG indicators to monitor progress (see Annex 3). The OECD's work focuses on policies for GG, country environmental performance reviews, economic surveys and GG policy surveys (see Annex 4 for an example of the GG recommendations developed for Indonesia).

In 2012, the World Bank published its Inclusive Green Growth report in support of greening economic growth, which defines GG as "growth that is efficient in its use of natural resources, clean in that it minimises pollution and environmental impacts, and resilient in that it accounts for natural hazards and the role of environmental management and natural capital in preventing physical disasters" (World Bank 2012a, p.2). It defines GG as a tool to operationalise sustainable development and a means of reconciling developing countries' urgent need for rapid growth and poverty alleviation with the need to avoid irreversible and costly environmental damage.

Rather than lack of finance, the World Bank contends that GG is constrained by social and political inertia. Thus, the report focuses on "good growth policies adapted to political economy realities and entrenched behaviours" (p.15) to address market failures, get prices right and tackle GG constraints.[5]

On an operational level, the Bank proposes a three-pronged strategy:

- Maximise local and immediate benefits and avoid lock-in, while actively managing the political economy of reform and understand sources of resistance;

[4] Other general objectives included: promotion of clean/renewable energy and resource efficient technologies and practices; linking consumption patterns to traditional lifestyles and promoting recycling; promoting models for synergy between economic development and environmental protection as a strategy for poverty reduction; developing mechanisms to aid the management natural disasters; promoting activities to mitigate adverse impacts of climate change.

[5] In this context the World Bank places a great deal of emphasis on green fiscal reform and green finance – which are examined in more detail in Chapter 2.

- Implement measures to promote smart decision-making, using incentives such as green fiscal policies, regulation, information and 'nudging' to change behaviour;
- Develop innovative financing tools to reduce risk and tackle higher up-front financing needs, e.g. private-public partnerships.

The success of the GG discourse has also resulted in the creation of new institutions to build knowledge and support the implementation of GG policies and strategies. The Global Green Growth Institute (GGGI) is dedicated to supporting and promoting strong, inclusive and sustainable economic growth in developing countries and emerging economies and became an international treaty-based organisation at the 2012 Rio+20 summit.[6] The Green Growth Knowledge Platform (GGKP), a global network of experts and organisations, was created by GGGI, UNEP, OECD and the World Bank to deliver knowledge, guidance, data, and tools to the policy, business, and finance communities.[7]

d. Green economy and inclusive green economy

In parallel to the policy discourse about GG, other institutions were working on a paradigm they referred to as "green economy" (GE). The term was coined by environmental economist David Pearce in 1989 in a report produced for the UK government: Blueprint for a Green Economy (Pearce et al. 1989). Its objective was to examine the implications of sustainable development for the measurement of economic progress, and to consider how the two concepts might be compatible.

The term GE came into more general use in the context of the financial crisis and the necessity for "green stimulus". In October 2008, UNEP launched its Green Economy Initiative. The flagship report it produced in 2011, *Towards the Green Economy: Pathways to Sustainable Development and Poverty Eradication*, provides the working definition of GE widely used by international organisations: a green economy "results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities [....] a green economy can be thought of as one which is low carbon, resource efficient and socially inclusive" (UNEP 2011).

In UNEP publications, GE is described as a means of operationalising sustainable development. Today, UNEP uses the term inclusive green economy (IGE), which it defines as an economy that is "low carbon, efficient and clean in production, but also inclusive in consumption and outcomes, based on sharing, circularity, collaboration, solidarity, resilience, opportunity, and interdependence" (UNEP 2020). This emphasis on inclusiveness and equity is closely linked to the just transition discourse, which grew out of the trade union movement in the 1990s and has since been mainstreamed in international policy dialogue. Today, International Labour Organisation guidelines call for "a just transition for all towards an environmentally sustainable economy [to] contribute to the goals of decent work for all, social inclusion and the eradication of poverty" (ILO 2015). Such approaches represent a shift away from the growth paradigm and towards the idea of an economy that is more agnostic about growth, promoting human prosperity whether GDP is going up, down, or holding steady (Raworth 2015).

e. Criticisms of green growth: post-growth theories and the problem with absolute decoupling

Whereas sustainable development appears to sidestep the growth question, drawing on the terminology of environmental policy — with its focus on costs, limits and the need to constrain growth — the GG paradigm deliberately incorporates economic growth

[6] See: https://gggi.org

[7] See: https://www.greengrowthknowledge.org

and environmental protection. Thus, GG embodies not only a normative ideal, but also a pragmatic claim: that economic growth can occur even while environmental impacts are minimised. This pragmatism is one of the reasons underlying the success of the GG paradigm. On the other hand, whether or not GG can be achieved at a global scale has been questioned by many economists.

In 1972, the Club of Rome published The Limits to Growth (Meadows 1972). This questioned the growth paradigm and sketched out what the authors regarded as the inevitable limits to exponential growth within the limits of planetary resources, proposing instead ecological and economic stability and a state of global equilibrium. This post-growth narrative has been picked up on by many economists, most notably perhaps by Tim Jackson in *Prosperity Without Growth* (2011).

The validity of the GG discourse relies upon the assumption of absolute, permanent, global, large and rapid decoupling of economic growth from all critical environmental pressures (Parrique at al. 2019). However, assuming the continuation of current growth rates, the global economy will be 80 times bigger in 2100 than in 1950 (Jackson 2011). This begs the question whether absolute decoupling can take place at a sufficiently fast rate and on the scale required to meet the requirements of IGG. While there is evidence in some OECD countries of absolute decoupling between GDP growth and GHG emissions, there is little evidence that this decoupling is sufficient to bring the global economy within planetary boundaries (Raworth 2015). Where decoupling has been observed, this has tended to be relative, temporary, and/or location-specific (Parrique at al. 2019). Indeed, there are several reasons why sufficient decoupling to enable

Box 1. Will sufficient decoupling on a global scale be impossible?

There is a large body of evidence that demonstrates that sufficient decoupling of GDP growth, energy use and resource consumption on a global scale will prove impossible:

1. **Cost shifting**: often, what has been observed as decoupling has actually been the externalisation of environmental impacts from high-income countries, i.e. leakage, facilitated by international trade.
2. **Insufficient technological change**: the innovations necessary to decouple resource use or energy from GDP growth are not happening fast enough. Market failures encourage inappropriate innovations, and act as an obstacle to green innovation.
3. **Resources are finite**: recycling cannot meet the demand for resources in a growing economy, but can only delay resource depletion. In the case of steel, the 62% recycling rate is only delaying depletion by 12 years, given the current annual increase in consumption of 3.5%.
4. **The service economy can only exist on top of the material economy**: immaterial products require material infrastructure; some services consume large amounts of energy, e.g. ICT.
5. **Problem shifting**: technological solutions to environmental problems may exacerbate other problems, e.g. electric vehicles reduce fossil fuel consumption, but put pressure on lithium, copper and cobalt resources.
6. **Rebound effects**: efficiency improvements often result in a reallocation of saved resources and/or money in consumption, sometimes more impactful consumption.
7. **Rising energy expenditures**: the costs of energy and material extraction increase over time, meaning that rising energy and material expenditures limit growth and become a barrier to decoupling.

Source: Parrique et al. 2019

the greening of economic growth on a global scale is likely to be impossible.

The post-growth paradigm does not question the importance of green growth in low- and middle-income countries: in countries with an average annual per capita incomes USD 12,500 or less, GDP growth and rising material affluence are associated with increased life expectancy at birth, lower child mortality rates, and higher school attendance (Raworth 2015). However, the post-growth narrative unearths a great deal of evidence that above a certain income level (around USD 25,000 per capita per annum) continued GDP growth does not deliver commensurate benefits for human health and well-being (Wilkinson and Pickett 2009).

f. Inclusive green growth and inclusive green economy in middle-income economies

The IGG paradigm has the potential to turn the prevailing top-down, polarised, North-South politics of sustainable development on its head. Many middle and low-income countries have implemented IGG and IGE policies from which other countries can learn. A new South-South dynamic is coming into being, with the potential to create a development model that effectively integrates economic, social, and environmental pillars (Samans 2013).

The case for GG remains strong in low- and middle-income economies, where growth has the potential to deliver benefits and foster the frameworks necessary for the achievement of the SDGs. Although the costs associated with the operationalisation of sustainable development are substantial, the costs of inaction — severe resource depletion, biodiversity loss, pollution and irreversible climate change — are far higher.

In high-income countries, where correlations between growth and human well-being are increasingly called into question, the growth paradigm may become less relevant in future, as governments measure success in relation to the achievement of the indicators of well-being, sustainability and inclusiveness, rather than GDP growth.

1.1.2. Evaluation criteria

Evaluation criteria are an important indicator of the extent to which IGG or IGE objectives are being achieved. Because the inclusive greening of economic activity is a cross-cutting process, its achievement must be monitored with reference to multiple indicators across a range of sectors and policy fields. Thus, defining indicators and finding ways of measuring them is complex but necessary, as monitoring of policy impacts and trends can deliver multifaceted policy insights, highlighting where progress has been made and where progress is lacking. Indicators must be analysed in a broad economic context and their interactions, synergies, and incompatibilities explored (OECD 2017).

Given the complexity of IGG across multiple dimensions and the differences between country contexts, it is not possible to develop one standardised package of indicators applicable and relevant in all countries to effectively track a government's achievements. The relative importance of different indicators is dependent on regional and national contexts and the priorities and needs of countries. In rapidly growing middle-income economies such as Viet Nam, indicators related to equitable access to natural resources, energy and resource efficiency, pollution, and emissions control tend to be highly relevant, as they can measure the extent of green economic transition (GKPP 2016).

a. Possible approaches to the measurement of green growth

In their seminal report on the measurement of economic performance and social progress, Stiglitz, Sen and Fitoussi (2010) identified four main approaches to measuring GG suitable for the delivery and analysis of granular environmental, economic and social information: dashboards, composite indicators, environmental footprints and adjusted economic indicators.

Each methodology approaches the multidimensional nature and inherent complexity of sustainability and GG differently, while some approaches use a

combination of a methodologies to draw on the advantages of both.

[1] Dashboards

Dashboards of indicators are sets of metrics representing information from various sectors and policy fields relating to IGG, expressed in different units. The OECD Green Growth indicators (see Table 2 in Annex 3), or the global indicator framework for the SDGs, are examples of dashboards from which countries can select specific indicators most relevant to their GG context and the environmental challenges they face. Dashboards tend not to weight indicators or draw conclusions relating to their relative importance: instead, the user selects the most relevant indicators, and weights them as appropriate. In this way, dashboards are more in line with "strong" sustainability, as they attempt to measure all dimensions of IGG and do not assume that one indicator can supplement another (GGKP 2016).

Their multidimensional approach makes dashboards particularly applicable to the measurement of economic, environmental and social sustainability. Typically, the large number of indicators used requires an explicit interpretation effort to identify overall trends and progress. Thus, dashboards lend themselves well to in-depth analysis of GG strategies and policies, although their complexity can make them harder to use for communication purposes.

[2] Composite indicators

Composite indicators deliver a single headline figure, converting units to deliver one common metric. The Global Green Economy Index[8] and the Environmental Performance Index[9] are two prominent international examples. They are well suited to communicating progress on IGG or IGE to a non-expert audience. However, the messages derived from this kind of index tend to be ambiguous, the weighting and aggregation process arbitrary and often not transparent, with normative implications of weighting rarely justified, and the resulting global ranking rather meaningless (Stiglitz, Sen and Fitoussi 2010).

Composite indices tend to deliver a snapshot of IGG, rather than identify trends over time. They are more in line with "weak" interpretations of sustainability, as they imply that improvements in one dimension of IGG will compensate for deterioration in others (GGKP 2016). Thus, while suitable for drawing international comparisons between countries and ranking their progress, as well as for drawing attention to their underlying components, composite indices are less relevant to the evaluation of the IGG outcomes of national policy strategies.

To address these weaknesses, some methodologies use a combination of dashboard and composite indicators to monitor progress towards IGG or IGE transition, e.g. UNEP's Green Economy Progress Measurement Framework (GEP+) described in detail in Annex 2.

[3] Footprints

Footprints measure overconsumption or underinvestment, or excessive pressure on resources, aiming to indicate whether development patterns are within planetary boundaries (GGKP 2016). Like composite indicators, footprints aggregate numerous sustainability considerations into a simple and easily communicable metric. National footprints are useful for highlighting inequality in the exploitation of resources but fail to pick up on global aspects and the interdependency of sustainability between countries, meaning e.g. that densely populated countries score less well than countries with dispersed populations. The ecological footprint is a well-known example, often used for communication purposes.

[4] Adjusted economic indicators

These approaches set out to correct conventional economic variables. Thus, adjusted economic indicators often refer to "green" GDP and supplement GDP growth through the inclusion of additional dimensions of wealth and welfare, e.g. natural capital, financial, physical and human assets.

A prominent example is the Index of Sustainable Economic Welfare (ISEW), which subtracts ele-

[8] http://dualcitizeninc.com/global-green-economy-index/

[9] https://epi.envirocenter.yale.edu

ments of consumption measures which do not positively contribute to welfare, e.g. defence expenditure, and adds monetary estimates for measures that do have a positive impact, such as domestic caring roles. The advantage of such approaches is that a single adjusted economic indicator can be easily communicated and compared internationally, but they tend to be less pertinent to inform the evaluation of GG within one country.

b. Application of evaluation criteria on the national level

On national level, a dashboard of indicators, or a combination of a dashboard with an index, seems to be the most preferable evaluative approach, because it has the most potential to deliver in-depth insights into the status and progress of IGG and to highlight policy fields where reforms or policy revisions are necessary to meet GG objectives. Two widely used dashboards are described below.

[1] OECD GG indicators

The OECD has developed a GG measurement framework, which identifies 26 headline indicators which capture the main features of GG and monitor progress in four areas: environmental and resource productivity in the economy; natural asset base; environmental dimensions of quality of life; and economic opportunities and policy responses (OECD 2017). OECD's headline GG indicators are listed in Table 2 in Annex 3, a wide range of additional data relevant to policy monitoring of GG and GE are available on the OECD Statistics website.[10]

Several of the first subset of OECD indicators measure progress per unit of GDP growth, as their specific objective is to measure whether economic growth is becoming more sustainable. This highlights the importance of economic growth for the OECD GG paradigm. It also implies that even relatively significant progress per unit of GDP may not denote e.g. falling material consumption, energy consumption, or CO_2 emissions, particularly if GDP growth is high in the same period: while relative decoupling may be the result, absolute decoupling may not. As explained in Box 1 (p.8), this can pose a serious threat to sustainability, e.g. because there are limits to the extent to which recycling can compensate for rising material consumption. Furthermore, it is a matter of urgency that CO_2 emissions start to fall rapidly and as soon as possible in line with countries respective capabilities and differentiated responsibilities. Thus, it is important to draw on absolute indicators collated in OECD statistics to evaluate policy impacts, such as total CO_2 emissions, material throughput, or total primary energy supply.

The second subset of indicators monitor changes to natural capital stocks over time with the objective of identifying risks to growth from a declining natural asset base, which clearly implies a recognition of the limits on substitutability of natural capital with other forms of capital (i.e. a strong interpretation of sustainability). Impacts of environmental policy on human health and welfare are taken into account in the indicator subset relating to quality of life, but this does not include broader issues of social inclusiveness, e.g. green jobs or equity considerations. The last subset of indicators looks at innovation, overseas development aid (ODA) and environmental fiscal policies (taxes and subsidies), primarily in the energy sector.

Therefore, while the OECD GG indicators are a very useful starting point — and there are many more indicators monitored on OECD Stat[11] — national policymakers interested in monitoring the successful implementation of inclusive economic strategies may require a broader set.

[2] Indicators in the Sustainable Development Goals

The Agenda 2030 and the SDGs are a global action plan which calls all countries to action to end poverty, protect the planet and improve the lives of all its inhabitants. The SDGs are underpinned by a total of 231 indicators to monitor their achievement.[12]

[10] https://stats.oecd.org/#

[11] The OECD statistics database is available online at https://stats.oecd.org and is an incredibly useful source of reference for GG indicators in many countries, including Viet Nam.

[12] The total number of SDG indicators is 247 not 231, as several indicators are repeated under different targets and goals.

This large number reflects the need for SDG indicators to be relevant to a wide range of country contexts, the broad nature of the Agenda 2030, and the to capture the complexity of the Agenda's objectives and targets.

Many SDG indicators are highly relevant to the measurement of economic aspects of GG, for example: SDG 7, renewable energy share in total energy consumption (7.2.1); SDG 8, material footprint per capita/unit of GDP (8.4.1); SDG 9, CO_2 emissions per unit of value added (9.4.1); and SDG 12, indicator 12.c.1 measuring the amount of fossil fuel subsidies per unit of GDP and as a proportion of total national expenditure on fossil fuels (UNGA 2017). Many SDG indicators relate to social aspects of GG and GE, equity and inclusiveness. For example: SDG 1, proportion of the population below the international poverty line (1.1.1); SDG 2, average income of small-scale food producers by sex and indigenous status (2.3.2); or SDG 8, proportion of informal employment in total employment by sector and sex (8.3.1) or average hourly earnings of employees by sex, age, occupation and persons with disabilities (8.5.1). Similarly, environmental issues are also covered in more depth.

c. Pragmatic approaches to evaluation criteria

Countries can choose to draw on any combination of OECD and SDG indicators, or any other relevant indicators, for monitoring and evaluation purposes. Given the effort associated with data collection for each indicator, it is preferable that where possible, policymakers try to prioritise and develop a relatively small set of relevant indicators, while also taking a pragmatic approach and focussing on indicators already being measured, e.g. within the framework of existing monitoring efforts for the SDGs. Ultimately, the availability of data and the specific objectives of a country's IGG or IGE strategy should inform the indicator selection process (Stiglitz, Sen and Fitoussi 2010; GGKP 2016). In so doing, policymakers can develop a set of national IGG indicators which is both country-specific and issue-driven, and so ensure that evaluation data is highly relevant, feasible to collect, and sufficiently granular to deliver in-depth policy insights (UNEP 2015).

1.1.3. Green growth trends in the international context

a. The international perspective: progress towards greener growth at a global level

At international level, a great deal of progress has been made since the establishment of the IGG and IGE paradigms in the policy dialogue. In 2009, G20 countries made a commitment to phase out (inefficient) fossil fuel subsidies. Similar commitments have been made by the G7 (with a 2025 deadline) and the Asia-Pacific Economic Cooperation (APEC). In 2015, several key international agreements were successfully negotiated: The Paris Agreement within the United Nations Framework Convention on Climate Change (UNFCCC); the Addis Ababa Action Agenda on Financing for Development; and the Agenda 2030 and the Sustainable Development Goals. By 2020, international organisations, UN institutions, multilateral banks, donors and national governments were all taking GG criteria into consideration for the majority of their activities, and many in their stimulus and recovery plans from the COVID-19 crisis.

In spite of this urgency, from 2010-2019 global GHG emissions rose by 1.5% each year — stabilising for a short period between 2014 and 2016. The emissions gap — the difference between the GHG emissions reductions necessary to meet the Paris Agreement target of limiting warming to well below 2°C — has continued to grow (UNEP 2019b). In 2019, the UN Food and Agriculture Organisation warned that biodiversity loss was threatening global food production (FAO 2019). Air pollution is becoming an ever more serious threat to human health, causing 7 million deaths worldwide each year (WHO 2020). In 2013, exposure to ambient and household air pollution was estimated to have cost the world economy USD 5 trillion in welfare losses: welfare losses in Viet Nam were estimated to have amounted to USD 24 billion, or more than 5% of the Viet Nam's GDP (World Bank and Institute for Health Metrics and Evaluation 2016).

Rising public awareness of these environmental pressures and popular movements in favour of cli-

mate action and environmental protection have created a window of opportunity for policymakers to implement GG. The imperative for the successful realisation of GG and its potential benefits for human health and welfare, the economy and the environment are becoming ever more apparent. The GG paradigm offers policymakers tools to tackle constraints to GG, such as inertia and path dependency, government and market failures, and vested interests. The 2020 Coronavirus crisis has changed the financial, fiscal and monetary policy context all over the world, opening up a window of opportunity for green fiscal stimulus and a shift towards greener growth.

b. National perspectives: examples of GG strategies in selected countries

The remainder of this chapter lists some examples of national GG strategies. In-depth case studies in the annexes highlight their strengths and weaknesses and evaluate their progress. Given its status as the seminal example of GG, the successes and failures of Korea's national GG strategy are examined in depth. Ethiopia's Climate Resilient Green Economy (CRGE) strategy is presented as an example of institution-building to mainstream GG approaches and build consensus. Green growth gaps in Costa Rica, perhaps due to the lack of a mainstreamed GG strategy, and certainly attributable to some common GG constraints, are also examined. The final case presents a brief evaluation of Germany's resource efficiency programme ProgRess.

[1] Republic of Korea: green growth pioneer

South Korea was the first country to enshrine GG in its long-term national development plan — the 2009-2050 National Strategy on Green Growth (NSGG). The NSGG has three long-term targets: mitigation of climate change and enhancement of energy security; creation of new growth engines; and improvement of quality of life and Korea's international standing.

The first 10 years of the NGSS were implemented by means of two five-year-plans for green growth. The 2009-2013 plan committed to investing USD 85 billion in clean energy, the creation of a clean-tech export industry and 1 million jobs, and spending worth 2% of GDP to build the foundations to sustain GG (World Bank 2012b). The 2014-2018 plan focussed creating a sustainable energy sector and reducing GHG emissions, fostering green, creative industries and realising a sustainable society (GGGI 2017).

OECD GG indicators reveal that in relation to the creation of new growth engines and the development of green technologies, the NSGG has been successful. In 2016, Korea had an impressive 11% share in global environment-related technology inventions. GDP per unit of domestic material consumption increased from USD 2.86/kg in 2010 to USD 6.73/kg in 2017 (see Table 1 in Annex 5). GHG emissions from industrial processes, waste and agriculture sectors have remained relatively stable alongside high rates of GDP growth (see Figure 1 in Annex 5). Total revenue from green industries increased from 1% to 1.5% of Korea's total industrial turnover between 2009 and 2013 (GGGI 2017).

The NSGG has also made progress to improve quality of life and Korea's international standing. Exposure to fine particulate matter (PM2.5) fell by 17% between 2010 and 2017 (OECD Stat 2020). In Seoul, over 60% of modal share was in public transport in 2011 — the second highest share of any city worldwide (Lee et al. 2015). Urban forest areas increased by 11% between 2009 and 2013 (GGGI 2017). Three smart eco-cities have been built, including Songdo, which has a high proportion of energy-efficient buildings and 30% green space (see e.g. Mullins 2017). Surveys reveal 97% support for the NSGG (GGGI 2017). Korea has become known as a green policy entrepreneur and aims to spend 30% of its ODA on green issues by 2020, and actively and successfully pursues a programme of "green diplomacy" on the international stage (GGGI 2017).

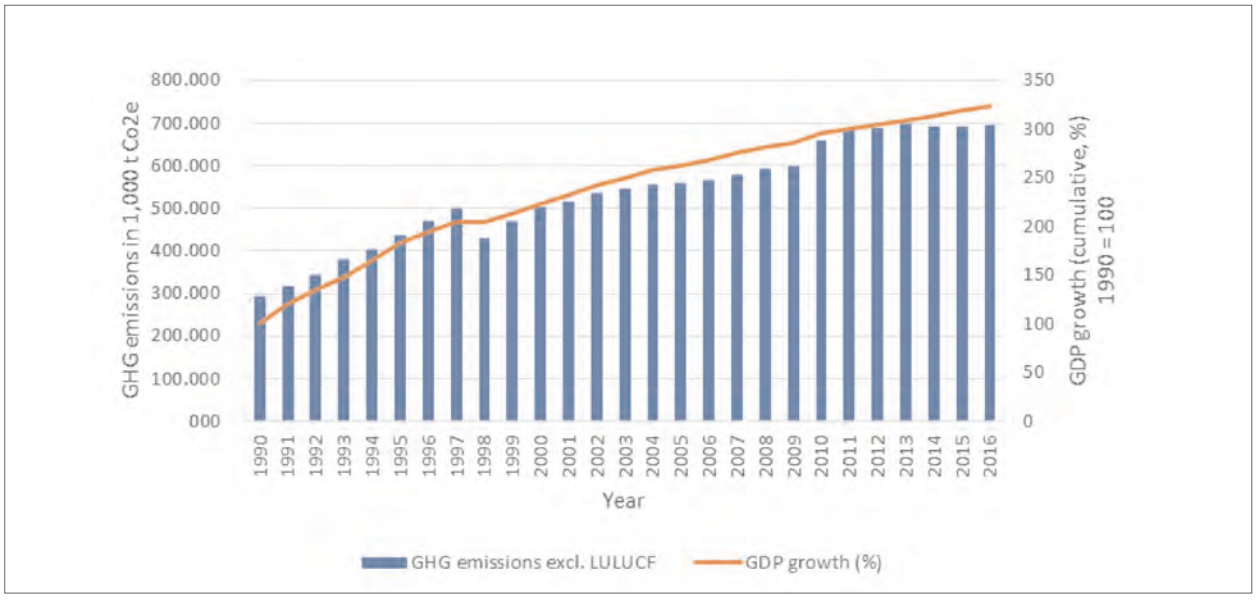
However, in relation to the first headline target to mitigate climate change, reduce GHG emissions from the energy sector and improve energy security, progress has been limited. While CO_2 productivity has improved and relative decoupling between GHG emissions and GDP growth took place between 2012 and 2016 (see Table 1 and Figure 1 in

Annex 5), this has not reduced GHG emissions sufficiently for the country to meet the its NSGG target of reducing emissions by 30% below business as usual (BAU) between 2009 and 2020.[13]

There are several reasons for these failures. Ongoing dependence on imported fossil fuels has undermined attempts to improve energy security, as has the limited deployment of renewable energy – which accounted for less than 4% of total electricity produced in the country in 2018 (see Table 1 in Annex 5). The influence of powerful vested interests in government and the power sector, who have strongly opposed higher energy prices as a driver of energy savings and falling demand, have kept energy prices low (Ha and Byrne 2018). Thus far, macroeconomic concerns have tended to influence energy pricing policy rather than GG considerations (GGGI 2017). These problems are exacerbated by high post-tax subsidies for fossil fuels[14] , which were worth 3.87% of GDP in 2017 (Coady et al. 2019). As a result, energy productivity remains low: Viet Nam produces around USD 1,000 more GDP per unit of energy than Korea.[15]

The Korean government have taken a number of steps to address these issues. In 2015, an emissions trading system (ETS) was implemented, which covers 70% of emissions and is designed to deliver emissions reduction of 37% below BAU by 2030 (ICAP 2020). The renewable energy target for 2030 has been increased to 20% of total power generation and the target for coal reduced by 9% (Cornot-Gandolphe 2018). In 2019, the coal import tax was increased by 28% to USD 40/t and taxes on natural gas imports were reduced by 75% to incentivise fuel switching in the power sector (Nicholas and Buckley 2019).

Figure 1: Cumulative GDP growth and GHG emissions in Korea, 1990 - 2016



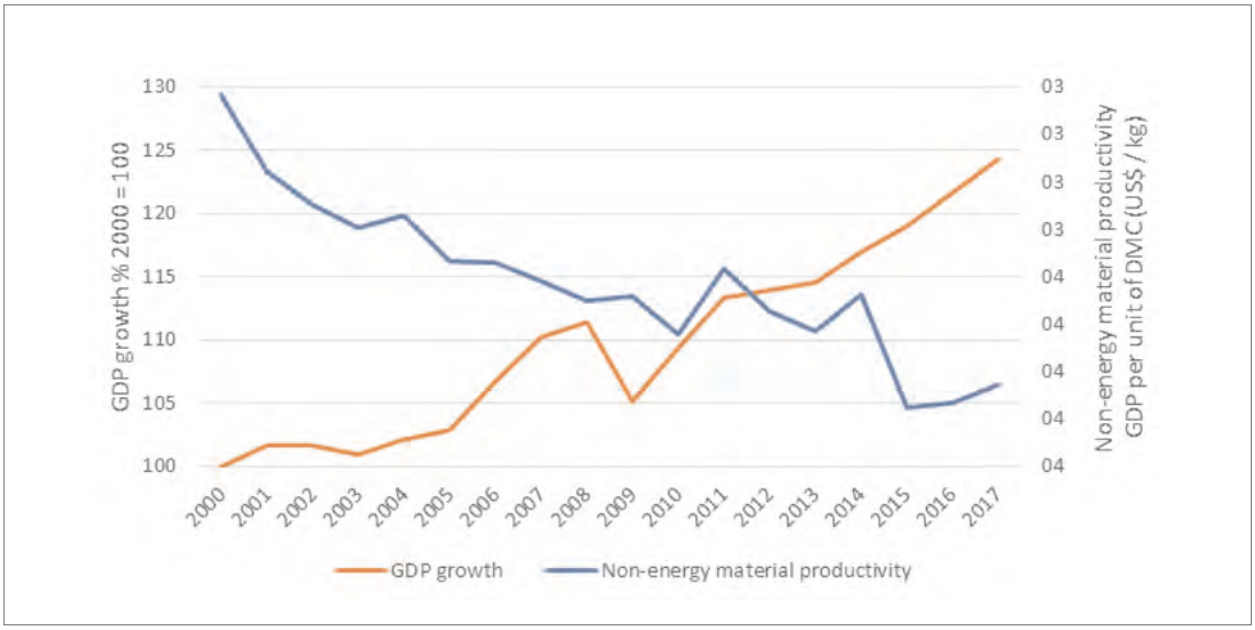
Source: OECD.Stat (data extracted 27.04.2020)

[13] Although the emissions trading system put in place in 2015 should ensure that the country's 2030 target, of reducing emissions 37% below BAU, is met (see below).

[14] Post-tax subsidy estimates incorporate not only actual subsidy measures which reduce the price of fossil fuels, but also the external costs of fossil fuel combustion - climate change, local air pollution, congestion, accidents and road damage – as well as foregone consumption tax revenue. See e.g. Coady et al. 2019 for a full explanation.

[15] In Japan, energy productivity measured in GDP per unit of Total Primary Energy Supply amounted to 11,400.06 in 2018 and in Indonesia, 11,857.32 in 2017. All statistics from https://stats.oecd.org/viewhtml.aspx?datasetcode=GREEN_GROWTH&lang=en#

Figure 2: Non-energy material productivity and GDP growth in Germany, 2000 - 2017



Source: OECD.Stat (data extracted 30.04.2020)

Thus, the overall trajectory of GG in Korea remains positive, and the NSGG is a world first: an innovative, top-down, pioneering nationwide strategy to achieve GG and the transition to a greener economy adopted as the central agenda of government (GGGI 2017).

[2] Germany's resource efficiency programme: ProgRess

The GG strategies of many countries focus on decoupling GHG emissions and energy use from GDP growth, while few countries have developed strategies to decouple consumption of resources from GDP growth. Germany is an exception, and has developed a long-term resource efficiency programme, ProgRess, with the headline objective of doubling raw material productivity by 2020 relative to 1994 (BMUB 2016).

A broad institutional approach covering ministries, industries, research institutions, consultancies, professional associations and civil society has mainstreamed resource efficiency across numerous fields. Capacity building in SMEs has raised awareness of possible process innovations, while information campaigns and a resource efficiency award raise awareness of the competitiveness advantages of resource efficiency. Grants for innovation in industry keep initial investment costs low. The programme also includes activities to enhance transparency and sustainability in the value chain for imported raw materials. Resource efficiency standards for industry have been developed, e.g. VDI 4800 (for details see BMUB 2016). Regulations stipulate minimum recycling rates for industry, strengthen product responsibility and specify procurement rules. Consumers have also been targeted through information and awareness raising, and public consultations on policy.

Between 2012-2015, ProgRess delivered relative decoupling of raw material productivity from GDP growth, putting Germany on a trajectory to achieve just 50% of the programme's targets by 2020 (BMUB 2016). Nonetheless, progress has been made, with OECD data showing that non-energy material productivity, measured in GDP per unit of domestic material consumption (Figure 4, blue line), is absolutely decoupled from GDP growth (Figure 4, orange line).

ProgRess has been lauded for its broad-based and innovative, inclusive and comprehensive approach (see e.g. UBA 2019). However, the lack of specificity of indicators makes measuring progress difficult — e.g., some indicators simply call for a "significant increase"

by 2030 (see BMUB 2016). This problem is compounded by the voluntary nature of many elements of the programme.

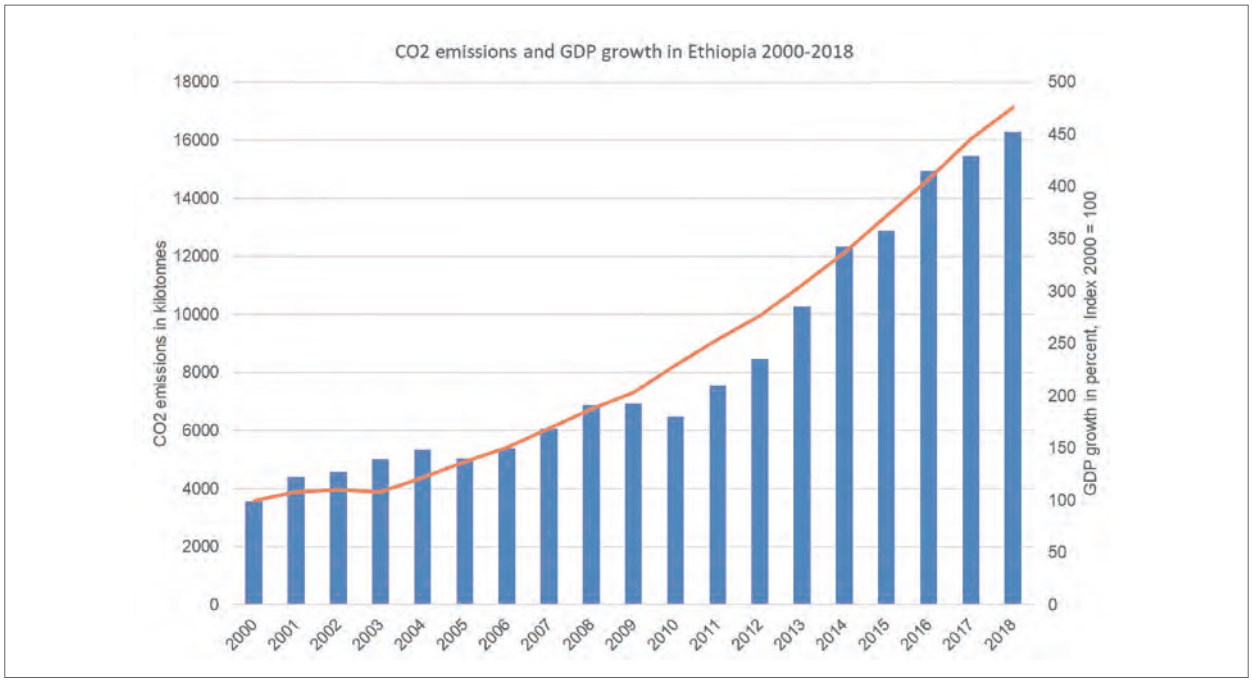
[3] Climate Resilient Green Economy in Ethiopia

Ethiopia's 2011 Climate Resilient Green Economy (CRGE) vision and strategy were devised in a very different context to Korea's NSGG. The CRGE envisages Ethiopia — a scarcely industrialised low-income country — leapfrogging "brown" industrialisation and transitioning straight into a green economy at a cost of USD 150 billion. The headline objective is to achieve a high rate of (inclusive) growth without increasing the country's net GHG emissions — an ambitious undertaking, given the historically strong correlation between GHG emissions and GDP growth (Okereke et al. 2019). By 2025, the CRGE vision aims for Ethiopia to become a middle-income country and by 2030, the country aims to become carbon neutral.

The green economy component of the CRGE focuses on 4 key objectives: reduced GHG emissions, improved agricultural practices and enhanced food security in the agricultural sector; protecting and re-establishing forests to create new carbon sinks; efficiency measures in industry, transport and buildings; and a high proportion of renewable electricity in the energy mix (FDRE 2019). Like the Republic of Korea, the Ethiopian government sees itself as a global and regional leader in the GG policy discourse (Fikreyesus et al. 2014).

Institutional frameworks created in Ethiopia have laid strong foundations for the fast tracking of projects and the establishment of a financing facility — two key elements in the success of the CRGE strategy.[16] Fast tracking takes place via a multidimensional analysis to identify GE policy priorities with potential to deliver immediate benefits for economic growth and GHG emissions abatement and maxim-

Figure 3: GHG emissions and GDP growth in Ethiopia 2000 - 2018



Source: World Bank Data see https://data.worldbank.org/

[16] The CRGE financing facility and the fiscal policies implemented to enable the realisation of CRGE strategy objectives are presented in detail in Chapter 2.

Box 2: Creating long-term policy certainty in the green economy: The UK Climate Change Act

There Through the 2008 UK Climate Change Act, the UK government is committed by law to reducing GHG emissions to net zero by 2050. The Act requires the UK government to develop policies to ensure that it complies with successive 5-year carbon budgets to put the country on a trajectory to net zero emissions by 2050. Carbon budgets are set 12 years in advance to create certainty for investors, individuals and policymakers alike and cannot be revoked by incumbent governments. In this way, the Act prevents policy reversals and creates stability in climate policy.

The Climate Change Committee, an independent group of experts who advise the government and report regularly to the parliament, provides guidance on the appropriate level for each carbon budget. The Committee fulfils an important role as an independent and transparent agency providing input to the implementation of low-carbon development.

Source: UK Committee on Climate Change

ise synergies along economic, environmental and social dimensions, while limiting trade-offs, costs and uncertainties (UNECA 2016). The institutional and political coalitions created to implement the CRGE have sustained high-level political support for GE through political transitions, preventing policy reversals due to changing leadership (UNECA 2016). Some countries have taken this institutional approach further and enshrined low-carbon development in law to prevent policy reversals and guarantee consistency across administrations (see 2 on p.25).

It is not yet possible to say whether the explicit aim of the Ethiopian government to achieve a carbon-neutral green economy by 2030 can be realised. GDP growth has increased rapidly since 2000, while GHG emissions fell in 2012 and 2013 (see Figure 3). More recent data are unavailable: while absolute decoupling of GDP growth from GHG emissions was realised for a short period of time, it is unclear whether this trend has been sustained. In the energy sector, positive trends can be identified: while total primary energy supply increased by 26% between 2010 and 2017, energy productivity improved by 54% in the same period[17] (OECD Stat 2020). In 2017, hydroelectricity accounted for 86% of power generation and renewable energy for a further 11%, with just 3% from fossil fuels (CIA Factbook 2020).

[4] Costa Rica: green growth gaps

Costa Rica is often regarded as a GG success story. The country has achieved a great deal, including successfully decarbonising its energy sector. However, a number of "green growth gaps" remain (GIZ 2016). Costa Rica was ranked 30th in the EPI in 2018, but this masks a poor performance in relation to several environmental policy fields, such as water supply and sanitation (58), climate and energy (50), N2O emissions intensity (82) and agriculture (171).[18]

One underlying reason for these policy failures might be that the country has a general commitment to sustainable development but does not have a coordinated, integrated economy-wide strategy (GIZ 2016). Some GG elements have thus been neglected in national policy planning. A further reason for lack of progress relates to some of the key constraints to GG highlighted in this chapter: government failures (in this case, attributable to poor institutional frame-

[17] Energy productivity (GDP per unit of total primary energy supply in 2010 USD) amounted to USD 2,765 in 2010 and USD 4,426 in 2017.

[18] See: https://epi.envirocenter.yale.edu/epi-country-report/CRI

works), market failures (incorrect price signals), lack of access to green finance (e.g. on the part of SMEs), and low rates of environmental taxation (which contribute to low tax-to-GDP ratios and lack of fiscal space). The case of Costa Rica exemplifies some of the problems policymakers might face if these important policy tools for GG are not implemented with sufficient rigour.

While it may be the case that at a certain level of development, countries need to become agnostic about economic growth, the case for green growth in developing countries is strong. As the examples show, countries stand to gain more than they lose by becoming GG innovators. Each year that countries fail to invest in GG, there is a risk that they lock in wasteful high carbon investment in its place. Moreover, the costs of failing to protect the environment are already being felt and as they reach critical levels, these costs will become ever greater and at some point, immeasurable. Already, the immediate costs of greening economic activity will be outweighed by their benefits in the medium- and longer-term, as natural capital is preserved and the potential for innovation to reduce costs and drive growth become greater (Jacobs 2013). Green technology is expected to become a key driver of growth in the coming decades. Countries setting the right framework conditions and investing in green growth will benefit from increases in competitiveness. UNEP modelling in 2011 for the *Green Economy Report predicted that within just seven years, investing 2%* of GDP in GE would result in a higher rate of GDP growth than BAU (UNEP 2011).

The policy fields covered by green growth and green economy strategies tend to be very similar: decoupling economic growth/the economy from fossil fuel energy and unsustainable resource use, energy sector transformation, greening industry and technological innovation, improving human health and welfare and preventing irreversible loss of natural capital and environmental degradation. Mainstreaming this cross-cutting approach institutionally and societally requires a robust regulatory and institutional framework. Doing so enables governments to develop policy instruments to address GG constraints, such as government and market failures, which distort economic decision-making. Green fiscal and green financial policies are effective and efficient policy tools to address such failures, as they incentivise the transition to a greener economic system. International experience with such mechanisms for the realisation of GG is examined in Chapter 2.

1.2. Financial instruments and their roles in green growth

1.2.1. Green financial instruments

Public goods — such as clean air — are vulnerable to overexploitation, because their consumption is not assigned a price. Similarly, without government intervention, there is no price assigned to the negative impacts of pollution and environmental damage. These costs — external costs or externalities — tend to be of considerable economic significance, e.g. exposure to air pollution is estimated to have resulted in 66,000 deaths and welfare losses equivalent to 5.2% of GDP in 2013 in Viet Nam (World Bank 2016).

Failure to internalise external costs in the price of goods and services is having a severe impact on societies and economies all over the globe. Society bears the external cost in welfare losses. Externalities cause damage to the natural environment and result in climate change, biodiversity loss or deterioration of ecosystem services. The resulting market failures, economic distortions and inefficiencies act as a constraint on GG, de-incentivising investment in green industry and locking in inefficient and polluting behaviour and technologies.

Without robust and targeted policy interventions that integrate environmental and climate considerations in the price of goods and services, market forces and prices will continue to incentivise unsustainable growth. Green fiscal policy (GFP) and green finance (GF) are key tools for policymakers to overcome these market failures (Annex 6).

a. Green fiscal policies

GFP encompasses a broad range of policy instruments, which enable the cost of negative environmental externalities to be taken into account in revenue-raising and public expenditure, e.g. ecotaxes or reform of harmful subsidies. Hence, GFP can reduce economic distortions and harness the power of the market for the achievement of GG objectives. Direct benefits accrue as a result of reduced pollution loads, improved human health outcomes and a more efficient economy with fewer market distortions. Indirect benefits include enhanced domestic revenue mobilisation, improved welfare, new incentives for green innovation and employment and a more energy- and resource-efficient economy.

Internationally, there is a great deal of support for and momentum behind GFP. GFP is the most effective instrument for implementing the Polluter Pays Principle, established as a central tenet of sustainable development in the 1992 Rio Declaration on Environment and Development. Phasing out subsidies harmful to the environmental is an explicit target in SDG 12 (fossil fuel subsidy reform) and SDG 14 (reform of harmful fisheries subsidies). GFPs are widely regarded by international organisations as indispensable for the achievement of GG.

In spite of this widespread recognition, GFP faces a number of obstacles: lack of political will; limited transparency; lack of knowledge, information, data and awareness; opposition from powerful special interest groups; rent-seeking behaviour; lack of human and technical capacity; possible equity impacts; and concerns about loss of international competitiveness (Withana 2015).

[1] Taxes and charges

Tax and charge policy instruments for green growth are usually divided into the following basic groups:

(i) Tax and charge policies to limit the consumption of products and goods causing environmental pollution (environmental tax)

Environmental taxes are mandatory, non-refundable contributions to the budget that are collected on tax bases (subject to tax) related to the environment. Items subject to environmental tax may include energy products, vehicles, waste, emissions or resources, etc.

Among the environmental taxes, together with fuel tax, Carbon pricing — carbon taxes or carbon emissions trading — is widely recognised as the most effective and cost-efficient instrument available to policymakers to mitigate CO_2 emissions (see e.g. de Mooij et al. 2012; World Bank 2019). Environmental tax is usually applied based on the principle of the "polluter pays" and directly charges producers and consumers of goods that pollute the environment.

(ii) Tax and charge policies to promote green production and investment

Tax incentives can be used to boost investments in areas deemed to have a high "spill-over" effect on the green growth goals, such as science and technology development or the use of renewable energy. Accordingly, countries can apply various forms of direct and indirect tax incentives, including tax reduction incentives, through the provision of lower tax rates than normal or real rates, and exempting or reducing income tax for a definite or indefinite term in order to attract investment capital in a number of industries and occupations associated with the demand for export markets.

Tax policies to promote green consumption can be applied through indirect tax incentives. Accordingly, the government can direct people to use more eco-friendly or low-emissions goods, or impose a high consumption tax rate on goods that cause great harm to the environment.

(iii) Other tax policy instruments

In addition to tools to limit the consumption of polluting products and goods, and tools to promote green production, investment and consumption, governments also use a number of tax policy tools and other charges to promote green growth, for example, allowing deductible expenses to be included when determining taxable income at a higher rate than the actual amount (additional deduction), tax refunds on reinvested profits, or the application of rapid depreciation mechanisms for machinery and equipment associated with green growth targets.

[2] Public expenditure for green growth

(i) Green budgeting

Green budgeting gained new momentum following the creation of the Paris Collaborative on Green Budgeting (PCGB) in December 2017. Green budgeting uses the tools of budgetary policymaking to support the achievement of GG objectives and gives decision-makers a clearer understanding of overall environmental impacts of budgeting choices (OECD 2020).

Many of the instruments associated with greening budgeting processes are GFPs. However, the PCGB also covers broader strategic approaches structured around four building blocks:

- Strategic and fiscal planning to bring environmental objectives into alignment with fiscal sustainability
- Budgeting tools for evidence generation and policy coherence
- Accountability and transparency – auditing and independent oversight
- Enabling budget environment for the effective integration of the environmental dimension, e.g. outcome and evidence-based budgetary development

(ii) Reform of environmentally harmful subsidies

Environmentally harmful subsidies (EHS) exacerbate the problem of non-internalised externalities, as they tip the balance even further away from a level playing field and create distortions in favour of the brown economy. Subsidies incentivise pollution and have negative impacts on human health and welfare. Although the WTO definition of a subsidy is widely used by governments (see Annex 12), there is no established international legal definition of an "environmentally harmful subsidy" or an "inefficient fossil fuel subsidy". Many types of measures can be considered environmentally harmful subsidies, as shown in the typology of environmentally harmful subsidies in Annex 12.

This lack of agreement means that whether a subsidy is environmentally harmful or inefficient remains a politicised question. Although SDG target 12.c calls on countries to phase out inefficient fossil fuel subsidies, from a theoretical economic perspective fossil fuel subsidies are inefficient by nature. Indeed, the IMF's "post tax" subsidy estimate for 2017 — USD 5.2 trillion or 6.5% of global GDP — is an attempt to quantify the difference between efficient and inefficient fossil fuel prices on a global scale (Coady et al. 2019).

Reforming harmful subsidies is a complex process, also at a practical level, but one that is necessary for the cost-effective achievement of GG.[19] Particularly in the energy sector, subsidy dependence tends to be high and vested interests powerful. Political will to reform subsidies is often lacking. The structural reforms required to provide welfare for households and industries accustomed to low energy prices are demanding and difficult to achieve. Careful planning and preparation are key factors for successful reform. Nonetheless, reforms of harmful subsidies have been successfully undertaken in many countries.

(iii) Green subsidies

The optimal policy response to address market failures which encourage and lock in brown growth is to internalise external costs by means of GFP. In many cases, however, this is either impossible for political economy or other reasons, or insufficient to facilitate innovation or support market penetration of new, unproven green technologies. Green subsidies can close this gap by providing access to capital for firms or individuals so that they can invest in GG.

Green subsidies can take the form of direct or indirect budgetary transfers or risk transfers, for example: differentiated VAT, tariffs, import duty or excise; green tax exemptions and special tax rules for green sectors; accelerated depreciation; investment grants, soft loans and interest subsidies; green public procurement; and feed-in-tariffs (FITs) for renewable energy. Best practice examples can be found in Annex 13.

(iv) Green public investment

To be achieved on a global scale, GG requires large-scale private investment. At the same time, green public investment in, for example, transport infrastructure, or research and development of green technologies, is essential to create the framework conditions for low-carbon development, facilitate market penetration for new and less established technologies, and to reduce risk for companies seeking opportunities to invest.

The public budget used to finance green growth can come from a number of sources. General public budget allocations can provide flexibility for government allocation processes and are relatively simple to administer. However, budget allocations tend to be subject to political budget cycles. This can be addressed to an extent by legislating for a specified amount of GG spending from government budgets over the longer term. Successive GG strategies in Korea have specified that spending on GG should amount to 2% of GDP (GGBP 2014). Rather than setting an upper limit, it is advisable to specify a minimum amount of spending to prevent underfinancing.

Alternatively, revenues from specific taxes may be earmarked, such as fuel and water taxes in Costa Rica. However, although earmarking may be a means of generating a reliable and stable revenue stream, it undermines the flexibility of governments to respond to changing circumstances. The amount of revenue raised by a particular green tax instrument is not an indication of how much spending on GG is socially desirable or economically necessary. Earmarking thus entails an inherent risk of misallocation of resources. Alternatively, governments may declare an intention to invest revenue in a particular GG activity without making a firm legal commitment and so boost political acceptance without the disadvantages of earmarking (Cottrell et al. 2016).

Using government revenue to meet any shortfall may also be a solution. Germany's Energy and Climate Fund channels revenues from auctioning of EU ETS

[19] For an excellent Guidebook to Fossil Fuel Subsidy Reform for Policymakers in South East Asia see (Beaton et al. 2013).

emissions allowances to investment in e-mobility, energy efficiency, the modernisation of the insulation of buildings, R&D for renewable energies and a market incentives programme for renewable heating. Since its inception in 2011, the government has compensated for fluctuations in the revenue stream due to low prices in the EU emissions trading system by topping up the fund — by USD 5 billion in 2019[20] (Cottrell et al. 2013). Some countries have set up independent agencies to manage GG funds, protecting them from changing political priorities and ring-fencing revenue for public investment. In Morocco, revenues from plastics taxes have been channelled through a fund and invested in sanitary landfill sites and improved recycling facilities (Cottrell and Falcão 2018).

State-Owned Enterprises (SOEs) also have considerable potential to channel GG investment. In 2018, SOEs owned 62% of total installed electricity capacity, 56% of existing coal power plants and 52% of planned coal power plants (Prag et al. 2018). Although SOEs are important investors in coal and renewable electricity generation, they are investing in coal at a higher rate than their private counterparts — despite their ultimate purpose being to maximise value for society. In countries with high levels of state ownership in the electricity sector, government influence over SOEs can be used as a complementary policy lever to sector-wide or economy-wide energy and climate policies, for example, by including public policy objectives in mandates for SOEs. In this context, SOEs should be able to take advantage of preferential financing and state guarantees to realise lower capital costs for green energy investment (Prag et al. 2018).

Sweden has published guidelines on the role of SOEs in implementing long-term approaches to sustainable growth, creating a healthy work environment, respect for human rights, decent working conditions, environmental sustainability, high standards of business ethics (particularly through the prevention of corruption), and responsible conduct with regard to payment of taxes. Compliance with these guidelines is mandatory (Barnes 2019). In China, green credit guidelines require state-owned banks to strengthen environmental and corporate social responsibility in all overseas investment: these guidelines also mandate boards of directors or supervisory boards to promote green credit concepts on energy saving, environmental protection and sustainable development (Barnes 2019). Many other countries have taken similar steps.

The state can use its economic power to drive GG through green public procurement (GPP). GPP can have a significant influence on the growth of GG industries and is widely recognised as a strategic lever to drive innovation and improve the sustainability performance of public and private sector organisations. In low- and middle-income economies, public procurement accounts for up to 30% of GDP (UNEP 2017). Leveraging this purchasing power by buying sustainable goods and services on the basis of clear legal requirements and technical specifications creates demand and fosters a market for sustainable goods. The most effective and impactful GPP strategies incorporate comprehensive action plans, rather than specific sectors or products. Today, many countries include not only environmental considerations but also social issues, such as human well-being, in their procurement rules. The Republic of Korea is generally recognised as a best practice example (see Annex 13).

b. Green financial market instruments

[1] Green securities

Green securities are certificates and valuable papers issued to mobilise financial resources for investment in green growth projects and environmental protection. Green securities include green bonds and green stocks.

Although there are several definitions of green bonds, in general, green bonds are understood as a type of debt security where the proceeds are used to fund environmentally friendly projects. In essence, green bonds are like other conventional bonds (being debt securities like other types of bonds, with interest or no interest; green bonds are also rated by credit rating organisations). However, green bonds are different from conventional bonds in the following points:

[20] https://www.bundesregierung.de/breg-de/aktuelles/mehr-geld-fuer-die-energiewende-1588494

Box 3 Rules for granting green loans

Loans granted to the projects in the list below are considered a green loan:

(i) Renewable energy projects including production, transmission, appliances and products;

(ii) Energy efficiency projects for new and refurbished buildings, energy storage, district heating, smart grids, appliances and products;

(iii) Projects related to pollution prevention and control — including reduction of air emissions, greenhouse gas control, soil remediation, waste prevention, waste reduction, waste recycling and energy/emission-efficient waste to energy;

(iv) Projects related to environmentally sustainable management of living natural resources and land use – including environmentally sustainable agriculture, environmentally sustainable animal husbandry; climate smart farm inputs such as biological crop protection or drip-irrigation; environmentally sustainable fishery and aquaculture, environmentally sustainable forestry, including afforestation and reforestation, and preservation or restoration of natural landscapes;

(v) Projects related to terrestrial and aquatic biodiversity conservation — including coastal, marine and watershed protection;

(vi) Projects related to public transportation, electric power rail, hybrid technology; building infrastructure to serve the use of clean vehicles with the function of reducing harmful emissions and saving energy;

(vii) Projects related to sustainable water and wastewater management — including sustainable infrastructure for clean and/or drinking water, wastewater treatment, sustainable urban drainage systems and river training and other forms of flooding mitigation;

(viii) Relevant projects on climate change adaptation — including information support systems, such as climate observation and early warning systems;

(ix) Projects related to eco-efficient and/or circular economy adapted products, production technologies and processes — such as development and introduction of environmentally sustainable products with an eco-label or environmental certification, resource-efficient packaging and distribution;

(x) Projects related to green buildings which meet regional, national or internationally recognised standards or certifications.

Source: Loan Market Association

(i) The proceeds, after deducting expenses related to the offering, are used to sponsor or refinance green projects, environmental projects or projects taking into account environmental benefits, while other types of bonds can be used to fund non-environmental projects; (ii) Green bonds have other provisions on debt repayment and recourse/exemption mechanisms for the issuing organisations. The main characteristic of green bonds is to raise capital for green projects — a type of project that generates low profits, some of which may carry risk.

Green stocks are defined as shares of businesses operating in the field of renewable energy according to green criteria, aimed at sustainable economic development.

[2] Green credit

Among green financial instruments, green loans are one of the most popular and widely used instruments in many countries. A green loan is defined by the Loan Market Association as any debt instrument used to fund or refinance green projects[21] in part or in full. Green credits are expressed as term loans or revolving credit facilities. One of the basic factors used to determine a green loan is the purpose of the disbursed loan, which is described in the financial statements or promotional material of the business. This issue can be relatively easily determined for term loans, but this is not the case for periodic loans. However, it is possible to base the determination on the list of projects in the Loan Credit Principles of the Loan Market Association.

In terms of loans, green loans for green projects include loans from the State, commercial credit, bank credit, and international loans. Green loans from the State are loans provided by the government to green projects that have profound and broad impacts on the country's overall socio-economic development. Therefore, the scale of green loans is often large with preferential interest rates, and organisations must meet strict standards, regulations and constraints to be able to access them. Green commercial credit represents deferred purchase and sale relationships between trading parties. It is popular in developed economies, with green papers providing evidence of this relationship. The use of green commercial papers is beneficial for businesses due to the low discount rates from commercial banks. Green capital flows from international organisations are diversified and implemented through many channels, such as ODA, concessional loans among governments, and cooperation with commercial banks, etc. With the above characteristics, the three types of loan play the role of "bait" capital flow in order to convey policy messages and direction for sustainable and environmentally friendly development.

[3] Other market instruments

(i) Carbon credit markets

Carbon credit is a license issued by a government or other regulatory authority that allows its owner to burn a specified amount of hydrocarbon fuel within a specified period of time. Each carbon credit is equivalent to a ton of hydrocarbon fuel. Companies or countries are allocated a certain number of credits and can trade them to help balance the total emissions worldwide[22].

Carbon credit trading is a form of emissions trading primarily targeted at carbon emissions (in metric tons or carbon equivalent of tCO_2e). In this type of "trade", each country has a maximum level of emissions that facilities are allowed to "discharge". Those countries whose emissions are below the allowed level will have the right to "sell" their "residual emissions" to countries where emissions, for various reasons, exceed the allowed limit. Carbon is a major component of greenhouse gases, so the UN agreed the use of the term 'carbon emission trading'. This type of transaction is a common means for the countries participating in the Kyoto Protocol to uphold the covenants signed in that document; name-

[21] Loan Market Association (2019), Green Loan Principles: Supporting Environmentally Sustainable Economic Activity.

[22] As carbonic (CO_2) is a major greenhouse gas, emissions trading is carbon credit trading

ly, reducing carbon emissions and preventing climate change[23].

The carbon trading market is classified into two categories: the official market and the voluntary market. The official market is the market in which carbon trading is based on the commitments made by countries in the United Nations Framework Convention on Climate Change (UNFCCC) to achieve the goal of reducing greenhouse gases. This market is mandatory and is mainly for projects in the Clean Development Mechanism and Joint Implementation programme. The voluntary carbon market is outside the Kyoto Protocol and implemented on the basis of bilateral and multilateral cooperation agreements among organisations, companies or countries.

(ii) Green funds

The Green Investment Fund is a non-bank intermediary financial institution, attracting money from various sources to carry out investments aimed at promoting eco-friendly businesses and conserving natural resources. Typically, green investment funds often focus on companies or projects committed to conserving natural resources, developing and producing alternative sources of energy, environmental building projects, supplying fresh water and clean air, or doing other environmental business.

Due to the nature of green investment, green investment funds often receive capital contributions from the governments of developed countries, international financial institutions, and national budgets. The investments of green investment funds can be in the form of green stocks, green bonds, cooperation with banks and local financial institutions to make green loans, and direct green investments in local projects, etc. Green investments are managed by a supervisory bank or other authority depending on the size, organisation or establishment of the green investment fund.

Some of the most influential green investment funds in the world include the Green Climate Fund, the Clean Technology Fund (CTF) and the Strategic Climate Fund (SCF).

(iii) Public-Private Partnership (PPP) for green growth
Currently, there are many views and definitions of the state-private partnership or public-private partnership model, but no clear and unified definition. In the view of the ADB (2008), the concept of private sector participation is a term often used interchangeably with the term public-private partnership. Another concept of the PPP model that is also commonly used today is the public and private cooperation model, also known as public-private partnership, a model in which the State allows the private sector to invest in public services or facilities of the State. PPP cooperation for green growth is understood as investment cooperation activities between the State and the private sector for infrastructure projects that are able to adapt to natural hazards and protect environmental quality and human health, ensuring green growth and sustainable development.

1.2.2. The role of financial instruments for green growth

a. The role of green financial policies

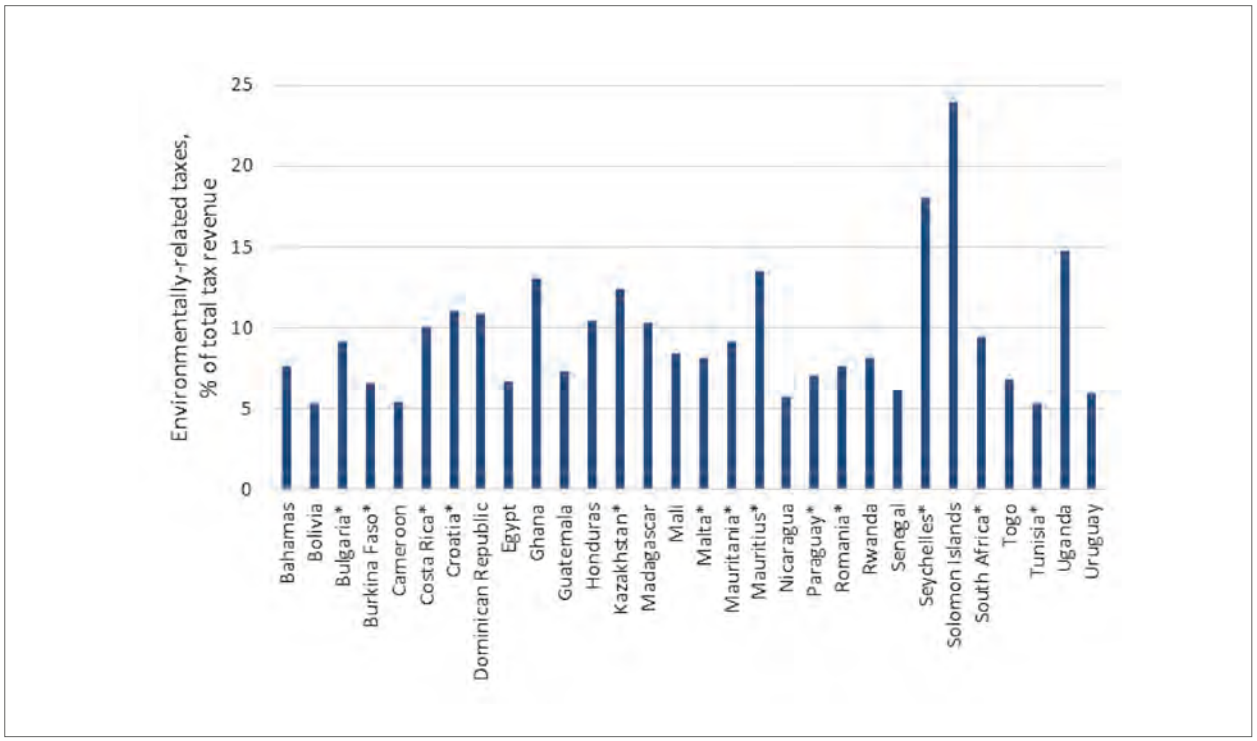
[1] The role of tax policies

In many countries that have made concerted efforts towards decoupling environmental degradation and economic growth — e.g. Scandinavian countries, the UK, Germany, France, the Netherlands, Chile, Mexico, Costa Rica, China and Viet Nam, to name but a few — green taxes have been implemented with some success.

A strong reason for the popularity of green taxes is that they can deliver economic, fiscal, social and en-

[23] The first commitment period of the Kyoto Protocol ended in 2012 and the protocol was revised that year in an agreement called the Doha Amendment, but it has not yet been approved. Meanwhile, more than 170 countries have signed the 2015 Paris Agreement, which also sets emissions standards and allows emissions trading.

Figure 4: Environmentally related tax revenue as a percentage of total tax revenue in selected non-OECD countries in 2018



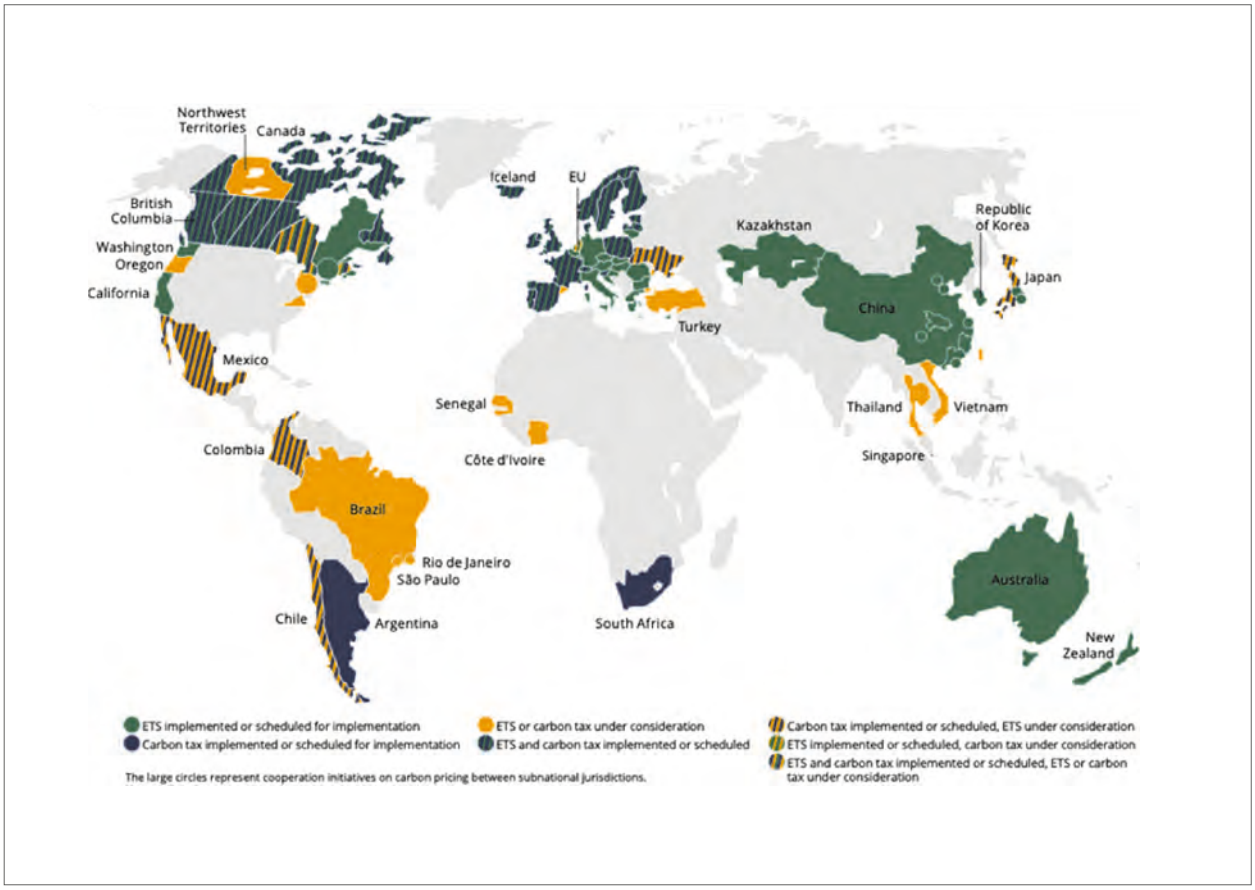
*Source: OECD Stat (data extracted 05.05.2020). *Estimated value/incomplete data*

vironmental benefits. Green taxes tend to have a slightly positive impact on growth and are referred to as "growth-friendly" taxes in the European Union.[24] Green taxes are "intended to distort production decisions and have a disproportionate impact on polluters" — but benefit greener companies and drive GG (OECD 2010, p.144). A green tax shift, reducing capital or labour taxation while increasing environmental taxation, can increase economic output.

