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Project "Strengthening Capacity and Institutional Reform for Green Growth and Sustainable Development in Viet Nam"

OPPORTUNITIES FOR CARBON PRICING IN VIET NAM

September 2018

TĂNG TRƯỞNG XANH
xanh hiện tại vững tương lai

ACKNOWLEDGEMENTS

This publication is a product of a project 'Strengthening Capacity and Institutional Reform for Green Growth and Sustainable Development in Viet Nam' which is implemented by the Ministry of Planning and Investment of Viet Nam within the framework of partnership with the United National Development Programme (UNDP) and United States Agency for International Development (USAID).

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FOREWORD

The world can only achieve the Sustainable Development Goals if accelerated climate actions are taken at scale in the next 12 years. Climate change presents the biggest challenge of this generation, it also provides the opportunity to do better while growing the economy. The United Nations Secretary-General's address to the General Assembly made on 25 September 2018 encouraged the governments to pursue green economy policies that utilise opportunities offered through affordable and competitive clean energy and create millions of new green jobs worldwide. He underscored the importance of the establishment of adequate price for carbon and end investments in unsustainable infrastructure that lock countries into high-emission decades to come.

There is a significant gap between the current committed greenhouse gas emission reduction in all Nationally Determined Contributions and the emission targets required to meet the Paris Climate Agreement of limiting global temperature increase by 2°C. Carbon financing, including carbon tax has been increasingly accepted as a cost-effective policy instrument for incentivising greenhouse gas emission reductions where they occur ("polluter pays principle") helping to address the "greatest market failure ever" of climate change.

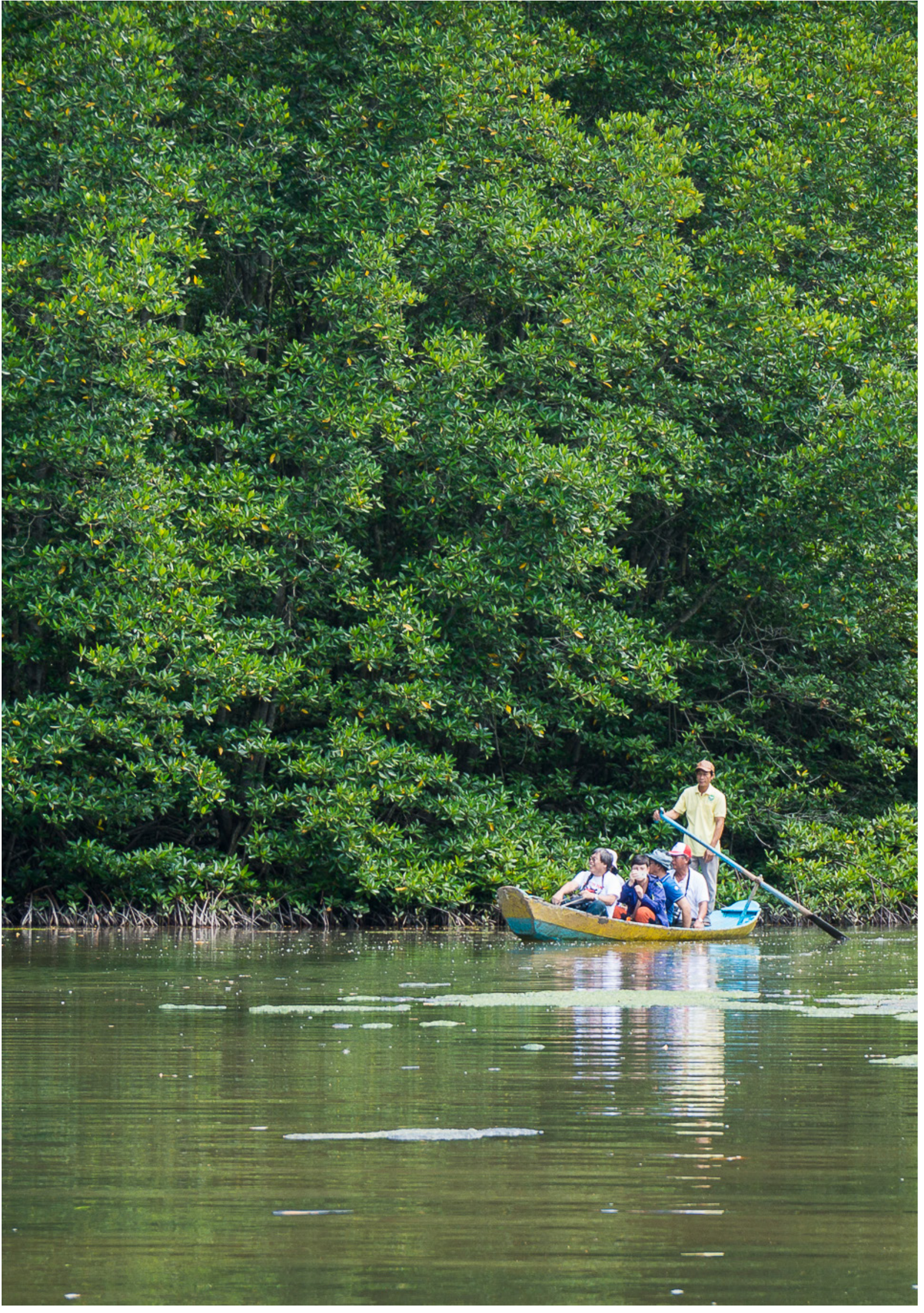
In this context, the research/discussion paper "Opportunities for Carbon pricing in Vietnam" by the Ministry of Planning and Investment, Ministry of Finance, the United Nations Development Programme (UNDP) and the US. Agency for International Development (USAID) presents an overview of the current trends and lessons from the evolving carbon pricing practices in over 40 countries worldwide, the existing taxation framework in Viet Nam, and proposes three options for introduction of carbon taxes or fees. The paper also assesses the potential revenues under scenarios of carbon taxes ranging from 1.5 to 15 USD per tons CO_2 for the period between 2017 and 2030, including the volume of revenues generated each year and their final allocation towards national budget or towards local government budgets.

It is our hope that this paper contributes to the debate on how fiscal instruments can be used to stimulate the clean and green investments to support Viet Nam's achievements of climate change targets in its Nationally Determined Contribution, and sustainable development.

Caitlin WIESEN

Country Director

UNDP - Viet Nam



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ACRONYMS

ADEME	French Environment Agency
As	Arsenic
BAU	Business as usual
BUR	Biannual Update Report
C2ES	Center for Climate and Energy Solutions
CA	Cooperative Approach
CCL	Climate Change Levy
Cd	Cadmium
CDM	Clean Development Mechanism
CDM EB	Executive Board
CER	Certified Emission Reduction
CFE	Contribution Fonciere des Entreprises (Committee for ecological taxation)
CH4	Methane
CHP	Combined Heat and Power
CIGG	Strengthening Capacity and Institutional Reform for Green Growth and Sustainable Development in Viet Nam
CNG	Compressed natural gas
CO	Carbon Monoxide
CO2	Carbon Dioxide
COD	Chemical Oxygen Demand
COP	Conference of Parties
CPF	Carbon Price Floor
CPS	Carbon Price Support
DEFRA	Department for Environment, Food and Rural Affairs
DIAN	National Directorate of Taxes and Customs of Colombia (Dirección de Impuestos y Aduanas Nacionales)
DPJ	Democratic Party of Japan
EB	Executive Board
EDF	Environmental Defense Fund
EE	Energy efficiency
EIT	Enterprise Income Tax
ETS	Emissions Trading Systems

EU	European Union
EUA	EU Emissions Allowances
GDP	Gross Domestic Product
GDT	General Department of Taxation
GHG	Greenhouse Gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (German Corporation for International Cooperation)
GLCC	General Law of Climate Change
GoV	Government of Viet Nam
GS	Gold Standard
GSTV U-Save	Goods and Services Tax Voucher – Utilities-Save
GtCO2e	Gigatonnes of Carbon Dioxide Equivalent
HCFC	Hydrochlorofluorocarbon
HFC	Hydrofluorocarbon
Hg	Mercury
HM	Her Majesty
HO	Hydrocarbon
I4CE	Institute for Climate Economics
IEA	International Energy Agency
IEEPS	Tax for Production and Services (Impuesto Especial sobre Producción y Servicios)
IETA	International Emissions Trading Association
INDC	Intended Nationally Determined Contribution
IPCC	Intergovernmental Panel on Climate Change
ITMO	Internationally Transferred Mitigation Outcome
JCM	Joint Crediting Mechanism
LNG	Liquefied Natural Gas
LPG	Liquid petroleum gas
LULUCF	Land Use, Land-Use Change and Forestry
MADS	Ministry of Environment and Sustainable Development (Ministerio de Ambiente y Desarrollo Sostenible) (Colombia)
MARD	Ministry of Agriculture and Rural Development (Viet Nam)
MEWR	Ministry of the Environment and Water Resources (Singapore)
MOF	Ministry of Finance (Viet Nam)
MONRE	Ministry of Natural Resources and Environment (Viet Nam)
MPI	Ministry of Planning and Investment
MRV	Monitoring, Reporting and Verification
N2O	Nitrous Oxide
NA	National Assembly
NAMA	Nationally Appropriate Mitigation Action
NC	National Communication
NCCS	National Climate Change Secretariat (Singapore)

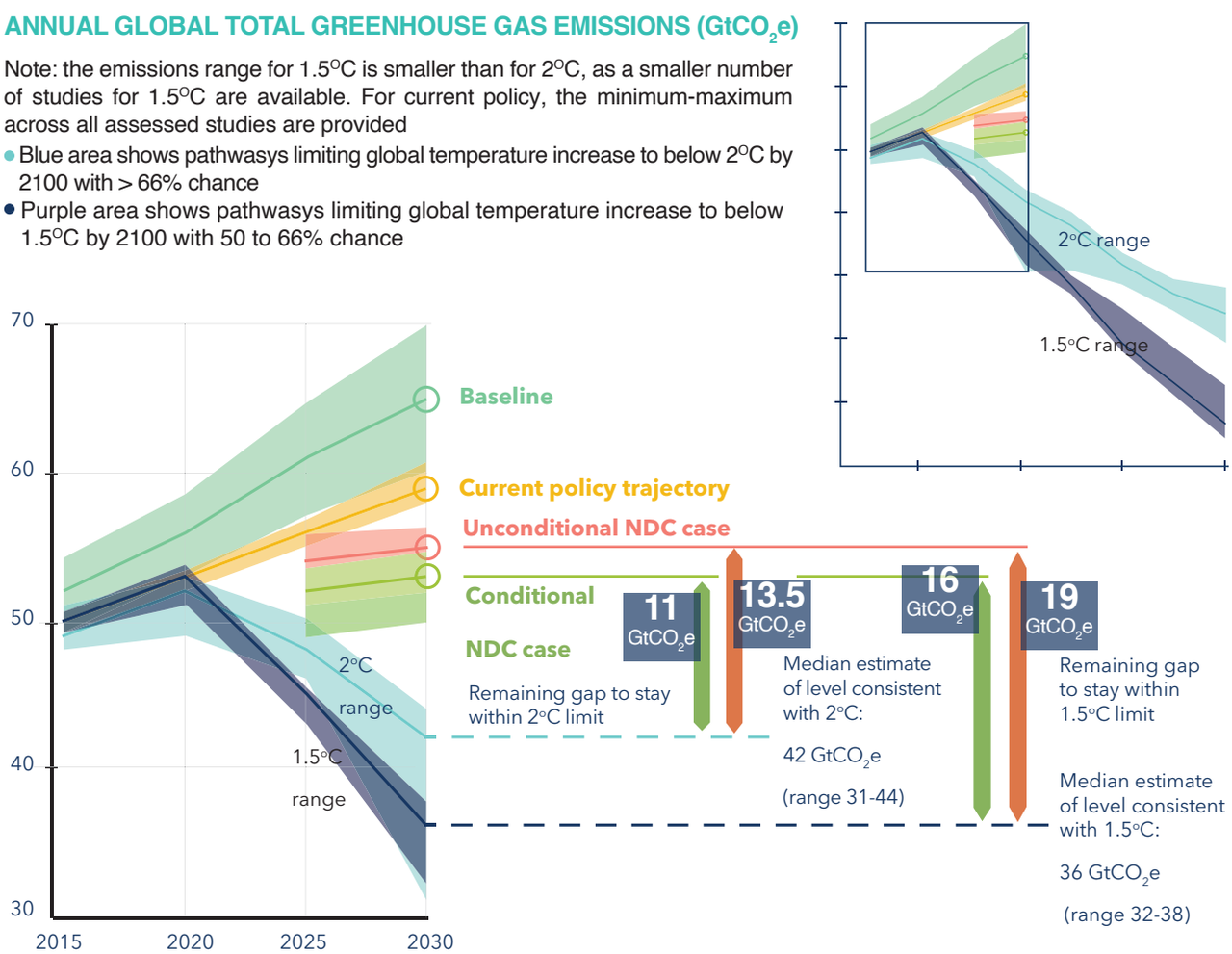
NDC	Nationally Determined Contribution
NEA	National Environment Agency
NGO	Non-governmental organization
NO	Nitrogen Oxide
OECD	Organisation for Economic Co-operation and Development
OFGEM	Office of Gas and Electricity Markets
PA	Paris Agreement
Pb	Lead
PC	People Committee
PFC	Perfluorocarbon
PFES	Payment For Forest Environmental Services
PM	Particulate Matter
PMR	Partnership for Market Readiness
PoA	Programme of Activities
PURC	Public Utility Research Center
RE	Renewable energy
RGGI	Regional Greenhouse Gas Initiative
SAT	Tax Administration Service (Servicio de Administracion Tributaria)
SD	Sustainable Development
SDGs	Sustainable Development Goals
SDM	Sustainable Development Mechanism
SEMARNAT	Secretariat of Environment and Natural Resources
SF6	Sulphur hexafluoride
SHCP	Secretariat of Finance and Public Credit
SISCLIMA	National System of Climate Change
SME	Small and medium-sized Enterprises
SOE	State Owned Enterprise
TBD	To be determined
tCO2e	Tons of Carbon Dioxide Equivalent
TSS	Total suspended solids
UK	United Kingdom
UN	United Nations
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollar
VAT	Value Added Tax
VCS	Verified Carbon Standard
VGGAP	Viet Nam National Action Plan on Green Growth
VGGS	Viet Nam National Green Growth Strategy
VND	Vietnamese Dong
VNFF	Vietnam Forest Protection and Development Fund

INTRODUCTION

A carbon tax is generally understood as a tax imposed by government on an emitter of greenhouse gases (GHG) that originate from the combustion of fossil fuels. The underlying rationale of a carbon tax is to put an additional cost to each ton of CO_2e that is emitted in the atmosphere. The ultimate target is to make GHG emissions economically rele-vant by internalizing part of their external costs (e.g. damage to the climate) associated with the emission of CO_2. A carbon tax is an economic policy instrument that is generally seen as a cost-effective tool for incentivising GHG emission reductions where they occur ("polluter pays principle").

Carbon taxes and other mechanisms for putting a price on carbon (e.g. emission trading schemes) are developed by many countries for curbing GHG emission and contribute to the goal of limiting global temperature increase by 1.5°/ 2°C. The magnitude of the GHG emission reductions required to meet this goal is huge, as highlighted by recently pub-lished study by United Nations (UN) Environment (2017a): it shows a significant emission gap between the mitigation targets and the results that can be achieved in case all Nationally Determined Contributions (NDCs) are implemented. The gap is estimated at 11-13.5 $GtCO_2e$ (NDCs, conditional case) and 16-19 $GtCO_2e$ (NDCs unconditional case), as shown in the figure below.

Figure 1: Annual global total GHG emissions ($GtCO_2e$)

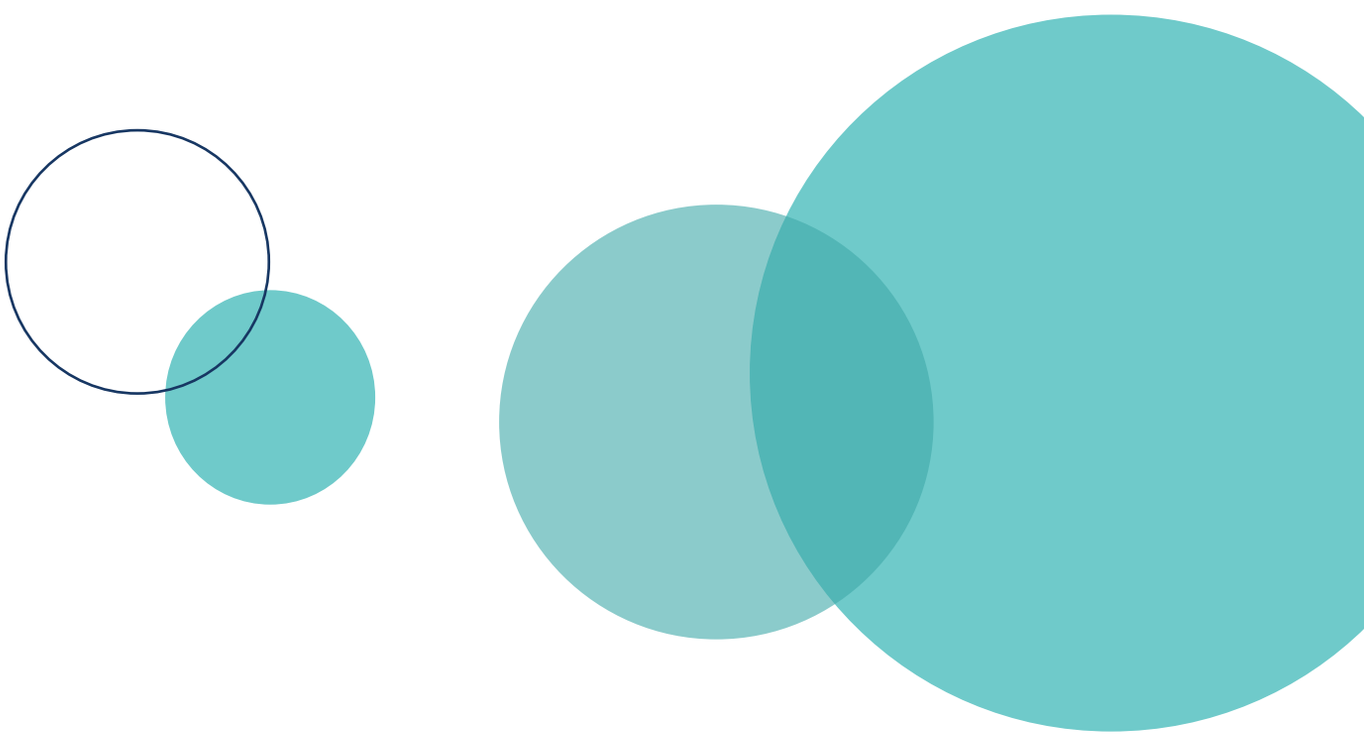


Source: UN Environment (2017a)

Against this background it is clear that mitigation actions need to be scaled up quickly: market instruments have a key role in delivering a significant share of the required emission reductions. 81 NDCs, including Viet Nam's, mention market mechanims as a tool for achieving the mitigation targets. Carbon taxes can contribute significantly to the global (and national) mitigation goals in two ways: They provide a strong price signal for emitters and hence encourage them to reduce their GHG emissions and they generate tax revenues that can be invested in mitigation activities. Carbon taxes can therefore be an effective domestic instrument for supporting the achievement of the mitigation goals of the NDCs. In the case of Viet Nam, if offsetting from existing project-based mechanisms such as the Clean Development Mechanism (CDM) is allowed, a carbon tax could also generate new demand and support existing activities that are currently stranded due to the very low price per emission reduction unit. However, the design and implementation of a carbon tax should be considered carefully.

In Viet Nam there are three main economic tools that the government uses to manage and protect the environment: Environmental taxes, environmental charges and environmental fees. The taxes and fees related to environmental protection are based on the principle "polluter pays". Taxes and fees generate revenues to the state and local budgets, but have different characteristics. A tax is a compulsory payment imposed by the Government, which generates revenues for the state budget, and it is not directly related to any expenditure or service from the Government. A fee (and a charge) is levied to the beneficiaries of certain services, and it is paid only when the service is actually provided. Fees are defined according to the nature and extent of the services provided. Fees and charges aim at recovering the costs for providing specific services.

Potential negative impacts should be taken into account from an early stage, especially those related to the impacts on the productive system in terms of price of energy, international competitiveness, potential leakage[1] and associated impact on the employment. Furthemore, the effects on vulnerable segments of the population must be considered in the design phase to ensure the tax is not regressive[2]. Another important element of the design of a carbon tax or fee is a possibility of allocating the revenues generated (or part of them) to specific mitigation and adaptation activities as opposed to the general allocation to the state budget without any direct link to climate-related activities. These options depend on the existing legal system in each country.



1 Leakage occurs when a company decides to relocate its GHG intensive activities to another country where no carbon regulation is in place. Thereby, the company avoids the carbon tax burden and emissions globally remain the same.
2 Regressive taxes are those that have a greater impact on low-income individuals than high-income earners

SCOPE OF THE REPORT

This report is part of a larger study that assesses the implication of the introduction of a carbon tax in Viet Nam and evaluates also different design options for the tax. The goal of the full study is to identify a viable option for introducing the carbon tax in Viet Nam and to define procedures to ensure that the revenues generated by the tax can be allocated to specific environment and climate-related activities.

Section 1 presents an overview of the current trends on carbon pricing initiatives at global level and specifically on carbon taxes. Main elements of a carbon tax, including potential negative effects of its introduction, are described. Furthermore, three examples of carbon taxes are discussed in more details: Mexico, South Africa and the recently launched Singapore's tax scheme.

Section 2 lays the foundation for the definition of the most appropriate elements that a carbon tax should have in Viet Nam. It describes the existing taxation framework, providing information on taxes that have an environmental component. It provides details on the functioning of different taxes, including the volume of revenues generated each year and their final allocation towards national budget or towards local government budgets. Section 2 will be the basis for evaluating how the new tax could be designed to ensure that at least part of the revenues can be allocated to specific climate-related measures.

Section 3 develops three options for introduction of a carbon tax in Viet Nam.

Section 4 assesses the potential revenues under scenarios of carbon taxes ranging from 1.5 to 15 USD/t CO2 for the period between 2017 and 2030.

Section 5 provides information on international experiences in six countries with the introduction of a carbon tax.

Section 6 concludes.

The report includes two annexes. Annex I presents the basic characteristics of the Natural Resource Taxes and environmental protection fees for exploitation of minerals in Viet Nam. Annex II offers a summary overview of the main features of carbon taxes in selected countries and sub-national jurisdictions.

SECTION

01

INTRODUCTION TO ECONOMIC INSTRUMENTS FOR THE REDUCTION OF CARBON EMISSIONS

1.1

EXISTING ECONOMIC INSTRUMENTS TO SUPPORT MITIGATION EFFORTS

In his seminal review, Nicholas Stern describes climate change as the greatest market failure ever seen. This failure is based on the problem of negative externality: those who generate GHG emissions as a by-product of economic activi-ties do not have to pay for the costs. As a result, there are only ethical – rather than an economic – incentives for busi-nesses and individuals to reduce their emissions. Stern argues that economic instruments can overcome this imbalance by increasing the price of activities that emit GHGs. This will lead businesses and individuals to switch away from high-carbon goods and services, and to invest in low-carbon alternatives (Stern 2006, p. 308).

There is a broad range of economic instruments that can be used to support the implementation of mitigation activi-ties. Two broad strategies can be observed. The first one refers to regulatory approaches that set explicit rules that must be fulfilled (so-called command-and-control policies). In case of non-compliance, target actors face penalties. Exam-ples for regulatory approaches include: (1) *performance standards* that define the maximum of emissions from certain sectors, processes or activities; (2) *technology standards* that dictate specific pollution abatement technologies or pro-duction methods; (3) *product standards* that specify characteristics of high-emission products (IPCC 2014, p. 240).

The second strategy aims to c`reate economic incentives that change the behaviour of target actors (so-called market-based policies). For instance, *subsidies* intend to correct market failures in the provision of low-carbon technologies or products. In the energy sector, two subsidy approaches can be differentiated: (1) lowering or removing fossil fuel sub-sidies; (2) providing subsidies to renewable energies or other forms of government expenditure on mitigation (IPCC, 2014, p. 240). The second approach covers tax exemptions, feed-in tariffs and feed-in premiums[3] as well as preferen-tial financing such as direct

3 Feed-in tariffs create a fixed price support – usually per unit of electricity produced – that is guaranteed over a given period. Under a feed-in premium scheme, renewable energy producers get a premium, which is paid on top of the elec-tricity market price. The premium can either be fixed or sliding – i.e. depending on the evolution of market prices (C2ES, 2012; Climate Policy Info Hub, 2017).

grants, loan investments or credit guarantees (C2ES 2012; Climate Policy Info Hub 2017).

In recent years, *carbon pricing* has emerged as one of the most promising market-based policy instruments. It can be implemented either in the form of an Emissions Trading System (ETS) ('quantity instrument') or in the form of a car-bon tax ('price instrument'). Both instruments put a price on carbon, providing a direct financial incentive to mitigate emissions. In Table 1, the main characteristics of both instruments are listed. Table 2 presents an overview of subtypes as well as empirical examples.

Table 1: Main characteristics of carbon pricing instruments

	ETS	Carbon tax / fee[4]
Definition (OECD 2013a, p. 12)	"ETSs are managed by a governing jurisdiction that sets a limit or a cap on the total level of covered greenhouse gas emissions, including CO_2. The allowances to emit are either auctioned or allocated for free to liable entities (emission sources or others), which must redeem allowances for every emitted tonne of CO_2, with the possibility to trade unused allowances"	"Carbon taxes refer to taxes that are directly linked to the level of CO2 emis-sions, often expressed as a value per t CO_2e."
Main characteristics (OECD 2013a; PMR 2017a)	Fixes the maximum quantity of emissions Can offer economic efficiency gains by focusing on emission reductions in companies with the lowest mitigation costs Guarantees the resulting level of maximum emissions Price is determined by the market and can thus be volatile	Fixes the price of one t CO_2e emitted in the atmosphere Provides a stable price signal to investors as well as certainty with respect to the marginal cost faced by emitters per t CO_2e Price is determined administratively and holds regardless of other climate and energy policies Does not require the operation of trading infrastructure

Source: own elaboration

Another incentive system is provided by a *quota system* (also referred to as *portfolio standard*). In such a system, "the government sets the percentage or an amount of energy, usually annually, that comes from renewable sources and then allows the market place to determine the cost" (PURC, 2017). In order to meet renewable energy obligations, some quota systems include the trading of *green certificates* (also referred to as Renewable Energy (RE) Certificates). This instrument focuses on the supply side of the energy market and targets producers of electricity. The government decides which amount of the consumed electricity has to be generated from renewable energy sources. This is translat-ed into obligations for producers to cover a certain percentage of their individual electricity generation by renewable energy sources. In order to meet their targets and avoid penalties, producers either produce the required share of elec-tricity from renewable sources or can purchase green certificates that are sold by the producers of 'green' electricity. The producers receive the certificates for each pre-defined unit of electricity produced from renewable energy sources that is put on the grid. The actual price of the certificates depends on the scarcity in the market – a low supply and a high demand increase

4 A carbon fee is related to a carbon tax, in that it is also a charge paid to the government by individuals or businesses. In this sense, a carbon fee in principal will have the same mitigation effect as a carbon tax, provided such fee or tax can be enforced with equal rigor. Normally, a fee is specifically applied for the use of a service, where the fee rate is directly connected to the cost of maintaining the service.

the price. This is expected to be an incentive for new producers to provide renewable electricity (Schaeffer et al. 1999). Similarly, *white certificates* (also referred to as Energy Efficiency (EE) Certificates) can be issued and traded to meet an energy saving target and obligation. The scheme primarily focuses on the demand side and encourages producers to save energy through various investments in energy efficiency. These savings are reward-ed by certificates that can be sold to other actors that cannot meet their targets and would face penalties (Schaeffer et al. 1999).

The two instruments described above, i.e. *the green and white certificates*, could be implemented also in case a carbon pricing mechanism is in place at domestic level. This is the case in several European countries, where different mecha-nisms are in place: a carbon tax, ETS and also green certificates. This is the case for instance of Sweden, Italy and the United Kingdom. Green and white certificates are a further incentive to reduce emissions, through increase in RE gen-eration or reduction of energy consumption through EE measures: in both cases, the ultimate goal of reducing emis-sions is not conflicting with the same goal under a carbon price initiative. For instance, in case of a carbon tax in place in one country, a green certificate scheme would strengthen the incentive for a power producer to increase the share of RE, benefitting simultaneously from a reduction in the compliance cost of the carbon tax (lower emissions due to re-duction in fossil fuel use) and also potential for additional revenues from trade of green certificates in the market. However, effects of the two mechanisms should be considered on a broader level: while the impacts on the overall level of emissions are likely to be positive and reinforcing each other, other impacts on the economy (e.g. impacts on the final price of electricity) should be considered carefully in the design stage.

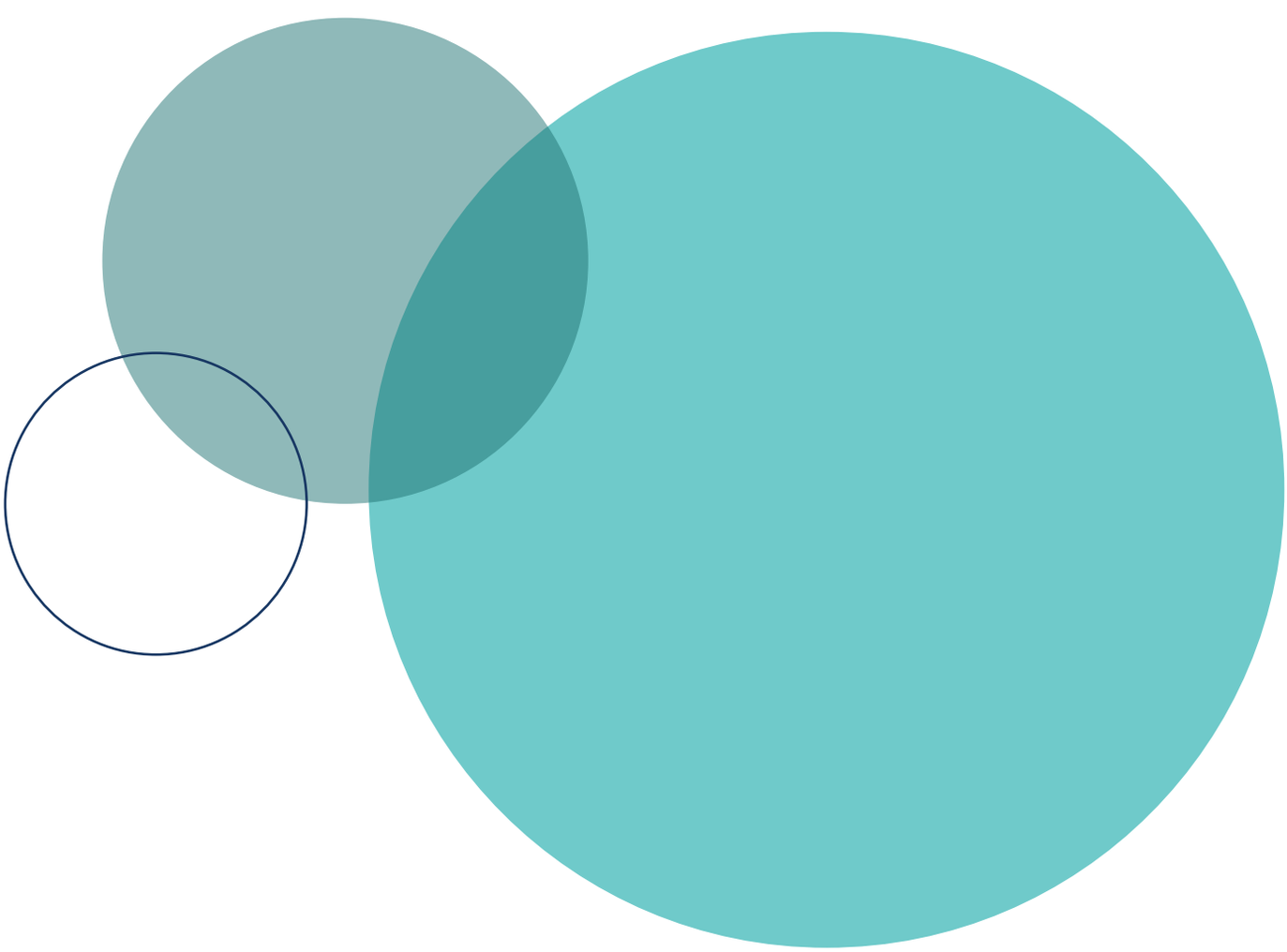


Table 2: Overview of carbon pricing instruments (Asian countries and cities are marked blue)

CARBON PRICING INSTRUMENT	EXAMPLES[5]	CARBON PRICING INSTRUMENT	EXAMPLES
Environmental tax[6]	Latvia	Emissions Trading System (ETS) 1. Cap-and-trade system	
	Poland		California (United States)
	Viet Nam		
Carbon tax	Alberta (Canada)		China[7]
	British Columbia (Canada)		European Union
	Chile		Kazakhstan
	China		Kyoto (Japan) (voluntary)
	Colombia		Liechtenstein
	Denmark		Nova Scotia (Canada)
	Estonia		Ontario (Canada)
	Finland		Québec (Canada)
	France		RGGI (United States)[8]
	Iceland		Saitama (Japan (compulsory)
	Ireland		South Korea
	Japan		Switzerland
	Liechtenstein		Tokyo (Japan) (compulsory)
	Manitoba (Canada)		Washington (United States)
	Mexico	2. Baseline-and-credit system	Alberta (Canada)
	Newfoundland and Labrador (Canada)		British Columbia (Canada)
	Norway		New Zealand
	Portugal	3. Baseline-and-offset system	Australia
	Singapore		
	Slovenia		
	South Africa		
	Sweden		
	Switzerland		
	Ukraine		
	United Kingdom (Carbon Price Floor)		

Source: World Bank (2017); I4CE (2017)

5 We only mention examples where the instrument has already been implemented or is scheduled for implementation

6 A typical carbon tax establishes a direct link between the greenhouse gas emissions (measured in tCO2e) of a product or process and the tax that must be paid on it. Latvia and Poland have not introduced such an explicit carbon tax but environmental taxes that are indirectly related to climate change mitigation (e.g. a natural resource tax that charges fees on air pollution and greenhouse gas emissions produced by stationary technological equipment not included in the emission quotas (Ecologic Institute 2017). In this context, one could also mention India's tax on coal: the reduction of CO2 emissions is not the main aim but only a by-product.

7 China announced to launch a nationwide ETS in 2017. For now, the country has implemented 7 pilot markets in Beijing, Chongqing, Guagdong, Hubei, Shanghai, Shenzhen and Tianjin.

8 RGGI is a cooperative effort by nine US states: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont

1.2

EVOLUTION AND TRENDS OF CARBON TAXES AT GLOBAL LEVEL

2.1. CARBON PRICING

As of 2017, over 40 national and 25 subnational jurisdictions are putting a price on carbon – either through a carbon tax scheme or an ETS. Over the past ten years, the number of carbon pricing initiatives has doubled. Several other jurisdictions are already considering the development of a carbon pricing initiative. Both developing countries and developed countries are active, as shown by the recent initiatives for the implementation of a carbon tax in Colombia and Chile (World Bank, 2017). With the implementation of the Paris Agreement, the adoption of carbon pricing poli-cies is expected to accelerate (PMR, 2017a). In contrast to the Kyoto Protocol, the Paris Agreement requires all con-tracting Parties to contribute to global mitigation. As a result, both developed and developing countries strive to find cost-effective policy instruments to support mitigation actions. Domestic measures – like carbon pricing initiatives – are expected to play a pivotal role in enabling countries to meet their NDCs.

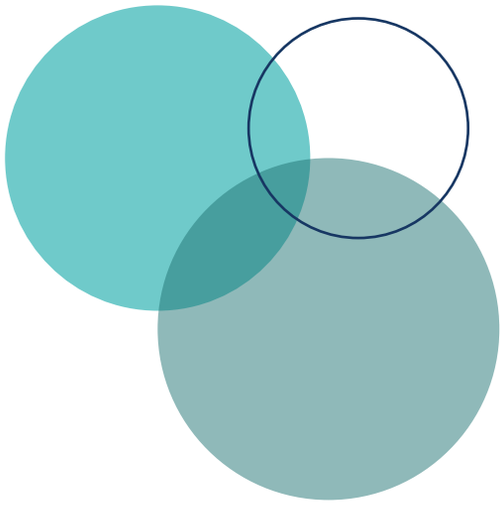
1.2.2. CARBON PRICING MECHANISMS AS A TOOL FOR NDC IMPLEMENTATION

Carbon pricing mechanisms are considered as cost effective tools for supporting mitigation activities. Their design and implementation should thus be seen as a tool to support the achievement of the mitigation targets defined in the NDCs. Countries have the flexibility to select and implement the set of measures that fits specific national conditions: carbon pricing could be a cost-effective option to achieve large scale emission reductions across the entire economy.

Altogether 81 Parties to the Paris Agreement already mentioned in their NDC their interest in using carbon pricing mechanisms for the NDC implementation [9] and to realize their own mitigation targets (World Bank 2017). A domestic carbon tax can contribute significantly to the mitigation targets of one country, Viet Nam's NDC mentions explicitly market instrument as tool for supporting changes in the "fuel structure of industry and transport" (Government of Viet Nam, 2015).

9 In the World Bank report carbon pricing covers market mechanisms in a broader manner, also beyond carbon taxes and ETS.

The introduction of two new mechanisms under the PA, i.e. the Sustainable Development Mechanism (SDM), a cen-trally governed mechanism that generates verified emission reductions under Article 6.4, and Cooperative Approaches (CAs) that involve the use of Internationally Transferred Mitigation Outcomes (ITMOs) under Article 6.2. The modali-ties and procedures for the operationalization of these mechanisms are being discussed at the international level and are yet to be agreed. Depending on the final decision taken in this regard, especially in the context of Article 6.2, there could be room for developing bilateral agreements for the transfer of ITMOs and also for the potential linking of dif-ferent domestic carbon pricing initiatives. Another option (Wang-Helmreich et al., 2017) could be the linking of a car-bon tax scheme with an ETS, allowing the use of allowances from the latter to reduce liability under the carbon tax.



1.2.3. CARBON TAX

As presented in Table 2, more than 20 jurisdictions – both countries and provinces – have implemented an explicit carbon tax scheme or scheduled its implementation. This includes four nations that are classified as developing coun-tries by the UN, namely Chile, Colombia, Mexico and South Africa (UN, 2017b). The implementation of a carbon tax can contribute to achieve a country's NDC targets, especially in countries that lack economic incentives to reduce emissions. Since carbon tax encourages investment in research, it may also be useful for jurisdictions that face a lack of technical mitigation options (PMR, 2017a).

From a cost-benefit point of view, a carbon tax scheme has several advantages (Pegels, 2016, p. 7):

a. it can make use of existing structures and expertise;
b. it is technically relatively easy to implement and manage;
c. it does not need a minimum number of participants to work; and
d. it creates revenues that can be used to support several social and economic aims.

Consequently, the progress of NDC implementation can be accelerated and targets can soon become more ambitious. Several studies show that a well-designed carbon tax provides an efficient tool for reducing GHGs, thereby covering large parts of the emissions reductions needed to meet the country's NDC (Chen and Hafstead, 2016; PMR, 2017a; Altamirano and Martínez, 2017).

1.3

MAIN FEATURES OF A CARBON TAX SCHEME

A carbon tax may cover different sector or subsectors, different types of GHGs or different types of fuels. As jurisdic-tions can build on existing capacities and structures, taxes on goods or services that are carbon intensive – usually fossil fuels – are the most common. These taxes require minimal additional administration because the infrastructure to measure energy use already exists (e.g. in the form of electricity meters and fuel storage tanks) and the focus on certain emissions sources reduces the costs of monitoring. As a result, these taxes are more difficult to evade. In addi-tion, the identification of legal entities that are liable for the tax can follow the existing rules (PMR 2017a; Pegels 2016, p. 7).

In contrast, taxes that are based on the quantity of emissions an entity produces (also referred to as taxes on direct emissions or taxes on sectors) are less straightforward. The required administrative structures must be created or some-how emerge from existing structures. Moreover, governments have to decide which legal entity to make liable and where in the supply chain to apply the tax (point of regulation). In the latter case, the choice is between upstream taxes (tax burden falls on exploration and production), midstream taxes (tax burden falls on transportation and processing) and downstream taxes (tax burden falls on distribution and sale to end users or end consumers). Another additional question is whether a threshold should be applied (PMR, 2017a).

Some jurisdictions – including Denmark, Finland, Iceland, Ireland, Norway, Sweden, and Switzerland – that have im-plemented both an ETS and a carbon tax use the latter to address emissions that are not covered by the ETS. Others use the tax to apply a price floor to ensure some level of price stability in their ETS (e.g. Great Britain). Jurisdictions that have implemented carbon taxes as their main economic instrument tend to cover as many sectors as possible (PMR, 2017a). Nevertheless, most schemes grant tax exemption for certain sectors, subsectors, gases, fuels or actors. These exemptions serve to tailor the carbon tax to the given national context and to reduce impacts on specific groups that receive a specific treatment from the government for economic, social and technology reasons. In addition, they can increase public acceptance of the tax. For instance, governments may have an interest in reducing the carbon tax impact on low-income groups. Another reason for exemptions is the problem of feasibility and cost-effectiveness: many existing systems exclude emissions from agriculture and forestry due to the high level of uncertainty in the cal-culation of emissions and the high costs of implementation and monitoring (Elbeze and de Perthuis, 2011, 13).

Table 3: Examples for tax bases

MAIN DISTINCTION	COUNTRY EXAMPLE	TAX BASE	EXEMPTIONS
Taxes on sectors	Chile[10] (2017)	Power and industrial sector, particularly generators operating power plants with installed capacity ≥ 50 MW	Thermal power plants fuelled by biomass; smaller installa-tions
	China (2020)	Industrial sector, particularly emissions from non-ETS sectors and small- and medium-sized enterprises	
	Singapore (2019)	Power and industrial sector, particularly large direct emitters	
	South Africa[11] (2017)	Industrial sector, particularly fossil fuel combustion, industrial processes, product use, fugitive emissions	Waste and land use sector
Taxes on fuels[12]	Mexico[13] (2014)	Coal, oil	Natural gas
	Japan[14] (2012)	Coal, oil, gas	Agriculture, forestry, air, rail, and maritime transport
	Colombia (2017)	Coal, oil, gas	International aviation and shipping; users that are certified to be carbon neutral

Source: own elaboration

1.3.1. TAX RATE

The actual tax rate is a decisive factor for the success of the carbon tax scheme. If the rate is too low, there is no de-mand for clean solutions. Hence, businesses are not encouraged to develop new technologies and unlock financing for climate-friendly investments. In contrast, if the rate is too high, the costs will rise higher than necessary to reduce emis-sions and may have a negative impact on profits, jobs and end consumers (Grantham Research Institute, 2013). The Partnership for Market Readiness (PMR) identifies three different approaches to set the initial tax rate, depending on different policy objectives. Governments could aim to:

i. seek a certain level of emission mitigation
ii. raise a certain level of revenue
iii. reflect the social costs of polluting emissions

Economic modeling can be used to predict the effects of different tax rates on meeting these policy objectives. It may also be used to estimate the revenue arising from different carbon tax rates. Jurisdictions could also decide to mimic the tax rate of (a) jurisdictions with similar circumstances or (b) jurisdictions that are competitors in key commodities affected by the tax. Jurisdictions that have an ETS may choose to link the carbon tax rate and the ETS price (PMR, 2017a). The latter is especially challenging, since it requires the harmonization of two heterogeneous designs (one with a fixed price, one with a flexible market price). Nevertheless, such a linking is expected to generate benefits in terms of cost-effectiveness and reducing carbon leakage (Adelphi, 2015).

Apart from setting the initial tax rate, policy makers

10 For more information see Reuters, 2014.
11 For more information see The Carbon Report, 2015
12 For more information see UNDP, n.d.; Parry et al, 2014.
13 For more information see UNDP, n.d.; Parry et al, 2014.
14 For more information see OECD, 2013b.

have to decide if they set a trajectory that goes up over time or adopt a mechanism for adjusting the tax rate over time. Several leading economists suggest the implementation of a modest tax rate that increases annually (Handley, 2008). This has been done, for instance, in the case of British Co-lumbia (Canada). The initial rate was relatively low (10 CAD per tCO2e) and has increased by 5 CAD each year until reaching the current rate of 30 CAD per tCO2e in 2012. The purpose was to give companies and households time to adjust to the new carbon management. A similar approach has been taken by South Africa. In order to ensure a rela-tively smooth transition, a tax-free threshold was introduced. Companies eligible for this threshold only have to pay the carbon tax on a portion of their emissions. During the first five years, this threshold was intended to range from 60 to 90% (National Treasury, 2014).

Table 4: Examples for tax rates

COUNTRY EXAMPLE	TAX RATE IN €/tCO_2e (ACCORDING TO I4CE, 2017)	ADDITIONAL FEATURES	METHODOLOGY USED TO ESTABLISH TAX RATE (ACCORDING TO PMR, 2017b)
Chile	5	Plans to either scale up the taxes or develop an ETS in the future.	The international market price of one tCO2e was used as a proxy. The government has stated that the relevant price in this case is the price of Certified Emission Reductions (CERs), though in reality the price is more closely tied to the price of European Union emission allowances.
China	TBD in 2020	Information not available.	Information not available.
Colombia	See Section 5		
Japan	See Section 5		
Mexico	See Section 5		
Singapore	See Section 5		
South Africa	8	Tax-free threshold during the first five years. The tax rate will increase annually.	Information not available.

Source: own elaboration

1.3.2. REVENUE USE

The use of revenue generated by the carbon tax can influence the overall economy, the success of the tax scheme as well as the public welfare and opinion towards carbon pricing. The PMR identifies three different approaches to decide how to use carbon tax revenue:

- **i.** revenue neutrality
- **ii.** increased spending (including on deficit reduction or debt payments)
- **iii.** forgoing revenue by permitting entities to surrender offsets in lieu of tax payments

Revenue neutrality can be implemented by returning revenues through direct rebates or by reducing other taxes. If governments decide to use revenues to reduce taxes that are distorting for the economy – such as taxation on capital or labour –, the carbon tax can even create a “double dividend”: the first dividend is the environmental benefit (posi-tive environmental impact); the second dividend comes from the beneficial effects on economic activity (positive economic impact) (Elbeze and de Perthuis, 2011, p. 6-7). This procedure also helps to maintain the competitiveness of companies located in the given country and to avoid a decline in foreign investments. It has been widely used by juris-dictions (for example, British Colombia of Canada) (UNFCCC, n.d.) that focus on the economic efficiency of carbon taxation and the potential it provides to reduce more distortionary taxes (PMR 2017, p. 17). In the case of British Co-lumbia, the government has used the

carbon tax revenues to cut income taxes for lower incomes, thereby mitigating distribution inequalities (positive social impact). The revenues are also being used to fund a low-income tax credit and to provide a rebate for vulnerable households and communities. In fact, the government has returned more in income tax cuts than it has collected in carbon tax, generating a net benefit for taxpayers (Sustainable Prosperity, 2012). It should be mentioned that the Ministry of Finance is annually required to submit a 3-year plan for distributing the car-bon tax revenues. If they are not fully recycled, the person in charge may even face a personal penalty, in the form of salary reduction (PMR 2017b). It should be noted, though, that it is very difficult to achieve a “triple dividend” by recycling the carbon tax revenues to both mitigate distributional impacts and reduce distortional taxes. In other words, there is a trade-off between a positive economic and social impact (Pegels, 2016, p. 22).

In other cases, the revenues are integrated in the general budget and spent on environmental programs and measures such as energy efficiency in buildings (Denmark and Switzerland), energy assistance to low-income households (France), promotion of low-carbon technologies (Japan) or electricity levy reduction (South Africa). This procedure can heighten the environmental impact of the tax. The increased spending can also cover other policy fields like education and health (Chile) as well as social insurance and security (Denmark, Finland, and Switzerland). In the case of Ireland, the system allows for a flexible use that includes reducing the deficit or paying off national debt (PMR, 2017a).

Finally, taxpayers can be allowed to surrender offsets as a substitute for paying (part of) their carbon tax obligations. However, there is no practical experience with the use of offsets, although a number of countries are developing the related rules (Australia, Mexico, and South Africa).

1.4

RATIONALE FOR THE INTRODUCTION OF A CARBON TAX SCHEME

As stated by Stern (2006), the only economic solution to the problem of negative externality is to increase the prize of activities that emit GHGs, thereby internalizing the costs of damages resulting from emissions. In order to avoid tax payments, businesses and individuals will consider switching to low-carbon activities that are free of tax. Hence, they are incentivized to adopt more sustainable business models and decrease their GHG emissions. Where no low-carbon alternatives are available, a carbon tax may increase investments in technological research and innovation. It should also be noted that a carbon tax gives businesses and individuals the flexibility to independently decide in which way they want to tackle their GHG emissions (PMR, 2017a).

If the carbon tax is well designed and decreases the overall national emissions, the instrument directly contributes to the NDC's mitigation targets. As described in chapter 1.3, governments may choose a carbon tax design that builds on existing capacities and structures, the introduction of the tax only requires minimal additional administration and costs. As the transition towards a low-carbon economy will require a sufficiently long time-horizon, governments can take advantage of the carbon tax creating an additional source of revenue for a defined time period. Revenues can be predicted with a certain level of certainty for short to medium term periods. In that way, the instrument differs from other economic incentives like subsidies. If the overall tax burden for businesses and individuals should not be raised, governments can guarantee a tax shift and revenue neutrality (see chapter 1.3).

Introduction of offsets is also another element that should be considered carefully as it provides taxpayers with more flexibility to reduce compliance cost. Furthermore, allowing the use of offsets from domestic activities has the poten-tial to mobilize demand for emission reduction units from mitigation projects and programmes, such as CDM activi-ties. This option is discussed in more details in chapter 1.6.

1.5

BARRIERS TO IMPLEMENTATION

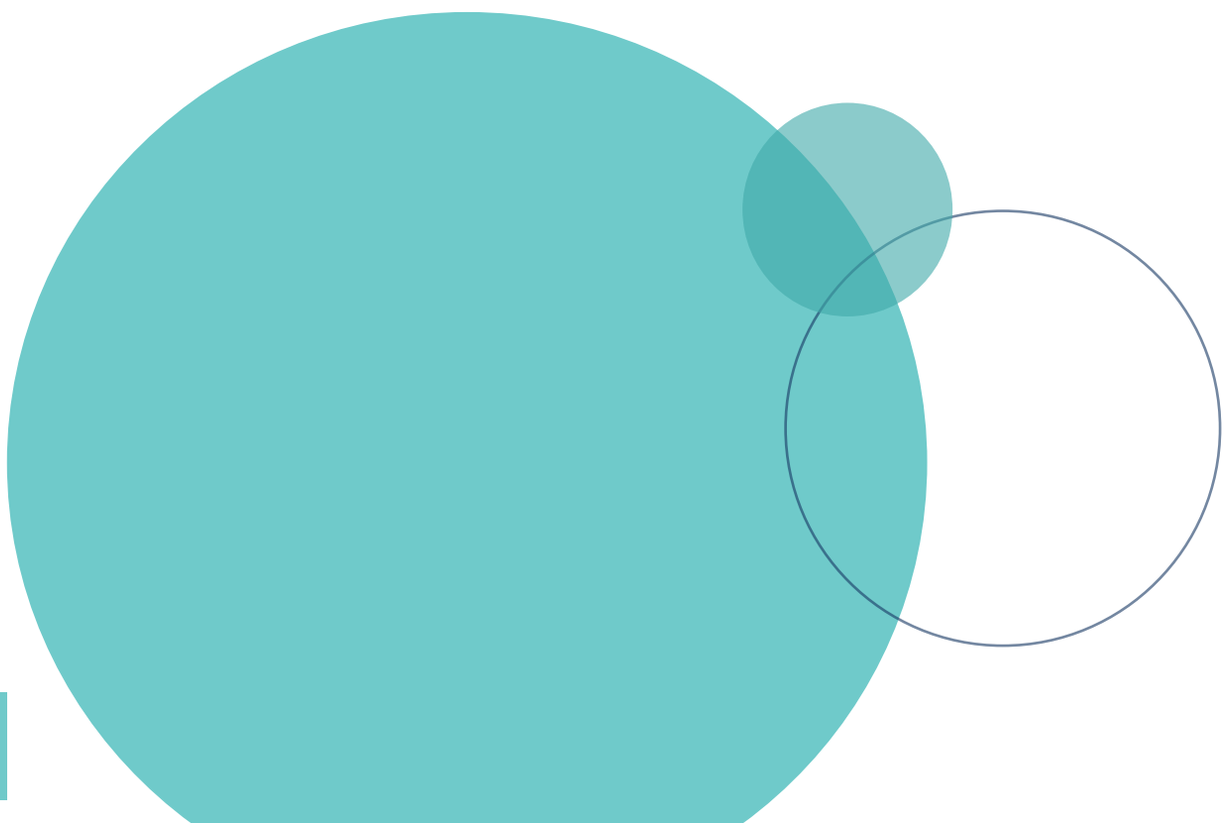
The chances to successfully implement a carbon tax strongly depend on public acceptance. A basic requirement is the awareness of the given problem and the view that a tax can actually contribute to the solution. Therefore, it is crucial to inform the public and the businesses that will be affected before introducing the tax. Broad consultations with relevant stakeholders can support the development of a common understanding (OECD, 2007, p. 5-6). Such a procedure can also foster trust in the capabilities and willingness of the government to actually link the implementation of the carbon tax with benefits for the society (Pegels, 2016, p. 18). Introducing the carbon tax as part of a broader fiscal reform can also increase public and political acceptance (OECD, 2007, p. 5-6).

Tax exemptions (see chapter 1.3) can defuse conflicts that might arise around the issue of fairness, especially with regard to socioeconomic discrimination and sectoral competitiveness. The latter is directly linked to the problem of carbon leakage: companies might consider relocating their activities to other countries instead of lowering their emis-sions or paying taxes (Pegels, 2016, p. 15). Multinational companies have the choice to relocate or to develop new expansion plans considering the implication of a carbon tax and moving production facilities outside of a carbon tax jurisdiction, gaining a competitive advantage over those actors that cannot follow the same policy. However, there is little empirical evidence that environmental taxation has triggered carbon leakage (UK Green Fiscal Commission, 2009) and other business costs are more likely to have a greater impact than a carbon tax (World Bank, 2017).

Quite in contrast, companies have benefited from adjusting to the carbon tax because the pressure for innovation has led to an increased international competitiveness. However, governments should give companies time to adjust, which is why a gradual phasing-in of the carbon tax is recommended (OECD, 2007, p5-6). Cooperation with neighbouring countries and implementation of carbon pricing mechanisms in different jurisdictions could further reduce the risk of leakage and also to avoid negative impacts on international competition.

Introduction of carbon tax in an existing taxation framework needs to be considered also in light of potential distor-tional effect on the economy. It is important to bear in mind that also other taxes normally imposed in many coun-tries, such as taxes on labour or capital, also have a distortional effect in the economy. In general, carbon taxes have lower distortional impact as they are normally issued for addressing existing market failures, such as the carbon tax internalizing the cost of GHG emissions. However, some negative impacts can occur. A carbon tax, in case it is levied according to specific thresholds (e.g. level of emissions, level of fuel consumption) at facility level, would generate the incentive for companies to stay below the threshold to avoid the carbon tax. Similarly, if a threshold for inclusion is set, it would generate distortion in the competition between emitters above the threshold and hence covered by the tax and those below the threshold with no tax liability (PMR, 2017a). Distortion can be addressed also through the utiliza-tion of the revenues generated by the tax, for instance lowering other taxes on income or labour. Carbon tax design must take this element into account to minimize it. For instance, tax levied on fuel imports and sales are likely to have minimal leakage issues as it is reasonable to expect that even if the carbon tax increases the cost of fossil fuels, im-porters will be able to pass the extra cost to consumers which in turn will carry the additional cost.

Another crucial aspect of a carbon tax is the impact on a country's economy, which must to be taken into account in the design phase to reduce negative impacts. Generally, taxes are seen by companies as an additional burden as they erode the profit margin. In cases where an excessively high taxation is imposed to companies or sector(s), it can have detrimental effects on the economic performance, in terms of competitiveness compared to other companies and countries not covered by a carbon tax, which in turn can affect the employment level in a specific sector. While the leakage effect has been discussed above, it is important to point out that distributional effect of the tax within one sector (country) must be considered carefully. The distribution impacts (or equity) of a tax refers to the impacts it has on different segment of the society that are affected by the tax. Especially in those sectors where the cost of the tax is likely to be passed on through to consumers (for instance power generation), distributional impacts, especially regard-ing affected low-income and vulnerable segments of the population, are likely to be more significant (World Bank, 2017). Several countermeasures can be adopted to reduce these undesired effects of the carbon tax: supportive measures for vulnerable groups can be put in place funded by revenues from the tax, as the avoidance of a regressive tax is of utmost importance from an equity point of view; adjustments of the border taxes related to carbon consider-ations. The decisions on how to reuse the revenues from the carbon tax is probably the most important element of the carbon tax design as it can address these issues without imposing new costs on the society.



1.6

INTRODUCTION OF OFFSETS

Offsets are introduced in the context of a carbon tax to provide the parties liable under the taxation scheme with some flexibility to reduce compliance cost. Offsetting is here intended as the possibility to surrender a certain allowance or certificate to reduce the overall carbon tax amount. In some cases, entities under a carbon tax can receive a reduction on the total tax if they commit to achieve certain targets (e.g. efficiency or emission targets). Offsets at domestic level are possible if there are sectors where activities generating credits are implemented and that are not covered by other carbon pricing mechanisms. Offsets provide more flexibility to the taxpayers, allowing the implementation of cost effective alternatives to comply with the tax. Feasibility of the offsets depends on the level of the tax rate and on the price for implementing the activities that generate credits. If the former is higher than the latter, then it is economically attractive to use offsets under a carbon tax scheme. The introduction of offsets under a carbon tax scheme will require the definition of certain eligibility criteria to identify activities and projects that can generate the offsets, and to ensure that the emission reduction claimed are real and measurable. One option that is being implemented in countries where a carbon tax is in place is to allow CERs, issued by the United Nations Framework Convention on Climate Change (UNFCCC) under the CDM as offsets, as discussed below. Using CERs – i.e. offsets from a programme that ensures emission reductions are real and measurable and thus has high environmental credibility reduces the risk of low quality domestic offsets, which would then undermine the environmental integrity of the scheme.

There are several examples of countries that allow offsetting under a taxation scheme. Two of the most prominent cases are provided by Mexico and South Africa. The case of Mexico is presented in section 5.

In South Africa, the Government planned to introduce a carbon tax starting in January 2017: a draft bill was pub-lished for comment in 2015. However, at the moment of writing no new bill has been published and the introduction of the tax has been postponed with no date communicated. The tax would cover the following sectors: 1) Fuel combus-tion in energy industries, transport, other sectors and other non-specified sources; 2) Fugitive emissions from fuels in solid fuels, oil, and other fugitive emissions from

energy production; 3) Industrial processes and products: mineral industry, chemical industry, metal industry; 4) Agriculture, forestry and land use: livestock; 5) Others. The initial price was set at around 8.5 USD per t CO_2e, however different measures to reduce taxpayers' exposure to the carbon tax in the initial period have been considered, including a free "allowance" for about 60% of the tax liability, which reduces the overall cost for taxpayers to around 3.5 USD per t CO_2e. Also in the case of South Africa, offsetting has been con-sidered: although the final rules and procedures for offsetting have not been published yet, there is a proposal to allow offset from 5 to 10% of the total tax exposure. Final eligibility criteria are not yet available at different type of standards, such as CDM, Verified Carbon Standard, the Gold Standard (GS) and the Climate, Community and Biodiversity Standards are under consideration. Only project hosted in South Africa should be eligible.

In the context of the introduction of a carbon tax in Viet Nam, offsetting should be considered under a two-fold per-spective: as it is broadly recognized, it is an instrument that allows taxpayers to define with flexibility their strategies to minimize the cost of compliance with the carbon tax. On the other hand, it can provide an important incentive (if CERs from domestic CDM activities are considered eligible) for the existing CDM portfolio. More comprehensive information on offsetting in the Vietnamese context is provided in section 4.

SECTION

02

VIETNAMESE CONTEXT

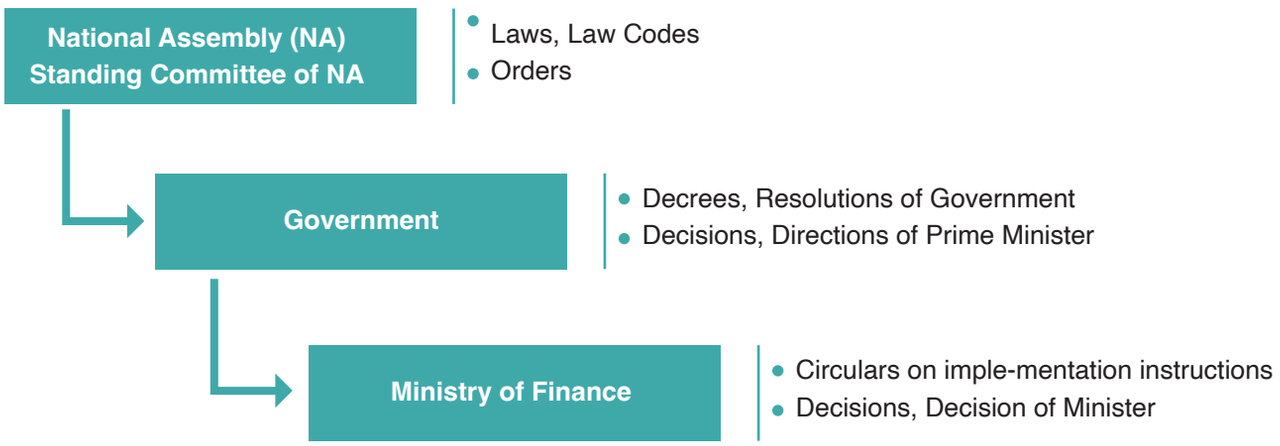
2.1

TAXATION SYSTEM

The Constitution of the Socialist Republic of Viet Nam stipulates that the National Assembly has the duty and power to regulate, amend or repeal tax laws. However, due to the request for adjustment of tax laws, the National Assembly may assign the National Assembly Standing Committee to stipulate, amend or abolish certain taxes through the issuance of Ordinances.

The Vietnamese taxation system is overseen by the General Department of Taxation (GDT) that is part of the Ministry of Finance (MOF). The GDT advises and assists the Minister of Finance in performing the state management of do-mestic revenues nationwide, including taxes, charges and fees and other state budget revenues and to manage taxa-tion in accordance with law. One of the major task of GDT is preparing proposal to the MOF (for further proposal to the Government or the Prime Minister) for consideration and decision of draft laws and resolutions of the National Assembly; draft ordinances and resolutions of the National Assembly Standing Committee; draft decrees of the Government and draft decisions of the Prime Minister on tax administration. At local level, tax affairs are handled by local provincial Tax Departments. The organisational structure of the taxation system in Viet Nam is reflected in the two figures below. Figure 2 shows the institutions in charge of issuing different tax regulations in Viet Nam.

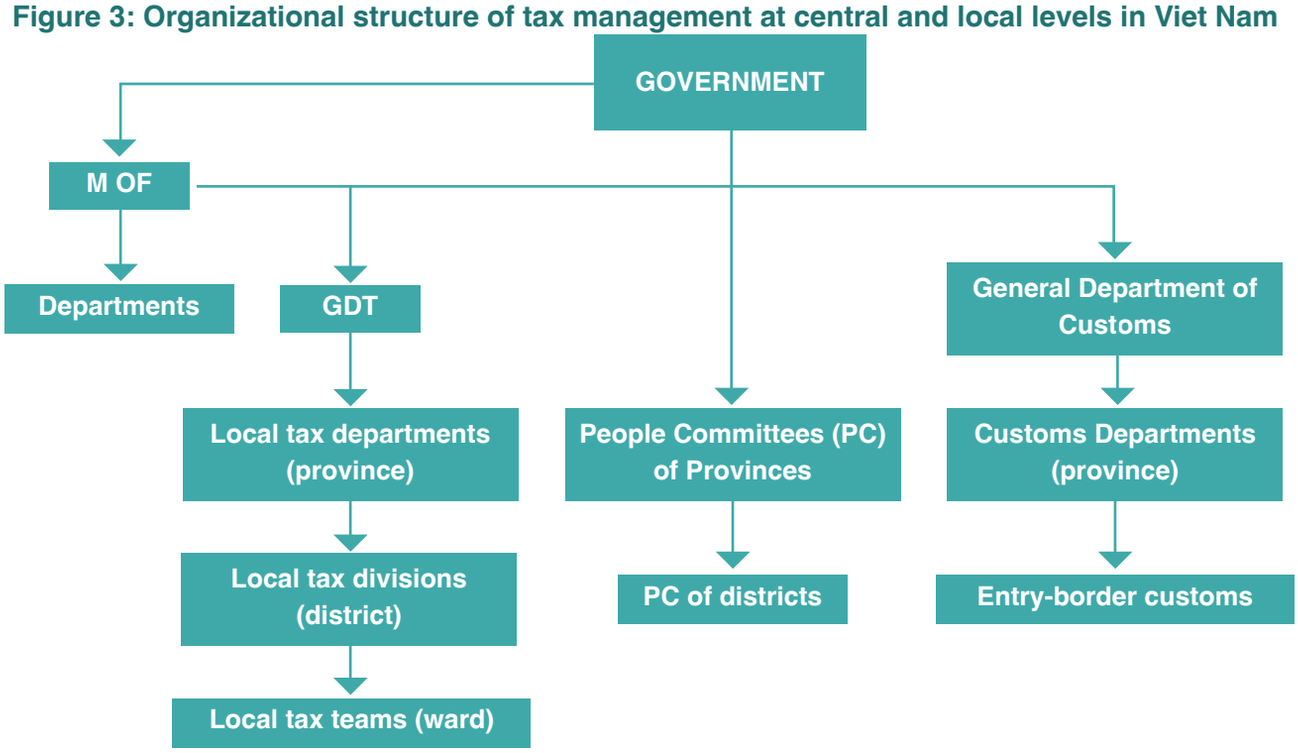
Figure 2: Institutions in charge of issuing different tax regulations in Viet Nam



Source: own elaboration

The enforcement of tax regulations in Viet Nam is performed through tax organizations at central and local levels, as illustrated in Figure below.