In many OECD and non-OECD countries (see Figure 1), green taxes account for a significant proportion of total tax revenue. In Mauritius, for example, revenues from environmentally related taxes – on fossil fuels (the MID levy), excise on PET and plastic bottles, a petrol charge earmarked for public transport purchasing, environmental protection charges, a CO_2 levy/rebate programme on vehicles, fishing access rights charges, fees to operate in marine protected areas, and the energy inefficient products charge fuel excise, excise on motor vehicles, registration fees for imported vehicles and road taxes — amounted to 13.5% of total tax revenue in 2018 (see Figure 1). In the country, environmental tax revenues increased by a multiple of 40 between 2003 and 2013 (UNEP 2014b). Many of these revenues are earmarked for a specific fund or purpose, with revenues from the MID levy paid into the MID fund, which institutes sustainability-related projects in the country across a number of sectors, including energy, transport, construction, tourism, fisheries, industry and agriculture (Cottrell and Falcão 2018).

[24] See for example this speech by European Commissioner for the Economy, Paulo Gentiloni, from 5th March 2020 https://ec.europa.eu/commission/presscorner/detail/en/SPEECH_20_398

Figure 5: Global spread of carbon pricing initiatives



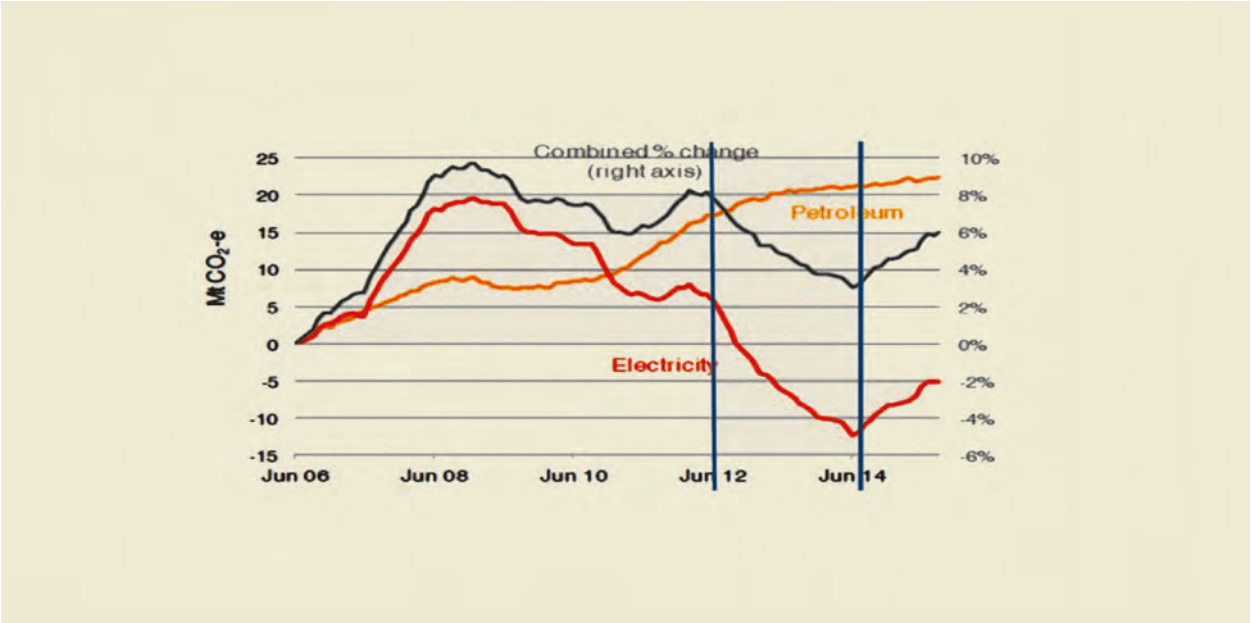
Source: World Bank 2019

A further reason for the widespread implementation of green taxes is that they are easy to implement and administrate. If levied upstream, they can target a few large taxpayers and be tagged on to existing tax collection mechanisms. This means that administrative costs are often low — just 0.13% of total tax revenue in the case of the German eco-tax — although tax exemptions or special provisions can increase costs substantially (OECD 2006). Eco-taxes also tend to be difficult to evade as they tend to be paid by a small number of large taxpayers and levied on immobile tax bases, such as energy, and on goods and services which have prices which are relatively transparent (Fay et al. 2015). In countries with high rates of tax evasion, carbon-energy taxes more than pay for themselves as a result of improvements in the efficiency of the tax system (Liu 2013).

If the tax rate is set at the appropriate level, environmental taxes are effective in reducing pollution. Setting the tax rate is a complex process and the result tends to be a compromise between an appropriate rate from an environmental economic perspective and the realities of political economy. Impacts of a specific measure cannot always be accurately predicted, and so, tax design may to some extent be a matter of trial and error.

Carbon pricing — carbon taxes or carbon emissions trading — is widely recognised as the most effective and cost-efficient instrument available to policymakers to mitigate CO_2 emissions (see e.g. de Mooij et al. 2012; World Bank 2019). Carbon pricing schemes have been implemented or are planned in 57 jurisdictions, with prices ranging from USD 1/tCO_2 in Ukraine and

Figure 6: GHG emissions trends in Australia clearly show a strong response to the carbon tax



Source: van Dender 2019

Poland to USD 127/tCO_2 in Sweden (see Figure 2). Nevertheless, only 20% of global GHG emissions are covered by a carbon price, and only 5% are priced at a level commensurate with the achievement of the temperature goals of the Paris Agreement (World Bank 2019).

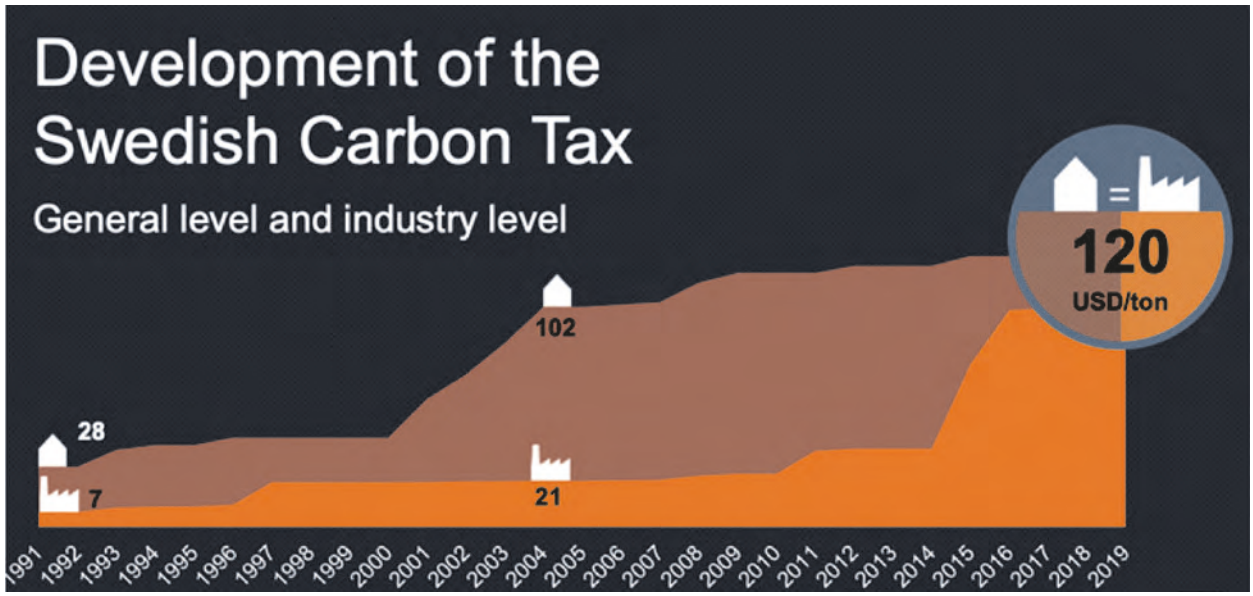
As a growing number of countries make a legal commitment to achieve carbon neutrality by 2050 — necessary for the achievement of Paris climate targets — coverage of emissions and carbon prices are likely to increase. Table 2 lists all the countries which have made a commitment in law or a political commitment backed up by clear legislation to achieve carbon neutrality on or before 2050, and lists the GFP and GF measures they make reference to in their climate planning.

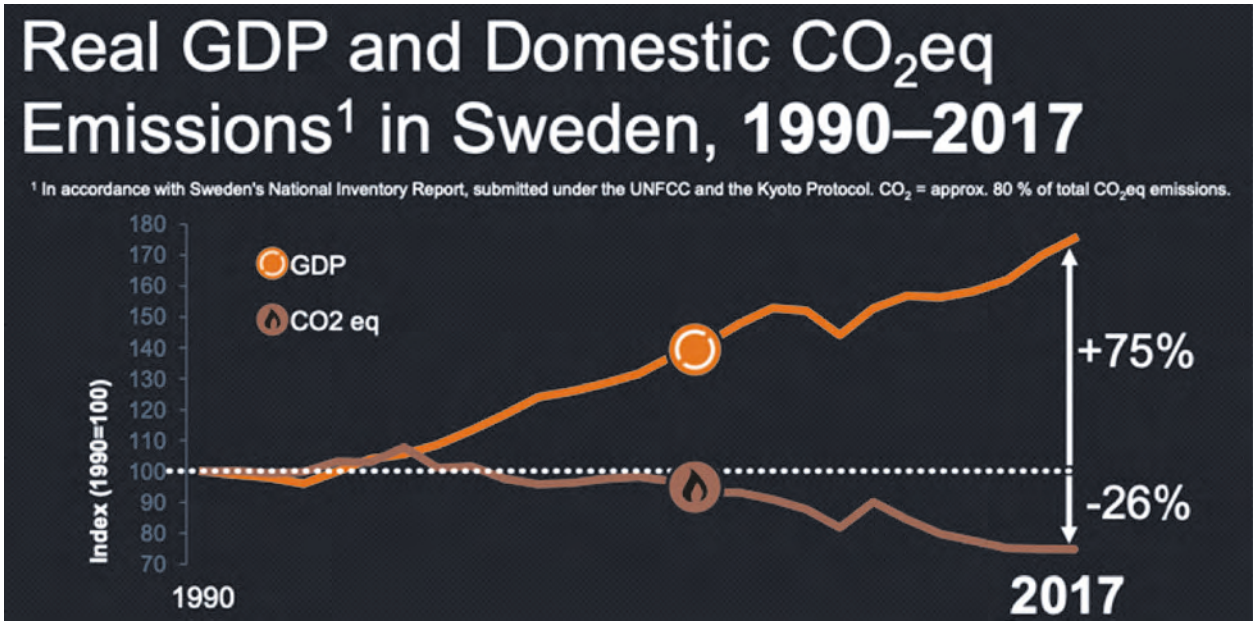
Given the potential negative competitiveness impacts from a higher carbon price and the risk of carbon leakage, the imposition of carbon border adjustment mechanisms on imports to jurisdictions with a higher carbon price is becoming increasingly probable. If implemented, border adjustment mechanisms can be expected to have an impact not only on the implementing country, but well beyond to exporting countries without a carbon price.

Carbon pricing can be implemented either by means of taxes or trading. When implementing carbon taxation, the price per tonne of CO_2 emitted is set and the market governs the quantity of CO_2 abated. Controversies regarding the social cost of carbon have led to policymakers opting for a more pragmatic, target-consistent approach when setting the carbon tax rate.[25] In carbon trading systems, no price is set, but rather the permitted quantity of CO_2 emissions is specified, and trading of allowances generates a price in line with supply and demand.

[25] For a brief timeline of the international debate on the social cost of carbon see the Carbon Brief website: https://www.carbonbrief.org/qa-social-cost-carbon

Figure 7: The Swedish Carbon Tax Rate 1991 – 2019* and the decoupling of emissions and GDP growth





* From 2008 the tax applied only to industry outside the EU emissions trading system

Source: Government of Sweden 2020

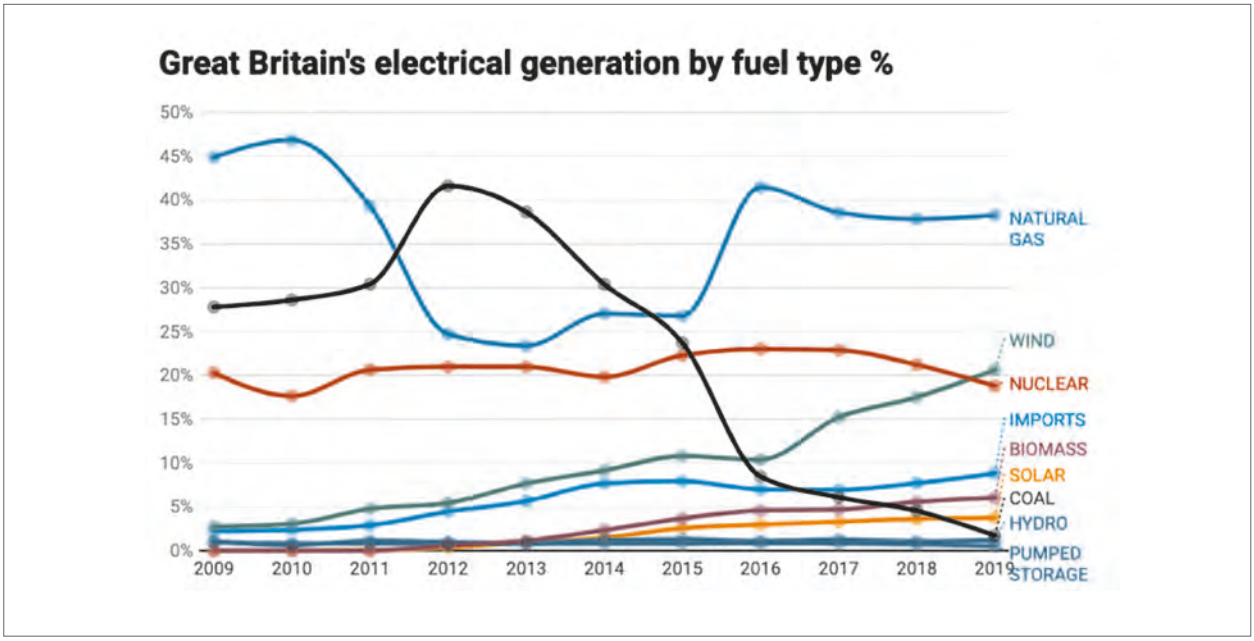
Both options can be effective in mitigating CO_2 emissions and all things being equal, should generate the same carbon price for the same amount of emissions reduced. In practice, carbon taxes may be preferable to trading, because of their potential to achieve much greater coverage. Modelling of carbon pricing in G20 countries from 2015 to 2030 predicts that trading would reduce emissions by an average of 60% of the emissions reduced by a USD 70 carbon tax, as only larger installations are covered by trading schemes (Parry et al. 2018).

The imposition and withdrawal of the carbon tax in Australia clearly demonstrates the effectiveness of a carbon tax. Australia introduced a carbon tax in June 2012 and removed it in July 2014 — both dates are marked on Figure 4 by a blue line. As clearly shown, emissions from the electricity sector fell sharply during the time the tax was in place, rising almost immediately again once the tax was lifted. Petroleum was not subject to the tax, and emissions increased gradually but consistently over the same period.

Both taxes and trading can deliver economic, fiscal, climate, environmental and social benefits (see e.g. de Mooij 2012). There is little evidence that carbon pricing has a negative effect on economic growth, indeed, if revenues are recycled, its impact is generally positive (CPLC 2016). Several countries have implemented a carbon price and achieved the decoupling of CO_2 emissions and GDP growth.[26] Figure 7 shows the development of the carbon tax rate in Sweden and in parallel, the decoupling of GDP growth and GHG emissions.

To maximise emissions coverage and to tailor policy instruments to their specific context, some countries

Figure 8: Electricity generation by fuel type in the UK 2009 - 2019



Source: Wilson 2020

[26] Although some researchers have questioned whether this decoupling is as a result of a failure to account for consumption emissions, see Chapter 1 and Parrique et al. 2019.

have implemented innovative hybrid instruments, which combine a form of taxation and trading. The UK, for example, implemented a minimum carbon price within the EU emissions trading system in 2013 — which is currently fixed until 2021 at around USD 22/tCO_2 — with the objective of ensuring that the carbon price is sufficiently high to incentivise low-carbon investment and that unabated coal is no longer used (UK Government 2017). The relative price change between coal, natural gas and renewable energy sources resulting from the so-called "carbon price support" is a major cause of the dramatic reduction in the proportion of coal in power generation from around 45% in 2009 to 2% in 2019, resulting both in fuel shifting to natural gas and a greater proportion of renewable electricity (particularly wind) in the energy mix (Wilson 2020).

[2] The role of public expenditure

(1) With regard to green budgeting

Many green budgeting approaches have been employed in middle-income countries in collaboration with international organisations and bilateral donors, e.g. Climate Public Expenditure and Institutional Reviews (CPEIR)[27], Climate Budget Tagging[28], the UNDP biodiversity finance programme BIOFIN[29], and the Public Expenditure and Financial Accountability programme (PEFA)[30].

Mexico has recently developed mechanisms to bring long-term budgetary planning and public investment into line with the objectives of the SDGs through in-depth analysis of the linkages between national planning and the SDGs. This has been standard practice within the annual budgetary process since 2018. Now, the Mexican government has the necessary information to implement better long-term strategic planning and realise investments for the achievement of the Agenda 2030, and to make public policy decisions and budget allocations on the basis of an in-depth analysis of existing programmes and the progress they have made towards achieving their objectives (Perez-de-la-Torre 2018).

Many countries implement budgeting tools for evidence generation and policy coherence. The German government has been obliged by law to report federal financial assistance and tax benefits to the parliament every two years since 1967. Since 2015, these reports must include information on target attainment, effectiveness and sustainability. New financial assistance programmes have to comply with strict guidelines, be time-limited and have a measurable objective which can be evaluated on a biannual basis in the report.[31] In 2015 the Italian government drew up its first catalogue of all environmentally relevant subsidies — the ICES — which it updates regularly.[32] The catalogue covers direct and indirect subsidies harmful to the environment, including lack of full-cost pricing. The third edition analyses 171 subsidies. The analysis prioritises key sectors with environmental relevance, such as agriculture, energy, transport and VAT. In France, a methodology has been developed to classify budgetary expenditures according to their environmental impact on a five-point scale: very favourable, favourable, favourable but controversial, neutral and negative (IGF 2019). Again, the methodology prioritises key sectors to ensure that the administrative effort is manageable.

---

[27] For examples, see: https://www.climatefinance-developmenteffectiveness.org/CPEIR-Database

[28] See: https://www.climatefinance-developmenteffectiveness.org/topic/climate-budget-tagging-cbt

[29] https://biodiversityfinance.net/index.php/

[30] PEFA is currently developing indicators for climate responsive public expenditure management, see: https://www.pefa.org

[31] For information on the guidelines for new financial assistance measures, as well as links to previous subsidy reports (most recently, 2017-2020), please see [in German]: https://www.bundesfinanzministerium.de/Content/DE/Standardartikel/Themen/Oeffentliche_Finanzen/Subventionspolitik/2017-09-2017-Grundlagen-der-Subventionspolitik.html

[32] The catalogue (ICES) and related documents (in Italian and English) are available here: https://www.minambiente.it/pagina/economia-ambientale

(2) Reform of environmentally harmful subsidies

Although SDG target 12.c calls on countries to phase out inefficient fossil fuel subsidies, from a theoretical economic perspective, fossil fuel subsidies are inefficient by nature. Indeed, the IMF's "post tax" subsidy estimate for 2017 — USD 5.2 trillion or 6.5% of global GDP — is an attempt to quantify the difference between efficient and inefficient fossil fuel prices on a global scale (Coady et al. 2019).

Reforming harmful subsidies is a complex process, also at a practical level, but one that is necessary for the cost-effective achievement of GG.[33] Particularly in the energy sector, subsidy dependence tends to be high and vested interests powerful. Political will to reform subsidies is often lacking. The structural reforms required to provide welfare for households and industries accustomed to low energy prices are demanding and difficult to achieve. Careful planning and preparation are key factors for successful reform. Nonetheless, reforms of harmful subsidies have been successfully achieved in many countries. For success factors and best practice cases see Annex 12.

(3) Green subsidies

The optimal policy response to address market failures which encourage and lock in brown growth is to internalise external costs by means of GFP. In many cases, however, this is either impossible for political economy or other reasons, or insufficient to facilitate innovation or support market penetration of new, unproven green technologies. Green subsidies can close this gap, by providing access to capital for firms or individuals so that they can invest in GG.

Green subsidies can take the form of direct or indirect budgetary transfers or risk transfers, e.g. differentiated VAT, tariffs, import duty or excise; green tax exemptions and special tax rules for green sectors; accelerated depreciation; investment grants, soft loans and interest subsidies; green public procurement; and feed-in-tariffs (FITs) for renewable energy. Best practice examples can be found in Annex 13.

(4) Green public investment

To be achieved on a global scale, GG requires large-scale private investment. At the same time, green public investment in e.g. transport infrastructure, or research and development of green technologies, is essential to create the framework conditions for low-carbon development, facilitate market penetration for new and less established technologies, and to reduce risk for companies seeking opportunities to invest.

The public budget used to finance green growth can come from a number of sources. General public budget allocations can provide flexibility for government allocation processes and are relatively simple to administer. However, budget allocations tend to be subject to political budget cycles. This can be addressed to an extent by legislating for a specified amount of GG spending from government budgets over the longer term. Successive GG strategies in Korea have specified that spending on GG should amount to 2% of GDP (GGBP 2014). Rather than setting an upper limit, it is advisable to specify a minimum amount of spending to prevent underfinancing.

Alternatively, revenues from specific taxes may be earmarked, such as fuel and water taxes in Costa Rica. However, although earmarking may be a means of generating a reliable and stable revenue stream, it undermines the flexibility of government to respond to changing circumstances. The amount of revenue raised by a particular green tax instrument is not an indication of how much spending on GG is socially desirable or economically necessary. Earmarking thus entails an inherent risk of misallocation of resources. Alternatively, governments may declare an intention to invest revenue in a particular GG activity without making a firm legal commitment and so boost political acceptance without the disadvantages of earmarking (Cottrell et al. 2016).

Using government revenue to meet any shortfall may also be a solution. Germany's *Energy and Climate Fund* channels revenues from auctioning of EU

[33] For an excellent Guidebook to Fossil Fuel Subsidy Reform for Policymakers in South East Asia see (Beaton et al. 2013).

ETS emissions allowances to investment in e-mobility, energy efficiency, the modernisation of the insulation of buildings, R&D for renewable energies and a market incentives programme for renewable heating. Since its inception in 2011, the government has compensated for fluctuations in the revenue stream due to low prices in the EU emissions trading system by topping up the fund — by USD 5 billion in 2019[34] (Cottrell et al. 2013). Some countries have set up independent agencies to manage GG funds, protecting them from changing political priorities and ring-fencing revenue for public investment. In Morocco, revenues from plastics taxes have been channelled through a fund and invested in sanitary landfill sites and improved recycling facilities (Cottrell and Falcão 2018).

State-Owned Enterprises (SOEs) also have considerable potential to channel GG investment. In 2018, SOEs owned 62% of total installed electricity capacity, 56% of existing coal power plants and 52% of planned coal power plants (Prag et al. 2018). Although SOEs are important investors in coal and renewable electricity generation, they are investing in coal at a higher rate than their private counterparts — despite their ultimate purpose being to maximise value for society. In countries with high levels of state ownership in the electricity sector, government influence over SOEs can be used as a complementary policy lever to sector-wide or economy-wide energy and climate policies, e.g. by including public policy objectives in mandates for SOEs. In this context, SOEs should be able to take advantage of preferential financing and state guarantees to realise lower capital costs for green energy investment (Prag et al. 2018).

Sweden has published guidelines on the role of SOEs in implementing long-term approaches to sustainable growth, creating a healthy work environment, respect for human rights, decent working conditions, environmental sustainability, high standards of business ethics (particularly through the prevention of corruption), and responsible conduct with regard to payment of taxes. Compliance with these guidelines is mandatory (Barnes 2019). In China, green credit guidelines require state-owned banks to strengthen environmental and corporate social responsibility in all overseas investment: these guidelines also mandate the board of directors or supervisory board to promote green credit concepts on energy saving, environmental protection and sustainable development (Barnes 2019). Many other countries have taken similar steps.

The state can use its economic power to drive GG through green public procurement (GPP). GPP can have a significant influence on the growth of GG industries and is widely recognised as a strategic lever to drive innovation and improve the sustainability performance of public and private sector organisations. In low- and middle-income economies, public procurement accounts for up to 30% of GDP (UNEP 2017). Leveraging this purchasing power by buying sustainable goods and services on the basis of clear legal requirements and technical specifications creates demand and fosters a market for sustainable goods. The most effective and impactful GPP strategies incorporate comprehensive action plans, rather than specific sectors or products. Today, many countries include not only environmental considerations but also social issues, such as human well-being, in their procurement rules. The Republic of Korea is generally recognised as a best practice example.

b. The role of green financial market instruments

[1] Green securities

Green securities have a positive impact on the green growth process as they are primarily a new and effective capital mobilisation channel for solutions to adapt to and minimise the impact of climate change in many countries around the world. The issuance of green securities will help create conditions to attract large capital resources in society to support the implementation of environmentally friendly projects and meet the social responsibility goals for sustainable development. According to estimates by the International Energy Agency (IEA), to halve global emissions by 2050, the world will need an investment of up to USD 46 trillion, equivalent to 1 trillion per year.

[34] https://www.bundesregierung.de/breg-de/aktuelles/mehr-geld-fuer-die-energiewende-1588494

Therefore, green securities (especially green bonds) are considered as an effective solution, which can help to mobilise hundreds of billions of USD a year for the development of a clean and sustainable economy.

Besides, green securities are one of the instruments used to regulate medium and long-term capital sources, contributing to improving the efficiency of the distribution and redistribution of financial resources in the economy. Green securities help diversify forms of capital mobilisation in capital markets, avoiding excessive concentration on the common bond market, stock market or bank credit market which cause imbalances among these markets. Green securities (especially green bonds) are also an effective tool to raise investors' awareness of projects addressing environmental issues, such as climate change and environmental pollution.

Of the two instruments of green securities (green bonds and green stocks), green bonds are used to mobilise medium and long-term capital, to finance economic development and sustainable production and business activities of the government and enterprises. The government issues green bonds to raise capital for urgent national projects in the field of environment and in the fight against climate change. Meanwhile, businesses issue green bonds to raise capital more effectively. According to statistics from the impact rating reports of green bond issuers, normally the issuance of green bonds has a positive impact on the environment through the reduction of CO_2 emissions and toxic waste, and recycling. According to a review by Reuters, the issuance of green bonds will help issuers attract about 20% more long-term investors and 50% more responsible investors on the issuer's bond portfolio. Therefore, one of the most important benefits of green bond issuance is to help diversify the investor base, especially to attract foreign investors wishing to invest in green financial products.

[2] Green credit

In fact, the trend of green credit has developed in tandem with energy saving, renewable energy and clean technology projects aimed at the dual goal of economic growth and environmental protection. Green credit is an important solution, helping to minimise negative impacts from life and production processes on the environment and society, contributing to the sustainable development of the economy. The implementation of green credit programmes also helps banks reduce bad debts, enhance financial stability and protect brand images in the market for green credit.

[3] Carbon credit market

Economic theories show that the use of price regulators, such as the emissions trading market, always outperforms quantitative management tools such as tax policies (Weitzman, 1974). The purchase and sale of carbon emissions rights demonstrates their cost effectiveness and efficiency in protecting the environment. At the same time, they show flexibility and transparency and encourage innovation (Ackerman and Stewart, 1985; Hahn and Stavins, 1991). Market mechanisms such as the emissions trading market are seen as a superior tool that can replace traditional coping-with-climate-change policies. Policymakers often argue that the emissions trading market is an intersection of the effectiveness of environmental protection policies and economic efficiency, and this mechanism is becoming an increasingly viable option for countries around the world.

[4] Green investment funds

International green investment funds often play a pioneering role in creating green investment trends in developing countries, underdeveloped countries, developing island nations and African countries. International green investment funds make a significant contribution to supporting the restricted capital resources in these groups of countries, helping them to minimise the impact of climate change. National green investment funds are often used to pave the way, stimulate and attract investment from the private sector for environmentally friendly investments.

1.3. Trends in using market instruments for green growth in the international context

1.3.1. Tax policy reform towards green growth in the international context

To achieve the goals of promoting green growth and reducing greenhouse gas emissions, several financial measures, including tax and charge policies, have been issued and implemented in many countries to change the behaviour of organisations and individuals and to raise awareness of environmental protection in investment, production and consumption activities. Accordingly, this trend is reflected in the following taxes:

(i) Apply new taxes related to the environment (Typically: Finland was the first country to apply a tax on CO_2 emissions on fuels in 1990; Norway applied a carbon tax on Mineral oil in 1991; Denmark imposed a carbon tax on fuel in 1992; The Netherlands introduced a general fuel tax in 1988 and a number of other environmental related taxes such as waste tax, groundwater tax, and new energy taxes in 1995 and 1996).

(ii) Apply packaging tax to reduce the use of packaging and waste (Belgium, Denmark, Norway, Korea); or impose different tax rates to encourage the reuse and recycling of packaging materials (Norway, Finland).

(iii) Gradually reducing or eliminating tax incentives and subsidies that are potentially harmful to the environment (agricultural subsidies in OECD countries, which account for 1.2% of GDP, are among the causes of erosion and land degradation, and other environmental problems; or transportation tax incentives for the OECD countries, etc.)[35].

1.3.2. Public expenditure for green growth in the international context

Green and environmentally friendly growth is a sustainable development model that countries are striving to implement. Economic growth must go hand-in-hand with sustainable environmental development. Green growth also requires increased spending on research and development to develop green technology, encourage low-carbon projects, reduce harmful emissions, and minimise negative impacts on the environment and human health. Faced with two basic requirements of economic development – to respond to global population growth and deal with environmental pressures – especially after the 2008 global financial crisis, green growth has become a model and an instrument to implement sustainable development with three closely related elements: economic development, ensuring security/enhancing social welfare, and environmental protection. Since 2011, countries have developed their economies according to the green growth model, gradually reducing energy- and resource-intensive industries towards the use of green and renewable energy to solve food security issues and respond to climate change. Green growth has also become a topic of great interest to many international organisations and is an important issue at international conferences and forums[36].

[35] OECD (2004), Green Tax Reforms in OECD Countries: An Overview.

[36] World Economic Forum on East Asia, June 2010; Asia - European Summit (ASEM), October 2010; Asia-Pacific Economic Cooperation (APEC) Forum Conference, November 2011; APEC Finance Ministers Meeting (November 2011). At the APEC Conference (Hawaii, USA) in November 2011, leaders adopted the Honolulu Declaration in which APEC identified the need to address the environmental and economic challenges of the region by moving towards a green, low-carbon economy, improving energy security and creating new sources of economic growth and employment.

1.3.3. Using financial market tools for green growth goals in the international context

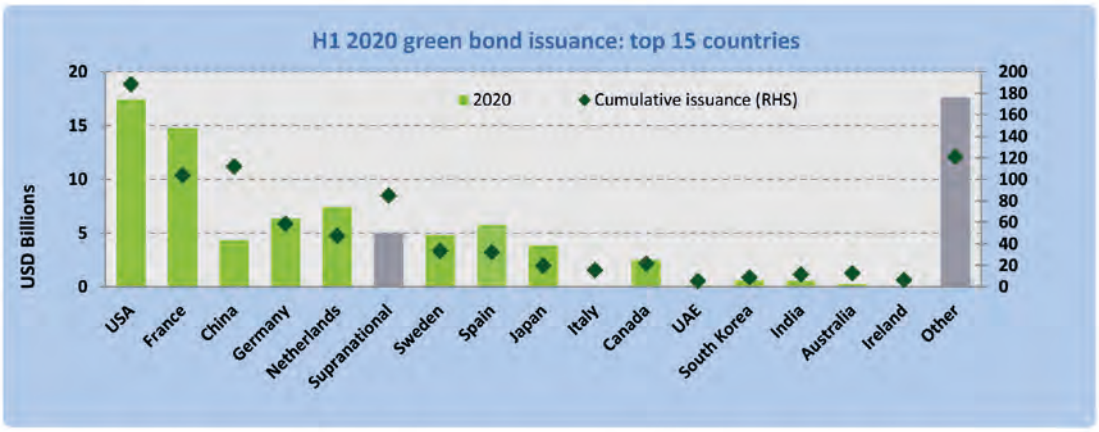
a. Green securities

Green securities products (mainly green bonds) provide financial resources for countries to implement clean energy projects, reduce impacts and adapt to climate change, while at the same time bringing about high-quality credit and high returns on investment, together with positive environmental benefits. In addition, clean technology is also an option investors choose due to concerns about risks of climate change and environmental issues.

Since the World Bank's first issuance in 2008 with the aim of financing environmental projects, green bonds have become one of the new tools for raising capital widely developed in countries around the world and by many issuers, such as the European Investment Bank (EIB), the Asian Development Bank (ADB), the Development Bank in Japan and Germany and governments in the Americas, Europe and Asia-Pacific.

According to the Climate Bonds Report (2020), the total volume of green bond issuance in the world has increased sharply, reaching a record of USD 257.7 billion, with an average growth rate of 46% over the period 2017-2019. In 2019, there were 1,788 green bonds issued globally from 496 issuers, of which 250 were new issuers entering the market. In particular, the 15 countries with the largest volume of green bond issuance in 2019 include: the United States, China, France, Germany, the Netherlands, Sweden, Japan, Canada, Italy, Spain, the United Arab Emirates, Korea, Australia, Finland and Belgium. In particular, the United States, China and France continue to have the highest issuance volumes in the world, accounting for 44% of the total green bond issuance in 2019. European markets accounted for 45% of global green bond issuance in 2019. Asia-Pacific markets accounted for 25% of market share and markets in North America for 23%.

Figure 9: The 15 countries with the largest volume of green bond issuance in 2019



Source: Climate Bonds (2020)

In developed countries, green securities (especially green bonds) are essential in capital markets in the context where the types of investment products on the market have saturated. At the same time, governments as well as financial market participants in these countries also pay attention to sustainable growth associated with environmental protection. The US currently has the highest green bond issuance rate in the world, at USD 51.3 billion, accounting for 20% of the total issued volume in 2019. In France, green bonds were deployed from 2007 and reached USD 30.1 billion, accounting for 11.6% of the total issuance volume and ranked third in the world.

However, in developing countries, the financial markets, especially capital markets, have not developed to their full potential while the demand for green securities is huge in the context that climate change is becoming more severe and green growth is imperative. Accordingly, developing countries adversely affected by climate change (sea level rise, natural disasters, floods, etc.) will need to develop a green bond market to cope with climate change and respond to its consequences. In contrast, for developing countries and countries less affected by climate change, market participants have almost no need for green financial products, leading to undeveloped green bond markets.

In China, green bonds help communities reduce the risks associated with natural disasters through flood prevention and the development of warning systems. China's green bond volume reached USD 31.3 billion in 2019, ranked second in the world and accounted for 12.1% of market share. In South Africa, since the government tested rules and regulations applicable to green bonds in 2011, the volume of green bonds issued in the country has increased exponentially. Specifically, the capital raised from the issuance of green bonds in South Africa increased by 20 times in the period 2011-2015, bringing the capital raised from the issuance of green bonds to USD 41.8 billion with the broad participation of multilateral organisations, businesses and local governments. In Southeast Asia, Thailand and Indonesia began participating in the green bond market in 2018, along with the application of the ASEAN green bond standard. Funds raised from the issuance of green bonds are mainly used to develop renewable energy sources. It is noteworthy that investment in construction of low-carbon emissions buildings has increased over the past year.

b. Green credit/Green loans

Experience from developed countries shows that green financing from green financial instruments can play an active role in helping developing countries restructure their economies and stimulate new environmentally friendly sectors. In Europe, with the application of green financial instruments including green loans, green interest rates, green investment funds, etc., to develop the energy conservation industry, the continent is on track to achieve energy savings of up to EUR 200 billion/year (equivalent to USD 220 billion/year) by 2020. In the above trend, the scale of green credit and credit for sustainable development globally has increased sharply during the period 2014-2019, from USD 15.8 billion in 2014 to USD 178 billion in 2019. In particular, green credit and credit for sustainable development in emerging economies has grown strongly in recent years, from USD 41.3 billion in 2018 to USD 112.3 billion in 2019[37].

Countries in Europe such as the UK, Germany, France, and the Netherlands are pioneers in the use of green credit, green loans, and the allocation of funds for green projects. Since 2012, the Green Investment Bank (GIB) has officially operated and sponsored over 100 green projects worth around USD 15.5 billion. The GIB has raised capital from the British Government, with initial capital of GBP 3 billion and GBP 700-800 million annually, issuing shares to investment partners such as pension funds, private equity funds and national interest funds. During operation, the GIB identified three priority areas for green loans, including offshore power generation projects, infrastructure, carbon storage and processing projects,

[37] Loan Market Association (2020) Loans Highlights: Full Year 2019: Politics and climate change shape 2019 loans market. https://www.lma.eu.com/application/files/7715/8410/9487/Dealogic_Loans_Highlights_FY_2019.pdf

and energy efficiency improvement projects. On that basis, the GIB offers appropriate support products, such as providing short-term equity for up to 20% of a project's charter capital for offshore power generation projects, encouraging commercial banks or other investors to provide part of the project's total loan capital for areas relating to infrastructure, carbon storage, carbon processing, and long-term funding through – in part or in full – bond issuance underwriting for energy efficiency improvement projects. Germany has adopted several financial support programmes for commercial banks to implement environmental projects. The German KfW is the leading Development Bank in the design of green financial products for environmental protection and energy conservation. In 2008, KfW's green credit accounted for 21.66% of total policy loans, focusing on energy saving, soil protection, and water pollution control.

In recent years, China has been one of the countries that have undergone significant policy changes to promote green credit. The Bank of China has cooperated with the United Nations Environment Programme to develop policies to develop green banks, considering them as key institutions in managing green credit development. Since 2007, guidelines for lending to energy-saving and emissions-reduction businesses have been issued by the Bank of China Regulatory Commission, encouraging financial institutions to analyse environmental risks, including environmental endurance testing. Commercial banks are allowed to recover previously issued credits if businesses do not pay attention to or ignore environmental regulations. Green credit policy in China has achieved a number of results; for example, changing the structure of bank credit and reducing the amount of credit financing for energy-intensive projects that cause environmental pollution. The growth of funding for environmentally friendly projects has increased, reaching a disbursement of USD 1.3 trillion in 2017, accounting for nearly 10% of the total outstanding loans of the top 21 banks in China. However, China also faces difficulties in developing and using green credit, namely issues concerning the completion of the legal framework; minimising overlaps in state management and synchronising green financial development policies with other development policies; and the lack of a system of assessment for environmental pollution and environmental risks as a basis for banks to classify projects (Wang et al., 2019); and issues concerning the mobilisation of capital for green investment and green fields when the budget can only meet 15% of demand, estimated at USD 320 billion per year in the period 2016-2020 for the purpose of environmental protection.

c. The carbon credit market

The emissions rights exchange system began to develop[38] after the Kyoto Protocol of the United Nations Framework Convention on Climate Change (signed in 1997) laid down an obligation to reduce greenhouse gas emissions for developed nations. The EU was the first region to design and operate an emissions trading mechanism to ensure reductions in greenhouse gas emissions as committed to under the Kyoto Protocol, with a desire to play a leading role in the negotiating process to fight climate change.

The European Union Emissions Trading System (EU ETS) has officially been operating since 2005 and is set to progress through four progressive stages to 2030. This mechanism is operated through the construction of a cap on greenhouse gas emissions, allocating emissions quotas (carbon credits) to member states and creating emissions trading markets. Emissions quotas allocated by the EU to member states continue to be allocated by member states to registered emissions facilities[39]. The EU ETS system is currently the largest carbon market in the world, accounting for three quarters of global carbon trading volume with more than 11,000 businesses, power plants and other energy industries with a capacity of over 20 MW in 31 countries (including all 28 EU countries and Liechtenstein, Norway and Iceland).

[38] The majority believes that the world's first emissions trading market is that of the EU.

[39] Businesses also have the right to buy, but with a limited number of licenses or carbon credits, from emissions reduction projects around the world to comply with their emissions caps.

Following the EU, many other countries issued their own regulations to set up emissions trading markets. The mechanism of carbon credit trading has been implemented in several countries and territories, including: The European Union, California (USA), China, Australia, Japan, New Zealand, Switzerland, Canada, Korea, Thailand, and Kazakhstan. The following countries are considering implementation: Brazil, Côte d'Ivoir, Senegal, Turkey, and Taiwan.

In Asia, China has attained several achievements in researching and operating a domestic carbon trading market. China announced an emissions trading system in December 2017; the first phase was piloted in seven major provinces and cities (Shenzhen, Shanghai, Beijing, Guangdong, Tianjin, Ho North, and Chongqing). These provinces and cities began piloting the emissions trading mechanism in the field of electricity production with participation mainly of state-owned enterprises. On the basis of the amount allocated from the central government, local governments have the right to assign quotas to each enterprise or production establishment based in the area and inspect and supervise implementation. As of 2019, China has collected around USD 700 million from emissions rights trading transaction fees. In India, the government has been operating market-based instruments, studying mechanisms to achieve national and sector greenhouse gas emissions reduction targets. In the short term, India plans to apply carbon pricing tools to the waste management sector.

d. The trend of green investment funds

Countries around the world tend to take advantage of and attract green investment capital from international green investment funds. At the same time, they set up national green investment funds to realise national green growth strategic goals. In particular:

(i) Developing and emerging countries often take advantage of green investment capital from international green investment funds. For example, Indonesia drew capital from the Green Climate Fund (GCF) for a project related to geothermal energy development in 2018. One hundred and eighty-four developing and underdeveloped countries also have access to GCF capital. The international green investment funds (see Table 1 below) are considered to be external financial sources, providing additional support to the financial sources in each country.

(ii) A number of countries have established national green investment funds to realise national green growth strategic goals. New Zealand established a "green" investment fund worth NZD 100 million (USD 69.28 million) in 2018 to encourage the private sector to join the campaign eliminate all carbon emissions by 2050. The new investment fund is an important part of New Zealand's plan to "build a clean, sustainable, low-carbon economy", contributing to both reducing emissions and benefiting businesses. The fund will be used to invest in manufacturing, agriculture, electric vehicles and energy-efficient commercial buildings. South Africa has established a national fund to support green initiatives, supporting the transition to a low-carbon economy using resources effectively and combatting climate change. South Africa's green investment fund is managed by the Development Bank of South Africa.

Table 1. International green funds and mechanisms

Fund	Area	Main information
I. Financial funds and mechanisms under the UNFCCC		
Green Climate Fund (GCF)	Climate change adaptation and mitigation	The GCF supports projects, programmes and policies on climate change adaptation and mitigation. • The financial fund for the private secor allows the GCF to provide direct or indirect financial assistance to private sector activities. • All developing countries participating in the UNFCC are eligible for GCF funding.
Global Environment Facility (GEF/TF)	Climate change adaptation and mitigation	Activities supported by the GEF/TF: • Climate change mitigation: EE - energy efficiency, RE - renewable energy; sustainable transportation; land use, land-use change, and forestry (LULUCF). • Climate change adaptation: Promote immediate and long-term adaptation measures in development policies, plans, programmes, projects and actions.
GEF Special Climate Change Fund (GEF/SCCF)	Climate change	The GEF/SCCF supports the following activities: • Climate change adaptation and mitigation; • Technology transfer; • Mitigation in selected sectors: energy, transport, industry, agriculture, forestry, and waste management; • Economic activity diversification.
GEF Small Grants Programme (GEF-SGP)	Climate change adaptation and mitigation	Supported activities include: • Biodiversity; • Climate change adaptation and mitigation; • Land degradation and sustainable forest management; • Water and international chemicals.

Fund	Area	Main information
II. Financial mechanism funds not belonging to the UNFCCC – Multilateral funds		
Clean Technology Fund (CTF)	Electricity, Transport, Energy Efficiency	• CTF's goal is to promote the deployment and transfer of clean technology by funding low-carbon programmes and projects. • The CTF focuses on three main areas: (1) Electricity; (2) Transportation; and (3) Energy saving. • Five projects have been approved by CTF in Viet Nam through The International Bank for Reconstruction and Development (IBRD), ADB and the International Finance Corporation (IFC) with the total approved grants and loans of USD 110 million.
Global Energy Efficiency and Renewable Energy (GEEREF)	Energy Efficiency, Renewable Energy	GEEREF invests in private equity funds that specialize in small and medium size businesses and project development units to implement energy efficiency and renewable energy projects in developing countries and eco-nomies in transition.
Forest Carbon Partnership Facility (FCPF)	REDD+	The FCPF consists of the Readiness Fund (RF) and the Carbon Fund (CF), and began operating in June 2008. • FCPF assists developing countries to reduce emissions from deforestation and forest degradation, enhance and conserve forest carbon stocks and sustainably manage forests (REDD +).
UN-REDD Programme	REDD+	UN-REDD support is provided through: • Direct support to the design and implementation of the National REDD+ Programme; • Supplementary support for national REDD+ action; • Support to technical capacity building through sharing of expertise, common approaches, analysis, methods, tools, data, implementation and South-South knowledge sharing.

Fund	Area	Main information
II. Financial mechanism funds not belonging to the UNFCCC – Multilateral funds		
Future carbon fund under the Carbon Market Initiative (ADB CMI)	Energy saving, Renewable energy	The ADB CMI supports and encourages projects on EE and RE, and other projects with long-term greenhouse gas reduction benefits after 2012. • Assisted countries have mandatory or voluntary GHG emissions reduction goals and policies by 2012 by providing continuous access to certified emissions reductions (CERs) and verifiable emissions reductions (VERs). • Improve the affordability and attractiveness of low-carbon technologies through conventional solutions by reducing the initial capital barriers of GHG mitigation proJects.
Asian Clean Energy Fund (ACEF)	Energy saving, Renewable energy	The ACEF was established by Japan as part of its initiative of Enhanced Sustainable Development for Asia. • The ACEF supports member countries' efforts towards reducing greenhouse gases through the use of energy-saving and renewable energy technologies.
Clean Energy Financing Partnership Facility (CEFPF)	Energy	The CEFPF supports: • The application of new clean energy technology; • Projects that reduce barriers to the application of clean energy technologies; • Projects to increase access to clean and modern energy for the poor; • Technical capacity building programmes for clean energy.

Fund	Area	Main information
III. Financial mechanism funds not belonging to the UNFCCC – Bilateral funds		
UK International Climate Fund (UK-ICF)	Climate change	Activities supported by the ICF include: • Building global knowledge and evidence; • Development and expansion of low-carbon and climate adaptation and mitigation programmes; • Capacity building in public and private sectors and support for national activities; • Integrating climate change into UK development aid.
Actions for Cool Earth 2.0 (ACE 2.0)	Climate change	ACE 2.0 is a new Japanese Government initiative to support actions in developing countries and the advancement of state-of-the-art technologies to address climate change. • A total budget of USD 10.5 billion will be provided as climate finance for developing countries by 2020. • Supported activities: renewable energy production, flexible infrastructure, and other mitigation efforts.
The Japanese Fast Start Finance contribution (J-FSF)	Climate change	Japan's FSF supports both mitigation and adaptation activities. • Supported mitigation activities: energy saving, energy saving technology, and new clean energy initiatives. • Support for adaptation projects that may include adaptation planning, forestry research, rural electricity, drought management and general methods.

Source: Le Ngoc Cau, 2019

1.4. Green growth and market instruments for green growth in Viet Nam

1.4.1. Perspectives, strategies and legal frameworks for green growth

a. The views of the Party and the State on green growth over time

Currently, green economy and green growth are considered as a new development model supported that is currently being implemented by several countries; at the same time, it is a strategy for sustainable development. In Viet Nam, policies and views on green growth have been clearly elaborated by the Party and the State since 2012 and reinforced in the National Strategy on Green Growth for the period 2011-2020 with a vision to 2050. However, the Party and State have been interested in the content and methods of green growth for some time.

The 6th Party Congress marked an important turning point in the Party's awareness of national development as well as green growth. This was the first time the Party requested unity between economic policy and social policy while emphasising the importance of protecting forests and other natural resources.

Since the 7th Party Congress in 1991, the concept of green growth has been recognised by the Party and developed to perfect its theoretical and practical implications for the operation of the economy. The association of socio-economic development with human development and environmental protection has great theoretical and practical significance, because people are the goal, driving force and the most important guarantee of the social market. The Party continues to emphasise the protection and effective use of national resources to improve the natural environment, offering new perspectives on the use of clean technology, clean energy and collection, and the recycling and treatment of waste management. These are not only urgent issues for Viet Nam during the country's industrialisation process but are also global issues.

The political report at the 11th Party Congress (2011) continues to affirm the goals of "Developing the market economy associated with harmonious settlement of social and environmental issues; building an advanced culture imbued with national identity as the spiritual foundation for the society; firmly ensuring national defence and security". The term green economy was first mentioned in the "Socio-economic development strategy 2011-2020" in which the economic development orientation was defined as "Linking economic development with environmental protection and the green economy" and "focusing on the development of a green and environmentally-friendly economy. Implementing sustainable production and consumption; developing clean energy step-by-step, clean production and clean consumption. Promoting the socialisation of environmental protection, the development of environmental services and waste treatment".

Viet Nam's Strategy for Sustainable Development 2011-2020 (Prime Minister's Decision No. 432/QD-TTg dated April 12, 2012) mentioned the concept of green growth for the first time. Accordingly, the strategy defines Viet Nam's growth target of "transforming the growth model step-by-step into a harmonious development between width and depth; implementing green growth step-by-step and developing a low-carbon economy; economically and efficiently using all resources". The National Strategy on Green Growth (Decision No. 1393/QD-TTg) also states that "green growth is an important component of sustainable development, ensuring rapid, efficient, sustainable economic development and contributing greatly to the implementation of the National Strategy on Climate Change. Green growth must be made by people and for people, contributing to creating jobs, reducing poverty, and improving people's material and spiritual lives". The Party's Central Committee (Session XI) also issued Resolution No. 24-NQ/TW dated June 3, 2013 on proactively responding to climate change, strengthening natural resource

management and environmental protection, which affirmed "speeding up growth model transformation and growth associated with restructuring the economy in the direction of market economy". At the same time, the resolution proposed a group of solutions on innovating, perfecting mechanisms, monetary policy, enhancing and diversifying resources to respond to climate change, and managing natural resources and environmental protection aiming at green growth.

To implement the views of the Party and the State on green growth, the National Action Plan on green growth for the period 2014-2020 (Decision No. 403/QD-TTg dated March 20/2014) mentioned four main themes, 12 groups of activities and 66 task actions. Capital sources for implementing activities include: State budget capital (state budget) in the Support Programme to Respond to Climate Change; from the resources of the private sector; from the community; and from international aid. At the same time, the State will prioritise and provide adequate funds from the central government and local state budgets to implement the Green Market Action Plan, especially to improve energy efficiency and develop renewable energy. The State will also create a legal basis to encourage financial institutions and businesses to invest in the implementation of green growth Action Plan activities.

Thus, since the Strategy on green growth was officially launched in 2012, the Party's view on the green economy and green growth has been formed and developed with ideas gradually improved over time in line with the conditions and characteristics of Viet Nam, and gradually approaching the general viewpoints and conceptions of the world. Green growth has been reinforced throughout socio-economic development strategies; the green growth perspective is not only mentioned in economic development strategies, but also in strategies on environmental protection, climate change, etc. Most of the strategies related to green growth are implemented to 2020, with visions to 2030/2050. A number of strategies have been implemented to review the situation of implementation to provide a basis for proposing direction for the next phase (National Strategy on Climate Change[40]).

b. Legal frameworks and treaties on green growth

Viet Nam's view of green growth was institutionalised and expressed in the 2013 Constitution[41]. The government has issued national directions and strategies for sustainable development and a national strategy on green growth.

The Party and State's guidelines and policies on green growth are institutionalised through the promulgation and completion of the system of legal documents, proactively responding to climate change, and strengthening natural resource management and environmental protection with the key task of promoting the transformation of the growth model associated with economic restructuring in the direction of a market economy, which is provided for in Resolution No. 24/NQ-TW by the Party's Central Committee. In the period 2010-2019, the National Assembly issued and/or supplemented a number of laws related to green growth such as the Law on Economical and Efficient Use of Energy (2010), the Law on Disaster Prevention (2013), the revised Law on Environmental Protection (2015), and the Law on Meteorology and Hydrology (2015), etc. to promote the implementation of activities related to green growth. In each economic sector, the legal system and policies have been perfected to link and integrate tasks and plans towards green growth. In particular:

(i) In the agricultural sector, newly issued laws include the Law on Irrigation (2017), the Fisheries Law (2017), the Law on Forestry (2017). The documents guiding these laws all include regulations, incentives

[40] Ministry of Natural Resources and Environment (2019), Report on the implementation of the National Strategy and Action Plan on Climate Change.

[41] Article 50, Chapter 3, 2013 Institution: "The Socialist Republic of Vietnam shall build an independent and self-reliant economy, bringing into full play its internal strengths and international integration and cooperation, in close association with cultural development, social progress and justice, environmental protection, and national industrialisation and modernisation".

and combine green standards for agricultural, forestry and fisheries production.

(ii) In the industry-construction sector, several legal documents related to the economical and efficient use of energy and the development of new energy sources have been issued, such as Resolution No. 55 on the orientation of Viet Nam's national energy development strategy to 2030, with a vision to 2045 (Resolution No. 55-NQ/TW dated February 11, 2020) with a number of breakthroughs in national energy development (prioritising the rapid and sustainable development of energy; encouraging and creating favourable conditions for all economic sectors, especially the private sector, to participate in energy development; resolutely eliminating all manifestations of subsidies, monopolies, and unequal competition, and the lack of transparency in the energy sector).

Additional legal documents for this sector include

- the Strategy for Renewable Energy Development in Viet Nam to 2030 with a Vision to 2050;
- the National Programme on Economical and Efficient Use of Energy 2019-2030 (Decision No. 280/QD-TTg by the Prime Minister dated March 13, 2019);
- Decision No. 04/2017/QD-TTg by the Prime Minister dated March 9, 2017 providing for the list of vehicles and equipment subject to energy labels, applying minimum energy efficiency levels and a roadmap for implementation;
- The Action Plan to reduce greenhouse gas emissions in cement production to 2020 with orientation to 2030;
- The National Urban Upgrading Programme for the period 2009-2020; The National Strategy on Integrated Solid Waste Management to 2025 with a vision to 2050;
- The plan to develop urban centres in Viet Nam to 2030; and regulations on green growth urban construction indicators.

(iii) In the financial sector, to implement the green growth strategy, the Prime Minister has regulated principles and criteria for the allocation of capital expenditure for a 5-year period (2016-2020) (Decision No. 40/2015/QD-TTg dated September 14, 2015). Accordingly, green growth and climate change are added as sub-sectors for which capital expenditures from the State budget are allocated (not regulated in the previous five-year periods). Resolution No. 73/NQ-CP/2016 by the government approving the investment policy of target programmes for a 5-year period (2016-2020) — climate change/green growth is one of the 21 target programmes. Investment capital for the target programme climate change/green growth and projects related to climate change/green growth[42] account for about 2/3 of the total capital available for the target programmes.

The Ministry of Finance and the State Bank of Viet Nam have also formulated and issued action plans to implement the National Strategy on Green Growth (Decision No. 2183/QD-BTC dated May 20, 2015 by the Minister of Finance and Decision No. 1552/QD-NHNN dated August 6, 2015 by the Governor of the State Bank of Viet Nam). This is the basis and direction for the development and operation of financial and monetary policies serving green growth.[43]

Institutional improvement and implementation of the green growth strategy is also conducted through the development and promulgation of action plans for green growth by ministries and local authorities. By the end of 2018, seven ministries had issued green growth action plans. Countrywide, 34 provinces and

[42] Programme on sustainable forestry development; The target programme to develop a sustainable fisheries sector; The target programme to restructure the agricultural economy and prevent and mitigate natural disasters, stabilise people's lives; The target programme to thoroughly handle establishments causing serious environmental pollution.

[43] Decree No. 32/2017/ND-CP dated March 31, 2017 by the Government on state investment credit (replacing Decree No. 75/2011/ND-CP dated August 30, 2011 on state investment credit and state export credit). The Decree stipulates the list of projects eligible for state investment credit, in which (compared with Decree No. 75) many investment projects in the green investment sector have been added.
In March 2015, after issuing Directive No. 03/CT-NHNN, the State Bank made a review and assessment of the green financial and credit situation. Green credit activities are directed towards energy efficiency, renewable energy and clean technology projects through the Green Credit Trust Fund (GCTF) and credit from commercial banks.

cities directly under the Central Government have developed and implemented green growth action plans.

Green growth is a development process with a close, reasonable and harmonious combination between socio-economic development and environmental protection. Accordingly, in order to implement the green growth policy in Viet Nam in the context of global climate change and international integration, in recent years a number of new legal documents have been developed to promote the implementation of activities related to green growth. Specifically, the National Assembly's Resolution No. 102/2020/QH14 approving the Free Trade Agreement between Viet Nam and the EU (EVFTA) and Resolution No. 72/2018/QH14 dated November 12, 2018 approving the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). In particular, the requirements on environmental protection are committed to at a high level in the two Agreements with the following objectives: promoting mutual support policies in trade and the environment; promoting the enforcement of environmental laws and multilateral international treaties on the environment; ensuring that growth in trade and investment does not affect the cost of environmental protection; and enhancing the capacity of stakeholders to deal with trade-related environmental issues. To implement the above-mentioned two Agreements and the Prime Minister's plans to implement the two Agreements, on August 18, 2020, the Ministry of Natural Resources and Environment approved Decision No. 1813/QD-BTNMT issuing the CPTPP and EVFTA implementation plan, which focuses on implementing mandatory commitments[44].

Viet Nam's Nationally Determined Contribution Update Report (updated NDC) to the United Nations Framework Convention on Climate Change in Document No. 1982/VPCP-QHQT of the government identifies contributions to greenhouse gas emissions mitigation and climate change adaptation committed to by Viet Nam, which are more consistent with the current situation and forecasts for the country's socio-economic development to 2030, ensuring compliance with the goals of the Socio-Economic Development Strategy, the National Strategy on Climate Change, and the National Strategy on Energy Market and Natural Disaster Prevention Strategy. The official website of the United Nations Framework Convention on Climate Change (UNFCCC) has noted that Viet Nam is the latest country to submit an updated NDC. Accordingly, out of 186 countries participating in the UNFCCC, Viet Nam is one of the first 20 countries to send its updated NDC to the Convention Secretariat. Viet Nam's updated NDC demonstrates the country's efforts and identifies contributions to GHG emissions reduction and climate change adaptation.

1.4.2. Green growth in Viet Nam

a. The trade-off between green growth and brown growth/brown economy

Green growth emphasises promoting economic growth while maintaining a harmonious balance with the ecological environment, in particular avoiding pressure to disrupt the balance of the environment. Green economy places more emphasis on the limits of the environment, not just ecological balance; in particular, green economy also focuses on human happiness and social justice[45]. In other words, green economy is more comprehensive when paying attention to sustainable development with the three pillars of economy, environment and society. However, in the context of poverty in several parts of the world, green growth is a necessary condition to progress to a green economy. This may be the main reason why green growth has gained more attention than green economy in the early years of the 21st century[46].

[44] In the two Agreements, there is a separate chapter on environmental protection and sustainable development (Chapter 20 on the Environment of the CPTPP with 81 clauses; Chapter 13 on Trade and Sustainable Development of EVFTA with 41 clauses). Accordingly, the provisions require participating parties to be obliged to fulfill their commitments on environmental protection, biodiversity and climate change, enforcement and dispute resolution regulations.

[45] UNITAR (2012), Advancing an Inclusive Green Economy: Rationale and Context.

[46] UNESCAP (2013), Green Growth and Green Economy.

Meanwhile, "brown economy" refers to a very popular development concept in the past, which is economic development first and pollution treatment later. "Brown" here refers to environmental pollution and inefficiency in terms of resource use. The United Nations Environment Programme (UNEP) defines the brown economy as “an economy based on fossil fuels, ignoring social problems, environmental degradation and depletion of natural resources”[47].

In fact, exploiting nature without due regard to efficiency allows economies to achieve higher growth rates. However, the brown economy also causes great harm to the environment, causing air pollution, over-exploitation of water resources and the oceans, land degradation, deforestation, biodiversity loss, and increased GHG emissions. Greenhouse effects, such as CO_2, SO_2, CH_4, and climate change are occurring on a global scale. These consequences have come back to threaten people's lives and cause economic losses. A prime example is China’s economy in the past. Prioritising economic growth, the country has made rapid strides. In 2014, China became the number one economy in the world, with a GDP of USD 17.4 trillion in purchasing power parity terms, accounting for 16.5% of global GDP. However, China has had to face the consequences of the brown economy – serious environmental pollution and the decline of ecosystems. In 2009, China’s total energy consumption per unit of GDP was about 2.9 times that of the US, 4.9 times that of Japan, 4.3 times that of the EU, and 2.3 times the world average. Since 2012, its share of imports of natural resources, such as oil, iron ore and aluminium, has exceeded 50%. According to the World Health Organisation, more than 1 million Chinese people die each year from air pollution, with many of the country’s major cities consistently among the most polluted cities in the world. In addition, in a large-scale survey in 2013, China’s Ministry of Environmental Protection admitted that 16.1% of the country’s land (equivalent to 1.5 million km2) and 19.4% of its agricultural land is seriously contaminated with heavy metals. About a third of China’s rivers and 60% of groundwater resources are heavily polluted. These are the serious consequences of the brown economy and a lesson for other countries.[48]

In Viet Nam, although the energy intensity (energy to produce a unit of GDP) in the economy in general and in industry in particular has decreased in recent times, it is still high. Currently, the annual growth rate of electricity consumption is normally 1.5-1.6 times higher than the annual GDP growth rate. In addition, energy intensity is currently five times higher than that of developed countries such as Japan and Europe, and higher than other ASEAN countries such as Thailand (about 20-30%). The industrial sector consists of the major energy-intensive industries, which account for about 50% of the total national energy demand, and there is still room to improve energy efficiency; for example, in the cement industry (27%), paper and pulp (14%), steel (20%), textiles (20%)[49], etc. From 2023 onwards, it is expected that Viet Nam will import liquefied natural gas for electricity generation. In the future, the country will increasingly depend on imported energy sources. The environmental pollution situation in Viet Nam is complicated. Air pollution is becoming more serious and is worsening in big cities like Ha Noi and Ho Chi Minh City. Notably, the Air Quality Index (AQI) sometimes exceeds the safety threshold, which is harmful to people’s health. Along with air pollution, solid waste and wastewater are also a concern. According to the General Department of Environment, the reason that the above-mentioned shortcomings have not been fully dealt with is that the concept of prioritising economic growth still lingers, attracting investment at all costs, and disregarding the requirements of environmental protection[50]. Nevertheless, Viet Nam has initially achieved results in the implementation of

[47] UNEP (2011b), Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication, Geneva.

[48] Nguyen Hoang Nam et al. The relationship between green growth, green economy, circular economy and sustainable development.

[49] Ministry of Industry and Trade (2019), Consultancy for the development of the Circular regulating energy consumption in the sugar industry in Viet Nam.