Figure 3: Organizational structure of tax management at central and local levels in Viet Nam



Source: own elaboration

The tax system of Viet Nam has undergone crucial reforms since the renovation policy (Đổi Mới) commenced since 1986. Tax policy and tax reform has become aligned with international rules and practices, and at the same time tax collection and administration processes have been improved.

Taxes can be classified according to different criteria. Based on the objects of taxation, there are taxes on income, taxes on consumption and taxes on properties. When considering the purpose of regulation, there are two basic types of taxes: direct taxes and indirect taxes. If the level of decentralization of tax revenue management is taken into ac-count, taxes can be classified as central taxes (the entire tax revenue is allocated to the State budget), local taxes (100% of tax revenue is allocated to the local budget) and distributed taxes (with a certain percentage of revenues allocated to different levels of budget). The following table provides the current major taxes in Viet Nam based on objects of taxation, their description (including contents for the purpose of regulation) as well as information on the revenue allocation.

Table 5: Overview of major taxes in Viet Nam

NO	TAX	DESCRIPTION	TAX REVENUE ALLOCATION[15]
Income tax			
1	Enterprise income tax (EIT)	Direct tax levied on the profits earned by companies or organizations. Income generated within Viet Nam is subject to EIT.	Allocation to both State budget and local government budget
2	Personal income tax	Direct tax applied to individuals earning income	Allocation to both State budget and local government budget
Consumption tax			
3	Import-export tax	Direct tax applied to goods imported or exported through Viet Nam's borders	
Full allocation to central government budget			
4	Special Consumption Tax	Indirect tax that applies to the production or importation of specific goods and the provision of certain services	Revenues from imported goods are allocated to State budget; other revenues are allocated to local government budget
5	Value added tax (VAT)	Indirect tax the cost of which ultimately falls on the consumer. Broadly, VAT is levied on the value added at each stage of the production and distribution supply chain	Allocation to both State budget and local government budget
6	Environmental protection tax	Indirect tax levied on products and goods that causing adverse impacts on the environment, including fuels (oil, coal). This tax generates revenues for the state budget.	Revenues from imported goods are allocated to State budget; other revenues are allocated to both the State budget and local government budget.
Property tax			
7	Natural resource tax	Direct tax calculated on the use of natural resources. The taxable items are: metallic minerals, coal, peat, oil and gas, natural gas, natural resources and natural resources such as natural materials.	Revenues from petroleum exploitation are allocated to State budget; other revenues are allocated to local government budget
8	Agricultural land use tax	Annual tax levied on agricultural land users or households who are granted agricultural land use rights for cultivation or afforestation or use water surface for aquaculture	Allocation to local government budget
9	Non-agricultural land use levies	Non-agricultural land use levies are taxes levied on the use of land for production, business and non-agricultural purposes	Allocation fully to local government budget

Source: own elaboration

Within these tax instruments, Environmental Protection Tax offers a tax regime that can incorporate a price of GHG emissions associated with the use fuels (oil, coal). Other tax instruments do not offer direct opportunities for internalis-ing the price of GHG emissions. Nevertheless, besides the Environmental Protection Tax, there are two other economic instruments that have the capacity to at least partly address prices of GHG emissions.

15 Decree no. 163/2016/ND-CP dated December 21, 2016, on guidelines for the law on state budget

These instruments are:

- payment for forest ecosystem services policy under 2017 Forest Law that contains an overall policy stipulation requiring individuals, organizations emitting a large volume of GHG to pay for carbon absorption and storage services provided by forests; and
- partially also Environment Protection Fees for waste water treatment and Environment Protection Charges for waste treatment that can address prices of relevant GHG emissions (primarily methane).

The following section describes each of these tools in detail. For completeness, Annex I to this report offers a basic overview of Natural Resource Tax and Environmental Protection Fee for exploitation of minerals that generate signifi-cant revenues for environmental protection activities but do not cover economic activities generating GHG emission were not therefore deemed relevant for carbon tax.

2.1.1. ENVIRONMENTAL PROTECTION TAX

The Law on Environment Protection Tax (N°57/2010/QH12) was approved by the National Assembly of Viet Nam, 12th Legislature, 8th Session, November 15, 2010 and became effective from January 1st, 2012. Environmental protec-tion tax is an indirect tax, collected on products and goods that, when used, are deemed to cause negative environmental impacts. The law stipulates the environmental protection tariffs with absolute minimum tariffs and absolute max-imum tariffs. Absolute minimum rates and absolute maximum rates are to be established on the basis of the degree of adverse impact on the environment or the cost to handle the negative consequences resulted from the use /consumption of the selected goods. The environmental protection tax is applicable to the production and import of certain goods deemed detrimental to the environment, especially petroleum and coal. Export products are exempted from this tax. The rates applied to different goods are presented in Table 6.

Table 6: Environmental protection tax rates[16]

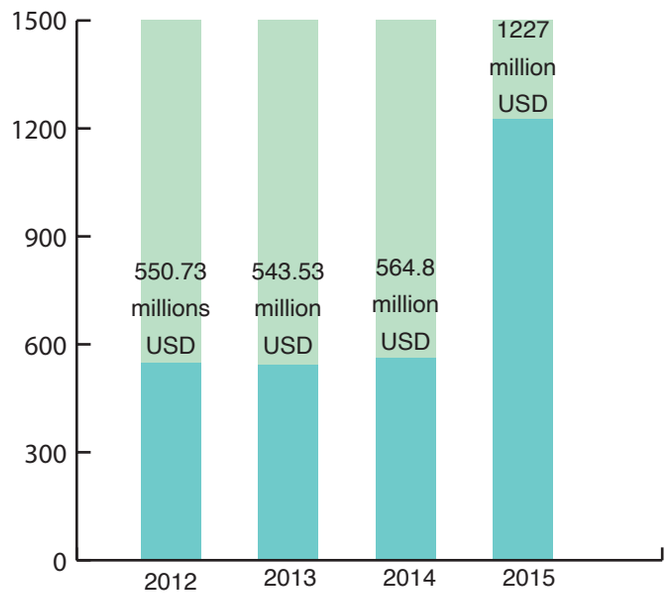
NO	GOODS	CALCULATION UNIT	TAX RATE (VND)	TAX RATE (USD)
I	**Gasoline, oil, grease**			
1	Gasoline, except ethanol	Liter	1000-4000	0.04 - 0.18
2	Aircraft fuel	Liter	1000-3000	0.04 - 0.13
3	Diesel oil	Liter	500-2000	0.02 – 0.09
4	Petroleum	Liter	300-2000	0.013 - 0.09
5	Fuel oil	Liter	300-2000	0.013 - 0.09
6	Lubricants	Liter	300-2000	0.013 - 0.09
7	Grease	Kg	300-2000	0.013 - 0.09
II	**Coal**			
1	Lignite	Tonne	10,000-30,000	0.44 - 1.32
2	Anthracite Coal (Anthracite)	Tonne	20,000-50,000	0.88 - 2.20
3	Fat coal	Tonne	10,000-30,000	0.44 - 1.32
4	Other coal	Tonne	10,000-30,000	0.44 - 1.32
III	**HCFC**	Tonne	1,000-5,000	0.04 - 0.22
IV	**Taxable-plastic bag**	Tonne	30,000-50,000	1.32 - 2.20
V	**Herbicide which is restricted from use**	Tonne	500-2000	0.022 - 0.08
VI	**Pesticide**	Tonne	1000-3000	0.04 – 0.13
VII	**Forest product preservative which is restricted from use**	Kg	1000-3000	0.04 – 0.13
VIII	**Warehouse disinfectant which is restricted from use**	Kg	1000-3000	0.04 – 0.13

Source: National Assembly of Viet Nam, 2010

16 Exchange rate: 1USD=22,700VND

At its dawn, environmental taxation contributed a stable proportion of government budget, of approx-imately 1.5% on average for the period 2012 – 2014 (GSO, 2012 - 2014). Amongst the taxes levies, fuel taxes stand out as key instrument. Fuel tax alone generates substantive revenues for the state budget which were estimated to grow by 131% from 1.227 billion USD in the period 2014-2016 With regard to future trends, the Green Fiscal Policy Network (2017) estimates that the environmental pro-tection tax could significantly increase Viet Nam Government's revenues by about 3.5 %.

Figure 4: Collected Revenue from Environmental Protection Tax 2012-2015



Source: Minis try of Finance of Viet Nam, 2016

It is stated by The Government of Viet Nam (2017) declares that the imposition of the Environmental Protection Tax on several environmentally harmful products is contributing to Viet Nam's commitments towards the international community regarding climate change. Moreover, introduction of Hydrochlorofluorocarbon (HCFCs) as the object of Environmental Protection Tax also contributes to the achievement Viet Nam's commitment of complete phase-out of HCFCs by 2030 under the Montreal Protocol on Ozone-Depleting Substances.

The status of collected environmental protection tax revenue against Gross Domestic Product (GDP) and state budget revenue in the period 2012 – 2016 is summarised in the following table

Table 7: The status of collection of the environmental protection tax in the period of 2012-2016 (billion VND and billion USD)

ITEM	INDICATOR	2012	2013	2014	2015	2016
1	GDP at current prices (VND)	3,245,419	3,584,262	3,937,856	4,192,862	4,530,398
	GDP at current prices (USD)	142.97	157.897	173.473	184.7	199.6
2	Total state budget revenue (VND)	754,572	828,348	877,697	997,785	1,039,000
	Total state budget revenue (USD)	33.24	36.491	38.665	43.955	45.77
3	Gross domestic tax revenue (VND)	422,870	513,090	537,997	740,062	829,000
	Gross domestic tax revenue (USD)	18.628	22.603	23.7	32.6	36.52
4	Total collected environmental protection tax (VND)	11,160	11,512	11,970	27,020	44,323
	Total collected environmental protection tax (USD)	0.49	0.50	0.50	1.19	1.95

ITEM	INDICATOR	2012	2013	2014	2015	2016
5	Revenue from environmental protection tax compared to GDP (%) (VND)	0.34	0.32	0.30	0.64	0.98
6	Revenue from environmental protection tax against total state budget revenue (%) (VND)	1.48	1.39	1.36	2.71	4.27
7	Revenue from environmental protection tax against total tax revenue (%) (VND)	2.64	2.24	2.22	3.65	5.3

Source: GoV, 2017

The value of collected environmental protection tax revenue differentiated by commodity groups in the period 2012-2016 is presented in the following table.

Table 8: Environmental protection tax revenue detailing by commodity groups, 2012-2016 (billion VND and mil-lion USD)

ITEM	TARGETS	2012	2013	2014	2015	2016
	Total collected environmental protection tax (VND)	11,160	11,512	11,970	27,020	44,323
	Total collected environmental protection tax (USD)	491	507	527	1,190	1,952
1	Domestic production (VND)	11,160	11,036	8,059	14,260	22,798
	Domestic production (USD)	491	486	355	628	1,000
1.1	Gasoline (VND)	5,899	6,210	4,410	7,977	11,702
	Gasoline (USD)	260	273	194	351	516
1.2	Diesel oil (VND)	3,656	3,525	2,421	4,485	8,454
	Diesel oil (USD)	161	155	106	197	372
1.3	Fuel (VND)	26	45	11	22	13
	Fuel (USD)	1.1	1.9	0.5	1	0.6
1.4	Fuel oil, grease, (VND)	226	210	186	309	863
	Fuel oil, grease, (USD)	10	9.3	9.2	14	38
1.5	Coal (USD)	516	581	577	794	766
	Coal (USD)	23	25	25	35	34
1.6	Hydrochlorofluoro-carbons (VND)	9	0	21	0	0
	Hydrochlorofluoro-carbons (USD)	0.4	0	0.9	0	0
1.7	Plastic bags (VND)	827	168	71	69	56
	Plastic bags (USD)	37	7.4	3.1	3	2.4
1.8	Herbicide (VND)	0	0	0	0	2
	Herbicide (USD)	0	0	0	0	0.9
1.9	Flying fuel (VND)	0	296	362	603	942
	Flying fuel (USD)		13	16	27	42
2	Group of imported goods (VND)	0	477	3,911	12,759	21,258
	Group of imported goods (USD)	0	21	17	56	9.3
2.1	Gasoline (VND)	0	274	2,098	6,599	10,279
	Gasoline (USD)	0	0.012	0.092	0.029	0.450
2.2	Flying fuel (VND)	0	20	235	1,084	2,133

ITEM	TARGETS	2012	2013	2014	2015	2016
	Flying fuel (USD)		9	10	48	94
2.3	Diesel oil (VND)	0	180	1,522	4,800	8,273
	Diesel oil (USD)		8	67	210	364
2.4	Fuel (VND)	0	0	3	4	6
	Fuel (USD)	0	0	0.13	0.18	0.26
2.5	Fuel oil, grease (VND)	0	2	53	272	567
	Fuel oil, grease (USD)		0.9	2.3	12	25
3	Other commodities produced domestically and imported (VND)	0	0	0	0	267
	Other commodities produced domestically and imported (USD)	0	0	0	0	12

Source: GoV, 2017

Regarding revenue distribution, 100% of the revenue from Environmental Protection Tax from crude oil, natural gas and coal gas import will be allocated to the national budget. Revenues of the Environmental Protection Tax from other sources are allocated between the central budget and the local budget.

There is no specific provision on the use of the revenue for specific expenditure purposes but only for general ones in accordance with the Law on State Budget, which is approved by the National Assembly annually.

It is however worth mentioning that total revenue from Environmental Protection Tax from 2012-2016 is 105,985 billion VND (4.7 billion USD) while total expenditure from the State Budget for environmental protection for 2012-2016 reached about 131,857billion VND (5.8 billion USD) of which about 89,131 billion VND (3.9 billion USD) is allocated to expenditure for environmental protection.

In 2017, the MOF has proposed to increase the rates for some commodities targeted under of the Law on Environmen-tal Protection Tax as part of revision of this Law, which was submitted to the National Assembly for revision in Octo-ber 2017 but not yet adopted. In the revision, the tax rates are increased for some goods and the list of items that are subjected to the tax is extended to cover more goods. The MOF proposed to raise environmental protection tax on petrol from the current VND 1000-4000 (0.044-0.18 USD) to VND 3000-8000 (0.13-0.35 USD) per litre; and for kero-sene from VND 2000 to VND 3000 (0.088 to 0.13 USD). There is no information whether the tax rate on coal would be increased. There have been concerns on the potential impacts of this tax increase on economic activities, which lead to the rejection of the proposal by the National Assembly; a comprehensive evaluation on the impact of a hike in envi-ronmental protection tax given the effect on many economic sectors is needed (National Assembly, 2017a).

2.1.2. PAYMENT FOR FOREST ENVIRONMENTAL SERVICES POLICY UNDER 2017 FOREST LAW

The National Assembly ratified the Forest Law on 15 November 2017 (National Assembly, 2017b). In the Excerpt đ, item 2, Article 63 which defines the payment for forest environmental services policy, it is stated that “individuals, organizations involved in production and business activities that emit a large volume of GHG shall pay money for the services of carbon absorption and storage of forests” (Item 2đ). However, there is no definition of large emitters. The law will enter into force on 1 January 2019, it is expected that further detailed guidance will be provided within 2018.

2.1.3. ENVIRONMENTAL PROTECTION FEES

According to the Law on Charges and Fees (Law No. 97/2015/QH13) dated 25 November 2015, the fees related to environmental protection include:

- Environmental protection fee for waste-water (further detailed under Decree No. 154/2016/ ND-CP dated 16 November 2016);
- Environmental protection fee for exploitation of minerals (further detailed under Decree No. 164/2016/ND-CP dated 26 November 2016);
- Environmental protection fee for emissions. There is not yet detailed guidance on the procedures, modality for registration and stock taking of industrial emissions as well as for the allocation of Industrial Waste Air Emis-sion permit;
- Fee for appraisal of environmental impact assessment report, detailed environmental protection plan;
- Fee for appraisal of environmental restoration, renovation plan and additional environmental restoration, ren-ovation plan.
- There is no environmental charge provided in the Law.

Apart from the above mentioned environmental protection fees, there is also fee for collection, transport and treat-ment of domestic solid waste at city-/provincial- level. The following section discusses the fee for waste-water and solid waste as they are the existing fees that relate to GHG emissions (CH_4, CO_2 and N_2O).

a) Environmental protection fee for waste-water

The environmental protection fee for waste water, as provided in Decree No. 154/2016/ND-CP (GoV, 2016a). The environmental protection fee for domestic waste water is 10% of the sale price of 1m3 of fresh water that does not include Value Added Tax.

The environmental protection fee for industrial waste water is calculated based on the fixed fee of 1.5 million VND/year (66 USD) plus the variable fee defined by the volume of fresh water used (m3) multiplying with the content of pollution parameters and the fee level for each pollution parameter.

The fee level for each pollution parameter is presented below (enterprises having total waste volume below 20m3/day are not subject to variable fee).

Table 9: Environmental protection fee level for waste water

NO.	POLLUTION PARAMETERS FOR FEE CALCULATION	FEE (VND)	FEE (USD)
1	Chemical Oxygen Demand (COD)	2000	0.88
2	Total suspended solids (TSS)	2400	0.11
3	Mercury (Hg)	20,000,000	881.05
4	Lead (Pb)	1,000,000	440.53
5	Arsenic (As)	2,000,000	88.11
6	Cadmium (Cd)	2,000,000	88.11

Source: GoV, 2016a

The Department of Natural Resources and Environment is in charge of collecting the environmental protection fee for industrial waste water while the fresh water providers are in charge of collecting the environmental protection fee for daily waste water.

The revenue distribution is provided in below table:

Table 10: Distribution of revenue from environmental protection fee for waste water

	DAILY WASTE WATER	INDUSTRIAL WASTE WATER
Fresh water provider	<10%	25%
People's Committee of commune, ward, town	<25%	-
State Budget at provincial level	<65	75%

Source: Government, 2016a

b) Fee for collection, transport and treatment of domestic solid waste

Regarding domestic solid waste in Viet Nam, about 46% of the solid waste is generated from municipalities, 17% from industrial processes and the remaining belongs to rural areas, craft villages and health care sector (MONRE, 2011).

Solid waste are mainly collected and treated by Urban Environment Companies (URENCOs) and enterprises that are licensed by MONRE or Department of Natural Resources and Environment at provincial level for solid waste collect, transfer and treatment services.

Current collection rate of industrial solid waste, urban solid waste and rural solid waste in Viet Nam is about 90%, 83-85% and 40-55% respectively.

The level of the fee for collection, transport and treatment of solid waste is defined by the provincial People's Commit-tees (PC). Examples for the fee for collection, transfer and treatment of solid waste are provided in below table.

Table 11: Examples for the fee for collection, transport and treatment of solid waste in some cities in Viet Nam (VND)

	HANOI	BAC GIANG	DA NANG
	3,000-6,000/ person/ month (0.13-0.26 USD)	24,000-50,000/ household/ month (1-2.2 USD)	15,000-30,000/ household/ month (0.66-1.3 USD)
Businesses	90,000-130,000/household/ month (generating below 1m^3/ month) (3.9-5.7 USD) 208,000/m^3 or 500,000/ ton (generating above 1m^3/ month) (9.1 or 22 USD)	80,000-220,000/ facility/ month (3.5-9.7 USD)	45,000-100,000/ household/ month (2-4.4 USD)
Schools, offices	130,000/ household/ month (generating below 1m^3/month) (5.7 USD) 208,000/m^3 or 500,000/ ton (generating above 1m^3/ month) (9.1 or 22 USD)	2220,000/facility/month (9.7 USD) 878,000/ton (38.7 USD)	165,000 (facilities generating below 1m^3/month) (7.2 USD) 205,000/m^3 (facilities generating above 1m^3/month) (9 USD)
Other facilities	130,000/household/month (generating below 1m^3/month) (5.7 USD) 208,000/m^3 or 500,000/ ton (generating above 1m^3/ month) (9.1 or 22 USD)	220,000/facility/month (9.7 USD) 878,000/ton (38.7 USD)	265,000/m^3/month (11.7 USD)

Source: Hanoi PC, 2016; Bac Giang PC, 2018; Da Nang URENCO, 2017

2.2

OVERVIEW OF GHG EMISSIONS IN VIET NAM

The latest national GHG inventory of 2013 was published under the 2nd Biannual Update Report (BUR) of Viet Nam in November 2017 for the main GHGs such as CO2, CH4, N2O, etc. and for the following main sources of emissions: Energy, Industrial processes, Forestry and Land use change, Agriculture and Waste.

Total GHG emissions/removals in 2013 not controlled by Montreal Protocol are shown in the below Table.

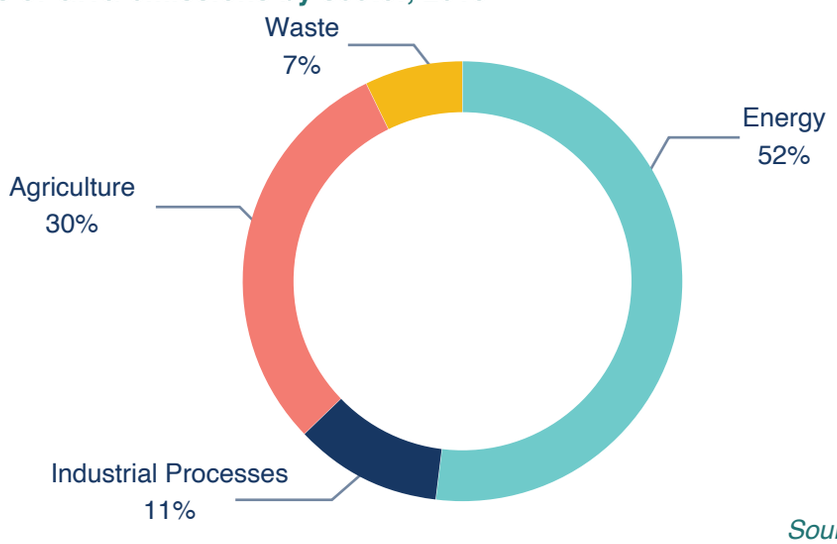
Table 12: GHG emissions and removals by gases, 2013 (thousand tonnes CO2e)

SECTOR	CO_2	CH_4	N_2O	HFCS	TOTAL
Energy	126,914.6	23,397.8	1,090.1		151,402.5
Industrial Processes	29,799.8			1,967.6	31,767.4
Agriculture		59,131.2	30,276.7		89,407.9
Land Use, Land-Use Change and Forestry (LULUCF)	-34,359.5	101.1	18.6		-34,239.8
Waste	255.0	18,494.4	1,937.0		20,686.4
Total emission(without LULUCF)	156,969.4	101,023.4	33,303.8		293,264.2
Total emission(with LULUCF)	122,609.9	101,124.5	33,322.3		259,024.4

Source: Ministry of Natural Resources and Environment (MONRE), 2017

The shares of different sectors in the total GHG emissions of Viet Nam in 2013 are illustrated in the figure below:

Figure 5: Shares of GHG emissions by sector, 2013



Source: MONRE, 2017

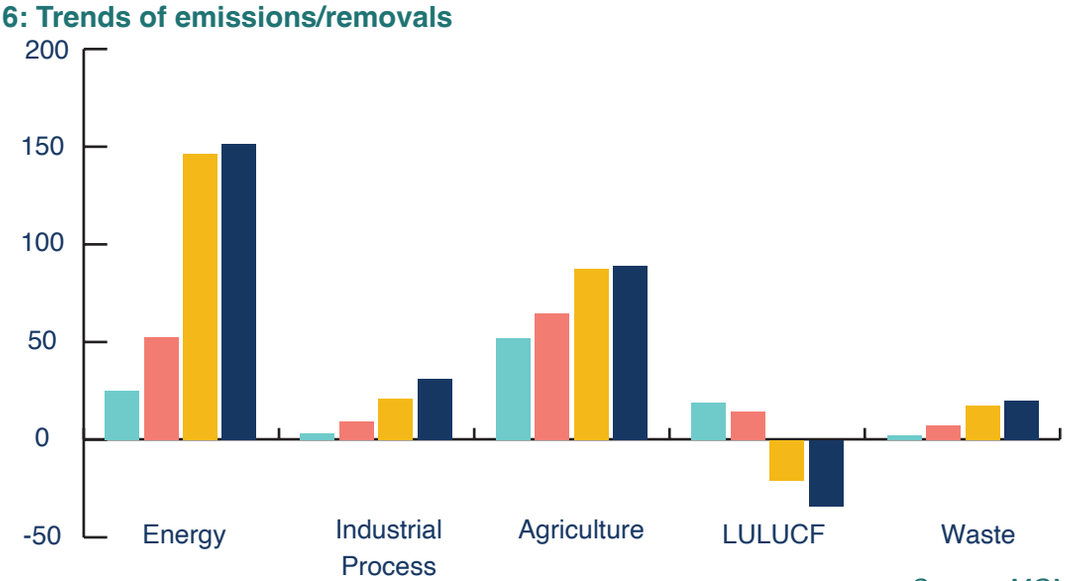
During the period of 1994-2013, total emissions in Viet Nam (with LULUCF) have increased more than two-fold from 103.8 million tonnes to 259.0 million tonnes CO2e. Emissions in the energy sector have increased most rapidly, nearly six-fold from 25.6 million tonnes to 151.4 million tonnes CO2e. LULUCF sector changed from being a source of emis-sions to be a net sink in 2010 and has sequestered 34.2 million tonnes in 2013. Trends of emissions/removals among inventory cycles are illustrated in Table and Figure below.

Table 13: Trends of emissions/removals among inventory cycles (thousand tonnes CO_2e)

YEAR	ENERGY	INDUSTRIAL PROCESSES	AGRICULTURE	LULUCF	WASTE	TOTAL
1994	25,637.0	3,807.0	52,445.0	19,378.0	2,565.0	103,832.0
2000	52,774.0	10,006.0	65,091.0	15,105.0	7,925.0	150,901.0
	146,170.7	21,682.4	2010[17] 87,602.0	-20,720.7	17,887.0	252,621.5
2013	151,402.5	31,767.4	89,407.8	-34,239.8	20,686.4	259,024.3

Source: MONRE, 2017

Figure 6: Trends of emissions/removals

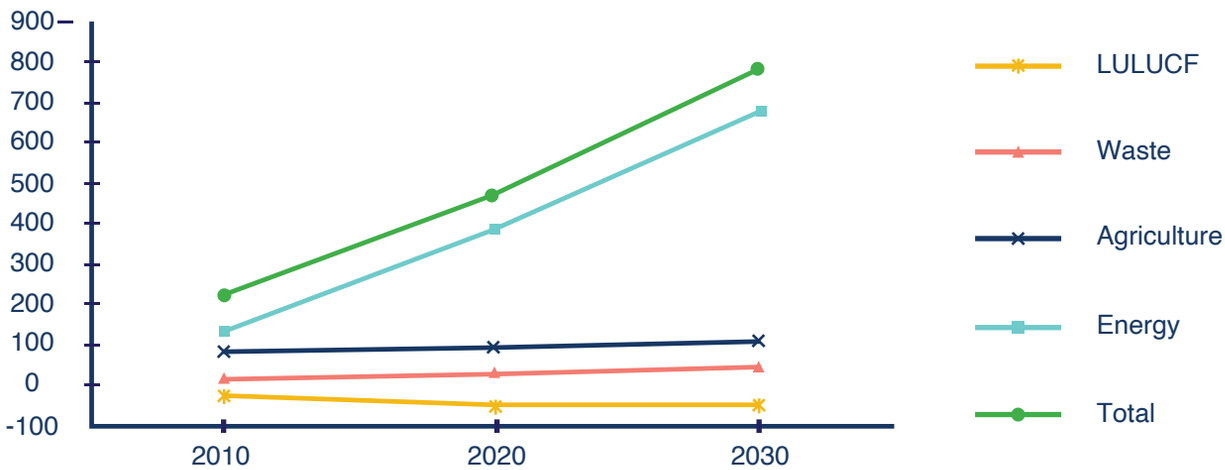


Source: MONRE, 2017

17 Updated 2010 inventory

The 2nd BUR does not contain projections on GHG emissions trends for the future. These are contained in the latest National Communication (NC 2), where projections have been provided for the period 2010-2030 and are presented in the figure below.

Figure 7: GHG emissions in 2010 and projections for 2020 and 2030 ($MtCO_2e$)



Source: Ministry of Natural Resources and Environment, 2014

The actual GHG emission trend presented in Table 15 and Figure 6 and the projections in Figure 8 show that the net GHG emissions in Viet Nam are projected to increase significantly.

Table 14: Emission in different sectors in 2013, excluding LULUCF

NO.	SECTOR/SUB SECTOR	GAS	EMISSION IN 2013 (GG)	SHARE (%)	CUMULATED SHARE (%)
1	4.C.1. Rice cultivation- Irrigated	CH_4	42,561.0	14.5	14.5
2	1.A.1.a. Energy industry: Public Electricity and Heat Production	CO_2	41,429.3	14.1	28.6
3	2.A.1. Cement Production	CO_2	28,207.1	9.6	38.3
4	1.A.3.b. Transport: Road Transportation	CO_2	26,815	9.1	47.4
5	1.A.2.c. Manufacturing Industries and Construction: Cement and Building materials	CO_2	17,992.8	6.1	53.5
6	1.B.2.a. Fugitive: Oil	CH_4	14,323.0	4.9	58.4
7	4.D.1. Cropland: Direct Soil Emissions	N_2O	13,167.3	4.5	62.9
8	4.D.3. Cropland: Indirect Soil Emissions	N_2O	9,950.2	3.4	66.3
9	6.B2. Domestic wastewater	CH_4	9,436.0	3.2	69.5
10	6.A. Solid Waste Disposal on Land	CH_4	7,436.0	2.5	72.1
11	1.A.4.b.Other sectors: Residential	CO_2	6,608.9	2.3	74.3
12	1.A.2.g. Manufacturing Industries and Construction: Other	CO_2	6,378.5	2.2	76.5
13	4.B.9. Manure management: aerobic treatment	N_2O	5,694.6	1.9	78.4
14	4.A.1. Enteric fermentation: Cattle	CH_4	5,672.4	1.9	80.4
15	1.A.2.e. Manufacturing Industries and Construction: Textile and Leather	CO_2	5,610.3	1.9	82.3

NO.	SECTOR/SUB SECTOR	GAS	EMISSION IN 2013 (GG)	SHARE (%)	CUMULATED SHARE (%)
16	1.A.2.b. Manufacturing Industries and Construction: Chemical and Petroleum	CO_2	4,350.6	1.5	83.8
17	4.A.2. Enteric fermentation: Buffalo	CH_4	3,519.4	1.2	85.0
18	1.A.4.b.Other sectors: Residential	CH_4	3,497.3	1.2	86.2
19	.A.4.a. Other sectors: Commercial/ Institutional	CO_2	3,312.7	1.1	87.3
20	1.A.2.d. Manufacturing Industries and Construction: Food and Tobacco	CO_2	2,936.2	1.0	88.3
21	1.B.2.b. Fugitive: Natural gases	CH_4	2,886.5	1.0	89.3
22	4.C.2. Rice cultivation: Rain fed	CH_4	2,180.7	0.7	90.0
23	1.A.1.b. Energy industry: Petrochemical	CO_2	2,098.6	0.7	90.7
24	4.F. Field Burning of Agricultural Residues	CH_4	1,972.9	0.7	91.4
25	2.F.1. HFCs Consumption	CO_2	1,967.6	0.7	92.1
26	6.B. Wastewater handling: Human sewage	N_2O	1,937.0	0.7	92.7
27	1.B.1.a. Fugitive: Underground coal mining	CH_4	1,824.7	0.6	93.4
28	6.B.1. Industrial Wastewater	CH_4	1,623.0	0.6	93.9
29	1.A.2.a. Manufacturing Industries and Construction: Iron and Steel	CO_2	1,609.4	0.5	94.5
30	1.A.4.c. Other sectors: Agriculture/ Forestry/Fishing	CO_2	1,425.3	0.5	94.9

Source: MONRE, 2017

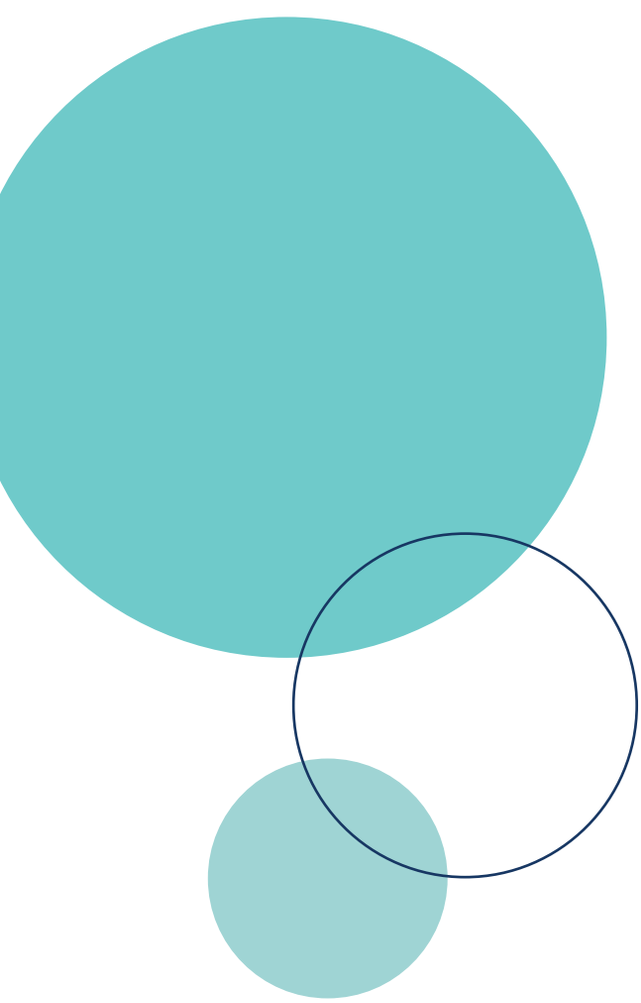
The Intended Nationally Determined Contribution (INDC) of Viet Nam submitted to the UNFCCC in September 2015 (GoV, 2015) sets the unconditional contribution target of GHG emission reductions by 8% by 2030 compared to BAU with emission intensity per unit of GDP reduced by 20% compared to 2010 levels and forest cover increasing to 45%. With support through bilateral and multilateral cooperation, the reduction target can be 25% with emission intensity per unit of GDP reduced by 30%. The Government of Viet Nam intends to develop climate change policies in different sectors of the economy and to transform its current development patterns towards sustainable development.

With the successful accomplishment of the Paris Agreement on Climate Change at the 21st Conference of Parties (COP) and the country's signature and ratification of the PA, the submitted INDC has become the Nationally Deter-mined Contribution (NDC) that is legally binding for Viet Nam. The Plan for Implementation of the Paris Agreement approved by the Prime Minister in October 2016 (Prime minister, 2016a) creates favourable conditions for Viet Nam to fulfil its commitments under UNFCCC.

Setting a price on carbon would help Viet Nam to achieve its targets under the Green Growth Strategy and under its NDC. Price on carbon sends a price signal gradually leading to a market response, creating incentives for producers and consumers to shift to less GHG intensive ways of production and consumption, and ultimately resulting in GHG emis-sions reductions.

2.3

ECONOMIC INSTRUMENTS FOR THE REDUCTION OF GHG EMISSIONS IN VIET NAM



The Government of Viet Nam is working on development of a Decree on the roadmap and methods for Viet Nam's participation in global GHG emission mitigation to be issued in 2019. It is expected that the Decree will provide details on the national carbon pricing strategy that are not in place up to date.

Viet Nam developed a strong CDM portfolio and established a functioning governance framework from a very early stage. Up to March 31st, 2017, Viet Nam hosted 255 Clean Development Mechanism (CDM) projects and 10 CDM Programmes of Activities (PoAs) registered by the CDM Executive Board with an expected total annual amount of 19,653,872 tCO2 reduction. Among those projects, 69 projects (including 68 CDM projects and one CDM PoA) have received 17,793,032 CER, of which 59 projects from energy sector and 10 projects from waste sector. Four projects have been registered under Joint Crediting Mechanism (JCM) mechanisms. Besides that, there are number of GHG emission reduction projects in Viet Nam registered under Verified Carbon Standard (VCS) and GS (MONRE, 2017).

Apart from these project types, the current update on the mitigation actions of the country in Viet Nam's 2nd BUR shows that no international market mechanism is applied in Viet Nam. However, there are different activities carried out under the World Bank-funded Partnership for Market Readiness (PMR) project for the introduction of carbon pricing mechanisms, which is still in the preparation stage. The project aims at: strengthen the capacity of government agencies to develop, implement and disseminate policies and tools for state management of Nationally Appropriate Mitigation Action (NAMAs); formulate market-based instruments to reduce GHG emissions; pilot NAMAs in the field of steel production and solid waste management; and develop a roadmap to participate in the domestic and interna-tional carbon market.

Under the UNDP project "Strengthening Capacity and Institutional Reform for Green Growth and Sustainable Devel-opment in Viet Nam (CIGG), several assignments related to promotion of the development, management, and use of carbon credits and development of the basis for revision of the Prime Minister's Decision on CDM (Decision 130/2007/QDTTG) as well as on the potential scenarios for the transition from the CDM to the Paris Agreement mech-anisms have been conducted. One of the major recommendations of the studies is the identification of the appropriate carbon pricing mechanism, with a preliminary indication of carbon tax as the most promising candidate. It is also pointed out that it is necessary to define "solid accounting rules and MRV systems and harmonization of different systems in order to allow tracking of results towards mitigation targets in a comparable manner."

Under the Plan for Implementation of Paris Agreement, the implementing activities for mitigation of GHG emissions are presented as follows:

- to develop national carbon market and pilot in potential sectors as (one of the activities in the period 2016 – 2020); and
- to deploy extensive actions related to mitigation of GHG emissions, green growth using mechanism, policies and market tools in potential sectors which have been successfully piloted in the period before 2020, also considering and selecting other appropriate actions to deploy.

2.4

BENEFITS AND BARRIERS OF EXISTING ECONOMIC INSTRUMENTS IN TERMS OF THEIR POTENTIAL USE FOR REDUCTION OF GHG EMISSIONS IN VIET NAM

As discussed above, there are already various economic instruments in Viet Nam that can be adjusted to support re-duction of GHG emissions in Viet Nam, namely the environmental protection tax; and environmental protection fees. There are also on-going studies and pilot on carbon pricing initiatives such as bilateral carbon offsetting (JCM) or emission trading system (PMR). Each of the instruments has its own benefits and barriers in achieving CO2 emission reductions. However a more specific taxation such as a carbon tax would be more effective in supporting wider mitigation actions and in-vestments.

2.4.1. ASSESSING A CARBON TAX AGAINST THE CURRENT SYSTEM OF ENVIRONMENTAL PROTECTION TAX AND NATURAL RESOURCE TAX

a) Benefits

The current environmental protection taxation system has taken into account the "polluter pays" principle and has imposed the responsibility of environmental protection on the producers and importers of products that cause negative environmental impacts (En-vironmental Protection Tax) and individuals, organizations exploiting domestic natural resources (Natural Resources Tax). Especially the development of the Environmental Protection Tax has taken into account the contribution of the Tax to achieve GHG emission reductions, e.g. tax on petrol, diesel, coal, etc. even if the current tax rate levies widely differing tax rates for different fuels and does not explicitly reflect a price of carbon. Moreover, HCFCs, which are covered by the international agreement under the Montreal Protocol, are also included under the Environmental Pro-tection Tax.

This study is conducted at the time when the Law on Environmental Protection Tax is under revision. There is thus a chance for revision of the Environmental Protection Tax in order to take into consideration of further progress in the international negotiations on climate change, especially Viet Nam's stronger commitment on GHG mitigation under the Paris Agreement and Montreal Protocol.

Environmental benefits: The carbon tax will impose a price on each unit of emitted CO2e. A price on carbon will stimu-late polluters to reduce the amount of GHG emitted in the atmosphere by shifting to low-carbon technologies and helps spur innovation and investments in mitigation alternatives. A carbon tax that succeeds in reducing carbon emis-sions and consumption of fossil fuels contribute to the reduction of emissions of hazardous pollutants, such as NOx and SOx, delivering benefits related to improved health and reduced mortality

Economic benefits: the carbon tax generates additional revenues for the state budget. These can be used to support the development of clean and low-carbon technologies (e.g. investment in research into renewable energy) and mitiga-tion activities, as well as investment in broader sustainable development in the country. The latter can significantly contribute to delivering social benefits to the population and, depending on the type of activities financed, specifically to vulnerable communities and low income segments of society. A carbon tax, if designed as revenue neutral (as in the case of France, see section 5) can lead to the reduction of other more distortive taxes.

b) Barriers:

Revision of the Tax system shall require approval of the National Assembly. During the 14th session of the National Assembly in September 2017, the Ministry of Finance proposed to increase the Environmental Protection Tax rate for petroleum but the proposal was not approved by the National Assembly since it may have significant impacts on sev-eral economic sectors. Political ownership is necessary to introduce the carbon tax in the existing taxation framework.

Interaction between different legislation must be carefully taken into account to ensure coherence of the carbon tax scheme and to avoid double imposition of a tax or fee. An environmental protection fee on emissions, including CO2 emission, will impose further burden on the operators of vehicles and machinery and may receive their strong objec-tion. On general terms, it is to be expected that the introduction of a new tax is not welcomed by companies and ulti-mately by consumers as it is seen as an additional cost. It is therefore necessary to gain public support (or reducing opposition) clearly communicating what are the associated benefits at environmental and economic level.

There are technical barriers for the design and introduction of a carbon tax/fee that need to be considered carefully. Definition of the appropriate rate for the carbon tax is a challenging task. A balance is needed between a sufficiently high price that effectively drives investment into low-carbon alternatives, and the need to avoid negative repercussions on economic development (e.g. imposing an excessive extra cost to domestic companies) and on the society (e.g. lead-ing to a strong increase in energy tariffs). Another technical aspect to be considered is the definition of the planned trend for the rate of the tax: it is suggested to introduce the carbon tax with a relatively low rate, also to facilitate ac-ceptance and political support, and to progressively increase it allowing companies to prepare their own emission re-duction strategies to reduce tax exposure. However, the definition of a consistently appropriate rate over time, and also its periodic review is a complex operation. The level of the carbon tax should be set taking into account the re-quired contribution from this instrument to the

achievement of the NDC mitigation target of Viet Nam. Examples from international experience show that introduction of a low tax rate, that progressively increases, is the preferred option by policymakers.

Another key element is the identification of the appropriate tax base, i.e. the coverage of the tax in terms of sectors, companies and households that will be subject to the tax. Depending on how the tax is designed, for instance if it is levied on the direct emission at plant level, or on the quantity of fuel sold and imported, the number and composition of the taxpayers can vary significantly. Also in this case it is necessary to strike a balance between the need to cover as many emission sources as possible to increase the mitigation potential of the tax/fee, and at the same time increase the revenues generation, with potential negative effects on the economy. Also inclusion (or exclusion) of sectors from the tax/fee scheme can raise opposition from those taxpayers that may perceive exclusion of others as an unequal and unjust application of the tax/fee.

The two barriers mentioned above can be addressed with detailed modelling work to identify the different scenarios taking into account different design options, such as different tax rate levels, including more or less aggressive initial rate and progression over time; extension of the tax base also in terms of GHG covered. This exercise is necessary to gain sufficient information for identifying the most effective option in terms of both mitigation potential and also of revenues generation. The information acquired through modelling can be used to support the proposal of the tax/fee and to present its benefits to the relevant stakeholders.

Enforcement of a new carbon tax might be challenging as well: depending on the final design of the carbon tax (for instance in the case of new carbon tax on actual GHG emissions), an appropriate MRV system might be needed and enforcement must be ensured by national authorities. This will require substantial capacity to be built both at compa-ny level to monitor the level of emissions and also within public entities which will be in charge of the supervision and enforcement of the tax. Increase in the complexity of MRV requirements might represent a barrier in the short term for companies, due to the associated costs. However this should be seen as a further step towards the improvement of the existing MRV at sectoral and national level, which is a key element under the Paris Agreement and towards which Viet Nam is already developing appropriate actions at different level, including at legal level and for the creation of a na-tional MRV framework. Social barriers should be considered as well: one of the concerns related to a carbon tax is related to its distributional impacts. A carbon tax, all things being equal, can be regressive if the extra cost can be passed completely to the consumers. For this reason, exemptions and tax-reductions should be considered to ensure regressive impacts of the carbon tax are minimized.

Opposition from companies affected by the proposed carbon tax/fee should also be expected, as on general terms (see also Section 5 on the actual examples in different countries) a new tax or its increase is not seen positively as it would reduce profits. This barrier can be addressed (at least partially) with a consideration of supporting measures (such as exemptions or rebates or even specific provision of financial support from the tax/fee revenues) to reduce the opposi-tion of the business community.

Moreover, currently the revenues from existing taxes are blended with other sources or revenues for the State budget without a specified purpose of expenditure. Therefore, the benefit of the taxes in increasing the State budget is obvi-ous, while the contribution of these revenues to supporting environmental protection and also GHG emission reduc-tions is not fully transparent.

2.4.2. PROJECT BASED MECHANISMS

The project based mechanisms have been used to generate credits to offset emissions from outside Viet Nam under CDM, JCM, VCS, GS. Therefore, in the context of a potential tax on direct emission, the project based mechanisms can be used to design the off-setting scheme that is combined with the carbon tax options which will be later discussed in section 4.4.

a) Benefits

A good wealth of experience, both at institutional and private company level, has been generated in the country over the past decade with the implementation of project based activities, including those under the UNFCCC such as the CDM. Viet Nam has rich experiences in implementation of CDM projects. There are also other on-going project based emission reduction initiatives such as JCM, voluntary carbon market under VCS and GS. The volume of GHG emis-sion reductions can be easily monitored based on developed methodologies and the target of GHG emission reductions are more certainly ensured. The programmatic approach solves to a large extent the inability of project based mecha-nisms in support mitigation actions in the case of small and geographically scattered emissions in an efficient manner. It also supports scaling up of mitigation activities to harness larger mitigation potential.

b) Barriers:

Project based mechanisms rely on the existence of a sufficiently high price for credits that can mobilize investments. Currently prices are very low (i.e. less than 1 USD /CER) and hence many potential projects are not financially attrac-tive and thus are not implemented. Stimulating the demand for credits is necessary to mobilize private investment in mitigation.

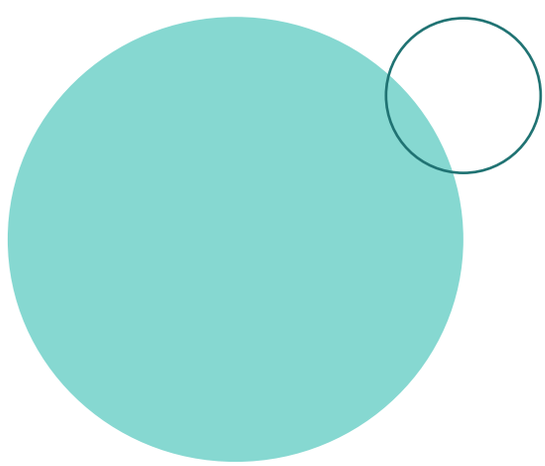
2.4.3. EMISSION TRADING SCHEME

a) Benefits

There are on-going activities supported by the World Bank through the PMR project and MONRE shows interest in developing carbon pricing mechanism at national level. An ETS is being considered. On general terms, emission trading can deliver emission reductions in a cost-effective manner by focusing on emission reductions with the lowest costs. There is potential for linking with other similar mechanisms in other jurisdictions also under the Article 6.2 (CAs) of the Paris Agreement.

b) Barriers:

Set up of an emission trading scheme is quite complex and required significant preparatory work, including an initial test-phase to actually evaluate the functioning of the system. Establishment and operation of the trading infrastruc-ture is also another element that increases complexity and costs. This measure will require also sufficient capacity building and training of stakeholders (i.e. companies covered with the emission trading scheme and also at institutional level) on this carbon pricing mechanism.



SECTION

03

OPTIONS FOR THE INTRODUCTION OF A CARBON TAX/FEE SYSTEM IN VIET NAM

3.1

KEY OPTIONS FOR THE INTRODUCTION OF A CARBON TAX SYSTEM IN VIET NAM

Chapter 2 shows that one of the purposes stated by the Government of Viet Nam to impose the current Environmental Protection Tax is to contribute to Viet Nam's international commitments regarding climate change and also the phase-out of HCFCs by 2030 under the Montreal Protocol on Ozone-Depleting Substances. Therefore, the introduction of a carbon tax in Viet Nam should be consistent with the specific emission reduction targets of the Government of Viet Nam as described in the NDC and the Kigali Amendment to the Montreal Protocol.

On general terms, it is important to note that the most relevant option to significantly reduce GHG emissions would be the reduction and elimination of subsidies to fossil fuels. Subsidizing fossil fuels and at the same time levying a carbon tax does not make sense, as these policy instruments are counteracting each other. Subsidies clearly are an incentive to increase emissions. Therefore, the most efficient approach to reduce emissions would be the abolition of fossil fuel subsidies, which would both free resources from the state budget that could be used for other mitigation activities, and would also send a price signal to business and consumers on the real cost of fossil fuels and energy. In Viet Nam, it is emphasized that most fossil fuel subsidies are indirect, not recorded as actual fiscal transfers and difficult to quantify (Vinh Nguyen, 2015), while direct subsidies are already at a low level (IEA, n.d.).

Introduction of a carbon tax should follow once subsidies are eliminated in a specific sector of the economy. This is also highlighted in the NDC of Viet Nam, which calls for the implementation of a road map for phasing out the fossil fuels subsidies (GoV, 2015). However, elimination of these subsidies is not an easy task: barriers include: political ac-ceptance of increases in energy prices; impacts of such price increases on low-income groups; opposition from mid and upper classes benefitting over-proportionally from the subsidies); and directly visible losses of firm competitiveness and employment while the indirect competitiveness and job losses from taxation to collect the funding subsidy remain invisible (Rentschler and Bazilian, 2016).

Designed in the right way, a carbon tax would be an efficient tool for Viet Nam to reduce GHG emissions, mobilizing large parts of the emissions reductions needed to meet the country's NDC with low administrative burden. Therefore, based on the previous chapter and PMR (2017a) we suggest the following actions:

- Garner political support to overcome resistance of interest groups due to fears on the impact of a carbon tax on the economy, employment and international competitiveness. Involve key stakeholders in the carbon tax design pro-cess and appropriately communicate the economic and environmental benefits of a well-designed carbon tax, as well of envisaged measures to reduce potential negative impacts.
- Clearly define the goals to be pursued with the tax either in terms of the level of emission abatement to be achieved at certain points in time or the level of revenue to be generated. This requires a clear understanding of the overall array of policy instruments that underpins the Vietnamese NDC.
- Define the tax base in terms of fuels, emission-generating processes, or to a combination of both. A narrow tax base will neither generate significant mitigation nor revenues.
- Define the tax rate: as indicated in Chapter 1, the design of the carbon tax rate involves two major decisions: (i) choosing the basis for setting the carbon tax rate; and (ii) deciding the process for the development of the tax rate over time. A phased increase of the tax rate, starting with a low level when introduced, would increase acceptance of the carbon tax but risks irrelevance of the tax if the increases are politically not feasible.
- Decide whether offsets can be used instead of paying the tax. As costs of offsets may be much lower than the tax rate, the level of revenues could be significantly eroded by unlimited use of offsets. On the other hand, the possibil-ity to use offsets can harness cheaper mitigation options outside the taxed sectors and reduce the tax burden on taxed entities. While practical experience with use of offsets in carbon tax systems is limited (PMR 2017a), this ap-proach is promising (see also section 4 below).
- Determine the use of revenues. A national carbon tax of 30 USD per tCO2e in 2012 could have raised revenue of more than 1.5 % of GDP in the United States and more than 2.5 % in China (PMR 2017a). Therefore, decisions on how to use revenue will have profound implications for the overall economy, the efficiency of the tax system, and public welfare. Given that direct earmarking of revenues is not possible in Viet Nam, an indirect approach of ear-marking could be applied through targeted elimination of specific fees and taxes in order to remain revenue neutral on a macroeconomic level. This option is for instance applied in the case of the United Kingdom Carbon Price Floor, where earmarking is not allowed but a support package for an amount that can be covered by the carbon tax revenues for energy intensive industries is in place. This solution could be implemented also in Viet Nam, defin-ing a subsidy programme to reduce specific taxes for a total amount that is lower than the amount of revenues generated by the tax.
- Define a sufficiently high penalty for non-compliance in line with the provisions of the Law on Tax Administration and regulations promulgated under this Law in Tax Administration (Government Decree 129/2013/ND-CP regulat-ing penalties for violations pertaining to taxation and enforcement of administrative decisions on taxation).

Table 15 below provides specific options in accordance with the policy processes currently underway in Viet Nam.

Table 15: Key options for the introduction of a carbon tax system in Viet Nam (Please look at both pages)

OPTION	ADMINISTRATIVE REQUIREMENTS	ADMINISTRATIVE BARRIER	TECHNICAL BARRIER	NEXT STEPS
Option 1: Reflect price of carbon in Environmental Protection Tax – adjust the tax rates to reflect the price of carbon (i.e. increase the rate for coal) and potentially also include HFCs until their phase-out as per the Kigali Amendment.	**Sub-option 1a:** Integrate into the current amendment of the Law to submit to the next meeting of the National Assembly. The revision of the Amendment shall be submitted to the Standing Committee of the National Assembly for review. The new revision shall be available at least 20 days before the meeting of the National Assembly for consideration.	The draft of the Amendment has been reviewed in the 4th meeting of National Assembly, Session XIV in Oct 2017 and changes and clarifications have been requested for the submission in the next meeting. The coming meeting (the 6th meeting of National Assembly, Session XIV) is scheduled in October 2018. The new revision of the Amendment should be discussed and agreed with relevant agencies and entities before submitting to the Standing Committee of the National Assembly. Moreover, legal implication and proper formulation of the revision must be prepared, which is a bottleneck to be considered, given the tight timeline for the revision.	Even in case of the revision of an existing fee, defining the optimal tax coverage and tax rate is the key challenge. This includes the estimation of different impacts on GHG emissions under different tax rates and the associated revenues that can be generated. These elements can significantly impact the opposition (or support) from companies and the general public. Evaluation of the impacts of the revision of the tax with other national policies and existing policy instruments (e.g. increase in the rate for coal will affect the policy to extend the use of coal for thermal power generation in Viet Nam).	Decide on the coverage and tax rate (see section below for key design issues). Engage relevant ministries and governmental authorities to discuss and agree on the content of the revision. Submit the revision to the Standing Committee of the National Assembly (for the 6th meeting of National Assembly, Session XIV). Submit the revision to the Government for inclusion in the annual program of the National Assembly for the targeted year. The Government holds regular meeting in January: the amendment should be submitted in the year preceding the year when the amendment is expected to be submitted to the National Assembly and National Assembly Standing Committee. Examine the possible link to the obligation of the large emitters to pay for the services of carbon absorption and storage of forests regulated under the recent Forest Law.
	Sub-option 1b: If it is impossible to include the revision in the current Amendment to be submitted in 2018, the integration of carbon tax in the Law on Environmental Protection Tax can be done through a new Amendment by the National Assembly during future revisions. The next Amendment shall follow the Government Decree No. 34/2016/ND-CP detailing a number of articles of, and providing measures for implementing and the law on promulgation of legal documents (National Assembly, 2015a).	As discussed above, the revision of the Law is most likely to pass by the National Assembly in 2019. It is common procedure that the amendment of a Law requires several years before completion, i.e. it normally ends up in a 5-year process. If the new amendment of the Law will be approved in 2019, it could take at least 5 more years after the promulgation and implementation of the Amendment in order to review and amend the law where necessary. Thus, the window of opportunity is of a very short duration.		
Option 2: Establish a dedicated Carbon Tax in parallel with Environmental Protection Tax	New Carbon Tax would have to be established through legislation prepared in accordance with the Government Decree No. 34/2016/ND-CP detailing a number of articles of, and providing measures for implementing, the law on promulgation of legal documents.	The fundamental legal basis and rationale to enact the law, especially the link, interaction and possible overlaps with the existing Law on Environmental Protection Tax should be defined and justified. Strong political support is needed for the inclusion of the carbon tax in the next round of inclusion. At the moment it is not clear which ministry of authority would be willing to support such new tax.	Defining the optimal tax coverage and the tax rate still is the key challenging. This includes the estimation of different impacts of the tax on GHG emissions under different tax rates and the associated revenues that can be generated. Impacts vary also depending on how the tax base is identified. These elements can impact significantly the opposition (or support) from companies and the general public. Identification of sectors and income groups that are particularly exposed to the new tax and identification of mitigation measures for the potential negative effects. Avoiding overlap with the existing environmental tax scheme and environmental regulation Modelling is required to estimate the impacts on a specific sector and on the entire economy from economic and social perspectives. Identification of sectors and income groups that are particularly exposed to the new tax and identification of mitigation measures for the potential negative effects. Evaluation of the impacts of the carbon tax with other national policies and existing policy instruments. Design of an accurate and transparent MRV system.	Detailed design a new carbon tax scheme (see section below for key design issues). Consult relevant ministries and governmental authorities and entities on the introduction of a new carbon tax. Submit to the Government to include in the annual adjusting the law- and ordinance-making program of the National Assembly for the targeted year. The Government holds regular meeting in January: the proposal should be submitted in the preceding the year when it is expected to be submitted to the National Assembly and National Assembly Standing Committee. Explore the possibilities to introduce new carbon fee under the obligation for the large emitters to pay for the services of carbon absorption and storage of forests regulated under the recent Forest Law.
Option 3: Introduce new carbon fee as part of Environmental protection fees.	There is not yet detailed guidance on the procedures, modality for registration and stock taking of industrial emissions as well as for the allocation of Industrial Emission permit.	Define the roles, responsibilities and cooperation mechanism among parties involved in the service. Establish the fee collection and distribution system.	Define the environmental protection service as well as the nature and extent of the services by the government in order to be able to claim for the carbon fee can be challenging. Justification on the rationale and level of the fee. Modelling is required to estimate the impacts on a specific sector and on the entire economy identify the impacts from economic and social perspectives. Avoiding overlap with the existing environmental tax scheme and environmental regulation. Design of an accurate and transparent MRV system	Promulgation of Government Decree on carbon fees regulating the details of the fees according to the Law on Charges and Fees (Law No. 97/2015/QH13) dated 25 November 2015. Identify possible link to and interaction with the Environment Protection Fund and conduct feasibility study of payments for carbon sequestration (Carbon Payment for Forest Environmental Services, PFES) in Viet Nam.[17]

Source: own elaboration

The section 3.2 elaborates the approach sketched in Table 15.

18 Vietnam's PFES policy is administered by the Vietnam Forest Protection and Development Fund (VNFF) under the Ministry of Agriculture and Rural Development (MARD). A feasibility study of Carbon PFES is funded by USAID to develop, compare and evaluate different policy options to collect payments from domestic GHG emission sources, as well as different options to use these revenues for forest-based activities

3.2

INTEGRATION OF THE CARBON TAX/FEE WITHIN THE EXISTING TAXATION SCHEME

In this section, the advantages and challenges of each option for designing carbon tax system in Viet Nam in the con-text of the existing taxation scheme are examined against the key design issues.

REFLECT THE PRICE OF CARBON IN ENVIRONMENTAL PROTECTION TAX (OPTION 1A AND OPTION 1B)

The design structures of the two options have the same principle, except the submission timeline. There is already a tax on fossil fuels and HCFCs (imports and production). A revision of this existing tax to include new items (e.g. HFCs) to be taxed and to revise the tax rate for the fuels already covered by the existing tax would be straightforward. It would build on the existing institutional set up and functioning of the Environmental Tax and it might also benefit from lower political and social opposition compared to the introduction of a brand-new tax. Under this option, existing collection and management structures would be the same as the existing ones, reducing the associated administrative costs. This is one factor that helps ease the implementation of this option.

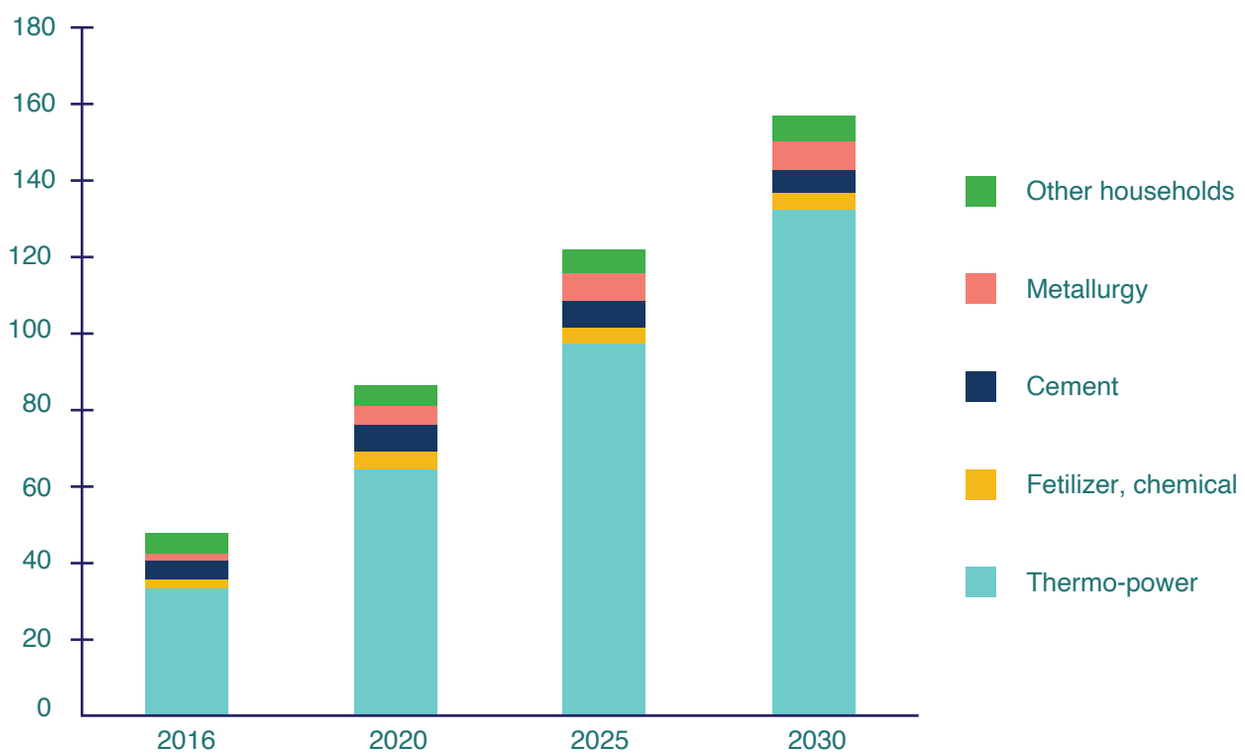
The decision on the revision of the tax rates and for the inclusions of new items to be covered should be taken consist-ently with the national mitigation targets as defined by the NDC and other domestic policies, planned and already implemented. This option has another benefit related to the need of limited enhancement of the existing MRV sys-tems, given that the tax is not levied on actual emissions and could follow existing MRV procedure and practices. This will reduce the burden related to the MRV requirements for the entity that covered under the Environmental Protection Tax and easing the implementation of Option 1a and 1b, especially in the context of those sectors where existing MRV practices are not sufficiently strong.

Table 16: Current tax rate for various fossil fuels under the Environmental Protection Tax[19]

ITEM	GASOLINE	DIESEL	COAL
Tax rate	3000 VND/litre	1500 VND/litre	2000 VND/tonne
Rate in VND/tCO2e	1,320,543	560,435	3,810
Rate in USD/tCO2e (1 USD = 22,700 VND)	58.2	24.7	0.2

As shown in the table above, the current carbon tax rate for coal is two orders of magnitude lower than for other fossil fuels. This is an interesting tax regime to observe given the current plans for massive expansion plans for coal use. According to Government of Viet Nam estimates (Prime Minister, 2016b), coal use will increase from less than 50 mil-lion tonnes in 2016 to an expected consumption of over 150 million tonnes in 2030. This will result in a share of 53% coal in power generation.

Figure 8: Coal consumption plans, 2016-2030



Source: (Vieweg et al., 2017) based on: Master plan on development of Vietnam's coal industry through 2020. Ad-justed. Decision 403/QD-TTg (Prime Minister, 2016b).

It would be ideal to align the tax rate across all fuels at a level that generates significant mitigation. Given that India whose development level is lower than that of Viet Nam has been able to levy a coal tax of 6 USD/ tonne, a Vietnam-ese carbon tax on coal of 15 USD/t CO2 should be considered. Such a price signal might limit the increase in coal use that is forecast for the next years (see section 4.3) and contribute significantly to the mitigation goal of the NDC.

However, there are also limitations to this approach. Firstly, earmarking and allocation of carbon tax revenues to spe-cific environmental activities is not feasible under the existing taxation framework in Viet Nam, and thus a simple revision of the existing tax would not allow a different revenue use. Allocation of the revenues to specific uses would require a political decision of the Government of Viet Nam that would be very difficult to achieve.

Secondly, as shown by the recent rejection of the increase in the tax rates for petroleum products, this option

19 Calculated using conversion factors from http://database.v-c-s.org/sites/vcs.benfredaconsulting.com/files/18_E-FFC_Emissions_from_fossil_fuel_combustion.pdf and emission factors of IPCC 2006

requires consensus from wide stakeholders and approval from the ministries, governmental agencies and up to the National Assembly. On general terms there is opposition to any increase of an existing tax which might have negative impacts and thus are not easily put forward due to concerns on the political impacts of such decisions. In order to reduce this risk, it is necessary to provide sufficient background information to clarify the rationale of such increase and present the environmental and social benefits associated (e.g. through the use of modelling tools), to avoid the risk these op-tions are simply perceived as an increased burden for taxpayers and ultimately for the society. Awareness raising campaigns at political level and also towards business and households can reduce this risk and can contribute to a more transparent discussion on the benefits and impacts of the revision of existing tax.