[50] Duy Anh (2019), 2020: Drastically control environmental pollution.

the green growth strategy and the policy of changing the growth model towards a green economy.

b. The reality of green growth in Viet Nam

In the 2011-2020 period, not only did the economy grow faster with greater stability, but the quality of that growth improved. On average, in the period of 2011-2015, the economic growth rate was estimated at about 5.91%. With this trend the economy recovered after 2013, with GDP increasing from year to year. Generally, in the period 2011-2020, GDP growth reached 6.35%, among the highest in the region and in the world. The scale of economic growth also increased by 2.5 times in this period from USD 116 billion to USD 300 billion by 2020 (forecast figures). This is a great effort by Viet Nam to reform policy and transform the economic growth model in the context of the global economic slowdown. In 2018 alone, GDP growth reached 7.08%, the highest level in the whole period from 2011 to now.

Although Viet Nam's growth rate in the 2011-2019 period tended to slow down (compared to 2006-2010), compared to other countries in the ASEAN region, Viet Nam is always in the group of countries with the highest growth rates at over 6%/year. As a result, Viet Nam's per capita income has also increased. Average income per capita is estimated at VND 3.8 million/month, equivalent to nearly USD 2,600 per person/year. On

Table 2: Growth rates of ASEAN countries, 2011 - 2019

Country	2011	2012	2013	2014	2015	2016	2017	2018	2019
Brunei	3.74	0.91	-2.13	-2.51	-0.41	-2.47	1.33	0.05	3.87
Cambodia	7.07	7.31	7.36	7.14	7.04	6.86	7.00	7.53	7.05
Indonesia	6.17	6.03	5.56	5.01	4.88	5.03	5.07	5.17	5.02
Laos	7.99	7.81	8.03	7.61	7.27	7.02	6.83	6.31	4.72
Malaysia	5.29	5.47	4.69	6.01	5.01	4.45	5.74	4.74	4.33
Myanmar	5.47	6.49	7.90	8.20	7.47	5.15	6.33	6.40	6.50
Philippines	3.66	6.68	7.06	6.15	6.07	6.88	6.68	6.24	5.90
Singapore	6.26	4.45	4.82	3.90	2.89	2.96	3.70	3.43	0.73
Thailand	0.84	7.24	2.69	0.98	3.13	3.36	4.02	4.15	2.37
Viet Nam	6.24	5.25	5.42	5.98	6.68	6.21	6.81	7.08	7.02

Source: IMF (2019), WEO database

Unit: %

average, during the period 2016-2018, it increased by 10.2% per year.

Green GDP is determined by subtracting the total cost of natural resources loss from traditional GDP (such as product/quality reduction and area of forests, productive land, fauna and flora, genetic resources, ecosystems and mineral resources) and the costs of environmental degradation, climate change (public health, water supply, farming, fisheries, drought, natural disasters, etc., as a result of environmental degradation), to appreciate the true nature of sustainable development. In Viet Nam today, the green GDP index has not been announced, but if we exclude the annual losses caused by natural disasters, about 1-1.5%[51], we can see a more authentic picture of green growth in Viet Nam.

Along with the process of economic renewal and the perspective on green growth, sustainable growth has also gradually attracted more attention in Viet Nam with its principle of not accepting a trade-off between the environment and economic development at all costs.

According to the most common understanding today, green growth is associated with the concept of growth that is environmentally friendly using natural resources in an economical, efficient and sustainable manner, and is associated with reducing GHG emissions and healthy lifestyles. According to the assessment criteria of Organisation for Economic Co-operation and Development (OECD) countries, the Green Growth Indicators are built according to four dimensions: (i) Environmental and resource productivity; (ii) Natural asset base; (iii) Environmental quality of life and (iv) Economic opportunities and policy responses. These criteria are also mentioned relatively clearly in Viet Nam's green growth strategy, especially the contents related to promoting the use of clean energy, reducing greenhouse gas emissions, promoting green production, greening lifestyles and sustainable consumption.

Among the four dimensions proposed by the OECD, the fourth dimension (economic opportunities and policy responses) has not been clearly shown in the dimensions developed by Viet Nam's Green Growth Strategy. The remaining dimensions have been detailed through indicators. These indicators are the basis and driving force to promote green growth in Viet Nam. In fact, green growth in Viet Nam in the past period has made progress:

[1] Economic development has focused more on resource management, environmental protection and climate change response.

Along with economic development goals, resource management, environmental protection and climate change response are increasingly focused. The system of policies and laws on natural resources and environmental management continue to be developed and completed. More attention is paid to environmental impact assessment. A database system has gradually been built, meeting the requirements of monitoring, supervision and evaluation in the field of natural resources, environment and climate change response. State budget expenditure sources for environmental protection are always ensured to be not less than 1% of total state budget expenditure and gradually increase according to economic growth.

In addition, society's awareness of the importance of management, exploitation and effective and efficient use of natural resources, environmental protection, natural disaster prevention, and response to climate change has increased. Organisations and individuals have applied measures to protect the environment and handle environmental pollution. Measures for environmental protection, prevention and treatment of polluting establishments are actively implemented. The proportion of solid waste collected and treated is increasing. The work of overcoming pollution and improving environmental quality has been promoted, contributing to reduced environmental pollution. Many environmental targets have been met and exceeded the goals set out by the Socio-Economic

[51] Natural Resources and Environment Newspaper (2018), More than 400 people dying due to natural disasters causes damage of 1 - 1.5% of GDP each year, https://baotainguyenmoitruong.vn/hon-400-nguoi-chet-thiet-hai-1- 1-5-gdp-new-nam-do-thien-tai-230089.html.

Table 3: Framework for measuring green growth in Viet Nam

OECD THEME	Viet Nam green growth strategy
Environmental and resource productivity	Reduce the intensity of greenhouse gas emissions and promote the use of clean and renewable energy. Specifically: • 2011-2020: Reducing the intensity of GHG emissions by 8-10% compared with 2010 levels; reducing energy consumption as a percentage of GDP by 1-1.5% per year. Reducing GHG emissions in energy activities by 10-20% compared to the normal development option in which the voluntary rate achieved with national resources is about 10%, and the remaining 10% possible with international support. • Orientation to 2030: Reduce GHG emissions by at least 1.5-2% per year; reduce GHG emissions in energy activities by 20-30% compared to the normal development option. in which the voluntary rate achieved with national resources is about 20%, and the remaining 10% possible with international support. • Orientation to 2050: Reduce greenhouse gas emissions by 1.5-2% per year.
Natural asset base	Greening production: Implementing a "clean industrialisation" strategy through reviewing and adjusting existing industry plans; using resources economically and efficiently; encouraging the development of green industries and green agriculture with technology and equipment ensuring environmentally friendly principles; investing in developing natural capital; and actively preventing pollution and investing in pollution treatment. The main targets up to 2020 include: the value of high-tech and green-tech products will be 42-45% of GDP; the rate of production and business establishments meeting environmental standards is 80%; applying 50% cleaner technology; investment in the development of supporting industries for environmental protection and enriching natural capital to reach 3 - 4% GDP.
Environmental quality of life	Greening lifestyles and promoting sustainable consumption: Implement rapid and sustainable urbanisation, maintain lifestyles in harmony with nature in the countryside and create sustainable consumption habits in the context of worldwide integration. The main targets up to 2020 include: the rate of grade-III urban centres with wastewater collection and treatment systems meeting the prescribed standards will reach 60%; with grade IV and V urban centres and craft villages reaching 40%; 100% improvement in the environment of heavily polluted areas; the rate of waste collected and treated in accordance with Decision No. 2149/QD-TTg dated December 17, 2009 and greenery area are equivalent to urban standards; the proportion of public transport services in large and medium urban areas, reaches 35-45%; the rate of large and medium urban areas meeting green urban criteria reaches 50%.
Economic opportunities and policy responses	N/A

Source: Consolidated

Development Strategy; for example, the proportion of the population using clean and hygienic water reached 93.4% in 2017, and 95.3% by 2020 (the target was 90% by 2020).

Natural resources are gradually being managed, exploited and used more effectively, especially land and minerals. Nature conservation, biodiversity and forest protection are increasingly focused. Afforestation has been actively implemented with several newly planted forest areas. According to an announcement by the Ministry of Agriculture and Rural Development on the current national forest status in 2019, as of December 31, 2019, the area of forested land was 14,609,220 hectares of which, natural forest was 10,292,434 hectares and plantation forest 4,316,786 hectares. The area of forested land eligible to calculate the national coverage rate is 13,864,223 hectares, the coverage rate is 41.89%. The exploitation of natural forests is strictly managed with natural forests closed nationwide in 2017, effectively preventing deforestation and forest fires. However, the area of mangroves is seriously degraded and is slowly being restored. The biodiversity of the mangrove ecosystem has been significantly reduced. Forest coverage rates tended to increase in the period 2011-2017, from 37.7% (2011) to 41.89% (2017), an average increase of about 0.3%/year. By 2020, forest cover is expected to increase to 42%.

[2] Reducing the intensity of greenhouse gas emissions and increasing the rate of renewable energy.

Recognising the importance of reducing global greenhouse gas emissions as well as understanding its impacts on socio-economic development, Viet Nam has supported the United Nations Framework Convention on Climate Change and actively participated in legal agreements related to climate change mitigation.

Viet Nam is a country with low total GHG emissions. Statistics released by the Department of Climate Change in 2018 show that in 2014, Viet Nam's GHG emissions were 283.96 million tons of CO_2, accounting for only about 0.5% of the global total; emissions per capita were 2.84 tons of CO_2, higher than other Southeast Asian countries and lower than China and Japan. Energy and agriculture are two fields that currently produce the largest proportion of greenhouse gas emissions. Along with economic development, emissions from energy will increase rapidly in the coming years, both in terms of total volume and as a proportion of total GHG emissions. By 2030, the energy sector is forecasted to remain the largest source of GHG emissions.

In the past, most of Viet Nam's economic growth was based on the exploitation of natural resources, especially non-renewable resources. Therefore, in the coming time, Viet Nam needs to move from extensive growth (using large amounts of natural resources) to intensive growth (enhancing the role of technology and production efficiency). In addition, natural resources, especially non-renewable resources, have been exploited in increasing numbers. For example, the mining output of coal in 1994 was 5.7 million tons; in the period 2013-2019, the output of the Viet Nam National Coal and Mineral Industries Holding Corporation Limited and the Northeast Corporation (supplying about 95% of the national coal output) reached between 41 to 47 million tons/year[52].

In addition, new renewable energy policies have encouraged electricity generation enterprises and industrial and service enterprises to invest in the production of renewable energy for their own use and for sale to the national grid. Renewable energy production technologies are rapidly replacing fossil fuels as future energy sources. Technologies to produce solar, wind, biomass and accumulators are currently options at optimal costs for many energy markets. From 2017, the government has issued a series of preferential policies for renewable energy development to boost production and attract domestic and foreign investment. The rate of renewable energy in the national power source structure has increased rapidly, from negligible to more than 9% from two main sources: wind and solar.

[52] Banh Thi Hong Lan (2020), Analysis of greenhouse gas emissions in Viet Nam, Journal of Industry and Trade.

Table 4: Greenhouse gas emissions by sector

Area	2010	2014	2016
Energy	146.2	171.62	182.29
Industrial processes	21.7	38.61	46.09
Agriculture	87.6	89.75	83.56
Land use, land-use change and forestry	-20.7	-37.54	-39.49
Waste	17.9	21.52	20.73
Total	**252.6**	**283.96**	**293.18**

Source: MONRE

Unit: mil. ton of CO_2e

Small-scale renewable energy projects are effective in remote areas with difficult terrain, such as sparsely populated highlands and islands. There have been a number of projects implemented in the past few years that have brought about positive effects to people's lives, facilitating political, economic and social achievements. However, there are also small-scale renewable energy supply projects in areas with difficult conditions that have not been successful for various reasons, such as inadequate equipment, poor management, the lack of maintenance plans after installation, and a lack of proper management and participation of local communities — the direct beneficiaries.

[3] Green production activities have been strengthened

Along with the process of renewing the growth model, after more than 10 years implementing the Strategy for cleaner production[53] in industries with the goal: "Cleaner production is widely applied in industrial production facilities to improve the efficiency in using natural resources, raw materials, fuels and materials; reduce emissions and limit pollution; protect and improve the quality of the environment, human health and ensure sustainable development" (Decision No. 1419/QD-TTg dated September 7, 2009 promulgating the Strategy for cleaner production in industries by 2020), the Vietnamese economy has experienced positive changes. Legal documents guiding the implementation of the strategy have been issued.

The strategy for cleaner industrial production has been implemented at both central and local levels. In 2012, the Ministry of Finance and the Ministry of Industry and Trade issued Joint Circular No. 22/2012/TTLT-BTC-BCT guiding the management and use

[53] Cleaner production is the continual application of an integrated environmental protection strategy for production processes, products and services in order to increase ecological efficiency and reduce risks to people and the environment. Cleaner production solutions are not just about changing equipment, but also about changing operations and management of businesses. Cleaner production makes sense for all industrial establishments, big or small. It not only brings economic benefits, but also environmental benefits. Enterprises applying cleaner production programmes will reduce material and energy consumption, and reduce emissions that cause pollution.

of state budget funds to implement the Strategy for Cleaner Production in Industries to 2020. At the same time, the Ministry of Industry and Trade developed and issued technical guidelines on cleaner production for industrial production sectors such as textiles, paper, tapioca, beer, electroplating, casting, cement, roofing, painting, coconut, seafood processing, bamboo, rattan, recycled plastic, and sugar, etc. Communication activities and capacity building for cleaner production were conducted at local levels. At local levels, the strategy for cleaner production has been actively implemented by provinces and cities and has achieved certain results. Many provincial and municipal people's committees have approved and issued plans and programmes to implement the cleaner production strategy. These plans and programmes serve as a legal basis for local departments and agencies to actively implement the strategy. As such, the results of implementing the strategy across the country have been positive.

According to the "Evaluation report on implementation of the National Green Growth Strategy in the period 2013-2017", the Ministry of Industry and Trade conducted a survey on implementation of the cleaner production strategy with 63 departments of industry and trade and 9012 industrial enterprises nationwide. The results of the survey are as follows:

(i) Meeting target 1 (the proportion of industrial enterprises aware of cleaner production): In 2010, 28% of enterprises — rising to 55% by 2015 — knew about cleaner production and its benefits at different levels of perception, from hearing about cleaner production to applying cleaner production and achieving results; for example, reducing raw material or fuel consumption.

(ii) Meeting target 2 (the number of industrial establishments applying cleaner production, reducing the consumption of energy, raw materials and fuel per unit of product): In 2010, 11% of enterprises — rising to 32% by 2015 — said that they applied cleaner production. Twenty-four percent of enterprises said they could reduce the consumption of energy, raw materials and fuel per unit of product, and 8% said that they had not obtained any obvious benefit.

(iii) Meeting target 3 (reducing energy, raw material, fuel consumption per unit of product): In 2015, 34% of businesses said that applying cleaner production helped them reduce energy consumption by 5% or more of raw materials and fuel per product unit; the remaining 66% of businesses had an unclear reduction in energy and fuel consumption per unit of product or less than 5%.

(iv) Meeting target 4 (the number of medium and large enterprises with a division dedicated to cleaner production): No answer because the concept of a dedicated cleaner production division was not clearly defined.

(v) Meeting target 5 (number of departments of industry and trade with specialised staff capable of guiding cleaner industrial production): By 2015, 73% of industry and trade departments had specialised staff capable of guiding cleaner production at relatively different capacity — 25% of departments of industry and trade had staff who had received both practical training in guiding businesses and conducted practical activities to guide businesses locally — 48% either had staff trained to guide businesses or conducted practical activities to guide businesses.

One of the activities to promote green economy in Viet Nam is to build eco-industrial parks. An eco-industrial park is a business community of production and service providers located in the same location in which member firms seek to improve economic, environmental and social efficiency through collaborative management of environmental and resource issues and develop an industrial symbiotic system through the exchange of energy and raw materials between companies. Currently, Viet Nam has more than 300 industrial parks and export processing zones. The contributions of these entities to economic growth have been acknowledged. However, industrial production activities in industrial zones and processing zones are also causing several challenges to the environment and human health.

To promote the transfer, deployment and replication of clean technologies and solutions to minimise hazardous waste, GHG emissions and water pollutants,

Table 5: Survey results on implementation of the Cleaner Production Strategy, 2010 – 2015

Strategy objective	Period objective		2010 Baseline	2015 Baseline
	2010 - 2015	2016 - 2020		
Proportion of industrial enterprises with awareness of cleaner production	50%	90%	28%	55%
The proportion of enterprises applying cleaner production reducing energy and fuel consumption per product unit	25%	50%	11%	24%
Reduction in energy or fuel per unit of product	5 - 8%	8 - 13%	Diversified	Raw materials and chemicals: 1-92%; Water: 1-99%; Coal: 2-98%; DO: 1-70%; Electricity: 1-68%; Biomass fuel (firewood, rice husk): 3-61%; FO: 7-43%; Petroleum: 5-34%; Gas: 3-30%
Proportion of medium and large enterprises with a specialized department in cleaner production activities		90%		
Proportion of departments of Industry and trade with full-time staff capable of guiding cleaner industrial production	70%	90%	18%	73%

Source: Evaluation report on implementation of the National Green Growth Strategy for the period 2013 – 2017

and to promote good management of chemicals in public areas, the Ministry of Planning and Investment began cooperating with the United Nations Industrial Development Organisation (UNIDO) in 2014 to implement the project "Implementing the eco-industrial park initiative towards a sustainable industrial park model in Viet Nam". The project was piloted in the Khanh Phu and Gian Khau (Ninh Binh) industrial zones, Hoa Khanh Industrial Park (Da Nang) and Tra Noc industrial zone 1 and 2 (Can Tho). After 5 years of implementation, the project has achieved several positive results. The concepts, characteristics, and benefits of the ecological industrial park model have been disseminated to relevant ministries, branches, local authorities, pilot industrial zones, and enterprises participating in the project. The positive results have attracted the attention of industrial parks and businesses across the country.

c. Emerging issues

Although there are many positive results that can be taken from the process of transforming the growth model, developing a sustainable economy and promoting green growth, there are still a number of problems, in particular:

(i) Although the green growth strategy has been implemented in Viet Nam for many years, the conceptual connotations related to green growth are still unfamiliar and unclear. Many concepts and views on its components are understood in different ways. Survey results in 2015 showed that the percentage of industrial enterprises with awareness of cleaner production only accounted for 55%. A green economy cannot be developed with insufficient awareness. Therefore, for green growth to really come to life, people and the business community must understand and have knowledge about green growth. Research needs to be conducted and knowledge widely disseminated to the business and residential communities. Currently, Viet Nam is transforming its growth model towards the development of green economy at a fast pace. This is a completely different model from the brown growth model. Changing the growth model and restructuring the economic development model in the current conditions is not easy given that economic infrastructure is backward and that the awareness of people and businesses is low.

In macro management, the government has approved many strategies, and planned several programmes and projects related to the implementation of the climate change – green growth strategy. However, there is some overlapping of objectives and tasks between strategies and programmes. Specifically, the Strategy for Sustainable Development, the Strategy to Respond to Climate Change and the Green Growth Strategy have a number of similar goals and activities. This leads to overlapping implementation, which means that the allocation and use of resources (human, financial, resources) are scattered and ineffective. In addition, there are 19 targets in the Green Growth Strategy (indexed with numbers reflecting specific goals) and 3 green growth missions. Among 19 green growth indicators, 7 targets (nearly 40%)[54] have not been institutionalised (i.e. are not included in the system of statistical indicators) or have no guidance on concepts, calculations, and methods of data collection and reporting. The statistical indicators reflect the level of emissions reduction and product greening. The remaining 12 indicators (more than

[54] 3. Reducing greenhouse gas emissions in energy activities (in 2020, the target was 10-20% lower than 2010, of which the rate using solely national resources is about 10%, the remaining 10% is the rate with international assistance).
4. Increase the proportion of renewable energy (wind power, solar power ...) in total electricity output.
6. The rate of production and business establishments applying cleaner technology was 50% (by 2020).
9. The rate of investment in the development of supporting industries for environmental protection to get rich natural capital will reach 3-4% of GDP (by 2020).
11. The rate of urban centers, clusters and industrial parks with concentrated wastewater treatment systems (by 2020, the target of grade-III urban centers will reach 60%; grade IV and V urban centers and craft villages will reach 40%).
14. The proportion of public transport services in large and medium urban areas will reach 35-40% (by 2020).
15. Rate of large and medium urban areas meeting green urban criteria, striving to reach 50% (by 2020).

60%) have been institutionalised, of which 5 indicators[55] (1, 2, 5, 6, 7) limit the ability to collect data and have not calculated or published the achieved figures. Thus, out of 19 indicators stated in the Green Growth Strategy, currently only 8 indicators (nearly 40%) have annual performance reporting data, most of which are indicators on environmental protection (rate of forest cover, clean water, waste, treatment of environmental pollution, etc.) that have been established and implemented for many years before the issuance of the Green Growth Strategy. The unspecified, incomplete collection of statistics related to the Green Growth Strategy's goals also significantly limits the progress of Viet Nam's Green Growth Strategy.

(ii) The process of transforming the economic growth model toward green growth has progressed slowly: Although the economic growth model has begun to shift combining extensive and intensive features, economic growth still relied on material factors (66% in the period of 2011-2018). Meanwhile, the contribution of the extensive growth factor in Thailand was only 47%, 50% in Malaysia, 49% in Indonesia, 61% in the Philippines, and 48% in China[56]. In fact, Viet Nam's economic growth in recent years was still mainly based on traditional growth areas, which utilised capital investment to exploit and take advantage of cheap labour and mineral resources. In addition, the contribution of the labour factor to economic growth tends to decrease gradually. In the period 2011-2018, the labour factor only accounted for about 13% compared to nearly 24% in the period 2006-2010. This is unreasonable, given the fact that Viet Nam is in a golden population stage and still has several labour advantages. Meanwhile, the proportion of capital contribution in the 2011-2018 period, though less compared to the previous period, still accounted for over 50%. Compared to other countries that do not have capital advantages such as Viet Nam, the contribution of over 50% to the growth of such investment is quite high (17% in Thailand, 21% in the Philippines, 30% in Malaysia; China and India have the highest rate of all at 42%[57]). Compared to international standards, production technology in Viet Nam is mostly old, outdated and energy-consuming. Replacing technology is a big challenge in the initial process of transforming to a green economy in Viet Nam. Currently, technological innovation in Viet Nam is still slow, while the research and deployment of new technologies has not kept pace with economic development and technology transfer has not yet achieved high efficiency. This leads to the wasteful use of natural resources, generating a large amount of solid waste, causing environmental pollution and low economic efficiency. Resources are overexploited in an ineffective and unsustainable manner, so they are depleted and degraded rapidly; biodiversity declines sharply, and the risk of ecological imbalance is high. Environmental pollution and degradation are increasing at a worrying rate. Although pollution from industrial zones, economic zones, and industrial clusters tends to decrease, pollution from other areas has not been addressed, and is even increasing in size and impact level. Establishments causing serious environmental pollution are dealt with slowly. Craft village pollution is becoming more serious and solid waste management still has many weaknesses. Most domestic wastewater in urban areas has not being treated and several environmental areas that have been polluted are remedied and renovated slowly. These are the

[55] 1. Reduce energy consumption to produce per unit of GDP (KWh or TEU/billion VND) (the target for the period 2011-2020, to reduce 1-1.5% per year).
2. To reduce the electricity elasticity coefficient/GDP from 2.0 at present to 1.0 by 2020.
5. Value of products of high-tech and green-tech industries in GDP was 42-45% (by 2020).
6. National technology innovation rate (reaching 13% by 2015).
7. The rate of production and business establishments meeting environmental standards was 80% (by 2020).

[56] WB, World Development Indicators (WDI).

[57] Ngo Thang Loi (2019), Renovating the economic growth model in Viet Nam: Current situation - Identifying the current bottlenecks, recommendations for the period 2021 - 2030.

main causes of the increase in environmental pollution in Viet Nam. Increased environmental pollution is the most obvious manifestation of the failure to solve the tensions between the environment and growth, or in other words green economic growth has not been seriously or effectively implemented.

Although progress has been made over the years, the implementation of the cleaner production indicators still faces many difficulties when implementation at local levels continue to face obstacles[58]. Some activities have been implemented with positive results, such as energy saving, renewable energy development, promotion of the application of high technology in agricultural production, encouraging urban centres to move towards green city standards, liveable cities, and smart cities, etc. Activities to promote green growth in Viet Nam are still too few compared to the demand and potential. The development of renewable energy is still very modest compared to its potential. Science and technology have not received proper investment in the development of green and environmentally friendly technologies. Cleaner production has yet to thrive. Natural resources are also indiscriminately exploited without proper management. The trend towards consumer lifestyles is on the rise while activities promoting sustainable consumption are still limited. Worryingly, climate change has not been integrated into development policies.

Investment resources for the implementation of the green economy in Viet Nam are limited. Despite remarkable economic development achievements, Viet Nam is still a poor country with limited national reserves. From local areas to industries and businesses, the application of environmentally friendly technologies to conserve resources, electricity and water has not received the necessary attention. In addition to strong and active enterprises investing in environmental protection, many businesses have paid the issue little attention. In fact, most businesses are very constrained in terms of capital, especially SMEs. Despite the Party and State's policies and guidelines on applying cleaner production as a tool for environmental protection, the application of cleaner production still faces many difficulties. Public resources are currently dispersed for various priority goals, so the amount for green growth is currently very limited and mainly from public investment programmes in infrastructure development; there is only one dimension on green growth in the Climate Change and Green Growth Target Programme.

[58] Lang Son: Implementing the strategy of cleaner industrial production in 2019 in the province mainly consists of propaganda activities such as distributing leaflets and hanging banners on cleaner production for businesses; building and reporting on the efficiency of applying cleaner production in industry; organising seminars and training to improve human resources on cleaner production.
According to statistics of the Ministry of Industry and Trade, by the end of 2017, there were 41 out of 63 provincial and municipal authorities with clues about cleaner production nationwide. Thirty-five issued plans and programmes to implement the Cleaner Production Strategy 2009 - 2015. In particular, 22 issued the plan to implement the Cleaner Production Strategy 2016 - 2020. Nearly 100 centres (industrial promotion, energy saving, cleaner production, trade promotion, industrial development consultancies) implemented consulting activities, guiding the implementation of cleaner production for businesses.

1.4.3. Financial instruments for green growth in Viet Nam

a. Fiscal policies

Fiscal policy tools towards green growth in Viet Nam are quite diverse and flexibly applied through revenue collection policies (mainly tax and charge policies) and state budget spending (through recurrent and capital expenditures). The system of tax and charge policies towards green growth is highly oriented to restricting the consumption of products and goods that pollute the environment. Besides, Viet Nam also applies many forms of tax incentives to promote consumption and production of "green" goods. In terms of state budget expenditure, Viet Nam implements recurrent expenditure (spending to prevent, control and remedy environmental damages) and capital expenditure (typically green public procurement) to integrate environmental factors through the way goods, services and vehicles are procured toward green growth.

[1] Tax and charge policies

(i) Tax and charge policies aiming at limiting the consumption of polluting products and goods.

The environmental protection tax is implemented in accordance with the Law on Environmental Protection Tax No. 57/2010/QH12 passed by the National Assembly on November 15, 2010, effective from January 1, 2012. This is an indirect tax which is imposed on products and goods that cause adverse impacts to the environment to which taxpayers are organisations, households and individuals that produce and/or import environmental protection taxable goods, and taxpayers are consumers. Environmental protection tax is only payable once for manufactured or imported goods.

(ii) Tax and charge policies to promote green production and investment

Green production and investment are among the most important pillars to promote green growth. Tax incentive policies for eco-friendly economic activities are policies to encourage and promote technological innovation and application of modern technologies to economic activities so that they do not cause harm to the environment. Accordingly, enterprises investing in the development and application of clean technologies and development of green production shall enjoy tax incentives and a reduction of payable tax obligations for the investment they have made. To promote green growth, tax policies can be used to attract investment projects in an industry in which the government wants to encourage investment in line with green growth goals, such as industries producing less energy-consuming products, causing less harm to the environment, or projects using modern equipment in the production process to reduce energy use. In addition, tax incentives can also be used to promote investment in areas that are thought to have a "spill over" effect on green growth targets, for example, for promoting the development of science and technology or the use of renewable energy.

In order to achieve this goal, countries can apply various forms of preferential taxes on direct and indirect taxes, including preferential tax rates with lower tax rates than the general tax rates or tax exemption or reduction (tax holidays) for a certain period or indefinitely in order to attract investment in some industries associated with the requirements of green growth. In addition, it is possible to implement investment allowances or investment tax credits to reduce the tax burden on investors based on the investment value that investors make for projects in the incentivised sector tied to the goals of green growth. Specifically, the investor is entitled to a deduction from the taxable income or the payable tax amount with a certain percentage of the investment capital invested by the investor. Tax incentives for investment tax deduction or reduction of investment tax liability may apply to all types of investments but may also be applied solely to investments in certain types of assets; for example, investment in the procurement of modern or high-tech machinery and equipment that consume less energy, emit less greenhouse gases or use renewable energy.

In addition, it is possible to apply preferential measures for exemption and reduction of indirect taxes to promote the implementation of green growth targets through the exemption (without collection) or reduction of indirect taxes such as import taxes and excise tax or value added tax (VAT) for investors who meet the conditions when importing or purchasing cer-

tain types of goods eligible for incentives. These are incentives that are directly linked to inputs of an investment project, such as exemption or reduction of import duties on raw materials and components imported to produce eco-friendly goods, or exemption from import duties on fixed assets of projects related to the implementation of green growth targets. The application of these tax incentives will reduce the input costs of enterprises' investment and production activities, thereby creating conditions for businesses to produce eco-friendly products with lower costs and become more competitive in the market.

(iii) Tax policy instruments to promote green consumption

Similar to the promotion of "green production", tax incentives can be used to promote green consumption. Through preferential policies on indirect taxes, the government can guide people to use more environmentally friendly or low-emission goods. Similarly, the government can also impose higher consumption tax rates on goods whose consumption is harmful to the environment, such as high-cylinder cars. In some countries, goods consuming less fossil fuels and eco-friendly goods, such as biofuel or small-cylinder vehicles, hybrid vehicles, and electrical vehicles are entitled to more favourable consumer tax rates. In Viet Nam, passenger cars with the same number of seats but with different cylinder capacities may be subject to different excise tax rates; the larger cylinder capacity, the higher the applicable tax rate. The difference may be up to more than 3 times. The excise tax rate for biofuel is lower than that of regular gasoline.

(iv) Other tax and charge policies

In addition to the above-mentioned policy instruments, there are a number of other tax and charge policy instruments that can also be used to promote green growth; for example, allowing the calculation of higher deductible expenses (than the amount actually spent – additional deduction) when determining taxable income, refunds on reinvestment of profits, or application of a rapid depreciation mechanism for the investment in machinery and equipment associated with green growth targets. For the additional deduction method, in order to encourage businesses to increase spending on priority areas associated with the goal of green growth, the CIT law may allow businesses to deduct from the taxable income a percentage that is higher than the actual expenditure (investment) on these priority areas. For the rapid depreciation mechanism, enterprises eligible for incentives shall be entitled to a faster depreciation rate than normal for machinery and equipment that meet the requirements of green growth (for example, machinery and equipment using renewable energy or discharging fewer toxic substances into the environment, etc.). In the case of a rapid depreciation, the total depreciation rate is not constant compared to the normal depreciation rate, but the present value of tax liability is reduced (depreciation with a higher rate in the first years and less in the remaining years of the asset life cycle).

[2] Public expenditure

In Viet Nam, public spending is a process of redistribution of financial resources that have been focused on the state budget from many different sources, of which taxes and charges are the main source of revenue, associated with the performance of functions and responsibilities of the state apparatus. In terms of economic content, public expenditure can be classified into: (i) Recurrent expenditure and (ii) Capital expenditure.

Recurrent expenditure refers to the process of distributing and using state budget funds to meet spending needs associated with the performance of the State's regular tasks on socio-economic management. Stemming from the existence of the state apparatus and the requirement to perform the State's functions and tasks, recurrent expenditures are highly stable ones. The stability of recurrent expenditures requires stable financial resources to maintain the functioning of the state apparatus. The stability of recurrent expenditure also stems from the stability requirement in each specific activity of each functional agency in the state apparatus. Therefore, recurrent expenditures are mainly intended to cover spending needs for state administrative management, security, national defence, and economic and social activities. Recurrent expenditures are associated with state and social consumption to create public goods and services for the benefit of the community.

Capital expenditure refers to the process in which the State uses part of the resources in the state budget fund to invest in the construction of socio-economic infrastructure, the development of production and reserves to achieve the goals of economic stabilisation and long-term economic growth. Capital expenditure is a form of investment because of the growth in the size of the State's investment capital and the scale of capital across society. The scope and level of capital expenditures have a close relationship with the national socio-economic development views, goals and requirements in each period.

The State Financial Fund is a monetary fund owned by the State. The Fund is mobilised and used according to the purposes of the State. In the system of State Finance Funds, the state budget is the largest centralised monetary fund, subject to strict control by the state power agency (the National Assembly). In the process of socio-economic development in each country, besides the state budget, there are also other state-owned funds, often called extra-budgetary funds. In the 2001, in the Government Financial Statistics Manual (GFSM, 2001), the IMF argues that State Financial Funds, or state entities, are organisations engaged in state transactions that can use state accounts and state-specific accounting standards with a specific governance structure and legal status independent from ministries, central agencies and local governments. Accordingly, State Financial Funds can either be managed by functional units of the government and/or be managed by units outside the government sector. However, in general, these funds implement government policies and are part of the government. Depending on the case, the government may choose non-profit organisations instead of governmental agencies to implement certain policies.

In the "Guide to budget transparency", the International Budget Partnership (IBP) said that State Financial Funds often refer to public resource transactions and government transactions that are not included in the government's annual budget estimates and fail to fully comply with standard financial reporting (accounting, financial reporting), operating regulations, or auditing regimes like other government agencies in the public sector. Likewise, the accounting standards of OECD countries refer to state activities as government transactions that are not covered in the Annual Budget Statement, which may not be fully compliant to standards of reporting, accounting and monitoring as the prescribed standards for annual budget activities. The World Bank believes that State Financial Funds can be classified and managed based on the nature of the sources, directly or indirectly managed by the government's administrative agencies, and implemented outside the normal budget process. State Financial Funds have separate accounts, are separate from the budget and usually carry out a particular activity or serve a certain beneficiary. These funds are organised in the form of a financial fund, or an autonomous entity, or are mobilised by state administrative units and make payments outside the state treasury system, state bank or state budget authorities.

b. Market instruments

[1] Green securities

(i) Green stocks

The green stock market in Viet Nam is in the early stages of creating a market, whereby the authorities issue programmes and indices to encourage businesses to focus on sustainable development. The development and application of the market-wide sustainability index began in March 2017 when the Ho Chi Minh City Stock Exchange (HOSE) released the Viet Nam Sustainability Index (VNSI), which was officially put into operation in late July 2017.

The VNSI index is a reference tool for individual and institutional investors and, at the same time, is used as the underlying asset for investment products (such as ETFs and future derivatives). The VNSI index is researched and implemented by HOSE in collaboration with GIZ and State Securities Commission, aiming to determine sustainable development standards for listed companies; assist institutional and individual investors to identify "green" businesses for investment; strengthen the trend of sustainable development of the whole economy; identify criteria for best environmental, social, and governance practices. The criteria for evaluating sustainable development are researched and formulated based on the International Reporting Standards set for making global sustainability reports (according to Global Reporting

Initiatives (GRI)), the OECD Principles of Corporate Governance and regulations of securities law in Viet Nam. Currently, the VNSI includes 20 enterprises with the highest sustainable development rating listed on HOSE of Top VN100 and calculated in real time every 5 seconds (similar to the VNIndex).

(ii) Green bonds

The legal basis for the issuance of green bonds in Viet Nam has been gradually established[59]. Legal documents on green bonds were issued, forming a legal framework for the issuance of government bonds, local government green bonds and corporate green bonds:

- Decree No. 95/2018/ND-CP dated June 30, 2018 providing for the issuance, registration, depository, listing and trading of debt instruments of the government on the securities market, including the content about government green bonds issuance;
- Decree No. 93/2018/ND-CP dated June 30, 2018 regulating debt management of local governments, which includes provisions on the issuance of green bonds of local governments;
- Decree No. 163/2018/ND-CP dated December 4, 2018 on corporate bond issuance, which sets out the principles for issuing green enterprise bonds according to international practices. Accordingly, the issuance of green bonds must basically follow the normal bond issuance regulations and add some conditions according to international practices. Specifically:

For government green bonds, issuance must comply with the provisions of the State Budget Law, the Law on Public Investment, the Law on Public Debt Management and Decree No. 95/2018/ND-CP. In particular, Article 21 of Decree No. 95/2018/ND-CP stipulates that government green bonds are a type of government bond issued to invest in projects related to environmental protection activities in accordance with regulations defined in the Law on Environmental Protection. Accordingly, the Ministry of Finance shall coordinate with the Ministry of Planning and Investment and the Ministry of Natural Resources and Environment in formulating a scheme on issuing government green bonds to report to the Prime Minister for approval before implementation.

For local government green bonds, issuance must comply with the same regulations as for ordinary local government bonds and the provincial people's committee must report the list of projects using the proceeds of local government green bonds under the guidance of the Ministry of Finance (Point k, Clause 1, Article 8 of Decree No. 93/2018/ND-CP). Accordingly, local authorities that want to issue bonds will formulate a scheme to submit to the Prime Minister for approval based on the guidelines for issuing green bonds (green bond framework) provided by the Ministry of Finance. The content of local government green bond issuance scheme is basically similar to that for government green bonds, including the following main contents: issuance purpose, released volume, terms and conditions of the bonds, buyers, issuance method, registration, deposit, listing and transaction; and a list of projects using the proceeds from the bond issuance.

For corporate green bonds, Decree No. 163/2018/ND-CP dated December 4, 2018 on corporate bond issuance supplements the regulations on issuing green bonds, including the content of information disclosure before and after issuance, and accounting of the cash flow earned from bond issuance. Accordingly, proceeds of corporate green bonds are accounted and

[59] Accordingly, implementing the GG National Action Plan for the period 2014 - 2020, the Action Plan of the financial sector to implement the GG National Strategy to 2020 (issued together with Decision No. 2183/QD-BTC dated 20/10/2015 by the Minister of Finance). In which, the key task is to build and complete the financial policy framework to develop the green capital market and green financial products, including: (i) Bonds issued by green businesses, bonds issued for green projects or green products; (ii) Government bonds and municipal bonds, serving green objectives, programmes and projects; (iii) Green indicators, sustainability indicators, carbon indicators; and (iv) Green certificates and investment certificates issued by investment funds. In the roadmap for the development of Viet Nam's bond market in the 2017-2020 period, with a vision to 2030 (issued together with the Prime Minister's Decision No. 1191/QD-TTg dated August 14, 2017), the adoption of mechanisms and policies on green bond market development to create conditions for issuers to raise capital through bond issuance to implement green projects is one of the solutions to develop the bond market.

managed separately and disbursed for environmental protection projects under the issuance plan approved by competent authorities. In addition to the content of information disclosure in accordance with the provisions of regular bonds, green bond issuers must disclose information on the process of managing and disbursing green bond proceeds. At the same time, businesses issuing green bonds must report on the use of capital, disbursement progress, the project's implementation schedule and environmental impact assessment report on the issued bonds, of which, the report on capital use must be commented on by the auditing authority.

However, the green bond market in Viet Nam has not really developed because the supply of local government green bonds is still limited while government green bonds and corporate green bonds have not been issued.

[2] Green credit/green loans for green growth in Viet Nam

In Viet Nam, loans for green projects are provided through two forms: loans provided by the State through programmes on investment lending, interest rate support, preferential interest rates; and loans provided through the business operations of credit institutions. In the early stages of transition to a green economy, loans from the State dominated. When the economy has developed according to the criteria of green growth, loans from credit institutions prevail. Specifically, green loans include: (i) State investment credit provided by the Viet Nam Development Bank (VDB); (ii) Loans with preferential interest rates and interest rate support provided by the Viet Nam Environment Protection Fund; (iii) Investment loans from local Development Investment Funds; (iv) Syndicated loans provided by the Viet Nam Environment Protection Fund; and (v) Green credit from the commercial banking system.

(i) Investment credit from the State through the VDB

The State's investment credit is used for many projects in the green credit field such as: wind and solar power production, freshwater production, waste and waste treatment, and high-tech agricultural production. State investment capital for "green" projects in the list of projects eligible for investment credit loans[60] accounted for the majority of the total investment credit capital in 2017. According to a VDB report, by the end of 2017, the total outstanding loans for the energy sector (including renewable energy) accounted for 41.6% and water supply, wastewater and solid waste treatment accounted for 4.5% of VDB's total outstanding loans.

(ii) Lending at preferential interest rates and loan interest rate support provided by the Viet Nam Environment Protection Fund

Borrowers entitled to preferential interest rates are organisations and individuals of all economic sectors with the demand for loans to implement investment projects on environmental protection, nature conservation and biodiversity; investment projects on the prevention and remediation of environmental pollution, degradation and incidents at national, interdisciplinary, and inter-regional level; investment projects solving local environmental issues with wide impacts; and nationwide climate change response activities. At the same time, if these projects borrow from other credit institutions, they may be supported with the same interest rates as loans from the Fund. The interest rate support rate for loans in 2017 was 2.4%/year.

(iii) Loans from local Development Investment Funds

Subjects for lending are infrastructure investment projects with plans for capital recovery, which are under programmes and objectives according to socio-economic development strategies and plans approved by provincial people's councils, including: projects on transport; water supply; homes in urban and residential areas; relocation and rearrangement of production facilities; treatment of municipal waste; and important projects decided by provincial People's Committees. The loan for a project of up to 15% of the equity of a local Development Investment Fund shall be decided by the local Development Investment Fund. The loan capital level for a project of

[60] According to Decree No. 32/2017/ND-CP on state investment credit

over 15% of the equity of a local Development Investment Fund shall be decided by the provincial people's committee. The loan term is determined by the ability to recover capital in accordance with the production and business characteristics of each project and the investor's ability to repay debts but shall not exceed 15 years. In special cases where the term is over 15 years, the provincial People's Committee shall make the decision. Lending interest rates of local Development Investment Funds for eligible projects shall not be lower than that of the State's investment credits and re-lending interest rates for projects using ODA loans according to the government's regulations on the management of foreign borrowing and repayment.

(iv) Syndicated loans provided by the Viet Nam Environment Protection Fund

The local Development Investment Fund may act as a focal point for a syndicated loan or cooperate with a credit institution and other organisations to provide project loans.

(v) Green credit from the commercial banking system

In Viet Nam, green credit is considered as one of the most important financial instruments for the implementation of green growth goals in general, and for combatting climate change in particular. This fact is reflected in Decision No. 2053/QD-TTg approving the Action Plan for the implementation of the Paris Agreement on combatting climate change, Task No. 47 on "Accelerating the application of financial instruments such as green credit, green bonds, green investment funds and accordingly making available the development of a set of green project criteria". One of the important goals and targets set out in the Green Bank Development Project in Viet Nam, which was approved by the State Bank in Decision No. 1604/QD-NHNN, is that 60% of banks can access green capital and start lending to green credit projects by 2025. The specific goal is to increase the share of bank credit in renewable energy, clean energy, and sustainable production and consumption sectors. As the most important capital channel for the economy in recent years, green credit has become one of the key green financial instruments supporting the transformation of Viet Nam's economy towards green growth.

[3] Some other market instruments

(i) Carbon credit market for green growth/development in Viet Nam

Decision No. 130/2007/QD-TTg by the Prime Minister was issued to provide a legal basis for the implementation of the Kyoto Protocol of the United Nations Framework Convention on Climate Change. Accordingly, this Decision clearly specifies that investors shall build and implement clean development mechanism (CDM) projects on a voluntary basis. Domestic investors can do so themselves or associate with foreign investors to select appropriate fields to implement investment under CDM. Viet Nam has developed many CDM projects and set up a financial policy framework under Decision No. 130/2007/QD-TTg to conduct carbon credit exchange. The government issued Decision No. 2053/QD-TTg dated October 18, 2016 on the issuance of a plan to implement the Paris Agreement on climate change. The plan aims to specify Viet Nam's commitments to the international community in responding to climate change and fulfil its obligations under the Paris Agreement across 5 main components: Mitigation of greenhouse gas emissions; adaptation to climate change; resources preparation; establishment of a transparency and disclosure mechanism; building and perfecting policies and institutions.

(ii) Green investment fund for green growth/development in Viet Nam

In Viet Nam, the current green investment funds are mainly funds from the state budget, bilateral cooperation funds between Viet Nam and the governments of developed countries, and international investment funds with branches in Viet Nam. Private green investment funds do not exist.

Table 6: Green investment funds in Viet Nam

Fund	Area	Main information
Sustainable Energy Promotion Fund (SEPF)	Renewable Energy (RE)	The SEPF was established under the Prime Minister's Decision No. 2068/QD-TTg of November 25, 2015, "Approving the Strategy for Renewable Energy Development of Viet Nam to 2030 with vision to 2050" as financial support for renewable energy development and use; and financial support for the promotion of RE development on a national scale.
Viet Nam Environment Protection Fund (VEPF)	Environmental protection, Climate change	The VEPF is a financial organisation under MONRE, providing: • Loans for environmental protection projects; and • The VEPF provides financial support for climate change mitigation activities.
Green Growth Strategy Facility (GGSF)	Climate change	• The GGSF is sponsored by the Vietnamese Government and the Belgian Government. • The GGSF supports implementation of the Green Development Strategy (GGS) and the Green Development Action Plan for the period 2014-2020.
Green Investment Fund (GIF)	Energy efficiency in brick and ceramics production, food processing	The GIF was established under "Low-carbon conversion in the field of energy efficiency" supported by the Danish Government. • The GIF supports small and medium enterprises (SMEs) in Viet Nam with access to financial resources for energy-efficient projects (EE).
Global Climate Partnership Fund	Agriculture, Energy efficiency, Renewable energy	• The GCPF facilitates widespread investment in climate-related projects in several countries. • Provides local financial institutions with credit lines that they use to investment in renewable energy and energy efficiency.
Low-carbon transfer in the field of energy efficiency	Energy efficiency	Promoting energy efficiency of new construction as well as in small and medium enterprises in selected fields. • The project addresses a range of barriers to energy efficiency in buildings, such as the lack of capacity to design energy-efficient buildings. • Financial support for small and medium enterprises.

Fund	Area	Main information
Norway's International Climate and Forest Initiative	Forestry & REDD+	The Norwegian Government Fund aims to support efforts to slow, reduce and ultimately prevent greenhouse gas emissions from deforestation and forest degradation in developing countries (REDD +).
Multilateral Fund to support the implementation of the Montreal Protocol (MLF)	Climate change	The MLF was established in 1990 to assist developing countries with an annual consumption of ozone-depleting substances of CFCs and halons of less than 0.3 kg per person to comply with Protocol measures. • Total budget for the period 2015-2017: USD 507.5 million; • 144 ozone-depletion removal programmes and 143 HCFC removal management plans have been adopted; • Funded the establishment and operation of Ozone Offices in 145 countries under Article 5.
Clean Technology Fund (CTF) under the Climate Change Investment Fund	Energy efficiency, Renewable energy, Transportation	Reduce technology costs: • Financial support; • Market creation; • Creation of a new private finance channel.
Green Climate Fund (GCF)	Agriculture, Climate Change, Energy Efficiency, Renewable Energy, Forestry, REDD+, Infrastructure, Land Use, Transport, Urban Development, Waste and Water	The GCF is designed to promote low-carbon and climate resilience development models by providing financial support to developing countries to reduce GHG emissions and to adapt to climate change, especially in countries vulnerable to climate change.
Capacity-building Initiatives for Transparency (CBIT)	Strengthening capacity and transparency in climate change mitigation	The Global Environment Facility (GEF) Council will serve as CBIT's council and apply GEF's policies, procedures and management structure. • GEF policies and procedures, such as reporting requirements, gender, environmental and social safeguard policies, will be applied to the CBIT.

Source: Le Ngoc Cau (2019)

Public Private Partnership for green growth

According to the Public Procurement Agency - Ministry of Planning and Investment: Public-private partnership (PPP) is a form of state and private sector cooperation to implement investment projects to develop socio-economic infrastructure and provide public services on a contractual basis that clearly divides responsibilities, benefits, and risks. Accordingly, a part or the whole of the project will be implemented by the private sector on the basis of competitive bidding, ensuring the community benefits, meeting the quality standards of works or services set by state regulations. According to certain legal documents, "Investment in the form of public-private partnership (hereinafter referred to as PPP) means that any form of investment on the basis of a contract between a regulatory agency and an investor, a project enterprise to carry out, manage and operate an infrastructure and public service project" (Decree 15/2015/ND-CP dated February 14, 2015). "Public-private partnership (hereinafter referred to as PPP) means any form of investment on the basis of a contract between a regulatory agency and an investor or a special purpose entity to build, innovate, operate and manage infrastructure and public service projects" (Decree No. 63/2018/ND-CP dated May 4, 2018).

Investment in the form of PPP for green growth is an investment form on the basis of a contract between a regulatory agency and an investor, a project enterprise to carry out, manage and operate an infrastructure and public service project. Public infrastructure and service projects must ensure the minimisation of pollution and environmental impacts, adaptability to natural hazards, the protection of environmental quality and human health, and sustainable development.

Green growth is considered one of the most important components of sustainable development; a development process that combines between socio-economic development and environmental protection, meeting the needs of the current generation without prejudicing those of future generations. The Green growth trend is occurring both in developed countries and developing countries. To assess the level of green growth, OECD Criteria (2011) are applied by many countries such as Germany, the Czech Republic, the Netherlands, and South Korea. According to this set of criteria, green growth is measured by 4 main dimensions: (i) Environmental and resource productivity; (ii) Natural asset base; (iii) Environmental quality of life; and (iv) Economic opportunities and policy responses. Through these results, each country can evaluate the country's progress in implementing green growth and then propose suitable adjustment policies.

Without strong and targeted policy intervention integrating environmental and climate issues with the prices of goods and services, market forces and prices will continue to encourage unsustainable growth. Green financial instruments, including green fiscal policies (tax, public expenditure, etc.) and green financial instruments (green securities, green credit, emissions trading, green investment funds, green public-private partnerships, etc.) are the primary tools to help policymakers overcome market failures.

In the past period, not only has Viet Nam's economic growth been faster and more stable, but the quality of growth has also been improved; economic growth has made positive changes towards sustainability, GDP for industry and services increased, and the proportion of agriculture decreased. Economic development has focused more on resource management, environmental protection and climate change response. Many environmental indicators have met and exceeded the goals set by the socio-economic development strategy: the proportion of the population using clean and hygienic water; natural resources are managed gradually, exploited and used more effectively, especially land and minerals; nature conservation, biodiversity and forest protection are increasingly focused; afforestation has been actively implemented with newly concentrated planted forest areas; the intensity of greenhouse gas emissions has been reduced and renewable energy increased. In particular, green production activities have been strengthened. However, green growth in Viet Nam in recent years is still facing many challenges such as an excess of strategies, plans, programmes and projects related to the implementation of the Climate Change Strategy, Green Growth Strategy, etc.; an overlap in targets and missions; slow progress in transforming the economic growth model towards the green economy. Production technology in Viet Nam today is mostly outdated, and energy consuming. Pollution from industrial zones, economic zones, and industrial clusters is decreasing, but from other sources it is still a problem and its impacts on the environment are increasing. Investment resources for the implementation of the green economy in Viet Nam are limited.

Financial instruments for green growth in Viet Nam also include green monetary policy and green financial market instruments. The monetary policy instruments towards green growth in Viet Nam are quite diversified and flexibly applied through the policy of collection (mainly tax and charge policies) and state budget expenditures (recurrent and capital expenditures). Market tools for green growth in Viet Nam are still in their infancy. Specific regulations on market implementation and operation are still being studied and have not been issued. Typically, the new green bond policy is in experimental form, and only government bonds are recognised (green corporate bonds are not yet recognised). For green stocks, there is no policy for market development and no regulations on products (specifications, issuance conditions, etc.). For green banks, credit products come from international support or from commercial banks actively developing products. New green credit policies focus on incentives but there is no clear mechanism for implementation.

Part II

Tax Policies For Green Growth[61]

Green economy development is an issue that most countries and regions in the world pay special attention to and make great efforts for. Developing and organising the effective implementation of economic policy instruments, including tax and charge policies, plays a very important role in promoting green growth and a low-carbon economy. Experience from many countries around the world shows that the effective development and implementation of tax and charge policies will contribute to promoting healthy production and consumption activities with little harm to the environment, thereby forming an important foundation for green growth and sustainable development. However, it is not easy to develop and effectively implement effective tax and charge policies to promote green growth, such as environmental protection tax, corporate income tax, import-export tax, severance tax, and excise tax. The implementation of these policies reveals a number of shortcomings that need to be addressed to promptly adjust to the new requirements for promoting green growth and sustainable development.

This section will focus on a number of tax policy components including: Tax policy for green growth and environmental protection; requirements for greening the tax policy system for green growth purposes; experiences of other countries in tax policy reform towards green growth goals and lessons for Viet Nam; the process of reforming the tax policy system of Viet Nam with the requirement to promote green growth; results of implementing tax policies for green growth in Viet Nam, the issues posed, and direction for reforming the tax policy system to achieve green growth goals in Viet Nam.

[61] Truong Ba Tuan MSc., Truong Huynh Thang MSc., Nguyen Thi Hai Binh MSc., Pham Thi Thu Hong MSc., Dao Mai Phuong MSc., and Dr. Lai Van Manh.

2.1. Roles and requirements for greening tax policy systems towards green growth goals

2.1.1. The role of tax policies in green growth

Tax policy is an important aspect of fiscal policies towards green growth, shown in the following four main pillars: (i) overcoming market failures in environmental management, implementing the principle of "polluter pays"; (ii) adjusting the behaviour of producers and consumers towards green production and consumption; (iii) encouraging polluting subjects to invest in renovating production technologies for the purpose of environmental protection; and (iv) creating a sustainable source of revenue for the budget to finance environmental protection activities together with other financial sources. In particular:

- Contributing to overcoming "market failures". In the field of environmental management, there are several cases where without government intervention, the prices of certain goods in the market may not fully reflect the cost of consuming them (from a social perspective). The environmental costs caused by the production and consumption of these goods are also not fully reflected in the selling price. To overcome these "market failures", state intervention is necessary through the use of economic instruments, including tax and charge policies. Specifically, the application of environmental protection tax, excise tax, carbon tax or emissions charges, etc., will contribute to implementing the principle of the "polluter pays". The application of tax and charge policies to economic activities that harm the environment will help producers convert environmental protection costs into commodity prices, thereby transferring indirect environmental protection responsibilities to the consumers of polluting goods.

- Performing a constructive role to encourage businesses and people to limit production and consumption of goods that have an adverse impact on the environment, aiming to promote green production and green consumption. At the same time, through tax and charge policies, the government can also encourage businesses and people to switch to the production and consumption of environmentally friendly goods and use natural resources more efficiently and effectively. Examples include high tax rates for large cylinder capacity private vehicles, and low rates on biofuel products and renewable energy vehicles.

- Executing the motivation system to encourage businesses to invest in green growth projects and projects using environmentally friendly technology. The government can use tax incentives and tax reductions for projects using advanced technology with low energy consumption, or projects that produce green, environmentally friendly products. Through tax incentives, projects for green growth will be more competitive and profitable than conventional ones, thereby encouraging investors to participate in these projects.

- Contributing to creating a sustainable revenue source for the state budget. The use of tax and charge tools for environmental protection will help the government achieve the "dual goal", both limiting production and consumption behaviours that harm the environment and contributing to adding more resources to the state budget, strengthening the government's fiscal position. Along with that, effective implementation of green tax reform will create conditions for the government to restructure its revenue sources in a sustainable direction. The additional revenue from environmental taxes will create fiscal space for the government to actively reduce traditional taxes on labour and capital such as PIT and CIT to encourage production, while ensuring a balanced budget (UNDP, 2018).

2.1.2. Greening the tax policy system for green growth

In recent decades, the use of tax policy tools to reduce emissions, boost consumption and production and green investment has become a common trend in many countries around the world, applied in different forms, methods and names, such as environmental tax; energy tax; motor vehicle tax; carbon tax; electricity generation tax on production and generation from non-renewable sources made of coal, fuel from oil, natural gas; and energy consumption tax on gas, oil and coal products. In addition, the government may impose high consumption tax rates on goods that cause great harm to the environment when used[62].

Besides, to promote green growth, tax policy can also be used to attract investment projects into an industry that the government wants to grow or encourage investment in association with other green growth targets, such as industries that produce products that consume less energy and cause less harm to the environment, or projects that use modern equipment in the manufacturing process to reduce energy use.

Regarding direct tax, the government can apply policies to reduce CIT rates or implement tax exemption and reduction for a period of time to attract investment capital in a number of industries and occupations associated with promoting the green growth. Another incentive mechanism is to apply higher rates for deductible expenses when determining taxable income (additional deduction) or apply a rapid depreciation mechanism for investments in machinery and equipment attached to green growth targets. The government can also apply incentives to exempt and reduce indirect taxes to promote the implementation of green growth goals through the exemption (non-collection) or reduction of indirect taxes such as import duties and excise taxes for investors who meet the conditions when importing or purchasing goods entitled to preferential treatment.

A well-built tax system greening process will promote green business development, realise sustainable production and consumption, and create a sustainable source of revenue for the budget. However, the implementation of tax policy system reform for the purpose of green growth is always a complicated issue and requires a suitable strategy and roadmap. Some requirements for the greening process of tax policy systems are as follows:

Ensure holistic, unified and synchronous characteristics with relevant reform measures

The process of tax policy reform for green growth must be built in a consistent way, promoting the role of each tax form in the implementation of green growth goals. Accordingly, it is necessary to position the role of each tax in the tax system according to the following aspects: (i) Minimising the cost of overcoming environmental pollution through adjusting the behaviour of producers and consumers; (ii) encouraging polluting entities to invest in technological innovation to reduce emissions into the environment; (iii) implementing the principle of the "polluter pays"; and (v) creating a sustainable source of revenue for the budget for socio-economic development in general and investing in public spending programmes related to green growth in particular.

In addition, the development and completion of tax policies for green growth must ensure consistency with other relevant legal documents, contributing to implementation of the government's commitments to the international community regarding global environmental problems and responding to climate change. In the current context, to escape the current conditions, Viet Nam should focus on consolidating tax policies related to environmental protection and promotion of green growth instead of trying to introduce new tax policies.

Harmoniously handle environmental protection requirements, promote economic development activities, and enhance international integration

The process of reforming tax policies for the sake of green growth also needs to be carefully considered in terms of the international and domestic context,

[62] Personal car with a large cylinder capacity.

and overall consistency in order to ensure macroeconomic stability, and promote production and business. Impacts of proposed tax policy reforms related to environmental protection need to be thoroughly studied and assessed on all relevant aspects, without sacrificing the environment for economic development goals, but also not eliminating development dynamics for people and businesses because of environmental protection.

In tax policy reforms related to the environment and promoting green growth, tax rates and taxable objects must be calculated and determined appropriately. If the tax rate is too low and tax base is narrow, businesses will have no need to apply green solutions to reduce emissions. This also means that businesses will not have an incentive to increase the application, research and development of new environmentally friendly technologies. Conversely, tax rates that are too high will create a financial burden for stakeholders, negatively affecting business competitiveness and the competitiveness of the whole economy, eroding profits, and reducing the possibility of job creation.

Based on the market principle of the "polluter pays"

The development and application of tax instruments for green growth purposes should mainly be based on the principles of the market, especially on the basis of economic theory about dealing with external problems caused by environmental pollution, and in overcoming market failures and ensuring effective implementation of the "polluter pays" principle. In particular, sufficient motivation needs to be created to change production and consumption behaviours towards the goals of green growth.

Ensure transparency and an appropriate implementation roadmap

First of all, the use of economic instruments, including tax, to promote the development of a low-carbon economy requires a long-term strategy and vision. In addition, stakeholders in society need to understand the benefits of greening the tax policy system. Although a policy may be feasible and effective from a theoretical point of view, it may not be accepted if the approach inappropriate or if people and the business community are not made fully aware of its benefits. Tax regulations for the purpose of environmental protection and emissions reduction should be clear, easy to understand, easy to implement, and easy to manage. For tax policies related to environmental protection and the promotion of green growth, a clear, transparent and stable legal framework should not only be related to the roadmap for tax policy adjustment but also should ensure clarity and transparency on the use of revenue at the policy formulation stage.

2.2. Tax policy reform towards green growth targets in the international context and lessons for Viet Nam

2.2.1. Tax policies toward green growth in the international context

Applying tax policies for the purpose of environmental protection is a general trend many countries are pursuing. However, in developing this tax policy, there are countries that clearly identify these taxes as an "environmental protection tax", but there are also countries that name the tax in a way that clearly shows the taxable objects, which are, commonly, carbon — Carbon tax (Finland, Norway, Denmark, Estonia, Iceland, Ireland, Japan, China, France, Chile, Mexico, Singapore, etc.); energy — Energy tax (Germany, Belgium, Portugal, Netherlands, Sweden, Singapore, China, Japan, India, etc.); electricity — Electricity taxes (in Europe and Japan); emissions — Emissions Tax (Australia); pollution — Pollution Tax (Netherlands); and Motor fuel tax (USA). Despite the different names, the objects of environmental taxes usually include: (i) gasoline, oil, liquefied gas, natural gas, coal (Belgium, Portugal, Poland, Germany, England, Canada), USA, Singapore); (ii) CO_2, SO_2, NO_x emissions (Denmark, Sweden, Japan, China); and (iii) petroleum products (the Philippines).

[1] Carbon tax

Carbon tax is a tax levied on CO_2 emissions resulting from the use and burning of fossil fuels (mainly in the transport and energy sectors). Carbon tax is a kind of Pigouvian tax, levied on objects polluting the environment through engine fuel (gasoline, oil, methanol, naphtha, butane); liquefied gas; and the burning of fuels such as peat and coal. This is considered a cost-effective economic tool to encourage technological innovation, reduce greenhouse gas emissions at source and realize the principle of the "polluter pays". Applying carbon taxes will increase costs for businesses, forcing them to calculate benefits and costs, thereby regulating excessive energy exploitation, use and consumption. In recent years, the number of countries applying a carbon tax tool has nearly doubled, from 20 to around 40 in 2012-2016, with this number forecast to grow in the coming years. Experience from many countries shows that carbon tax has significant impacts on reducing CO_2 emissions and contributes to government budget revenue.

Countries in northern Europe were the first to apply carbon taxes in the early 1990s. Finland was the first country to apply a carbon tax instrument in 1990, based on the carbon content of fossil fuels with the starting tax rate of EUR 1.12 per ton of CO_2. The tax rate gradually increased and by 2013 reached EUR 35/ton of CO_2 for heating fuels and EUR 60/ton of CO_2 for vehicle fuels. In Norway, carbon tax was imposed on CO_2 emissions from hot oil, diesel, natural gas, and gasoline, etc. in 1991. The rate of collection per ton of CO_2 is determined according to the type of fuel. Sweden adopted a carbon tax in 1991 (in addition to the existing energy tax) in an effort to reduce fossil fuel consumption, reduce CO_2 emissions and encourage technological innovation. The rate was set at EUR 23/ton of CO_2 and then gradually increased to EUR 110/ton CO_2 in 2020.

In Asia, Japan applied a carbon tax called the tax for climate change mitigation in 2012. This is an additional tax for coal, oil and gas, and tax rates increased gradually over a 5-year period. The revenue from this tax is used for activities that reduce energy-derived CO_2 emissions and promote the use of low-carbon technology and improve fossil and renewable energy efficiency. Singapore[63] applies carbon taxes in accordance with the Carbon Pricing Act (CPA), which became effective on January 1, 2019. The carbon tax applies to burning fossil fuels including natural gas, coal

[63] https://www.nea.gov.sg/our-services/climate-change-energy-efficiency/climate-change/carbon-tax

Table 7: Carbon tax in the international context

Country	Year	Recent rates % (USD/ton Co_2)
Finland	1990	76
Norway	1991	3 - 61
Denmark	1992	23 - 26
Estonia	2000	2
Iceland	2005	31
Alberta	2007	22
Columbia	2008	34
Ireland	2010	25.88
Japan	2012	12.84
China	2013	13
France	2013	32.15
Chile	2014	5
Mexico	2014	2.5
Argentina	2018	6 (an increase of about 10%/year until 2028)
Singapore	2019	5 (to 2023) with an increase from 10 - 15 (from 2030)
South Africa	2019	6.42

Source: Consolidated

and fuel oil. The tax rate is USD 5/ton of CO_2 from 2019 to 2023 at which time Singapore will consider increasing it from USD 10 to USD 15/ton by 2030.

Recently, some developing countries have also begun to study and apply carbon taxes. In 2013, China piloted a carbon tax in Beijing on CO_2 emissions from industry, electricity, transportation, and construction. The tax is RMB 84/ton of CO_2 (equivalent to USD 13/ton). Chile passed a carbon tax in 2014 for plants with boilers and turbines. The tax rate is set at USD 5/ton of CO_2. Argentina has applied a carbon tax since January 1, 2018 for most liquid fuels (replacing the previous fuel tax). Mexico has been applying a carbon tax on fossil fuels since 2014. The initial tax rate was USD 5/ton CO_2, which was then revised to USD 3.5/ton. South Africa[64] has applied carbon taxes since June 1, 2019.