INTRODUCTION OF A NEW CARBON TAX (OPTION 2)

Principally, a new carbon tax can be introduced in addition to the existing Environmental Protection Tax. This will have the benefit to align the development of the carbon tax with the Government Decree regulating the roadmap and methods to mitigate GHG emission planned to be in place in 2018. Particularly the coverage of sectors and activities beyond production and sale of fossil fuels regulated under the existing Environmental Protection Tax could be opti-mized, e.g. emissions from the cement sector which alone was responsible for 9.6% of Viet Nam's total GHG emissions in 2013 (see Table 14) can be targeted under the new carbon tax. However, the introduction of a new tax on emissions would require undergoing a lengthy approval process, starting with the proposing entity (MOF in this case) through the validation of the Ministry of Justice to gain approval from the Government. The Government would have then to propose the inclusion of the new law on carbon tax into the legal development program of the Standing Committee of the National Assembly. Once completed the tax law proposal would go through the validation of the Ethnic Council and different Committees of the National Assembly, then would receive comments from the Standing Committee of the National Assembly and also would have to be discussed in the conference of the National Assembly for approval (National Assembly, 2015a). In order to be successfully adopted by the National Assembly, strong political support and strong consensus from stakeholders is needed: this option would thus require strong commitment from Ministries to support the introduction of the new tax throughout the entire process and to gain the necessary support from differ-ent stakeholders during the different steps for the introduction of a new tax.

If the new carbon tax is to coexist with the existing Environmental Protection Tax, it will be necessary to avoid over-laps between the two schemes to avoid double taxation. A carbon tax could be designed as "revenue-neutral": i.e. as the carbon tax is introduced, other taxes are progressively phased out, ultimately reaching the same level of overall taxation as before the introduction of the carbon tax. The design of this phase-out process however should be careful-ly considered to ensure equity in the redistribution of the tax revenues through the reduction of other existing taxes. If well designed, this element can contribute to the generation of support from the population that would benefit from reduction of tax, as shown by the case of Switzerland. On the other hand, this element is also very sensitive as it can create resentment and opposition to the carbon tax/fee if it is perceived as allocating in an unfair manner the revenues generated.

Technical capacity would be required for design and implementation of a new carbon tax on GHG emissions, especial-ly a Monitoring, Reporting and Verification (MRV) system at facility/plant level would have to be specified in the new law if emissions are directly taxed. This is challenging given MRV is not a common practice in most industrial sectors of Viet Nam. The cement sector is better placed than other sectors as it is characterized by a limited number of actors and relatively similar production processes at different plants. Each cement plant has already a basic MRV system that would only require limited improvements and adjustments to be robust enough for determining carbon tax liabili-ties. The cement sector could thus be a pilot sector for the introduction of a carbon tax which subsequently could be extended to cover a larger number of sectors.

Another challenge is to assess the potential socio-economic development and environmental impacts of a new carbon tax in Viet Nam. To support the decision-making process, it would be useful to exchange experiences with countries where the carbon tax has been introduced in order to evaluate actual impacts and results. Furthermore, elaborated modelling tools should be used to assess the potential impacts (at country and sector level and also on the different segments of the society) of different design options on aspects such as: GHG mitigation, economic performance, reve-nue generation and local environmental impacts as well. This will provide a good basis to justify for the introduction of a new carbon tax and gain consensus from the stakeholders, both on the political side than in the general public.

Once the carbon tax law is adopted, it can take the advantage of existing tax collection and management system as required by the Law on State Budget (National Assembly, 2015b). The new tax can be designed so that existing struc-tures for implementation and management of the tax can be used, without the need to establish new entities or proce-dures. The establishment of a transparent MRV system will help communicating environmental benefits to the general public, including also stakeholders at international level, enhance the efficiency of GHG accounting practices and the transparency of GHG data at all levels. However, as mentioned above, the adoption and implementation of this op-tion would require strong political support and consensus from the stakeholders, high technical competence and signif-icant budget for design and operation of the MRV system, which make it the most costly compared to other options. Alignment with existing and planned policies, including alignment with international requirements on tracking progress on the implementation of the NDC should be considered in the design of the new tax.

INTRODUCTION OF A CARBON FEE (OPTION 3)

Introducing new carbon fees for emissions is an option that has an advantage compared to introducing a new carbon tax in terms of approval process. According to the Law on Charges and Fees (Law No. 97/2015/QH13), the Standing Committee of the National Assembly, the Government, the Minister of Finance and the Provincial People's Councils shall have the authority to stipulate charges and fees, and define their collection, exemptions, remissions, payment, management and use. The design of carbon fees can be done in a flexible way (e.g. at ministerial level, proposed by MONRE and MOF) which allows to link them to other carbon pricing instruments and for allocating revenue to specific entities and for mitigation initiatives. This option however would have the drawback of lower enforcement effect compared to a carbon tax with a strong legal background being approved by the National Assembly. Moreover, insti-tutional arrangements and coordination would be required for fee collection and distribution of revenue among parties involved.

Another advantage of this option is that earmarking is possible as fee collected from services provided by a public entity can be kept partly or totally to provide resources to the provider of the environmental service, while the remain-ing part will flow in the State budget (National Assembly, 2015c). One of the services that can be claimed for the use of revenue from a carbon fee is the forest environmental services. The Forest Law (National Assembly, 2017b) prescribes that individuals/organizations who generate significant volume of GHG emissions shall pay for the carbon absorption and storage service of the forest. The Law however does not define the mechanism to transfer the payment from the emitters to the providers of forest environmental service but assigns the Ministry of Agriculture and Rural Develop-ment (MARD) the management and organization of the payment scheme for forest the environmental service.

However one challenging aspect is the definition of a strong legal basis for the carbon fee by specifying the nature and extent of the services that are actually provided by the government to be able to claim the fee and at the same time avoiding overlaps and duplications with other fees already in place in Viet Nam. Another important element refers to the definition of the fee level. It is regulated by Article 8 of the Law on Charges and Fees on the Principles of determi-nation of fee levels, that the "Level of fees is determined to make up for expenses with due account taken of policies on socio-economic development of the state over periods, ensuring equality, fairness, public disclosure and transpar-ency on rights and obligations of citizens". This element should be explored further to understand how the fee level could be quantified in consistency with the law and also to effectively contribute to the national mitigation targets, stimulating changes in the investment decisions of fossil fuel users.

A carbon fee however, could be considered as a complement to existing taxation in case of political will to cover sec-tors with large number of emitters with a small amount of emissions from each actor where the sources of emission are not significantly different. For instance, a carbon fee could be imposed on private/individual vehicles with a certain level of emissions according to the motor vehicle emission standards in Decision 49/2011/QĐ-TTg of Prime Minister. It will not only be able to mitigate GHG emissions from transportation sector but also contribute positively as an incen-tive for people to take up more climate-friendly transport habits, e.g. switching from private motorized transport to public transport, selection of low-carbon alternatives for private transport (e.g. electric vehicles).

Considerations on the MRV requirements are similar to those described in the previous Option, introduction of a new carbon tax.

Table 17 below summarizes the procedures, potential use of revenues, timeline of implementation for each of the options and comparison of the options discussed above.

MKN PIX

STAKEHOLDERS	PROCEDURES[20]	REVENUES USE[21]	TIMELINE	OVERALL COMPARISON
Option 1: Reflect price of carbon in Environmental Protection Tax				
Option 1a: Reflect price of carbon in Environmental Protection Tax (short-term)				PROS: Limited implementation challenges once approved, benefitting from existing procedures. It can rely on the existing tax collection and management system (as described in Figure 3). Can rely on existing political background that supports the Environment Protection Tax. Limited additional requirements as it can rely on existing MRV systems. CONS: Require consensus from a broad number of stakeholders (up to the National Assembly) for approval. Earmarking is not possible without changes in the existing fiscal framework. EXPECTED COST: Low, as the existing system can be utilized without signification additional changes. Administrative costs for the approval process should be considered .
MOF (in charge of revision and submission) Comment by all relevant ministries and authorities. Approval by National Assembly.	The revision of the Amendment must to submitted to all relevant ministries and authorities for comments before the new submission to the National Assembly. A revision has been rejected by the National Assembly Meeting in Oct 2017. New submission is possible if proposal is revised.	Regulated under the Law on State Budget (National Assembly 2015b). Earmarking is not possible under the existing legislation.	At least one year before the submission to the National Assembly is required to complete the commenting process. Current amendment to be resubmitted in 2018, finalization expected in May 2018.	
Option 1b: Include GHG emission considerations into Environmental Protection Tax (long-term)				
MOF (in charge of revision and submission) Comment by all relevant ministries and authorities. Approval by National Assembly.	Inclusion in the agenda of the National Assembly's meeting by the beginning of the calendar year. The draft of the Amendment has to be submitted to all relevant ministries and authorities for comments before the new submission to the National Assembly.	Regulated under the Law on State Budget. Earmarking is not possible under the existing legislation.	At least one year before the submission to the National Assembly is required to complete the commenting process. As a common practice, evaluation of one law's implementation, and proposal of amendments, takes place after 5 years from initial introduction.	
Option 2: Establish a dedicated Carbon Tax in parallel with Environmental Protection Tax				
Preparation and submission by MOF. Comment by all relevant ministries and authorities . Approval by National Assembly.	Register with the Government to be included in the agenda of meeting of the National Assembly in the beginning of the calendar year. The draft of the proposed law has to be submitted to all relevant ministries and authorities for comments before the new submission to the National Assembly.	Regulated under the Law on State Budget. Earmarking may be possible but need consultation with legal experts of MOF for require legal adjustments.	At least around one year before the submission to the National Assembly is required to complete the commenting process. It is not possible to estimate approval time, due to uncertainty on the political process for the approval (or rejection) of a new tax. Depending on the level of support to one tax, this process could be shortened or could be stalled.	The introduction of a new carbon tax is expected to be the most complex option in terms of approval procedures and political support required. It has the following pros and cons: PROS: Can rely on the existing tax collection and management structures (see Figure 3). Establishment of MRV system will improve awareness, efficiency of GHG accounting practices and transparency of GHG data. It can be effectively linked to the ongoing developments at national and international level on MRV requirements. CONS: Long approval process, requiring strong political support for the adoption of a new tax and consensus from many stakeholders; Require technical capacity and significant budget for design and implementation, including modeling on potential impacts; extensive awareness raising activities to communicate environmental and social benefits as well as measures for mitigation of potential negative impacts on society. Impacts on MRV requirements can be significant (depending also on the final design, e.g. tax is levied on the CO2 emissions or on fuels), considering that in many industrial sectors MRV practices are weak. Earmarking is not possible without changes in the existing fiscal framework. EXPECTED COST: High, mainly due the administrative cost including for the long approval process, and technical cost for ex-ante assessment and modelling, set-up of the MRV system, requirements for awareness raising campaign to gain support for a new tax.
Option 3: Introduce a new carbon fee as part of Environmental protection fees				
Preparation and submission by the proposing ministry (e.g. MONRE) Comment by all relevant ministries and authorities (particularly MOF) Approval by Government	The registration of legal document has to be made in a previous year. Prepare and organize the consultation with relevant stakeholders.	The revenue use will be defined in the fee regulation. It can be more flexible than tax and use the revenues for specific uses .	It can take around one year for preparation and issuance of a new fee scheme (provided sufficient political support from relevant institutional stakeholders is secured).	PROS: Approval at ministerial level, which is less complex than the process or obtaining approval of a new tax. Earmarking is possible. CONS: Potential risk of lower enforcement compared to a tax introduced by law. Requires strong coordination and alignment between relevant stakeholders on the fee collection and allocation of revenues among parties involved. Requires technical capacity and budget for design and implementation of the new fee. Similarly to Option 2, impacts on MRV requirements for taxpayers can be significant, considering weak existing MRV practices in several sectors. EXPECTED COST: Medium, mainly technical cost for development and implementation of the MRV system, ex-ante modelling and assessment and need for awareness raising campaigns to gain support.

20 This is based on the Law Promulgation of Legislative Documents (Law No. 80/2015/QH13)
21 More details on revenues use under existing regulations and laws are provided in section 2

3.3

KEY RELEVANT STAKEHOLDERS AND ASSESSMENT OF CAPACITY NEEDS

As carbon pricing is still a relatively new concept in Viet Nam with no practical implementation experience, the engagement with a broad number of stakeholders is crucial for gaining support from during the approval process and during the implementation of the carbon tax/fee. In general, the stakeholders that would be involved in the process for approval of a new carbon tax or revision of the existing Environmental Protection tax at the National Assembly are largely similar. The key stakeholder is considered to be the MOF, which is in charge of proposing tax revisions and of the introduction of a new carbon tax. Its proposals will be evaluated by the Government and after the review and approval the tax revision or proposal for the introduction of a new carbon tax is submitted to the National Assembly for discussion and approval (National Assembly, 2015a).

The revision of the existing Environmental Tax in terms of tax collection and disbursement would rely on the existing tax management structure, i.e. the GDT and local tax departments. While also the introduction of a new tax could be designed in a manner that allows the use of the existing structure, it would however require the establishment of an MRV system to ensure transparent and accurate accounting of the emissions to be covered by the tax and also the effective enforcement of the tax. In this case, MONRE as the national focal point for climate change and MRV, would play a key role for the introduction of these MRV requirements and to ensue alignment with existing and planned national regulations on MRV, also in light of the national commitments under the Paris Agreement and international development of rules and procedures on tracking the contribution of national mitigation activities towards the NDC implementation.

The establishment of a carbon fee, on the other hand, would require approval at ministerial level and definition of institutional arrangements for fee collection and distribution among the parties involved, including fee service providers and fee service receivers. One of the possible service as prescribed in the Forest Law (National Assembly, 2017b) is the forest environmental service, in which the service providers include: forest owners, individuals/organizations contracted for forest protection and development and communal People's

Committees who are tasked with forest management in the locality; and the service receivers include: hydropower generation facilities, fresh water suppliers, providers of eco-tourism, eco-resorts and eco-entertainment, large emitters as well as aquaculture facilities. Regarding this MARD is responsible for management and implementation of the forest environmental services defined under the Law. In addition, the implementation of a carbon fee would require establishment of an MRV system in the targeted sectors or enterprises, which is the responsibility of the ministry that is in charge of the State management of the sector as well as MONRE, which increases the need for inter-ministerial coordination on this topic. The main stakeholders can be divided into 3 groups:

- Authorities with roles on the legislation development/revision, policy coordination. These include: include MOF, MOJ, MARD, MONRE the Government, the National Assembly;
- Operators related to implementation of a carbon tax/fee system include GDT, the State Bank, fee receivers;
- Carbon tax/fee payers.

Table 18 below describes these stakeholders, their existing role and new responsibilities under the different options proposed.

Table 18: Relevant parties, roles and technical capacity needed for introducing a carbon tax/fee in Viet Nam

STAKEHOLDERS	RELEVANT OPTION	EXISTING ROLE	RESPONSIBILITIES UNDER THE PROPOSED OPTIONS
MOF	Option 1a/ Option 1b and Option 2	MOF is in charge of implementing the State fiscal policies and management of State finance (including the State budget, tax, fees and other revenues of the State budget.	For revision of the existing Environmental Protection Tax (Option 1a/1b) or introduction of a new carbon tax (Option 2), MOF (the Department of Tax Policy) would be in charge of preparing the proposal to submit to the Government (National Assembly, 2015a).
Ministry of Justice (MOJ)	Option 1a/ Option 1b and Option 2	MOJ is in charge of the development and implementation of laws and regulations.	MOJ would review and appraise the tax proposal proposed by MOF and submit to the Government (National Assembly, 2015a).
The Government	Option 1a/ Option 1b and Option 2 and (possibly) Option 3	The Government is the executive body of the National Assembly, and the supreme administrative agency of Viet Nam	The Government would discuss the tax proposal for approval in order to submit it to the legal development program of the National Assembly (National Assembly, 2015a).
The National Assembly	Option 1a/ Option 1b and Option 2	The National Assembly is the highest representative body of the people; the highest body of state power of Viet Nam and the sole body that has the constitutional and legislative rights.	The Ethnic Committee and the Committees of the National Assembly would review the tax proposal before submit to the Standing Committee of the National Assembly The Standing Committee of the National Assembly would review the tax proposal before submit it for discussion at the meeting session of the National Assembly for approval.

STAKEHOLDERS	RELEVANT OPTION	EXISTING ROLE	RESPONSIBILITIES UNDER THE PROPOSED OPTIONS
GDT	Option 1a/ Option 1b and Option 2	GDT is an agency under MOF in charge of tax administration	GDT with its local branches would be charge of tax collection.
State Bank	Option 1a/ Option 1b and Option 2 and (possibly) Option 3	State Bank is in charge of organization, management and overseeing of the national payment system and treasury services	The State Bank would be in charge of allocation of the revenues to the State budget.
Tax payers	Option 1a/ Option 1b and Option 2	Entities and consumers that are subject to the tax.	Under Option 1a and1b, those who produce and import coal and HFCs would pay for the tax (if no expansion of the tax base is planned). As the tax can be transferred to the users, end-users of coal and HFCs will be affected as well
			Under Option 2, the tax payers would be GHG emitters. Actual taxpayers will depend on the final design of the tax (e.g. could the cement plants, power producers). As the additional cost of the carbon tax can be transferred, final consumers will be affected as well
MONRE	Option 2	MONRE is in charge of environmental protection, climate change and the national MRV system in Viet Nam, as well as communication to the UNFCCC	MONRE would play the role of policy coordination and guide the development of MRV methodology for the implementation of the tax or fee
	Option 3	MONRE (the Environmental Protection Fund)	MONRE could potentially be in charge of fee collection from emitters to pay for the forest environmental service.
MARD	Option 3	MARD is responsible for State management on protecting and developing forest	MARD would be in charge of the national fund for forest protection and development.
Fee receivers	Option 3	Entities that provide the service for which a fee shall be paid	Depending on the fee design. For instance fee receivers could be the forest owners, individuals/organizations who are contracted to provide the services related to forest protection or commune-level People Committees and other organizations tasked with forest management.
Fee payers	Option 3	Fee payers are those entities that receive the service for which have to pay a fee	GHG emitters

Source: own elaboration

Given the current limited practical experience in Viet Nam with the implementation of carbon pricing instruments if a carbon tax/fee is adopted, awareness rising would be needed for all stakeholders. Technical capacity improvement would especially be important to the authorities and operators of a carbon tax/fee system. The challenges and gaps for all options include:

DESIGN OF EFFECTIVE STAKEHOLDER ENGAGEMENT PROCESS

The design of effective stakeholder engagement process is especially required for introduction of a new carbon tax (Option 2) or carbon fee (Option 3) on direct emissions given the novelty of a carbon tax in the country. Revision of the existing Environmental Protection Tax (Option 1a/1b) requires less effort as it may rely on the existing expertise for the Environmental Protection Tax that is already in place.

INCREASE INTER-MINISTERIAL COORDINATION

Increased coordination and alignment of priorities of different ministries (e.g. MOF, MONRE, line ministries) will gen-erate stronger commitment and participation from relevant stakeholders, reducing uncertainties possibility to address potential conflicting interest.

ASSESSMENT OF THE SOCIO-ECONOMIC IMPACTS

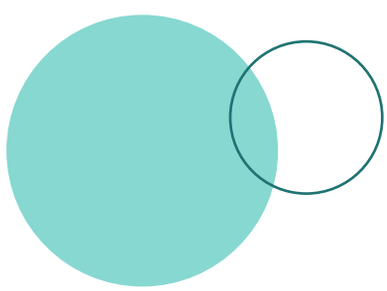
The impacts of implementation of all options on the socio-economic development of the country should be carefully studied and evaluated. Viet Nam had experience with indirect tax on emission through the implementation of the En-vironmental Protection Tax. A tax/fee on direct emission however requires deeper understanding of and measures to deal with undesirable effects such as leakage or undesirable distributional impacts. Especially in the case of introduc-tion of a tax/fee on direct emission (Option 2 and Option 3), the following expertise and capacity are required to design an effective scheme and minimize negative impacts:

EXPERTISE FOR CARBON TAX/FEE DESIGN:

As discussed in Section 3, the technical barriers for design of a carbon tax/fee include: defining the coverage of the tax (sectors and emitters within each sector) and the appropriate rate of a carbon tax/fee that provide an effective incen-tive to reduce emissions without imposing an excessively high cost to business; ensure avoidance of overlaps with existing tax schemes and environmental regulations, identification of cases where exemption or rebates could be pro-vided (e.g. low-income households, sector exposed to international trade and competition). This would require suffi-cient data and detailed background studies to carefully evaluate the impacts of each approach and of the different options (i.e. tax level and coverage) on the economy and also in terms of GHG emission reductions. Modelling of dif-ferent options and associated outcomes can help reduce uncertainty and also opposition to the carbon tax/fee, which is in many cases used as a pretext to stall its introduction. Transparent and reliable assessment of the impacts will al-low the selection of the best option and also increase the chances of obtaining political support.

DESIGN AND OPERATION OF AN EFFECTIVE MRV SYSTEM

An effective MRV system of emission is crucial for introduction and implementation of a carbon tax/fee if this is im-posed on direct emissions as it ensures the fairness and transparency of the taxation system. Since the national MRV system in Viet Nam is not yet officially established, Option 2 or Option 3 would have to consider this aspect and de-velop MRV requirements and procedures in accordance with the development of the national framework and also of the international requirements under the Paris Agreement regarding tracking of NDC implementation.



SECTION

04

OPTIONS FOR THE USE OF COLLECTED CARBON TAX REVENUES

4.1

PRINCIPAL OPTIONS FOR USE OF CARBON TAX REVENUES

Allocation and use of the revenues generated by the tax are important as the overall efficiency and burden of the carbon tax depends on the way tax revenues are recycled. Different uses are possible, most common are the following:

- Earmarking. This option implies that the revenues (or part of them) are allocated to a specific purpose which could be a type of projects (e.g. implementation of renewable energy activities), a specific group of people (e.g. disadvantaged or poor communities), or specific institutions (e.g. research centers and universities). It is possible to earmark the carbon tax revenues to other environment-related expenditures. Unfortunately, in Viet Nam cur-rently earmarking of tax revenues is prohibited.

- General budget. In this case the revenues are allocated to the state budget without any specific indication on how they will be used nor specific target activities or groups. It is thus not possible to identify the final use of these revenues. Negative effects of a government deficit on the general economy can be reduced through the addition-al revenues generated by the carbon tax.

- Reduction of distortionary taxes/ fees. If an earmarking of carbon tax revenues is not possible, taxes or fees that are a burden on economic activity can be reduced. This allows harnessing a “double dividend” that decreas-es the macroeconomic costs of a carbon tax. Recycling reduces individual or business tax exposure without any direct relationship with the cost of carbon emission either at individual, company or sector level. Recycling of the revenues can be designed for instance in the form of tax rebate, tax credits.

Use of the revenues should be considered from an early stage in the design of a carbon tax given the strong implica-tions it has on the tax acceptance, both at institutional level and also from companies and individuals that are ulti-mately affected by the tax. For example, in Switzerland a high carbon tax levied on private households is generally accepted because its revenues are used to reduce the health insurance premia. Decision on the allocation of the reve-nues is important as it is a strong tool for gaining public and political acceptance: reducing the negative impacts of the carbon tax would reduce opposition to it from both business and individuals. A double effect for climate change policy can be achieved if revenues are directed to specific climate-related activities (including adaptation). However, reve-nues use must be considered in light of the existing legal

framework in one country: the existing legal systems might have provision for allowing earmarking while in other countries this option is not feasible.

Table 19 below presents different examples of uses of carbon tax revenues in different countries.

Table 19: Examples of carbon tax revenues use in different countries[22]

COUNTRY/ REGION	USE OF THE REVENUES
Costa Rica	**Green subsidies: 3.5-33 %.** The Costa Rica government received tax revenues of 200 million USD per year from a levy of 3.5 % of the market value of individual fossil fuels, covering all fossil fuel use. Though referred to as a "carbon tax," this price-based tax, which has been in place since 1997, does not appear to be tied to the carbon content of fuels and so is essentially is a conventional energy sales tax. 33 % of tax revenues were originally earmarked for use by Costa Rica's State Environmental Services Program, which primarily funds forest conservation programs. After years of consistent underpay-ment by the central government, however, this share was reduced to 3.5 % of "carbon tax" revenues in 2001. **General funds: 67-96.5 %.** The government retains the "carbon tax" funds not provided to Costa Rica's State Environmental Services Program for general budgetary use.
Japan	**Green subsidies: 100 %.** Revenues are earmarked for spending on the promotion of "innovative domestic low-carbon technology," including lithium ion batteries, energy-efficient equipment use by small and medium-sized businesses, and the promotion of energy efficiency and renewable energy by local governments through "Green New Deal Fund" financing. Many of these measures were outlined in Japan's existing 2012 "4th Basic Environmental Plan."
Mexico	**Green subsidies: 0 %.** Mexico has an existing slate of green subsidies to reduce greenhouse gas emissions, but it is unknown if revenues from the new carbon tax will be earmarked for these or additional spending programs. **General funds: 100 %.** Tax revenues are currently going into the general budget.
Norway	**Green subsidies: 30 %.** When carbon tax rates were raised in 2013, additional revenues were earmarked into expanding the capital base for the government's existing "Green Fund for Climate, Renewable Energy and Energy Efficiency Measures" (actual carbon tax revenue increase from 2012 to 2013 was 454 million USD, mostly from offshore petroleum producers). Annual financial returns on this fund are then spent to subsidize green technology projects by a purpose-created government body named "Enova." Targeted green spending areas include renewables, energy efficiency, and low-carbon research and development. The 2015 Norwegian budget further outlines support for clean technology deployment in the industry sector (so-called "risk reduction measures"), wind power deployment subsidies, passenger rail subsidies, urban transit subsidies, carbon capture and storage demonstration projects, and additional funding for existing government funds focused on food security, agriculture, and forestry in developing countries. **General funds: 40 %.** Carbon tax revenues that are not otherwise earmarked for green subsidies or estimated to offset existing tax are assumed to contribute towards government general funds. Reduction of distortionary taxes / fees: 30 %. In addition to the green subsidies described above, the 2015 budget also described the use of carbon tax revenues to fund reductions in the corporate income tax (the so-called "capital tax"). The above revenue share is only a rough attribution of this tax shift based upon incomplete date.

22 A broader set of examples of the uses of revenues in several countries is provided in Annex II.

COUNTRY/ REGION	USE OF THE REVENUES
South Africa	**Green subsidies:** The revenue from the carbon tax will go to the National Revenue Fund, because of national provisions against earmarking, but is expected to be used for the following purposes: an energy efficiency tax incentive; a decrease in the electricity levy; a tax credit for renewable energy purchase; free basic energy services for low-income individuals; support for public transport; and support for rail transport of freight (Energy Research Centre 2015, 4). The overall impact of the carbon tax is expected to be revenue-neutral (National Treasury 2016, 45).
United Kingdom (Carbon Price Floor)	**Other earmarks: 15 %.** Alongside the launch of the carbon tax, the UK government introduced a "compensation for indirect costs of energy and climate change policies for energy-intensive industries" subsidy program of about GBP 100m (165 million USD) per year through 2015. The spending program had an initial ceiling of GBP 250m (411 million USD); half was earmarked to offset the indirect costs to energy-intensive industries of the carbon price floor's effect on electricity prices, and the other half was intended to offset costs associated with the European Union Emission Trading System. While funding for this pool of money is separate from the revenues generated by the carbon tax itself (it is described as having an ad hoc budget composed of the UK Department of Energy and Climate Change's one-time budgetary "underspend" with the rest coming from the UK Treasury), overall carbon tax revenues appear fungible enough for this to be considered functionally linked spending. **General funds: 85 %.** The use of tax revenues was not explicitly promoted in the launch of the pricing system and subsequent government documents have described revenues as being retained by the UK Treasury as general tax revenue. **Reduction of distortionary taxes / fees: 0 %.** Unlike the 0.3 % reduction in employer national insurance contributions enacted alongside the earlier Climate Change Levy (described above), there are no known offsetting tax-reduction measures explicitly associated with the Carbon Price Floor.

Source: Carl and Fedor, 2016

As it can be seen from the examples above, different configurations for the revenue uses are possible, ranging from 100% allocation to green subsidies in Jan, to allocation of the full revenues to general funds, as in the case of Mexi-co. In the case of the carbon tax in Viet Nam, earmarking for specific uses is not legally possible, thus revenues from an existing or new tax will be channelled to the state budget. But reduction of distortionary taxes / fees can be consid-ered. It is possible to provide part of the revenues to the local government. Another element which is of great concern when introducing a tax is its impact on certain sectors of the society, i.e. low income groups or rural communities who are most exposed to negative impacts of the tax on their income. Cottrell (2016) finds that the social impacts of the Environmental Tax in Vietnam have been limited, also because with the introduction of the new tax, other taxes have been reduced, thus applying a reduction of distortionary taxes / fees.

In the medium to long term, the carbon tax should be introduced through in phases with progressively increasing rates and based on a longer-term plan that is known to key industries in Viet Nam. This will contribute to define a clear framework for private investments, as the impact of the tax can be forecasted and help generate consensus as tax-payers will be able to adapt over time to the new taxation. At the same time, this approach would allow policy makers to adjust the tax rate depending on several factors, such as macroeconomic considerations, market development, international prices of fossil fuels, and actual impacts on the economic actors' behaviours. The possibility of revising the tax within the pre-defined range over time taking into account in domestic and international factors is important to avoid undesired effects on the domestic economy and to maximize the effectiveness of the tax. For instance, falling oil prices in the international markets contributed to minimize the negative impacts of the Environmental Tax (Cottrell 2016).

4.2

REVENUE ESTIMATIONS

This section will provide estimations on the potential revenues that could be generated by the introduction of the op-tions presented in section 3.2. Regarding the tax rate, different rate levels are used for projecting the potential volume of revenues until 2030.

REVENUE ESTIMATES FOR THE REVISION OF THE EXISTING ENVIRONMENTAL PROTECTION TAX

For the revision of the existing Environmental Protection Tax, Option 1 (a and b), it is assumed that the tax rate is adjusted for coal. In addition, also HFCs gases are included under the taxation. Regarding coal, 3 different tax rates are used for estimations: 1.5 USD/t and 6 and 15 USD/t (or 34,050 VND/t, 136,200 VND/t and 340,500 VND/t). Simi-larly, for HFCs the revenues are estimated under 3 scenarios: taking into account the current rate for HCFCs under existing legislation, i.e. 44 USD/t - 220 USD/t (or 1 – 5 million VND/t), revenues are estimated using also a middle value (110 USD/t or 2.5 million VND/t). The following tables show the potential revenues from the introduction of a carbon tax on HFCs and also an increase in the existing rate for coal.

Table 20: Potential revenues from HFC taxation, until 2030 (USD/billion VND)

TAX RATE (PER T OF HFC)	2018	2020	2025	2030
44 USD	132,978	164,416	220,217	241,386
1 million VND	3.02	3.7	5.0	5.5
110 USD	332,445	411,040	550,543	603,465
2.5 million VND	7.5	9.3	12.5	13.7
220 USD	664,890	822,079	1,101,086	1,206,930
5 million VND	15.1	18.7	25.0	27.4

Source: based on own database on HFCs consumption trends (not publicly available)

Table 21: Potential revenues from the increase in the tax rate for coal, until 2030 (million USD and trillion VND)

TAX RATE (PER T OF COAL)	2017	2020	2025	2030
1.5 USD	71	86	121	156
34,050 VND	1.6	2.0	2.8	3.6
6 USD	284	344	484	624
136,200 VND	6.4	7.8	11.0	14.2
15 USD	710	860	1210	1560
340,500 VND	16.2	19.6	27.6	35.5

Source: own calculations based on Master Plan for Vietnam's Coal industry development to 2020 and vision towards 2030 (Prime Minister, 2016b)

REVENUE ESTIMATES FOR INTRODUCTION OF A DIRECT TAX ON CO_2 EMISSION

A new carbon tax (Option 2) levied on the cement sector and all fossil fuels under 3 scenarios: 1.5 USD/t, 6 USD/t and 15 USD/t (or 34,500 VND/t, 136,200 VND/t and 340,500 VND/t). Under this option, also the potential revenues from the introduction of a broader carbon tax covering all emission in the Vietnamese economy are provided. GHG emis-sions are sourced from DEA (2017) and refer to the proposed scenario which takes into account the potential for ener-gy savings in different sectors and the target of a 15% reduction in overall GHG emission. This is conservative as over-all emissions are lower than the business-as-usual scenario.