[64] https://www2.deloitte.com/za/en/pages/tax/articles/carbon_tax_2019.html

[2] Energy tax

Energy tax is adopted in many countries around the world under different names. This is essentially a special excise tax on the consumption of fossil fuel products that produce carbon, such as gasoline, oil, coal, and natural gas, etc. The tax base is calculated on one physical unit of an energy type that harms the environment, but the energy tax is limited to a number of goods related to the energy sector. The OECD (2019) estimates that around 43 OECD countries and G20 countries apply energy taxes. These countries represent 80% of global energy use. The tax rates for gasoline among countries vary significantly, ranging from about USD 0.11/gallon (Indonesia) to USD 3.49/gallon (UK). The diesel tax rate ranges from about USD 0.1/gallon (Indonesia) to USD 3.39/gallon (UK). Fuel used to power transportation in the agricultural sector and domestic heating oil are often subject to lower tax rates. In most countries, revenues from petroleum taxes are included in the state budget in general and are usually central budget revenue. However, there are also countries that use this revenue for specific purposes, for example India.

[3] Tax on vehicles

Most countries now apply vehicle taxes, vehicle registration, and vehicle circulation taxes, etc. This is a tax levied on vehicle ownership and is usually collected periodically (annually) with similar characteristics as asset taxes. The objective of tax policy for vehicles is to limit private vehicles to control fossil fuel consumption, thereby reducing CO_2 emissions. The tax rate is usually differentiated by vehicle characteristics, such as the number of seats, cylinder capacity or vehicle type, which applies low rates to energy-efficient vehicles and vehicles using clean energy. The most common tax base is engine power or cylinder capacity, and CO_2 emissions. In Germany, for example, the annual motor vehicle tax is based on cylinder capacity and distinguishes between diesel and gasoline use and CO_2 emissions. Similarly, in the UK[65], vehicles registered from April 1, 2017, will have to pay a vehicle tax based on their CO_2 emissions the first time they register. Higher tax rates apply to diesel cars that do not meet the NO_2 emissions standards.

[4] Electricity tax

Electricity tax is commonly applied in European countries. Electricity tax does not directly encourage electricity producers to switch to cleaner energy sources but has an indirect effect that helps reduce GHG emissions due to savings in the fossil energy used to generate electricity. In Sweden, electricity use is taxed per kWh, regardless of the source of energy used to generate it, thereby making all power sources more expensive corresponding to the level of environmental damage. Electricity used in industrial production, technology centres and agriculture is taxed at a lower rate (EUR 29/kWh) than electricity used for residential and commercial sectors. Power plants do not have to pay carbon taxes. In the UK, an electricity tax called climate change tax was introduced in April 2001. The rates have been adjusted up gradually in recent years reaching 0.847p/kWh from April 1, 2019 to March 30, 2020. However, it has recently been reduced to 0.811p/kWh.

[5] Other environmental taxes and charges

In addition to the above taxes, many countries also apply taxes on other products that pollute the environment such as pesticides and fungicides (Denmark, Mexico, the Congo, Malawi, Zimbabwe); plastic bags (Ireland, England, Indonesia, Malaysia, USA, China, India, Taiwan, France, Denmark, South Africa); chemicals (fertilisers) used in agriculture (Belgium); Plant protection drugs (Sweden); equipment, products manufactured or imported containing a mixture of hydro-chloro-fluoro-carbon (HCFC) substances[66] (Macedonia, USA). In particular, many countries levy high environmental taxes on plastic bags, even banning their manufacture, sale and use (USA, India, China, Taiwan, France, South Africa). Specifically, in Ireland, the tax rate for plastic bags[67] used for shopping effective from March 4, 2002 is EUR 0.15/bag. The col-

[65] https://www.gov.uk/vehicle-tax-rate-tables

[66] There are countries that prohibit the production, use and import of HCFCs (including solutions and mixtures containing such solutions) such as Indonesia, Thailand, Bangladesh, China, and Argentina.

[67] Under the provisions of section 9 (1) (a) of the 2001 Waste Management Law, plastic bags are bags made partly or completely from plastic. http://www.housing.gov.ie/environment/waste/plastic-bags/faqs

lection rate for plastic bags (including biodegradable plastic bags) was increased to EUR 0.22/bag from July 1, 2007. In the UK, the collection of shipping bags[68], including plastic bags, disposable plastic bags and biodegradable plastic bags is GBP 0.5/bag, mandatory application in large stores and voluntarily for small and medium-sized shops (effective October 5, 2015). In Greece, the eco-tax rate applicable to plastic bags is EUR 0.4/bag (effective from January 1, 2018). In Asia, in February 2016, Indonesia imposed a minimum tax on plastic bags in 22 cities (proposed by the Ministry of Environment and Forestry) of EUR 0.012 applicable at all stores. In Malaysia, a complete ban on the use of plastic bags has been applied in some areas (2009 in Penang, 2010 in Selangor).

Equipment and goods containing mixtures of ozone depleting substances, typically equipment and goods using a mixture containing a solution of HCFCs are subject to environmental taxes in some countries because the HCFCs belong to the group that causes the reduction of the ozone layer. There are even countries that prohibit the production, use, and import of HCFCs (including solutions and mixtures containing such solutions), such as in Indonesia, Thailand, and Bangladesh. For solid waste and other types of emissions causing environmental pollution, in some countries such as China, the pollution discharge charge is converted into the Environmental Protection Tax, effective from January 1, 2018.

Some countries apply regulatory mechanisms on computers, batteries, glass bottles and other products that are discarded after use through a "deposit-return" mechanism. The "deposit-return" rule was originally used by OECD countries to collect beverage packaging and waste. Later, this provision was expanded to the collection of many other goods (such as used cars and batteries) to limit negative impacts on the environment.

2.2.2. Tax incentives to promote green investment, production and consumption

In addition to the application of tax policies to limit the consumption of polluting products and promote investment in and use of green technology, renewable energies have been developed and implemented by several countries in recent decades. Several countries now apply tax incentives to encourage and promote investment in clean technology and efficient use of alternative energy sources. The policy instruments to achieve this goal are quite diverse, including tax exemptions, tax liability reduction mechanisms, and additional cost deduction mechanisms. The United States deducts a renewable electricity production tax for each kWh of electricity generated by renewable energy sources (wind). In 2019, the deduction was 2.4 cents/kWh (adjusted for inflation) and the period for making the deduction extends 10 years from the time the electricity production facility begins operations. Establishments (using wind power) that started construction in 2016 receive 100% tax deduction, decreasing to 80% in 2017, 60% in 2018, 40% in 2019 and 0% in the following years. Malaysia implemented a tax deduction for green technology projects, which reduced 100% of the capital costs incurred for a green technology project from the 2013-2020 review year and 100% reduction in the cost of capital generated for green technology assets from 2013 to 2020 (the support level may offset against 70% of the statutory income in the assessment year). In addition, Malaysia also exempted 100% of CIT for green technology services from the 2013-2020 evaluation year.

Myanmar applies a tax exemption for a limited period of time (up to 7 years) as well as import and export duty exemption for machinery, equipment and materials related to renewable energy. The country also applies a deducted accelerated depreciation and charge for the "production, transmission and distribution of energy" especially "renewable energy

[68] According to UK regulations, the concept of shipping bags are new bags made of plastic with a thickness equal to or less than 70 micrometres, with handles and unsealed.

production" or the "production, transmission and distribution of energy using solar energy, wind energy and underground heat energy". The Philippines applies a seven-year CIT exemption, carries forward losses for tax purposes for the next seven years and exempts import duties on machinery, equipment and materials related to renewable energy for the first 10 years.

In addition, to use energy more efficiently, protect environment and promote the use of cleaner transport means, some countries apply preferential policies on special consumption taxes for environmentally friendly energy-consuming vehicles, such as hybrid cars or electric cars. For example, in Thailand, hybrid cars are subject to a special sales tax rate lower than other types of cars depending on CO_2 emissions (the tax rate ranges from 8% to 26%). From January 1, 2016, for cars that carry both people and cargo (pick-ups), Thailand began to apply a special consumption tax policy based on cylinder capacity and CO_2 emissions level (previously the vehicle was taxed based on cylinder capacity). Currently, for pick-up vehicles with a capacity of 3,250 cc or less and with CO_2 emissions of 200g/km or less, the tax rates range from 2.5% to 10%; for pick-up vehicles with a capacity of 3,250 cc or less and with CO_2 emissions of 200g/km or higher, the tax rates range from 4% to 13%; for pick-up vehicles with a capacity of 3,250cc or higher, the tax rate is 40% (regardless of CO_2 emissions level). As for pick-ups using electric motors, the special consumption tax rate is 10% (regardless of CO_2 emissions levels). In the US, the federal government applies a tax credit policy for electric vehicles with a deduction of USD 2,500 to USD 7,500/unit depending on the battery capacity and the total weight of the vehicle. In addition, many state governments in the United States also have policies to reduce, exempt and deduct taxes to promote the purchase of electric cars. China applied a tax exemption for electric cars from 2014 to 2020.

2.2.3. Lessons for Viet Nam

In recent decades, environmental protection, dealing with the consequences of environmental pollution, and promoting green growth have received the attention of many countries. In particular, "market" mechanisms through economic instruments such as taxes and charges are becoming increasingly common. Practices in some countries have shown that the use of tax and charge tools by internalising environmental costs into the production costs of products on the basis of the principle of the "polluter pays" contributes to promote the production and consumption of environmentally friendly goods, and increases government revenues. However, the experience and practice of applying tax policies, environmental protection charges, and promoting the development of the green economy vary largely; there is no common pattern that can be applied to all countries. By studying international experience on tax policy towards green growth, the following lessons can be drawn:

Diversifying and increasing the use of tax policy instruments to promote green production and consumption

To promote green growth and environmental protection, countries have used different tax policy instruments under different names, tax bases, tax rates as well as collection methods, notably: carbon taxes, fuel taxes, vehicle taxes, energy taxes, royalties, excise taxes, etc. These taxes and charges are imposed on various environmental pollutants (mineral resources); fossil fuels (crude oil, natural gas, coal, etc.); energy products (oils and grease, processed gases, gasoline, etc.); mineral products; vehicles such as cars and motorbikes; CO_2 emissions; and other products such as cigarettes, plastic bags, and devices containing a mixture of substances harmful to the ozone layer, etc.) and imposed in different stages of exploitation and consumption. Economic tools such as environmental taxes impose "prices" on pollution and activities that cause harm to the environment so that there are financial sources for the remedy of the environment.

Selection of tax instruments that are suitable to economic conditions

The experiences of other countries also show that depending on the conditions of each country, different tools can be used to achieve the goal of environmental protection and green growth promotion. There may be taxes that work in one country but not in others. Reference to the experience of countries is necessary, but it is essential to select measures that fit the characteristics and context of the domestic economy. In principle, the tax base of environmental taxes must have wide coverage, covering all sources of environmental pollution. However, the tax method depends on several factors as well as the context of each country and the presence of other taxes in the tax system.

Each type of environmental tax collection has its advantages and disadvantages, and the choice depends on many other factors, such as the tax authorities' performance (for example, in the case of tax collection based on emissions content). In developing tax policies for the purpose of environmental protection and green growth promotion, it is important to identify taxable objects and tax collection points; for example, taxes collected upstream at the start of the production process or downstream. In order to optimise environmental efficiency, environmental taxes need to be precisely directed at polluters and pollution behaviours – the sources of pollution.

Ensuring consistency in the formulation and implementation of environmental and tax policies

The formulation and implementation of environmental tax policies must ensure consistency. In addition to the use of policy tools to limit the production and consumption of products that pollute the environment, it is advisable to have incentive policies; for example, tax incentives for the production and consumption of environmentally friendly goods. In addition, to promote green growth, Viet Nam needs to promote economic restructuring, and enhance the application of modern technology in order to exploit and use natural resources effectively and reduce emissions that are harmful to the environment.

Towards dual goals, contributing to environmental protection and creating a sustainable revenue source for the state budget

Applying tax policies towards green growth can help generate revenue for the government to consolidate and restructure the budget, increase spending on environment related activities, and respond to climate change. In addition, reform towards increasing the role of environmental taxes appropriately will also contribute to the restructuring of the budget, reduce the tax burden on income and capital, including PIT and CIT, thereby forming new incentives to promote employment and growth, and improving the competitiveness of the economy.

Preparation and roadmap for implementation

Developing and adopting a new tax policy or adjusting existing tax policies to raise taxes have always been a political challenge, requiring time for careful preparation and research. Acceptance by the people and businesses plays a key role in deciding the success or failure of tax policy. Communication is not only about information and disclosure for the public to understand the policy instruments, purposes, and operating mechanisms, etc. — it also needs to be public and transparent about the increase in revenue, the roadmap for increasing tax rates, and the use of tax revenue. In particular, clarification on the use of revenue for proposals to increase taxes and charges is very important. In addition, it is necessary to enhance the propaganda and dissemination of compensation mechanisms for vulnerable people when applying new tax and charge policies for the purpose of green growth in order to receive public acceptance and support.

2.3. The process of tax policy reform in Viet Nam to promote green growth

2.3.1. An overview of Viet Nam's tax policy system reform

For over 30 years, tax reform has been an integral part of Viet Nam's economic transformation. Requests for tax reform were identified and addressed in the early years of the renewal process. Viet Nam's tax reform process from the late 1980s to the present can be divided into four main stages.

The first period of reform was from the start of renovation until the mid-1990s. The focus of tax reform during this period was to establish a system of tax policies appropriate to the market economy in the early stages of the transition. Many new tax policies have been adopted and applied to all economic sectors, including income tax; sales tax; excise tax; import and export duties on trade goods; income tax on high-income earners; resource tax; agricultural land-use tax; housing tax; land tax, etc.

The second phase of Viet Nam's tax reform began from the mid-1990s to the early 2000s with a focus on the enactment of the 1997 VAT Law and the 1997 CIT Law to replace the Revenue Tax Law and the Income Tax Law. This is also the period when Viet Nam started implementing the roadmap to reduce import tax rates according to commitments to build the ASEAN free trade area. A number of other taxes, such as income tax on high-income earners and excise tax, export tax and import tax, were also amended and supplemented to ensure uniformity of the tax policy system and suitability with requirements set out in the development process.

In the period from the early 2000s to 2010, several taxes that were issued in the previous period such as corporate income tax, excise tax, VAT, import and export tax and income taxes for high-income earners were substantially revised and supplemented to better meet the requirements set out in the economic transition process. At the same time, a number of new tax laws were developed and submitted to the National Assembly for approval, including the 2007 Personal Income Tax Law, the 2010 Natural Resources Tax Law, the 2010 Non-Agricultural Land-Use Tax Law and the 2010 Environmental Protection Tax Law. Viet Nam has removed the discriminatory policies on taxes, fees and charges between domestic and foreign investors, between Vietnamese and foreign individuals, and between domestic and imported products.

From 2011 to the present, on the basis of the tax system reform strategy for the period 2011-2020, Viet Nam has continued to amend and supplement many important tax laws, including the VAT Law, the Law on Corporate Income Tax and the PIT Law, Excise Tax Law, and the Import and Export Tax Law. In particular, the CIT rate was reduced from 25% to 22% from January 1, 2014 and to 20% from January 1, 2016, family allowances for PIT taxpayers were adjusted, and the excise tax rate for cigarettes, beer and alcohol was increased. In 2015, the National Assembly also passed the Law on Fees and Charges No. 97/2015/QH13, effective from January 1, 2017 to replace the Ordinance on Fees and Charges, including many environment-related charges.

Up to now, Viet Nam has basically formed a system of state budget collection policies with 10 taxes and charges, consistent with the overall transformation of the economy in recent years. The highlight of tax reform in Viet Nam over the past time is its consistency with the general principles and standards of tax reform in the region and in the world. In the reform of each tax, Viet Nam has gradually expanded the tax base, reduced tax rates, and simplified methods of tax calculation, tax declaration and tax payment. The requirements for developing a green economy have also been gradually integrated into the process of reforming the tax policy system in Viet Nam, especially the development and submission of the Environmental Protection Tax Law No. 57/2010/QH12 to the National Assembly in 2010.

2.3.2. The greening process of the tax system in Viet Nam

In the above-mentioned process of reforming the tax system, the requirement for "greening" the tax policy system in the direction associated with promoting green production and consumption has also become a cross-cutting issue, especially within the last 10 years. Many tax and charge policies related to environmental protection and green economy development have been developed and improved.

In the period before 2010, Viet Nam did not have a specific environmental tax to restrict the production and consumption of products whose consumption causes environmental pollution. However, the government has enacted and implemented several financial measures to encourage investors to directly participate in environmental pollution treatment activities and economical and efficient use of resources. These measures are implemented in tax policies such as land-use tax, royalties, excise tax, corporate income tax, import tax and through the collection of charges for activities impacting the environment, such as discharging wastewater, exploiting minerals, natural gas and petroleum. In particular, there are charge policies applied to polluting sources, levying pollutants discharged into water, soil and the air environment, including:

i) Environmental protection charge for waste water implemented from 2003 with the goal of reducing environmental pollution caused by waste water and promoting the use of clean water in an economical and efficient manner;

ii) Environmental protection charge for solid waste, which has been implemented since 2007, and charges for ordinary and hazardous solid waste generated from production and business processes;

iii) Environmental protection charge for new mineral exploitation, which has been implemented since 2008, applicable for mining activities including metallic and non-metallic minerals; and

iv) Collection charge for gasoline, diesel, kerosene, fuel oil and lubricants.

Since January 1, 2012, the implementation of the Law on Environmental Protection Tax No. 57/2010/QH12 has marked a fundamental change in the approach of using economic instruments for the goal of environmental protection. The Law on Environmental Protection Tax No. 57/2010/QH12 was enacted with the goal of taxing environmental polluters to protect the ecological environment in order to contribute to change people's perceptions on the environment, create more resources to restore the ecological environment, and encourage the economical and efficient use of energy, reducing the negative impacts of production and consumption on the environment. In addition, policies related to promoting green production and green consumption have also been developed and implemented. In particular, the Special Consumption Tax Law No. 27/2008/QH12 (amended in 2014 and 2016) provides tax incentives for products that cause less harm to the environment; cars running on electric and solar energy are entitled to tax rates 50% and 70% of that for cars of the same type running on gasoline. These preferential regulations have been issued to encourage the investment, production and consumption of energy-saving, eco-friendly products. In addition, passenger cars with large cylinder capacities are levied with higher excise tax rates to encourage the use of energy-efficient vehicles.

Besides, the system of incentive policies to promote green production and green consumption has also been amended and supplemented. The current CIT law provides for a tax rate of 10% for the whole project life for enterprises operating in the field of environment as well as tax exemptions for no more than 4 years and a 50% reduction of payable tax for no more than 9 subsequent years for newly established enterprises operating in the field of environment. The Law on Export Tax and Import Tax No. 107/2016/QH13 also provides for the exemption of import duties for machinery, equipment, vehicles, tools and materials directly used in the collection, storage, transportation, recycling and treatment of waste and in the production process of clean and renewable energy.

It can be seen that the greening process of Viet Nam's tax policy system in the past period has contributed to the formation of relatively comprehensive frameworks, promoting the role of each tax and charge policy in the implementation of green growth goals. These policies address the following two pillars: (i) encouraging and supporting good behaviours towards green production and green consumption; and (ii) restricting environmentally damaging behaviour on the principle of the "polluter pays".

2.3.3. The real situation of tax policies towards green growth goals in Viet Nam

a. Tax policies aimed at limiting the production and use of polluting goods

[1] Environmental protection tax law

The environmental protection tax is implemented in accordance with the Law on Environmental Protection Tax No. 57/2010/QH12 passed by the National Assembly on November 15, 2010, effective from January 1, 2012. The objective of issuing environmental protection tax is to:

(i) Meet the requirements of sustainable economic development, boosting economic development and reducing environmental pollution;

(ii) Enhance the whole of society's awareness of environmental protection, thereby contributing to changing the awareness and behaviour of organisations and individuals in production and consumption in order to reduce emissions at source;

(iii) Strengthen state management, institutionalising guidelines and policies of the Party and State, and fulfilling the government's commitments to the international community;

(iv) Reasonably encourage social contributions, generating more revenue to address environmental issues, ensuring the competitiveness of the economy and key products of Viet Nam[69].

Environmental protection tax is based on the principle that people using polluting products must pay taxes. Tax rates and tariffs are based on national environmental standards and international practices. This is an indirect tax which is imposed on products and goods that cause adverse impacts on the environment; taxpayers are organisations, households and individuals that produce and/or import environmentally harmful goods, and consumers. Environmental protection tax is only payable once for manufactured or imported goods.

According to the Law on Environmental Protection Tax, taxable objects are commodity products whose consumption has negative impacts on the environment including the following 8 types of goods: (1) Petrol, oil, grease; (2) Coal; (3) HCFC; (4) Plastic bags; (5) Herbicides; (6) Termiticides; (7) Forest-product preservation chemicals; (8) Warehouse disinfectant. In addition to these products, Clause 9, Article 3 of the Environmental Protection Tax Law No. 57/2010/QH12 also stipulates: "When it is necessary to supplement other taxable objects as per period, the National Assembly Standing Committee shall consider and regulate". At the same time, the Law also stipulates that goods directly exported by manufacturers or entrusted to export businesses are not subject to environmental protection tax, except for cases where organisations, households or individuals purchase taxable goods for export.

The Law on Environmental Protection Tax stipulates the schedule of tax rates for environmental protection with absolute minimum and maximum rates. Absolute minimum tax rates and absolute maximum tax rates are determined on the basis of the level of harm to the environment of the taxable goods and the cost of handling the negative consequences of their use/consumption. The environmental protection tax is imposed on the production and import of certain goods that are considered harmful to the environment, especially kerosene and coal. Export products are exempt from this tax. The law also assigns the National Assembly's Standing Committee to regulate specific tax rates for each type of taxable good.

Accordingly, specific tax rates for each type of resource are specified in Resolution No. 579/2018/UBTVQH14 dated September 26, 2018, on the environmental protection tariff (effective from January 1, 2019) to ensure the following principles: (i) Tax rates for taxable goods are in line with the State's socio-economic development policies in each period; and (ii) Tax rates for taxable goods are determined to the extent that they cause adverse impacts on the environment.

[69] According to Government Report No. 14/TTr-BTC dated February 10, 2010 on the Environment Tax Law Project.

The environmental protection tax is collected at an absolute rate. For the group gasoline, oil and grease, the tax rate ranges from VND 2,000-4,000/litre depending on the type of goods. In particular, the tax rate for gasoline is set at VND 4,000/litre, equal to the ceiling level specified in the Law on Environmental Protection Tax No. 57/2010/QH12. The tax rate applicable to grease is VND 2,000/kg. As for kerosene, to support the aviation industry in the face of the Covid-19 pandemic, according to the above Resolution No. 979/2020/UBTVQH14, the tax rate for this item was reduced from VND 3,000/litre to VND 2,100/litre, effective from August 1, 2020 to December 31, 2020. For coal, the tax rate is between VND 15,000 - VND 30,000/ton, depending on the type of coal, of which the tax rate for anthracite is the highest at VND 30,000/ton.

The tax rates applicable to other items are: HCFC at VND 5,000/kg; plastic bags at VND 50,000/kg; restricted herbicides at VND 500/kg; restricted termiticides at VND 1000/kg; restricted forest product preservation chemicals at VND 1,000/kg and restricted warehouse disinfectants at VND 1,000/kg.

[2] Severance tax

The current policy on severance tax is applied in accordance with the Law on Royalties 45/2009/QH12 passed by the National Assembly on November 25, 2009, effective from July 1, 2010. Severance tax is an indirect tax which is collected on exploited natural resources. The purpose of this tax is to: (i) strengthen state management of natural resources to protect, exploit and use resources economically and efficiently; (ii) minimise losses on resources in the process of exploitation and use, and minimise the exploitation of exhausted resources or exploitation of resources seriously threatening the environment; (iii) contribute to raising awareness about the importance of natural resources for sustainable economic development; and (iv) generate revenue for the state budget to serve the interests of society regarding the use of resources[70]. Taxable objects are metallic minerals, non-metallic minerals, crude oil, natural gas, coal, etc.

Similar to environmental protection tax, the National Assembly only sets the severance rate frame. Based on the provisions of the tax rate frame prescribed in the law, the National Assembly's Standing Committee stipulates a specific tax rate for each type of natural resource in each period. In order to implement this provision, the government submitted Resolution No. 928/2010/UBTVQH12 dated April 19, 2010 and Resolution No. 712/2013/UBTVQH13 dated December 16, 2013 on the promulgation of severance tax rates to the National Assembly's Standing Committee. In general, in the recent period, Viet Nam has gradually increased the tax rates to encourage enterprises to invest in renovating exploitation and deep processing technology, contributing to the effective and efficient exploitation and use of natural resources, which in turn contributes to environmental protection. At the same time, the tax has contributed to restricting the exploitation of domestic resources, and to the sourcing and exploiting of raw materials abroad to ensure domestic supply.

Under current regulations, the method for collecting severance tax in Viet Nam is based on the value of resources. Accordingly, the amount of severance tax payable is calculated based on the amount of taxable resource output, taxable price and tax rate. Provisions on tax rates ensure the principle that "non-renewable resources" are subject to high tax rates, and "renewable resources" are subject to lower rates. The average severance tax revenue for the period of 2011-2020 accounts for 4.9% of the total state budget revenue. Revenue from crude oil accounts for nearly 80% of total severance tax revenue.

3] Excise tax

The Law on Excise Tax also has regulations to encourage people and businesses to use products that emit low greenhouse gas emissions. The current excise tax policy is stipulated in the Excise Tax Law No. 27/2008/QH12. Similar to environmental protection tax and royalties, excise tax is an indirect tax on certain goods and services that are considered "special". Goods and services subject to excise tax are those whose consumption is discouraged by the State it causes adverse impacts on the environment (cigarettes, cars, and air conditioners, etc.) or economical consumption is required such as fossil-based gasoline.

[70] See the Statement to the Government by the Royalties Law Project.

For passenger cars, Viet Nam's excise tax law prescribes tax rates based on cylinder capacity and type of fuel to encourage the economical use of fuel and reduce environmental pollution. For vehicles running on fossil fuels, the tax rates are in the range of 40% to 150%, depending on the cylinder capacity. A tax rate of 150% applies to passenger vehicles with a cylinder capacity of over 6,000 cm^3. At the same time, the current law on excise tax also stipulates a tax rate of 20% applicable to two-wheeled and three-wheeled motorcycles with a cylinder capacity of over 125 cm^3. Two-wheeled and three-wheeled motorcycles with a cylinder capacity of less than 125 cm^3 are not liable to excise tax.

In addition, to encourage the use of biofuels, the Law amending and supplementing a number of articles of the Law on Excise Tax No. 70/2014/QH13 provides a separate application of the excise tax rate for E5 biofuel gasoline of 8% and E10 of 7%, effective from 1 January 2016. This is a lower excise tax rate than that of 10% applicable to conventional gasoline.

[4] Environmental protection charges

According to Article 148 of the Law on Environmental Protection No. 55/2014/QH12, organisations and individuals discharging waste into the environment or generating harmful impacts on the environment must pay an environmental protection charge. The environmental protection charge is a direct charge on polluting subjects (subjects discharging pollutants into water, soil or air) in order to motivate polluters to minimise the quantity of pollutants discharged into the environment and generate funds for the treatment of environmental pollution. The environmental protection charge is prescribed on the following basis: (i) The volume of waste discharged into the environment and the scale of adverse impacts on the environment; (ii) The level of toxic waste and the level of harm to the environment; (iii) the bearing capacity of the receiving environment. The environmental protection charge is adjusted to suit the country's environmental protection and socio-economic conditions over time. Revenue from the environmental protection charge is used to support environmental protection and investment. Current environmental protection charges include:

- **Environmental protection charge for wastewater:** The current environmental protection charge for wastewater is stipulated in the government's Decree No. 154/2016/ND-CP dated November 16, 2016 on environmental protection charges for wastewater, effective January 1, 2017. The subjects liable to environmental protection charges for wastewater are industrial wastewater discharged from industrial production establishments, agricultural, forest and aquatic product processing establishments; and domestic wastewater discharged to the environment from other households and organisations.

  According to Article 4 of Decree No. 53/2020/ND-CP, organisations and individuals discharging industrial wastewater and daily-life wastewater into the environment are subject to the environmental protection charge, except for the case where organisations or individuals discharge wastewater into a centralised wastewater treatment system and pay for the wastewater treatment service; the payment of charges shall then be made by the unit managing and operating the drainage system.

  The environmental protection charge rate for domestic wastewater is calculated as a percentage (%) of the selling price of 1m3 of freshwater, but shall not exceed 10% of the selling price of freshwater exclusive of VAT. The environmental protection charge for industrial wastewater is from VND 2.5-4 million/year applicable to establishments with an average total volume of wastewater in the year of less than 20 m^3/day and VND 2,000-20,000,000/kg for production and processing establishments having an average total discharge of 20 m^3/day of wastewater in a year and according to the pollutant parameters charged for each substance in the wastewater.

- **Environmental protection charge for solid waste:** The environmental protection charge for solid waste has been implemented since 2007. However, since the effective date of Decree No. 38/2015/ND-CP dated April 24, 2015 on waste and scrap management, the environmental protection charge for solid waste is no longer applied. Instead, organisations and individuals with waste sources must pay

the waste treatment cost (service price) to the waste treatment facility.

- **Environmental protection charge for mineral exploitation:** Mineral mining activities are activities that directly impact mineral resources because of depletion of resources, and directly affect the environment in the area where the mining activities take place. In Viet Nam, the environmental protection charge policy for mineral exploitation has been applied since 2006 and is currently being implemented in accordance with the government's Decree 164/2016/ND-CP dated December 24, 2016 on the environmental protection charge for mineral exploitation. Subjects of environmental protection charges for mineral exploitation are the extraction of crude oil, natural gas, coal, gas, metallic minerals and non-metallic minerals. The environmental protection charge for crude oil is VND 100,000/ton; for natural gas and coal gas VND 50/m^3; and natural gas obtained in the extraction of crude oil (associated gas) VND 35/m^3. The charge bracket is determined based on the value of the exploited minerals. The specific charge for each locality will be decided by the provincial People's Council in accordance with the local socio-economic development conditions.

- **Charge for mineral exploitation rights:** In addition to the charge for licensing mineral activities, organisations and individuals that exploit minerals must pay a charge for granting mineral mining rights according to the provisions of Decree No. 67/2019/NĐ-CP dated July 31, 2019 by the government, effective from September 15, 2019. Subjects of the Decree are organisations and individuals permitted to exploit minerals without going through the auction of mineral mining rights. Relevant state agencies shall determine and collect the mineral exploitation rights charge. The charge for mineral exploitation rights is determined on the basis of the mineral price, mineral reserve, type or group of minerals, and conditions for mineral exploitation. The purpose of collecting the mineral mining charge is to strengthen the nation's mineral resource management, promote green growth, and generate revenue for the state budget.

b. Tax and charge policies to promote green production, investment and green consumption

[1] Corporate income tax

The current corporate income tax policy is implemented in accordance with the Law on Corporate Income Tax No. 14/2008/QH12 passed by the National Assembly on June 3, 2008, effective from January 1, 2009 and amended and supplemented in 2013 and 2014. In order to encourage investment and production in the direction of green growth, the Law on Corporate Income Tax also prescribes many preferential policies for businesses, namely: (i) Applying a tax rate of 10% for enterprises' income from socialising activities in the environment field; enterprises' income from forest planting, tending and protection; (ii) Applying a tax rate of 10% for 15 years for enterprises' income from implementing new investment projects on high-tech applications on the list of high technologies prioritised for development investment under the provisions of the Law on High Technology; production of renewable energy, clean energy, and energy from waste disposal; biotechnology development; and environmental protection. At the same time, businesses are exempt from tax for 4 years and entitled to a 50% reduction of payable tax for the subsequent 9 years.

In addition, the CIT Law also stipulates tax exemption for income from transfer of certified emissions reductions (CERs) by enterprises that are granted certified emissions reductions to encourage organisations and individuals to implement investment projects under the clean development mechanism (CDM) and encourage socialisation in the field of environmental protection.

[2] Export and import tax

Current export and import tax policies comply with the Law on Export Tax and Import Tax No. 107/2016/QH13 passed by the National Assembly on April 6, 2016, effective from September 1, 2016. In particular, there have been policies encouraging the import of raw materials with priority given to types that the domestic market cannot supply, focusing on developing high technology, energy saving and environmen-

tal protection technology. Specifically, import tax is exempted for goods exported and imported for environmental protection including machines, equipment, vehicles, instruments and supplies that cannot be produced domestically; for the collection, transportation and treatment of wastewater, waste and exhaust gas; environmental monitoring and analysis; production of renewable energy; handling of environmental pollution; and coping with and handling of environmental incidents. The Law also provides for tax exemption for imported goods for direct use in scientific research and technological development activities; goods exported and imported in the service of overcoming the consequences of natural disasters and epidemics; energy-efficient products and the promotion of green growth goals. Investment projects under the CDM are also exempt from import tax on goods imported to create fixed assets.

In addition, export products produced from recycling and waste treatment are also exempt from export tax. In order to minimise the environmental impact, protect and limit the export of mineral resources, the Law on Export Tax and Import Tax No. 107/2016/QH13 stipulates the minimum export tax rate for mineral resources. The tax rates gradually decrease as the level of processing increases.

[3] Excise tax

The Law on Excise Tax also encourages people and businesses to use products that emit low greenhouse gas emissions into the environment. The current excise tax regulation is stipulated in the Excise Tax Law No. 27/2008/QH12. Goods and services subject to excise tax are those whose consumption is discouraged by the State as it causes adverse impacts on the environment (cigarettes, gasoline, personal cars, etc.) or economical consumption is required, such as for fossil-based gasoline.

For passenger cars, Viet Nam's Excise Tax Law prescribes tax rates based on cylinder capacity and type of fuel used to encourage economical use of fuel and reduce environmental pollution. For vehicles running on fossil fuels, the tax rates are prescribed in the range of 40% to 150%, depending on cylinder capacity. In particular, a 150% tax rate applies to passenger cars with a cylinder capacity of over 5,000c^3.

In addition, the excise tax rate for products causing less harm to the environment, such as electric and solar-powered cars, is only 50% and 70% of the applicable excise tax rate applicable to gasoline-powered cars of the same type. For gasoline, the applicable tax rate is 10%, and for biofuel (E5 or E10 gasoline), a lower tax rate is applied.

Currently, in addition to the role of orienting consumption and production towards environmental protection, the excise tax is also a stable source of state budget revenue, which is used for environmental protection activities. The annual revenue of excise tax accounts for about 8-9% of total state budget revenue and about 1.8-2.6% of GDP. Of the total state budget revenue from excise tax, revenues from gasoline, cars, cigarettes, alcohol and beer make up the largest proportion.

[4] Other environmental protection tax and charge policies

In addition to the above-mentioned policies, Viet Nam's tax and charge policies also include a number of provisions that support and encourage environmental protection projects and goods, helping to reduce greenhouse gas emissions. Regarding VAT, according to the current regulations, there are 25 types of goods and services that are not subject to VAT, in which, related to the green growth target, there are goods and services such as: pet breeds; plant varieties, including breeding eggs, seedlings, seedlings, seeds, semen, embryos, genetic material; zoos, flower gardens, parks and street greenery maintenance services; public passenger transportation by bus, tram; technology transfer and intellectual property rights transfer. In addition, the calculated VAT taxable price must include the environmental protection tax and excise tax (if any). For imported goods, it is the import price at the checkpoint plus the import tax (if any), plus excise tax (if any) and plus the environmental protection tax (if any). With this regulation, the VAT burden on goods taxed for the purpose of environmental protection will be higher, thereby also indirectly contributing to limiting their consumption.

2.4. The implementation of tax policy for green growth goals in Viet Nam and emerging issues

2.4.1. Results of tax policy implementation to promote green growth in Viet Nam

Recently, the system of economic instruments and financial mechanisms directly or indirectly related to the objective of reducing greenhouse gas emissions including taxes, fees and charges in the fields of land, mineral resources, water resources, forest resources, biodiversity, and environmental protection have been used more appropriately and correctly, contributing to the institutionalisation of the "polluter pays" principle to handle, remedy, renovate and restore the environment. Beneficiaries from natural resources and the environment must be obliged to contribute in order to reinvest in environmental protection.

Preferential policies on taxes, charges, land, capital, labour, etc. for technological investment and innovation towards the efficient use of resources, minimising environmental pollution and reducing greenhouse gas emissions have been more specifically regulated, thereby increasing motivation to mobilise the participation of businesses, people and organisations in the effective exploitation and use of resources and energy for the purpose of environmental protection and climate change response.

- **The collection policies through tax and charges related to environmental protection to promote green growth have been enacted covering three basic aspects:** i) implementing the principle of the "polluter pays"; ii) forming an incentive system to promote green production and green consumption (through preferential policies on taxes and charges); iii) supporting and encouraging organisations, individuals and businesses to participate in ecological environmental protection projects and the production of clean and renewable energy. Charge policies related to environmental protection have also been changed towards a market orientation, forcing organisations and individuals generating waste in the production and consumption processes to pay charges and service prices for activities in waste collection, transportation and disposal, ensuring the principle of the "polluter pays".

- **Creating more resources for the state budget, offsetting the expenses of activities that improve ecological environments that are adversely affected by polluting activities**. Revenues from other environmental protection policies have been expanding over the years, such as revenue from excise tax on petrol, mineral exploitation charges and charges for wastewater treatment. Revenue from the environmental protection tax in 2018 was equivalent to 0.88% of GDP, accounting for about 3.4% of total state budget revenue; this rate is forecast to rise. According to the 2020 budget estimate approved by the National Assembly, the estimated 2020 environmental protection tax revenue will reach nearly VND 69 trillion. Within 9 years (2012 - 2020) since its introduction, the environmental protection tax revenue has increased by more than 5.4 times. By 2020, revenue from the environmental protection tax is estimated to contribute 4.55% of the total state budget revenue. The environmental protection tax is becoming an important tax in Viet Nam's tax policy system from the perspective of generating revenue for the state budget.

- **Enhancing the responsibility and raising the awareness of organisations and individuals for the environment.** The economic base to issue environmental protection tax is to put the cost of environmental pollution into the selling price of goods. The environmental protection tax increases the price of products and goods, thus stimulating and adjusting production and consumption in the direction of environmental protection, encouraging the economical and efficient use of energy and reducing emissions. The environmental protection tax helps implement the "polluter pays" principle,

Table 8: Scale of environmental protection tax (EPT) revenue compared to GDP and state budget revenue, 2014 – 2020

Indicator	2014	2015	2016	2017	2018	2019	2020
Total EPT revenue (VND billion)	**11,970**	**27,020**	**44,323**	**45,133**	**47,923**	**63,075**	**60,631**
EPT revenue to GDP (%)	0.30	0.64	0.98	0.90	0.86	1.04	0.96
EPT revenue to total state budget revenue (%)	1.36	2.71	4.27	3.44	3.34	4.07	4.02
EPT revenue to total revenue from domestic taxes (%)	2.22	3.65	5.35	4.17	4.17	4.95	4.70

Source: MoF budget data

thereby contributing to raising the awareness of environmental protection for the whole of society. In addition, the tax has encouraged the production and consumption of more environmentally friendly goods.

- **Making an important contribution to fulfilling Viet Nam's commitments to the international community.** The implementation of policies on taxes and charges on environmental protection also plays an important role in fulfilling Viet Nam's commitments to the international community on climate change, such as the country's commitments under COP 21 and commitments for reimbursement to eliminate HCFC by 2030 under the Montreal Convention on ozone-depleting substances.

2.4.2. Emerging issues

The application of tax and charge policies related to green growth in Viet Nam also reveals limitations. It is important to clarify these limitations in order to identify suitable space for adjustment, especially when considering the systematic, synchronous and scientific basis of each policy tool regarding the current objectives of protecting the environment, promoting the efficient exploitation and use of natural resources, and coping with climate change.

In particular, the system of environmental economic instruments in general, tax and charge policies is still incomplete and insufficiently sound to effectively regulate the behaviour of actors in the economy towards green production and consumption. The gap between goals, policy requirements and the actual effectiveness of policies during implementation is relatively wide. The environmental protection tax rates of some polluting goods are low or even negligible. Also, there are still lack of specific preferential policies to encourage organisations and individuals to participate in activities to reduce pollution and greenhouse gas emissions.

Environmental protection tax must become the main financial solution to reduce environmental pollution, thereby contributing to the development of socio-economic development in a sustainable manner, while at the same time creating more resources for the state budget to better respond to expenditure needs, including resources for expenditure on environmental protection. In Viet Nam, although the environmental protection tax is imposed on products

and goods whose use causes negative impacts on the environment, in fact, there are several heavily polluted products and goods that have not yet been defined as taxable, such as certain chemical fertilisers and detergents that need to be limited in use. In addition, coal gas and natural gas are harmful to the environment and human health but are not subject to environmental protection tax. The environmental protection tax rate must also be "high enough" to contribute to regulating consumption behaviour, restrict the use of polluting goods, and shift production towards the production of environmentally friendly goods.

The production, use, and recall of items such as batteries, accumulators, automobile and motorcycle tires need to be properly regulated as experiences in several countries indicate. These are items whose production, use and discharge heavily pollute the environment.

Although the Environmental Protection Charge for emissions was issued in 2014, the policy has not yet been applied in practice. The legal basis for the issuance of the Environmental Protection Charge for emissions is specified in the Law on Environmental Protection No. 55/2014/QH13 and the Law on Fees and Charges No. 97/2015/QH13. Specifically, according to Article 148 of the Law on Environmental Protection No. 55/2014/QH13, organisations and individuals that discharge emissions into the environment or cause negative impacts on the environment shall pay an environmental protection charge. In the list of fees and charges promulgated together with the Law on Fees and Charges No. 97/2015/QH13, the environmental protection charge for emissions is also regulated and the government shall have the authority to provide in detail. However, up to now, the documents detailing application of the environmental protection charge on emissions have not yet been issued, so there is no basis for collecting this charge.

2.5. Recommendations on tax policy system reform to achieve green growth goals in Viet Nam

2.5.1. Perspectives and requests for reform of the tax policy system to achieve green growth goals in Viet Nam

To effectively implement the green growth goals in Viet Nam, the tax policy system must ensure the following:

- The reform of tax and charge policies to promote green growth in the coming time should be tied to the following two pillars in a coordinated manner: (i) encouraging the support of good behaviours towards green production and green consumption; and (ii) restricting environmentally damaging behaviour on the principle of "polluter pays". In the current context, Viet Nam should focus on streamlining tax and charge policies related to environmental protection and promoting green growth, instead of trying to adopt new tax policies that are unsuitable to the present conditions.

- The reform process should also be considered very carefully both in the international context, in the country's specific conditions, and in terms of uniformity in the overall legal system to ensure macroeconomic stability as well as the promotion of production and business. Tax policy reform in general and tax policies for promoting green growth in particular are always sensitive issues. Accordingly, policy proposals need to be carefully studied and assessed. From a theoretical point of view, a feasible and effective policy is not necessarily well accepted if the approach is inappropriate and the public and business community are not aware of its benefits.

- Reform measures need to aim at creating strong enough "motives" and "motivations" to change the production and consumption behaviour of businesses and people thanks to the correct determination of taxable objects and tax rates. If tax rates are too low and the tax base is narrow, businesses will not be encouraged to apply green solutions to limit and reduce emissions. They will have no incentive to research, develop and apply new environmentally friendly technologies. On the contrary, if the tax is too high, the cost of reducing emissions will become expensive, creating an excessive financial burden for stakeholders, negatively affecting the competitiveness of businesses and the whole economy, undermining profits, damaging jobs and jeopardising consumers' benefit.

- In order to establish a clear and transparent legal framework, it is necessary to have a long-term strategy and vision on climate change adaptation, low-carbon economy development, green growth and sustainable development to avoid having to fundamentally reorient or modify the implementation process. The legal framework should be clear, transparent and predictable; not only clear about the roadmap for tax increases, but clear and transparent about the use of revenue right from the development stage of the policy.

- Selectively adopting international experience and standard tax practices for the purpose of promoting green growth: International experience shows that the use of market-based tax and charge policies to change producers' behaviour and consumer preferences is an effective way to stimulate investment towards green growth and sustainable development. Viet Nam is not unaffected by this trend. However, during implementation, Viet Nam needs to make appropriate choices based on the conditions and the availability of prerequisite factors to effectively apply these policy instruments. In addition, it is necessary to prevent, control and overcome environmental pollution and degradation as quickly as possible, and conserve biodiversity appropriately. The experiences of other countries

also show that depending on the conditions of each country, it is possible to use different types of instruments to achieve environmental protection goals and promote sustainable development. Reference to the experiences of countries is necessary but it is essential to select appropriate measures to fit the characteristics and context of the domestic economy.

2.5.2. Recommendations on tax policy system reform to promote green growth in Viet Nam

Reviewing and rationalising the tax law to move towards green growth according to an overall and comprehensive strategy

On the basis of the current system of tax and charge policies related to environmental protection and promoting green growth (including: environmental protection tax; severance tax; excise tax; export and import duties, charges and fees for environmental protection and for mineral activities, etc.), review, amend and supplement those regulations to suit reality and address all emission sources to ensure the successful implementation of the goal of green growth in a way that is consistent with the socio-economic development context and deeper international integration. Some specific directions are as follows:

- Amendments and supplements towards expanding the environmental protection tax base to cover sources that are harmful to the environment. Environmental protection taxable objects should cover all activities causing environmental pollution. The environmental protection tax should target polluters and the most precise pollution behaviours, covering the sources of pollution.

- Determining appropriate tax rates for goods subject to environmental protection tax, ensuring effective implementation of the principle the "polluter pays". Currently, the tax rates for some products and goods subject to environmental protection tax are not really reasonable; not high enough to create appropriate incentives to promote green production and green consumption. Accordingly, for items currently subject to environmental protection tax, such as gasoline, coal, plastic bags, HCFC solution, etc., it is necessary to modify tax rates to suit the reality. The increase in tax rates and the inclusion of new groups of goods subject to environmental protection tax must have a roadmap along with an assessment of the full impact of the increase to ensure acceptance.

- Overall review of tax incentives, giving greater priority to green growth, environmental protection and climate change mitigation and adaptation projects as these are areas where investment will create "positive external impacts" for the economy in achieving green growth goals. Tax incentive policies must conform to the general principles of international trade and investment and respect Viet Nam's international commitments. Tax incentive policy must ensure equality among domestic and foreign investors, among domestically produced and imported products, and be in line with the country's commitments when participating in negotiations to join bilateral and multilateral FTAs.

  In addition, the tax incentive policy must ensure transparency and include clear criteria on the basis of "rewarding good people" and the market principle. In addition, in enacting new tax incentives and amending incentive policies applicable to environmental and green growth goals, mechanisms must be formulated to ensure that these policies can be monitored and assessed during implementation.

- Developing policies to collect environmental protection charges for emissions and revising other collection policies for the use of fossil fuels to avoid duplication. To limit air pollution but at the same time be suitable with Viet Nam's socio-economic conditions. Policy should not reduce the competitiveness of goods manufactured in Viet Nam; for the time being, environmental protection charges for emissions should only be applied to types of emissions that directly harm human health.

- Continuing to improve the environmental protection charge policy for mineral exploitation, ensuring full coverage of mineral mining activities in-

cluding metallic and non-metallic minerals such as stone, agar, gravel, clay, plaster, sand, soil, coal, natural mineral water and titanium placer, etc. Mining activities are activities that directly impact mineral resources because of depletion of resources, and directly affect the soil, water and ecological environment in mining areas. At the same time, an increase in the tax rate range for certain types of non-renewable resources should be considered to encourage the efficient use of natural resources and to generate revenue for the state budget. Sufficiently high export tax rates should be applied to restrict the export of raw and unprocessed resources.

Study the possibility of developing and applying a carbon tax in the long term

As analysed in the previous sections, carbon tax is a tax applied in many countries. Viet Nam can proactively conduct studies on the possibility of applying this tax in accordance with the characteristics of Viet Nam's economy and the structure of the current tax policy system. The nature of carbon tax is to impose an additional price on emissions that will help overcome the negative externalities of the market by forcing polluters to pay for their environmentally damaging behaviour. Carbon tax application has the advantage of achieving emissions reduction goals, encouraging the move toward a low-carbon technology, contributing to improving air quality and helping to reduce health care costs. If Viet Nam considers applying a carbon tax, it is necessary to carefully consider the following issues:

[1] Taxable objects

Taxable objects should focus on fossil fuels such as gasoline, oil, methanol, naphtha, and butane; liquefied gas; and burning fuels such as peat, coal, etc., as applied internationally. The tax base is the amount of carbon emissions (in tons of emissions)[71].

[2] Tax rates

Carbon tax rates need to be determined based on the tax coverage, level of emissions reduction, revenue and economic impact of the tax. The setting of carbon tax rates and the approach to determining tax rates depends greatly on the government's policy goals[72]. Determining the appropriate tax rate is important, balancing between the goal of ensuring that the cost of carbon emissions is high enough to limit emissions, creating incentives for the transition of investment into the low-carbon sector, and the need to avoid negative social and economic impacts from imposing excessive costs on businesses and high energy prices.

Viet Nam can apply the tax rates of developing or emerging countries at the early stage of implementation or use econometric models to calculate appropriate tax rates. The use of quantitative methods to determine tax rates requires a complete and reliable source of data. In order for the society and community to become accustomed to and accept the new tax, the rate needs to be low in the first phase of application. However, to achieve the goal of green growth and sustainable development, the tax rate needs to be increased gradually over time. The roadmap for tax increases must be public, transparent and announced together with the issuance of the carbon tax. Rates will be increased steadily and reasonably to avoid shocks.

[3] Tax collection method

At present, there are two methods for calculating carbon tax: based on the volume of input products and based on the volume of emissions. According to the method based on input products, the tax is calculated on the emission of goods or services, which

[71] Some typical examples of taxable objects: Sweden taxes carbon on fossil fuels and fuels used by vehicles. Switzerland imposes a carbon tax on thermoelectric fuels (not including fossil fuels). Germany imposes a tax on the CO_2 content of energy sources. Ireland applies tax on thermal power, peat and fossil fuels. Norway imposes taxes on natural gas and liquefied oil.

[72] The World Bank (2017) points out that there are four approaches to setting tax rates, respectively: (i) access to social prices of carbon; (ii) cost-based approach; (iii) revenue-based approach; (iv) threshold-based approach.

are converted to equivalent emissions. This calculation method does not require much additional cost and effort to prepare for implementation since it can be based on the available floor limits to measure energy use without significantly increasing the cost of compliance and monitoring. The method based on volume of emissions is more difficult to implement because it requires an effective measuring infrastructure system, which is a huge challenge in Viet Nam's current conditions. Implementing this method requires large investment for technical infrastructure for compliance and monitoring. When carbon tax is applied, it is designed into the current tax revenue system with a variety of instruments such as corporate income tax, environmental protection tax, etc. Therefore, when considering the application of carbon taxes, it is important to consider the interaction of such taxes with other taxes in the fiscal policy system. Therefore, consideration must be given to the suitability of carbon taxes with the existing tax system to make the right choices, such as calculating carbon efficiency rates. This would ensure the integration of carbon taxes in the existing tax system, and avoid overlapping and negative impacts on macroeconomic stabilisation, production and consumption.

Change the method of decentralising revenue sources for revenue related to environmental protection

Revenue from environmental protection tax and excise tax on domestically produced goods are now divided between central and local budgets. To ensure compliance with the nature of each revenue, Viet Nam should consider converting them into revenue of the central budget. This is a measure applied by many countries that Viet Nam should also apply, which requires a high consensus and determination because it will affect the interests of many local areas. There are large revenues from excise tax and environmental protection tax on domestically produced goods. Excise tax is a tax imposed to guide consumption, applies only to certain types of goods and is usually an "at source" collection tax or in other words, collected at the place of production. While the production of these goods is usually limited to certain locations, consumption tends to "be allocate" in many different areas. Similarly, for environmental protection tax, the fact that tax revenue from domestically produced goods is divided between the central and the local budgets (based on the "origin") appears unsuitable with the nature of this revenue. Environmental protection tax is in principle a revenue towards the goal of environmental protection through restricting the use of goods that may cause environmental pollution. Besides, the place of origin (production) of these goods may not be the area affected by the consumption. Under the current mechanism, the local area where the commodity is produced is entitled to the revenue; for example, the coal mining area, but other areas where coal is consumed are affected by environmental pollution (for example, the area where the coal power plant is located) and yet these locations are not entitled to the revenue from the environmental protection tax on these items.

Continue to restructure the economy towards a green economy

In addition to the use of policy instruments to limit the production and consumption of products polluting the environment, there are also incentive policies; for example, through tax incentives for the production and consumption of environmentally friendly goods. In addition, to promote green growth, Viet Nam needs to promote economic restructuring, enhance the application of modern technology to exploit and use natural resources effectively, and reduce emissions that are harmful to the environment.

In recent years, Viet Nam has achieved several positive results, from the development of mechanisms and policies to the enhanced awareness of people and businesses about growth. Viet Nam has formed a system of legal documents to ensure the implementation of green growth targets, including tax and charge policies. There are three groups of tax policies that the government uses to manage and protect the environment: (i) environmental taxes, environmental fees and charges collected based on the principle of the "polluter pays"; (ii) tax policies to promote green consumption and green production; and (iii) severance tax policy associated with the requirements of improving the efficient use of natural resources and limiting environmental pollution. Each policy group has certain roles and positions in the implementation of green growth goals.

The implementation of these policies has recently contributed to creating favourable conditions to mobilise the participation of businesses, people and organisations in the efficient exploitation and use of natural resources and energy, in environmental protection, and responding to climate change. Although introduced later than other taxes, the implementation of the Law on Environmental Protection in the past 5 years has brought about many positive results. Basically, the policy on environmental protection tax in Viet Nam has been built on the "polluter pays" principle and is applicable to certain types of goods whose consumption has adverse impacts on the environment. In addition, the system of tax incentives to encourage green production and green consumption has also been completed with several relevant taxes adopted. However, the practice of applying environmental protection tax policies in Viet Nam recently also points to a number of issues that need to be further studied to improve both taxable objects and tax collection methods, thereby better meeting the set requirements and at the same time reinforcing in detail the policy of "expanding the tax base and adjusting tax rates to contribute to restricting the use of goods that cause harmful effects on the eco-environment".

It can be seen that at present, the use of economic instruments and financial mechanisms is still primarily aimed at generating revenue for the state budget. They have not yet focused on their role as a support to the State to orient the market or to regulate the behaviours of entities participating in the efficient exploitation and use of natural resources, energy saving, or developing innovating technologies to reduce pollution and GHG emissions. Therefore, to bring the role of the tax policy system in promoting green growth into full play, Viet Nam needs to develop a specific roadmap to amend and supplement related tax and charge policies, forming strong enough "motives" and "motivations" to change the production and consumption behaviour of enterprises and people towards achieving the goals of green growth.

In environmental protection tax policy reform and promoting green growth, tax rates and taxable objects must be determined in an appropriate and transparent manner, both in terms of policy and implementation. The reform process also needs to be considered carefully both in terms of international and domestic contexts and of synchronisation with the general system of the country to ensure macroeconomic stability, promoting production and economic development. The use of tax and charge policies as well as market-based tools to change the behaviour of producers and consumers is an effective way to stimulate investment towards green growth. However, in the implementation process, Viet Nam needs to make choices suitable to the conditions and the availability of the necessary prerequisites to effectively apply these policy instruments.

Part III

Public Expenditure For Green Growth[73]

Public expenditure is the spending of public financial resources to maintain the state apparatus and perform the functions of the State. The use of the state budget is a process of redistribution of financial resources that have been mobilised to the state budget. Public expenditure can be classified according to several different criteria. According to economic nature, public expenditure includes recurrent expenditure, capital expenditure, and debt service. Recurrent expenditure is the process of distributing and using the state budget to meet expenditure needs associated with the performance of the State's recurrent tasks on socio-economic management. Capital expenditure is the process in which the State uses part of the resources in the state budget to invest in building socio-economic infrastructure, creating technical infrastructure for the economy and promoting economic growth. Debt service is the expenditure from the state budget to pay off due debts, including principal, interest, charges and other costs arising from borrowing (usually to finance capital expenditures).

Public expenditure has a direct impact on economic growth. Countries around the world are increasingly aware of the importance of green growth, as well as the implications of economic development without addressing environmental protection. Therefore, public expenditure is used as an important fiscal tool to promote green growth. In theory and practice in the international context, public expenditure towards green growth goals includes direct spending policies for economic development and environmental protection goals and integrating green growth goals into public expenditure policies. Accordingly, in addition to recurrent and capital expenditures, the use of state extra-budgetary funds to finance environmental protection spending tasks and promote green growth is common.

In the framework of this document, public expenditure in Viet Nam refers to spending on environmental protection (recurrent expenditures), green public procurement (including recurrent and capital expenditures) and state extra-budgetary funds for spending tasks on environmental protection and promoting green growth.

[73] Dr. Le Quang Thuan, Dr. Ho Cong Hoa, Tran Thi Quynh Hoa, MA., Vuong Doan Trung, MSc., Le Van Cuong, MSc., Le Thi Hong Thuy, MSc., Le Thanh Hue, MSc.

3.1. Public expenditure and green growth

Modern economics emphasises the basic principles of the market to achieve harmony between economic development and environmental protection such as the "polluter pays" principle and the "beneficiary pays" principle, etc. This is also the best tool for overcoming market failures and shortcomings. The policy of recurrent expenditure for the purposes of environmental protection and to encourage environmentally friendly economic activities is actually a subsidy policy to overcome environmental pollution when it is too severe or in case businesses face financial problems and are unable to manage pollution. The subsidy also encourages organisations and individuals to research and develop pollution treatment technologies and environmentally friendly production technologies.

In addition, capital expenditure also contributes, creating momentum for economic growth. In order to move towards green growth and sustainable development, public investment must create a foundation for long-term development and the development of clean industry. It must be used to rationally exploit and use natural resources, minimise harmful emissions, and minimise negative impacts of economic activity on the environment; it should also be used to prevent, control and promptly overcome environmental pollution and degradation, and conserve biodiversity. Capital expenditure must also contribute to narrowing the development gap between regions and between different sectors of society in order to ensure social justice, especially in terms of access to and enjoyment of essential public services, as well as equality in accessing development opportunities.

Public investment in green growth must create the foundation for continuous and stable economic growth in the long term. Accordingly, public investment should be directed towards industries that consume less energy, rely on high technology, emphasize the quality of growth, and limit environmental pollution. The growth process must be associated with improving productivity and the efficient use of resources. In particular, economic growth shall not cause risks to or the deterioration of society, nor should it lead to division or discrimination between people or violate human rights. All members of society, including the poor, the weak and the vulnerable, are allowed to participate in and enjoy the fruits of economic growth. The goals of green growth should be integrated into strategies, socio-economic development plans, financial-budget plans, and medium-term and annual public investment plans. At the same time, it is necessary to develop principles and disciplines on resource allocation for green growth in the overall budget plan.

Official development assistance (ODA) is an important resource for socio-economic development in developing and underdeveloped countries. To effectively mobilise and use ODA capital for socio-economic development, it is necessary first of all to be aware that ODA and aid are not "free". In essence, ODA includes both political and economic aspects, which are closely linked together. On that basis, exploiting the positive political and economic impact of ODA is beneficial to the development of the country. Therefore, cost-effectiveness must always be considered and calculated when using ODA to ensure the repayment of foreign debts and preserve the country's reputation. Accordingly, the quality of loan investments should be carefully considered. The use of capital must be associated with green growth-oriented investment projects capable of generating the revenues required to repay debts.

Green public procurement is considered as an important method for achieving the green and sustainable growth model innovation goals. Through the form of green public procurement — in addition to considering price and efficiency of public procurement — state agencies as investors and bid solicitors will integrate requirements on environmental protection and climate change adaptation into public procurement purposes and plans. Accordingly, in the procurement of green public products, the State is both the party reducing emissions through the direct use of green products, and the party indirectly promoting businesses to invest in green technology and products.

This helps to reduce resource and energy consumption, and reduce GHG and pollutant emissions.

Public expenditure on climate change response is used directly for research activities, responding to climate change, or integrated into spending policies related to environmental protection, conservation and energy conservation. The state budget is the main and most important resource for climate change response. In addition, countries also advocate diversifying financial resources to respond to climate change, including: International public finance (ODA loans, foreign loans of the government); domestic private financial resources (domestic private investment); international private finance (foreign indirect investment). Currently, the general trend internationally is to promote PPP in climate change response projects. The promotion of PPP in climate change response projects requires a number of conditions to be met:

(i) Completing the general legal framework for PPP; clear government guarantees such as: term of transfer, ownership of BOT (Build-Operate-Transfer) projects; address gaps between current legal documents, initial support from the government and priority given to climate change projects;

(ii) Sharing risks during project implementation and providing procurement procedures (including signing negotiated contracts with preferred enterprises); and

(iii) Guarantee of foreign exchange reserves and conversion, and foreign currency transfer to ensure the loan debt and the lender's right to intervene in case of delay in debt repayment or when the project performs poorly.

In recent years, along with eradicating poverty through economic growth and narrowing the development gap with other countries in the world, Viet Nam is facing environmental degradation. On the other hand, global warming along with climate change, which has a strong impact on Viet Nam's socio-economic development, also poses many problems for economic development and sectors, especially the agricultural sector, and affects society, ecosystems, and water resources. According to the United Nations Intergovernmental Panel on Climate Change (IPCC, 2007), Viet Nam is one of the five countries in the region most affected by climate change. Therefore, monetary policy in general and spending policy in particular have been identified as important tools towards the goal of green growth and sustainable development. With the view that recurrent expenditure on environmental protection and response to climate change is expenditure for sustainable development, Viet Nam has identified that the budget spending tasks for the purpose of environmental protection is a recurrent expenditure task of both central and local budgets, and at the same time allocates funding for environmental activities at not less than 1% of the total balanced state budget expenditure in the annual budget estimate. In addition, the state budget also invests in scientific research related to the forecasting and warning of natural disasters, as well as in measuring equipment in the field of geology and climate.

Public investment plays an important role in the market because it increases the total demand of society, and the total supply and long-term capacity of the economy. The government has integrated the goals of green growth into strategies, socio-economic development plans, financial-budget plans, and medium-term and annual public investment plans. However, specific criteria, principles and guidelines for the allocation of resources for green growth in the overall budget plan still need to be developed. In the process of appraising annual socio-economic development plans, ministries, sectors and localities need to give clearer evidence to receive expenditures for green growth and sustainable development in the budget allocation plan, including ODA. At the same time, it is necessary to strengthen planning and budget coordination, and strengthen coordination among sectors, regions and localities; to timely provide highly reliable information to all parties involved in the decision making of public investment allocation for green growth and sustainable development. The Ministry of Planning and Investment and the Ministry of Natural Resources and Environment should take lead in making priorities for capital expenditure for green growth and sustainable development.

On that basis, the government allocates public resources and attracts capital from the private sector to participate in public investment projects. The mobili-

sation of financial support from countries and international organisations is also associated with investment projects, ensuring the goals of green growth, climate change adaptation and sustainable development.

In addition, the government has issued documents directly regulating green public procurement, such as requiring agencies to use the state budget, and encouraging individuals and consumers to use energy-saving products with little impact on the environment. In addition, the government has also issued a list of energy-saving vehicles and equipment purchased for state agencies and units, and purchases low-carbon products.

Along with financial resources from the state budget, non-budget state financial funds are an important tool to mobilise social resources to finance spending tasks related to environmental protection goals.

3.2. Public expenditure for green growth in Viet Nam

3.2.1. Environmental expenditure

Viet Nam has always determined that environmental protection is both an objective and a basic component of sustainable development. Strengthening environmental protection must follow the motto of behaving in harmony with nature according to the natural law. Prevention is key. Environmental protection should combine pollution control and remediation, environmental improvement, nature conservation and biodiversity conservation. It should assign the protection of the people's health as its top target and resolutely eliminate projects that pollute the environment and affect public health. All environmental protection activities must be coordinated with climate change response, exploitation and use of natural resources. This means that financial resources for environmental protection are disparate and integrated into many different fields, such as: economic development towards a green economy for all economic sectors — for example, in fields using large amounts of natural capital (agriculture, forestry, clean water and aquatic products); in green economy infrastructure development (energy, construction, transportation); climate change mitigation and adaptation; clean water, environmental sanitation; and in technological innovation, process change, capacity building for management, and environmental protection information. Viet Nam has determined that the state budget should have a separate expenditure item for environmental non-business activities and increase spending to ensure that by 2006 the level is not less than 1% of the total state budget expenditure, gradually increasing according to the country's economic growth rate. This is one of the main solutions to fundamentally change investment in environmental protection.

Expenditure on environmental protection includes environmental warning and observation activities; investigation, prevention and control of environmental pollution; troubleshooting and protecting the environment; climate change response; ensuring clean water and environmental sanitation; green growth and sustainable development; and other environmental protection activities.