Table 22: Estimation of revenues from carbon tax on CO_2 emissions in the cement sector, until 2030 (million USD and trillion VND)

TAX RATE (PER tCO_2)	2017	2020	2025	2030
1.5 USD	102	115.5	132	136.5
34, 050 VND	2.3	2.6	3.0	3.1
6 USD	408	462	528	546
136,200 VND	9.2	10.4	12.0	12.4
15 USD	1020	1155	1320	1365
340,500 VND	23	26	30	31

Source: own calculations based on cement sector database (not publicly available)

Table 23: Estimation of revenues from carbon tax on CO_2 emissions from coal, until 2030 (million USD and tril-lion VND)

TAX RATE (PER tCO_2)	2015	2020	2025	2030
1.5 USD	127.5	150	184.5	222
34,050 VND	2.9	3.4	4.2	5.0
6 USD	510	600	738	888
136,200 VND	11.6	13.6	16.8	20.0
15 USD	1275	1500	1845	2220
340,500 VND	29	34	42	50

Source: own calculations based on data from DEA 2017

Table 24: Estimation of revenues from carbon tax on CO2 emissions from petroleum products, until 2030 (million USD and trillion VND)

TAX RATE (PER tCO_2)	2015	2020	2025	2030
1.5 USD	105	181	284	383
34,050 VND	2.4	4.1	6.5	8.7
6 USD	420	724	1136	1532
136,200 VND	9.6	16.4	26.0	34.8
15 USD	1050	1810	2840	3830
340,500 VND	24	41	65	87

Source: own calculations based on data from DEA 2017

Regarding the option for the introduction of a specific fee on GHG emissions, estimates are the same as above, since only the legal process for the introduction of the fee would change and potential revenues (assuming the same tax coverage and tax rate per tCO2eq is the same and in the previous options) will be equal.

It is important to note that actual revenues from the abovementioned options will vary depending on the final design of the tax: exemptions, offsets and thresholds will reduce the overall revenues. Obviously, also fossil fuel consumption until 2030 will vary depending on the actual economic and social trends in the country.

UNDP (2016) finds that a carbon price of 5 USD/tCO2e and 10 USD/tCO2e would result in an increase of the Levelized Cost of Energy, which is commonly used to compare different technologies for power generation, of around 10% and 20% respectively. The externalities of coal use for power generation are increased compared to business as usual by the coal subsidy of the GoV.

4.3

COMPLEMENTARY POLICIES TO MAXIMIZE BENEFITS OF THE CARBON TAX

The following elements should be considered to increase efficiency of the tax and to minimize distortive or negative impact on the economy:

- The following **supporting policies and mechanisms** can strengthen the long term effects of the tax on the pollut-ers' behaviour, facilitating switching to cleaner alternatives: support in Research & Development, as well as other incentives for supporting renewable energies and energy efficiency measures. These policies would provide addi-tional incentives to taxpayers to reduce their own emissions and deploy cleaner alternatives to carbon-intensive fuels. There is a wide array of options, main examples are: tax rebates and duty exemption for specific clean technologies, facilitate access to capital.
- **Periodic check of the actual impacts.** It is important to monitor the real effects of the carbon tax (or an increase in the rate) on emitters and more broadly on the economy. For instance, it could be found that a low tax rate would only lead to taxpayers simply paying the tax without changing their behaviours and production processes. The periodic checks will allow the Government of Viet Nam to understand how the carbon tax is affecting indus-trial policies and customers' behaviours and to identify the corrective measures that can amplify the impacts of the tax.
- **Inflation-proofing.** The tax should be automatically adjusted as per the development of consumer price index to avoid a reduction of the real tax level.

4.4

OFFSETTING WITHIN A CARBON TAX SCHEME IN VIETNAM

One important feature of a carbon tax is the possibility of using offsets, as discussed in Section 1.6. One of the most prominent options is the project-based offset. Viet Nam has a large portfolio of CDM activities with 255 projects regis-tered and 10 Programmes of Activities (UNEP DTU, 2017a,b). An existing study from early 2017 shows[23] that around 13% of the CDM projects are still issuing CERs also under the negative market conditions. This share could increase up to 70% (or 177 projects) of the total projects if prices would reach at least 2 €// CERs. In the context of the introduc-tion of a carbon tax in Viet Nam, offsetting should be considered under a two-folded perspective: as it is broadly rec-ognized, it is an instrument that allows reducing the cost of compliance with a carbon tax. This holds true if offsets are an opportunity for taxpayers to reduce the compliance cost, i.e. if the cost for generating and using offsets is lower than the cost of paying the full tax. On the other hand, it can provide an important incentive (if CERs from domestic CDM activities are considered eligible) for the existing CDM portfolio. CER price is currently very low (i.e. less than 1 USD/ CER) resulting in many activities stalled and not delivering their mitigation potential given the lack of financial incentive in issuing CERs (considering also the associated verification and issuance costs). The possibility of using the CERs to offset part of the tax liability would stimulate again demand and project owners can again benefit from this renewed source of revenues. Also, activities developed under voluntary standards, e.g. the Gold Standard or the Veri-fied Carbon Standard, can be allowed as offsets under a carbon tax. Eligibility criteria should be defined to incentivize mitigation investments in selected sectors, coherently with national priorities and policies. Moreover, the potential for delivering strong sustainable development (SD) co-benefits

23 The study was conducted by the consultant for UNDP, it is however not publicly available.

should be considered when defining eligibility criteria, to exclude activities that might have mitigation component but limited co-benefits.

The level of the tax rate is crucial to understand how strong the incentive for offset is: in case the carbon tax is set at a low level, it would not mobilize mitigation investments in new activities. Moreover, it might not be sufficient to incen-tivize verification and issuance of carbon credits from existing projects, due to the associated cost. For instance, a carbon tax level of 1 (or around 1.2 USD/ tCO2e) is not expected to be able to mobilize new issuances (let alone new investments); however a tax level of 2 €/tCO2e) (or around 2.4 USD/ tCO2e) would be sufficient at least for restarting issuances from existing registered projects. A higher level of carbon tax, e.g. 10 €/ tCO2e (or around 12 USD/tCO2e) would be sufficiently high to mobilize investments in new mitigation activities however the impacts of this level of carbon tax on the economy should be carefully evaluated. Double counting of the carbon credits, i.e. utilization of the carbon credits under the carbon tax scheme and also traded in the market, should be avoided to preserve environmen-tal integrity. In order to do so, it is necessary to set up appropriate tracking tools and registries to monitor the use of the carbon credits.

Introduction of offsetting within a carbon tax scheme should be considered also in light of the international develop-ment on the market mechanisms and their use for achieving the mitigation targets identified in the NDC. Existence of more attractive market opportunities, e.g. potential to trade carbon credits from mitigation projects/programmes for a sufficiently high price under the new market mechanisms to be defined under the Paris Agreement, would be a pre-ferred alternative for project owners provided that the tax level is lower than the market price. It is important to follow the evolution of the international negotiation on the new market mechanisms under the Paris Agreement: there are different options that are currently being discussed and that should be considered when considering the use of offset within a carbon tax. This refers for instance to eligibility criteria, potential discounting of credits eligible under the Paris Agreement, and other design options that still are being discussed.

Introduction of offsets requires the definition of specific rules and eligibility criteria under the carbon tax mechanisms. One important element is given by share of the carbon tax that can be offset through carbon credits. Generally, only a limited percentage of the tax can be offset: in the case of South Africa this percentage is 5-10% depending on the sector. An upper limit can be set, avoiding also excessive reduction of the revenues generated by the tax. Other eligibil-ity criteria can be set: for instance allowing only credits from activities implemented in Viet Nam, to incentivize domes-tic mitigation and avoiding the use of cheap credits purchased from abroad. Another criterion would take into account the project/ programme type: credits from activities implemented in strategic sectors, for instance RE generation or Energy Efficiency (EE) in industry should be allowed as offsets. This would ensure coherence with national priorities and support investments in priority sectors or on selected technologies. Similarly, contribution to SD can be another important criterion for eligibility, allowing only credits generated by activities that are also delivering strong SD co-benefits, such as contribution to the achievement of the Sustainable Development Goals as defined by the United Nations[24].

As mentioned in section 4.2, allowing offsets has the negative impact of reducing the overall revenues generated by the carbon tax. Political decisions are needed to strike a balance between volume of the revenues and flexibility for tax-payers coupled with stimulus for the existing CDM activities.

For the different options provided in the Study, the use of offsets can be directly applied to Option 2; Establish a dedi-cated Carbon Tax in parallel with Environmental Protection Tax and Option 3: Introduce a new carbon fee as part of Environmental protection fees since the MRV of direct emission has been established and tax/fee can be directly off-set with emission reductions from mitigation projects.

In the case of Option 1a and 1b: Reflect price of carbon in Environmental Protection Tax, the results of emission reductions from mitigation projects will have to converted into the reduction of relevant volume of items subjected to the Tax in order to reduce the tax and realize the offset.

24 For more information on the Sustainable Development Goals, see http://www.un.org/sustainabledevelopment/sus-tainable-development-goals/

SECTION

05

INTERNATIONAL EXPERIENCES WITH CARBON TAXES

Six case studies provide experiences from both developing and developed countries when they introduced a carbon tax. The depth of the information varies from case to case, depending on different factors such as novelty of the tax introduction (e.g. in Singapore the carbon tax is yet to be implemented), availability of studies on the impacts of the tax (in terms of both GHG emissions and other socio-economic impacts) or on the reaction of taxpayers and more broadly of the society to the tax introduction. Multiple sources have been used to inform the case studies, including literature, government websites and newspapers to gather the latest information. The six countries examined are: Unit-ed Kingdom, France, Colombia, Mexico, Japan and Singapore.

5.1

SINGAPORE

OBJECTIVES AND BACKGROUND

In its NDC, Singapore committed to reduce its emissions intensity by 36% by 2030 compared to 2005 levels. It aims to stabilize the country's emissions, with the aim of peaking around 2030. Singapore intends to achieve these objectives through domestic efforts but continues to study the potential of international market mechanisms (UNFCCC, 2015). In February 2017, Singapore's Minister for Finance first announced plans to introduce a carbon tax from 2019. In February 2018, the government officially announced the implementation of the tax. The parliament passed the Car-bon Pricing Bill in March 2018 (Tan, A, 2018a). Hence, the tax has been legally approved and can be implemented as planned (Allen, 2018).

The tax is expected to enhance Singapore's existing and planned mitigation efforts under the Climate Action Plan, and stimulate clean technology as well as market innovation (National Climate Change Secretariat 2018a). As such, the tax is seen as a key step to "build a smart, green and livable city" (Ministry of Finance of Singapore, 2018) and to "help Singapore transform into a low-carbon economy" (National Climate Change Secretariat, 2018b).

TAX DESIGN

The Carbon Pricing Bill will come into force on 1 January 2019. It will apply uniformly to all industry sectors, without exemption (Ministry of Finance of Singapore, 2018, p. 25). The tax will be collected from 2020 onward for emissions occurring in the 2019 calendar year. It covers the emission of the six gases that Singapore is required to report under the UNFCCC: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), Hydrofluorocarbon (HFCs), perfluorocar-bons (PFCs), and sulphur hexafluoride (SF_6)[25] (National Climate Change Secretariat 2018b). Companies do not have to pay for GHGs emitted from fire extinguishers as well as HFC and PFC emissions from air-conditioning equipment used for non-manufacturing purposes (such as in office buildings). Furthermore, emissions arising from the use of mo-tor fuels such as petrol, diesel and compressed natural gas (CNG) already have excise duties and are therefore exclud-ed (Ministry of Environment and Water Resources, 2018).

The tax will be applied upstream, i.e. the single site at which the business activity is carried out and where emissions occur. The business entity has to assess the emissions generated by the facility or

25 These are the six GHGs that Singapore reports to the UNFCCC as part of its national GHG inventory.

facilities it owns and register them with the National Environment Agency (NEA). A facility it will either be registered as a reportable facility or a taxable facility:

- Facilities that annually emit 2,000 tCO_2e or more are required to register, monitor their emissions, and submit an emission report (reportable facility)
- Facilities that annually emit 25,000 tCO_2e or more are required to register, submit a monitoring plan, monitor their emissions based on the approved monitoring plan, submit independently-verified reports, and pay carbon tax (taxable facility)

The tax will be paid through the surrender of carbon credits. Depending on the total emissions – more specifically, the total emissions of all facilities owned by a business entity – in a reporting period, the NEA assesses the specific amount of carbon tax levied. To cover this liability, the business entity has to purchase the related number of carbon credits from NEA at a fixed price. To prevent double counting, the credits will then be removed from circulation. Also, they cannot be sold, transferred, assigned or otherwise disposed of or dealt with (Allen, 2018; Government of Singapore, 2018). The tax rate – i.e. the value of a carbon credit – will be 5 Sg$/tCO2 (3.8 USD) in the first implementation period, from 2019 to 2023. The government will review the rate in 2023, with plans to increase it to a rate of between 10 Sg$ and 15 Sg$/tCO2 (7.3-10.9 USD) by 2030, taking into account international climate change developments, the progress of Singapore's emissions mitigation efforts and its economic competitiveness (Ministry of Finance Singapore, 2018, 24-25).

The Ministry of Finance expects to collect carbon tax revenue for around 1 billion Sg$ (750 million USD) in the first five years (Ministry of Finance of Singapore, 2018). The revenues will not be earmarked for specific purposes. Howev-er, the government intends to set aside funds to enhance support for companies – including SMEs and power genera-tion companies – to improve energy efficiency. This support will be done via two existing schemes: the Productivity Grant and the EE Fund (Ministry of Finance of Singapore, 2018, 26; Tan, A, 2018b).

IMPACT OF THE TAX

The carbon tax will be levied on major emitters, such as power stations and other large industrial facilities. It is affect between 30 to 40 large emitters – mainly from the petroleum refining, chemicals and semiconductor sectors – which account for about 80% of Singapore's emissions (Low, 2018). If power generation companies pass through the addi-tional costs to the market, the carbon tax could result in a rise in electricity prices. At this stage, a rise of 0.43 to 0.86 cent Sg$ per kWh is expected, which would equal a 1 to 4% increase in electricity prices for consumers (Kotwani, 2017; National Climate Change Secretariat, 2018a).

In order to counter the effects of the carbon tax, households will receive additional utilities rebates through the GSTV U-Save (Goods and Services Tax Voucher – Utilities-Save)[26] scheme. More specifically, eligible households (i.e. low income households) will each receive 20 Sg$ more per year, from 2019 to 2021. Given the recent introduction of the tax, information on its environmental and economic impacts is not yet available.

CHALLENGES AND RESPONSES FROM STAKEHOLDERS

Before officially announcing the implementation of the tax in February 2018, the government conducted two public consultation sessions. Interested members of the public were invited to comment the proposed carbon tax policy via online consultation and focus group discussions (National Climate Change Secretariat, 2017). According to the feed-back received, there is a broad support for a carbon bill (Tan, JL, 2018). However, the public, members of the parlia-ment – across political affiliations – as well as academics have questioned its level of ambition, calling for a higher tax rate over time. It has been argued that the low tax rate "neither satisfies pro-business sentiments opposed to any tax, nor lives up to the tax's very purpose of decarbonizing Singapore's industries" (Tan, JL, 2018). Notably, even industry players such as ExxonMobil and Shell argued that the tax rate is not enough to encourage energy efficiency (Tan, JL, 2018). According to Kuttan (2017), a tax rate of 50 Sg$ to 100 Sg$ is suggested to be more effective in driving indus-trial operational behavior towards low carbon alternatives.

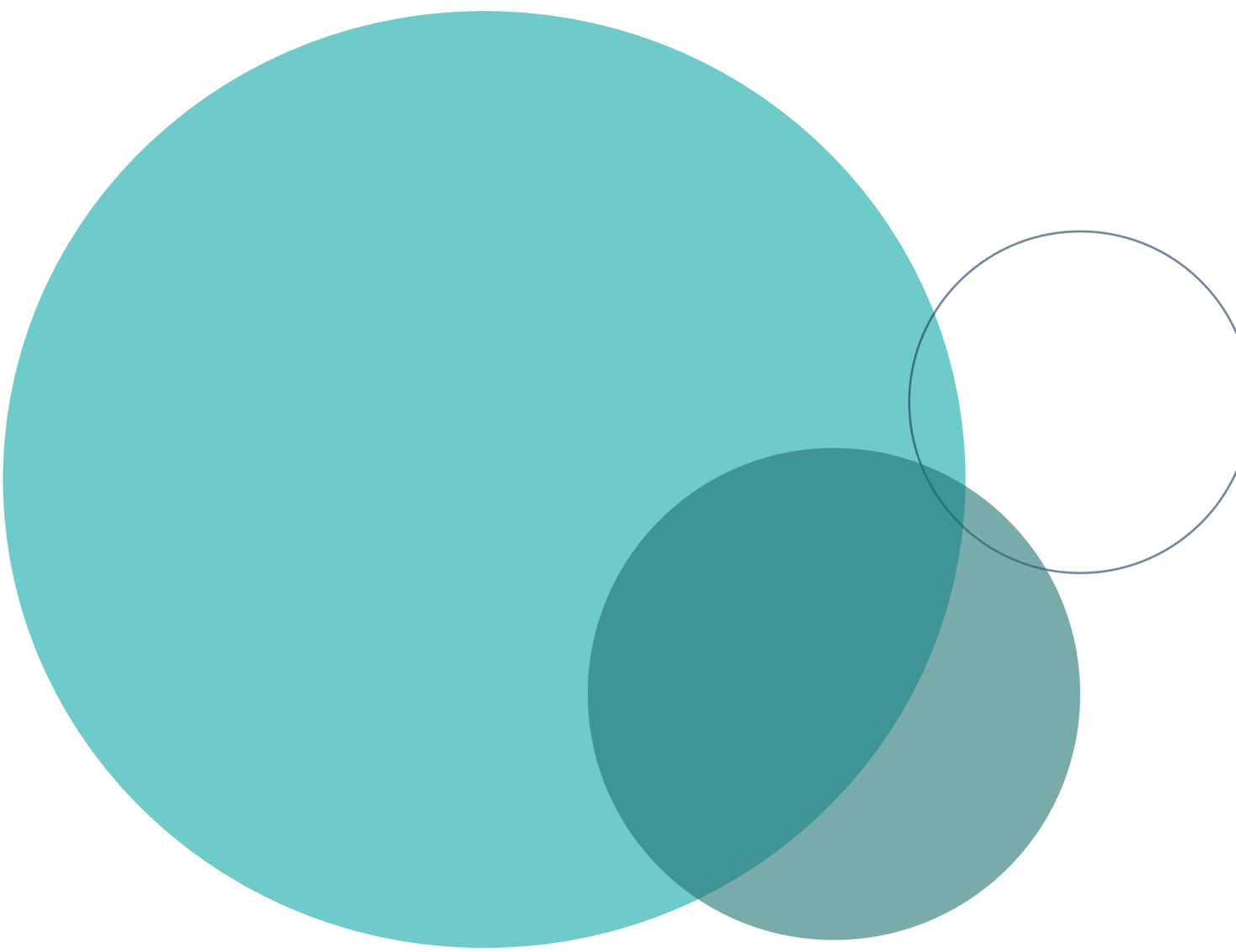
Moreover, the industry voiced concern that the tax could increase the costs of operation, both with regard to the need of new investments in more sustainable technologies and costs of auditing and reporting (Tan, JL, 2018). There are fears that the higher costs are will result in loss of export competitiveness in key industry clusters such as refining and petrochemicals (Soh, 2017; Kuttan, 2017).

The Ministry of Finance justified its decision for a low

26 For more information on the GSTV system, see https://www.gstvoucher.gov.sg/Pages/index.aspx (accessed June 22, 2018).

carbon price, stating that the initial tax rate of 5 Sg$ is consid-ered to balance economic and environmental considerations and prevent fallout by the battered power generation sector. Moreover, the Government argued that, due to the size and economic structure of the city state as well as the design of the carbon tax – which, unlike other taxation systems, does not exempt certain sectors –, Singapore is a unique case. Therefore, the tax rate should not be compared to the (higher) rates introduced by other countries (Minis-try of Finance of Singapore, 2018, 25; Tan, JL, 2018).

Several stakeholders also called for all emissions data to be released publicly in order to increase transparency and data availability. This would allow consumers to monitor the sustainability performance of energy providers and make informed choices about their energy products (Tan, JL, 2018).



5.2

JAPAN

OBJECTIVES AND BACKGROUND

Japan has been pushing for the adoption of measures to combat climate change since 1997. In 2009, the Government introduced the 'Basic Act on Global Warming Countermeasures' which proposed both carbon taxation and cap-and-trade as potential measures to fulfill the country's commitment to reduce GHG emissions. However, design issues could not be solved and the Act failed to pass Japan's legislative branch (National Diet) in August 2010. The ruling party, the Democratic Party of Japan (DPJ), eventually stopped the implementation of a cap-and-trade scheme in December 2010, mainly due to opposition from the Japan Business Federation (Keidanren). The DPJ, however, pursued the introduction of a carbon tax. The political commitment to introduce such a tax increased after the severe earthquake in March 2011, when the Government committed to reducing its reliance on nuclear energy and reduce energy consumption and therefore decided to revise its entire energy policy (Climate Action Tracker, 2017; Kawakatsu et al., 2017, p. 3). The Government eventually introduced the 'Tax for Climate Change Mitigation' in October 2012 as part of the 2012 Tax Reform (Ministry of Environment, 2017, p. 10; PMR 2017b, p. 59). The tax was introduced in 2012.

Japan's NDC includes an emissions reduction target of 26% below 2013 levels by 2030 (Government of Japan, 2015). Moreover, the 'Plan for Global Warming Countermeasures' enshrines a long-term target to reduce emissions by 80% by 2050 (Climate Action Tracker, 2017). As energy-related CO2 emissions account for 90% of total emissions, the gov-ernment is strongly promoting energy-related emissions control measures. In addition, the Japanese energy policy fo-cuses on the promotion of energy-saving and RE in order to reduce the country's reliance on nuclear power (Ministry of the Environment, 2012).

TAX DESIGN

The tax is applied to fossil fuels – crude oil, petroleum, natural gas and coal – at their point of entry into the market, i.e. when they are imported or exploited (Ministry of Environment, 2017, p. 13). Basically it is not a new tax but adds a carbon content component to the existing Petroleum and Coal Tax (Kawakatsu et al., 2017). The tax rates vary for each type of fossil fuel, depending on their CO2 content. The tax has been phased in over three and a half years, and

reached its full tax rates in April 2016: 760 ¥ per 1000 liters of petroleum and oil products, 780 ¥ per ton of gaseous hydrocarbon and 670 ¥ per ton of coal. The rates were set by using the CO2 emissions factor of each fossil fuel consid-ering a tax rate of 289 ¥/tCO2 (2.54 USD). Tax revenues are to be used to promote low-carbon technologies, EE im-provements, and Re development. (Ministry of the Environment, 2012, p. 2–3; Kawakatsu et al., 2017; PMR, 2017b, p. 59).

Exemptions are provided to certain industries and fuels, including coal used for electricity generation on the island of Okinawa; volatile oil used for the production of petrochemical products; domestic oil asphalt; oils used for agriculture, forestry, and fisheries; fuel for domestic flights; oils used by railways; oils used for domestic cargo and passenger ships; and imported coal used for the home generation of caustic soda and salt production (Ministry of the Environment, 2012, p. 7; PMR, 2017b, p. 60).

Implementation is under the responsibility of the Ministry of Finance, while revenues (combined with revenues from other taxes) are channeled through the Ministry of Economy, Trade, and Industry or the Ministry of Environment. The latter uses part of these revenues to support the Joint Crediting Mechanism, which is a bilateral program to support the development of mitigation activities in multiple countries. The Government of Japan supports the investments and in return receives up to 50% of the emission reduction credits the projects can generate (Carl and Fedor, 2016).

IMPACT OF THE TAX

It is assumed that the carbon tax burden is passed forward into consumer prices (Maeda 2012). However, in terms of the effects on households, so far no independent empirical studies are available (Kawakatsu et al., 2017). The Ministry of Environment expects the additional household burden to be about 1200 ¥ per year (approx. 10 USD) (Ministry of the Environment, 2012; PMR, 2017b).

Revenues generated by the tax are expected to reach 39 billion ¥ (500 million USD) for the first year, and up to 260 billion ¥ (US$2.18 billion) (International Energy Agency 2015; PMR, 2017b, p. 61). The revenues are collected by the Ministry of Finance as part of the "Petroleum and Coal Tax". In the case of late payment, taxpayers are required to pay a penalty plus interest (PMR, 2017b, p. 61). Japan's carbon tax is earmarked for clean energy technology, energy efficiency programs, and environmental conservation (Ministry of Environment, 2017, p. 6; Kawakatsu et al., 2017; PMR, 2017b, p. 59).

In 2017, the Ministry of Environment estimated CO2 emission reductions for 2020 and 2030 compared to 2013. The results show that, for 2020, the price effect – i.e. the CO2 emissions control effect through taxation – will be -0.2% and the budget effect – i.e. the CO2 reduction effect by utilizing tax revenues for measures to reduce energy-related CO2 emissions control – will be -4.2%. For 2030, the price effect will be -0.03% and the budget effect will be -7.3%. This means that the tax will contribute 17.5% in 2020 and 9.1% in 2030 to the CO2 reduction target of Japan (Kawakatsu et al., 2017, p. 5). Lee et al. (2012) find that the tax will only have a small impact on emission levels, the GDP and employment. It should be noted, though, that the economic impacts vary across industries: the cost effect on high emitting industries will be stronger than on others (Kawakatsu et al., 2017, p. 5).

CHALLENGES AND RESPONSES FROM STAKEHOLDERS

Business is still opposing explicit carbon pricing, arguing that it raises energy costs, hinders corporate innovation and harms industries in terms of global competitiveness[27]. The Japan Business Federation (Keidanren) has made numerous requests for the review and potential abolishment of the tax (PMR, 2017b, p. 62). Since 2014, the Keidanren business also criticized the lack of clarity on the amount of revenues collected through the carbon tax, and also on lack of full clarity on the actual expenditure of these revenues. Opposition to the tax grew substantially with rising energy prices after the shutdown of nuclear plants after the 2011 Tsunami (Carl and Fedor, 2016).

27 Kiyoshi Tanigawa, manager of the environment and energy policy bureau at Keidanren, cited in Gulf Times; http://www.gulf-times.com/story/550187/Japan-s-environment-minister-puts-carbon-tax-foes- (accessed June 26, 2018).

5.3

UNITED KINGDOM

OBJECTIVES & BACKGROUND

The Carbon Price Floor (CPF) was introduced by the United Kingdom (UK) Government on April 1st, 2013 under the Climate Change Levy (CCL)[28] after a consultation in 2010 and the announcement of the policy in the budget of spring 2011 (Ares, 2016, p.3). It is designed to complement the European Union emission trading scheme (EU ETS) in the UK by underpinning the price of allowances under the EU ETS. Thereby, low-carbon investment should be more effective-ly incentivized than through the EU ETS (Hirst, 2018). In this sense, the CPF can be considered as a reaction to the oversupply of allowances and the low prices in the European emission trading scheme (Sandbag, 2012; Hirst, 2018). Furthermore, the CPF contributes to achieving the emission reduction commitment of the UK under its Climate Change Act (PMR 2017b).[29]

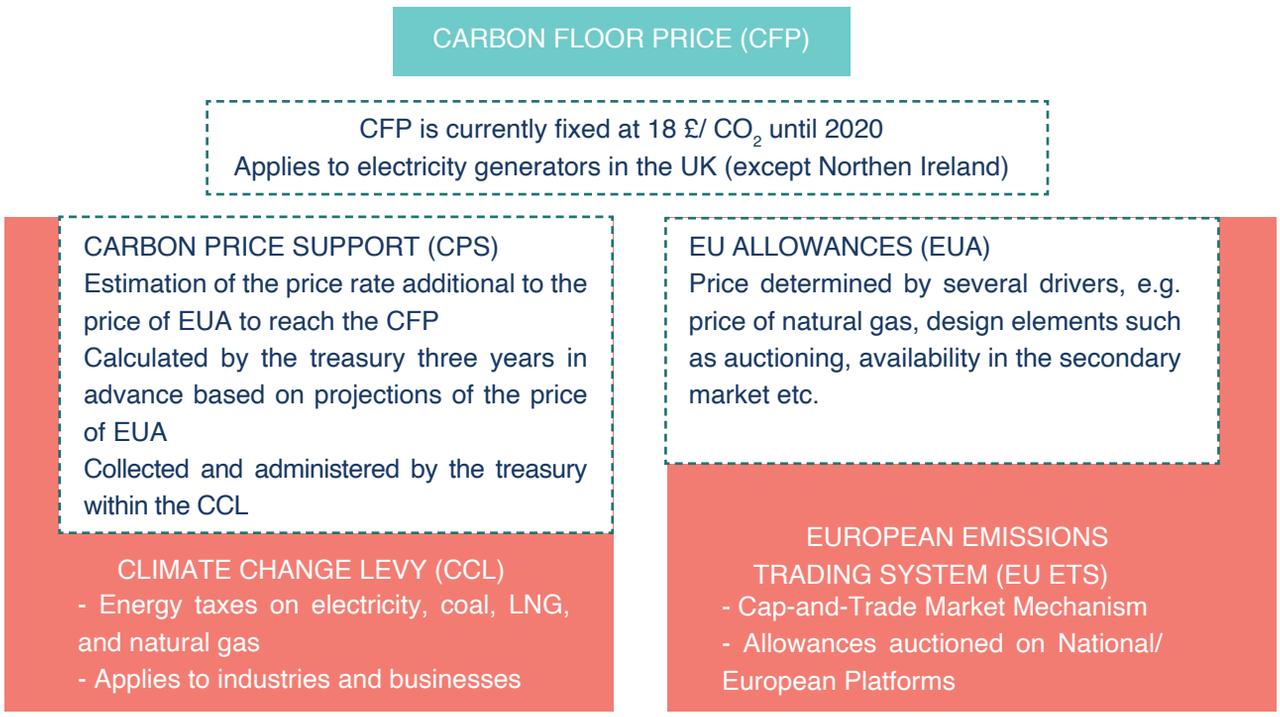
TAX DESIGN

The CPF is set as a minimum price for carbon in the government's budget. Starting from 2013 the CPF was set to 15.7 £/tCO_2e and was supposed to increase steadily up to 30 £ in 2020 and 70 in 2030 £ (Sandbag 2013; Ares, 2016, p. 3). Since 2014 and until at least 2019/2020 the CPF is however set at 18 £ (Ares, 2016, p.12). The CPF consists of two components: the price of carbon emissions under the EU ETS (the so-called EU Emission Allowances, EUA) on the one hand and, on the other, the so-called Carbon Price Support (CPS) rates. The CPF covers around 25% of the United Kingdom's emissions, excluding Northern Ireland. Figure 10 shows the design of the CPF with its two components that are related to the European-wide ETS policy, as well as the UK-wide CCL policy.

28 The Climate Change Levy (CCL) is a tax raised on electricity, coal, natural gas, and liquefied natural gas for businesses and industries in the UK. The tax was announced in the 1999 budget and became effective in 2001. (Seely 2016, p.7)

29 Emission Reduction of 80% compared to 1990 levels until 2050.

Figure 9: The Carbon Price Floor and its two components: The EUA and the CPS



Source: own elaboration

The EUA component of the CPF is determined by the market price of one allowance. The EUAs are purchased on the carbon markets or through government auctions. While the UK established its own auctioning platform on behalf of the Department for Business, Energy and Industrial Strategy (UK Government, 2018), the EU ETS is regulated by the institutions of the European Union.[30] For the purpose of the report, the focus is on the design of the CPS component of the CPF.

The CPS is paid by electricity generators, and applies to electricity generation from natural gas, liquefied natural gas, solid fossil fuels and oil. This includes combined heat and power (CHP) generators and auto-generators of electricity in the UK (PMR 2017, p.94). The tax does not apply in Northern Ireland. Exemptions also apply for the following:

- power generation facilities and CHP stations with a capacity of less than 2MW
- stand-by generators
- facilities using coal slurry[31]
- electricity produced and used on-site at CHP stations that meets certain efficiency standards

A reduced rate applies to generating stations with Carbon Capture and Storage (PMR, 2017b).

In practice, the CPS is levied as an adjusted rate of the CCL, as £/kWh for the fossil fuels used for power generation. These actual CPS rates are calculated according to the following formula (Hirst, 2018):

CPS Rate = (target carbon price – market carbon price) x (emission factor of the fuel).

The market carbon price is calculated from the average annual ICE-ECX benchmark end of day settlement price for carbon for delivery in the target year. The difference between the carbon price and market carbon prices is the 'carbon price support rates' by carbon content (i.e. per tonne of CO_2). The emission factors for the different fuels are deter-mined by the UK Department for Environment, Food and Rural Affairs (DEFRA). This results in the CPS rates per kWh, which is levied through the CCL (Hirst, 2018). Her Majesty's (HM) Revenue & Customs operates a registry for the levying and monitoring the CCL.

The revenues from both components of the CPF are retained by the Treasury. In a strict sense, neither the revenue from the CPS nor from the EUA is

30 For more information, please visit https://ec.europa.eu/clima/policies/ets_en or https://www.gov.uk/guidance/participating-in-the-eu-ets#complying-with-the-eu-ets .

31 Coal slurry is a by-product from coal preparation. It consists of a mixture of solid coal particles and, usually, water. It can be used as a fuel in power boilers, gas turbines, diesel engines and power stations

earmarked, as the Treasury is strongly opposed to this practice (Hirst 2018, Sand-bag 2012). Additionally, in conjunction with the CPS, a support package for energy intensive industries was imple-mented with a volume of 250 million £ between 2012 and 2014 (see below for more information). The expenses for this package could be fully covered by the revenues from the CPS, which is why some analysts have labelled it ear-marking (Sandbag, 2013, Carl and Fedor, 2016). Penalties and fines can be charged to non-compliant entities and can even lead to criminal charges (PMR, 2017b).

IMPACTS OF THE TAX

According to Hirst (2018, p.13) the tax has encouraged a shift from coal-based generation to renewables. Between 2015 and 2016, in conjunction with an increase of the CPF from 9 £ to 16 £, electricity generation from coal has de-clined by 25%. The generation from gas remains constant (Ares, 2016, p.16), while generation from wind (on- and off-shore and solar has about doubled between 2013 and 2017 (OFGEM, 2018). This increase, however cannot be at-tributed directly only to the CPF, but it is also due to market developments, as well as changes in the climate and other energy policies in recent years.

In 2016 the revenues from the CPF reached about 1 billion £. The cost of the compensation measures for energy in-tensive industries was projected to be around 500 million £/year from 2016 (Ares, 2016, p.15).

A report by the Committee on Climate Change (2014) found that the energy and climate change policies, including the CPS had a negative impact on business energy bills, making compensation necessary (see above). As far as house-holds are concerned, CPF has been examined as part of the combined energy and climate change policies. The burden of CPF on households is supposed to rise from 14 £ in 2014 to 30 £ in 2030 (Hirst, 2018). As energy and climate change policies have undergone reform since 2014, there is ongoing concern on the impact for households with cur-rently no updated figures available.

CHALLENGES AND RESPONSES FROM STAKEHOLDERS

Since the conception of the CPF, concerns were raised that the floor price was having negative impacts on the competi-tiveness of energy intensive industries, amongst others by the Confederation of British Industry (Hirst, 2018, p. 9). The main concern relates to divergence with the low price of EUA in the rest of Europe, but also the risk of carbon leakage. Part of the concerns over carbon leakage were addressed at the European level with regard to the ETS as design of the EU ETS takes into account the risk of carbon leakage and features provisions to address these such as free allocation of allowances. The ETS Directive also sets guidelines for financial compensation for sectors at risk by the Member states (DG Climate 2015, p. 60-68).[32]

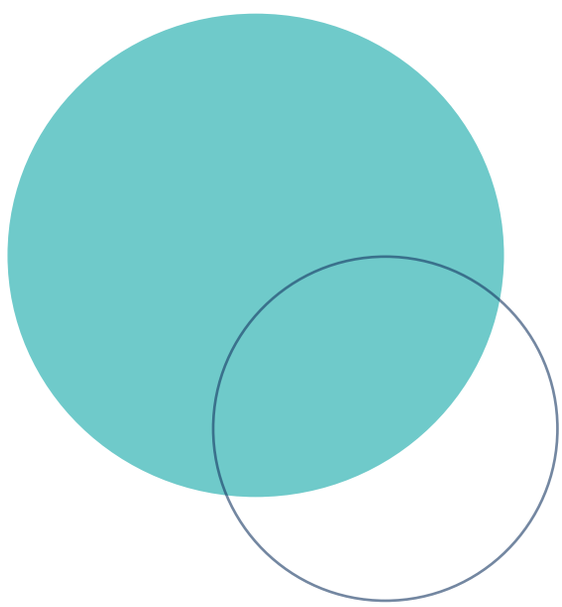
Domestically, in response to these concerns about competitive disadvantages, the Government took several support measures: With the start of the CPF in 2013, the Government decided on a 250 million £ support package to compen-sate the burdens from the EU ETS and CPS rates for qualifying 'electro-intensive' industries until 2016. The package was announced in conjunction with the CPF in the Autumn Budget of 2011 and consists of measures promoting ener-gy efficiency and renewable energy (HM Treasury, 2011, p. 36; Cambridge Econometrics, 2017). In 2014, this support package was prolonged until 2019-20 (Hirst, 2018, p. 14). Additionally, as of 2016 the CPS rate was frozen at 18 £ to minimize the divergence of the CPF with the carbon price for the rest of the EU. The CPS remains frozen until 2020 (HM Treasury, 2017).

The three year time frame is seen by some, e.g. the Renewable Energy Association, as to short given that investments in low-carbon energy generation have a longer time frame. Currently, criticisms mainly focus on the uncertainties after 2020 on the CPF. In the 2017 autumn budget, the UK government announced that no changes will be made to the CPF (HM Treasury, 2017, p. 37). Concerns have been voiced that a constant price would lessen the incentive to shift from coal-based power generation to RE (Hirst, 2018, p. 22). With the UK planning to leave the European Union in 2019, there is currently no certainty on whether it will remain in the EU ETS. As the CPF is linked to the EU ETS, the UK plan to exit the European Union (i.e. the so called Brexit) leads to further uncertainty about the CPF price stability (Hirst, 2018, p. 23).

32 The European Commission determines sectors particularly exposed to this risk based on quantitative and qualitative criteria (DG Climate 2015, pp. 63-64). This so-called carbon leakage list is available on https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014D0746&from=EN (accessed 05.07.2018)

Next to concerns over competitiveness and carbon leakage and price stability, there is ongoing controversy about al-ternative policy designs. A recurring argument in the inception phase was that CPF is more effective at the European level. Furthermore introduction of the CPF was criticized as with increasing energy prices, nuclear power plants would benefit from additional profits (Hirst, 2018, p. 14).

Some member of the business community, such as SEE, Drax, and the Renewable Energy Association support the CPF, because it encourages investment in low-carbon power generation. However, they stress the importance of long-term clarity (Hirst, 2018, p.13); in October 2017 several energy companies[33] demanded more clarity with regard to the future of the CPF. Initially however, many power companies and many businesses were against the policy (Ares, 2016). A large part of the industry however remains critical, arguing that the CPF disadvantages British companies' competitiveness. Meanwhile, environmental groups have criticized it for having only a limited effect on GHG emis-sions. Criticisms of environmental groups are mainly focusing on issues with the design of the CPF, while others wel-comed the aim of CPF and supported implementation of the policy. Consumer groups have raised concerns over in-creased cost for electricity (Hirst, 2018, p.13).



33 Drax, SSE, VPI, Immingham and Intergen.

5.4

FRANCE

OBJECTIVES AND BACKGROUND

In France, governments tried to introduce a carbon tax since 2000. In 2012, the government appointed a Committee for Ecological Taxation (CFE, according to the French acronym) with the mission to come up with proposals for eco-logical taxation, considering the three main principles: ecological effectiveness, economic impact and the respect of social justice (Balto, 2012). This attempt followed two rejections of two proposals for a carbon tax in 2000 and 2009. The committee consulted national stakeholders and international experts. It was supported by the General Commis-sion for Sustainable Development and the Directorate for Tax Legislation and presented a report proposing a carbon tax in 2013.

The carbon tax was introduced in the same year and the design followed the proposition made by the President of the CFE Christian de Perthuis (Ollivier-Trigalo, 2017). The tax became effective in 2014 (Ministry of Ecological and Soli-dary Transition, 2017). The objective of the tax was to contribute to the financing of the Energy Transition, increasing energy efficiency and foster investment in renewable energies (Ministry of Ecological and Solidary Transition, 2017). In 2015, with the Law on Energy Transition for Green Growth the tax rates were increased to meet the objectives of the energy transition (PMR, 2017b).[34]

TAX DESIGN

The French carbon tax is levied in addition to the domestic taxes on energy consumption[35]. The domestic energy taxes apply for gas, heating oil and coal products (since 2014) and transportation fuels (since 2015) (PMR, 2017; Ministry of Ecological and

34 Objectives of the Energy Transition for Green Growth Act (2015): reduce GHG emissions (40% until 2030; ref.: 1990), reduce fossil fuel consumption (30% until 2030; ref. 2012), reduce final energy consumption (by 50% until 2050, ref.: 2012) (PMR 2017b).

35 The domestic tax on the consumption of energy products (TICPE), the domestic tax on consumption of natural gas (TICGN) and the domestic tax on the consumption of carbon (TICC).

Solidary Transition, 2017). The carbon tax applies to both businesses and households. However, energy intensive businesses that are already covered by the EU ETS are exempted. These companies pay the tax on energy consumption without the carbon component (Ministry of Ecological and Solidary Transition, 2018). Some small ener-gy intensive businesses are not covered by the EU ETS, provided they appear on the list of sectors with high risk of carbon leakage as defined by the European Commission (Ministry of Ecological and Solidary Transition, 2018). Other far-reaching exemptions include vulnerable sectors, such as truck drivers, public transport operators, taxi drivers; farmers, river shipping, air transportation, fishing and marine transport (PMR, 2017b; Sénat, 2018). The tax is paid by the supplier upon delivery to the consumer. Non-compliance is sanctioned with fines and interests.

The tax is calculated by taking into account CO2 content of the energy products (Sénat, 2018). It is set with the adop-tion of the budget for the following year. The evolution of the rate takes into account the social cost of carbon deter-mined by the Quinet Commission (Quinet, 2009; Ministry of Ecological and Solidary Transition, 2017). It was deter-mined in 2009 through a collaboration between the Centre for strategic analysis and representatives of businesses, environmental and social groups, economists from academia and public institutes, as well as national and internation-al organizations (such is IEA, OECD or the French Environment Agency ADEME). In February 2018, a new Commis-sion was appointed to update the 2009 report. In practice, a tax base value (per amount of fuel consumed) is deter-mined, based on the tax rate per tCO2. The tax rate has been set also considering the goal of reducing GHG emissions by 2030 by 40% compared to the 1990 levels (PMR, 2017b).

The tax is designed to be revenue neutral, aiming at the reduction of other taxes, such as the company income tax or labour taxes (PMR, 2017b). Revenues from the tax are used finance the green energy transition and to compensate for costs of the tax (Ministry of Ecological and Solidary Transition, 2017).

The tax is levied in addition to the energy consumption tax per amount of fuel. The revenues are collected by the “Douane”, the Ministry for Public Accounts. As shown in the following table, the initial rate of the tax was 7 €/ tCO2e in 2014, which increased up to 30.5 € in 2017 and it is estimated that it will increase to 65.4 € in 2020, with the long term target of reaching 100 € in 2030).

Table 25: Evolution of the carbon tax since 2014

EVOLUTION OF THE CARBON COMPONENT IN €/ TCO_2E AS OF 2018									
2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2030**
7	14.5	22	30.5	44.6	55	65.4	75.8	86.2	100

Source: own elaboration based on Ministry of Ecological and Solidary Transition, 2018 and Sénat, 2018

IMPACTS OF TAX

Since the introduction of the tax, revenues have increased constantly, starting from 340 million € in 2014 to 2.3 € billion in 2015 and 3.8 billion € in 2016. For 2017 the revenue from the tax was estimated to be 6 billion € (Ministry of Ecological and Solidary Transition, 2017; Rocamora, 2017).

When the tax was introduced in 2014, 100% of the tax revenues were directed towards green subsidies. In 2016, al-most 80% (3 billion €) of the revenue from the carbon component of energy taxes was directed to financing a gov-ernment credit support program for businesses. The remaining amount was used for a VAT reduction on thermal build-ing renovation and essential goods and services for the energy transition, as well as compensation for households (Min-istry of Ecological and Solidary Transition, 2017).

The transport and building sectors are the main sectors concerned by the tax; reductions of CO2 emission by 2017 resulting from the tax were estimated at around 1 million t CO2 and 2 million t CO2 respectively (Ministry of Ecological and Solidary Transition, 2017). Because of the exemption for companies under the EU ETS, main tax payers are households with a 67% and companies representing 33% (Rocamora, 2017, p.49). The tax is projected to lead to an increase in prices for fuels by 0.18 €/l for heating oil, 0.16 €/l for petrol and 0.17 €/l for diesel between 2017 and 2030 (estimation by the Electricity Industry Observatory in Rocamora, 2017, p. 47).

CHALLENGES AND RESPONSES FROM STAKEHOLDERS

In 2009, inadequate communication of the tax to the public created a low acceptance of the carbon tax. The tax was communicated very early on, while key items such as revenue recycling, rate progressivity and inclusion of electricity were not clear enough until the submission of the proposal for the tax to Parliament. The consequence was a shift of support and within 5 months support rates within the population dropped from 66% to 34% and in September 2009, 73% of the public believed the tax would fail to reduce energy consumption (Rocamora, 2017, pp. 26-27). Rocamora (2017, p.27) states that "[i]t seems that the government failed to explain what a carbon tax is, rather than failed to demonstrate the relevance of a carbon tax". Finally, the tax was ruled unconstitutional by the Constitutional Council that judged "that the exemptions were against the objective of climate change mitigation and the principle of tax equality" (Rocamora 2017, p.32). When introducing a new carbon tax in 2013, the effects of the tax on vulnerable businesses and citizens were a main concern, which lead to the inclusion of an expenditure program for low-income households (Carl and Fedor, 2016, p. 75; Rocamora, 2017, p.52). The CFE proposed the incorporation of the carbon component into the overall framework of energy taxes and in the context of broader considerations on environmental taxation. Ollivier-Trigalo (2017, p. 57-61) suggests that it was finally decided to introduce the carbon tax as compo-nent of the energy taxes in order to avoid the risk of the Constitutional Council ruling again against the tax.

During the consultation process, the main criticism of NGOs was that the carbon price development as proposed by the Commission was not ambitious enough to effectively reduce GHG emissions, and with the support of unions and some deputies, a more ambitious rate increase was proposed (Ollivier-Trigalo, p. 51, 52). Employers' organization Mouvement des Entreprises de France and the consumer group Association nationale de défense des consommateurs et usag-ers supported the tax rate as proposed by the CFE. The CFE presented two rate scenarios to the government for con-sideration (i.e. the original proposal and a more ambitious one), which resulted in the adoption in 2014 of a higher tax rate. Since its introduction, the tax rates have been increased several times. De Perthuis and Faure (2018) argue that the decrease in market prices of fossil fuels has outweighed the burden of the tax, eliminating its effects. With the adoption of the Budget Law for 2018, the tax rates were increased in order to enhance tax effectiveness.

The relationship between the carbon tax and the EU ETS was also discussed and analyzed at length (Rocamora, 2017, p.25). The tax was introduced as a complement to the EU ETS; hence sectors covered under the EU ETS are exempt-ed. However, the tax rates show a quick increase which is much higher than the current the prices for EUAs under the EU ETS. Hence larger industries would have to pay a lower price per tCO2 compared to the domestic tax; there have been different attempts to build better coordination with the national and regional climate policy in order to have a comparable cost on CO2 emission amongst large and small producers (de Perthuis and Faure, 2018, p.3).

5.5

COLOMBIA

OBJECTIVES AND BACKGROUND

In its NDC, the Government of Colombia set a target of reducing 20% the GHG emissions against the 2010 BAU sce-nario by 2030 (Government of Colombia, 2015). Moreover, in 2015, the National Government approved the Decree 298 that crated the National System of Climate Change (SISCLIMA, from the Spanish acronym) which establishes a cooperation platform for state, private and non-profit entities to coordinate and implement actions to fight climate change (Carbon Trust, et. al., 2018).

As a contribution to this mitigation objective, and as part of SISCLIMA, the national carbon tax was introduced in 2016 within the Law 1819 which targeted a structural reform of the revenue collection system. The carbon tax came into force in 2017 and applies to the sales and imports of all fossil fuels except for coal. The decision on the introduc-tion of the carbon tax on fossil fuels has the target of reducing the high level of emissions associated with the use of these fuels (Ministry of Environment and Sustainable Development, 2017). The tax covers the 16% of Colombia's total emissions and 50% of the emissions generated from fossil fuels (Carbon Trust et al., 2018).

After Law 1819 was implemented, a complementary action was introduced: in 2017 the Decree 926 established the possibility to reduce tax liability through utilization of offsets and established the requirements for their use. The Gov-ernment continued to implement new climate-related activities both at national and international level, as the Ministry of Environment and Sustainable Development presented Law 73 to Congress in order to establish guidelines for cli-mate change management and compliance; and joined Canada, Chile, Mexico, Costa Rica and other North American states to launch the Carbon Pricing in the Americas cooperative framework to promote carbon market (Carbon Trust et al., 2018) at international level.

TAX DESIGN

Colombia's carbon tax was fixed at COP15,000/ tCO2e (approximately 5 USD/tCO2e) and set to increase annually by 1% plus inflation until the price reaches represents approximately 10 USD/tCO2e. Table 26 shows the tax rate per unit of fossil fuel, taking into account specific CO2 emission factors.

Table 26: carbon tax rates in Colombia

FUEL	UNIT	TAX/ UNIT (COP)
Natural Gas	Cubic meter	$29
Liquefied petroleum gas (LPG)	Gallon	$95
Gasoline	Gallon	$135
Kerosene and Jet Fuel	Gallon	$148
ACPM (Diesel)	Gallon	$152
Fuel oil	Gallon	$177

Source: Government of Colombia, 2016, Art. 221

The obligation to pay this tax applies to all fossil fuels used for energy purposes and for combustion. More specifically, gasoline, kerosene, jet fuel, diesel and fuel oil are affected by the tax regardless of their final use; on the contrary, nat-ural gas is only taxed when it is used by the refining and petrochemical industries while LPG is only taxed when it is sold to industrial users (MADS, 2017). In summary, the tax is levied on:

- Sales made in national territory
- Fuel extraction for self-consumption
- Imported fuels

The tax it is only imposed once, depending on whichever action occurs first. Non-compliant entities can be subject to a fine of up to two times the value of the own emissions (Carbon Trust et al, 2018).

In order to facilitate industries' participation and to stimulate investments in mitigation activities, the Decree 926 in-troduced the possibility to achieve partial or total exemption (Government of Colombia, 2017). This means that enti-ties subject to the carbon tax can reduce their exposure investing in mitigation projects. According to this decree, an entity can achieve the certificate of being "carbon neutral" when the totality of emissions generated by the fossil fuels covered by the tax are compensated by the delivery of emission reductions for the same volume through the imple-mentation of mitigation activities.

National Directorate of Taxes and Customs of Colombia (Dirección de Impuestos y Aduanas Nacionales DIAN) is in charge of approving the mitigation projects to offset the carbon tax. Eligibility criteria are: the activity must have oc-curred after 2010 within Colombian territory and must be in compliance either with CDM methodologies or being certi-fied under a carbon standard that includes the verification from an accredited third party accredited by the UNFCCC or the National Normalization Body, or projects that meets the REDD+ requirements (Carbon Trust, et. al., 2018). Moreover, to qualify for the exemption, entities must request it ahead of the tax compliance deadline, presenting a "Voluntary Cancellation Certificate" and a "Declaration of Verification" of eligible offsets to certify that the emission reduction are real and measurable and that they will be then retired from the market to avoid double counting. The Declaration of Verification contains the name of the mitigation activity, the amount of verified emission reductions and removals and the MRV methodology applied. It must contain also a report of the emission reductions according to the National Emissions Register. The Voluntary Cancellation Certificate is issued for those credits that are cancelled in their respective certification program before entering the National Emission Register. It is equivalent to the cancella-tion of a CER. Verifications issued by CDM-certified bodies (i.e. the Designated Operational Entities) are accepted only until 31 December 2018. After that date, only Declaration of Verification issued by an authorized verification body accredited under the National Accreditation Body of Colombia (Organismo Nacional de Acreditación de Colombia ONAC) will be accepted (Carbon Trust, et. al., 2018).

IMPACT OF THE TAX

DIAN is tasked with the collection of the tax revenues, and according to Art. 223 of the Law 1819 the revenues are used to support the Fund for Sustainable Environment and Rural Sustainable Development (nowadays known as the Sustainable Colombia Fund) that specifically addresses the areas affected by the civil conflict Colombia faced until 2016, and to be utilized for the adaptation of costal erosion, conservation of water source and ecosystem protection which are actions related to the country's climate change international

commitments (Government of Colombia, 2016, Art. 223; BBC, 2018). Currently, the estimated revenues could reach 220 USD million per year (Carbon Trust et al., 2018). Given the recent introduction of the tax, impacts have not been thoroughly studied and only limited infor-mation is available.

CHALLENGES AND RESPONSES FROM STAKEHOLDERS

When the carbon tax was proposed in 2016, the response of affected sectors was substantially negative, as leaders from different industrial groups expressed their concerns on this additional cost for the final consumers (El País, 2016). Over time, other concerns have been raised as well.

Environmental experts have expressed concerns that the carbon tax allowance of offsets generated by projects out-side national territory (CO2CERO, 2017) as these offsets might be reducing the expected tax revenues while not sup-porting the implementation of mitigation activities in Colombia. However projects implemented abroad were only accepted until December 2017 and further legislation and linkage to the National Emission Registry is still being dis-cussed. This is however appearing as a challenge of the implementation of the tax. The exemption of coal could also result in a negative incentive to its use (Carbon Trust, et. al., 2018).

In early 2018, an article published by El Espectador (Cavelier, 2018) raised concerns on the clarity of the actual final destination of the revenues generated by the tax. The author calls lack of inclusion of the Ministry of Environment and Sustainable Development (Ministerio de Ambiente y Desarrollo Sostenible (MADS)) in its governance, managed by the Ministry of Finance and Public Credit, to identify the actual uses of the resources generated by the carbon tax. After public controversy, also MADS was involved in the governance of the Sustainable Colombia Fund. However, recent changes to the destination of the funds at the end of June 2018 raised concerns on their utilization for environ-mental activities. The new receiver of funds is now the Colombia in Peace Fund (Fondo Colombia en Paz) and the new Law states that only part of the revenues will go to environment related activities such as fighting costal erosion and deforestation, water resources conservation and ecosystems' protection, and strengthening of the National Environ-mental System (Sistema Nacional Ambiental). The concerns are related with the majority of the revenues going to the implementation of the Peace Agreement as it seen by various experts as a diversion of revenues to the main original objective of the tax, which was to support environmental protection activities (Correa, 2018; El Tiempo, 2018).

5.6

MEXICO

OBJECTIVES AND BACKGROUND

Mexico's commitment towards climate change is described in its NDC submitted to the UNFCCC in 2016, where the country aims to reduce its emissions 22% below 2000 levels by 2030 and 50% by 2050. The NDC also mentions the carbon tax as one of the instruments to support its national climate change policy for mitigation (Government of Mex-ico, 2016). The country's overall climate policy however was introduced before the ratification of the Paris Agreement, with the introduction in 2012 with the General Law of Climate Change (GLCC) (Government of Mexico, 2012) which is the first document to identify strategies to achieve GHG emission reductions. The GLCC first introduced the carbon tax as a possible mechanism to achieve the mitigation target of the country.

Thus, in 2013, inside a broad fiscal reform, a carbon tax was proposed for all fossil fuels with the goal of reducing GHG emissions. The Mexican carbon tax entered into force in 2014 as part of the Tax for Production and Services (Impuesto Especial sobre Producción y Servicios (IEPS))

TAX DESIGN

The tax is levied on gasoline, petroleum coke, carbon coke, propane, butane, kerosene and other jet fuels, fuel oil, and coal. It is applicable to producers and importers of fossil fuels (coal and oil) (MEXICO2, 2017; Government of Mexi-co, 2017). Natural gas was not included under the tax as it is considered a "clean" fossil fuel. This exemption was mainly brought in to accept the request from the private sector and to boost political acceptance of the tax (SHCP, 2014). Moreover, the tax is not applicable to oil when it is used for manufacturing. The initiative presented by the pres-ident, Enrique Peña Nieto, covered all fossil fuels and proposed a tax of 70.68 MXN$/$tCO_2$e. However, the final pro-posal for the tax approved by Congress in 2014 set a tax rate of 39.80 MXN$/$tCO_2$e (around 3.5 USD). It now reached 43.77 MXN$/ tCO2e (2.3 USD at current exchange rates). The initial tax rate was based on the average price per tCO_2 in the European, New Zealand and California in the period from October 2012 to June 2013, resulting in a rate of 5.7 USD/tCO. Earmarking, even if possible, is not favoured in the country (PMR, 2017b), hence the revenues are allocated to the national budget (Carl and Fedor, 2016).

The tax rate was capped at 3% of the sale price of the fuel and calculated as function of the emission generated by unit of the consumed fuel (see Table 27). The tax covers around 40% of Mexico's GHG emissions. Non-compliant entities are sanctioned with a fine.

Table 27: The evolution of the carbon tax (2014 - 2017)

TAX				
FOSSIL FUEL	**Initial Proposal**	**Final Proposal**	**Difference (%)**	**2017**
Natural Gas	11.94 ¢/m3	0		0
Propane	10.50 ¢/l	5.91 ¢/l	43.7	6.50 ¢/l
Butane	12.86 ¢/l	7.76 ¢/l	39.7	8.42 ¢/l
Gas (Regular & Premium)	16.21 ¢/l	10.38 ¢/l	36	11.41 ¢/l
Jet Fuel	16.21 ¢/l	10.38 ¢/l	36	11.41 ¢/l
Turbosine & other Kerosene	18.71 ¢/l	12.40 ¢/l	33.7	13.64 ¢/l
Diesel	19.17 ¢/l	12.59 ¢/l	34.3	13.84 ¢/l
Fuel Oil (Heavy & Regular 15)	20.74 ¢/l	13.45 ¢/l	35.1	14.78 ¢/l
Oil Coke	MXN$ 189.85/ton	MXN$ 15.60/ton	91.8	MXN$ 17.56/ton
Mineral Carbon	MXN$ 178.33/ton	MXN$ 27.54/ton	84.6	MXN$ 30.28/ton

Source: Carbon Trust et al., 2018

Offsetting is allowed and the tax can be paid with the use of carbon offset credits generated from CDM projects. Par-ties can use CERs to reduce their overall tax bill by an amount equivalent to the market value of each CER at the moment of payment. Nevertheless, the clarity of the rules to utilize these certificates is yet to be fully developed and defined in the Law (Climate Action Reserve, 2015; MEXICO2, 2017).

IMPACT OF THE TAX

The emission reductions triggered by the carbon tax are estimated at around 1.6 Mt CO_2e per year (Centro Mario Mo-lina, 2014). This reduction is less than the 5.83 Mt CO_2e per year originally estimated with the initial tax proposal. The implementation of this fiscal reform would have contributed to an estimated reduction of 5.8 MtCO_2e for 2014 and an income representing 1.8% of the tax revenues of Federal Government in 2012 (26.7 billion MXN$) (Centro Mario Molina, 2014).

The exemption of natural gas and the change in the rate caused a significant reduction of the deliverables initially thought by the Government. Nevertheless, the carbon tax revenues generated in 2014 and 2015 were of around 17 billion MX$(approximately 950 million USD). The revenues are collected by the Mexican revenue collection agency, the Servicio de Administracion Tributaria (SAT), and are directly allocated in the state's budget.

CHALLENGES AND RESPONSES FROM STAKEHOLDERS

Support from domestic think tanks and NGOs was important in media and policy discussions to approve the fiscal reform and specifically the carbon tax in Mexico (SHCP, 2014). Nevertheless the influence of the private sector and the increasing market role of natural gas contributed to producing a less aggressive law (SEMARNAT, 2017). Private sector actively opposed the tax, especially heavy industries, claiming lack of viable low carbon alternatives and de-scribing the tax as a measure to increase revenues with no real impact on emission reductions (PMR, 2017), The low rate resulting of private sector influence has caused criticism among experts on the low rate which is insufficient to effectively drive investment in less carbon intensive alternatives and hence providing only a limited contribution in terms of GHG emission reductions, despite Mexico being the country in Latin America with the highest emissions (MEXICO2, 2017). A study from OECD (2017) on Mexico's economy found that taxes on emissions are still too low to be effective. The carbon tax since its introduction only accounted for no more than 0.5% of the total tax revenues, suggesting that both the tax rate and the tax base should be expanded to provide a strong signal on the price of carbon to the market.

The following table summarizes the main elements of the above case studies.

ITEM/ COUNTRY	SINGAPORE	JAPAN	UNITED KING-DOM	FRANCE	COLOMBIA	MEXICO
Taxable objects and coverage	Facilities emitting ≥ 25,000 t GHG emissions per year Around 80% of Singapore's emissions	Fossil fuels (crude oil, petro-leum, natural gas and coal) Around 70% of Japan's emissions	Electricity generation plants Around 25% of United Kingdom's emissions (excluding Northern Ireland)	Fossil fuels (Gas, heating oil, coal products, transportation fuels)	Fossil fuels used for energy purposes and for combustion. Around 16% of Colom-bia's emissions	Fossil fuels (gasoline, petroleum coke, carbon coke, propane, butane, kerosene and other jet fuels, fuel oil, and coal) Around 40% of Mexi-co's emissions
Exemptions	Applies to all industry sectors. Emissions from the use of fossil fuel for transport already have excise duties and will not be affected by the tax	Coal used for electricity generation in Okinawa; volatile oil used for the production of petrochemical products; domestic oil asphalt; oils used for the agriculture, forestry, and fisheries industries; fuel for domestic flights; oils used by railways; oils used for domestic cargo and passenger ships; and imported coal used for the production of caustic soda salt	Small plants (<2MW), stand-by generators, use of coal slurry, electricity produced and used on site at CHP stations; tax does not apply in Northern Ireland	Energy intensive industries covered by EU ETS; sectors with high risk of carbon leakage; vulnerable sectors (truck and taxi drivers, farmers, etc.)	Coal and natural gas for power generation; gasoline-blend alcohols and biofuels	Natural gas; oil when used for manufacturing products
Entities liable	Power generation plants and other large industrial facilities (approx. 30–40 companies)	Both companies and primary users of fossil fuels. Tax is imposed on fuel when it is imported or exploited.	Electricity generators	Businesses and households	Producers and importers of fossil fuels	Producers and importers of fossil fuels
Tax-collector	Taxable facilities buy carbon credits from the NEA and use them to pay the carbon tax Revenues not ear-marked, but specific used are possible	Ministry of Finance Revenues are to be used to promote low-carbon tech-nologies, EE improvements, and Re development	UK Treasury Revenues are allocated into national budget	Ministry of Public Accounts (Ministère de l'Action et des Comptes Publics, Douane) Designed as a revenue-neutral tax	The National Directorate of Taxes of Colombia (DIAN) Revenues are earmarked for specific activities	Servicio de Administración Tributaria (SAT) Revenues are allocated into national budget
Tax calculation method	CO_2 content (emission factor) of each fuel multiplied by a tax rate per tCO_2)	CO_2 content (emission factor) of each fuel multiplied by a tax rate per tCO_2	CPF consists of EU Emission Allowances (EUA) and Carbon Price Support (CPS) rates	CO_2 content (emission fac-tor) of each fuel multiplied by a tax rate per tCO_2. Tax rate takes into account social cost of carbon	CO_2 content (emission factor) of each fuel multiplied by a tax rate per tCO_2	CO_2 content (emission factor) of each fuel multiplied by a tax rate per tCO_2 Initial proposal based the tax rate on an av-erage of major carbon markets
Tax rates	2019 to 2023: 3.8 USD/ tCO_2e By 2030: 7.3-10.9 USD/ tCO_2	2.54 USD/tCO_2	In 2013, CPF was set to 20.6USD/t CO_2. and supposed to increase up to 39.5 USD/t CO_2 in 2020 and 92 USD/t CO_2 in 2030 However, since 2014 and until at least 2019/2020 it is set to 23.7 USD/t CO_2	Introduced at 8.6 USD/ tCO_2e in 2014, increasing to 51.9 USD/t CO_2 in 2018 and further to 76.13 USD/t CO_2 in 2020 (long term target: 116.4 USD in 2030)	Fixed at 5 USD per tCO_2; set to increase annually by 1% plus inflation until price reaches approx. 10 USD/tCO_2	2.3 USD/ tCO_2; capped at 3% of the sale price of the fuel
Tax introduction	Announced in 2017 as part of the Climate Action Plan; implemented in 2019; relatively low level of initial rate in order to balance environmental needs and business concerns; plan to progressively increase the tax rate	Tax was introduced in 2012 (effective from October 2012) as part of the FY2012 Tax Reform; tax rate in-creased gradually over 3 and a half years; since April 2016, the tax rate has been frozen; no plans for further increases; earlier proposals were called off, inter alia, due to opposition from the Japan Business Federation (Keidanren); Government considered relevant opinions from the public that have been voiced over time	Through legislative decision in the budget of 2011, effective as of 2013	Through legislative decision in the budget for 2014, effective as of 2014; introduced as carbon component of taxes on energy consumption; earlier attempts to introduce a carbon tax failed; experts and stakeholders were consulted	Introduced in 2016 (Law 1819); implemented since 2017	Part of the tax reform proposed in 2013; implemented in 2014 and included as a part the Tax for Production and Services
Impacts	Not yet implemented	Tax is expected to contribute 17.5% in 2020 and 9.1% in 2030 to the CO_2 reduction target of Japan; only small effect on GDP and employment; additional household burden estimated at 1,200 ¥ per year (approx. 10 USD)	1 billion £ revenues from CPF in 2016; burden on households to rise from 14 £ in 2014 to 30 £ in 2030; cost of compensation measures for energy intensive industries around 500 million £/year	CO_2 emission reduction in transport and building sector: around 1 million t CO_2 and 2 million t CO_2 respectively; tax revenues since introduction: 2.3 billion € in 2015, 3.8 billion € in 2016, 6 billion in 2017 € (estimated); expected increase in fuel prices between 2017 and 2030: 0.18 €/l for heating oil, 0.16 €/l for petrol and 0.17 €/l for diesel	Revenues of 220 million USD per year	Revenues of 950 million USD (2014-2015), accounts for max. 0.5% of total tax revenues; emissions reduction of 1.6 Mt CO_2 per year
Challenges and stakeholders responses to the tax	The public, members of the parliament, academics and even companies have questioned the level of ambition, calling for a higher tax rate over time	Industry groups still oppose the tax; opposition was also a consequence of the 2011 earthquake and related discussions on the future of nuclear power and energy security	No strong oppositions from power companies but call for clarity on price development; concerns over competitiveness and carbon leakage; uncertainty over price stability related to the pre-notification period of three years and Brexit; controversy over policy design alternatives	In response to public opposition to tax in 2009, public expenditure program for low-income households was adopted; other points of contention: increasing tax rates and complementarity with EU ETS	Concerns on increased costs for consumers; concerns on suitability of offsets from projects implemented abroad; regulation is under revi-sion; lack of clarity on revenues use, currently being addressed	Private sector influenced the decision of not including natural gas; Low rate of the tax with limited impacts on revenues

36 Current exchange rate used for conversion

SECTION

06

CONCLUSIONS AND RECOMMENDATIONS

The existing Environmental Tax in Viet Nam is setting a price on emissions associated with fossil fuel use, although not in a direct manner. It is not labelled as a carbon tax and differs by several orders of magnitude between fuels, however it is contributing to increasing the cost of using fossil fuels and thus stimulating investments into energy efficiency and renewable energy which can boost the domestic mitigation efforts. A direct carbon tax on GHG emissions, as discussed above, would require the introduction of a brand new tax within the current fiscal framework: a viable option would be the increase of the tax rate for fossil fuels under the Environmental Tax and an alignment across fuels according to carbon content.