The target of budget expenditure for environmental protection in Viet Nam is integrated into the objectives of the National Environmental Protection Strategy to 2020, with a vision to 2030[74], namely: Basically control and minimise the level of environmental pollution, resource degradation and biodiversity decline; continue to improve the quality of the living environment; and improve the capacity to proactively re-

[74] The strategy was approved by the Prime Minister in Decision No. 1261/QD-TTg dated September 5, 2012.

spond to climate change, aiming at the country's goal of sustainable development. From this common objective, the National Environmental Protection Strategy also identifies specific target groups for different time periods as follows:

[1] By 2020: Substantially reduce sources of environmental pollution; remedy and improve the environment in polluted and degraded areas; improve people's living conditions; mitigate the level of degradation and exhaustion of natural resources; curb the rate of biodiversity decline; strengthen the ability to proactively respond to climate change, and reduce the level of increasing GHG emissions. Many monitoring and evaluation indicators are specifically identified to quantify and evaluate the implementation of these goals. For example, the percentage of people with knowledge on coping, adapting, and living under climate change conditions reaches 30% by 2015 and 100% by 2020; the proportion of establishments currently causing environmental pollution; by 2015, the proportion of establishments causing environmental pollution decreases 20% compared to 2010 and by 2020, by 50% compared to 2010, etc.

[2] By 2030: Prevent and reverse the trend of increasing environmental pollution, resource degradation and declining biodiversity; improve the quality of the living environment; proactively respond to climate change; form the basic conditions for a green economy with low waste and low carbon for the prosperity and sustainable development of the country.

a. Expenditure policies

The Law on Environmental Protection No. 55/2014/QH13 dated June 23, 2014 (Law on Environmental Protection 2014) regulates the state budget expenditure for environmental protection, namely: Formulating strategies, planning, plans, technical processes, technical guidelines, economic and technical norms, environmental technical regulations, programmes and schemes on environmental protection; evaluation of environmental protection planning, strategic environmental assessment reports; environmental monitoring activities; building environmental information systems and environmental reporting; supporting inspection and examination activities; controlling and dealing with environmental pollution; preventing, responding to and remedying environmental incidents; waste management and biodiversity conservation; training and communication on environmental protection; disseminating and evaluating the implementation of environmental protection legislation; international cooperation on environmental protection; and other environmental protection management activities.

Pursuant to the above general provisions of the Law on Environmental Protection 2014, the expenditure tasks for environmental protection from the state budget are specified in Circular No. 02/2017/TT-BTC[75]. Accordingly, state budget non-business expenditure tasks for environmental protection include expenditures for environmental protection at central and local levels; these are basically similar to each other. In addition to the task of ensuring funding for the implementation of environmental protection activities of the ministries, ministerial-level agencies, governmental agencies and other central agencies, the central budget is also obliged to support local authorities facing budget difficulties to thoroughly handle establishments causing serious environmental pollution. The environmental expenditure tasks of the state budget include:

[1] Elaborating and adjusting strategies, plans, technical processes, technical instructions, economic and technical norms, environmental technical regulations, environmental protection programmes and schemes; elaborating, evaluating and announcing regional and national environmental protection planning; evaluating strategic environmental assessment reports; appraising other tasks in accordance with the Law on Environmental Protection; supporting waste management, investigation, assessment of waste sources causing environmental pollution, and environmental load capacity assessment.

[75] Circular No. 02/2017/TT-BTC dated January 6, 2017 by the Ministry of Finance on management of environmental non-business funding

[2] Ensuring operation of the national environmental monitoring and analysis system, environmental status monitoring programmes (including operation, maintenance, repair, calibration, inspection and replacement of ancillary equipment and tools); development and implementation of monitoring programmes on the environment and environmental impacts in their areas of management; supporting the control of environmental pollution, including pollution of inter-provincial river basins and in local areas; supporting waste management, evaluating sources causing inter-provincial environmental pollution or pollution in local areas, and assessment of environmental load capacity in accordance with the Law on Environmental Protection.

[3] Supporting the implementation of projects on handling and remedying pollution and reducing environmental degradation for a number of public-utility subjects under Decision No. 58/2008/QD-TTg dated April 29, 2008 by the Prime Minister; implementing projects on thoroughly handling establishments causing serious environmental pollution in the public-utility areas under central management according to Decision No. 64/2003/QD-TTg dated April 22, 2003 and Decision No. 1788/QD-TTg dated October 1, 2013 by the Prime Minister; supporting other projects on environmental protection under the decisions of competent authorities (for local authorities still receiving balance transfers from the central budget, the central budget shall support local budgets to implement local projects).

[4] Supporting biodiversity conservation in accordance with the Law on Biodiversity No. 20/2008/QH12 dated November 13, 2008; implementation of prevention and response to national environmental incidents; managing the State's nature reserves; management of facilities for care, rearing and propagation of a number of endangered precious and rare animal species under state management.

[5] Implementation of target programmes: responding to climate change and green growth, and thoroughly handling public utilities causing serious environmental pollution; implementing the national target programme on building new rural areas (improving sanitation conditions, minimising environmental pollution; collecting and treating waste and wastewater; overcoming environmental pollution and improving the environment in particularly seriously polluted craft villages).

[6] Building and maintaining the operation of information systems and databases on the environment, including collecting, processing, exchanging information, maintaining, repairing and replacing data storage systems; environmental statistics and building databases for national and local environmental statistics; national environment reports (including reports on environmental protection activities); reporting, evaluating and ranking local environmental protection results.

[7] Support to overcome environmental pollution caused by coal and oil exploitation, and crematoriums for Khmer people; implementing a number of specific programmes and projects on clean water and rural environmental sanitation in local areas; allocating counterpart funds of a non-business nature to implement foreign capital programmes and projects on environmental protection and climate change response, etc., according to commitments and agreements signed with foreign donors.

[8] Propagating and enhancing the public's awareness of legal regulation on environmental protection; professional training on environmental protection; and supporting the inspection and examination of compliance with the Law on Environmental Protection.

[9] Carrying out other environmental protection activities decided by competent authorities, including: support to the Environmental Protection Fund in accordance with the Law on Environmental Protection 2014; support to wind power projects to connect to the grid under the Prime Minister's Decision No. 37/2011/QD-TTg dated June 29, 2011 on the mechanism to support the development of wind power projects in Viet Nam (amended and supplemented in the Prime Minister's Decision No. 39/2018/QD-TTg dated September 10, 2018 – thereby moving from the mechanism in which the state budget supported grid-connected wind power prices to one in which prices are calculated according to the annual electricity price of the Viet Nam Electricity Corporation) and other activities.

[10] Local authorities shall allocate budgets to manage public sanitation works; support equipment and means for waste collection and environmental sanitation in public places and residential areas under the decisions of competent authorities; support environmental protection activities of environmental self-governed organisations (cooperatives, residential groups, socio-political organisations); support the collection, classification, transportation, treatment and disposal of local waste (excluding the construction of waste treatment facilities); support the maintenance and operation of public environmental pollution treatment facilities; support the repair and renovation of environmental protection technical infrastructure works for handicraft villages encouraged to develop.

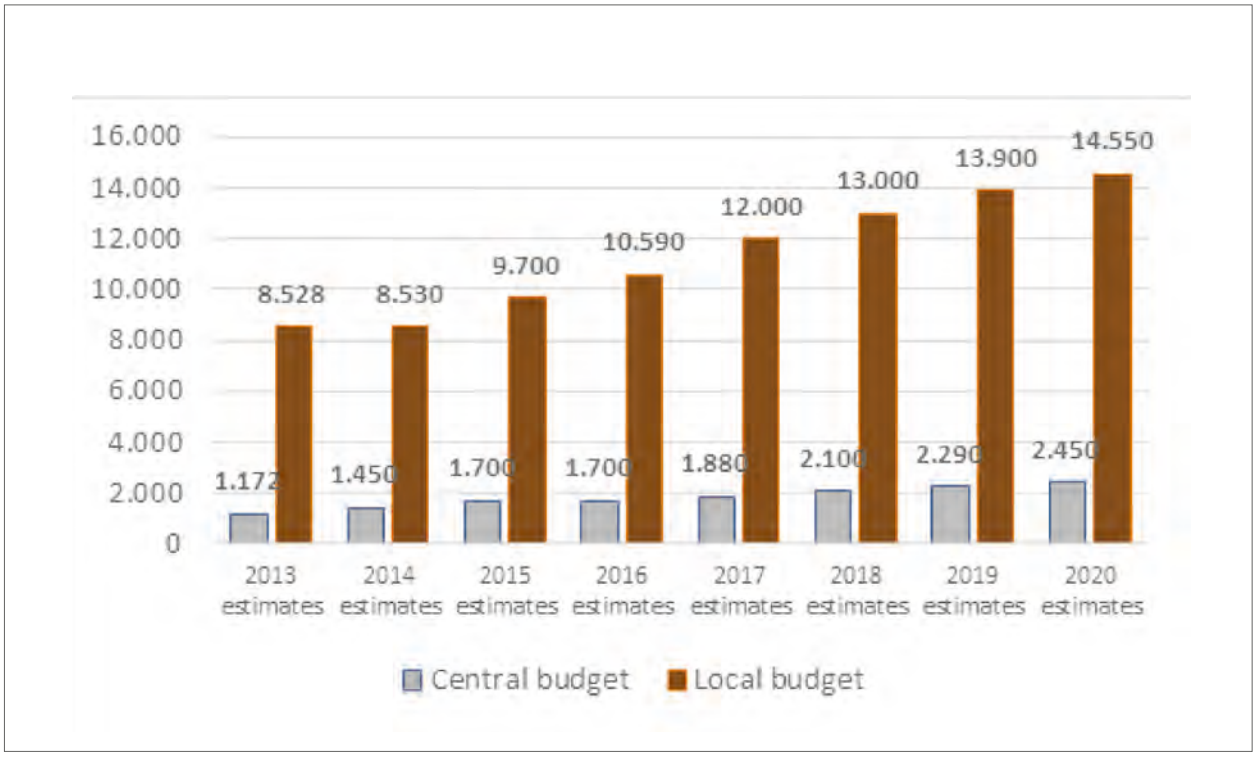
State budget environmental expenditure is divided according to the above-mentioned major tasks. However, due to the lack of specific data, it is not possible to provide charts on the share of this expenditure or to compare proportional changes in the period 2013-2020.

b. State budget expenditure for environmental protection in Viet Nam

State budget recurrent expenditure estimates for environmental protection in the period of 2013-2020 ensures a ratio of 1% of total state budget expenditure, increasing annually in accordance with Resolution No. 41-NQ/TW, Decision No. 34/2005/QD-TTg. In particular, the structure of budget expenditures between central and local levels basically ensures the ratio of 15% - 85% according to the provisions of the Prime Minister's Decision No. 59/2010/QD-TTg dated September 30, 2010 promulgating norms for recurrent expenditure estimates for the state budget in 2011 and Decision No. 46/2016/QD-TTg dated October 19, 2017 promulgating norms for recurrent expenditure estimates for the state budget in 2017.

In organising implementation of the annual state budget, environmental protection is the top task of the whole political system, in which the State plays a key role. Based on the resources of local budgets, lo-

Figure 10: Estimates of decentralised state budget expenditure for environmental protection in Viet Nam



Source: Consolidated from data published by the Ministry of Finance

Unit : VND billion

Table 9: Estimates of state budget expenditure for environmental protection in Viet Nam

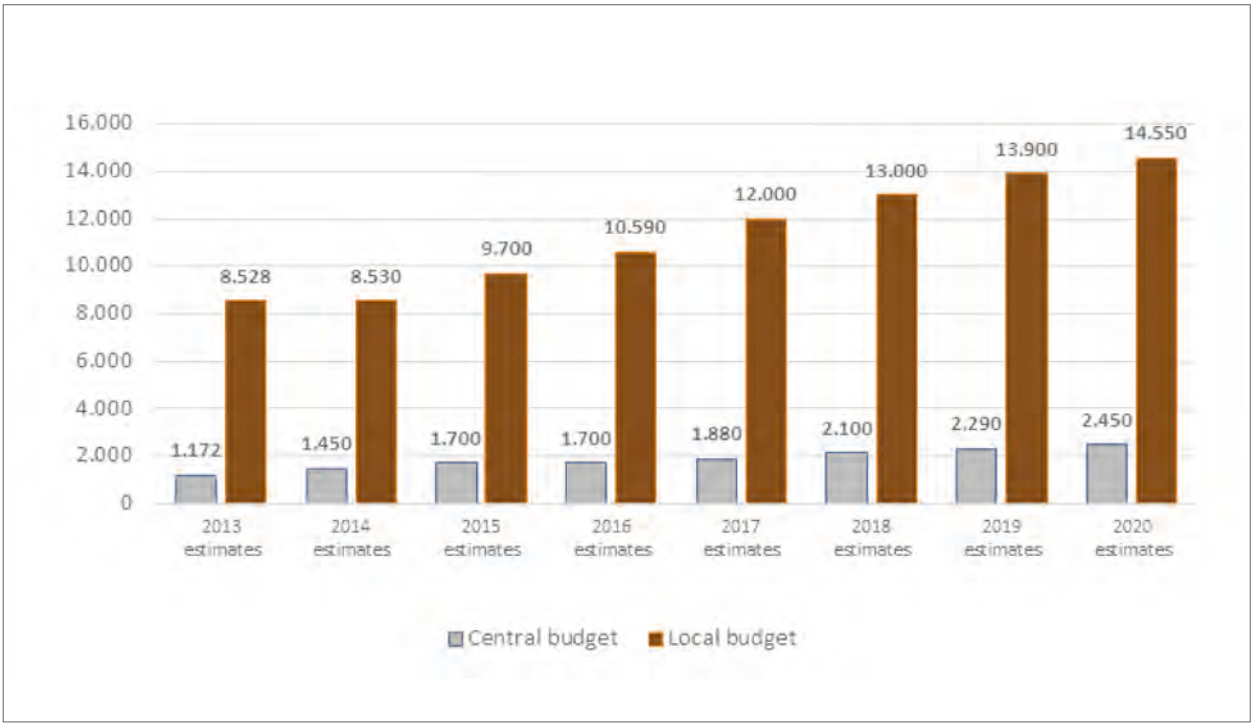
No.	Description	2013 Estimates	2014 Estimates	2015 Estimates	2016 Estimates	2017 Estimates	2018 Estimates	2019 Estimates
1	Total state budget expenditure	978,000	1,006,700	1,147,100	1,273,200	1,390,480	1,523,200	1,633,300
2	State budget expenditure for environmental protection	9,700	9,980	11,400	12,290	13,880	15,100	16,190
	% of total state budget expenditure	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%

Source: Consolidated from data published by the Ministry of Finance

Unit: VND billion

cal authorities actively send proposals to the People's Councils for decisions on local budget allocation to perform the task of environmental protection. Local budgets are higher than central government guidance, hence the total expenditure for environmental protection in recent years has been higher than 1% of state budget expenditure as prescribed. The proportion of local budget expenditure for environmental protection in the total state budget expenditure for environmental protection in the period 2013-2020 was about 88.58%, higher than the prescribed rate of 85%.

Figure 11: The decentralisation of state budget expenditure for environmental protection in Viet Nam



Source: Consolidated from data published by the Ministry of Finance

Unit: VND billion

Table 10: State budget expenditure for environmental protection in Viet Nam

Description	2013	2014	2015	2016	2017	2018	2019	2020
State budget recurrent expenditure for environmental protection	**11,031**	**11,595**	**13,617**	**14,656**	**18,676**	**18,392**	**20,442**	**21,425**
Proportion of environmental expenditure in total state budget expenditure	1.1%	1.2%	1.2%	1.2%	1.34%	1.21%	1.25%	1.23%
Of which: • Central budget environmental expenditure (estimated)	1,172	1,450	1,700	1,700	1,880	2,100	2,290	2,450
• Local budget environmental expenditure (estimated)	9,859	10,145	11,917	12,956	16,796	16,292	18,152	18,975
Proportion of local environmental expenditure to total environmental expenditure of the whole country	89.38%	87.49%	87.52%	88.40%	89.93%	88.58%	88.80%	88.56%

Source: Consolidated from data published by the Ministry of Finance

Unit: VND billion

c. The impact of budget expenditure policy for environmental protection

In the period of 2013-2020, non-business expenditure for environmental protection basically met the performance of tasks on environmental protection with the following important results:

[1] Preventing and controlling environmental pollution, minimising environmental pollution; environmental monitoring activities at central and local levels were maintained and developed, promptly providing necessary data on environmental status for environmental protection work; handling establishments causing serious environmental pollution under the Prime Minister's Decision No. 64/2003/QD-TTg dated April 22, 2003 approving the Plan of thoroughly handling establishments seriously polluting the environment; Decision No. 58/2008/QD-TTg dated April 29, 2008 by the Prime Minister on targeted support from the state budget to thoroughly handle, overcome pollution and minimise environmental degradation for a number of public-utility areas; overcoming serious environmental pollution and degradation.

[2] Maintaining and ensuring regular operation of the national environmental monitoring system under the Prime Minister's Decision No. 90/QD-TTg dated January 12, 2016 on the Planning of natural resources and environmental monitoring network for the period of 2016-2025, with a vision to 2030; implementing Resolution No. 35/2013/NQ-CP by the government on a number of urgent issues in the field of

environmental protection; implementing Directive No. 25/CT-TTg by the Prime Minister on a number of urgent tasks and solutions on the environment.

[3] Preventing and treating environmental pollution in areas in need of urgent attention, focusing on dealing with pollution of water sources and epidemics; solid waste treatment in urban areas, industrial parks, environmental pollution treatment in craft villages and high-density residential areas; controlling the production, import and use of chemicals, pesticides, and chemical fertilisers in agriculture and aquaculture; controlling the import of used scraps, machinery and equipment.

[4] Ensuring funding for the implementation of national target programmes and target programmes already approved by the National Assembly, the government and the Prime Minister in the field of environmental protection.

[5] Campaigns and propaganda to raise awareness and responsibility for environmental protection for all levels, sectors, businesses and the public have been held widely at both central and local levels. Ministries, branches, local authorities and socio-political organisations have carried out several communication activities, raising awareness about environmental protection, contributing to raising awareness and knowledge about environmental protection for the community. Environmental inspection and control activities are carried out regularly and continuously.

[6] Classifying production, business and service establishments according to environmental pollution levels to take measures to inspect, supervise and handle them; basically, solving environmental issues in craft villages and issues related to rural sanitation; awareness and understanding of climate change has been raised; continued promotion of the prevention, fighting and response to natural disasters.

[7] Awareness and understanding about climate change has been raised; continued promotion of combating and response to natural disasters. Climate change scenarios and sea level rise were updated twice, in 2012 and 2016. Climate change has been integrated into socio-economic and sectoral development strategies and plans[76]. Several models for adapting to and living with climate change have been developed and disseminated.

3.2.2. Green public procurement

The concept of green public procurement is used to refer to a process by which state agencies can purchase goods, services and facilities in order to minimise environmental impacts during their lifetime while ensuring the main features of such goods, services and facilities. Accordingly, green public procurement is conditional public procurement, integrating environmental factors into the entire procurement process (from planning, project selection, contractor selection to implementation, monitoring and evaluation). Effective implementation of green public procurement needs to fully combine many factors, from awareness to action through the promulgation of mechanisms, policies and resource allocation for implementation, in which institutions play an important role in the process of forming these factors.

a. Legal framework

Viet Nam has issued several strategies and national action plans related to sustainable development, green growth, and sustainable consumption and climate change. These have been legalised by legal documents governing public procurement, environmental protection, and energy saving, etc., paving the way for the implementation of green public procurement activities through the integration of environmental factors into public procurement. Some strengths of green public procurement in Viet Nam include the following:

[1] The regulations on public procurement are relatively comprehensive, from planning, assigning pro-

[76] The integration of climate change in sectoral development planning and socio-economic development planning has been institutionalised in the 2014 Law on Environmental Protection and the 2017 Planning Law.

curement estimates, and formulating plans for procurement, to organising procurement, handing over assets and goods for units managing, using, warranting, and maintaining procured assets, as well as those inspecting, supervising, publicising procurement results, and handling violations and responsibilities for implementation organisations, etc. In particular, the centralised procurement mechanism was issued in accordance with Decision No. 08/2016/QD-TTg dated February 26, 2016 (replacing Decision 179/2007/QD-TTg). Circular No. 35/2016/TT-BTC dated February 26, 2016 (replacing Circular No. 22/2008/TT-BTC) has facilitated implementation of green public procurement. It is much easier to change and adjust public procurement activities into green public procurement with centralised procurement compared to decentralised procurement. Statistics in 2018 showed that the total value of bidding packages implemented through centralised procurement nationwide was VND 24,844 billion (accounting for nearly 3% of the total value of bidding packages). The total winning value was VND 22,579 billion, with the savings nearly twice that of the national savings rate of 9.12% (Ministry of Planning and Investment, 2019).

[2] The State has also issued a number of legal documents to encourage the purchase of green products, especially the compulsory purchase of energy-saving products and unburnt materials. This is an important basis to integrate the criteria of economical, efficient energy consumption, emissions reduction and environmental criteria into the documents guiding the Bidding Law. Specifically, the Law on Environmental Protection 2014 and Decree 19/2015/ND-CP guiding the Law on Environmental Protection encourages the heads of state budget-funded agencies and units to give priority to eco-friendly products and services certified with eco-labels in accordance with laws[77]; Decision 68/2011/QD-TTg by the Prime Minister mandating units and state agencies to procure energy-saving products; and Circular 13/2017/TT-BXD dated December 8, 2017 by the Ministry of Construction providing regulations on the use of unburnt construction materials in construction works.

[3] Some national programmes, strategies and action plans also deal directly or indirectly with aspects of green public procurement including the Green Growth Strategy (Decision 1393/QD-TTg); the National action plan on green growth for the period of 2014-2020 (Decision No. 403/QD-TTg); the Viet Nam Sustainable Development Strategy for the period of 2011-2020 (Decision No. 432/QD-TTg); and the National Action Programme on Sustainable Production and Consumption to 2020, with a vision to 2030 (Decision No. 76/QD-TTg).

[4] There are instructions on the order and procedures for green labelling, energy labels and eco-labels. Especially, the process of guiding energy labelling has been standardised on a separate website, with 4 basic steps, facilitating manufacturers to self-label their energy products.

[5] The infrastructure for communication and propaganda is quite synchronised and divided into several levels. This infrastructure can be used effectively to conduct communication, raising awareness of among both green public procurement officials and suppliers.

b. Opportunities to promote green public procurement in Viet Nam

[1] Green public procurement is an inevitable development in the context of climate change. Viet Nam needs to actively and proactively participate. Countries have been focusing on green public procurement and low-carbon economies with the promulgation of mandatory regulations or incentives for green public procurement while at the same time requiring close reporting. This will affect the awareness and motivation for implementing green public procurement in Viet Nam, especially given that Viet Nam has signed free trade agreements (FTAs) with several major international partners.

[2] Viet Nam can obviously learn from experiences of institutional building and implementation of green

[77] Article 44 of the Law on Environmental Protection; Article 47 of Decree 19/2015/ND-CP.

Table 11: State budget and state capital bidding package, 2009 - 2019

		State budget expenditure			Bidding package			
Year	GDP	Total expenditure	Capital Expenditure	Recurrent expenditure	Total	State budget for develop-ment investment purposes	State budget for recurrent procure-ment	Financial sources from Joint Ventures, shares, business cooperation contracts
2009	1,809,149	561,273	181,363	303,371	413,237	367,594	24,554	21,090
2010	2,157,828	648,833	183,166	376,620	357,270	324,087	28,874	4,310
2011	2,779,880	787,554	208,306	467,017	816,362	617,366	142,416	56,579
2012	3,245,419	978,463	268,812	603,372	450,581	364,624	28,085	57,872
2013	3,584,262	1,088,153	271,680	704,165	467,114	416,362	26,650	24,103
2014	3,937,856	1,103,983	248,452	723,292	507,416	394,974	91,098	21,345
2015	4,192,862	1,265,625	308,853	788,500	472,238	407,781	64,293	164
2016	4,502,733	1,295,061	296,451	822,343	545,798	452,583	93,125	90
2017	5,005,975	1,355,034	372,792	982,242	559,157	384,028	175,128	
2018	5,542,332	1,616,414	411,277	954,117	683,600	415,155	268,445	
2019	6,037,348	1,666,800	443,400	1,177,400				

Source: Consolidated by the author from MPI data (2009 – 2018) and GSO data (2009-2019)

Unit: VND billion, actual price

public procurement in the international context, so Viet Nam can consider and develop appropriate methods to suit its own context. On the other hand, the opening and restructuring of the economy and promotion of the private sector have removed barriers to participation in the supply of goods and services, enabling Viet Nam to apply appropriate models from market economies.

[3] The scale of public procurement is very large, which is an opportunity for forming a large green procurement market. In the period of 2009-2019, total state budget expenditure reached VND 12,367,193 billion, accounting for about 29% of total GDP, of which capital expenditure accounted for 25.8% on average and recurrent expenditure 63.9%. The total procurement package for public procurement in the period 2009-2018 was VND 5,272,773 billion, accounting for an average of about 15.5% of GDP, of which the total state capital source for recurrent procurement only accounted for an average of about 2.4 % of GDP and capital expenditure for 12.5% of GDP.

In the period 2017-2018, the proportion of procurement bidding packages in recurrent expenditures accounted for 90.7% of the total bidding package, of which investment and development accounted for 21%. In development investment expenditure, the construction and installation sector accounted for 66.6% and merchandise procurement for 21%, indicating a great opportunity for green goods procurement in Viet Nam.

[4] Green public procurement is prioritised in the allocation of international support capital, so institutional completion is required. The procurement of green public services is a way to achieve green growth, and is one of the sectors prioritised by the government for the use of ODA and concessional loans in the coming period according to Decision

Table 12: Average value and distribution of state budget tender packages in 2017 - 2018

	Projects using the State budget for development investment purposes			Bidding packages using the state budget to buy assets to maintain regular operations of state agencies		
	No. of bidding packages/year	Package value (VND billion /year)	Winning price (VND billion /year)	No. of bidding Packages/year	Package value (VND billion /year)	Winning price (VND billion /year)
Total	**183,846**	**399,592**	**377,584**	**51,700**	**221,787**	**206,314**
Construction	27.5%	66.6%	67.4%	8.6%	4.1%	4.3%
Goods	8.5%	21.0%	20.2%	61.6%	90.7%	90.2%
Non-consultancy	7.3%	0.9%	0.9%	11.4%	3.9%	4.1%
Consultancy	55.9%	5.7%	6.1%	11.3%	1.3%	1.3%
Mixed	0.8%	5.7%	0.7%	0.0%	0.0%	0.0%

Source: Consolidated by the author from MPI data (2017 – 2018)

Unit: VND billion, actual price

No. 251/QD-TTg dated January 17, 2016 by the Prime Minister approving the project "Orientation of attracting, managing and using ODA and concessional loans of foreign sponsors in the 2016-2020 period". Meanwhile, green and low-carbon growth continues to receive international support, although international assistance to Viet Nam has been and will continue to decline since the country has become a middle-income country. This support can take place throughout the policy development process until the actual implementation.

3.2.3. Extra-budgetary state financial funds for green growth

In addition to the state budget, which is considered the largest centralised monetary fund, there are also extra-budgetary state funds. The subjects of extra-budgetary state funds are agencies assigned by the State to establish and mobilise financial resources, and use and organise the fund management apparatus. The source of the extra-budgetary state financial fund is in part from the state budget, which acts as "bait" capital for the operation fund; the rest is mostly mobilised from organisations and individuals in society. Extra-budgetary state financial funds are established in parallel with the state budget but are not subject to the adjustment of the state budget process — they are flexible, mainly to solve problems arising from the economic development process. In principle, the extra-budgetary State Financial Fund implements the principle of "right money spent in right place". When events and circumstances either no longer exist or have been completely resolved, the extra-budgetary State Financial Fund for the matter ceases to exist. In fact, in Viet Nam, there are currently around 70 extra-budgetary State Financial Funds established at central and local levels on quite diverse scales, and with different natures and scopes of activities.

Regarding green growth goals, Viet Nam has the Environment Protection Fund[78] and the Forest Protection and Development Fund, etc. These funds are derived mainly or partly from the state budget and partly from other mobilised capital sources. The funds are regulated by industry or local governments, but remain independent of the budget and primarily to implement measures according to the specific objectives of the fund.

a. The Viet Nam Environment Protection Fund

The Viet Nam Environment Protection Fund is a state financial institution under the Ministry of Natural Resources and Environment. It has the function of lending at preferential interest rates, funding, and supporting interest rates for programmes, projects, activities, and tasks for environmental protection and climate change response not included in the budget plan.

The working capital of the Viet Nam Environment Protection Fund is derived from the following sources:

(i) The charter capital of the Viet Nam Environment Protection Fund is VND 500 billion from the state budget, fully granted within 02 years from the effective date of Decision No. 35/2008/QD-TTg dated March 3, 2008. Every year, the Fund is provided with additional capital from the State budget to spend on environmental causes to offset the funding for projects and environmental protection tasks, ensuring the Fund's operating expenses from the state budget are equal to at least VND 500 billion. A change in charter capital of the Fund is decided by the Prime Minister on the basis of a proposal by the Minister of Natural Resources and Environment and the Minister of Finance;

(ii) Additional annual operating expenses from other sources, such as environmental protection charges for wastewater, emissions, solid waste, mineral exploitation and others as prescribed by law; compensation for environmental damage collected into the state budget; fines for administrative violations in the field of environmental protection; CERs sale charges; sponsorships, support, contributions, investment trusts of domestic and foreign organisations and individuals; and other additional capital sources according to the provisions of the law.

According to current regulations, the charter capital of the Viet Nam Environment Protection Fund is VND 1 trillion granted by the state budget. The beneficiaries of the Fund are organisations and individuals with investment projects on environmental protection with a fixed preferential interest rate of 2.6-3.6% during the 10-year loan period. As of the end of 2018, the Fund had disbursed 76% of the loan capital with preferential interest rates in 54 provinces and cities nationwide, and had signed credit contracts worth VND 379.99 billion. Loan disbursement reached VND 324.77 billion, achieving growth of more than 33% compared to 2017, and principal collection was VND 161.23 billion. In the period 2010-2019, the Fund's credit growth rate on average was over 10%/year.

Through activities of mainly revolving capital loans, the capital allocated by the state budget to the Environment Protection Fund has supported several projects and activities on environmental protection, and at the same time has acted as a source of revenue to cover operating costs, reducing pressure on the state budget. The Environment Protection Fund has actively contributed to the synchronisation of financial instruments and state policies, meeting the government's international commitments in the field of environmental protection.

b. The Viet Nam Forest Protection and Development Fund

The Viet Nam Forest Protection and Development Fund is a state financial institution under the Ministry of Agriculture and Rural Development established on November 28, 2008. The Fund was set up to mobilise

[78] Up to now, Viet Nam has 41 environmental protection funds, including 1 central environmental protection fund (Viet Nam Environment Protection Fund), 39 local environmental protection funds and 01 environmental protection fund for the coal industry.

social resources to protect and develop forests, contributing to the implementation of the policy on socialisation of the forest profession; raising awareness and responsibility for forest protection and development; and strengthening capacity and efficiency in capital management and use. The Fund operates for non-profit purposes, with the function of mobilising, managing and coordinating resources to serve the management, protection and development of programmes in the forestry sector. In addition, the Fund also organises the evaluation, selection, support, monitoring, evaluation and acceptance of projects or non-project activities serving the forestry sector.

Funds are used to finance programmes, projects or non-project activities; replant forest; provide financial support to combat deforestation; propagate, disseminate and implement legal policies on forest protection and development; pilot and popularise models of forest protection and development and sustainable forest management; and train human resources for forest protection and development. Revenue from the Provincial Forest Protection and Development Fund is derived from the income generated from replanting forest due to changing the forest-use purpose, which similar in nature to the collection of land-use charges payable to the state budget when changing the land-use purpose according to the provisions of the Land Law. At the same time, the expenditure on afforestation also coincides with state budget expenditure. In addition, a number of other expenditure tasks are using the Fund's resources; for example, propagating, disseminating and implementing legal policies on forest protection and development and human resource development, etc., which coincide with state budget expenditure.

The Viet Nam Forest Protection and Development Fund has become an important tool, mobilising social resources for forest protection and development, contributing to the implementation of the policy on forest socialisation. The average amount collected for forest environment services is about VND 1,300 billion per year. This is a great resource, contributing to better forest protection and improved incomes for people who directly protect the forest, most of whom are ethnic minorities and from poor households, and making an important contribution to the implementation of the policy on socialisation of the forestry profession and poverty alleviation.

3.3. Challenges in public expenditure for green growth

3.3.1. Expenditures on environmental protection remain scattered and ineffective

The use of regular expenditure for environmental protection by a number of ministries, central agencies and local authorities is still ineffective. A number of expenditure items have not been used for the right purpose (such as environmental expenditure allocated to survey activities which are not linked to specific projects or programmes; expenditure for completing a system of specialised criteria and technical standards on environmental protection is not prioritised for allocation, etc.).

It is still the case that at the end of the year, budget estimates are not fully disbursed and must be transferred to the next year or cancelled. From 2017, according to the provisions of the 2015 State Budget Law and its guiding documents, the remaining non-business expenditure for environmental protection from the central budget shall not be transferred to the budget of the following year but shall be cancelled as prescribed. Accordingly, in 2018 and 2019, the amount of unused expenditure cancelled was VND 625 billion and VND 1,095 billion, respectively.

This is partly due to the fact that current regulations on environmental expenditure do not fully cover the financial needs for environmental activities. Regulations are strict and demanding with respect to local reciprocal responsibilities, but at the same time this hinders local authorities in accessing central targeted transfers. Some environmental expenditure items are actually of an investment nature but with small scales and scopes; the mechanism of recurrent expenditure cannot be applied in these cases. To solve this problem, in Resolution No. 86/2019/QH14[79], the National Assembly allowed the use of environmental recurrent expenditures to implement a number of investment-related activities (e.g. to support local authorities that receive transfers from the central budget to build crematoriums for Khmer compatriots, handle seriously polluting facilities in the public-utility area, and upgrade the environmental monitoring system) after ensuring non-business expenditure tasks according to the law. However, this is only a temporary and short-term solution. To thoroughly solve this problem, it is necessary to first amend and supplement the Law on Environmental Protection 2014. Expenditure tasks specified in Circular No. 02/2017/TT-BTC are limited, causing difficulties when proposing tasks to solve environmental problems that arise in the current situation and conditions.

3.3.2. Awareness and implementation challenges for green public procurement in Viet Nam

The weaknesses of green public procurement institutions are reflected in society's awareness, and especially in their inadequacies, problems and overlapping functions in the current mechanisms and policies.

[1] Although the awareness of green public procurement in Viet Nam has made strides, in general interest in the activity is still low (UNEP, 2015). The procurement habits of agencies and units are often based solely on price and product design with no understanding or analysis of green aspects. In addition, the priority for training for public procurement officials has not been addressed. Training programmes on green public procurement have only focused on awareness raising, not on how to integrate environmental factors into public procurement. Training programmes in Viet Nam are mainly organised by the Ministry of Natural Resources and Environment or the Ministry of Industry and Trade, and the participants are mostly experts

[79] Clause 5, Article 3 of Resolution No. 86/2019/QH14 dated 12 November 2019 by the National Assembly on the state budget estimates in 2020.

in environmental fields — public procurement experts are absent. Most public procurement training programmes have yet to pay attention to integrating environmental factors into public procurement. In addition, Viet Nam has no guidance on green public procurement, so methodical training faces many difficulties.

[2] Although there are regulations requiring the purchase of certain energy-efficient products or encouraging the purchase of green products, current policies and legal documents on public procurement and environmental protection still lack coherence and mechanisms for integrating environmental factors in the bidding process, and do not have sufficient monitoring, supervision and reporting on green public procurement.

The Bidding Law 2013 lacks the necessary regulations to promote green public procurement: (i) There are no regulations on the procurement of eco-friendly products nor on integrating green procurement into the preparation of bid applications, approval, bidding or approval of contractor selection; (ii) Environmental criteria are not considered as the main criteria to evaluate contractors; and (iii) There are no incentives for the procurement of green products. Thus, although the 2014 Law on Environmental Protection stipulates that state budget users shall prioritise the procurement of green products, the Bidding Law 2013 does not specify environmental criteria in the assessment and selection of contractors. Circular No. 06/2017/TT-BKHDT dated December 5, 2017 by the Ministry of Planning and Investment detailing the provision of bidding information and reporting on the implementation of bidding activities regarding contractor selection does not require reports on green procurement. The main contents of the report only include the number of bidding packages, bidding methods, types of products, total value of bidding packages, capital sources, training in procurement, bidding, and the capacity of procurement officials. The integration of environmental criteria into bidding packages goes almost unmentioned, so environmental criteria are often considered optional and ignored in most contractor selection cases.

Although the Law on Public Investment 2014 mentions environmental aspects and sustainable development, it does not directly address green public procurement; therefore, there are no documents guiding the implementation of green public procurement. Decree No. 84/2015/ND-CP dated September 30, 2015 on investment monitoring and evaluation specifies the responsibilities of stakeholders, including project environmental impact assessments/programmes. However, there is no requirement to supervise the contractor/supplier's fulfilment of green commitments during the procurement process, such as the use of green technology, engineering, equipment, green delivery, and services. There are no regulations on the supervision of procured goods and services for the operation of public agencies using the state budget. Consequently, Viet Nam does not have an effective mechanism for assessing whether selected contractors meet green production and consumption criteria.

There is still no common voice in issuing guiding documents for green public procurement. Unlike other policies, the policy for green public procurement in Viet Nam is mentioned in the highest type of legal document — the Law on Environmental Protection — but only at the level of "being responsible for prioritising the use of eco-friendly products and services certified with eco-labels". However, the by-laws are more detailed, providing for a "compulsory obligation" for green public procurement, such as the Prime Minister's Decision on procurement of energy-labelled products (Decision No. 68/2011/QD-TTg), and the Circular stipulating the use of unburnt materials (Circular 13/2017/TT-BXD). Yet, these policies are not really complete or closely linked to the regulations on public procurement, especially those related to public investment, bidding, and reporting and supervision of public procurement. There are no provisions of the Law on Public Investment and the Bidding Law or other legal documents on green procurement considerations during project preparation, ex-ante impact assessments, or appraisals, etc. The legal documents on public procurement and environmental protection remain distinct with no synchronisation. Therefore, the Circular on the Regulation on Green Public Procurement by the Ministry of Finance has not yet been adopted.

Resources for green public procurement are quite limited. The application of environmental policies and regulations often requires considerable resources, including manpower and finance. Projects supported by international organisations such as the World Bank or the Asian Development Bank have professional staff in charge of monitoring and evaluation to ensure environmental sustainability criteria are met. However, in Viet Nam, human resources to carry out this work in public procurement projects are insufficient and weak.

The mechanism for the recognition, supervision and evaluation of whether contractors are meeting green criteria is incomplete. The utilisation of green labels has not been promoted in Viet Nam[80]. For example, the new Blue Label is applied to six types of products: washing powder, light bulbs, printers, batteries and paints used in construction. However, four have expired (Viet Nam Environment Administration, 2017). All three popular types of environmental protection labels in Viet Nam today: Green Labels, Energy Saving Labels and Eco Labels are not yet specified as criteria for public procurement. In addition, public awareness of environmentally friendly products is not high in Viet Nam.

Also, public procurement agencies do not have a mechanism to supervise contractors in the entire process of providing goods and services, so the promotion of "green" criteria is still quite limited, mainly based on the personal views of people in charge, and applied in the form of direct procurement and self-implementation. Hence, green public procurement in Viet Nam is now at the pilot stage and focused on purchasing a number of products such as lighting equipment, electrical equipment, and electronics, etc., although some green public procurement initiatives have been implemented.

There is a lack of incentive programmes and policies for green public procurement. Current regulations on the selection of contractors in public procurement are based on low-price criteria but not on green aspects, which discourages agencies and units using the state budget. Existing policies mainly revolve around propaganda and awareness raising, or promotions and discounts, mainly at local level.

The main reasons for those shortcomings are:

[1] The fact that the prices of green products and services are often higher means that for countries unable to balance their finances, including Viet Nam, green procurement is a challenge.

[2] While green public procurement requires larger initial investment, public debt has increased rapidly and is at a high level, which means Viet Nam has to tighten public expenditure. Although Viet Nam's public debt level fell to 58.4% of GDP in 2018 compared to 63.7% in 2016 (Ministry of Finance, 2018), it was still at a high level, forcing the government to tighten public expenditure. In fact, public procurement finance tends to decrease compared to GDP. While in the period 2009-2011, the total public procurement expenditure accounted for an average of about 22.9% of GDP, it decreased to 12.4% of GDP in 2012-2018.

[3] The criteria for green products are very limited and only apply to certain categories of products. The ability to supply green-labelled products in Viet Nam is very limited. Firstly, this will significantly reduce the number of sectors that can conduct green public procurement since many sectors will not have certified green products. This situation will also cause significant difficulties when identifying green goods and services to be included in green public procurement regulations. Currently, there are only four groups of products certified using Viet Nam Green Label, focusing on four companies: (i) Fluorescent light bulbs of the Dien Quang Light Bulb Joint Stock Company (46 products); (ii) Paint used in construction paints of Jotun Paint Viet Nam Co., Ltd. (4 products); (iii) Fuji Xerox Asia Pacific Pte Ltd printers (2 products); (iv) Batteries of GS Viet Nam Battery Company Limited (2 products) (Nguyen Thu Ha, 2017). In addition, Viet Nam only has 13 products on the list of energy-saving devices and equipment procured by agencies and

[80] For example, the new green label is applied to 6 types of products including: detergent, light bulbs, printers, batteries, paint used in construction. However, the labels for 4 of these products have expired (Viet Nam Environment Administration, 2017).

units using the state budget (Decision No. 68/2011/QD-TTg dated December 12, 2011 of the Prime Minister). Enterprises are still reluctant to invest and develop technology and management methods to produce products that meet green labelling requirements. In addition, the majority businesses are of small and medium size and have limited resources. Thus, it is difficult for them to conduct product testing, evaluation and product verification to meet green criteria. This also poses a great challenge if implementation of the green public procurement policy does not develop an appropriate roadmap.

Vietnamese enterprises will have to compete more fiercely as the economy continues to open to international markets. The reality is that Viet Nam is conducting centralised public procurement, hence the bidding package is often larger than decentralised procurement. It is also subject to competitive bidding between domestic and foreign businesses under signed agreements. Therefore, if Viet Nam conducts green procurement while domestic enterprises are not ready to participate, it will create favourable conditions for foreign businesses that have advantages in capital, technology and environmentally friendly products. Obviously, these are potential challenges for large-scale green public procurement.

3.3.3. Extra-budgetary state financial funds for green growth are ineffective

Regarding the Viet Nam Environment Protection Fund: According to the Law on Environmental Protection, the operating capital of the Environment Protection Fund is formed from sources such as the state budget, environmental protection charges, compensation to the State for environmental damage, grants, contributions, and investment trusts of organisations and individuals at home and abroad. However, at present, the Fund's resources depend mainly on the state budget. Meanwhile, there is no capital transfer mechanism for funds that can be regularly supplement the Fund, such as environmental protection charges and compensation to the State for environmental damage. Environmental Protection Funds are often very cautious in choosing to approve borrowers due to their limited capital resources. Funds often have very strict regulations on lenders, as well as requirements for collateral. In the current situation, businesses investing in the environmental field face large initial investment costs, a long payback period, and complicated credit policy. Therefore, businesses that have the potential will invest by themselves or look for other credit mechanisms with more advantages and incentives than the Environment Protection Fund. As for businesses that need loans, they often cannot meet the lending criteria set by the Fund. On the other hand, the Fund's operations have not yet been highly effective. The identification of beneficiaries for support from the Fund's in local areas is not transparent. In addition, there are no unified guiding documents for the financial management regimes of local funds.

Regarding the Viet Nam Forest Protection and Development Fund: The financial autonomy and self-responsibility mechanism of the Viet Nam Forest Protection and Development Fund has not been clearly defined. In the decisions of the Provincial People's Committees on the determination of the Forest Protection and Development Fund as a public non-business unit, the Provincial Fund Management Board is usually autonomous and responsible for all activities of the Fund. Decree No. 16/2015/ND-CP dated February 14, 2015 by the government regulates the autonomy mechanism of public service entities, including autonomy in planning, in implementation of plans, in organisational structure, in personnel and finance. However, this is not applicable to the Forest Protection and Development Fund. In addition, the payment rate for forest environmental services is set in absolute, fixed numbers for hydropower production facilities at 20 VND/Kwh, and clean water production and supply facilities at 40 VND/m^3. However, there is no mechanism to adjust the payment for forest environmental services.

3.4. Recommendations

3.4.1. Increase recurrent expenditure for environmental protection and green growth

In the short term, it is necessary to increase recurrent budget expenditure for environmental protection tasks. The sources of increased spending on environmental protection should stem from increased mobilisation of revenue through environmental protection taxes, environmental protection charges, special consumption taxes and royalties. In the long term, financial resources for environmental protection must be based on investments and contributions from environmental operators and users (businesses, residents). Accordingly, along with spending from the state budget, there should be solutions to diversify domestic and foreign investment capital sources (mobilise financial resources through investment activities of enterprises in all business sectors). Financial resources should also be mobilised through financial institutions, the system of commercial banks, and the stock market (e.g. such as forming and circulating carbon and green bonds markets). There should be a focus on reviewing and creating a better market to encourage investment in green growth; for example, forming a financial capital market to invest in green growth to quickly increase social investment resources, including from domestic and foreign businesses.

At the same time, the 2014 Law on Environmental Protection and a number of policies and regimes need to be studied and revised to meet the new situation and continued international integration in accordance with practice and the laws on State budget, public investment and construction.

It is also necessary to promote socialisation in the environmental field according to Decree No. 69/2008/ND-CP dated March 5, 2008 of the government on policies to encourage socialisation of activities in the fields of education and training, vocational training, health, culture, sport and the environment; Decree No. 59/2014/ND-CP dated June 16, 2014 amending and supplementing a number of articles of Decree No. 69/2008/ND-CP diversifying the types of environmental protection activities, and encouraging the participation of businesses, organisations and individuals in environmental protection activities. Studies should be conducted on how to incorporate environmental protection funds (for example, the Viet Nam Environment Protection Fund) — whose revenues and expenditure tasks coincide with those of the State budget — into the State budget to increase resources for environmental protection (including recurrent expenditure tasks) and streamline management.

3.4.2. Green public procurement should become a mandatory requirement of public expenditure in Viet Nam

a. Completing green public procurement policy

Changing policy from "encouraging" to "compulsory" green public procurement, it is necessary first to amend Article 44 of the Law on Environmental Protection 2014 and Article 47 of Decree 19/2015/ND-CP. Accordingly, the phrase "responsible for prioritising the use of environment-friendly products and services certified with eco-labels as prescribed by law" is replaced by the phrase "responsible for using eco-friendly products and services with certified eco-labels as prescribed by law".

Green criteria for selecting projects and contractors should be added. The 2014 Public Investment Law stipulates that projects need to have procurement plans for green, energy and eco-labelled goods. Under the Bidding Law 2013 and the documents guiding the Bidding Law such as Decree No. 63/2014/ND-CP, it is necessary to supplement the criteria requiring public procurement goods to be labelled with green labels, energy labels and ecological labels. In the selected projects, the contractor needs to add green criteria.

Changing the method of green and ecological labelling towards post-inspection (such as the energy labelling organisation currently being deployed by the Ministry of Industry and Trade) to simplify administrative procedures and accelerate labelling. Accordingly, competent state agencies should only develop green label standards and eco-labels; manufacturers and suppliers will self-label based on the officially issued standards. State agencies will post-inspect, employing severe sanctions if manufacturers and suppliers are dishonest.

If it is not yet possible to amend and supplement the Law on Environmental Protection, the Law on Public Investment, and the Bidding Law, the Ministry of Finance and the Ministry of Planning and Investment shall coordinate with ministries, agencies and sectors in promulgating the following regulations to promote green public procurement:

Promulgating a Circular on regulations on green public procurement of eco-friendly products (i) Clearly defining the objects of green public procurement, implementation steps, products to be prioritised for public procurement, and incentives and sanctions for violations of non-compliance with regulations on green public procurement; (ii) Regulating agencies using the state budget to develop action plans on green public procurement which specify criteria and focal points for implementation; and (iii) Stipulating the mechanism for reporting results and annual monitoring mechanisms for green public procurement.

Promulgating regulations on the selection of contractors that integrate environmental factors into the process for selecting contractors: (i) Promulgating a regulation on rewarding points for products labelled with green, energy, and eco-labels, or products that include information such as: input materials (energy, water, raw materials, etc.), instructions on treatment after use, environmental management systems such as ISO 14,000, energy management system ISO 50,001, energy and environment auditing, waste management records, and environmental warnings; (ii) Provisions on integrating "green" bidding reporting mechanisms, including the percentage of bidding packages that are green goods in performance reports and the annual monitoring mechanisms on bidding.

b. Policies to promote green production of suppliers

First of all, to ensure that manufacturers of green products can compete fairly it is necessary to consider production-related aspects such as: (i) non-discrimination policy; (ii) policies to promote sustainable consumption; (iii) sustainable production policy; (iv) environmental protection policies and regulations in production and consumption; and (v) favourable legal frameworks and complete and transparent procurement systems.

In addition, it is necessary to develop more incentive programmes and policies related to green production, for example, preferential tax and credit policies to encourage enterprises to innovate science and technology towards sustainable production, as well as participate more actively in environmental protection activities, the issuance of policies to further promote the inspection, supervision and post-inspection of green labels, energy labels and eco-labels that manufacturers and suppliers administer themselves. After the above labelling is put into operation, criteria can be gradually increased to more complex and strict levels to ensure fairness and sustainability.

c. Mechanism for green public procurement

Developing green public procurement processes or mechanisms requires a 3-step process including the following stages: (i) before procurement; (ii) during the procurement process; and (iii) after procurement.

Procurement planning: Consider whether it is necessary to buy a product/service, or just repair or change the products being used, thereby minimising unnecessary financial costs, impact on the environment, and saving resources.

Defining requirements in bidding documents: Considering different environmental impacts throughout the life of the product, such as input materials, manufacturing processes, operating costs, GHG emissions, and the collection and handling of damaged, expired products.

Carrying out evaluation of bidding documents: If only goods with green, energy, or eco-labels are required, the evaluation of the bid only needs to be done through financial criteria and other points such as input materials (energy, water, raw materials, etc.), after-use treatment and handling instructions, environmental management systems such as ISO 14,000, energy management systems ISO 50,001, energy and environment audits, waste management records, etc., according to the defined scale. If there are no regulations on purchasing products with the above labels, it is advisable to consult an environmental expert and consider awarding points to green products.

Strengthening training and communication on green procurement in general and green public procurement in particular: Developing and issuing manuals, including specific contents on green public procurement processes and criteria for selecting green products in public procurement, etc., to support agencies and units.

Focusing on training and raising awareness of officials in charge of public procurement. These are the subjects that have the competency to make decisions, advise their leaders and develop public procurement plans for agencies and units. Therefore, they need to have a proper understanding of green public procurement. Promoting green public procurement through the media should also be conducted. Specifically, it is necessary to publish green public procurement regulations on public procurement websites under the Ministry of Planning and Investment, including bidding regulations, budget estimation regulations, and a list of green goods (products labelled green, eco-labels, energy labels and environmental-certified products).

To promote comprehensive green public procurement, it is necessary to overcome the current constraints on green procurement institutions. In particular, special attention should be paid on building a strong legal framework with a clear green public procurement process, identifying the roles and responsibilities of stakeholders in developing a public procurement and monitoring mechanism. Especially, it is advisable to redirect businesses to self-administer green labels, energy labels and eco-labels to create favourable conditions for enterprises, reduce costs and establish a system of green goods supply. Accordingly, post-inspection should be promoted to ensure the honesty and effectiveness of this mechanism. In addition, it is necessary to synchronise solutions to improve the quality of human resources, and to organise the dissemination of green policies and products in order to conduct green public procurement in Viet Nam as early as possible.

At the same time, it is necessary to study and promulgate economic and financial policies and mechanisms for the recovery and development of "natural capital" sources, encouraging the participation of all economic sectors to invest in service infrastructure. Ecosystems, environmental sanctuaries and their restoration have been impaired. The State prioritises and allocates a reasonable budget from the central government and local budgets to implement the green market strategy, especially for improving energy efficiency and renewable energy. Mechanisms and policies should be issued to encourage financial institutions, businesses, and especially SMEs to deploy production and business activities according to green growth criteria. Financial, credit and market instruments should be used to encourage and support the development of green economy and green products, moving towards building a management and transaction system for GHG emissions, carbon taxes and charges. The government should also encourage and attach importance to attracting loans, ODA and technical assistance from international partners and Vietnamese intellectuals living abroad.

The national set of green growth indicators needs to be completed and promptly issued. A number of indicators of green growth should be added to the system of socio-economic development indicators. Preparation should be made to complete and apply the set of green growth indicators to develop the socio-economic development plan for 2021-2025. The framework of the green growth economy should be completed. A policy framework should be developed for national budget allocation and management to serve the implementation of the green growth strategy. At the same time, the monetary policy framework (including taxes, charges, subsidies, funds, sanctions, green criteria, and sustainable development for companies listed on the stock exchange) related to promoting the implementation of the green growth strategy should be completed. Private support mechanisms should be developed to prepare and implement green growth projects.

3.4.3. Promoting financial autonomy and diversifying extra-budgetary state financial funds for green growth in Viet Nam

To promote the role of Viet Nam Environment Protection Fund in the pursuit of the green growth objectives, first of all, it is necessary to complete the legal framework for functions, tasks, organisation and operation of the Fund to promote the financial autonomy mechanism; ensure the principle that the Fund operates not for profit but must preserve charter capital and compensate for management costs from its own funds; and add functions of financial support from the Environment Protection Fund for sustainable development and climate change adaptation activities. At the same time, it is necessary to increase the charter capital of the Fund to ensure financial resources to implement the national environmental protection tasks and to solve the issue of capital investment for environmental protection. Currently, the charter capital of VND 1 trillion is considered to be low compared to the investment needs of environmental protection and climate change response. The increase in charter capital should be calculated on the basis of the capacity of the state budget. On the other hand, along with the annual supplement provided for in the current regulations, there should be a mechanism to mobilise social resources from domestic and foreign organisations and individuals.

Regarding the Viet Nam Forest Protection and Development Fund it is necessary to clearly define its financial autonomy and self-responsibility mechanism. At the same time, it is necessary to amend regulations on the payment for forest environmental services, taking inflation into account to ensure poor ethnic minority households are encouraged to participate in forest protection and development, contributing to improving the lives of people directly engaged in forest work in accordance with the Party and State's policy of socialising forest protection and development.

◆

Economic growth must go hand-in-hand with environmental protection – development must be sustainable. Financial policy is considered as an economic tool that plays an important role in green growth and developing the green economy towards sustainable development. Through financial policy and budget expenditure policy, the State influences the costs and benefits of persons and legal entities to adjust their behaviour and towards the goal of sustainable development.

In recent years, along with eradicating poverty through economic growth and narrowing the development gap with other countries in the world, Viet Nam has paid attention to environmental protection, integrating green growth and sustainable development goals in 10-year socio-economic development strategies and 5-year socio-economic development plans. However, Viet Nam is facing ecological degradation. Environmental factors (global warming and climate change) that have a strong impact on Viet Nam's socio-economic development have posed numerous challenges for economic development, especially in the agricultural sector, and have placed pressure on society, ecosystems, and water resources.

Therefore, monetary policy in general and spending policy in particular have been identified as an important tool for achieving the goals of green growth and sustainable development. Accordingly, the government should continue to prioritise allocating budgets for recurrent expenditure tasks on environmental protection and encourage individual units and consumers to use energy-saving products. The allocation of public financial resources should be supplemented by attracting resources from the private sector and international partners for public investment projects associated with green growth and climate change adaptation.

Part IV

Financial Market Instruments For Green Growth[81]

Financial markets are where securities, financial products and instruments are bought, sold and held. The most basic function of financial markets is to lead capital from where it is surplus to where it is needed. The role of financial markets, particularly the social market, in mobilising resources for socio-economic development is crucial. Green credit is used to finance or refinance green projects in part or in full, providing preferential capital with low interest rates for projects related to environmental protection, reducing greenhouse gas emissions and climate change response towards a green economy.

The green capital market includes businesses and organisations that issue shares to mobilise capital to invest in green or environmentally friendly activities. Financial market tools for green growth include debt instruments such as green credit and green bonds, equity instruments such as green stocks, and investment in the form of PPP.

Investment in the form of PPP for green growth is conducted on the basis of project contracts between competent state agencies, investors and businesses to build, renovate, operate, and manage public infrastructure, providing public services with the goals of minimising pollution and environmental impacts, adapting to natural hazards, ensuring sustainable development, and protecting environmental quality and human health.

[81] Assoc. Prof. Dr. Pham Tien Dat; Assoc. Prof. Dr. Pham Thi Hoang Anh; Duong Ba Duc, MSc.; Dr. Ha Thi Doan Trang; Ngo Anh Phuong, MSc.; Luu Anh Nguyet, MSc.

4.1. Using financial market instruments towards green growth targets in the international context and lessons for Viet Nam

4.1.1. Green securities

a. Green stocks

In fact, investors are increasingly interested in the stocks of businesses operating in the field of renewable energy according to green and sustainable criteria. Stocks of green businesses have more access to green investment funds.

The United States is the leading country in building a green stock market and green stock index. The Nasdaq stock market is a pioneer in the construction and publication of green stocks and the green stock index set in the field of clean energy, known as the "green index". The "Green index" includes stocks of enterprises operating in the field of economic development on the basis of carbon emissions reduction, typically the Clean Edge Green Energy Index (CELS)[82], which represents the level of market capitalisation designed to track companies that are mainly producers, developers, distributors or installers of clean energy technology. Nasdaq Clean Edge Green is based on CELS and is sponsored by First Advisors L.P. CELS components must pass strict screening tests: (1) They must be listed on the Nasdaq, NYSE or Amex; (2) Have a minimum market capitalisation of USD 150 million; (3) Have an average daily trading volume of at

Table 13: Typical green stock investment funds in the international context

Name	Total assets (USD billion)	Profit per year	Investors
BlackRock Global Fund	1,112	5.4%	Europe & USA
Pictet Clean Energy	767	5.38%	Europe & USA
RobecoSam Smart Energy Fund	636	16.27%	Europe & Singapore
Gugghenheim Solar ETF	373	25%	USA, China, Germany, Spain
Vontobel Fund New Power B	298	N/A	Europe
PowerShares CleanTech Portfolio	166	12.2%	US, Switzerland, Germany, England

Source: Renewable Energy Assets and Funds Report 2018

[82] https://cleanedge.com/indexes/stock-index/cels

least 100 thousand shares; (4) Have a minimum closing price of USD 1; and (5) Demonstrate the ability to capture clean energy growth potential. In addition to the Nasdaq stock market, the Nasdaq Green Economy Global Benchmark Index (QGREEN) is built for stocks in the field of efficient energy use, clean fuels, renewable energy, natural resources, water resources, environmental pollution reduction and supporting materials[83]. The S&P 500 Environmental & Socially Responsible Index (Encryption: SPXESRP[84]) is a set of S & P 500® environmental and social responsibility indexes designed to measure the performance of securities from the S&P 500 that meet environmental and social sustainability criteria.

Luxembourg: Since its inception in 2016, the Luxembourg Stock Exchange (LuxSE) has been a global pioneer, launching the Luxembourg Green Exchange (LGX). This is a stock exchange dedicated to green securities. Only issuers that adhere to strict standards and conditions can join the LGX. The issuer must ensure their securities are "green", which is evaluated by an independent third-party expert before being approved by the LGX. Issuing organisations must commit to fulfil their reporting obligations, report on the use of proceeds, manage cash flows from green securities and the expected impacts; and comply with the standards of the Climate Bond Initiative (CBI) and International Commodity Market Association (ICMA). The LGX is also the first stock exchange that requires periodic reporting after listing. The LGX enhances its entry requirements and requires periodic post-listing reporting to ensure issuers provide investors with complete transparency.

b. Green bonds

Green bonds can be issued in the form of financial services in the environmental sectors (renewable energy, efficient energy use, sustainable transport, sustainable resource management, etc.); or for social issues (housing, health, education, etc.) as in France. Green bonds can also be issued as green municipal bonds issued by local governments (South Africa). A green municipal bond was first issued in Africa in 2014 by the local government of Johannesburg, South Africa. Issuers of green bonds are diverse, and include development banks, large listed organisations, local and regional governments, state development issuers, IFCs, enterprises (South Africa, China, Singapore, Indonesia, Malaysia, Hong Kong) and commercial banks (China).

In order to support green bonds to work for green projects, several countries apply mechanisms and policies to support the formation and development of green bonds through measures such as issuance of a Manual on green bonds (France, South Africa); and financial markets providing preferential conditions for issuers (Singapore, China).

[1] Manuals

France has issued the handbook "Sustainable Development Bonds: Basic Characteristics and Best Practices for ISRs". Indonesia's financial watchdog also issued green bond requirements in 2017 in line with green bond principles of the International Capital Market Association and ASEAN. South Africa enacts a Code of Conduct to support investors, regulations on green bonds, and a Code of Responsible Investment.

Accordingly, institutional investors are encouraged to apply green bond-related principles such as: (i) Use of proceeds from the issue: South Africa has classified key sectors that meet the criteria to be funded and invested in by green bonds, such as renewable energy, energy efficiency, clean transportation, sustainable water management, waste management, land use, infrastructure, etc.; (ii) Project appraisal and selection process: The issuer needs to develop a decision-making process in which it is necessary to determine the suitability of the project using green bond proceeds. A standard South African bank will be selected by the issuer to ensure that the issuer follows the procedures

[83] Tran Thi Thanh Tu, Do Hong Nhung (2018), Developing green financial markets: International practices and practices in Viet Nam, http://tapchitaichinh.vn/nghien-cuu--trao-doi/trao-doi-binh-luan/phat-trien-thi-truong-tai-chinh-xanh-thong-le-quoc-te-va-thuc-tien-tai-viet-nam-135599.html.

[84] https://us.spindices.com/indices/equity/sp-500-environmental-socially-responsible-index

and that the project using the proceeds is a green one; (iii) Managing the proceeds: Issuing organisations are encouraged to hire independent auditors to acknowledge the allocated funding from the proceeds; (iv) Reporting: Green bonds are listed on the Johannesburg Stock Exchange and the issuer must comply with the transparent information disclosure regime on the Stock Exchange in accordance with regulations. The Johannesburg Stock Exchange appoints an independent organisation to advise on the development of a joint report template for green bond issuance. In addition, projects using green bond proceeds will be monitored and annual reports must be submitted. Indicators of environmental impact assessments must be provided in the report. These indicators are referenced based on international practices, for example the level of water improvement[85] and the reduction in emissions[86].

[2] Preferential policies

Singapore: To support green financial development, in 2017, the Monetary Authority of Singapore (MAS), which is equivalent to the national central bank, implemented the Sustainable Bond Grant Scheme. Specifically, MAS announced the programme to sponsor green bond issuers by exempting the charge for appraising green bond issuance plans for 3 years, from June 1, 2017 to May 31, 2020, which applied to issuers (enterprises and credit institutions) that satisfied the conditions set by MAS, such as: (i) Green bonds are issued in Singapore Dollar (SGD) and listed on the Singapore Stock Exchange (SGX); (ii) The value of the issue is at least SGD 200 million, the term is at least 3 years, and the bonds cannot be withdrawn during those 3 years; and (iii) Enterprises must make and submit independent evaluation reports or credit rating reports according to internationally recognised green bond issuance standards.

China is one of the developing countries that has had success in developing a green bond market by applying preferential policies, namely: (i) The People's Bank of China (PBoC) allows financial institutions to use green bonds as collateral to enjoy low-interest loans from the central bank. This is one of the reasons that commercial banks account for the largest proportion, up to 82%, in green bond issuance in China; (ii) Companies are allowed to separately and in syndicates to issue bonds on certain types of projects and in certain cases; and (iii) A number of conditions for issuing green bonds for businesses are adjusted, such as: (1) allowing the value of bond issuance to account for 80% of the total investment of the project; (2) allowing issuers to use green bonds to improve their capital structure; i.e., issuers are allowed to use less than 50% of the bond proceeds to pay off their bank debts and invest in working capital; (iv) shortening the approval time for green bond issues compared to ordinary bonds; and (v) requesting all bond issues to be appraised and controlled in accordance with the law to protect investors.

[3] Market confidence in green bonds

The success of the municipal bond issue in Johannesburg, South Africa, was supported by many factors. Since 2006, the Johannesburg Government established a Sinking Fund responsible for funding social projects to ensure market confidence when investing in green bonds due to the ten-year tenure of the government — green bonds usually have a maturity of 10 years. In addition, when issuing green bonds, 40% of mobilised capital is guaranteed by the IFC. In fact, before the issuance of green bonds, the city of Johannesburg had been implementing a successful process for issuing local government bonds and attracting investors, which facilitated propaganda for the green bond issuance. The city's credit rating is very high, reaching AA (Fitch's) and Aa+ (Moody's) and the city is keen to maintain this credit rating, ensuring successful bond issuance.

[85] The unit of assessment is pH.

[86] The unit of assessment is carbon.

Table 14: Institutions providing green credit in the international context

Financial institution	Name	Characteristics	Areas	Country
Public bank (owned by the government)	KfW	• Raising more than 90% of capital from capital markets, mainly bonds guaranteed by the federal government. • CIT exemption due to ist legal status as a public organisation. • KfW cannot compete with commercial banks, but only finances housing development and environmental protection.	The KfW energy-efficient housing standard has become the common standard in Germany. KfW encourages the development of photovoltaic (solar power) - a type of renewable energy that is highly indirectly subsidized thanks to the subsidized electricity tariff set by the 2000 Law on Renewable Energy. KfW also invests in community infrastructure such as public transport and sanitation.	Germany
Public limited liability company	Green investment group	The Green Investment Group was established in 2012 as a public bank under the British Government, and then sold to Macquarie Financial Investment Group (Australia) in 2017. The British Green Investment Bank has raised capital from the British Government, with an initial capital amount of GBP 3 billion and GBP 700 - 800 million annually, issuing shares to investment partners such as retirement funds, private equity funds and national interest funds.	Investing in green infrastructure: Offshore power generation projects, sectors related to infrastructure, carbon storage and processing, and energy efficiency improvement projects.	The UK
Green investment fund	New energy rationalisation fund	The Fund belongs to the Government of Korea under the National Strategic Programme related to energy and renewable energy.	Provides low-interest loans to both energy producers and consumers to increase investment in energy efficiency and conservation.	Korea

Financial institution	Name	Characteristics	Areas	Country
Commercial banks	Green banks	Encourages financial institutions to analyse environmental risks, including testing environmental stamina. Commercial banks are allowed to withdraw previously granted credit if businesses do not pay attention to or ignore environmental regulations.	Reducing the amount of credit financing for projects that consume a lot of energy and pollute the environment while increasing the amount of capital provided for environmentally friendly projects.	China
	18 Commercial banks	The government compensates the difference between the market interest rate and the concessional interest rate.	Provides loans for government-proposed projects that receive interest subsidies, typically energy efficiency, greenhouse gas emissions reduction projects, not-for-land purchases, and home construction and VAT.	Korea
	Commercial banks	Commercial banks implement a green banking strategy and policy framework as well as guidelines for environmental risk management.		Bangladesh

Source: Consolidated from Nguyen Thanh Phuong[87], Ha Van Hoi[88], Ho Ngoc Tu[89]

[87] Nguyen Thanh Phuong (2019), International experience in green credit growth, Banking Magazine, special topic 2019.

[88] Ha Van Hoi (2019), Green Credit Development of China and Viet Nam, Comparative Research and Some Policy Suggestions, Banking Magazine, Special Topic 2019.

[89] Ho Ngoc Tu (2019), Experience in developing green banking from countries around the world and some recommendations for Viet Nam, Banking Magazine, special topic 2019.

4.1.2. Green credit

Green credit can be provided by government-affiliated credit institutions (such as KfW), a public limited liability company operating in the financial sector (green investment corporation — UK), or green investment funds (Korea). However, the commercial banking system still plays an important role in providing green credit to the market. Countries such as China, Korea, Bangladesh, etc., are implementing policy measures to encourage commercial banks to participate more deeply and broadly in the development and provision of green credit. Currently, many banks in China have built up databases on the environmental risks of customers and increased credit for eco-friendly investment projects.

Green credit can be granted under green projects (Germany, UK, etc.) for businesses and organisations or as consumer credit for households. India implements green credit towards the development of green consumer credit; for example, when households are allowed to borrow at preferential interest rates if buying, using or manufacturing environmentally friendly products. Typically, the Central Bank of India (RBI) offers loans with preferential interest rates for households that borrow to buy houses under the "Green housing" project, in which the houses are certified by a specialised organisation and government agencies that they meet clean environmental standards[90].

Developed, emerging countries and developing countries tend to use different green credit development support mechanisms and policies. According to Park and Kim (2020)[91], developing countries have enacted mandatory regulations, requiring banks to conduct environmental and social risk assessments and report such activities to the management agency (China); issuing credit limits for sensitive areas to the environment and climate (Bangladesh, India). In contrast, developed countries have an optional, market-oriented approach that focuses on the disclosure of climate and environmental financial risks (UK, Sweden, and France, Australia, Japan, and the Netherlands).

Policy instruments supporting green credit can be grouped into four categories: macro-monitoring regulations, micro-monitoring regulations, market creation and credit allocation[92]. Green macro monitoring regulations aim to define environmental risk assessment rules applicable to financial institutions to minimise systemic risks caused by climate change. Green macro prudence tools are being adopted by developed countries such as the UK, the Netherlands and Norway, including environmental tolerance tests to capital market and banking rules, and establishing refinancing demand accompanied by conditions for green credit. The above measures are used to encourage banks to fully consider environmental issues when providing loans and to pay more attention to green credit. Micro surveillance regulations aim at strengthening the integration of environmental and social protection measures into the policies and activities of credit institutions.

Micro-monitoring tools typically include disclosure requirements related to environmental financial risks, the implementation of environmental and social risk management, and obligatory reserve requirements. For example, the Bank of Bangladesh adds bonus points to banks with good green banking performance when calculating the Camels ratio, which assesses and ranks banks' risk, and also considers additional criteria of green banking performance when licensing new bank branches. In Leba-

[90] In green credit activity, RBI currently has a limit of INR 150 million (about USD 2.2 million) as the maximum loan value for a borrower to invest in renewable energy projects. Given the current situation, the above limit is very small compared to the need to build conventional projects., In the future, the above limit should be adjusted to around INR 07 billion (about 100 million USD). This level of investment is suitable for a power project of about 100 MW.

[91] Park, H. and Kim, J.D. (2020), Transition Towards Green Banking: Role of Financial Regulators and Financial Institutions, Asian Journal of Sustainability and Social Responsibility, 5, Article number: 5 (2020).

[92] Dikau S, Volz U (2018), Central Banking, Climate Change and Green Finance. ADBI Working Paper Series 867, Asian Development Bank Institute, Tokyo.

non, commercial banks are exempt from compulsory reserves when lending energy-related projects under the Government's Renewable Energy and Efficiency Action Programme[93]. Central banks and regulators can also play a role in creating a green investment environment through the introduction of guidelines on sustainable finance, green finance, etc., to create supply and demand for the green financial market. Another commonly used group of tools is to apply credit allocation measures in the direction of providing credit for prioritised sectors such as agriculture, environment, energy, and water, etc. Conversely, credit is limited in areas that cause environmental damage.

In terms of support mechanisms, Korea is a country that has succeeded in promoting green credit that differs from other countries. Korea established the Korea Finance and Technology Group in 1989 — a non-profit government credit guarantee organisation. The institution acts as a credit guarantee system to deal with the lack of financial resources caused by banks' popular collateral-based lending. The Korea Finance and Technology Group supports enterprises with competitive and environmentally friendly technology, innovation and other knowledge-based business content at all stages of growth. The mission of the Korea Finance and Technology Group is to be at the forefront in transforming the Korean economy into one that prioritises innovation and reform. The Korea Finance and Technology Group is also the only financial institution that evaluates and grants Green licenses to businesses[94]. Companies that receive a good green license may receive special support from the Korea Technology Finance Corporation (KOTEC), such as increasing the amount of guarantee proportional to the number of green technology experts (KRW 30 million per expert), research support, development costs, and licensing charges.

4.1.3. Other market instruments

a. Investment in the form of PPP

Western countries were the first countries to apply green PPP in the construction of public infrastructure and services and have achieved certain results. However, there is no unified standard to apply PPP for green growth internationally and the conditions of each country are different. However, there are common characteristics.

[1] Legal obligations are established

Many countries have adopted legally binding methods to ensure the development of green PPP projects. The UK has promulgated specific laws such as the Public Contracts Regulations and the Utilities Contracts Regulations, and provides basic constraints as well as macro guidance for the application of PPP. The UK also provides guidance on procurement and management of PFI/PPP contracts and PPP cooperation, as well as guidance on public sector participation in PF2 project clause negotiation to control and limit stakeholder behaviour in PPP projects, regulate the responsibilities and rights of both parties, and ensure that the adoption of a green PPP model is standardised. Meanwhile, in order to increase the adaptability of PPP projects to different regions, Australia developed a flexible PPP legal framework. Based on the federal code guiding the operation and the federal policy issued in 2008, states may amend their policies according to state policy.

[2] Public — private relations are optimised

The cooperation of PPP projects is highly dependent on the possibilities of cooperation between government and business, especially in the public and

[93] Climate Change Coordination Unit (2014), Climate Finance Loan Schemes: Existing and Planned Loan Schemes in Lebanon.

[94] By 2013, 65% of green businesses had received support from the Korea Finance and Technology Group. From 2011 - 2013, the Korea Finance and Technology Group issued guarantees for green investments up to 10 trillion KRW (equivalent to USD 9.24 billion USD). Each company that receives a green license can apply for a guaranteed loan of up to 7 billion KRW (USD 6.49 million USD).

Table 15: Green credit development support tools in the international context

Policy intervention	Instruments	Purposes	Countries
Macro-monitoring regulations	1. Endurance test 2. Differential requirements for green capital 3. Loan limit 4. Loan restriction 5. Industry leverage ratio 6. Limiting liquidity	1. Assessment of the impact of climate risks on the financial system; 2. Assign a higher risk weight to carbon-emitting assets when assessing banks' capital to asset risk ratios; 3. Limit capital flows to industries or companies that exceed a specified carbon emissions target; 4. Limiting banks' credit to borrowers with high carbon emissions; 5. Limiting the use of financial leverage for assets with a carbon footprint; 6. Promulgating an incentive mechanism to link the regulations on the liquidity guarantee ratio and the net stabilization fund ratio with climate and environmental goals.	1. UK (under consideration for Implementation), the Netherlands, Norway 2. Brazil
Micro-monitoring regulations	1. Requirement of publication 2. Social and environmental risk management 3. Reserve requirement	1. To request the bank to disclose information on financial risks related to climate and environment; 2. Requiring banks to develop frameworks, standards and implement environmental and social risk management; 3. Lower reserve requirements for the bank's green portfolio to encourage green investment.	1. Belgium, Switzerland, UK, France 2. Bangladesh, China, Brazil, Colombia, Indonesia, Nepal, Mongolia, Viet Nam 3. Lebanon
Market creation	1. Sustainable financial principles 2. Guidance on green bonds	1. Provide instructions for banks; 2. Develop a set of guidelines on green bonds to encourage green bond issuance.	1. Nigeria, Brazil, Pakistan 2. China
Credit allocation	1. Credit limit 2. Green refinancing 3. Concessional loans for priority sectors	1. Requirements for a minimum bank loan ratio for sectors related to climate and environment; 2. Monopoly refinancing to encourage green financial initiatives; 3. Providing preferential loans, applying low interest rates, or subsidizing interest rate differences for banks that lend in fields sensitive to the environment and climate.	1. India 2. Bangladesh 3. Japan, Germany, Korea, India

Source: Compiled from Park and Kim, Nguyen Thanh Phuong[95] and Ha Van Hoi [96]

welfare sectors (green projects). In this regard, the experience of Germany and France in construction is very important. The Law on Promoting Public Private Partnerships, enacted by Germany in 2005, emphasises PPP as a useful transitional mechanism from the State taking full responsibility for public investment projects to the State sharing responsibility. France specifically emphasises that cooperation in PPP is equal. Therefore, in the operation of green PPP projects, the government and the public sector can bear the majority of the financial costs and create a favourable environment for private enterprises to develop their capacity to implement projects.

[3] A good market environment is established and strengthened

A good market environment is an important condition to promote production and this has a similar impact on green PPP development. France uses PPP not to reduce fiscal spending, but to increase efficiency and reduce administrative costs for businesses. A project is often participated in by many large reputable enterprises and meets the "Three P Criteria" [97]. This not only enhances competitiveness in the market, but also enhances the business ethics.

[4] Risk control and management in PPP is focused

The scale of green PPP projects is usually large, so during project implementation, effective risk control is important. Australia applies a two-step assessment of risk control: Verification of services need to ensure that top priority is given to regional and public development and identify the best possible supply method and projects for investment. For Canada, risk control for green PPP projects consists of three steps: (i) Risk compensation mechanism; (ii) Clarifying the parties' risk responsibilities (private sector responsible for operational risk, debt risk, technical risk and overspending risk; government agency responsible for legal risk political risk); and (iii) The project is feasible and operational.

[5] The necessary financial instruments to support the promotion of green PPP are appropriately applied

In the United States, the federal government identifies three financial instruments to support PPPs to reduce the burden on businesses, including: Private operations bonds, vehicle innovation credit packages, and water works renovation credit packages. Japan encourages socialisation to support green PPP project operation. Accordingly, the Japanese Government and private organisations have each invested JPY 10 billion to establish a limited liability company to promote the use of Japanese private funds for the purpose of financial support for green PPP projects.

In recent years, China has promoted the green PPP model in green foundation projects and has achieved good results. Green PPP projects are in a stable phase, operating on a small scale (below CNY 50 billion). Although China has achieved some results in implementing PPP in the field of environmental protection, there are still problems; for example, an incomplete legal framework for PPP. In addition, there are still mismatches between the government and enterprises in the cooperation process; the proportion of private enterprises participating in green PPP construction is low, mainly SOEs; there is a lack of transparency in disclosure of green PPP projects; and the rate of return and profitability of green PPP projects are not high.

---

[95] Nguyen Thanh Phuong (2019), International experience in green credit growth, Banking Magazine, special feature in 2019.

[96] Ha Van Hoi (2019), Green credit development of China and Viet Nam, comparative research and some policy suggestions, Banking Magazine, special topic 2019.

[97] Including adaptation to local conditions, and construction and economic development, with specific characteristics.

4.1.4. Lessons for Viet Nam

The premise for the development of financial market instruments towards green growth does not depend only on regulations[98], but also community awareness and consciousness[99], as evident in the case of France.

In order for green bonds to become as popular a capital channel as ordinary bonds, the standardisation of norms and practices to clearly identify and precisely quantify green features of funded projects/activities is essential. The general trend across countries is to adopt international best practices and standards. This can be done by government agencies (South Africa) or by professional organisations (France).

Green bonds are formed based on sectors and industries in which the government promotes green projects. Market growth has a significant influence on the types of green financial products deployed. In relatively highly developed markets such as France and South Africa, green bonds find buyers who are investors; for example, pension funds, investment funds, etc. In markets at a lower level of development (Brazil), green bonds should be issued in international markets. To ensure investor confidence in green bonds, measures such as credit guarantees for corporate green bonds by government agencies, or the establishment of reserve funds to repay green bonds of local governments (South Africa, Hong Kong), proved to be quite effective.

For the development and use of green credit instruments, countries tend to develop green banks as specialised institutions to promote and develop green credit. Green banks can exist in the form of specialised organisations, such as in the UK and Germany, but can also exist through integration with commercial banks such as in China, Korea, and Bangladesh. In general, to encourage green credit, central banks and regulators play an important role in encouraging the participation of economic entities and financial institutions in the market through policy instruments, macro and micro monitoring regulations, and credit allocation mechanisms in accordance with the characteristics of the national financial market. Environmental risk assessment guidelines are essential support measures, helping commercial banks fully assess environmental and social risks. The nexus between environmental risk and financial risk is often complex and is a significant challenge for small and medium-sized financial institutions.

Regarding the use of PPP for green growth, countries often focus on issues such as accelerating the formulation of PPP legislation for green growth and regulating the behaviour of governments and businesses; standardising selection criteria for green PPP projects and increasing the participation of private enterprises; strengthening databases and improving communication capacity; increasing risk management and reducing expected loss; closely evaluating the performance of green PPP projects and improving project profits; and establishing a PPP project management organisation to organise and strengthen professional work. To accelerate PPP legislation development for green growth and to regulate government and business behaviour, issues such as PPP application scopes, operational processes, risk sharing and the accountability-power relationship need to be standardised and clarified. After regulations have been enacted, relevant departments should also issue specific green PPP operating specifications for project implementation. In addition, to ensure the ultimate benefit of the project, it is also necessary to ensure the government's credit efficiency, limit dishonesty and strictly adjust business operations. These measures can increase third-party review mechanisms and public review channels to limit two-way behaviour to ensure contract validity. Long-term review mechanisms can also be applied to ensure project effectiveness.

[98] As required to report information on environmental and social impacts.

[99] As socially responsible investment.

The standardisation of selection criteria for green PPP projects and increased participation of private enterprises is also carried out by countries through the setting of certain standards for governance, business experience and corporate management qualifications in green PPP project tender and procurement processes. In addition, the government also develops clear technical standards for project performance and long-term assessment methods, ensuring the effectiveness of project activities.

Both government and businesses have also enhanced database development and improved communication capacity. The government can release project information in a timely manner by building an open, comprehensive information platform. This will help parties to proceed faster with projects. For businesses, it is necessary to proactively submit and promptly release relevant documents, actively cooperate with relevant departments for public review and monitoring, and strengthen communication with the government to provide timely feedback, reducing processing time and costs.

In addition, expected risk management and loss reduction should be based on an appropriate risk-sharing mechanism for the government and businesses, in which it is necessary to develop a pre-established risk assessment and relevant rigorous evaluation systems, using timely third-party adjudication to promote the reasonable allocation of risks. In green PPP projects, implementation and management of the business also helps to effectively manage risks, especially financial risks. Green project performance and profitability should be assessed through a rigorous and effective appraisal mechanism for green PPP projects.

In order to effectively develop and use financial market instruments, countries often strengthen international cooperation in the field of green finance. Strengthening international cooperation on the basis of consultation with investment funds and world financial institutions will help create opportunities for domestic financial systems to access international capital and build credit programmes with practical goals. For example, China has taken advantage of international cooperation, promoting a global consensus on green financial development within the framework of the G20[100] and promoting voluntary principles related to green credit and green investment.

Experience also shows that developed countries apply environmental financial risk information disclosure guidelines based on advice, guidance and standards from the Working Group on climate-related financial information disclosure, which operates under the G20 Financial Sustainability Board.

[100] International forum for governments and central bank governors from 19 leading economies, together with the European Union.

4.2. Financial market instruments for green growth in Viet Nam

4.2.1. Green securities

a. Green stocks

The green stock market in Viet Nam is still in the development stage. Authorities offer programmes and indicators to encourage businesses to focus on sustainable development. The main activities implemented so far can be divided into three categories: (i) Increasing market understanding of green finance; (ii) Encouraging the participation of businesses in green finance; (iii) Establishing and applying a sustainable development index for the whole market.

Market-wide understanding of green finance is enhanced through training on combining environmental, social and corporate governance factors. Since 2012, the State Securities Commission has cooperated with the IFC, the Global Reporting Initiative, the Hanoi Stock Exchange (HNX) and the HOSE to implement several capacity building training programmes for listed companies on disclosure of information on environmental, social and corporate governance factors. As part of the training programmes, the concept of sustainability reporting was introduced to listed companies in 2013. Up to now, the HOSE still regularly organises training courses on sustainable development and international reporting standards under the Global Reporting Initiative.

The participation of enterprises in green finance is encouraged in groups of activities such as: (i) Guiding enterprises to implement corporate governance reports: The State Securities Commission with the support of the IFC released a Guide on reporting the combination of environmental, social and corporate governance factors for listed businesses in 2016. Businesses can easily follow steps to implement corporate governance reporting, as the manual has detailed instructions as well as recommendations on the contents businesses need to include in order to produce a complete corporate governance report; (ii) The HOSE and the Securities Investment Magazine have given criteria for full disclosure of environmental, social and corporate governance factors, which has been a condition for voting the best business annual report since 2013. This award creates more motivation for businesses to disclose information about their sustainable development activities.

The Viet Nam Sustainable Development Index[101] (VNSI) for the whole market has been built and applied. Accordingly, at the end of March 2017, the HOSE announced the VNSI and officially put it into operation at the end of July 2017. The Index was researched and deployed by the HOSE in collaboration with GIZ and the State Securities Commission. Sustainable development assessment criteria are built on the basis of the set of international reporting standards for global sustainable development reporting, OECD's Corporate Governance Code of Conduct, and Viet Nam's Securities Law. The VNSI aims to: Define standards for sustainable development for listed companies; assist institutional and individual investors in identifying green businesses; increase sustainable development for the whole economy; define criteria for environmental, social and governance best practice; and add a new investment tool for the growth of the stock market and the economy.

[101] The Sustainability Index is a reference tool for individual and institutional investors and is used as a base asset for future investment products such as ETFs and index derivatives. Currently, the VNSI includes 20 businesses with the best sustainability scores listed on the HOSE in the Top VN100 calculated in real time every 5 seconds (similar to the VN-Index).

After three years of operation, the VNSI basket has received special attention from foreign investment funds due to its medium and long-term sustainable growth, its leading role in technology application, and environmental and social risk management standards. The total market capitalisation of the VNSI by the end of the third quarter of 2019 reached approximately USD 44 billion, accounting for 28.7% of the total market capitalisation of Viet Nam's stock market and equivalent to 18.48% of GDP[102]. The higher stability of the components in the VNSI results in higher average trading values of green stocks in this index set, around 4.4 times higher than other stocks. Holding green stocks in the VNSI basket brings long-term value and low risk to investors. In addition, the stock market is also an opportunity to access green capital flows from investment funds and international financial institutions, which also brings stability and sustainability to Viet Nam's stock market both in the present and in the future.

Thus, according to the operational framework of the State Securities Commission, Viet Nam, specifically the HOSE, has performed the following activities: (i) Conducted training on environmental, social and corporate governance factors; (ii) Conducted a sustainable development report (from 2016); (iii) Guided enterprises to make reports that incorporate environmental, social and corporate governance factors; (iv) Developed the VNSI; and (v) Applied minimum standards that incorporate environmental, social and corporate governance factors to enable businesses to go public[103]. These activities are equivalent to those of the stock exchanges of Hong Kong, India (the Bombay Stock Exchange and the National Stock Exchange), Singapore, Malaysia, Brazil and South Africa.

It can be seen that Viet Nam's green financial market is in a very early stage of development. There have been a number of activities and products introduced to the market, but they have not become an investment and development trend.

b. Green bonds

Currently, Viet Nam has no concept of green financial products or green bonds according to international standards. However, considering the nature of these products, on the Viet Nam stock market, bond products for green projects/buildings have begun to emerge. They include government bonds, government guaranteed bonds, and municipal bonds, whose mobilisation is used to fund irrigation projects, environmental protection, wind power, and solar energy[104].

In 2016, the Ministry of Finance approved the green local government bond pilot scheme and instructed relevant agencies to pilot implementation on the basis of the green bond market development project in the cooperation programme between the State Securities Commission and GIZ. Accordingly, green bonds are built to mobilise capital for green projects such as irrigation projects, environmental protection, and wind power, etc. HNX supports green bond issuers and pilot implementation in local areas in need of capital mobilisation. Ho Chi Minh City and Ba Ria — Vung Tau provinces are the two local authorities that have implemented this project. The bonds were issued in the form of municipal bonds with a term of 3-5 years. According to preliminary statistics, Ho Chi Minh City has issued VND 3 trillion of bonds for 34 projects, including 11 green projects based on the "Green Project Catalogue" issued by the State Bank; Ba Ria — Vung Tau province issued VND 500 billion of green bonds with a term of 5 years for 8 projects. These are all local sustainable development projects. The second phase took place in 2017, raising VND 2 trillion for 7 selected green projects. However, since then, there has not been another round of green bond mobilisation.

[102] Huu Hoe (2020), The attractiveness of green stocks.

[103] Circular No. 155/2015/TT-BTC dated October 6, 2015 on guidelines for information disclosure on the stock market.

[104] Nguyen Thi Hoang Lan (2015).

4.2.2. Green credit

The status of green credit development in Viet Nam from 2015 to present is assessed according to the following specific criteria: The size of green credit balance, green credit structure, the participation of entities in the green credit issuing process, green credit in relation to other green financial instruments, and the quality and diversity of green credit services.

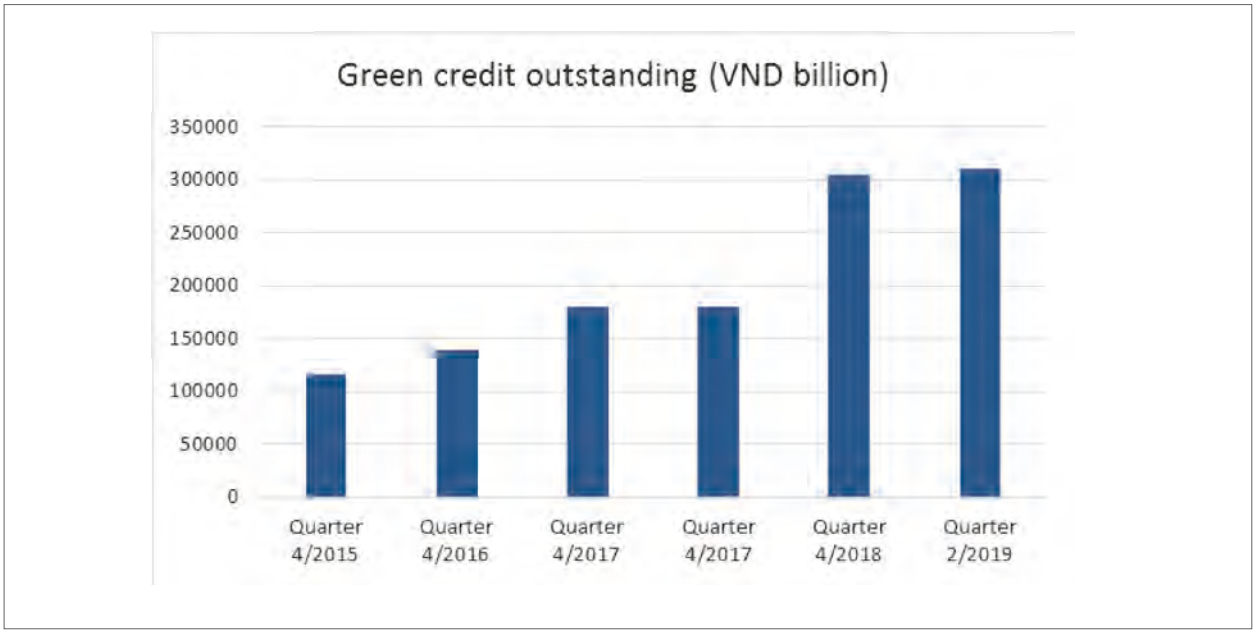
a. Green credit balance

Outstanding green credit has steadily grown over the years, increasing from over VND 71.02 trillion at the end of 2015 to more than VND 237.9 trillion at the end of 2018. This corresponds to an increase of 234.57% during 2015-2018, nearly three times the average credit growth rate in the same period. Green credit growth will continue until the end of the second quarter of 2019, with VND 310,600 billion of outstanding credit for green projects, an increase of 29% compared to 2018. Despite its rapid growth in recent years, the scale of green credit is still smaller than that of the entire system. The proportion of outstanding green credit loans increased from 1.55% of the total system credit outstanding at the end of 2015 to 4.18% at the end of the second quarter of 2019. The proportion of outstanding credit that has been assessed for environmental and social risks increased from 3.41% of total outstanding credit at the end of 2016 to 4.22% at the end of first quarter of 2019.

b. Green credit structure

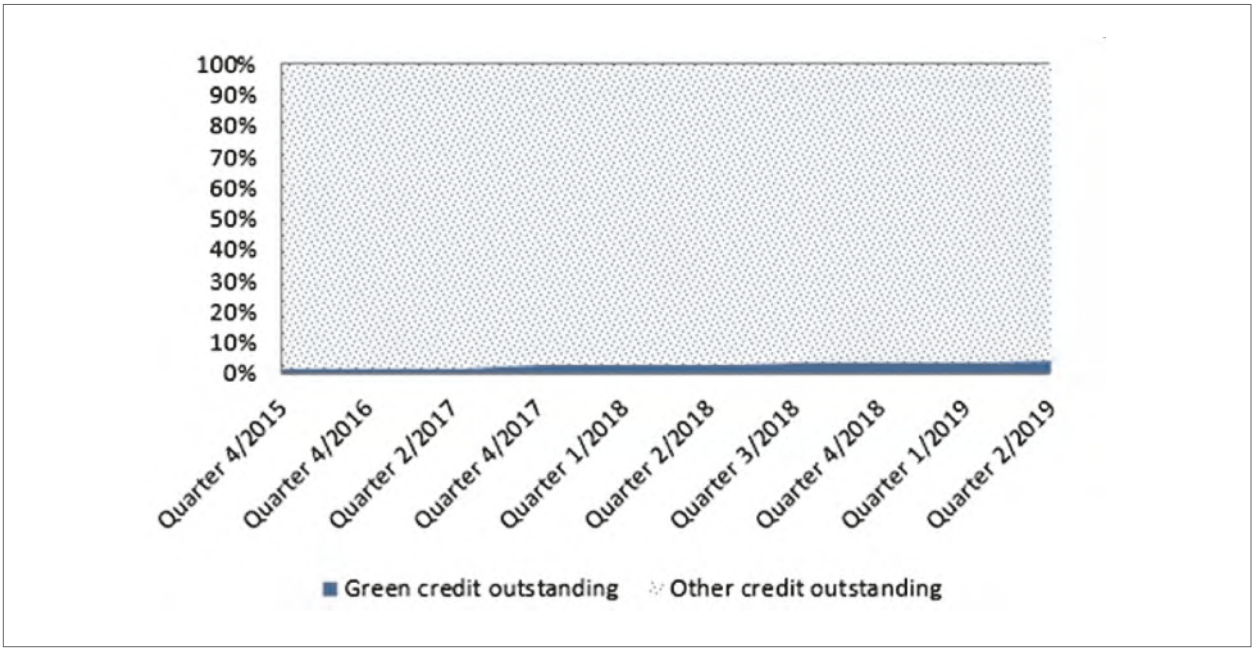
Outstanding green credit has been allocated mostly to green agriculture, mainly in the form of long-term credit. Accordingly, by the end of the second quarter of 2019, the credit balance in the green agriculture sector accounted for about 46%. The green credit structure is moving from sustainable water management in urban and rural areas to renewable energy and clean energy. Before the first quarter of 2019, the proportion of green credit in the field of sustainable water management ranked second, accounting for about 13% of the total green credit balance. The proportion of credit for renewable energy and clean

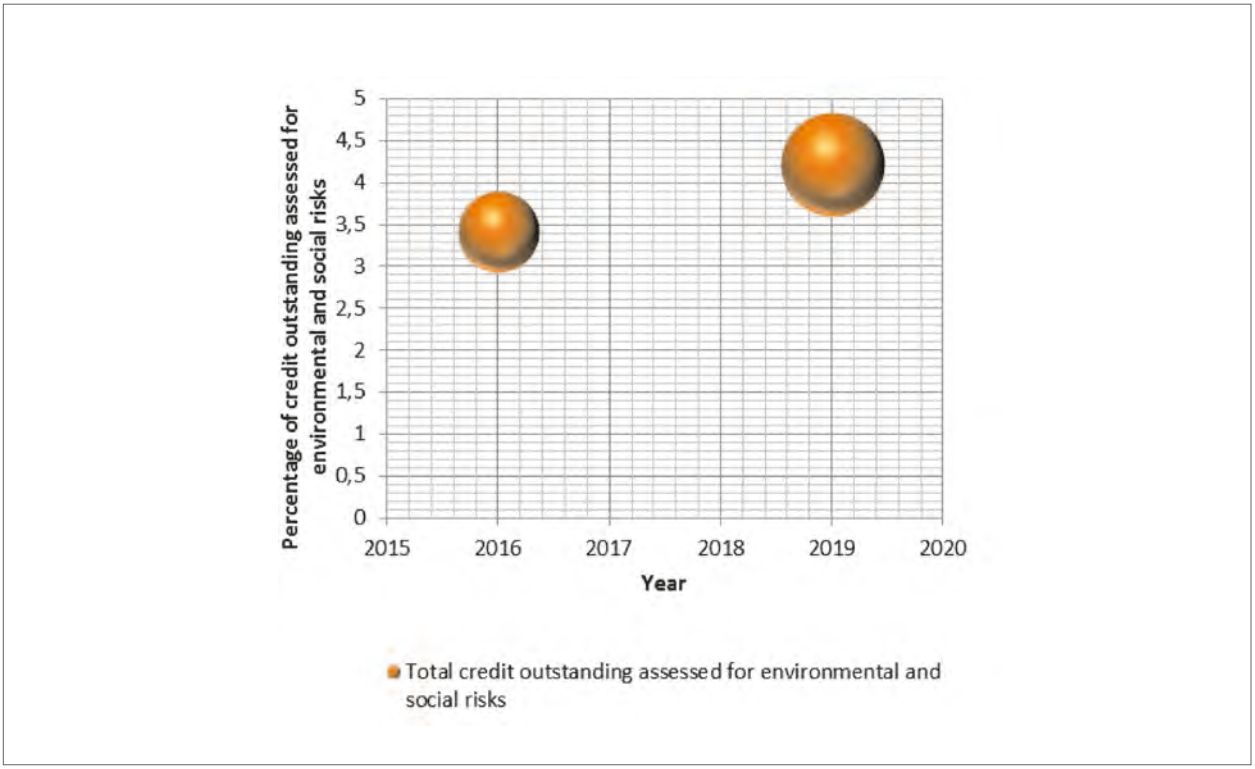
Figure 12: Green credit balance growth



Source: Credit Department for Economic Sectors, SBV

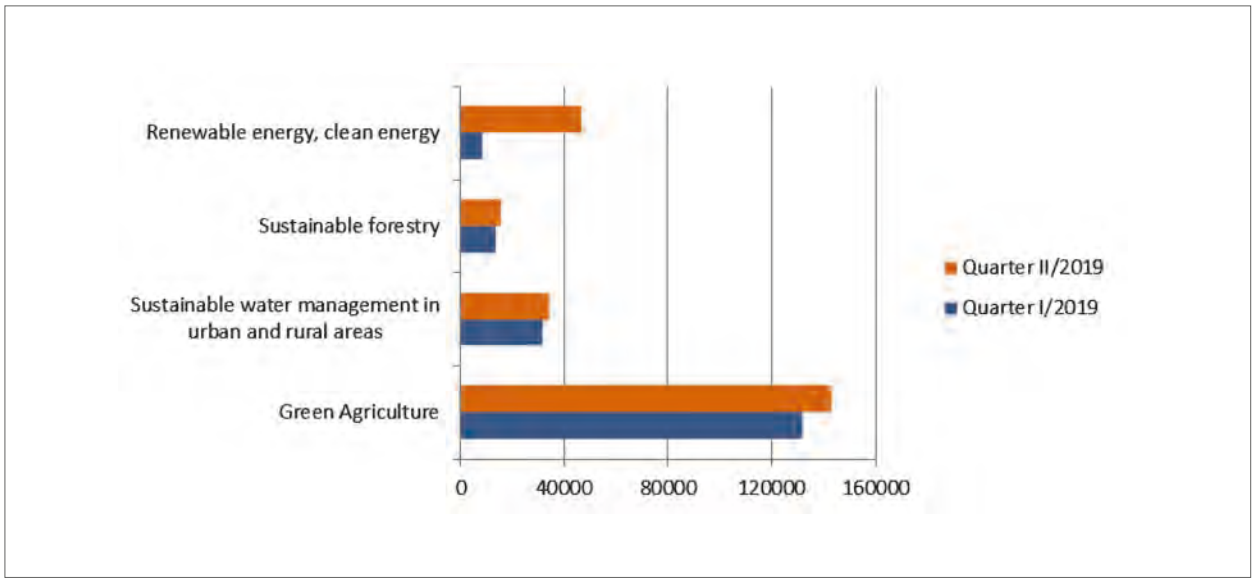
Figure 13: The proportion of green credit outstanding in total outstanding loans and the proportion of outstanding credit assessed for environmental and social risks





Source: Credit Department for Economic Sectors, SBV

Figure 14: Green credit structure by sector



Source: Credit Department for Economic Sectors, SBV

Unit: VND billion

energy is increasing significantly, giving it the second highest green credit balance by the end of the 2nd second quarter of 2019, equivalent to 15% of the total green credit balance[105]. Regarding terms, medium and long-term loans accounted for 76% of the green credit balance at the end of the first quarter of 2019.

Since 2015, banks in Viet Nam's financial system have made significant changes regarding green credit, from the perception of the role of green credit to the direction of organisational change towards green banking development in Viet Nam. Commercial banks do not only focus on the development of green products and services, but also on greening their internal operations, thereby contributing to reducing the use of paper, stationery, and electricity, etc. All these activities have contributed to achieving the green growth goals of each bank in particular, and of the banking industry in general.

Accordingly, credit institutions increasingly focus on environmental and social risk management in the lending process, and the number of credit institutions participating in green credit is increasing. Since implementation of Directive No. 03/CT-NHNN dated 24/3/2015 on promoting green credit growth and managing environmental and social risks in credit-granting activities, credit institutions have paid more attention to lending channels with preferential interest rates for projects on environmental protection, energy saving, renewable energy and clean technology. In 2016, only three banks had built internal policies on environmental and social risk management. By the first quarter of 2019, 19 credit institutions had developed strategies for environmental and social risk management, of which 13 have integrated environmental and social risk management into the green credit operation process; 10 have built bank credit products for green credit; and 17 have used a manual to assess environmental and social risks for 10 economic sectors. Generally, in the whole period, only a few major banks in the system, such as the Viet Nam Technological and Commercial Joint Stock Bank, the Viet Nam Joint Stock Commercial Bank for Industry and Trade, and the Saigon Thuong Tin Joint Stock Commercial Bank, have implemented official

[105] Data from the Credit Department for Economic Sectors, SBV.

policies and procedures to manage customers' environmental and social risks. The application and implementation of policies and procedures to manage environmental and social risks, creating a premise for the implementation of the green credit programme, were only really realised after the State Bank of Viet Nam issued the Guidebook on Risk Assessment for 10 Basic Manufacturing Industries[106] for credit institutions at the end of 2018.

Banks in Viet Nam are currently at a moderate level of development, equivalent to level 3 according to the 5-level green banking model launched by Kaeufer (2010)[107]. This means that the banking system in Viet Nam is operating systematically; most of the green banking processes and products are in line with green principles, and banks' organisational structures are designed to support green impact on 4 dimensions including people, process, principles and purpose.

On the business side, in the early stages of the green credit programme implementation, several enterprises lacked information on banks' green credit products of faced many difficulties regarding the requirements for green credit, the lengthy application process, complicated loan procedures, and a lack of collateral due to the fact that most businesses accessing green credit are SMEs. This is particularly the case for the requirement that projects must be proven effective, transparent, and experienced in green technology for at least one year, especially the requirement that they must prove the available market for their products.

c. Green credit in relation to other green financial instruments

The development of green credit in the past period has contributed to diversified green financial instruments. Green credit has quickly met the need for green capital for businesses, especially SMEs, while green bonds are still in the testing phase. The VNSI on the HOSE has just been launched and green investment funds in the market are limited.

The fact that bank credit capital is the main source of capital for the economy creates more pressure on green credit to meet the needs of green capital for businesses. International experience shows that green bonds are a key channel for raising capital for green growth and climate change. However, in Viet Nam, due to the limited bond market, it is difficult to develop a green bond channel right away. It is necessary therefore to implement a pilot green bond roadmap for the coming years. Green bond market development in Viet Nam is in the formative stage and still faced challenges from the limited development of the bond market in general, the lack of a legal framework, and a lack of standards and rules for development. Therefore, the source of green capital mobilised from the market depends on the flow of green credit, which poses a relatively large capital requirement for the banking industry. Green credit programmes are also challenged by the lack of green capital to mobilise for programmes because the capital market, especially the corporate bond market, is in the development stage and has many limitations. Meanwhile, during this period, Vietnamese banks have to deal with bad debt issues, banking restructuring, and credit growth pressure, which makes it difficult for them to give priority to green credit capital.

d. The quality and variety of green credit products

Green credit products in the market are increasingly used in a diverse way. They are developed by several banks and aim to diversify fields of investment. Some green credit products in the market such as: Loans under programmes aimed at implementing national strategies, such as the National Strategy on Rural Clean Water Supply and Sanitation, building

[106] Including: Agriculture; chemistry; infrastructure construction; energy; food and beverage processing; textiles; oil and gas; waste treatment and recycling; mining and the production of non-metallic mineral products.

[107] According to Tran Thi Thanh Tu, Ngo Anh Phuong, and Nguyen Thi Nhung (2019). Experimental study on the level of development of factors affecting green banking in Viet Nam, Banking Magazine, special topics 2019.

a new countryside and clean agriculture; loans for career development projects, such as forestry sector development, protection and development of coastal wetlands in southern Viet Nam, energy saving and efficiency, clean energy, and renewable energy development projects; and lending to SMEs (such as guaranteed loans for SMEs from Green Credit Funds). The Viet Nam Bank for Agriculture and Rural Development is a bank with a high green credit balance in the system that has participated in many projects related to environmental protection funded by the World Bank and financial institutions. These projects include improving the quality and safety of agricultural products and developing a biogas programme; a coastal resource project for sustainable development; natural disaster risk management; wind electricity; low-carbon agriculture support; and rural water supply and sanitation in the Red River Delta.

4.2.3. Other market instruments

Regarding investment in the form of PPP in Viet Nam, according to the World Bank, in the period 1994-2009, there were 32 projects implemented under PPP with a total committed capital of around USD 6.7 billion. In the period 1990-2014, Viet Nam had 95 PPP projects that had completed financial arrangements. Most of the PPP projects focus on the power sector (75 projects), seaport areas (7 projects), the telecommunications sector (4 projects) and the water sector (4 projects). Like other countries, the BOT and BOO (Build-Own-Operate) models account for the main share. Two sectors accounting for the largest share are electricity and telecommunications[108]. In addition, there are many other PPP projects that have been implemented from the 1990s to now, such as the BOT Co May bridge, the BOT Phu My bridge, Phu My power plant and many other small and medium power plants implemented under the BOO model. Regarding the BOT model, there are a total of 26 projects with a total investment of VND 128 trillion.

After the Prime Minister issued Decision No. 71/2010/QD-TTg on the regulation on piloting PPP investment which became effective from January 1, 2011, there have been four Decrees adjusting the details of investment activities in the form of PPP on the basis of corresponding regulations of other laws. The most recent one is Decree No. 63/2018/ND-CP dated May 4, 2018 on investment in the form of PPP (replacing Decree No. 15/2015/ND-CP). In addition, investment in PPP is also regulated in legal documents such as the 2014 Investment Law, and the 2020 Public-Private Partnership Investment Law passed by the National Assembly. In general, current regulations on PPP investment have been gradually completed and synchronised with many new items consistent with international practices. This has facilitated the implementation and management of PPP projects in Viet Nam.

However, in recent years, PPP investment still has several shortcomings, such as high investment costs, lack of local initiative, and lack of transparency in certain projects. According to the 2017 State Audit Report, over the past period most projects in the transport sector are under the form of contractor appointment, which reduces competition and entails potential risks in selecting incompetent investors. Many projects do not meet the quality requirements, with 56/75 projects upgrading, renovating and expanding roads funded from the state budget and only 19/75 new projects, which is far fewer than the target in the approved calling-for-investment portfolio[109].

[108] Nguyen Thanh Khiet (2019).

[109] Auditing data for 2017.

4.2.4. Mechanisms and policies to support the use of financial market instruments in Viet Nam

a. Due attention is paid on information disclosure

On October 6, 2015, the Ministry of Finance issued Circular No. 155/2015/TT-BTC replacing Circular No. 52/2012/TT-BTC guiding information disclosure on the stock market. The Circular took effect from January 1, 2016, stipulating that public companies must disclose information related to sustainable development. The revision of regulations related to sustainable development aims at aligning with international practice, enhancing companies' responsibility for the environment and society. This information can be included in annual reports or separately in sustainable development reports. However, this provision is only suggestive to increase enterprises' awareness and responsibility regarding information disclosure. No sanctions have yet been issued regarding the handling of breaches related to the disclosure of sustainable development information. Under current regulations, annual financial statements and mid-year financial statements of public companies shall be audited by an independent auditor. For sustainable development, the content of sustainable development can be integrated into annual reports. The law does not require auditing of annual reports.

In addition, to encourage businesses and raise their awareness about the implementation of the reporting and information disclosure regime, since 2008, for the first time on the Viet Nam stock market, there was a vote for the annual reports of listed companies. Since 2013, for the first time in the award structure, there has been an additional award for sustainability reporting. Sustainability reporting awards are scored on three different categories: the complete calculation award, the reliability solution award, and the presentation award. Participating in the judging committee were independent experts from the IFC and the British Association of Chartered Accountants. In 2016, there were 420 reports mentioning sustainable development, of which 77 reports entered the final round, including 51 reports by companies listed on the HOSE and 26 reports by companies listed on the HNX. Seven reports with sustainable development content were presented separately[110].

b. The institutional legal framework related to green credit is being increasingly completed

The National Strategy on Green Growth for the period 2011-2020 with a vision to 2050 approved by the Prime Minister on September 25, 2012 (Decision No. 1393/QD-TTg) has created an important legal turning point for the development of green finance and green banking, including green credit in Viet Nam. The Prime Minister then approved the National Green Growth Action Plan for the period 2014-2020. Accordingly, the banking industry continues the process of completing the legal document system guiding the adjustment of green credit activities as well as credit for sustainable development at credit institutions and financial intermediaries in Viet Nam. Accordingly, the legal documents are built focusing on the general direction for green banking operations, including green credit; and regulations on green credit and credit for sustainable development such as the list of projects to be financed under green credit, loan and guarantee principles, amount or interest rate and loan term. Notably, credit institutions have begun to include a requirement to comply with the Law on Environmental Protection.

However, the documents still do not provide specific requirements for credit institutions in Viet Nam to assess environmental and social factors when appraising credit. In addition, according to the roadmap, additional legal documents can add the requirement that customers applying for credit must provide in-

[110] Nguyen Thi Viet Ha (2015).

formation related to the project's environmental and social impacts. In particular, these evaluation reports shall be appraised independently/externally as a basis for an accurate and comprehensive assessment of the project's environmental and social impacts.

c. Developing green banking becomes an important part of the implementation of green credit instruments

The strategic framework and roadmap for the implementation of green banking are reflected in the bank's recent development direction, such as Decision No. 1552/QD-NHNN dated August 6, 2015 on the action plan of the banking sector to implement the National Green Growth Strategy to 2020 and Decision No. 1604/QD-NHNN dated August 7, 2018 approving green banking development in Viet Nam. Three specific targets for green banking development were set out: (i) Gradually increase the credit proportion for green sectors and fields; (ii) Promote technology application along with building environmentally friendly habits for customers; and (iii) Strive to ensure that by 2025: 100% of banks conduct environmental and social risk assessments in credit-granting activities and apply environmental standards for projects funded by banks; and 60% of banks have access to green capital and provide loans to green credit projects.

4.3. Challenges facing financial market instruments for green growth in Viet Nam

4.3.1. Advantages in developing and using financial market instruments towards green growth goals in Viet Nam in the past and in the coming period

The basic legal framework for the development and use of financial market instruments for green growth goals in Viet Nam is increasingly being completed

Currently, Viet Nam has a legal framework and basic policies to support the development of green capital markets, including the Environmental law, the Law on Environmental Protection Tax, the National Strategy on Green Growth, and the National Action Plan on Green Growth in the period 2014-2020, etc. The most specific and detailed is the Action Plan for the Finance sector to 2020 to implement the National Green Growth Strategy. These regulations and policies contribute to the creation of a strong legal foundation and policy direction for the development of the green capital market in Viet Nam.

Technological infrastructure for the financial market has been developed

Viet Nam's stock market has been through 15 years of development. Information technology infrastructure has been developed in a modern and methodical way to ensure the execution of order matching, clearing, and settlement transactions with large volumes. On the HNX, government bond bidding is completely electronic, thereby shortening bidding times as well as increasing the ability of investors to access information and participate in bidding. In addition, the development of central clearing partners within the framework of solutions to develop the derivative stock market has also contributed to further modernise the technological infrastructure of the market, helping to clear and settle transactions quickly, and reduce risks. Currently, Viet Nam's stock market has also implemented an electronic information disclosure system whereby public companies – except securities companies and securities investment fund management companies – only need to send reports and disclose information electronically via the electronic information disclosure system to the State Securities Commission. This contributes to reducing costs and increasing the efficiency of information disclosure for public companies in the market.

Viet Nam has received considerable support from international partners

As one of the countries most affected by climate change, Viet Nam receives significant support from international partners in finance, technology, and access to experts to respond to and overcome the consequences of climate change. In the securities sector, Viet Nam receives active and effective support from foreign partners; for example, the German Government's support implemented by GIZ for the research and development of green financial products; and IFC's support for the research and development of sustainability reporting guidelines and regulations. The scoring and awarding initiative for the annual reports of listed companies hosted by the HOSE in recent years has also received active cooperation from domestic and international professional technical partners. This has provided Viet Nam with the opportunity to learn from international experience in green capital market development.

4.3.2. Shortcomings and difficulties in developing and using financial instruments for green growth in Viet Nam

The growth of financial market instruments is not sustainable

Green credit growth in Viet Nam is not sustainable. The banks' balance sheets are mainly derived from short-term capital. Therefore, there is a lack of medium- and long-term capital to invest in green projects. In addition, the economy lacks medium- and long-term capital mobilisation channels to support green credit programmes. Currently, green credit flows are largely based on internationally funded projects and programmes. Financial sources for green credit are mainly derived from the Green Credit Trust Fund[111] or from the IFC. In the long term, it is difficult to maintain growth in green credit without addressing the issue of raising capital for green credit programmes. The driving force of green credit growth in Viet Nam from 2015 to now has mainly come from the policy orientation of the State Bank rather than the development needs of commercial banks.

In countries with developed financial markets such as the United States and the EU, the driving force of green financial growth, including green credit and green bonds, mainly comes from the investment needs of the market, which makes investment decisions with an awareness of sustainable development and corporate social responsibility. On that basis, investment flows into green and developed sectors are increasing and require businesses to prove green and environmentally friendly production as well as their capacity to meet investment demand. In contrast, in Viet Nam, green credit growth in the past period has mainly been the result of policies and requests from the State Bank for credit institutions in the system. The rapid growth of green financial debt balance in Viet Nam is mainly due to the attractiveness of incentives for green credit and policies that require banks to provide green credit.

Lack of overall green standards

The development of green benchmarks and criteria is one of the most important factors affecting the success of the green capital market. Viet Nam has yet to develop general definitions and standards of green finance and green financial products. For example, on the stock market, there is still no agreement on the basic concepts of green finance, green bonds, or green stocks. This creates difficulties in developing identification standards and mechanisms to encourage listing, issuing and raising capital through green securities products[112]. Another example is that the State Bank has collaborated with the IFC to develop a manual system of environmental and social risk assessments for a number of industries such as agriculture, chemicals, infrastructure construction, food and beverages, garment exports, leather and textile products, oil and gas, and waste treatment and recycling. However, these documents are only for reference and are not compulsory when evaluating and appraising projects.

Investing in PPP has several potential risks

Investment in PPP implies that the public sector loses management control and is therefore difficult to accept from a political perspective. Does the public sector have the capacity and skills to adopt a PPP approach and establish a legal environment for adequate incentives? Does the private sector have the professional qualifications to ensure the implementation of PPPs? These are the concerns and therefore absolute risk cannot be transferred. Besides, procurement can be time consuming and costly, and the

[111] The Fund is an initiative of the Swiss Government for a number of developing countries, including Viet Nam. The Fund will provide financial support for SMEs in Viet Nam, mainly for projects that update technology to become environmentally friendly. The Fund's support mechanism includes two parallel forms: guaranteeing 50% of credit loans for technological innovation at commercial banks and paying a bonus of 15% or 25% of the total credit disbursement when the environmental impact after the investment project is assessed as satisfactory.

[112] Nguyen Thanh Long (2015).

long-term structures are relatively inflexible. In short, investment activities in the form of PPP in general and green PPP in particular all face risks in the project development stage as well as financial risks.

4.3.3. Causes of the challenges posed to financial market instruments for green growth

Legal regulations are sporadic, out of date, and incomplete

Regulations on the environment, green growth, and sustainable development have received attention from state management agencies but are still sporadic due to the large number of documents issued by various regulatory agencies. At the same time, there are no regulations on joint liability between parties following an environmental incident. Current legal regulations do not require credit institutions to consider the environmental and social risks associated with credit loans. Directive No. 03/CT-NHNN only guides and encourages credit institutions to actively observe; however, it lacks the necessary legal and technical guidelines for banks to comply with or apply regulations. Therefore, most of the current credit loans have not been assessed for environmental risks. The United States is one of the pioneers in enacting the Comprehensive Environmental Compensation Act, which outlines the responsibilities of all stakeholders, including polluting businesses and banks granting loans for works and projects causing environmental pollution.

Despite the development orientation of the green bond instrument over four years, the legal framework and guiding documents on green bonds have not been issued. This leads to difficulties for entities who want to issue green bonds to raise capital when there is no information about Viet Nam's green bond standards or procedures for green bond issuance. The lack of specific legal documents on green bonds causes concern among investors about the transparency of capital disbursement, the level of commitment to sustainable projects, and the interests of investors.

The legal regulations on PPP are regulated in several documents. Investment in PPP is specified in Decree No. 63/2018/ND-CP, in which certain content is subject to other laws such as the State Budget Law, the Investment Law, the Public Investment Law, the Enterprise Law, the Land Law, the Construction Law, the Management Law, and the Law on Management and Use of State Property. At the same time, there are no specific regulations for implementing PPP projects in general or for green PPP projects in particular; the Law on Investment under the public-private partnership model was recently passed by the National Assembly on June 18, 2020 and has not yet come into effect. Experience in implementing PPPs internationally shows that the lack of consistency in laws and lack of implementation guidelines are the factors that contribute to the failure of PPP projects. Special attention should be paid on provisions for financial responsibility of government financial assistance and interest rate mechanisms. There should also be clear regulation on the state agencies in charge of implementing PPP projects. In addition, the prerequisite for mobilising investors to implement PPP is the opportunity to earn profits. However, some businesses are still concerned about the loan guarantee obligations of the government and the capital contribution ratio in a PPP project[113].

Tax incentives for PPP show that corporate income tax incentives for PPP projects are too widespread. This reduces the meaning of tax incentives and creates opportunities for tax evasion and avoidance, eroding budget revenues. In addition to corporate income tax, PPP projects are also entitled to land

[113] Ben Darche – international expert on PPP.

rent exemption and reduction policies. According to Decree No. 15/2015/ND-CP and inherited in Decree No. 63/2018/ND-CP, PPP projects are exempted from or entitled to a reduction of land-use charges for the land area allocated by the State for the duration of project implementation in accordance with the Land law. This change is aimed at ensuring that land rent incentives are consistently implemented in accordance with the Land law. However, according to Article 110 of the 2013 Land Law, the exemption or reduction of land-use charges and land rents shall comply with the Law on investment. Having said that, the Law on investment has yet specified which cases are exempt, and which land rent is reduced, making it difficult for local authorities to determine exemption, land-use levies or land rents for investors when implementing a PPP project[114].

Lack of uniformity in green criteria

The growth of green credit should be linked with the development of green financial instruments, green investment projects and towards green growth. The current green monetary policy market and green capital market development policies are based on green criteria to incentivise, encourage and attract investment, but the content of green criteria in policy is still inconsistent and lacks uniformity. While the legal framework and green financial policies have been established since 2004, it was not until 2017 that the list of priority projects for investment under the Targeted Programme to Respond to Climate Change and Green Growth in the 2016-2020 period was issued. Up to now, the criteria for green projects are still not clear; guidance on the list of green sectors and fields is still general, and there are no specific criteria for credit institutions to use as the basis for selection, appraisal, evaluation and monitoring when implementing green credit. If there are more specific and clearer criteria for green investments or green financial instruments, banks can issue green bonds to finance green banking projects themselves without worrying about the regulation on using short-term capital to provide medium and long-term loans. Also, banks would have a basis for convincing investors to raise medium and long-term green capital for green credit.

Funding to implement green growth instruments for green growth is limited

The capital needed to implement green credit is huge. However, banks in Viet Nam are still facing challenges from dealing with bad debts, banking restructuring, credit growth pressure, pressure of mobilising capital meeting Basel II standards, and pressure from regulations in Circulars prescribing prudential ratios and limits in the operations of credit institutions and foreign bank branches[115]. Therefore, in the past period, green credit has remained mostly concentrated at the Viet Nam Bank for Social Policies and the Bank for Agriculture and Rural Development of Viet Nam, who provide loans related to rural development, including activities related to green credit according to the guidelines and policies of the State Bank of Viet Nam. To create capital for green projects, the credit institution system needs to add medium and long-term capital to the green credit programme. Medium and long-term funds for green credit need to be mobilised from the capital market, which requires the promotion of investment funds (such as pension funds, trust funds, corporate bond market development, etc.) and the participation of foreign green investment funds in Viet Nam.

Awareness of green financial products is limited

The investment community's experience and understanding of green financial products is low regarding investment activities on the stock market in general as well as green financial products in particular. Although the policy direction on capital markets for green growth in Viet Nam has been clearly established, public awareness and interest in green financial products is still very limited.

[114] Assoc. Prof. Dr. Le Xuan Truong, http://thoibaotaichinhViet Nam.vn/pages/thue-voi-cuoc-song/2020-03-27/can-hoan-thien-chinh-sach-uu-dai-thue-cho-du-an-ppp-84456.aspx.

[115] Circular No. 19/2017/TT-NHNN, Circular No. 36/2014/TT-NHNN, Circular No. 36/2016/TT-NHNN.

The participation of institutional investors is limited

Institutional investors, especially long-term investors, play an important role in the development of green financial instruments. In addition, institutional investors are also the driving force for promoting new financial products and ideas, promoting modernisation of the financial sector as well as transparency and effective corporate governance standards, bringing several benefits to the development of the market. In developed markets, long-term capital from pension funds managed by professional asset management companies plays an important role in the stock market, while in Viet Nam there is only the Social Insurance Fund, which is managed by state agencies and has not yet participated in the stock market.

According to statistics from the Viet Nam Securities Depository, as of October 2016, there were more than 1.6 million securities investment accounts on the market, of which the number of domestic institutional securities investors reached 7,244 (0.4%) and foreign institutional investors 2,463 (accounting for 0.15%). Among the 8 investors with the largest portfolio value on Viet Nam's stock market today (holding 40% of the total market capitalisation of the listed market), four are state-owned investors with portfolio values accounting for 84% of the total value. The number of professional institutional stock market investors with large portfolio values and investment capital not from the state budget remains low.

There is a lack of professional organisations

According to the experience of other countries, in order to increase the reliability of green financial products, the assessment and assurance of independent parties outside the business community (environmental research organisations, audit firms, etc.) is very important. The lack of credit rating agencies is one of the difficulties hindering the development of the corporate bond market in recent years, not to mention the lack of independent intermediary organisations providing consulting and evaluation services, and ensuring the greenness of products. This makes it difficult to introduce green financial products to the public or ensure the reputation and objectivity of green financial products.

From an objective perspective, the above phenomenon stems from the following reasons: (i) Legal documents and environmental standards on the operations of enterprises in Viet Nam are insufficient and inconsistent; Viet Nam has not built a national environmental data bank; there is no legal document to specify who is mandated to carry out environmental audits (in the case where enterprises or organisations are required to be audited); the professional audit association has not coordinated with environmental agencies and organisations to develop their own process and methods for environmental audits; and (ii) There are no regulations or guidelines related to environmental accounting in enterprises, so information serving environmental audits is limited.

Experience, skills and knowledge on implementing environmental and social risk management is limited

The application and implementation of environmental and social risk management requires financial institutions, investors, relevant agencies, ministries and sectors to meet requirements regarding institutional capability as well as human resources capacity for senior management and staff. To manage environmental and social risks, banks are required to develop the internal capacity to identify and assess environmental risks during project appraisals and enhance expertise and skills for employees to implement loans related to green credit.

Currently, the capacity of credit officers to assess environmental and social risks is limited and mostly limited to checking loan applications to see if there is an approved environmental impact assessment. Some will examine the waste discharge technology and migration plan (if any) of the plan/project, which is mostly based on the experience of the appraiser. The effectiveness of this appraisal is still controversial when in fact many production/business projects have had to be stopped due to negative impacts on the environment, which directly affects banks and credit institutions. In general, environmental impact assessment reports for most projects have not yet prevented environmental pollution. Economic organisations focus on economic benefits, disregarding environmental protection.

4.4. Recommendations for financial market instruments for green growth in Viet Nam

4.4.1. Opinions, orientations and legal provisions on mechanisms to support the use of financial market instruments for green growth in Viet Nam

The perspective and direction for developing green growth tools for green growth in Viet Nam are reflected in legal documents such as the Viet Nam Strategy for Sustainable Development for the period 2011-2020[116], Decision No. 1393/QD-TTg approving the National Strategy on green growth for the period 2011-020 with a vision to 2050, Decision No. 403/QD-TTg on the National Green Growth Action Plan for the period 2014-2020, and Decision No. 403/QD-TTg on the National Green Growth Action Plan. To achieve the goal of developing green capital markets and green financial products, the Prime Minister issued Decision No. 1191/QD-TTg dated August 14, 2017 approving the roadmap for developing the bond market for the period of 2017-2020 with a vision to 2030.

The development orientation of green growth instruments is detailed in the financial policy framework for green growth. The Ministry of Finance is assigned to take lead and coordinating with the Ministry of Planning and Investment and the Ministry of Natural Resources and Environment to develop those orientations. The orientations for green financial markets include: (i) Developing a monetary policy framework including taxes, charges, subsidies, funds, sanctions, green criteria, and sustainable development criteria to serve the implementation of the green growth strategy; (ii) Improving institutions to strengthen the financial and credit activities of commercial banks to serve green growth as a high priority. The main contents include: Reviewing and adjusting credit institutions to suit green growth goals and organising training and capacity development to strengthen the capacity of commercial banks and financial institutions; (iii) Continuing to promote green capital market products including: Green bonds, government bonds and local government bonds for green goals, green programmes, projects, green indicators, sustainability indicators, carbon indicators; and green investment certificates issued by investment funds; (iv) Developing a green financial framework for capital markets such as: Promulgating regulations and conditions for listing shares (green listing), reporting (sustainability reporting) and monitoring (according to the green financial indicators).

The Vietnamese Government's opinion on green capital market development is to build and develop the bond market in accordance with the level of the country's economic development and in sync with other components of the financial market, including the stock market and the bank credit — monetary market; develop the bond market in width and depth, ensuring the safety of the system, gradually approaching international practices and standards and modernising market infrastructure, making the market an important channel for mobilising medium and long-term capital for the economy at a reasonable cost; continue to focus on developing the government bond market as the foundation for the development of the bond market; promote development of the corporate bond market, create favourable conditions for businesses to mobilise capital, especially medium and long-term capital, contribute to strengthening corporate governance and corporate information disclosure; and enhance openness, transparency and protect the legitimate interests of market participants.

For green credit, the point of view in the coming period is that the State Bank and related regulatory agen-

[116] Decision No. 432/QD-TTg dated April 1, 2012.

cies should continue to synchronise solutions to: promote the banking sector's operations in responding to climate change; strengthen resource management and environmental protection; increase social awareness and responsibility of the banking system for environmental protection and climate change prevention, gradually implement greening banking operations, directing credit flows into environmentally-friendly projects, promoting green manufacturing, services and consumption, clean energy and renewable energy; and contribute positively to promoting green growth and sustainable development.

Accordingly, it is necessary to develop and complete a legal framework guiding the implementation of green credit for credit institutions, providing green credit standards, and a list of green sectors and fields for general and unified application, thereby serving as the basis for credit institutions to select, evaluate, appraise and monitor projects when granting green credit. Environmental and social risk assessment guidelines should be further studied and completed for the sectors that do not have guidance on the credit granting activities of credit institutions. Resource-oriented solutions should be developed to provide credit for business-production projects and plans using advanced scientific and technological achievements; using energy economically and efficiently; developing clean energy and renewable energy; using environmentally friendly technologies and equipment, and producing environmentally friendly products. In addition, it is necessary to continue to mobilise resources to implement green credit policy in Viet Nam, including state budget sources, long-term concessional capital sources from international financial institutions, and capital mobilised through green bonds to finance large-scale, energy-saving renewable energy projects.

4.4.2. Financial market instruments should be used for green growth in the coming years

General recommendations for developing financial market tools

In the context of rising public debt, increasingly limited and more expensive foreign capital, the increasingly adverse impacts of climate change on Viet Nam, and the increasing pressure on green finance, it is necessary for Viet Nam to optimally design preferential policies that are comprehensive enough to motivate changes in consumption and production behaviour towards a green economy.

South Korea failed to promote private investment in the clean energy industry due to insufficient incentives. According to a report by the Korean Ministry of Commerce, Industry and Energy (2015), the development of domestic core technologies in this industry is still at an early stage. The low incentives for the clean electricity sector cause the country's fossil fuel consumption to continue rising and made it difficult to increase clean energy supplies[117]. In the early stage of the transition to a green economy, the state budget plays an important role in initiating investment activities, providing financial support for the transformation of green economy. However, to ensure green growth is sustainable, in the long term, capital raised from the financial market will be key to financing green economy activities. To ensure financial markets and green financial instruments operate effectively, environmental risk assessment standards must be clear and appropriate, creating the basis for financial decisions. In addition, the development of criteria for green financial instruments should also be standardised.

In the long-term development orientation of green financial instruments, Viet Nam should continue to prioritise the development of the green capital market, follow international trends and catch up with the

[117] Central Institute for Economic Management (2017).

development of green financial instruments. Currently, Asian countries, such as China, India, Malaysia, and Japan, have enacted legal initiatives to encourage sustainable financial instruments, focusing mainly on green bond development[118]. Thus, if Viet Nam does not quickly standardise criteria for green financial instruments and environmental risk assessment standards, and complete the legal framework related to green capital market creation and development, it will be difficult for the country to mobilise green capital when other Asian countries already have a solid green financial infrastructure. Some general recommendations for the development of financial market instruments include:

[1] A strategic green finance framework directly linked to green growth goals should be developed and perfected

Currently, the green financial strategy framework in Viet Nam has not been coordinated, but is scattered in legal documents issued by the Ministry of Finance, the State Bank of Viet Nam, etc. The development and systemisation of a green financial strategy framework is necessary. It is necessary to determine the amount of finance needed for implementation of the green growth strategy, to synchronise current financial policies, and define the role of each financial market type and the financial resources for the mobilisation, allocation and use of funds towards green growth.