Levying a carbon tax of 6 USD/t CO2 on fossil fuel use and process emissions in all sectors including cement produc-tion could generate annual revenues rising from 1.6 billion USD in 2020 to 3.6 billion USD in 2030.

Several elements need to be considered carefully from a very early stage in order to avoid potential distortive effects and negative impacts on society and economy. A set of recommendations for the design of the carbon tax/fee is pro-vided below:

• **Gain political support.** It is critical to gain strong political/institutional support to push for a tax increase or introduction of a new carbon tax. As shown by the recently rejected proposal for an increase of the Environ-mental Tax on petroleum product, raising existing tax rates (or introducing a brand new tax) is likely to be op-posed on political grounds due to fears on the potential impacts on the economy and society. It is crucial to identify key ministries and institutions and liaise with them to reduce opposition to an increased fuel tax rate (or introduction of a new carbon tax). Highlighting associated benefits (environmental and economic) as well as measures to reduce and control unwanted effects of the tax is necessary to gain support. Provision of measures to reduce impacts on economy and society such as increase in tariffs should be considered; for in-stance redistribution of revenues to the general population (as in the case of Switzerland) or to provide sup-port to business negatively affected (as in the case of the United Kingdom). Providing clarity on the revenue uses and minimizing identified negative effect is key to gain political support, as proved by the case of France or Colombia.

• **Stakeholder engagement.** A transparent and effective awareness raising campaign to outreach different stakeholders (public and private, including business and households) is necessary to gain support at all levels and reduce opposition. The example of France, where the Government failed to communicate properly to the general public the benefits of the carbon tax, shows that failing to communicate properly the relevance and benefit of the carbon tax/fee can result in a large number of opponents. The business community is very of-ten concerned about competitiveness, as shown in most of the cases presented in this report: communication by the Government on supporting measures (or exemption) as well as utilization of solid modelling data can be a solution to win consensus. Furthermore, establishing connections with those representatives of the busi-ness community that are in favor of a carbon tax can serve to expand consensus and increase the outreach effectiveness. Another measure that can help gaining support especially from business sector is to ensure po-litical certainty on the carbon tax and it evolution over time. Companies, as shown by the case of UK, need clear fiscal framework for a sufficiently long time horizon in order to plan investments and evaluate impacts on business profitability. Lack of this stability in the taxation regime would raise opposition: a carbon tax should be a component of a long-term strategy of the country on carbon pricing, to increase confidence of taxpayers and allow companies to plan for long-term investments in low-carbon alternatives.

• **Alignment with NDC targets.** A newly introduced carbon tax can be considered as a new effort of the coun-try towards the achievement of the NDC targets. A carbon tax should be considered as an element of a more comprehensive domestic climate policy: the mitigation targets under the NDC cannot be achieved through the implementation of a carbon tax only, but it will require the use of other policy instrument to support mitiga-tion and adaptation, especially for stimulating and incentivize private investments. Thus, accurate monitoring and quantification of the environmental benefits generated by the tax is necessary to track and communicate to the international community the climate change mitigation benefits that have been delivered. Overall, as also occurring in the six countries assessed here, it is important that the carbon tax/fee is linked to the existing policy priorities at national level, to ensure consistency and contributing to the achievement of NDC targets.

• **Consideration of transaction costs and capacity needs.** Selection of a carbon tax or fee, or a decision on the revision of the existing tax rates will have to consider also the implication on transaction costs and also on the capacity needs at both institutional and company level. A new tax will imply high transaction costs for the design and set up of the appropriate infrastructure for the implementation of the tax (e.g. modelling of the tax rates and of the associated environmental and economic impacts, MRV of the actual impacts, structure for the tax collection, etc.). Also, capacity needs in terms of MRV (both at specific plant level and for the overall company operations), expertise on management of the tax at institutional level, management of pilot activi-ties, capacity building and training, shall be considered as they can affect the support to the selected option both at institutional level and at private company level. Capacity for MRV should be considered also for ex-post activities to accurately evaluate the impact of the tax to be able to implement corrective actions where needed.

• **International finance.** Substantial preparatory work will be required for the introduction of a new carbon tax. Detailed modelling of the potential impacts, both in terms of GHG emission reductions and of economic ef-fects such as variations in the price of energy, potential effects on employment, will be needed. Other activi-ties can be supported through international resources, such as strengthening institutional capacity to improve management of the tax and of its extension over time to a broader number of sectors/products, to ensure ap-propriate MRV procedures and requirements are in place and enforced to guarantee the environmental integ-rity of the mechanisms and to accurately keep track of the mitigation benefits achieved by the carbon tax. If offsets are allowed, appropriate registries for tracking the use of the carbon credits and avoid double counting should be established.

• **Phased introduction.** Taxpayers under a brand new carbon tax will need some time for adjust industrial and consumption policies to factor in the increased cost for GHG emissions. It is recommended that the new tax is introduced progressively: initially one sector can be covered, with the aim of expanding the scope to cover other relevant sectors in terms of GHG emissions. Also, the tax rate should be set at a low level in the initial phase, and increase it over time. This is confirmed by the information from the case studies presented in Sec-tion 5, where in all the cases the tax rate was expected to increase over time, with different levels of intensity and different final rate levels. It would be however necessary to avoid situations where the tax rate keeps staying too low with only very limited impacts such as in the case of Mexico. Similarly, depending on the fi-nal design, a broader set of GHG gases beyond CO2 can be covered under the new tax. Exemptions and thresholds should be considered to avoid negative impacts on disadvantages communities and individuals

• **Pilot Activities.** In order to generate sufficient expertise and confidence in the taxpayers, in the case of newly introduced tax, it is suggested to introduce the carbon tax through a step-by-step process to test the function-ing, evaluate its impacts, and determine optimal measures to reduce or offset any significant negative effects of such tax before it is expanded. Whereas potential introduction of a carbon tax through adjustment of the Environmental Protection Tax is a relatively straightforward process that does not require extensive testing – only a well-planned and sequenced implementation, other options of carbon tax presented at this paper (e.g. new carbon tax or carbon fee) would require pilot activities and trial periods that have accompanied the in-troduction of different carbon pricing mechanisms in many countries.

• **Contribution to achievement of the Sustainable Development Goals (SDGs).** Co-benefits for promotion of sustainable development as defined by set of nationally-adapted SDGs in Viet Nam can provide a strong con-tribution for gaining support from institutions and from the public opinion. Some of the impacts can leverage strong support: positive impacts on the environment and on the public health through reduction of the negative impacts of fossil fuel use; lack of negative impacts on the employment. Support to cleaner technologies and potential to stimulate new jobs are examples of co-benefits that can generate strong support.

• **Evolution of the Paris Agreement.** The evolution of the negotiation on the Paris Agreement, such as operational rules for Article 6, the intensifying NDC process and definition of how domestic effort should be ac-counted for, are all elements that must be monitored to understand how the domestic carbon tax should be designed and how it will interact with them.

ANNEX I: NATURAL RESOURCE TAX AND ENVIRONMENTAL PROTECTION FEE FOR EXPLOITATION OF MINERALS IN VIET NAM

1. NATURAL RESOURCE TAXES

The natural resources tax is payable by industries exploiting Viet Nam's natural resources such as petroleum, minerals, forest products, seafood and natural water. The tax rates vary depending on the natural resources being exploited and are applied to the production output at a specified taxable value per unit. Various methods are available for the calcu-lation of the taxable value of the resources, including cases where the commercial value of the resources cannot be determined.

From 2011-2014, the revenue from Natural Resources Tax contributed with a relatively stable source of income to the State budget, with the average annual amount of more than 39 trillion VND (about 1.72 billion USD) accounting for 4.9% of total income to the budget. The table below provides the revenue from Natural Resources Tax from 2011-2014.

Table 28: Revenue from Natural Resources Tax, 2011-2014 (Billion VND and Million USD)

NO.	ITEM	YEAR 2011	YEAR 2012	YEAR 2013	YEAR 2014	AVERAGE 2011-2014
I	**Total revenue to the State budget (VND)**	**721,804**	**754,572**	**828,348**	**863,520**	**792,061**
	USD	**31.79**	**33.24**	**36.49**	**38**	**34.89**
II	**Total revenue from the Natural Resource Tax (VND)**	**39,299**	**41,312**	**37,875**	**38,048**	**39,134**
	USD	**1.73**	**1.81**	**1.66**	**1.67**	**1.72**
1	Revenue from petroleum and natural gas, coal gas (VND)	32,910	34,126	29,800	27,256	31,023
	USD	1.44	1.5	1.3	1.2	1.37
2	Revenue from other resources (VND)	6,389	7,186	8,075	10,792	6,788
	USD	0.029	0.032	0.35	0.047	0.03
III	**Ratio of revenue from Natural Resource Tax/ Total revenue to the State budget**	**5.4%**	**5.5%**	**4.6%**	**4.4%**	**4.9%**

Source: Hang, 2015

100% of the revenue from Natural Resources Tax (except for petroleum) is allocated to local government budget. This tax therefore constitutes a stable source of revenue also at local level, which can be invested in restoration of the environment in the areas where the natural resources are exploited and also to ensure social benefits reducing the nega-tive impacts of natural resources exploitation on local communities. However, currently in most localities in Viet Nam, the revenue from Natural Resources Tax is distributed together with other sources of revenue to the local budget and thus is cannot be earmarked specifically for restoration of the environment where the natural resources are exploited.

2. ENVIRONMENTAL PROTECTION FEE FOR EXPLOITATION OF MINERALS

The range of environmental protection fee for exploitation of minerals, as provided in Decree No. 164/2016/ND-CP (Government, 2016b) is presented below:

Table 29: Range of environmental protection fees for exploitation of minerals

NO.	TYPE OF MINERALS	UNIT	FEE (VND)	FEE (USD)
I	**METALLIC ORES**			
1	Iron ore	Tonne	40,000- 60,000	1.76-2.64
2	Manganese ore	Tonne	30,000- 50,000	1.32- 2.20
3	Titanium ore	Tonne	50,000- 70,000	2.20- 3.08
4	Gold ore	Tonne	180,000- 270,000	7.90- 11.90
5	Rare earth ore	Tonne	40,000- 60,000	1.76-2.64
6	Platinum ore	Tonne	180,000- 270,000	7.90- 11.90
7	Silver ore, tin ore	Tonne	180,000- 270,000	7.90- 11.90
8	Wolfram ore, antimony ore	Tonne	30,000- 50,000	1.32- 2.20
9	Lead ore, zinc ore	Tonne	180,000- 270,000	9.0- 13.5
10	Aluminum ore, bauxite ore	Tonne	10,000- 30,000	0.44- 1.32
11	Copper ore, nickel ore	Tonne	35,000- 60,000	1.54- 2.64
12	Chromite ore	Tonne	40,000- 60,000	1.76-2.64
13	Cobalt ore, molybdenum ore, mercury ore, magnesium ore and vanadium ore	Tonne	180,000- 270,000	7.90- 11.90
14	Other metal ores	Tonne	20,000- 30,000	0.88- 1.32
II	**NON-METALLIC ORES**			
1	Stone slabs, fine arts stone (granite, gabbro, marble, basalt)	m^3	50,000- 70,000	2.20- 3.08
2	Block stones	m^3	60,000- 90,000	2.64- 3.96
3	Precious stone ores: diamond, ruby, sapphire, emerald, alexandrite, precious black opal, agate, rhodonite, pyrope, beryl, spinel, topaz, violet, yellow and orange crystal quartz, chrysolite, precious white and scarlet opal, turquoise, nephrite	Tonne	50,000- 70,000	2.20- 3.08
4	Gravel, pebble, grit	m^3	4000- 6000	0.18-0.26
5	Stones for use as normal building materials	m^3	1000- 5000	0.04- 0.22
6	Limestone and argillite for cement production and other stones for production of cement additives (laterite, pozzolana), industrial minerals (barite, fluorite, bentonite and others)	Tonne	1000- 3000	0.04-0.13
7	Yellow sand	m^3	3000- 5000	0.13- 0.22
8	White sand	m^3	5000- 7000	0.22- 0.31
9	Sand of other types	m^3	2000- 4000	0.09- 0.18
10	Soil extracted for levelling and construction of works	m^3	1000- 2000	0.04- 0.09
11	Clay for production of bricks and tiles	m^3	1500- 2000	0.07- 0.09
12	Soil type for making gypsum	m^3	2000- 3000	0.09- 0.13
13	Kaolin, feldspar	m^3	5000- 7000	0.22- 0.31
14	Other soil types	m^3	1000- 2000	0.04- 0.08

NO.	TYPE OF MINERALS	UNIT	FEE (VND)	FEE (USD)
15	Fire clay	Tonne	20,000- 30,000	0.88- 1.32
16	Dolomite, quartzite, talc, diatomite	Tonne	20,000- 30,000	0.88- 1.32
17	Mica, technical quartz	Tonne	20,000- 30,000	0.88- 1.32
18	Pyrite, phosphorite	Tonne	20,000- 30,000	0.88- 1.32
19	Natural mineral water	m^3	2000- 3000	0.09- 013
20	Apatite, serpentine, graphite, sericite	Tonne	3000- 5000	0.13-0.22
21	Coal of all types	Tonne	6000- 10,000	0.26-0.44
22	Other non-metallic minerals	Tonne	20,000- 30,000	0.88- 1.32

Source: GoV, 2016b

The fee range is defined based on the value of the exploited minerals, not yet taking into account the cost required for remedy for the pollution resulted from mineral exploitation. The specific fee for each locality will be decided by the provincial People's Council of each province to be suitable with the socio-economic development conditions of each locality.

Regarding revenue distribution, 100% of the revenue from Environmental Protection Fee from exploitation of crude oil, natural gas and coal gas will be allocated to the national budget. Revenues of the Environmental Protection Fee from exploitation of other minerals is fully allocated to the local budget. In the local budget, revenue from the fee collection is merged with other sources but not earmarked for environmental protection services, in fact, this revenue is also used for other purposes as building schools, medical establishment, etc.

The structure of the revenues from the collection of environmental protection fee for mineral exploitation over the past years is provided in the figure below.

Figure 10: Revenue from collection of environmental protection fee for mineral exploitation, 2012-2014

Source: CIGG, 2015

The revenue from collection of environmental protection fee from mineral exploitation in some localities is provided in the table below

Table 30: Revenue from collection of environmental protection fee from mineral exploitation in some provinces (2013)

NO.	PROVINCE	REVENUE FROM COLLECTION OF ENVIRONMENTAL PROTECTION FEE (BILLION VND)	REVENUE FROM COLLECTION OF ENVIRONMENTAL PROTECTION FEE (MILLION USD)	TOTAL REVENUE (BILLION VND)	TOTAL REVENUE (MILLION USD)	SHARE OF REVENUE FROM ENVIRONMENTAL PROTECTION FEE IN TOTAL REVENUE (%)
1	Yen Bai	38.7	1.7	884	38.94	4.4%
2	Ninh Thuan	6	0.26	1,203	52.99	0.5%
3	Phu Yen	5.2	0.23	1,402	61.76	0.4%
4	Cao Bang	51.4	2.26	832	36.65	6.2%
5	Tuyen Quang	26.9	1.19	970	42.73	2.8%
6	Vinh Phuc	10.3	0.45	15,883	700	0.1%
7	Ha Noi	4.8	0.21	161,475	7,113	0.0%
8	Ben Tre	2.9	0.13	1,460	64.31	0.2%
9	Hung Yen	1.6	0.07	5,422	239	0.0%
10	Bac Giang	10.5	0.46	2,180	96	0.5%
11	Bac Ninh	0.16	0.01	10,897	4,800	0.0%
12	Lang Son	14.5	0.64	3,268	1,440	0.4%
13	Quang Ninh	415	18.28	33,590	1,479	1.2%

Source: CIGG, 2015 & MOF, 2013

ANNEX II: KEY CHARACTERISTICS OF CARBON TAXES IN SELECTED COUNTRIES AND TERRITORIES

COUNTRY/ REGION	USE OF THE REVENUES
British Columbia (Canada)	**Green subsidies: 0 %.** No new environmental, renewable energy, energy efficiency, or other clean technology spending is funded by carbon tax revenues. **Other earmarks: 21–42 %.** The carbon tax shift has near-universal coverage and a straightforward approach to revenue use. Some earmarks, however, have been introduced over the years as particularly impacted groups successfully campaign for relief from the tax. These groups or focus areas do not receive exemption from the tax, nor are they beneficiaries of new program spending, but they do receive targeted tax credits. A few have become significant: FY2013/14 examples include a “children’s fitness and arts” tax credit of 7.2m USD (CAD 8m), a “small business venture capital” tax credit of 2.7m USD (CAD 3m), and seemingly unrelated business subsector tax credits including an “interactive digital media” business tax credit of 57m USD (CAD 63m) and provincial film industry tax credits of almost 141m USD (CAD 156 m). Apparently at least some of these targeted tax ex-penditures existed under separate budgetary authority before being funded by the carbon tax. Two other types of direct payments or targeted tax cuts have existed in the carbon tax program since its outset but could be considered earmarks. Residents in the rural northern parts of the province, who require additional fuel use to heat their homes in the winter, each year receive a direct stipend of CAD 200 (182 USD; for a total annual cost of 63m USD, CAD 69m). Low-income residents also receive targeted tax cuts totalling 176m USD (CAD 194m) each year. **General funds: 0 %.** No specific funding is known to be identified from the carbon tax revenues for administrative overhead or other supplements to the provincial general fund. **Revenue Recycling: 102 %.** More revenues than are actually collected under the tax are recycled under the overall carbon tax shift program to individuals and business through a combination of direct payments, reductions in marginal tax rates, and other targeted tax credits. In total, individuals were set to receive 473m USD (CAD 522m) in payments and tax benefits for FY2013/14. The most significant broad-based revenue recycling measure in addition to the more narrowly targeted measures described above include a 5% reduction in the first two tiers of per-sonal income-tax rate. Businesses, meanwhile, receive their own broad tax-rate cuts, including a small business income-tax-rate cut from 4.5 % to 2.5 %, industrial and farm property tax credits, and a cut in the general corporate income-tax rate from 12 % to 10 % (this was partially reversed, however, in 2013, when the corporate income-tax rate was raised back to 11 %). These business tax changes totalled 643m USD (CAD 710m) in FY2013/14.
Costa Rica	The Costa Rica government received tax revenues of 200 m USD per year from a levy of 3.5 % of the market value of individual fossil fuels, cov-ering all fossil fuel use. Though referred to as a “carbon tax,” this price-based tax, which has been in place since 1997, does not appear to be tied to the carbon content of fuels and so is in function a more conventional energy sales tax. Thirty-three % of tax revenues were originally earmarked for use by Costa Rica’s State Environmental Services Program, which primarily funds forest conservation programs. After years of consistent un-derpayment by the central government, however, this share was reduced to 3.5 % of “carbon tax” revenues in 2001. The government now retains the remaining “carbon tax” funds for general budgetary use.

COUNTRY/ REGION	USE OF THE REVENUES
Denmark	**Green subsidies: 5–10 %.** Of the 256m USD in additional revenues gained from increasing the carbon dioxide tax in the 1996 Green Tax Package (see below; revenue estimates are as of the year 2000), 59m USD were directed toward providing business energy efficiency subsidies of up to 30 % of private investment costs. This was the most significant revenue earmark for green spending established over the course of the Danish carbon tax. **Other earmarks: 0 %.** Energy-intensive industries benefit from significantly reduced carbon tax rates, which is sometimes referred to as a "carbon tax rebate." Only the reduced tax rate is counted here in the above estimate of total tax revenue, and so the reduction is not considered an industry earmark. **General funds: 45–50 %.** Most of the carbon tax revenues contribute toward the government's general budget. Because the tax was developed with the aim of reducing the government's overall reliance on labour taxes, however, we ascribe roughly half of the revenues to each category (see below). The Danish Energy Authority estimated that as 2000, about 1.5 % of carbon tax revenues were needed for public administration costs, alongside additional private sector administration costs estimated at 1–2 % of the total carbon tax burden. **Revenue Recycling: 45 %.** Both personal income tax and employer social security contributions have been reduced in stages over carbon tax implementation period. The first stage of the carbon tax (1992–93) came alongside significant reductions in labour taxes and so revenues can be considered to be fully recycled. Expansion in carbon tax revenues from the second stage Green Tax Package reforms (1996) was also largely used to offset new labour tax cuts—278 m USD in new revenues were directed toward reductions in the income tax and tax on self-employment as of the year 2000—but some revenues were returned to industry as subsidies (see above). The third-stage reforms (1998), which increased the carbon tax rate, were also returned to the economy. Though reducing these other taxes was stated as an original goal of expanding carbon and energy taxes, carbon tax revenues do not directly fund other labour tax reductions. Labour tax reductions have generally exceeded any new carbon tax revenues generated.
Finland	**Green subsidies: 0 %.** No known earmarks to subsidize new green spending. **Other earmarks: 0 %.** No known unrelated earmarks. **General funds: 50 %.** Finnish carbon tax revenues are transferred directly into government general funds. **Revenue Recycling: 50 %.** Similar to many other Nordic countries with early carbon taxes, Finland in 1997 reduced personal national and local income taxed and employer social security contributions alongside the carbon tax implementation period, but at levels around five times the new carbon tax revenues. Though these tax reductions were not explicitly tied to the carbon tax, a representative share of revenues is ascribed here as a tax shift.

COUNTRY/ REGION	USE OF THE REVENUES
France	**Green subsidies: 38–100 %.** 100 % of 2014 French carbon tax revenues were set to be spent on the country's "green energy transition plans." The share of green spending is set to decline rapidly over time, however, to 44 % of 2015 revenues and 38 % of anticipated 2016 revenues. Meanwhile, an existing French tax break for the production of biofuels was eliminated alongside introduction of the carbon tax. **Other earmarks: 0 %.** No known unrelated earmarks. **General funds: 0–62 %.** As the share of carbon tax revenues earmarked for green subsidies declines over time, the remaining (and growing) revenues will presumably be used to support other government expenditures—no other concrete spending plans are known to have been announced. **Revenue Recycling: 0 %.** Though not included in the original policy plans, a new expenditure program for carbon tax revenue was announced in March 2014, a month be-fore launch, to compensate low-income households for increases in natural gas utility rates due to the inclusion of heating fuels under the carbon tax beginning in 2015. This will increase the share of revenue recycling from the French carbon tax, as enacted.
Iceland	**Green subsidies: 0 %.** No known earmarks to subsidize new green spending. **Other earmarks: 0 %.** No known unrelated earmarks. **General funds: 100 %.** The Treasury administers Iceland's carbon-tax revenues for general expenditures. The tax was instituted as a special revenue measure following government deficits realized during the 2008 global financial crisis. **Revenue Recycling: 0 %.** There are no known revenue-recycling measures or tax swaps associated with Iceland's carbon tax.
Ireland	**Green subsidies: 12.5 %.** Of carbon tax revenues, 66m USD (EUR 50m) are earmarked annually to fund building and low-income resident energy efficiency measures, in-cluding increasing the budgets of the "Warmer Homes" and "Home Energy Savings" energy efficiency retrofit subsidy programs and placing them under a newly formed "National Energy Retrofit Program". **Other earmarks: 0 %.** No other known earmarks (apart from low-income energy efficiency subsidies). **General funds: 87.5 %.** Remaining revenues are used to "support the civil service." The tax was instituted following the 2008 global financial crisis in part to reduce bal-looning government deficits without raising income taxes. There is no explicit legislative link between carbon tax revenues and other specific spend-ing programs. **Revenue Recycling: 0 %.** Direct revenue recycling under the Irish carbon tax is limited. The country support the "National Fuel Allowance Scheme" with a weekly cash pay-ment to low- and fixed-income households, whose rate was about EUR 20 (25.5 USD) in 2013 and issued for only the colder portion of the year. There is no formal earmarking of carbon tax revenues for this subsidy, whose overall demand is driven largely by employment and macroeconom-ic conditions, though its continued budgetary support is arguably politically linked to the existence of the carbon tax. This subsidy totalled 280m USD (EUR 211m) in 2013.

COUNTRY/ REGION	USE OF THE REVENUES
Japan	**Green subsidies: 100 %.** Revenues are earmarked for spending on the promotion of "innovative domestic low-carbon technology," including lithium ion batteries, energy-efficient equipment use by small and medium-sized businesses, and the promotion of energy efficiency and renewable energy by local govern-ments through "Green New Deal Fund" financing. Many of these measures were outlined in Japan's existing 2012 "4th Basic Environmental Plan." **Other earmarks: 0 %.** No known unrelated earmarks. **General funds: 0 %.** None specified, though see above Keidanren note on actual spending patterns. **Revenue Recycling: 0 %.** Though other tax reforms were enacted in 2012 alongside the creation of the carbon tax, there are no known direct household subsidies or tax swaps explicitly tied to new carbon tax revenues. Some household and commercial green subsidies are delivered in the form of tax credits.
Mexico	**Green subsidies: 0 %.** Mexico has an existing slate of green subsidies to reduce greenhouse gas emissions, but it is unknown if revenues from the new carbon tax will be earmarked for these or additional spending programs. **Other earmarks: 0 %.** No known unrelated earmarks. **General funds: 100 %.** Tax revenues are assumed to contribute to government general funds in the absence of known announced earmarks. **Revenue Recycling: 0 %.** No known revenue recycling tied to the carbon tax system. However, the Mexican federal government spends significant sums subsidizing end users of fuels at rates that would appear to exceed the level of carbon tax—for example, 3.5b USD annually on gasoline alone. ***Mexico special tax on production and services*** **Green subsidies: 0 %.** Mexico has an existing slate of green subsidies to reduce greenhouse gas emissions, but it is unknown if revenues from the new carbon tax will be earmarked for these or additional spending programs. **Other earmarks: 0 %.** No known unrelated earmarks. **General funds: 100 %.** Tax revenues are assumed to contribute to government general funds in the absence of known announced earmarks. **Revenue Recycling: 0 %.** No known revenue recycling tied to the carbon tax system.

COUNTRY/ REGION	USE OF THE REVENUES
Norway	**Green subsidies: 30 %.** When carbon tax rates were raised in 2013, additional revenues were earmarked into expanding the capital base for the government's existing "Green Fund for Climate, Renewable Energy and Energy Efficiency Measures" (actual carbon tax revenue increase from 2012 to 2013 was 454m USD, mostly from offshore petroleum producers). Annual financial returns on this fund are then spent to subsidize green technology projects by a purpose-created government body named "Enova." Targeted green spending areas include renewables, energy efficiency, and low-carbon research and development. The 2015 Norwegian budget further outlines support for clean technology deployment in the industry sector (so-called "risk reduction measures"), wind power deployment subsidies, passenger rail subsidies, urban transit subsidies, carbon capture and storage demonstration projects, and additional funding for existing government funds focused on food security, agriculture, and forestry in developing countries. **Other earmarks: 0 %.** No known unrelated earmarks. **General funds: 40 %.** Carbon tax revenues that are not otherwise earmarked for green subsidies or estimated to offset existing tax are assumed to contribute towards government general funds. **Revenue Recycling: 30 %.** In addition to the green subsidies described above, the 2015 budget also described the use of carbon tax revenues to fund reductions in the corporate income tax (the so-called "capital tax"). The above revenue share is only a rough attribution of this tax shift based upon incomplete date.
Slovenia	Slovenia was the first Eastern European country to introduce a carbon-revenue system when it launched a tax in 1997 at a headline rate of 1000 Slovene tolar (6.26 USD) per dioxide CO2. The rate was tripled the following year, resulting in a significant restructuring of the tax to include numerous end-user- and fuel-specific exemptions and discounts to the tax rate. These exemptions, which implemented other adjustments to the value-added tax rate, are so broad and seemingly haphazard as to question whether this tax can be considered a true carbon price as opposed to a fuel excise tax. Revenues for 2004 were reported to be roughly 75 m USD (1.5 trillion Slovene tolar) with one-third of revenues directed toward green subsidies (energy efficiency and other emission mitigation) with the remaining funds used in general funds without earmark.
South Africa	The revenue from the carbon tax will go to the National Revenue Fund, because of national provisions against earmarking, but is expected to be used for the following purposes: an energy efficiency tax incentive; a decrease in the electricity levy; a tax credit for renewable energy purchase; free basic energy services for low-income individuals; support for public transport; and support for rail transport of freight (Energy Research Centre 2015, 4). The overall impact of the carbon tax is expected to be revenue-neutral (National Treasury 2016, 45).
Sweden	**Green subsidies: 0 %.** No known earmarks to subsidize new green spending. **Other earmarks: 0 %.** No known unrelated earmarks. General funds: 50 %. Revenues from the carbon and energy taxes make up a significant portion of total government receipts and contribute toward the country's general budget. They are considered an integrated part of the tax system and are among the most "revenue generation-focused" of global carbon-pricing systems, even though consumption-behavior change was also acknowledged as a goal of the tax's creation. Administrative costs of Sweden's carbon and energy taxes together are estimated at 0.1 % of total revenues. Making the taxes administratively simple for both government and taxpayers was an original design priority of the policies.

COUNTRY/ REGION	USE OF THE REVENUES
	Revenue Recycling: 50 %. Sweden enacted personal income-tax reductions in 1991 alongside the introduction of the carbon tax, though the net effect at that time was never-theless an increase in the overall tax burden. In 2001, employer social security contributions were also reduced, and income-tax-free allowances were extended, alongside further carbon tax reforms and increases. This latter adjustment was described by the government as a "green tax shift." A further labor tax for carbon tax shift occurred over the period 2007–2010, and as before the reductions in labor tax revenues were much larger than new gains in carbon tax revenues. There is, however, no direct link established between carbon tax revenue and "funding" these concurrent labor tax cuts, so the above revenue share is only a rough attribution. The Swedish government also notes that its existing energy taxes on vehicle fuels have since 2000 been lowered as the carbon tax rate on vehicle fuels was increased.
Switzerland	**Green subsidies: 33 %.** Since the program's outset, Switzerland has earmarked a share of carbon tax revenues to subsidize building-sector energy use reductions, either through energy efficiency or distributed renewable power generation. For the period 2008–2012, a maximum of CHF 200m (186m USD) were dedicated to building-sector emission reduction measures. For the period 2013–2020, one-third of total carbon tax revenues (with a cap of CHF 300m, 280m USD per year) are similarly earmarked—one-third of that for deployment of renewables and two-thirds for building energy efficiency. Only companies that face compliance obligations under the levy scheme are eligible to claim such funding. A further budget of CHF 25m (23.3m USD) per year is earmarked for a loan guarantee green "Technology Fund." **Other earmarks: 0 %.** No known unrelated earmarks. **General funds: 0 %.** Unknown. **Revenue Recycling: 67 %.** For the period 2013–2020, the remaining two-thirds of carbon tax revenues not spent on building-sector green subsidies are "redistributed to the public and companies" ac in the form of household-level lump sum rebates and employer payroll rebates. In 2014, 197m USD (CHF 180m) were returned to businesses through a comprehensive payroll rebate of 0.573 %, while the general public received a flat carbon tax rebate of 50.55 USD (CHF 46.20) per "insured person" (totalling 414m USD, CHF 379m), distributed through the country's mandatory basic health insurance system (a mechanism already employed to issue rebates funded by Switzerland's separate "volatile organic compound" tax).
United Kingdom (Carbon Price Floor Price)	**Green subsidies: 0 %.** Unknown **Other earmarks: 15 %.** While funding for the compensation activities is separate from the revenues generated by the carbon tax itself, overall carbon tax revenues appear fungible enough for this to be considered functionally linked spending. **General funds: 85 %.** The use of tax revenues was not explicitly promoted in the launch of the pricing system and subsequent government documents have described revenues as being retained by the UK Treasury as general tax revenue. **Revenue Recycling: 0 %.** Unlike the 0.3% reduction in employer national insurance contributions enacted alongside the earlier Climate Change Levy, there are no known offsetting tax-reduction measures explicitly associated with the Carbon Price Floor.

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