In the framework of a green financial strategy, priority should be given to developing a green capital market to ensure the sustainability of green growth in Viet Nam. Viet Nam can learn from China in establishing a green financial system. In 2016, the People's Bank of China, together with six other government agencies, issued guidelines for the establishment of a green financial system. The People's Bank of China also reviewed the role of the stock market in green investment support and made recommendations on improving the legal regulations on green bonds; reduced the financial costs of green bonds; established standards for third parties related to green bond issuance such as green bond credit ratings; supported the development of the green bond index, green capital index and other related financial products; and encouraged institutional investors such as pension funds and insurance funds to make green investments[119].

[2] Strengthen public training and raising public awareness about the capital market for green growth

Public awareness has a significant impact on the development and dissemination of green financial instruments. Currently, the development of the green economy and green finance in general, and the capital market for green growth in particular, are new issues in socio-economic development in Viet Nam. Therefore, in order to have the consent and participation of investors, the public and market participants, it is necessary to further promote and disseminate knowledge about guidelines and policies through the implementation of conference programmes and training on corporate environmental and social responsibility, and to introduce green financial products to the investment community. In addition, awareness-raising activities should be carried out synchronously with coordination between ministries to reach the whole community.

---

[118] In March 2017, the Securities Administration of China issued guidelines to support green bond development, including specific requirements on criteria and policy initiatives for green corporate bonds. This guide requires green bond issuers to periodically disclose information regarding the use of green bond proceeds, and the progress of related projects and their environmental benefits.

Malaysia is the second largest sustainable investment market in the region (after Japan), accounting for 30% of the total value of sustainable investment assets in Asia. Malaysia developed a Sukuk Responsible Sustainable Investment Framework to finance green, social and sustainable investment projects in 2014, contributing to the direction of green bond issuance. The world's first Sukuk was conducted in July 2017 to finance a solar project. Under the Sukuk framework, issuers are entitled to tax deductions for expenses incurred related to the issuance of sustainability tools.

[119] Decision No. 2183/QD-BTC dated October 20, 2015 promulgating the action plan of the Finance sector to implement the National Strategy on TTX to 2020.

Awareness-raising about the importance of implementing green growth strategy is for all social classes and all ages. Accordingly, awareness-raising on green growth and green finance strategies should be carried out through a variety of media cannels that are relevant to all social classes such as television, radio, social networks, photo exhibitions, advertising for green growth products, and short films on green growth. Green growth-related content should be included in the education curricula at all levels. Heightened awareness is required to implement administrative measures and economic instruments, promoting environmentally friendly lifestyles and consumption. The experience of Japan, Canada, and Luxembourg shows that cooperation between regulators, political organisations, society, and the business community is very important. The active participation of the business and investment communities will create a sustainable foundation for the development of green financial instruments.

[3] Common green standards for green investment projects and programmes should be developed and issued

The development of a set of standards to categorise green financial products is a prerequisite for the long-term development of green financial instruments and the green capital market. However, it is not easy to establish clear green standards for green projects when the green market or green financial system is in the early stages of development. In parallel with providing a set of common standards that apply to the entire market, it is possible to apply a project-specific approach to quantify the impact to the highest possible level from the technology or effectiveness of the project. This is a practical approach towards standardising theory and regulations that is entirely feasible in the Vietnamese market. At the same time, it is also necessary to coordinate with international partners experienced in product development and the development of criteria and reporting frameworks, etc., to receive technical and financial support.

A professional intermediate organisation is the most important requirement to put this set of criteria into practice. This task requires the coordination of policy among ministries, sectors and units to achieve the best results. For example, with regard to environmental audits, there is a need for the active participation of the Ministry of Science and Technology in developing environmental standards for Viet Nam, the Ministry of Finance in developing accounting and auditing standards, and the State Securities Commission to develop regulations for and monitor capital mobilisation organisations. The role of professional organisations is an important element in laying the foundations for green capital market development.

[4] Institutional investors should be encouraged to participate in and develop the green financial market

In fact, the sense of socially responsible investment will come from the demand side in the market. Supply is only the engine for the market to develop; there must be support (demand side) from the market. The investor base needs to be gradually diversified, moving towards an investor base structure that is stable and professional with a long-term investment strategy and social responsibility, which is an important measure for the success of the green capital market. Therefore, it is necessary to have a good infrastructure and convenient trading processes for investors; further modernise the trading system to support several transaction modes and forms; modernise transaction mechanisms; and gradually apply modern techniques in accordance with international practices. In addition, it is also necessary to further develop the formation and participation of collective investment funds through the construction of tax mechanisms to encourage various forms of collective investment and to encourage investment in the stock market through investment funds in accordance with international practices.

Recommendations for green stock instruments

[1] Green stocks

Viet Nam has not agreed on the concept of green investment and there are as yet no green financial products for the stock market. In addition, it is necessary to build a group of asset management companies that have direct links with investors and who can promote their expertise in responsible investment with strong research on environmental, social and corporate governance, and hold a strong position in the bond market. This remains a weakness of fund management companies in Viet Nam.

In the early stage of green financial market development and green investment fund certificate development, the government should implement measures to support the attraction of green financial resources for the economy, including: (i) Prioritising funding from the state budget and local state budgets to implement a green growth strategy with priority given to improving energy efficiency and developing renewable energy; (ii) Ensuring a minimum level of return to encourage businesses to invest in green technologies and produce green products; (iii) Develop policies to encourage financial systems to finance the development of green industries and sustainable growth, and to develop new financial products that support a low-carbon economy.

To ensure the green stock index becomes an effective and reliable index for investors, the transparency of information related to the green investment activities of enterprises is essential. Sustainability reporting is a business practice of measuring, disclosing and being accountable to stakeholders for activities towards sustainable development. Firms should develop and publish sustainability evaluation reports and publish information on their performance from environmental and social perspectives in addition to information about their financial performance and capital governance, all of which is information conventionally disclosed according to international practices.

In Viet Nam, a report on sustainability reporting internationally, including Viet Nam, by the Business Council for Sustainability (2018) shows that the implementation of sustainability reporting is a relatively new concept for Vietnamese enterprises and is only applied by multinational companies or enterprises with large scales of production and business activities, such as the Bao Viet Group, Viet Nam Diary Products JSC., etc. Enterprises in Viet Nam understand sustainable development, but the level of understanding is not sufficient and most companies are not aware of sustainability reporting. With many countries and territories around the world promoting the use of sustainability reports as a mandatory tool to disclose and manage corporate information, Vietnamese businesses need to make sustainability reports compulsory. International experience shows that sustainability reporting needs to be institutionalized in policies and laws, with appropriate mechanisms to encourage businesses to comply.

[2] Green bonds

Developing green bonds to attract social capital for green projects and programmes is important. However, international experience shows that the security of debt repayment is important to the successful application of this type of bond (see the case of South Africa). On that basis, the study recommends prioritizing the implementation of green bonds with low repayment risks; for example, government bonds, government-guaranteed bonds or municipal bonds. This type of bond can be designed in a development direction from pure coupon bonds, zero coupon bonds or bonds with revenues from a national green growth programme. According to international experience, bond tenors range from 5 to 12 years. In addition, developing green bonds in this direction is also in line with the current conditions of the Vietnamese market in that there is no system of evaluation criteria, reporting framework or organisation for environmental assessment and auditing. This type of bond is formed based on the guarantee of the government or local authorities, thereby reducing the risk to investors and reducing the appraisal process. Therefore, the report must meet stringent requirements and be subject to the supervision of relevant government agencies.

Currently, the Vietnamese corporate bond market is underdeveloped, so green corporate bond development needs to wait for the development of policy frameworks, credit rating agencies, investment planning, environmental auditing, etc. International experience shows that to develop the corporate green bond market, it is essential to have partners who are recognised as having sufficient competence and expertise to assess and analyse environmental, social and environmental factors, and corporate governance needs to ensure suitability and to monitor issuers' compliance with the relevant legal frameworks.

In addition, Viet Nam can also research and issue green bonds on the international financial market. However, it is necessary to carefully study standards and guidelines on green bond issuance and consult environ-

mental rating and assessing organisations in the international market to ensure successful issuance.

Recommendations for green credit instruments

On the basis of adhering to the goals of the National Green Growth Strategy and the National Green Growth Action Plan, green credit growth should be promoted in the coming period. To effectively implement green credit programmes, it is necessary to develop a comprehensive plan, from mechanisms and policies to specific green credit programmes, as well as to develop a mechanism to encourage and strengthen capital and capacity to ensure the credit institution system effectively serves the goals of green growth and sustainable development. At the same time, it is advisable to coordinate with relevant ministries and agencies to develop a mechanism to promote green finance. Regulatory recommendations outlined in this study include:

[1] The general set of environmental and social assessment criteria has been developed and issued in accordance with international standards. Green credit is increasingly and becoming an important component of the credit market, requiring a separate mechanism and standards. Green criteria standardisation can be built on the Equator Principles introduced by international financial institutions such as the World Bank and the ADB. The State Bank needs to integrate regulations on environmental and social risk management into credit institutions' lending regulations, creating a legal basis for credit institutions for implementation. The State Bank of Viet Nam will soon complete a manual on environmental and social risk assessment for 11 economic sectors[120], which is currently unavailable for credit granting activities of credit institutions.

Funding sources for green credit in Viet Nam are diverse. Accordingly, the State Bank of Viet Nam may consider prioritising capital for green credit, securing credit for sustainable development through monetary policy tools such as compulsory storage, refinancing and other tools such as credit growth limits. However, the use of these instruments should be carefully and flexibly considered by the State Bank to ensure capital sources for green credit and stabilise inflation targets. In addition, the State Bank should develop a policy to support credit institutions providing green credit to access preferential loans from international financial institutions.

[2] In the design of policies to promote green credit growth, forms of green credit incentives need to be diversified regardless of the mode of financial support (interest rate reductions, loan extensions, etc.). Sustainable projects often have high capital requirements and also bear capital cost risks. Therefore, to create incentives, the government should support risk reduction for sustainable projects (as is the case in Japan, Canada, and Luxembourg). The government should also establish a sustainable development fund based on the experiences of other countries and review the current policy system to ensure centralisation and avoid a disorderly, overlapping regulatory environment.

[3] Green credit policy design and implementation also needs strengthening through green financial policy dialogue. To ensure that green financial policies are put into practice and to promote high efficiency, it is necessary to increase stakeholders' awareness of the goals, roles, tasks and solutions of green financial policies. For example, in Germany, to implement sustainable development the government calls for proposals, especially before revising the law, and encourages dialogue with stakeholders. This provides an opportunity for the government to better

[120] Eleven industries that have yet to receive guidance include: Production and distribution of electricity, gas, hot water, steam and air conditioning; wholesale and retail, repair of cars, motorcycles, motorbikes and other motor vehicles; transportation and storage; accommodation and catering services; information and communication; financial, banking and insurance operations; activities of expertise, science and technology; administrative activities and support services; education and training; medical and social assistance activities; arts and entertainment; employment in households, production of physical products and household self-consumption services.

explain policy solutions as well as allow stakeholders to contribute ideas, respond to government proposals and suggest policy improvements. Policy dialogue between the government and stakeholders improves the quality of government policy actions and increases public acceptance of government decisions. Experience shows that if communication is effective and combined with close and open public exchanges in various forms at the early stages of tax reform implementation, conflicting opinions and concerns can be alleviated[121] .

Recommendations for additional market instruments (PPP)

[1] The legal framework for PPP investment should be completed

The guiding documents for the Law on Investment under PPP should be completed. Given the fact that the Law has not come into effect and Decree No. 25/2020/ND-CP dated February 28, 2020 replacing Decree No. 30/2015/ND-CP was issued in early 2020 and came into effect from April 2020, it is essential to overcome the limitations in the implementation of Decree No. 30/2015/ND-CP for projects that require bidding documents to be issued before the effective date of Decree No. 25/2020/ND-CP. To accomplish this, it is necessary to clearly define the case of land allocation or lease under one of the three forms of bidding in accordance with the Law on Bidding. In addition, the investment decision should be reached in accordance with the Law on Investment, and the auctioning of land-use rights in accordance with the Land Law.

The basic regulations on the investor selection process should be promulgated to enhance publicity and transparency, improve accountability, and avoid emerging problems. This should be carried out to simplify the processes and procedures for investor selection on the basis of the processes for investment preparation and implementation of PPP projects in Decree No. 63/2018/ND-CP.

[2] Minimum revenue guarantee

In recent years, several foreign investors as well as international organisations and international banks have requested the government to apply a form of minimum revenue guarantee due to concerns about the level of risk in the Vietnamese economy. However, this requires the state sector to have sufficient capacity to forecast project needs and revenues in the long term. Also, state agencies need to have the capacity to manage and control the performance of contracts. At the same time, the State must ensure sufficient resources annually to supplement projects if their revenue is lower than expected.

Experience from Korea shows that minimum revenue guarantees are necessary to attract the private sector to participate in large projects important to the economic development of the country, such as investment in highways. Given Viet Nam's current situation, the country should only apply minimum revenue guarantees in special cases[122]. Where it is necessary to fulfil a guarantee obligation, the possibility of negotiating with the investor to adjust the financial plan should be considered (possibly extending or shortening the project contract period). In the case of paying revenue deficits as agreed in the contract, the 15% contingency capital source in the total medium-term public investment plan should be used to arrange funds to pay the investor. In case the amount payable exceeds the 15% of the contingency portion of the medium-term public investment plan, this should be reported to the Prime Minister for consideration and to arrange payment.

[121] Central Institute for Economic Management (2017), Green Growth Policy: Achieved results and some difficulties and challenges.

[122] For example: (i) Projects that are important to the economic development of the country that have a high degree of revenue risk. The project's demand sensitivity is greatly affected by the State's macro policies as well as macro indicators; (ii) Changes in government policies (prices, charges for goods and services provided by investors, taxes, industry planning ...) have a direct impact on project revenue.

[3] Policy on charges and prices

On November 25, 2015, the National Assembly passed the Law on Fees and Charges No. 97/2015/QH13. The Law has strongly shifted the socialisation of public services to a pricing mechanism that includes several public services subject to investment under PPP. Charges which have been converted to the pricing mechanism in accordance with specialised laws, or charges that overlap with other charges, will be removed from the list of charges. This is an important legal basis to create favourable conditions for private investors to participate in the provision of public goods and services under PPP.

For areas where the government does not need to control prices or charges, but for which there is a high probability for socialisation, price mechanisms should be allowed. This will increase the attractiveness of PPP projects, especially for foreign investors. Pricing mechanisms enable investors and competent state agencies to choose to negotiate prices on the principle of ensuring the interests of the State, investors, and the people. At the same time, by using pricing mechanisms the government may not need to use direct project subsidies, which will help to reduce pressure on the state budget in the short term. In fact, implementing BOT investment for power projects shows that applying the FIT mechanism will reduce the need for the State to support BOT power project investment costs for plant construction and will attract foreign investors to participate.

The price factor can be considered as one of the criteria in investor selection. When investors meet all the selection criteria with similar results, the investor bidding the lowest service price will be selected. In the case of appointing an investor, investors and competent state agencies are allowed to negotiate service prices on the principle of a price level that fully covers the investment and operating costs of the project and brings about suitable profits for investors.

For types of public goods and services that must be managed according to the price or charge mechanism, the State may propose a price and charge range to allow investors and competent state agencies to negotiate reasonable prices and charges within the rules for the project. This will create an initiative for competent authorities when building financial plans for projects and when negotiating with investors. For types of contracts with direct revenues from users such as BOT, BTO (Build-Transfer-Operate), and BOO contracts, it is necessary to issue a price or charge range to ensure the interests of the people and socio-economic development.

The cost of using infrastructure services has a direct impact on the socio-economic development and input costs of many business activities. Therefore, in the process of developing a capital mobilisation plan in the form of PPP, especially green PPP, the competent state agency needs to conduct independent assessments on the impact of infrastructure service prices on socio-economic development and environmental protection and conduct surveys to determine affordable prices for the public.

[4] Preferential policies on tax and land rents

Tax incentives for PPP projects need to be improved further. The way that tax incentives are regulated in accordance with tax laws needs to be maintained to ensure their consistency and transparency. In addition, CIT incentives should be narrowed. There should not be tax incentives for industries and sectors with natural advantages or for those that have a large effect on socio-economic development and environmental protection. This will help to reduce state budget revenue loss and reduce opportunities for enterprises to transfer prices, and evade and avoid taxes, including those implementing PPP projects.

For land rental incentives, it is necessary to specify the case of land rental exemption to ensure the implementation process for projects in general, and for green PPP projects in particular, is efficient and avoids delays. At the same time, it is necessary to amend legal regulations in cases where enterprises implementing PPP projects are exempted from or enjoy reduced land rents to ensure they can still use leased land as collateral to mobilise capital for project implementation[123].

[123] Assoc. Prof. Dr. Le Xuan Truong, http://thoibaotaichinhViet Nam.vn/pages/thue-voi-cuoc-song/2020-03-27/can-hoan-thien-chinh-sach-uu-dai-thue-cho-du-an-ppp-84456.aspx.

Debt instruments (green bonds and green credit), equity instruments (green stocks and green investment fund certificates) and strengthening public-private partnerships are popular financial market instruments for the mobilisation, allocation and use of capital for green growth. Each type of green financial market instrument has the characteristics and role of the traditional financial market tools with a green element. The green element of green financial market instruments is established in the goals of green and environmentally friendly projects that enhance adaptation and minimise the impacts of climate change. The development of green financial market tools depends heavily on supporting mechanisms and the policy environment, especially fiscal and monetary policies, and financial market development policy.

The experience of countries using financial market instruments for green growth shows the need to standardise and even quantify the green features of funded projects and activities. In early stages of the development of green financial markets, the government needs to appropriately participate in the market; for example, establishing a special financial institution (green bank), or underwriting green bonds, etc., to demonstrate assurance, reliability and create a market for all kinds of market instruments. In addition, many countries have also strengthened international cooperation in the field of green finance, including the transparency of information on green investments and raising awareness on social responsibility and green investments.

In Viet Nam, financial market instruments for green growth are still in their infancy but have the conditions to grow stronger in the coming years based on support in the National Green Growth Strategy, technology market infrastructure for the financial market, and support from international partners. Although green financial market instruments are present in the market, they have not yet become popular and have not met the capital needs for green growth in Viet Nam. The reason for these limitations is that legal regulations are still sporadic; they are not up to date and lack uniformity in green criteria. In addition, capital sources for implementation of financial market instruments for green growth are limited. Furthermore, public awareness on green financial products is limited and professional organisations are absent in the market.

In the period 2021-2030, three key objectives need to be achieved to develop financial market instruments for green growth: I) complete the legal framework related to green investment; II) standardise green standards to identify green financial market instruments; and III) raise awareness on green growth for society, businesses, and investors.

Annexes

Annex 1. Concepts of weak and strong sustainability and their implications for policymakers

Table 16: Concepts of weak and strong sustainability and their implications for policymakers

	Key concepts	Consequences	Challenges	Implications for GG indicators
Strong sustainability: sets out to conserve irreplaceable "stocks" of natural capital for future generations	Substitutability of natural capital by other types of capital is limited: natural capital is not a stock of resources but a stock of complex (eco) systems, whose services cannot be replaced by manufactured capital or technology.	Some human actions result in irreversible consequences, such as loss of natural capital critical for human well-being. E.g. biodiversity loss poses a threat to global food production (FAO 2019).	How can critical thresholds be ascertained? It is difficult to establish which elements of natural capital can be substituted and to what extent.	Requires large indicator set - quantity and quality of environmental items pertaining to specific subdomains of sustainability. Calls for adoption of extreme valuations for critical environmental assets.
Weak sustainability: maintains (or increases) total value of aggregate stock of capital for future generations	Natural capital and other types of capital are perfectly substitutable: natural capital such as ecosystems can be replaced with manufactured capital.	Assumes that technological innovation or capital can compensate for environmental degradation and loss of non-renewable resources: there are no "planetary boundaries".	Manufactured capital cannot be created independent of natural capital. Destruction of manufactured capital is rarely irreversible; loss of natural capital is often irreversible.	Good performance in some dimensions of sustainability can compensate for low performance in others, implying that mono-dimensional indices may be used.

Source: Pelenc at al., 2015; Stiglitz et al., 2010

Annex 2. The Green Economy Progress Measurement Framework (GEP+): combining dashboards and composite indicators

The GEP+ combines a dashboard of sustainability indicators with UNEP's Green Economy Progress index. The index tracks progress relative to desired changes and indicates a country's overall progress towards IGE and draws on 13 indicators: material footprint, energy use, air pollution, protected areas, gender equality, renewable energy, green trade, Palma ratio, environmental patents, life expectancy, means years of schooling, pensions coverage and access to basic services. The index focuses on progress, tracking trends, rather than measuring levels, and focuses on critical thresholds and targets. The dashboard draws on 6 indicators: ecological footprint, inclusive wealth index, land use, GHG emissions, nitrogen emissions, and freshwater withdrawal. The outcomes of these two processes are subsequently compared and a GEP+ ranking is produced.

The GEP measurement framework 2004-2014, which monitored progress in 105 countries, revealed that countries made progress in relation to around 75% of indicators, with 83 out of 105 countries able to achieve progress (PAGE 2017). Regress was most significant in relation to material footprint and air pollution. Viet Nam regressed in relation to these two factors, as well as in relation to energy use and renewable energy. On the sustainability dashboard, on average, countries experienced regress, meaning they exceeded planetary boundaries.

The framework is a useful tool to compare progress and regress between countries on IGE transition and to link IGE closely to the SDGs. To enhance the relevance of the GEP+ framework at national level, UNEP has suggested that countries also draw on UNEP's related work on indicators for IGE and tailor them to national policymaking, adjusting the choice of indicators to a country's specific needs and priorities (PAGE 2017).

When applied at national level, the most relevant GEP+ indicators are selected. These can then be tailored to the county context, to ensure that they are sufficiently granular to deliver insights into specific aspects of policymaking. UNEP has trialled the approach in three PAGE countries — Mauritius, Ghana and Uruguay. In Mauritius, evaluative indicators proposed focussed on measuring the impact of tourism on coastal areas, waste management, and sustainable use of water resources. In Ghana, the focus was on deforestation, agricultural productivity and food security, energy access and renewable energy share (UNEP 2015). In Uruguay, the evaluation criteria proposed exemplify the benefits of the development of country-specific indicators and were clearly aligned with transport policy priorities: average travel time on public transport (minutes); energy intensity of transport (TOE/USD); and emissions intensity in transport (tCO2/TOE).

In practice, data gaps and lack of systematic and regular data collection have proved to be major challenges in the application of GEP+ indicators. This issue can be addressed to some extent by prioritising a few highly relevant indicators to enable effective and efficient monitoring and statistical analysis.

Source: PAGE, 2017; UNEP, 2015

Annex 3. OECD Green Growth Indicators

Table 17: OECD Green Growth Indicators

Environmental and resource productivity in the economy		
THEME	**PROPOSED INDICATORS**	**SUB-INDICATOR, UNIT OF MEASUREMENT**
Carbon and energy productivity	1. CO_2 productivity	1.1 Production-based CO_2 productivity - GDP per unit of energy-related CO_2 emitted
		1.2 Demand-based CO_2 productivity - real income per unit of energy-related CO_2 embodied in final demand
	2. Energy productivity	2.1 Energy productivity - GDP per unit of Total Primary Energy Supply (TPES)
		2.2 Energy intensity by sector (manufacturing, transport, households, services)
		2.3 Share of renewable energy sources - in TPES, in electricity production
Resource productivity	3. Resource productivity	3.1 Demand-based material productivity - real income per unit of materials embodied in final demand, materials mix
		3.2 Production-based material productivity - GDP per unit of materials consumed, materials mix
		3.3 Waste generation intensity and recovery ratios - by sector, per unit of GDP or value added, per capita
		3.4 Nutrient flows and balances (nitrogen, phosphorus) - nutrient balances in agriculture per land area / change in output
	4. Water productivity	Value added per unit water consumed, by sector
	5. Environmentally adjusted multifactor productivity	Comprehensive measures, original units in monetary terms

Natural asset base		
THEME	**PROPOSED INDICATORS**	**SUB-INDICATOR, UNIT OF MEASUREMENT**
Natural resource stocks	6. Index of natural resources	Comprehensive measure expressed in monetary terms
Renewable stocks	7. Freshwater resources	Available natural resources and related abstraction rates
	8. Forest resources	Area and volume of forests; stock changes over time
	9. Fish resources	Proportion of fish stocks within safe biological limits (global)
Non-renewable stocks	10. Mineral resources	Available (global) stocks or reserves of selected minerals and related extraction rates
Biodiversity and ecosystems	11. Land resources	Land cover conversions, cover changes from natural to artificial state, land use state and changes
	12. Soil resources	Degree of topsoil losses on agricultural and other land; agricultural land area affected by water erosion
	13. Wildlife resources	Trends in farmland or forest bird populations; species threat status in percentage of know species; trends in species abundance
The environmental dimension of quality of life		
Environmental health and risks	14. Environmentally induced health problems and costs	e.g. years of healthy lives lost from degraded environmental conditions Population exposure to air pollution, related health risks and costs
	15. Exposure to natural or industrial risks and related economic losses	
Environmental services and amenities	16. Access to sewage treatment and drinking water	16.1 Population connected to sewage treatment 16.2 Population with sustainable access to safe drinking water

Economic opportunities and policy progresses		
THEME	**PROPOSED INDICATORS**	**SUB-INDICATOR, UNIT OF MEASUREMENT**
Technology and innovation	17. Research and development expenditure of importance to GG	Renewable energy sources (% of energy-Related R&D) Environmental technology (% of total R&D) All-purpose business R&D (% of total R&D)
	18. Patents of importance to GG	% of a country's patent families worldwide Environment-related and total patents Structure of environment-related patents
	19. Environment-related innovation in all sectors	
Environmental goods and services	20. Production of environmental goods and services (EGS)	Gross value added in the EGS sector (% GDP) Employment in EGS sector (% of total) Environmentally related expenditure (level and structure)
International financial flows	21. International financial flows important to GG	21.1 Official Development Assistance 21.2 Carbon market financing 21.3 Foreign Direct Investment (% of total flows and % of GNI - for all categories)
Prices and transfers	22. Environmentally related taxation and subsidies	Level of environmentally related tax revenue (% of GDP, % of total tax revenue, relation to abour-related taxes) Structure of environmentally related taxes (by tax base) Level of environmentally related subsidies
	23. Energy pricing	Share of taxes in end-use prices
	24. Water pricing and cost recovery	To be determined

Note: Indicators 25 and 26 relating to regulations and management approaches and training and skill development are yet to be developed

Source: OECD, 2017

Annex 4. The OECD Green Growth Policy Review (GGPR) of Indonesia

The OECD conducted a GGPR in Indonesia in 2017-18, reviewing Indonesia's policy framework for GG. The OECD's specific recommendations highlight many of the obstacles and challenges governments face in rapidly growing middle-income economies when attempting to implement and mainstream GG. The recommendations are summarised below:

Frameworks:

- Implement System of Environmental Economic Accounts framework to properly value the country's natural capital at national and sub-national levels.

Getting the prices right – green fiscal policies:

- Greater use of green fiscal policies in the energy sector: carbon pricing; reform of fossil fuel subsidies; alignment of vehicle taxes with environmental performance; create a green fiscal commission to build consensus.
- Improve enforcement related to forestry concessions and mining and fisheries permits – collect full economic rents on natural resource use; enforce water abstraction charges.
- Introduce a plastic bag excise tax; consider taxes on air pollution and wastewater.
- Reorient agricultural production support away from direct support and towards productivity-enhancing investment; replace fertiliser subsidies with direct cash transfers.

Investment:

- Enhance incentives for investment in waste, water supply and sanitation, increasing user charges to make service providers commercially viable and capable of funding capital investment.
- Build capacity to ensure compliance with sustainable finance regulations.
- Develop a plan to scale up renewable energy investment, remove regulatory barriers, streamline permitting systems, phase out fossil fuel subsidies.
- Increase the stringency of energy performance standards and ensure compliance with Energy efficiency regulations.
- Develop support measures for electric vehicles, esp. motorcycles.

Environment related goods and services and innovation:

- Balance focus of energy-related R&D budgets to adequately support renewables research and energy efficiency in addition to cleaner fossil fuels.
- Scale up the sustainable consumption and production programme, consider extending sustainable procurement to smallholders, e.g. those involved in social forestry products
- Reform trade barriers which prohibit Indonesia from adopting modern clean energy technology.
- Continue to fight the illegal wildlife trade prioritising protection of the most endangered species and partnering with civil society.

Source (OECD, 2019)

Annex 5. Detailed case studies of green growth from Chapter 1

1. Republic of Korea: green growth pioneer

South Korea is regarded as a pioneer in the field of GG. Having already led the establishment of GG in the Asia-Pacific region at the MCED in 2005, the country was the first to enshrine GG in its long-term national development plan — the 2009-2050 National Strategy on Green Growth (NSGG). The Korean example has been followed by many other countries in Asia and beyond and hence, calls for an in-depth analysis at the start of this final part of the chapter on country cases.

The strategy, which runs until 2050, has been embedded in governmental institutions from the top-down: from the Presidential Committee on Green Growth (PCGG) through four subcommittees with specific responsibilities — climate change, green growth, energy, and green technology industry — which engage closely with the private sector during the implementation process (GGGI 2017). Thus, the institutional setup for GG implementation deliberately set out to facilitate inter-ministerial and multi-institutional cooperation.

The first years of the NGSS were implemented by means of five-year-plans for green growth. The first of these, which ran from 2009-2013, committed to investing USD 85 billion in clean energy and the implementation of a GG plan to create 1 million new jobs and foster a clean-tech export industry, and to spend 2% of GDP from 2009-2013 on creating a knowledge and technological foundations to sustain GG for generations (World Bank 2012b). The second ran from 2014-2018 and focussed on key targets not met by the first, i.e. creating a sustainable energy sector and reducing GHG emissions, fostering green, creative industries and realising a sustainable society (GGGI 2017).

Over the long term, the NSGG has three headline targets, reflecting the serious environmental challenges faced by the country as a result of rapid GDP growth:

1. Mitigation of climate change and enhancement of energy security — reduction of GHG emissions, diversification of energy sources, strengthening climate adaptation.
2. Creation of new growth engines — developing green technologies, greening existing industries and promoting green industries, advancing industrial structure, engineering a structural basis for the green economy.
3. Improvement of the quality of life and enhancement of ROK's international standing — greening land and water, building green transportation and infrastructure, greening people's daily lives, becoming a role model for the international community as a GG leader.

The extent to which the NSGG has succeeded in meeting these objectives is analysed below.

Korea's NSGG has been hailed as a leading example of a bold and successful GG strategy. In relation to the second and third headline targets above, this is backed by strong evidence. Selected OECD GG indicators reveal that in relation to the creation of new growth engines and the development of green technologies, the NSGG has thus far been successful. Already in 2016, Korea had an impressive 11% share in global environment-related technology inventions. GDP per unit of domestic material consumption increased from USD 2.86/kg in 2010 to USD 6.73/kg in 2017 (see Table 3). GHG emissions from industrial processes, waste and agriculture sectors have remained relatively stable alongside high rates of GDP growth (see Figure 1). Total revenue from green industries increased from 1% to 1.5% of Korea's total industrial turnover between 2009 and 2013 (GGGI 2017).

Table 18: Development of Selected Green Growth Indicators in Korea, 2000 – 2018

Indicator	Unit of measurement	2000	2005	2010	2015	2018
Production-based CO_2 productivity: GDP per unit of energy-related CO_2 emissions	USD per kg, 2010	2.26	2.69	2.73	3.00	3.04
Demand-based CO_2 productivity: Disposable income per unit of energy-related CO_2 embodied in final demand	USD per kg, 2010	n/a	1.83	2.12	2.40	n/a
Energy productivity: GDP per unit of Total Primary Energy Supply	USD, 2010	5,188	5,849	6,018	6,397	6,357
Share of renewable energy sources	% total electricity generation	1.42	1.04	1.25	1.94	3.84
Non-energy material productivity, GDP per unit of domestic material consumption	USD per kg, 2010	1.77	2.24	2.86	5.96	6.73 *2017
Development of environment-related technologies	% inventions worldwide	2.66	6.10	8.66	10.16	11.02 *2016

Source: https://stats.oecd.org/viewhtml.aspx?datasetcode=GREEN_GROWTH&lang=en# (data extracted 23.04.2020)

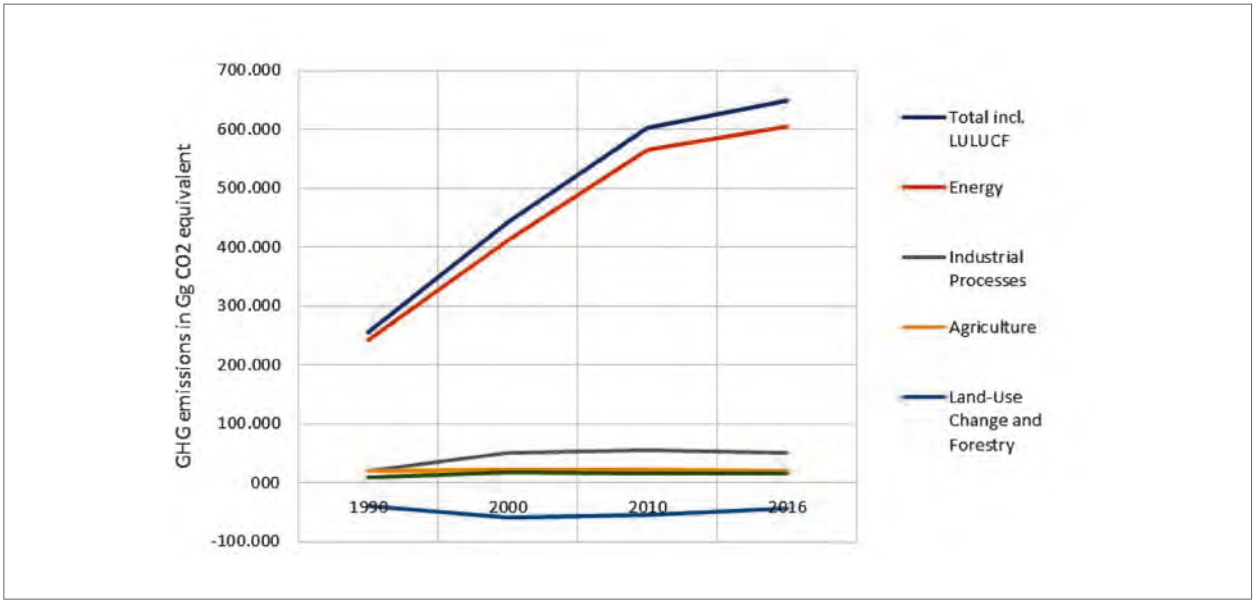
Some progress has also been made in relation to headline target three. Exposure to fine particulate matter (PM2.5) fell by 17% between 2010 and 2017 (OECD Stat 2020). In Seoul, over 60% of modal share was in public transport in 2011 — the second highest share of any city worldwide (Lee et al. 2015). Urban forest areas increased by 11% between 2009 and 2013 (GGGI 2017). Three smart eco-cities have been built, including Songdo, which has a high proportion of energy-efficient buildings and 30% green space, but which has also been criticised for the downsising of cycle lanes, lack of planning for pedestrians, poorly designed public transport systems, and a lack of affordable housing (see e.g. Mullins 2017). In addition, information campaigns have fostered support for GG issues: surveys reveal strong support for the NSGG, with 97% supportive (GGGI 2017). Finally, Korea has become known as a green policy entrepreneur in other countries and aims to spend 30% of its ODA on green issues by 2020, and actively and successfully pursues a programme of "green diplomacy" on the international stage (GGGI 2017).

However, in relation to the first headline target to mitigate climate change, reduce GHG emissions from the energy sector and improve energy security, progress has been limited. While CO_2 productivity has improved and relative decoupling between GHG emissions and GDP growth can be observed between 2012 and 2016 (as can be seen in Table 3 and Figure 1 respectively), this has not been sufficient to bring about the reductions in GHG emissions necessary for the country to meet the its NSGG target of reducing emissions by 30% below business as usual (BAU) be-

tween 2009 and 2020[124]. Indeed, on the BAU scenario reported in Korea's 2015 Nationally Determined Contribution, meeting this target would require Korea to have achieved a 20% decrease in total GHG emissions between 2016 and 2020 (ROK 2015).[125]

There are several reasons for these failures. First, ongoing dependence on imported fossil fuels has undermined attempts to improve energy security, as has the limited deployment of renewable energy — which accounted for less than 4% of total electricity produced in the country in 2018, according to the OECD (see Table 3). The influence of powerful vested interests in government and the power sector, who have strongly opposed higher energy prices as a driver of energy savings and falling demand, have kept energy prices low (Ha and Byrne 2018). Thus far, macroeconomic concerns — price stabilisation, inflation and international competitiveness — have tended to influence energy pricing policy rather than GG policy considerations (GGGI 2017). These problems are exacerbated by relatively high post-tax subsidies for fossil fuels[126] in Korea — estimated by the IMF to have been worth 3.87% of GDP in 2017: 1.4% for petroleum, 1.8% for coal, 0.5% for natural gas and 0.2% for electricity subsidies (Coady et al. 2019). As a result, energy productivity remains low: both Japan and Indonesia produce almost twice as much GDP per unit of energy consumed, and Viet Nam produces around USD 1,000 more GDP per unit of energy. [127]

Figure 15: GHG emissions by sector in Korea, 1990 - 2016



Source: UNFCCC statistics (data extracted on 23.04.2020)

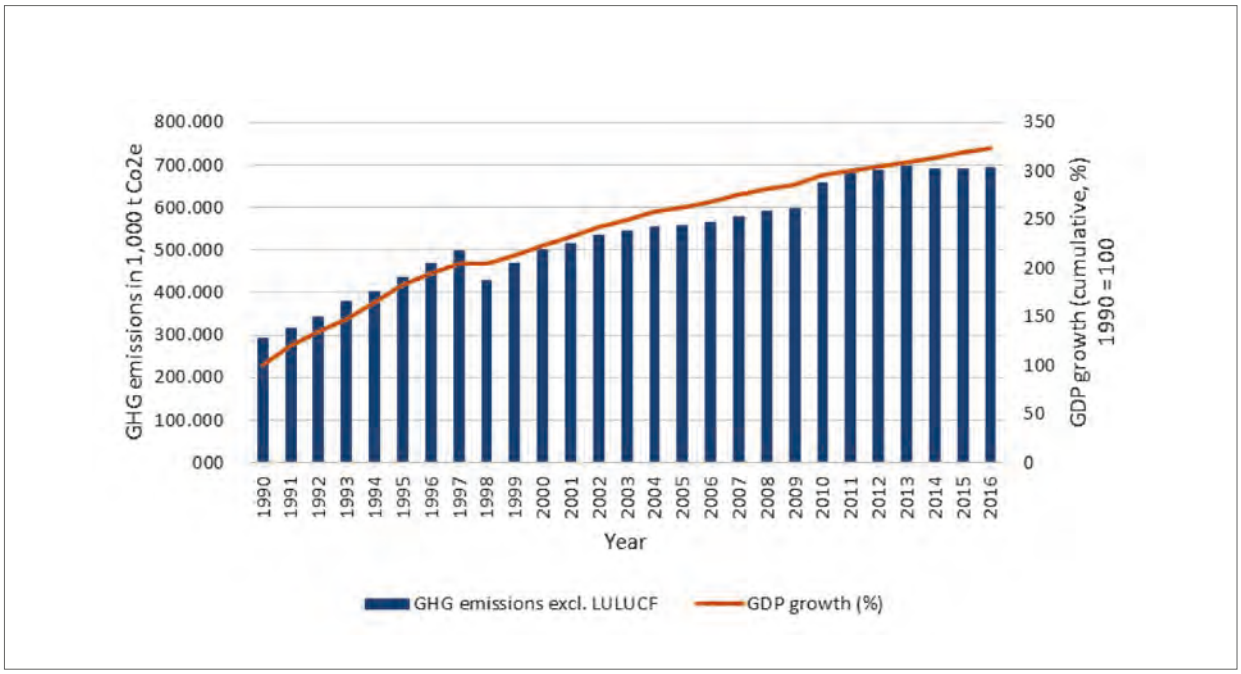
[124] Although the emissions trading system put in place in 2015 should ensure that the country's 2030 target, of reducing emissions 37% below BAU, is met (see below).

[125] The most recently reported year for GHG emissions information from Korea submitted to the UNFCCC, or available on the OECD website, at the time of publication was 2016.

[126] Post-tax subsidy estimates incorporate not only actual subsidy measures which reduce the price of fossil fuels, but also the external costs of fossil fuel combustion — climate change, local air pollution, congestion, accidents and road damage — as well as foregone consumption tax revenue. See e.g. Coady et al. 2019 for a full explanation.

[127] In Japan, energy productivity measured in GDP per unit of Total Primary Energy Supply amounted to 11,400.06 in 2018 and in Indonesia, 11,857.32 in 2017. All statistics from https://stats.oecd.org/viewhtml.aspx?datasetcode=GREEN_GROWTH&lang=en#

Figure 16: Cumulative GDP growth and GHG emissions in Korea, 1990 - 2016



Source: OECD.Stat (data extracted 27.04.2020)

On the whole, the implementation of Korea's NSGG has been criticised for focussing on market-driven economic growth and innovation rather than environmental priorities (GGGI 2017). The government's declared aim in its 2009-2013 Five-Year Plan for Green Growth to achieve a ranking in the top 30 countries in the Environmental Performance Index had not been achieved by 2018, when Korea was ranked 60th in the world, with extremely poor results for air quality (ranked 119), climate and energy (ranked 110), and biodiversity and habitats (ranked 144).[128]

The Korean government have taken a number of steps to address these issues. In 2015, an emissions trading system (ETS) was implemented, in spite of industry opposition. The ETS covers 70% of emissions in the country and was put in place with the explicit aim of ensuring that the NDC target of an emissions reduction of 37% below BAU is achieved by 2030, which it can reasonably be expected to achieve (ICAP 2020). In 2019, the first year of auctioning, the carbon price was relatively high: USD 25 per tCO_2e, which can be expected to have an impact of the price of electricity in the country and also on efficiency of energy and CO_2 productivity (ICAP 2020). The 2017-2030 basic plan for electricity supply and demand increased the renewable energy target for 2030 to 20% of total power generation — significantly more ambitious than the previous target of 12% — and reduced the target for coal from 45% to 36% (Cornot-Gandolphe 2018). Furthermore, in 2019 the coal import tax was increased 28% to USD 40/tonne and taxes on natural gas imports were reduced by 75% to incentivise fuel switching in the power sector (Nicholas and Buckley 2019).

Overall, the trajectory of GG in Korea is positive, although a step change will be needed to achieve an absolute decoupling of negative environmental and climate impacts and economic growth. Korea's NSGG represents a world first: an innovative, top-down,

[128] See https://epi.envirocenter.yale.edu/epi-topline?country=korea

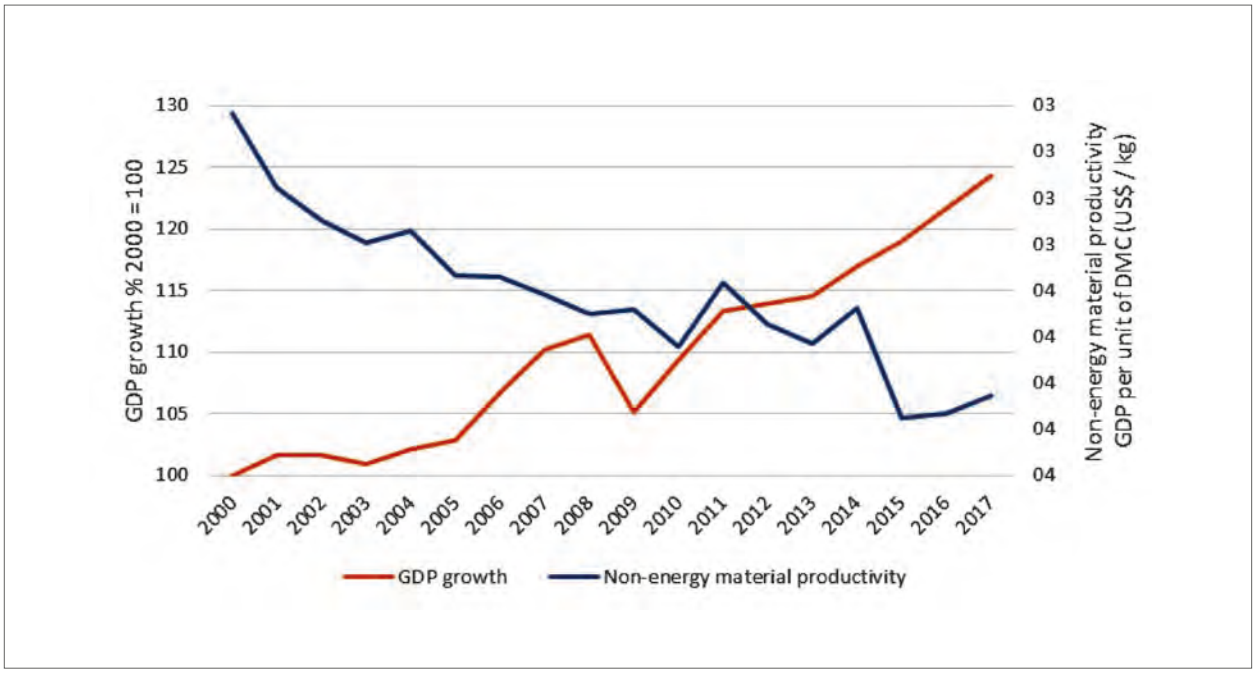
pioneering nationwide strategy to achieve GG and a transition to a greener economy. It demonstrates that GG can be adopted as the central agenda of government, and the importance of institutionalising GG in governance structures and creating a common sense of purpose behind the GG agenda, which carries over from one government to the next (GGGI 2017).

2. Germany's resource efficiency programme: ProgRess

While the GG strategies of many countries focus on decoupling GHG emissions and energy use from GDP growth, few countries have also developed strategies to improve resource productivity and decouple consumption of resources from GDP growth. Germany is an exception case, and has developed a long-term resource efficiency programme, called ProgRess. The headline objective of ProgRess was defined in the country's 2002 National Sustainable Development Strategy: to double raw material productivity by 2020 relative to 1994 (BMUB 2016).

In Germany, an extremely broad institutional approach covering a wide range of ministries, industries, research institutions, consultancies, professional associations such as the Association of German Engineers (VDI) and civil society have successfully mainstreamed resource efficiency considerations in many fields. A virtual research institution was created – the German Resource Research Institute (GERRI). Broad-based capacity building in SMEs has raised awareness of possible process innovations to enhance resource productivity, while information campaigns and a resource efficiency award for German firms raise awareness of the advantages of resource efficiency for competitiveness. Grants for innovation for industry keep the initial cost of resource efficient investment low. The programme also includes activities to enhance transparency and sustainability in the value chain for imported raw materials. Resource efficiency standards for industry have also been developed, e.g. VDI 4800 (for details see BMUB 2016). Alongside measures to incentivise resource efficiency, new regulations stipulate minimum recycling rates for industry, strengthen product responsibility

Figure 17: Non-energy material productivity and GDP growth in Germany, 2000 - 2017



Source: OECD.Stat (data extracted 30.04.2020)

and specify procurement rules. Consumers have also been targeted by the programme through information and awareness raising, and development of policy in consultation with the public.

The first phase of the programme from 2012-2015 resulted in the relative decoupling of raw material productivity from GDP growth and put Germany on a trajectory to achieve around 50% of the programme's targeted reduction by 2020 (BMUB 2016). Data are not yet available to show whether this indicator has been achieved in 2020, however, UBA has suggested that this target will not be met (UBA 2019). Considerable progress has been made, however, with OECD data showing that non-energy material productivity, measured in GDP per unit of domestic material consumption (Figure 17, blue line), is absolutely decoupled from GDP growth (Figure 17, orange line).

ProgRess has been lauded for its broad-based and innovative, inclusive and comprehensive approach (see e.g. UBA 2019). However, the lack of specificity of many programme indicators can be criticised and makes measuring progress difficult — e.g., several indicators relating to recycling simply call for a "significant increase" by 2030 (see BMUB 2016). The noncommittal character of some indicators is mirrored by the voluntary nature of many elements of the programme.

3. Climate Resilient Green Economy in Ethiopia

Ethiopia's 2011 Climate Resilient Green Economy (CRGE) vision and strategy were devised in a very different context to the Korean NSGG. The CRGE envisages Ethiopia – a scarcely industrialised low-income country – leapfrogging "brown" industrialisation and transitioning straight into a green economy at a cost of USD 150 billion. The headline objective is to achieve a high rate of (inclusive) growth without increasing the country's net GHG emissions – an ambitious undertaking, given the historically strong correlation observed elsewhere between GHG emissions and GDP growth (Okereke et al. 2019). By 2025, the CRGE vision aims for Ethiopia to become a middle-income country and by 2030, the country aims to become carbon neutral. The CRGE was one of the first approaches to bring climate resilience and green economy together within one coherent policy framework.

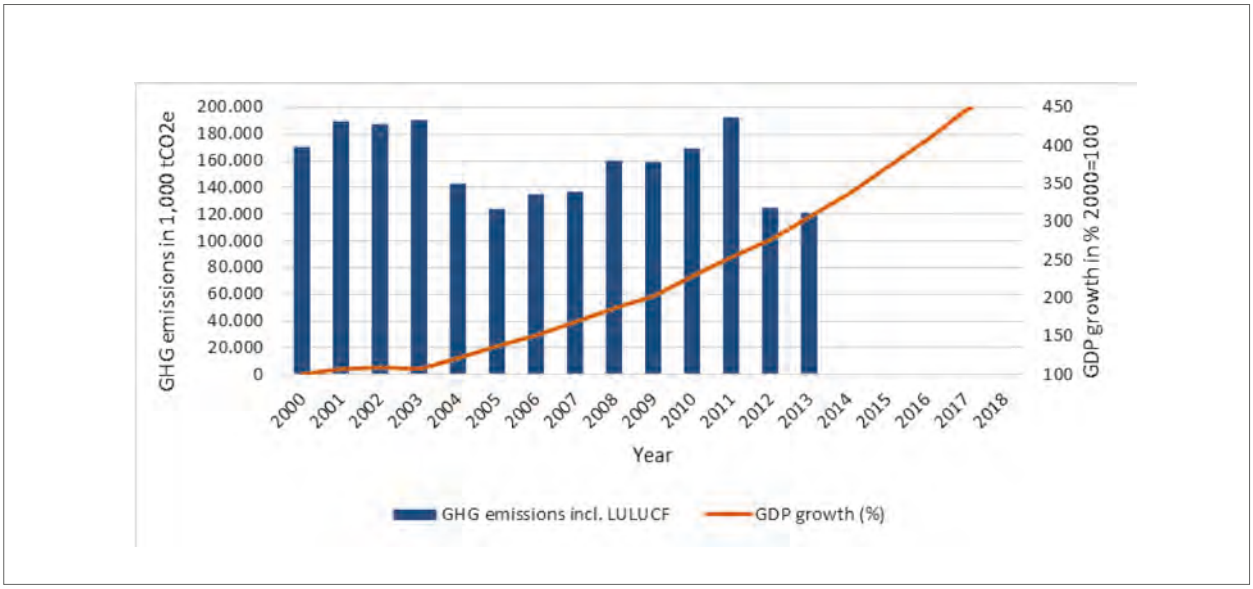
The green economy component of the CRGE focuses on 4 key objectives: reduced GHG emissions, improved agricultural practices and enhanced food security in the agricultural sector; protecting and re-establishing forests to create new carbon sinks; efficiency measures in industry, transport and buildings; and a high proportion of renewable electricity in the energy mix (FDRE 2019). Interestingly, like the Republic of Korea, the Ethiopian government sees itself as a global and regional leader in the GG policy discourse (Fikreyesus et al. 2014).

This sense of ownership at the highest level is also reflected in the institutional frameworks created for the realisation of CRGE. These have effectively integrated green economy considerations at all levels of government and society, securing strong political and technocratic backing for CRGE policies, engaging stakeholders, and creating a strong sense of ownership at national and regional levels. The high-level Environmental Council is led by the prime minister and has members from federal ministries, regional states, NGOs and trade unions. It develops laws and regulations and recommends environmental standards for approval by the Council of Ministers (Fikreyesus et al. 2014). An inter-ministerial committee coordinates policy implementation (UNECA 2016).

These institutional arrangements laid strong foundations for the fast tracking of projects and the establishment of a financing facility – both key elements in the success of the CRGE strategy.[129] Fast tracking took place via a multidimensional analysis to identify GE policy priorities which had the potential to deliver immediate benefits for economic growth and GHG

[129] The CRGE financing facility and the fiscal policies implemented to enable the realisation of CRGE strategy objectives are presented in detail in Chapter 2.

Figure 18: GHG emissions and GDP growth in Ethiopia 2000 - 2018



Source: UNFCCC 2020; OECD.Stat (data extracted 29.04.2020)

emissions abatement and maximise synergies along economic, environmental and social dimensions, while limiting trade-offs, costs and uncertainties (UNECA 2016). Crucially, the institutional and political coalitions created to implement the CRGE have sustained high-level political support for GE through political transitions, preventing policy reversals due to changing leadership (UNECA 2016). It is of note that some countries have taken this institutional approach still further and enshrined low-carbon development in law to prevent policy reversals and guarantee consistency across administrations.

It is not possible to say whether the explicit aim of the Ethiopian government to achieve a carbon-neutral green economy by 2030 can be realised. GDP growth has increased rapidly since 2000, while GHG emissions fell in 2012 and 2013 (see Figure 3). Unfortunately, more recent data are unavailable: while absolute decoupling of GDP growth from GHG emissions was realised for a short period of time, it is unclear whether this trend has been sustained. In the energy sector, too, positive trends can be identified: while total primary energy supply increased by 26% between 2010 and 2017, energy productivity improved by 54% in the same period[130] (OECD Stat 2020). In the energy mix, hydroelectricity accounted for 86% of power generation and renewable energy for a further 11% in 2017, with just 3% of electricity generated from fossil fuels (CIA Factbook 2020). 60% of firms have reported that they undertook some form of innovation in 2012-2014 (Okereke et al. 2019).

GHG emissions from the agricultural sector were relatively stable in absolute terms between 2010 and 2013, accounting for around 66 $MtCO_2e$. In the same period, emissions from land use, land use change and forestry (LULUCF) fell from 77 $MtCO_2e$ to 26 $MtCO_2e$ (UNFCCC 2020). Sustainable land management has reduced land degradation and improved soil moisture retention and water availability, and so has resulted in higher productivity for participating farmers and enhanced social protection (UNECA 2016). A programme to distribute more than 9 million household

[130] Energy productivity (GDP per unit of total primary energy supply in 2010 USD) amounted to USD 2,765 in 2010 and USD 4,426 in 2017.

Box 4: Creating long-term policy certainty in the green economy: The UK Climate Change Act

Through the 2008 UK Climate Change Act, the UK government is committed by law to reducing GHG emissions to net zero by 2050. The Act requires the UK government to develop policies to ensure that it complies with successive 5-year carbon budgets to put the country on a trajectory to net zero emissions by 2050. Carbon budgets are set 12 years in advance to create certainty for investors, individuals and policymakers alike and cannot be revoked by incumbent governments. In this way, the Act prevents policy reversals and creates stability in climate policy.

The Climate Change Committee, an independent group of experts who advise the government and report regularly to the parliament, provides guidance on the appropriate level for each carbon budget. The Committee fulfils an important role as an independent and transparent agency providing input to the implementation of low-carbon development.

Source: UK Committee on Climate Change

biomass cook stoves is expected to deliver a multiple benefits including GHG emissions reductions of up to 14 $MtCO_2e$ over three years, up to 2,000 fewer deaths per year due to indoor air pollution and the creation of over 5,000 jobs — generating a considerably greater amount of value than the cost of delivering the programme (Vivid Economics 2014).

4. Costa Rica: green growth gaps

Costa Rica is often regarded as a GG success story. However, while it is true that the country has achieved a great deal in relation to sustainable development and has successfully decarbonised its energy sector, this achievement is not apparent in all sectors, and a number of "green growth gaps" have been identified (GIZ 2016). Costa Rica was ranked 30th overall in the EPI in 2018, but this masks a poor performance in relation to several environmental policy fields, such as water supply and sanitation (58) and wastewater treatment (91), forests (49), climate and energy (50), N2O emissions intensity (82), black carbon emissions intensity (178) and agriculture (171).[131]

One underlying reason for these policy failures might be that the country has not (yet) developed a GG/GE policy framework. Although Costa Rica has a general commitment to sustainable development and aims to be carbon neutral by 2021, it does not have a coordinated, integrated economy-wide strategy (GIZ 2016). Perhaps as a result, some GG elements have been neglected in national policy planning, with gaps in the greening of the economy of Costa Rica the result. A further reason for lack of progress relates to some of the key constraints to GG highlighted in this chapter: government failures (in this case, attributable to poor institutional frameworks), market failures (incorrect price signals), lack of access to green finance (e.g. on the part of SMEs), and low rates of environmental taxation (which contribute to low tax-to-GDP ratios and lack of fiscal space).

For example, successive governments have failed to invest in public transport infrastructure in Costa Rica. This has led to high rates of private car ownership (145 per 1,000 inhabitants in 2011, up from 87 in 2000) and rising GHG emissions from the transport sector and

[131] See: https://epi.envirocenter.yale.edu/epi-country-report/CRI

high emissions of air pollutants harmful to human health, such as black carbon and N20 (GIZ 2016). However, there are a number of significant obstacles to investment in public transport infrastructure: the existence of fragmented agencies responsible for discrete elements of transport policy; complex procurement processes; institutional inertia; and lack of integrated urban planning and an overarching transport strategy (GIZ 2016).

Public investment in wastewater treatment, water supply and energy is similarly lacking. Costa Rica also has high rates of unemployment and a skills gap, lacking the human capital necessary to build an economy based on innovation (GIZ 2016).

These low public investment rates and related environmental and social challenges are compounded by a lack of fiscal space due to Costa Rica's high fiscal deficit and low tax-to-GDP ratio. In part, from a GG perspective, these problems could be addressed by the implementation of green fiscal policies — environmentally related taxes and reform of unnecessary tax exemptions — to mobilise domestic revenues for the reduction of fiscal deficits and to increase fiscal space for expenditure on government priorities.[132] Lack of access to credit has also been identified as a barrier to GG and innovation in SMEs in Costa Rica, which might be addressed by deliberate efforts on the part of government to green its financial sector. Both these solutions — green fiscal and green financial policies — are key for the realisation of GG and will be looked at in detail in Chapter 2. The case of Costa Rica exemplifies some of the problems policymakers might face if these important policy tools for GG are not implemented with sufficient rigour.

[132] This approach of introducing green fiscal policy in Costa Rica is recommended by both GIZ (2016) and the OECD (2018).

Annex 6. Green fiscal and green financial policies, specific instruments and examples

Table 19: Green fiscal and green financial policies, specific instruments and examples

	Policy	Specific instruments	Examples
Fiscal policy tools	Environmental taxes and charges	Pollution taxes, charges and fees, deposit-return schemes, road and air transport taxes, taxes on resource extraction, plastics taxes, landfill taxes, taxes on fertiliser and pesticides, incineration taxes, wastewater charges, land taxes, environmental fines, stump charges, payment for ecological services, etc.	Emissions fees in the Czech Republic, vehicle registration taxes in Norway, landfill taxes in the UK, plastics taxes in Morocco
	Carbon pricing - taxes and trading	Taxes, emissions trading (cap and trade)	Emissions trading in the EU, carbon tax in Chile
	Public spending and investment	Reform of environmentally harmful and economically inefficient subsidies, green subsidies, public spending on R&D, public investment in infrastructure, green public procurement	Indonesia, use of revenues from fossil fuel subsidy reform to invest in infrastructure
	Public guarantees	Loan commitments, credit guarantees	World Bank Multilateral Investment Guarantee Agency (MIGA)
	Public-private partnerships	Partnership between private sector, government, development banks, long-term institutional investors	China Development Bank-Urban Development Investment Corporation
Financial policy tools	Redressing under-pricing and lack of transparency of environmental risks	Gathering environment-related financial data, disclosure of climate/environmental risk, taxonomy of green assets, stress tests, macro prudential tools	Bank of England supervisory statement on climate change, mandatory disclosures in China
	Improving governance frameworks of financial institutions, reducing short-term bias	Prudential reforms, corporate governance reforms	Promotion of ESG criteria
	Supporting the development of green financial markets	Standardised taxonomy of green assets, low-carbon indices, green indices, active issuance e.g. of green bonds by authorities	Green bond issuance in France, USA, China, UK, etc.
	Active promotion of green finance using financial regulatory tools	International minimum requirement for green assets on balance sheets; notional carbon prices	Banque du Liban reserve requirements

Source: Krogstrup & Oman, 2019; author

Annex 7. A result of the underestimation of enviromental risk: stranded assets and the carbon bubble

If the 2°C target of the Paris Agreement is to be met, over one third of global oil reserves, half of gas reserves and over 80% of current coal reserves cannot be burned (McGlade and Ekins 2015). If this transpires, it would result in USD 34 trillion (in 2014 USD) gross revenue losses for the fossil fuels industry by 2040 (Barclays Equity Research, 2015). Investments in fossil fuels are thus in danger of becoming "stranded assets", whose value will be prematurely reduced as a result of external factors — policy responses to climate change — and which will devalue severely as a result (Cottrell et al 2016).

The problem of stranded assets, and the creation of the carbon bubble, are partly attributable to incorrect pricing of GHG emissions and a widespread failure to internalise the external costs of fossil fuel combustion. A further cause has been inadequate analytical capabilities in the financial sector, resulting in incorrect estimations of risk resulting from fossil fuel investments.

Whether or not the Paris targets are met, it is likely to be a matter of time before the so-called 'carbon-bubble' bursts. To date, more than 1,110 institutions have publicly committed to divesting over USD 11 trillion from fossil fuels (DivestInvest 2019). Royal Dutch Shell and BP, two leading oil companies, have both identified climate policy and divestment as a material risk (FT 2019). Once it becomes clear that known reserves of fossil fuels will not be extracted and burnt, fossil fuel assets will devalue substantially within a short timeframe, resulting in significant losses for investors. The financial stakes are so high that Mark Carney (2015), former governor of the Bank of England, has warned that physical, liability and transition risks of climate change could imperil financial stability.

Stranded assets also have significant implications for countries with fossil fuel reserves. In developing countries (excluding China), fossil fuel reserves have been estimated to be worth about USD 21 trillion — or about USD 627 billion per year — up to 2050 (Oxfam, 2016). The financial implications of not extracting these assets are significant: countries which can least afford it are facing the loss of a substantial revenues (Cottrell et al. 2016).

Annex 8. The Coalition of Finance Ministers for Climate Action – the Helsinki Principles

The Coalition of Finance Ministers for Climate Action was launched in April 2019, in recognition of the critical role of finance ministries in climate policy. The Coalition will help countries mobilise and align the finance needed to implement their national climate action plans; establish best practices such as climate budgeting and strategies for green investment and procurement; and factor climate risks and vulnerabilities into members' economic planning.

At the time of publication, finance ministers from more than fifty countries have signed on to the **'Helsinki Principles'**, a set of six aspirational principles that promote national climate action, especially through fiscal policy and the use of public finance:

1. **ALIGN** practices and policies with the Paris Agreement commitments
2. **SHARE** experience and expertise with each other
3. **WORK** towards effective carbon pricing
4. **TAKE CLIMATE CHANGE INTO ACCOUNT** in macroeconomic policy, fiscal planning, budgeting, public investment management, and procurement practices
5. **MOBILISE** private sources of climate finance by facilitating investments and the development of a financial sector which support climate mitigation and adaptation
6. **ENGAGE** actively in the domestic preparation and implementation of the NDCs submitted under the Paris Agreement

The Santiago Action Plan identifies priority work streams and deliverables for the Coalition relating to each of the Helsinki Principles and emphasises the key role of knowledge-sharing and development of toolkits and guides e.g. for green budgetary processes.

Source: https://www.cape4financeministry.org/coalition_of_finance_ministers

Annex 9. Tax design considerations

1. Setting the tax rate

If the tax rate is set at the appropriate level, environmental taxes are effective in reducing pollution. However, setting the tax rate is a complex process and the result tends to be a compromise between an appropriate rate from an environmental economic perspective and the realities of political economy. Impacts of a specific measure cannot always be accurately predicted, and so, tax design may to some extent be a matter of trial and error. If environmental taxes are Pigouvian taxes — named after economist Arthur Pigou — the rate is set at a level which internalises all environmental costs within the price of a good or service (Pigou 1932). However, pricing externalities is highly contentious.

An alternative and more pragmatic approach is the "standards and pricing" approach developed by Baumol and Oates (1988), who argued that the tax rate should be set at a level commensurate to achieving a particular environmental objective. In parallel to political economy considerations, which may limit tax rates or result in tax concessions, the "standards and pricing" approach is most commonly employed worldwide. As the definition implies, the majority of green taxes are ad quantum: the tax base is the quantity of an environmental pollutant, e.g. volume or weight. This is the most effective way of reflecting the amount of environmental damage, which tends to correspond to the number of units consumed or amount of pollutant emitted (Cottrell et al. 2018). An ad valorem tax — a percentage of the price of a good — is less appropriate, as environmental damage is not directly linked to the market price.

The objective of green taxes, and indeed green fiscal policy, is to use price signals and the market mechanism to change behaviour. The impact of the tax depends on the tax rate and on the price elasticity of demand, i.e. how responsive demand is to price change. In general, this is higher in the long-term than in the short-term (see e.g. OECD 2010). This is particularly true for cases where demand in the short term is relatively inelastic, i.e. where demand is relatively unresponsive to price change. In the transport sector, substitutions from less to more efficient fossil fuel vehicles, and from internal combustion to electric vehicles, have taken time to gain momentum. Economic actors tend to first adopt less polluting behaviours — shifting to other transport modes, or driving more efficiently — and then, in the longer-term, make structural changes and investments (OECD 2010). This has implications for the optimal design of a tax, as it implies that regular tax rate increases (a "tax escalator") may be necessary to maintain a dynamic incentive in favour of continuous environmental improvement while keeping revenues stable. A tax escalator can also safeguard against a tax rate losing nominal value over time by keeping it in line with inflation.

Policymakers must also resolve the inevitable tensions between fiscal and environmental objectives. Some green taxes do not have the potential to deliver a stable revenue stream, because the price elasticity of demand is high and they bring about rapid behavioural change, such as a plastic bag tax. Taxes on environmentally relevant tax bases with lower price elasticity of demand, where longer term structural changes are predicted, can be of considerable fiscal relevance. If domestic revenue mobilisation is a specific policy objective, taxes on transport fuels or energy combined with a tax escalator can maintain stable revenues over the medium and even longer term (Schlegelmilch and Joas 2015). Considerations pertaining to negative competitiveness impacts can be addressed with fiscal revenues (see the COMETR findings below).

2. Carbon pricing: taxes or trading?

Carbon pricing can be implemented either by means of taxes or trading. When implementing carbon taxation, the price per tonne of CO_2 emitted is set and the market governs the quantity of CO_2 abated. Controversies regarding the social cost of carbon have led to policymakers opting for a more pragmatic,

target-consistent approach when setting the carbon tax rate.[133] In carbon trading systems, no price is set, but rather the permitted quantity of CO_2 emissions is specified, and trading of allowances generates a price in line with supply and demand.

Both options can be effective in mitigating CO2 emissions and all things being equal, should generate the same carbon price for the same amount of emissions reduced. In practice, carbon taxes may be preferable to trading, because of their potential to achieve much greater coverage. Modelling of carbon pricing in G20 countries from 2015 to 2030 predicts that trading would reduce emissions by an average of 60% of the emissions reduced by a USD 70 carbon tax, as only larger installations are covered by trading schemes (Parry et al. 2018).

3. A tax escalator in practice: The German Ecotax Reform 1999-2003

The objective of green tax shifting, which has been implemented widely in OECD countries, is to reduce taxes on desirable activities, such as labour, and to increase them on undesirable activities (polluting behaviours damaging to the environment). Thus, in 1999 Germany implemented a green tax shift, reducing taxes levied on ancillary wage costs (pensions contributions) and increasing taxes on energy consumption.

This was implemented by means of a tax escalator, which increased taxes on transport fuels by 3.07 Euro cents per litre each year, and taxes per kWh of electricity by 1 Euro cent in 1999 and by 0.25 Euro cents each successive year. Taxes on natural gas for heating were increased in 1999 and again in 2003. The tax raised almost EUR 19 billion between 1999 and 2003, with just under 90% of revenue used to reduce pensions contributions and to reduce the overall tax burden in the country (Bach 2005).

The intention of the escalator was twofold: to introduce price increases gradually and so reduce resistance; and to ensure that the nominal value of the ecotax was not undercut by inflationary price increases. Both objectives were only achieved to some extent: the ecotax remained unpopular, and the link to reducing ancillary wage costs poorly understood; and a 63% increase in the pre-tax price of fuel made any inflationary concerns irrelevant.

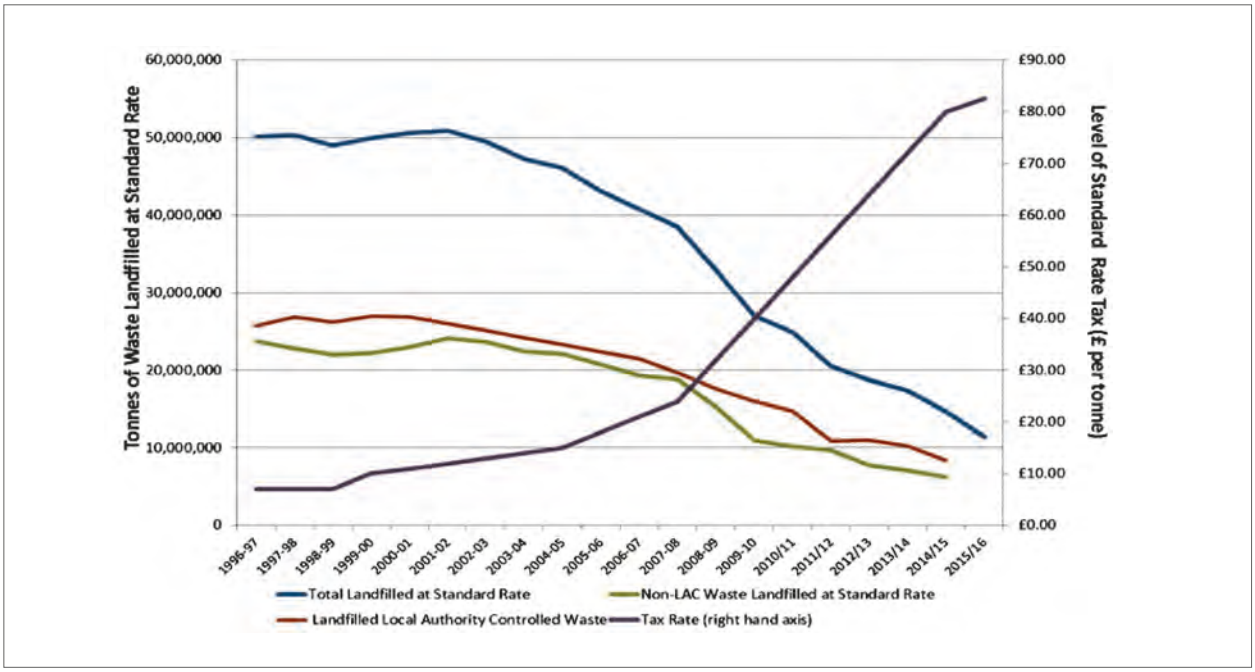
The tax had several positive GG impacts. Different modelling scenarios indicate a small increase in GDP growth as a result of the ecotax (COMETR 2007). It also resulted in the creation of as many as 250,000 jobs by 2003, or 0.75% more jobs than predicted in a business as usual scenario (EEA 2011). Administrative costs were minimal, amounting to just 0.13% of the total tax revenue (OECD 2006). CO_2 emissions were reduced by 2-3% due to falling demand for fossil fuels, increased use of public transport and car sharing (Knigge and Görlach 2005).

4. The bonus/malus scheme for vehicle registrations in France

An example of the trial and error which may be associated with environmental tax design is the feebate introduced on vehicle registrations in France in 2008. The measure subsidises the purchase of low-emissions vehicles (a bonus), while penalising purchasers of high-emissions vehicles and requiring them to pay an additional fee (a malus). In its first year, the policy reduced CO_2 emissions by roughly 4.8 million tonnes and delivered welfare benefits of roughly USD 1.7 billion (OECD 2019a). The measure also had a significant impact on the vehicle fleet: Between 2007 and 2009, average vehicle emissions dropped by 8.7g CO_2/km, 90% of which can be attributed to the reform (EEA 2018). However, the feebate resulted in a tax deficit of EUR 225 million, due to purchases of low-emissions vehicles rising far more rapidly than the government had projected and resulting in a 3.5% increase in vehicle sales (EEA 2018). In response, the feebate was redesigned to avoid rebound effects while still incentivising low-emissions vehicles. The majority of low-emissions vehicles no longer received a bonus.

[133] For a brief timeline of the international debate on the social cost of carbon see the Carbon Brief website: https://www.carbonbrief.org/qa-social-cost-carbon

Figure 19: The UK Landfill tax – tax rate and impact 1996 - 2016



Source: Elliot 2016

Cars emitting between 21g CO_2/km and 119g CO_2/km were exempt from vehicle registration tax, while cars emitting more than 119g CO_2/km paid a penalty starting at EUR 50, with rates increasing progressively to a maximum of EUR 10,500 for vehicles emitting more than 184g CO_2/km. Only purchasers of vehicles emitting 20g CO_2/km or less received a grant (Wappelhorst et al. 2018).

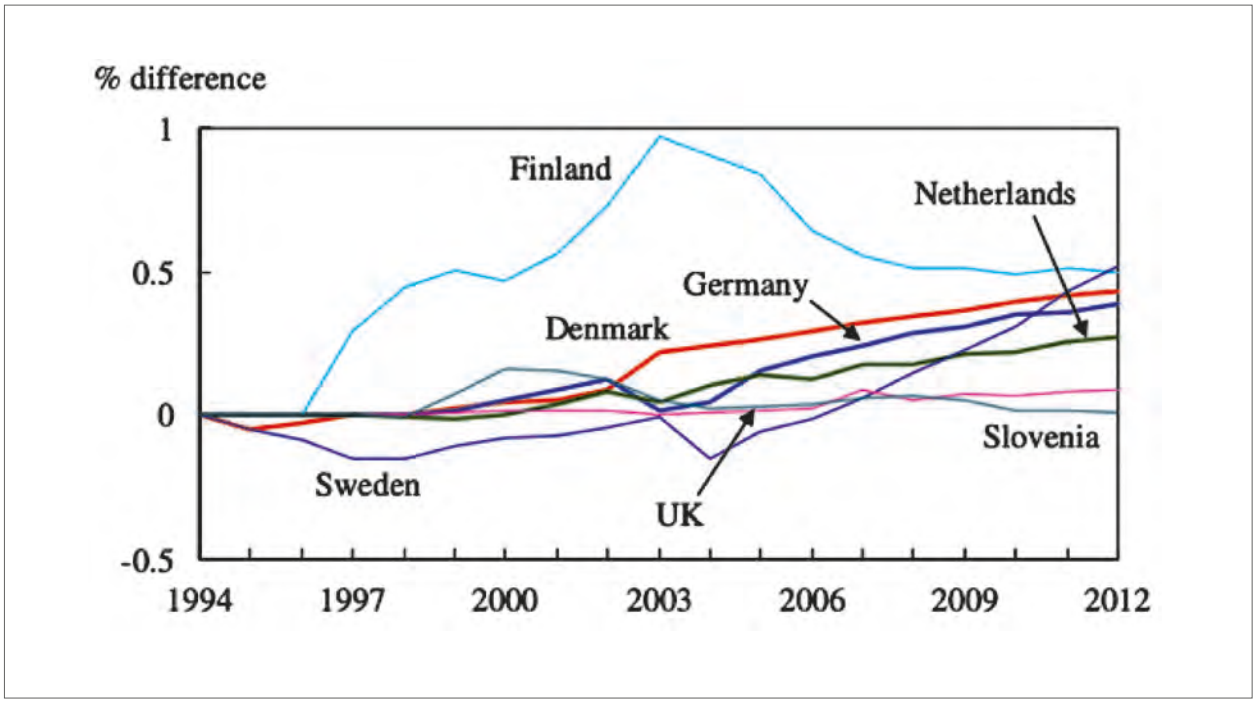
5. The UK landfill tax

A similar example is the UK landfill tax: in this case, the tax rate was adjusted regularly by means of a variable escalator until an appropriate rate was found to bring about reductions in waste-to-landfill. As shown in Figure 7, the tax rate was progressively increased to drive the environmental policy response required – a substantial reduction in the tonnage of waste-to-landfill. The tax rate is adjusted in line with inflation, with a "floor" of GBP 80/tonne (USD 105), with the standard rate from April 2020 of GBP 94.15/tonne (USD 117).

6. COMETR: Competitiveness Impacts of Environmental Tax Reform

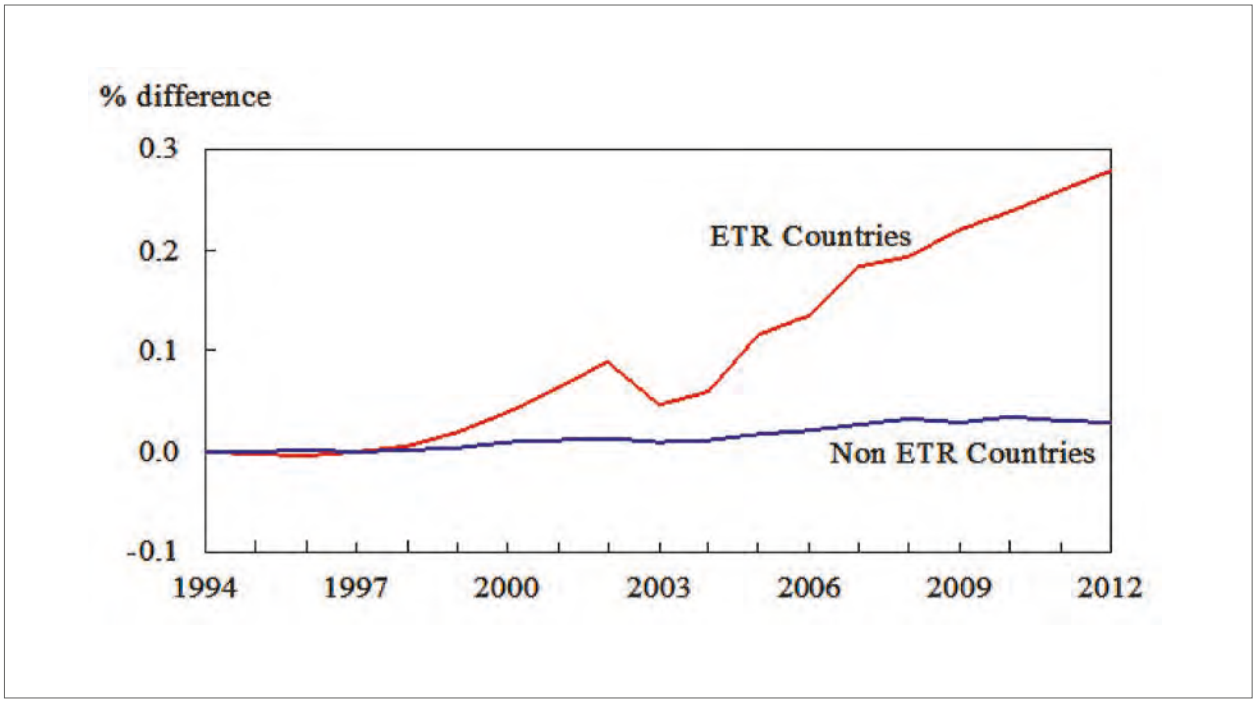
COMETR examined the competitiveness effects of increased carbon-energy taxation in parallel to reduced labour taxation in six European countries during the 1990s and early 2000s. On the basis of actual data from 1994 to 2002, the authors predicted the impacts of environmental tax reform (ETR) in comparison to business as usual (BAU) (COMETR 2007). The report found that ETR reduced GHG emissions by 4-6% on BAU in Scandinavia and Germany, and by around 2% on BAU in the Netherlands and the UK, alongside increases in GDP growth of up to 0.5% in comparison to BAU (Andersen and Ekins 2009; COMETR 2007). The report also predicted higher rates of GDP growth in ETR-countries than in non-ETR countries, implying that environmental taxes increase national competitiveness over time (COMETR 2007). The impacts are shown in Figure 8 and Figure 9.

Figure 20: Percentage change in GDP as a result of a green tax shift in six European countries



Source: COMETR, 2007

Figure 21: Difference in GDP growth in ETR and non-ETR countries



Source: COMETR, 2007

Annex 10. Cross-border externalities and carbon border adjustment mechanisms

The first-best response to climate change would be the imposition of a uniform global carbon price (see e.g. de Mooij et al. 2012; OECD 2016; HLCCP 2017). For political economy reasons, however, this has thus far proved impossible. Instead, 57 countries have implemented carbon pricing or scheduled pricing schemes for implementation (World Bank 2019). This failure to internalise the external cost of GHG emissions uniformly has resulted in economic distortions, lower competitiveness of energy-intensive goods produced in countries with a high carbon price and ultimately, carbon leakage — the relocation of emissions-intensive industries to localities with a low or non-existent carbon price.

To rectify this problem several jurisdictions are considering the introduction of a carbon border adjustment mechanism to impose a carbon price on imports. As more countries commit to GHG emissions neutrality and rapid emissions reductions, it is likely that such initiatives are ever more widely implemented. The European Union (EU) is planning to implement such a measure from 2021. Proposed within the framework of the European Green Deal, which commits the EU to zero net emissions of GHG by 2050, the mechanism will set out to ensure that the price of imports to the EU more accurately reflect their carbon content. The mechanism would replace current free allocation of emissions allowances to energy-intensive sectors within the EU Emissions Trading System (ETS).

This proposal explicitly sets out to "exert political pressure on climate laggards to take action" and will result in an increase in the price of imports from non-EU countries without a carbon price or equivalent mechanisms to reduce GHG emissions (European Commission 2020a). Products from such countries will become less competitive in EU markets as a result. Although the form BCAs will take is not yet clear, the proliferation of such measures will create new incentives in future for countries without a carbon price to take action.

For the realisation of green growth and decoupling of GHG emissions from the economy within the EU, this is an important step. In high-income countries, the difference between production and consumption emissions is typically around 30%, implying that decoupling takes place on the basis of burden-shifting — outsourcing biophysically intensive production — and not on the basis of low-carbon development (Parrique et al. 2019; UNEP 2014)

Annex 11. Countries with a commitment to carbon neutrality by 2050

Table 20: Countries with a commitment to carbon neutrality by 2050

Country/region	Year	Green fiscal policy and green finance measures thus far linked to carbon neutrality declarations
Bhutan	n/a	Bhutan is currently carbon negative and intends to remain carbon neutral: names fiscal incentives, financial support from international climate mechanisms.[134]
Chile	2050	Financial Strategy on Climate Change promotes economic and financial green instruments to support development of low-emissions and climate-resilient markets; strengthening of GF in the financial sector. Chile has a carbon tax and emissions trading.[135]
Costa Rica	2050	National Decarbonisation Plan 2018-2050: green tax reform targeting transport fuels, valuation of negative externalities of pollution in the transport sector, green finance (public-private partnerships and FDI).[136]
European Union*	2050	European Green Deal: green taxes on energy, emissions trading, green budgeting, green public procurement (GPP), carbon border adjustment, sustainable finance strategy, integration of the SDGs in the European Semester (cycle of economic and fiscal policy coordination within the EU).[137]
Ethiopia	2030	Ethiopia's Climate Resilient Green Economy Facility channels finance through grants, loan guarantees, co-financing, concessional loans or ex post rewards.
Fiji	2050	Fiji Low Emissions Development Strategy 2018-2050: Environment and Climate Adaptation Levy (ECAL), economic instruments (tax incentives), feed-in-tariffs (FITs), subsidies to support uptake of new technologies, mechanisms to foster access to finance, green bonds.[138]
Iceland	2040	Iceland's Climate Action Plan 2018-2030: tax incentives for clean cars and fuels, carbon tax, rebate system for high-polluting fossil fuel vehicles, green public procurement, economic instruments to increase the use of renewable energy in ships, climate fund, emissions trading, landfill tax, green accounting.[139]

* Several EU countries also have additional legal or political commitments, e.g. Finland (2035), Austria (2040), Sweden (2045), Denmark, France, Portugal, Slovakia, and Ireland (all 2050). Many have also implemented green fiscal policies, e.g. carbon taxes, at national level, and have created green investment banks or similar green finance facilities.

Country/region	Year	GFP/GF measures thus far linked to carbon neutrality declarations
Marshall Islands	2050	*Tile Til Eo*: Climate Strategy 2050: variable electricity tariff structures, FITs, deposit schemes to incentivise recycling, differentiated tariffs on vehicle imports, private finance, climate finance, climate-related ODA, increase private sector engagement and overcome barriers to investment.[140]
New Zealand	2050	Climate Change Response (zero carbon) amendment bill 2019: mentions both emission trading and carbon pricing; New Zealand Green Investment Finance - a green investment bank - was established in 2019 to accelerate low-emissions investments.[141]
Norway	2030	Norway's Climate Strategy for 2030: emissions trading, uniform carbon tax rate across all non-ETS sectors except agriculture and fisheries, tax incentives for zero-emissions vehicles, road use duty, basic tax on fuel oil, green public sector funding instruments, green subsidies and tax incentives, GPP, creation of a state-owned company invest in renewables/ new technology [142]
Scotland	2045	Covered by UK legislation (see below).
UK	2050	Climate Change Act 2009 amended on advice of Climate Change Committee to incorporate a legally binding commitment to carbo neutrality by 2050: fiscal policies for climate action include the Climate Change Levy, and the Carbon Price Floor - a minimum price for emissions within the EU Emissions Trading System.
Uruguay	2030	Uruguay has forecast in its NDC that it will become a carbon sink by 2030: policy efforts to achieve this include tax exemptions and tax benefits for low-carbon investments, e.g. forestry, afforestation

[134] https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Bhutan%20First/Bhutan-INDC-20150930.pdf

[135] https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Chile%20First/Chile%27s_NDC_2020_english.pdf

[136] https://www.2050pathways.org/wp-content/uploads/2019/02/Decarbonization-Plan-Costa-Rica.pdf

[137] https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

[138] https://unfccc.int/sites/default/files/resource/Fiji_Low%20Emission%20Development%20%20Strategy%202018%20-%202050.pdf

[139] https://www.government.is/library/Files/Icelands%20new%20Climate%20Action%20Plan%20for%202018%202030.pdf

[140] https://www.docdroid.net/W2hK5Qj/180924-rmi-2050-climate-strategy-final-pdf

[141] http://www.legislation.govt.nz/bill/government/2019/0136/latest/whole.html#LMS183742

[142] https://www.regjeringen.no/contentassets/7d3c209f821248da8d4727713ab9619c/en-gb/pdfs/stm201620170041000engpdfs.pdf

Annex 12. Environmentally harmful subsidies in theory and practice

1. The WTO definition of a subsidy

The definition of a subsidy with the most legal weight is that applied in the WTO 1994 Agreement on Subsidies and Countervailing Measures, in which a subsidy is defined as a financial contribution by a government or any public body where:

(i) a government practice involves a direct transfer of funds (e.g. grants, loans, and equity infusion), potential direct transfers of funds or liabilities (e.g. loan guarantees);

(ii) government revenue that is otherwise due is foregone or not collected (e.g. fiscal incentives such as tax credits);

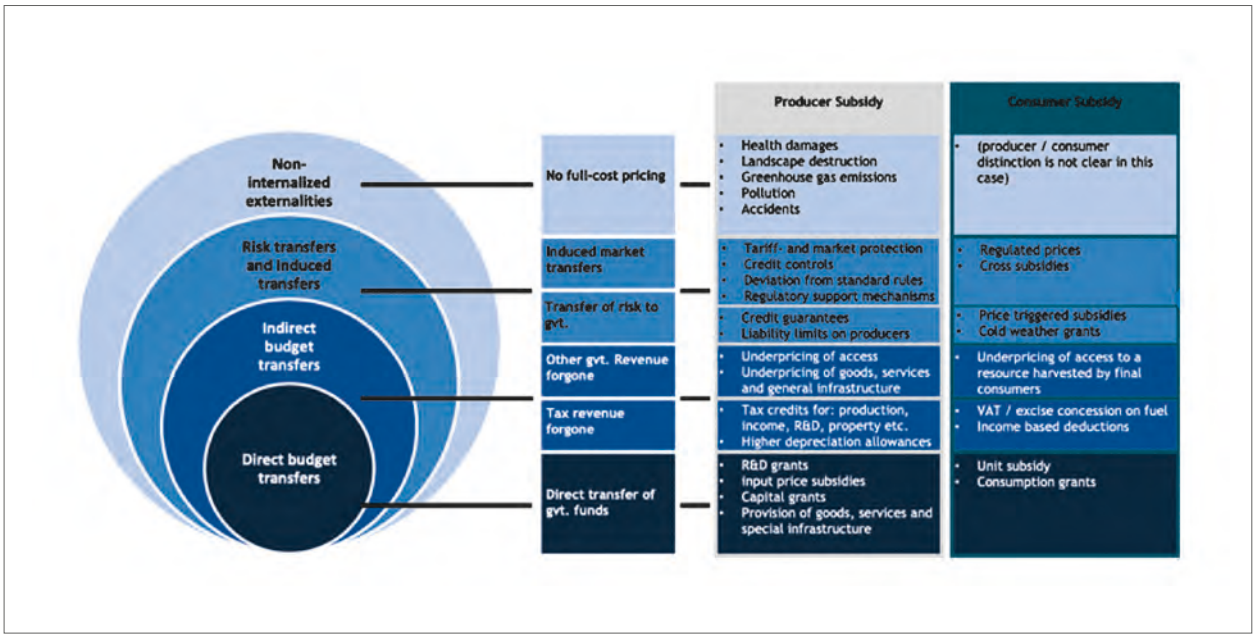
(iii) a government provides goods or services other than general infrastructure, or purchases goods;

(iv) a government makes payments to a funding mechanism, or entrusts or directs a private body to carry out one or more of the type of functions illustrated in (i) to (iii) above which would normally be vested in the government and the practice, in no real sense, differs from practices normally followed by governments (WTO 1994).

2. Reforming harmful subsidies

A common approach to reform of harmful subsidies is to develop a broad fiscal policy reform, which includes greening elements such as subsidy reform and green taxes. An important driver is often the realisation that large fossil energy subsidies are simply not fiscally sustainable in the face of rising budget deficits. Falling oil prices can create a window of oppor-

Figure 22: Typology of environmentally harmful subsidies



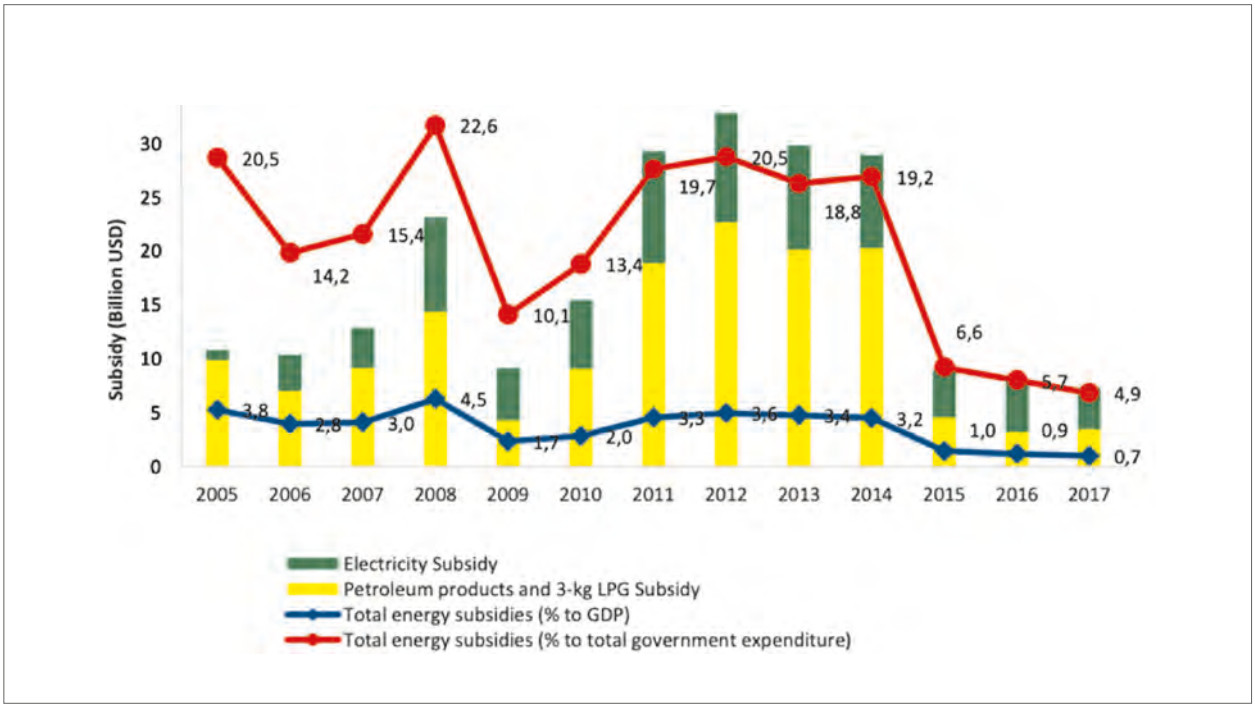
Source: Green Budget Germany, n.d.

tunity for reform, as in 2014, when countries from India to Indonesia, Mexico to Malaysia, implemented pricing reforms (IEA and OECD 2019). In recent years, even oil producing countries in the Middle East — Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates — have increased domestic prices for gasoline, natural gas and electricity (IEA and OECD 2019).

In Mexico, for example, since the General Law on Climate Change came into force in 2012, the country has implemented a series of green fiscal policy measures to phase out subsidies for fuel producers, introduce an excise on fuels, and a carbon tax — all within a wider process of budgetary consolidation and improvements to the efficiency of the tax system (OECD, 2019). Together these measures are expected to increase tax revenues, enhance GDP growth, reduce CO_2 emissions and improve energy efficiency (OECD 2019b).

Minimising negative equity impacts is essential for successful subsidy phase out. Alongside attempts to reduce indiscriminate LPG subsidies in India, the government introduced a direct benefit transfer for LPG users. To target the subsidy and keep costs down, high-income households are excluded from the scheme, while the #GiveItUp campaign has led to 10 million households (5% of the total) voluntarily opting out, saving USD 4.6 billion of subsidies (IEA and OECD 2019). This reform was accompanied by a programme to distribute clean cooking stoves to 80 million households living below the poverty line by March 2019, thus preventing a fall back to use of traditional biomass for cooking and so improving health and freeing up the time of women and children previously spent collecting firewood (IEA and OECD 2019).

Figure 23: Government spending on energy subsidies in Indonesia 2005 - 2017



Source: GoI, 2019

3. Best practice case: fossil fuel subsidy reform in Indonesia

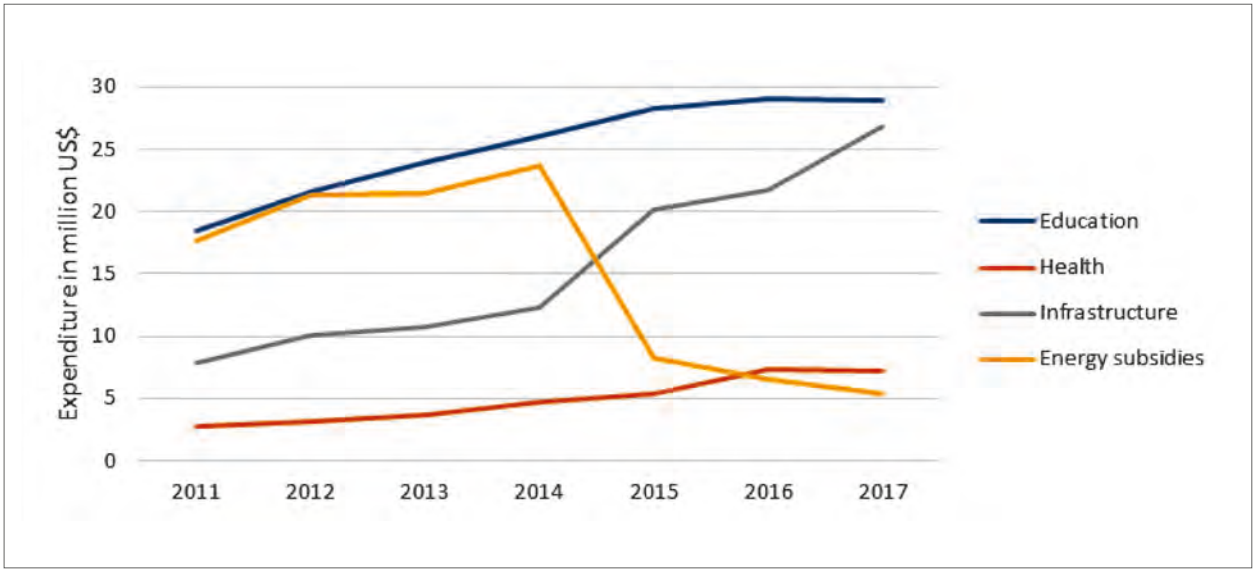
In Indonesia in 2014, fuel and electricity subsidies accounted for over 25% of government spending or over 3% of GDP (IEA 2016). As in many countries with high subsidy burdens, the drain on the government budget resulting from poorly targeted fossil fuel subsidies was becoming increasingly intolerable and unsustainable, as shown below.

For Indonesia, 2014 was also a time of political and economic opportunity: President Joko Widodo had just won the election and reform was relatively popular. Thus, in late 2014, the government effectively eliminated subsidies for gasoline, while subsidies per litre of diesel were set at roughly 7 USD cents in 2015 and halved to 3.5 USD cents in 2016 (2020 prices) (GoI 2017). In 2017, electricity subsidies were also reduced, and tariffs for all but the poorest electricity consumers increased to market prices in three stages.

The reform was carefully planned. The government ran information campaigns prior to reform to inform the public about the unsustainability of subsidies from a fiscal und environmental point of view. The reform itself was timed to coincide with a fall in the oil price of 50% in 2014, meaning that even a total phase out of gasoline subsidies was accompanied by a price drop of 12% (ADB 2015). The budget for poverty alleviation programmes — conditional cash transfers (PKH), cash transfers for education (PIP), and national health insurance subsidies for the poor (JKN) — was increased from USD 2 billion in 2014 to USD 3.1 billion in 2017, as was coverage of the measures (GoI 2017). Government expenditure was redistributed targeting critical sectors: education, health and infrastructure, as shown below.

The combination of subsidy reform and the rising oil price also had a positive environmental impact, bringing about reductions in fuel consumption of 16% for gasoline and 27% for diesel between 2014 and 2016 (GoI 2017). The fiscal space created has been essential to free up revenue for infrastructure investment (GoI 2019).

Figure 24: Government spending on education, health infrastructure and energy subsidies 2011 - 2017



Source: GoI, 2017

Annex 13. Best practice examples of green subsidies

1. Feed-in-tariffs

Feed-in-tariffs (FITs) are cross-subsidies, i.e. indirect budgetary transfers, with the cost of subsidising renewable energy typically passed through to the consumer by power utilities. FITs have been a key driver of market penetration of renewable energies and have played an important role in driving energy transition in many countries, as they mitigate risk for investors and, by fixing the price of renewable energy at a level which guarantees a return on investment, help level the playing field between renewable and fossil energy sources. In 2016, there were 83 FITs in place worldwide. They are widely regarded as the most efficient and effective support scheme for promoting renewable electricity, and a key enabler of renewable energy deployment worldwide (IRENA 2020).

In Germany, for example, the FIT has been crucial in increasing the share of renewable energy in total electricity consumed, which increased from 6% in 2000 to 38% in 2018 (BMWI 2020). The FIT prioritised grid access for renewable electricity and guaranteed a specified price for a period of twenty years. The price paid was based on the actual costs of the specific technology and the size of the installation, ensuring that efficiently operated projects yield a return. Specified unit prices were reviewed regularly to take into account rapidly falling renewable energy costs: this was an important design element which ensured that the policy could be sustainable and stable over time, while offering investors price certainty over a twenty-year timeframe (BMWI 2020).

2. Phased subsidy mechanisms

Phased subsidy mechanisms paid out over time on the basis of technology performance are an innovative approach which can deliver quality assurance for green technologies. In Bangladesh and Nepal, such subsidies are paid out to suppliers and service providers of small-scale renewable and energy-efficiency technologies, who are held responsible for their maintenance and repair (GIZ 2015). Such subsidies encourage installation of GG technologies and in delivering quality assurance, can substantially reduce the portfolio risks of FIs.

3. Loan subsidy schemes

Subsidies on loan interest rates for GG investments can increase the attractiveness of product financing options to end users and create long-term incentives for FIs to develop green credit lines and enhance the incentive for end-users to invest. In Tunisia, for example, the PROSOL programme subsidised interest rates and also increased the term of loans from 3-5 years to incentivise investment. PROSOL combines several green fiscal and financial policy measures to promote the purchase of small-scale solar water heaters (SWH) (Cottrell et al. 2016). PROSOL incorporates several elements: revenues from import duties on air conditioners and vehicle registration taxes on new vehicles partially fund the programme; a 20% subsidy for consumers towards the cost of SWH; subsidised interest rates to facilitate consumer's access to credit; and loan guarantees made by government to commercial banks financing the residual cost of SWH (GIZ 2015). The programme installed 119,000 SWH between 2005 and 2010 (Trabacchi et al. 2012).

Measures to extend the period of the loan, provide 20% of the capital cost and reduce interest rates have made PROSOL affordable also for low-income households: the financing costs amount to around USD 6-13 per month (GIZ 2015). The programme has a very streamlined application procedure, requiring participants to complete an application form, submit ID and a utility bill, and visit a SWH installer (Trabacchi et al. 2012).

The PROSOL programme is commendable particularly in its specific efforts tailored to addressing technical and financial barriers to investment. PROSOL's loan guarantee mechanisms mitigated

risk for commercial banks, with loans being repaid through electricity bills to the state-owned utility (STEG), which can suspend the supply and enforce the loan in the event of a default (Trabacchi et al. 2012). Due to the transfer of risk to STEG, commercial lenders agreed to extend loans over five years rather than three. The near zero-rate of default on PROSOL loans has meant that the initiative has been profitable for banks in spite of the reduced interest rate (Trabacchi et al. 2012). Quality control ensures that standards are maintained, and loans repaid (GIZ 2015).

4. Payments for Ecosystem Services

Payments for Ecosystem Services (PES) are an innovative form of green subsidy which implements the beneficiary pays principle, and which has been successfully implemented in many contexts. PES compensate for the failure of markets to account for the value of ecosystem services and consist of either direct payments to farmers or landowners or indirect payments via a regulatory body. They can deliver substantial cost savings in comparison to more conventional policy responses: in New York City, for example, the PES watershed programme cost just USD 1.5 billion, substantially less than the USD 8-10 billion estimated cost of water treatment plant construction. In developing countries PES schemes must be carefully targeted to ensure that they not only reach wealthier landowners, but also poorer communities with no clearly defined property rights (Porras et al. 2013).

PES in Costa Rica was implemented in 1997, the first national level programme for PES in the world. PES is structured around four ecosystem services: carbon sequestration, preservation of water sources, biodiversity protection and scenic beauty. These indicators are not monitored particularly effectively in relation to the PES schemes, and there is insufficient evidence available of the extent to which PES has succeeded on these metrics (Porras et al. 2013). However, there is evidence that water supplies have improved considerably as a result of PES, and that forests in the country sequester at least 5 million tonnes of CO_2 annually (GIZ 2016). In addition, since 1997, at least 100 million hectares of forest have been under PES, with forest cover accounting for around 50% of Costa Rica's total land area by the mid-2010s from a low of 20% in the 1980s (Porras et al. 2013). PES in Costa Rica are financed through several channels, including fiscal mechanisms:

- Tax on transport fuels: initially, 30% of fuel tax revenues were used to fund the PES programme; this has been changed a fixed amount of USD 11.6 million annually.
- Water taxes: 25% of water charges were allocated to PES, 25% to public parks and conservation areas; average annual revenues around USD 3.6 million.
- Loans: World Bank to kick-start the PES programme, later from GEF and KfW.
- Agreements with private and semi-private companies that shared in PES objectives, e.g. tourism (less than 2% of all payments) (Porras and Chacón-Cascante 2018).

Agroforestry contracts have improved the access of more vulnerable groups to PES alongside larger landowners. Participation of indigenous communities increased from 3% in 1997 to 26% by 2012. PES also appears to have driven greater regularisation of land ownership amongst smaller landowners.

Annex 14. Green Public Procurement in the Republic of Korea

The Act on the Promotion of Purchase of Green Products was introduced in Korea in 2005. It has a strong focus on supporting sustainable consumption and production by developing the market for eco-labelled products. All government agencies, at all levels, must submit an annual GPP implementation plan. Electronic systems automatically collect procurement data and monitor procurement practices. Progress is assessed on the basis of these two sets of information.

The policy has been very successful. Between 2006 and 2017, total expenditure on green products increased from USD 759 million to USD 2.9 billion, with 48% of public procurement regarded as sustainable. The number of ecolabel certified products increased from 2,721 to 14,647 in the same period and the compound annual growth rate of the green products market was 11.1% per year. The government publishes an annual report on the impact of GPP policies on the environment, jobs and the economy. In 2017, the economic benefits from green purchases were estimated to be worth USD 35 million, and more than 4,000 green jobs were created. Modelling has indicated that implementing GPP, in comparison to BAU, will generate macroeconomic benefits worth up to USD 117 million in cost savings from GHG mitigation, increased investment, and a greener industrial sector with fewer energy-intensive industries by 2030 (UNEP 2019c).

GPP has been central to Korea's low-carbon green growth strategies and is seen as an important tool for the achievement of national sustainable development goals. A strong inter-agency and inter-ministerial institutional framework, including the development of annual GPP plans and robust monitoring and reporting have informed policy and ensured that GPP is successfully implemented. Electronic procurement systems have supported public agencies to procure green products, as have the use of the Eco-label and the Good Recycled Mark.

Annex 15. Governance frameworks for green finance

1. Green Banking Policy Framework in Bangladesh

Bangladesh was the first country in the world to develop and introduce a Green Banking Policy and Strategy Framework in 2011. Soon after, in 2017, the Bangladesh Central Bank published environmental risk guidelines to streamline solutions to manage environmental risks in the financial sector. As a result, the country is widely acknowledged as being a pioneer in GF.

The Framework proposed the creation of separate green banking units, inclusion of climate change and environmental degradation in existing credit risk methodology, preferential access to credit for green business, and determination of green targets for GF (GIZ 2015).

Perhaps because the Framework was indicative, rather than legally binding, it did not bring about a rapid shift towards GF in the country. Although 40 banks (out of a total of 48) had created green banking units by 2015, the Framework has had only a minimal impact on financial decision-making and mainstream FIs were not attracted to the GF sector (GIZ 2015). Two flagship green funds, established by government, remain the main sources of GF in Bangladesh, alongside funds set up by multilateral banks and bilateral donors (Hossain 2018).

In January 2016, a mandatory 5% credit quota for GF in the loan portfolio of all banks and FIs was set by the Bangladesh Bank (Hossain 2018). However, in spite of these efforts and the country's green banking policy guidelines, poor capacity of banks and FIs to manage green projects has resulted in slow growth in GF. Among 50 sectors identified by the government as eligible for GF in 2017, most do not have a well-established investment demand. Small-scale green entrepreneurs tend to find it difficult to prove their creditworthiness and to secure funding. Often, banks and FIs receive applications from enterprises without proper documentation. Banks and FIs are thus unable to find enough green project proposals. Ongoing limitations to GF in Bangladesh exemplify why integrated solutions tackling a range of constraints to GG are developed by policymakers and highlight the importance of coordinating policies to achieve an effective transition to green economy.

2. The European Union governance framework for green finance

In 2016, the European Union Action Plan on Financing Sustainable Growth had three objectives: to reorient capital flows towards GG; to manage financial risks stemming from climate change and environmental degradation; and to foster transparency and long-termism in economic and financial activities. It proposed a number of ways in which governance frameworks can be improved and GG considerations integrated within the financial sector and put into legislation:

- A Sustainable Taxonomy — a classification system for environmentally sustainable economic activities. The Taxonomy specifies that a green investment must make a substantial contribution to one the following environmental policy areas — climate change mitigation, adaptation, sustainable use of water or marine resources, pollution prevention, healthy ecosystems, or the circular economy — and do not harm to any of the others.
- A Green Bonds Standard — aims to be a best practice model which can be applied by all bond issuers to explain how their funding contributes to sustainability.
- Paris-Aligned and Climate Transition benchmarks — to support the allocation of a large amount of private capital towards climate transition.

Furthermore, in the EU many other governance improvements are underway, e.g. requirements for financial services to take sustainability preferences into consideration when providing investment advice; new guidelines for corporate reporting; better integration of sustainability risk in prudential requirements; better integration of sustainability and ratings and market research; strengthening sustainability disclosure; and attenuating short termism in capital markets.

3. Policy instruments for Green Bonds markets

- Market integrity: development of green definitions, GB principles and standards and administrative systems for verification, certification and enforcement (see e.g. activities in the EU).
- Strategic issuance: Foster innovation in public issuance of GBs. This can take the form of issuance of city bonds to finance public transport infrastructure investment; creation of "green" national banks to issue GBs or collaboration with "greened" development banks, e.g. KfW; green sovereign bonds.
- Market development: aggregation and securitisation. To access GB markets, smaller loans and assets need to be packaged to reach the size demanded by institutional investors. This is often the case for renewable energy investment or energy efficiency projects, e.g. GBs issued for the installation of green energy in government and commercial buildings in Shanghai (World Bank 2018). Aggregated assets can be sold into institutional investors through the issuance of asset-backed securities. Subsequently, banks can recycle their capital and lend to new projects.
- Improvements to risk-return profiles for GG investments: policy tools to improve risk-return profiles of climate investments, e.g. feed-in-tariffs to reduce risk and increase return on investment in renewable energy installations, state loan guarantees, state insurance, risk transfers.
- Tax incentives for issuers and investors: Tax incentives can reduce the cost of climate investment, enhance return on investment due to tax benefits, or reduce the relative cost of GB issuance. Tax credit bonds give investors tax credits for their investments instead of interest payments, e.g. Clean Renewable Energy Bonds in the USA. In the case of direct subsidy bonds, governments pay direct cash subsidies to investors. Tax exempt bonds do not require investors to pay tax on interest earned, e.g. tax-exempt issuance of wind energy bonds in Brazil.
- Boosting demand: governments set minimum quotas for green domestic investment. Pensions, social security, sovereign wealth funds and development banks must allocate a percentage of their fixed income in GBs. Green quantitative easing can support urgent GG investments, e.g. in green infrastructure bonds.

Source: Climate Bonds Initiative 2020a.

Annex 16. Green credit lines

The Ethiopian government has created a national financing mechanism for GG, the Climate-Resilient Green Economy Facility (CRGEF) to support the implementation of the country's GE strategy and investment plans.

The GEF started operating in 2013. It mobilises resources from government, private sector, bilateral and multilateral development partners, carbon trading schemes and financial mechanisms of multilateral environmental agreements. The CRGEF channels finance through various instruments, including grants, loan guarantees, co-financing, concessional loans, or ex post rewards in the form of payment for verified results. It implements information dissemination, capacity building and other activities to address costs and risks to GG investment, conducts monitoring and verification of results achieved by funded actions and provides fiduciary assurance to finance providers (UNECA 2016).

The CRGEF is hosted jointly by the Ministry of Finance and Economic Development (MoFED) and the Ministry of the Environment, Forests and Climate Change, which fosters cross-cutting approaches to GF, inter-ministerial cooperation and prioritisation of funds across different development programmes. As recognised by the Coalition of Finance Ministers for Climate Action, the involvement of MoFED has been critical in ensuring prioritisation of GG at the budgetary level.

In 2014-15, bilateral funding partners gave USD 40 million to the CRGEF. This capital has been used to fund a Fast-Track Investment Initiative, which has been effective in the short-term mobilisation of resources, funding 28 quick-start projects in priority areas over more than 80 sites across the country (UNECA 2016; Redda and Roland 2016). In addition, the CRGEF developed a private sector strategy targeting SMEs to mobilise private sector GG investment.

The CRGEF has also spearheaded measures to meet the requirements of international climate finance, e.g. the development of systems for financial and programme management, and environmental and social safeguards (Redda and Roland 2016). In 2016, the MoFED was given accreditation to the Adaptation Fund (for projects up to USD 10 million) and the Green Climate Fund (for projects worth up to USD 50 million) (Redda and Roland 2016). Between 2016-2020, it has mobilised USD 50 million from the GCF under its five-year growth and transformation plan (UNECA 2016).

The CRGEF demonstrates the value of dedicated entity to attract and channel climate finance from international, public and private sources to implement initiatives towards establishing a climate-resilient green economy (Redda and Roland 2016). The CRGEF has played a key role in supporting the implementation of GG strategies in Ethiopia and the mainstreaming of climate change across different sectors. The successful establishment of a single pool of funds makes it easier for the government to coordinate activities and to disburse funds effectively.

Annex 17. Green bonds

In 2015, Transport for London (TfL), the statutory body responsible for the transport network in London, issued a green bond for infrastructure investment and improvements to the transport network — station and line upgrades on rail and underground trains — as well as improvements to cycle lanes and the purchase of low-emissions hybrid buses. The city aims for 81% of all journeys to be on foot, by cycle or using public transport by 2041, which requires the expansion of low-carbon transport infrastructure in the city.

To reassure investors of its green credentials, that alignment of the bond with the Green Bond Principles — a set of international best practice policy guidelines — was assessed by an independent third party prior to bond issuance in 2015. The 10-year bond, worth USD 612 million, was oversubscribed by 50%. The green label for the bond enabled TfL to issue a larger bond than would otherwise have been possible, and at a better price, and promoted the environmental credentials of TfL.

Several factors facilitated bond issuance and administration. Prior to bond issuance, TfL had many eligible low-carbon projects in the pipeline worth an estimated USD 6 billion. It has proven relatively easy for TfL to track green bond proceeds with minor adjustments to existing reporting mechanisms. TfL publishes annual reports on how much of the green bond proceeds have been allocated, and to which projects. Environmental impacts, e.g. on GHG emissions or NO_x emissions, are already published annually within established reporting systems.

Alongside provision of additional funds for infrastructure investments, potential environmental and social benefits include improved air quality, reduced GHG emissions, reduced congestion, improved human health as a result of reduced harmful air pollution and promotion of active travel. In the long-term, green bond issuance will be a major source of funding for the transformation of London to a zero-carbon city by 2050, with 80% of all trips on foot, by bicycle or on public transport by 2041.

TfL has identified a total of USD 4.9 billion of investments to enable further issuances in the future. In January 2020, following the success of the first green bond, TfL issued a Green Bond Framework to set the parameters for further green bond issuance focussing on three key areas: clean transport, pollution prevention and control and renewable energy. For the first category, a major focus will be rail infrastructure construction and improvement, charging points for electric taxis, zero emissions buses, and cycling and walking infrastructure. The second category refers to investments in enforcement infrastructure to implement the ultra-low emissions zone (which reduced NO_x emissions from transport by 31% when it was implemented in 2019). The third, to solar energy investment.

References

Vietnamese

1. Ministry of Industry and Trade (2013), *Documents of APEC Workshop on sharing experiences in building and implementing new growth model*, Ha Noi, November 2013.
2. Ministry of Education and Training (2018), *Basic Principles of Marxism-Leninism, Curriculum*, National Political Publishing House.
3. Ministry of Planning and Investment (2016), *Project Increasing mobilization of social resources for development investment.*
4. Ministry of Finance (2015), *Decision No. 2183/QD-BTC dated 20/10/2015 promulgating the Action Plan of the Finance sector to implement the National Green Growth Strategy to 2020.*
5. Ministry of Justice (2017), *Guidance on professional policy impact assessment.*
6. Can Van Luc (2016), *The role of green banks in sustainable economic development – Current situation and solutions for Viet Nam, Proceedings of the Workshop "The role of green banks in greening the economy"*, September 2016.
7. CIEM (2013), *Action Plan for developing the Industrialization strategy in Viet Nam: Environmental and Energy Saving Industry,* Special Information.
8. CIEM (2012), *Green job creation potential in Viet Nam,* Special Information.
9. Government (2018), *Decree No. 163/2018/ND-CP dated December 4, 2018 on corporate bonds issuance.*
10. Government (2012), *Decision No. 1393/QD-TTg dated September 25, 2012 approving the National Green Growth Strategy.*
11. Government (2014), *Decision No. 403/QD-TTg dated 20/3/2014 approving the National Action Plan on Green Growth for the period of 2014 - 2020.*
12. Chu Van Cap (2012), *Green growth: Sustainable development in Viet Nam's socio-economic development strategy for the period of 2011 - 2020.*
13. *Enterprise and access to green credit (2018),* http://hpa.hanoi.gov.vn/trang-chu/tin-tong-hop/tin-trong-nuoc/doanh-nghiep-va-van-de-tiep-can-nguon-von-tin-dung-xanh-a10340.
14. GIZ, *Reforming the green finance in Viet Nam: Green bonds, green index and green credit programs.*
15. H. Chung (2020), *Green credit growth has plenty of room for development.*
16. Ha Phuong (2020), *Banks "sprung up" green credit.*
17. Holger Rogall (2009), *Sustainable Economics - economic theory and practice of sustainable development, Vietnamese translation from original German version, Natural Science and Technology Publishing House,* Ha Noi 2011.

18. Viet Nam Association for the Protection of Nature and Environment (2018), *Green economy for sustainable development in the context of climate change, The Truth National Political Publishing House,* Ha Noi.

19. Huu Hoe (2020), *The attractiveness of green stocks.*

20. Lai Thi Thanh Loan (2019), *Green financial market in Viet Nam: Current situation, international experience and solutions.*

21. Le Quang Thuan (2017), *Using tax instruments to protect environment towards sustainable development: International experience and implications for Viet Nam, Proceedings of the Scientific Workshop Completing "environmental protection tax and charge policies",* July 2017.

22. Le Quang Thuan and research group (2016), *Financial policies for green economy development, ministry-level scientific research project,* Ministry of Finance.

23. Mai Thu, Thu Huong (2015), *Green finance associated with sustainable development,* Securities Journal, No. 206, page 12.

24. Minh Lan (2019), *What is green credit? The role and necessity of green credit.*

25. State Bank of Viet Nam (2019), *Proceedings of the seminar "Green credit growth in Viet Nam: Opportunities, challenges and solutions".*

26. Nguyen Huu Huan (2014), *Green banking development in Viet Nam,* Journal of Development and Integration, 14 (24), 4 - 9.

27. Nguyen Huu Lam Son (2014), *Some issues about Viet Nam's green trade policy*, Journal of Trade Studies, No. 9, June 2014.

28. Nguyen Manh Hai et al. (2015), *Financial policies for green economy development in Viet Nam: Current situation and solutions, Ministerial-level scientific research topic,* CIEM.

29. Nguyen Minh Loan (2019), *Green banking development in the context of industrial revolution 4.0.*

30. Nguyen Quang Thuan and Nguyen Xuan Trung (2012), *Green experience in growth model innovation and restructuring the Vietnamese economy,* Journal of World Economic and Political Issues, No. 3, 2012.

31. Nguyen The Chinh (2011), *Changing mode of economic development towards green economy in Viet Nam,* sponre.gov.vn/home/dien.dan/763.

32. Nguyen Thi Hong Nhung (2015), *Green bonds — Potentials and challenges,* Viet Nam Securities Review, No. 204, page 20.

33. Nguyen Thi Minh Chau (2017), *Chinese green bond development experience for Viet Nam.*

34. Nguyen Thi Minh Hue (2016), *Approach green finance by Vietnamese enterprises: Difficulties and advantages,* Proceedings of the Workshop "The role of green banks in greening the economy".

35. Nguyen Thi Tue Anh with the research team at CIEM (2016), *Some key solutions to promote green growth in Ha Noi city,* city-level scientific research project.

36. Pham Ngoc Dung and Dinh Xuan Class (2011), *The Finance — monetary Textbook (page 148),* Financial Publishing House.

37. Pham Xuan Hoe (2015), *Recommendation for a policy framework to support green credit programs, Workshop on international green capital access - green credit programme development,* SBV and GIZ, Ha Noi June 18, 2015.

38. Ta Quang Don (2019), *Developing green credit: Current status of policies and some recommendations.*

39. *Green Finance in Viet Nam,* Proceedings of the Workshop organized by SBV in cooperation with ADB in Ha Noi on September 13, 2019.

40. Tran Cong Sach (2013), *Towards a model of green growth and sustainability,* Trade Research Journal, No. 485, December 2013.

41. Tran Thanh Thuy, Nguyen Hong Anh and Nguyen Viet Dung (2016), *Environmental policy in credit activities of commercial banks in Viet Nam,* Center for People and Nature, Ha Noi, Viet Nam.

42. Tran Thi Khanh Li (2017), International experience in green credit and recommendations, Banking Journal No. 10, May 2017.

43. Tran Thi Thanh Tu, Ngo Anh Phuong, Nguyen Thi Nhung (2019), *Experimental study on the development level of factors affecting green banking in Viet Nam,* Banking Magazine, special issue 2019.

44. Tran Thi Thanh Tu and Do Hong Nhung (2018), *Green financial market development: International practices and practices in Viet Nam.*

45. Tran Thi Thanh Tu et al. (2017), *Finance – Banking – Green accounting, international experience and implications for Viet Nam,* Science and Technology Publishing House.

46. Tran Thi Xuan Anh et al. (2019), *Building green financial system – Experiences of some countries in the world and lessons for Viet Nam.*

47. Tran Trong Phong, Thieu Thuy Duong (2016), *Developing a green credit line in the context of "greening" the banking system,* Banking Magazine No. 5/2016.

48. Trong Triet (2015), *Green credit: A new growth model for Viet Nam, a green credit trust fund,* Financial Information No. 11 for the first period of June 2015.

49. Vien The Giang (2017), *Finance for green economic development in Viet Nam – Policy framework, law and practice,* Science and Technology Development Journal, volume 20, issue Q2-2017.

50. Vu Dinh Anh (2020), *Green Credit.*

51. Vu Phuong Chi (2018), *Green credit development: International experience and some lessons for Vietnamese commercial banks.*

52. Vu Thi Kim Oanh (2015), *Green Bank, international experience and recommendations for Viet Nam,* Financial-monetary Magazine.

53. *The Department of international cooperation,* State Securities Commission (2018), Learning Luxembourg City to develop a Green stock exchange.

54. Vuong Thu Hien (2017), *International experience on environmental protection tax and recommenda tions to Viet Nam,* Proceedings of the Scientific workshop "Completing the environmental protection tax and charge policies", July 2017

English

55. Bahl Sarita (2012), *Role of Green Banking in Sustainable Growth,* International Journal of Marketing, Financial Services and Management Research, 1(2), 27 - 35.

56. Cottrell, J et al. (2016), *Environmental Tax Reform in Developing, Emerging and Transition Economies,* German Development Institute.

57. Dirk Heine, John N. and Ian W.H Parry (2012), *Environmental Tax Reform: Principles from Theory and Practice to Date.*

58 . Do Thi Van Trang (Banking Academy, Viet Nam) (2016), *Experiences of Green Credit Development — Lessons Learned to Viet Nam,* Review of Business and Economics Studies.

59. Duan Jin and Niu Mengqi (2011), *The Paradox of Green Credit in China,* Science Direct.

60. Eurostat (2013), *Environmental Taxes-A Statistical Guide,* European Union.

61. Farell, D., Remes, J (2009), *Promoting Energy Efficiency in the Developing World.*

62. Green Bond Market Report (2017) — Climate Bond Initiatives (CBI).

63. Green Fiscal Commission (2009), *Green Fiscal Commission, how Effective are Green Taxes.*

64. Heine D, Norregaard, J và Parry I, W.H (2012), *Environmental Tax Reform: Principles From Theory And Practice To Date,* IMF Working Paper.

65. Hirschnman (2001), *The Strategy of Economic Development.*

66. IFC (2016), *Green Finance: A Bottom-up Approach to Track Existing Flows, 2121 Pennsylvania Avenue,* N.W.

67. IFC (2013), *Mobilizing Public and Private Funds for Inclusive Green Growth Investment in Developing Countries* — An Expanded Stocktaking Report Prepared for the G20 Development Working Group, IFC Climate Business Department.

68. International Capital Market Association (2015), *Green Bond Principles,* www.icmagroup.org/assets/.../Green-Bonds/GBP_2015_27-March.pdf, 20/4/2017.

69. Isao Endo (2018), *Overview of the Report on Market-Based Approaches to Environmental Management in Asia,* Sustainable Development and Climate Change Department Asian Development Bank, 2018.

70. Jacqueline Cottrell (2016), *Environment tax in Developing, Emerging and Transition Economies,* DIE and German Development Institute, ISSN 1860-0468, 2016.

71. Jacques Raoul Boudeville (1996), *Problem of Regional Economic Planning.*

72. Janusz Rosiek (2015), T*he Impact of Environmental Tax Policy on Sustainable Development of the EU Economics.*

73. John Friedmann (1996), *Regional Development Policy: A Case Study of Venezuela.*

74. John Friedmann (2005), *Regional Planning: A Problem in Spatial Integration.*

75. Kennet et al. (2012), *Handbook of Green Economics,* Green Economics Institute.

76. Laura Alix (2017), *How Banks are Fighting Climate Change, Linklaters (2019),* Sustainable Finance, Retrieved from: https://www.linklaters.com/en/insights/thought-leadership/sustainable-finance/the-rise-of-green-loans-and-sustainability-linked-lending.

77. Loan Market Association (2018), *Green Loan Principles,* Retrieved from: https://www.lma.eu.com/application/files/9115/4452/5458/741_LM_Green_Loan_Principles_Booklet_V8.pdf.

78. Loan Market Association (2019), *Sustainability linked Loan Principles,* Retrieved from: https://www.lma.eu.com/application/files/8015/5307/4231/LMA_Sustainability_Linked_Loan_Principles.pdf.

79. Millat K. M (2012), *Green Banking Activities,* Banking Regulation and Policy Department Bangladesh Bank.

80. Mohammed Niyas Fthima Muneera (2012), *Public – Private Partnership (PPP) in Solid Waste Management.*

81. Muleba Nshimbi, Royd Vinga (2014), *Impacts of Public – Private Partnership on Local Livelihoods and Natural Resources Dynamics: Perceptions from Eastern Zambia.*

82. OECD (2011), *A Green Growth Strategy for Food and Agriculture: Preliminary Report.*

83. OECD (2011), *Environmentally related taxes in OECD Countries: Issues and Strategies.*

84. OECD (2017), *Green Finance and Investment Mobilising Bond Markets for a Low-Carbon Transition.*

85. OECD (2012), *Green Growth and Development Countries: A Summary for Policy Makers,* OECD.

86. OECD (2014), *Green Growth Indicators for Agriculture.*

87. OECD (2012), *Industrial policy and Territorial Development: Lessons from Korea.*

88. OECD (2014), *Towards Green Growth in Southeast Asia.*

89. Porter M, Vonder Linde C (1995), *Towards a New Conception of the Environment – Competitiveness Paradigm.*

90. R.E Freeman (1984), *Strategic Management: A Stakeholder Approach; Boston Pitman.*

91. Saijel Kishan (2019), *Banks Are Finally Starting to Account for Climate Change Risk, 12 Sep.*

92. Stephen Spratt (2013), *Environment Taxation and Development: A Scoping Study, Institute of Development Studies,* IDS Working Volume 2013, No.433.

93. Tran Thi Thanh Tu và Tran Thi Hoang Yen, 2015, *Green Bank: International Experiences and Viet Nam Perspectives, Asian Social Science;* No. 28OECD (2017), Green Finance and Investment Mobilising Bond Markets for a Low-Carbon Transition.

94. UNEP (2011), *Toward a Green Economy: Pathways to Sustainable Development and Poverty Eradication.*

95. UNEP (2012), *Measuring Progress Towards a Green Economy – Draft Working Paper.*

96. UNEP, ILO (2011), *Green Jobs: Towards Decent Work in a Sustainable, Low Carbon World.*

97. UNESCAP (2008), *Greening Growth in Asia and Pacific.*

98. UNIDO (2010), *A Green Footprint for Industry. Opportunities and Challenges of Sustainable Industrial Development.*

99. UNIDO (2007), *Policies for Promoting Industrial Energy Efficiency in Developing Countries and Transition.*

100. UNIDO (2011), *UNIDO Green Industry Initiative for Sustainable Industrial Development.*

101. United Nations (2011), *Working Towards a Balanced and Inclusive Green Economy.*

102. WB (2017), *Carbon Tax Guide: Handbook For Policy Maker,* Washington, D.C.

103. WB (2007), *Financing Development Aid and Beyond.*

104. WB (2013), *Financing for Development: Post-2015.*

105. WB (2014), *Natural Resources PPP.*

106. Zhang, B., Yang, Y., & Bi, J. (2011), *Tracking the Implementation of Green Credit Policy in China: Top-down Perspective and Bottom-up Reform,* Journal of environmental management, 92(4), 1321-7.

Imprint

Published by
Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

Registered offices
Bonn and Eschborn, Germany

Friedrich-Ebert-Allee 32 + 36
53113 Bonn, Germany
T +49 228 4460-0
F +49 228 4460-1766

Dag-Hammarskjöld-Weg 1 - 5
65760 Eschborn, Germany
T +49 6196 79-0
F +49 6196 79-1115

E info@giz.de
I www.giz.de

As at
October 2021

Design by
Gudrun Näkel

Photo credits
GIZ GmbH / cover, left side: top and bottom; page 3, 69, 95, 119
Oliver Krebs / GIZ GmbH / cover, left side: middle

istockphoto / inside cover
Thomas Imo / cover, right side