
International Economic Law Clinic

UNFCCC NATIONALLY DETERMINED CONTRIBUTIONS: CLIMATE CHANGE AND TRADE

20 December 2016, Geneva

Submitted by
Rana Elkahwagy, Vandana Gyanchandani, Dario Piselli

To: Alexey Vikhlyaev
United Nations Conference on Trade and Development

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Table of Contents

<u>Table of Contents</u>	<u>A</u>
<u>List of Abbreviations</u>	<u>B</u>
<u>Executive Summary</u>	<u>E</u>
<u>1. Introduction</u>	<u>1</u>
<u>2. Mapping trade-related response measures in INDCs/NDCs</u>	<u>5</u>
2.1. Introduction and scope of the mapping	5
2.2. Methodology and mapping format	6
2.3. Findings	8
<u>3. The interplay between economic diversification and response measures in the INDCs/NDCs</u>	<u>17</u>
3.1. Introduction	17
3.2. Economic diversification in the UNFCCC work streams	17
3.3. Potential impacts of response measures on economic diversification	19
3.4. Framing the mapping of response measures through the lenses of economic diversification	22
3.5. Trade rules as a precondition for promoting economic diversification through response measures	32
<u>4. The incorporation of climate-related measures into Free Trade Agreements</u>	<u>34</u>
4.1. Introduction and methodology	34
4.2. The Architecture of climate change provisions in FTAs	36
4.3. Climate-related measures included in FTAs	37
4.4. Exceptions allowing the implementation of response measures	46
<u>5. Conclusion</u>	<u>48</u>
<u>Bibliography</u>	<u>51</u>
<u>Annex 1: Country Summaries</u>	<u>55</u>

List of Abbreviations

ADB	Asian Development Bank
AFOLU	Agriculture, Forestry and Other Land Use
APEC	Asia Pacific Economic Cooperation
AWG-KP	Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol
BAPCO	Bahrain Petroleum Company
BAU	Business as Usual
BIT	Bilateral Investment Treaty
BOAD	Banque Ouest Africaine de Developement
CARIFORUM	Caribbean Forum
CDM	Clean Development Mechanism
CETA	Comprehensive Economic and Trade Agreement
CFLs	Compact Fluorescent Lamps
COP	Conference of the Parties
CSP	Concentrated Solar Power
CTCN	Climate Technology Center and Network
DSM	Demand-side Management
EAEU	Eurasian Economic Union
ECOWAS	Economic Community of West African States
EGA	Environmental Goods Agreement
EPA	Economic Partnership Agreement
FDI	Foreign Direct Investment
FITs	Feed-In-Tariffs
FTAs	Free Trade Agreements
GCC	Gulf Cooperation Council
GCF	Green Climate Fund

GDP	Gross Domestic Product
GEF	Global Environment Facility
GEI	Gases de Efecto Invernadero
GES	Gaz à Effet de Serre
GGP	Green Government Procurement
GHG	Greenhouse Gas
HCFCs	Hydrochlorofluorocarbons
HFCs	Hydrofluorocarbons
IDB	International Development Bank
INDC	Intended Nationally Determined Contribution
IPCC	Intergovernmental Panel on Climate Change
JI	Joint Implementation
LDCs	Least Developed Countries
LULUCF	Land Use, Land-Use Change and Forestry
MRV	Monitoring, Reporting and Verification
NAMAs	Nationally Appropriate Mitigation Actions
NDC	Nationally Determined Contribution
NG	Natural Gas
OJ	Official Journal of the European Union
PDVSA	Petróleos de Venezuela, S.A.
PPMs	Process and Production Methods
PVs	Photovoltaics
R&D	Research and Development
RPS	Renewable Portfolio Standards
RTA	Regional Trade Agreement
SBI	Subsidiary Body for Implementation

SBSTA	Subsidiary Body for Scientific and Technological Advice
SDGs	Sustainable Development Goals
TES	Thermal Energy Storage
TPP	Trans-Pacific Partnership
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNGA	United Nations General Assembly
UNTS	United Nations Treaty Series
UT-CUTS	Uso de la Tierra, Cambio de Uso de la Tierra y Silvicultura
WAEMU	West African Economic and Monetary Union
WTO	World Trade Organization

Executive Summary

On 12 December 2015, the Paris Agreement was adopted by consensus by the 195 Parties to the United Nations Framework Convention on Climate Change (UNFCCC). One year removed from this historic moment, 162 Parties (including the European Union, on behalf of its Member States) have begun detailing the individual commitments that they are expected to make in order to reach the overall mitigation objective of the Agreement, namely that of “holding the increase in the global average temperature to well below 2 °C above pre-industrial levels”, while pursuing efforts to limit the temperature increase to 1.5 °C.

An effective implementation of the 162 Intended Nationally Determined Contributions (INDCs) and Nationally Determined Contributions (NDCs) that have so far been submitted to the UNFCCC will necessarily require countries to take effective steps to minimize the adverse effects of their response measures but also, where possible, to create positive synergies between climate change mitigation and economic development. This holds particularly true for those countries whose economies are currently highly dependent on a narrow range of carbon-intensive exports, calling for substantial investments and policy interventions aimed at supporting low-carbon innovation, encouraging the transfer of technologies, boosting high-value added sectors and more generally promoting economic diversification.

The extent to which response measures and economic diversification will be capable of operating in a mutually supportive way will depend not only on the design of domestic policies, but also (and perhaps more importantly) on the international trading system, which provides the underlying conditions of competition, market access and market creation that must support a long-term decarbonization of the world economy. As such, this study seeks to improve our understanding of the relationship between response measures, economic diversification and international trade rules, and accordingly identify the positive opportunities that the current proliferation of regional and bilateral trade agreements brings for diversification and climate change mitigation. In doing so, the study explores the following questions: 1) *what* are the trade-related response measures included in the INDCs/NDCs and *how* are these measures designed? 2) *What* are the implications of these measures on the economic diversification of the states adopting the measures and on other states? *How* are free trade agreements constructed in a way to allow the space of implementation?

Response measures in the INDCs/NDCs: the (overlooked) importance of trade

This study represents the first attempt to comprehensively map the 162 INDCs/NDCs submitted by Parties to the UNFCCC in order to identify and categorize response measures that interact with the world trading system. The results are, in a way, unexpected. The occurrence of trade-related measures, including financial and direct trade measures (e.g. taxes, subsidies, carbon pricing mechanisms, FITs, tariffs, import bans) is pervasive throughout the INDCs/NDCs, suggesting the possibility for the climate and trade regimes to substantially interact with each other in the implementation of the Paris Agreement.

On the one hand, some of these interactions may remain hypothetical, in the sense that several measures may, or may not, have implications for trade depending on the instruments and measures adopted at the domestic level to implement them. A majority of the measures that have been mapped as part of the study, particularly green industrial policies and measures taken in the energy sector, appear to fit this description. On the other, the INDCs/NDCs analysed as part of this study have also been found to include a significant number of response measures which are directly relevant for trade. In part as a consequence of the chosen mapping format, these measures broadly fall within two categories identified in the study, namely financial and direct trade measures and green government procurement practices.

Response measures and economic diversification: a mixed picture

In expanding its analysis of the interactions between climate change mitigation policies and the international trading regime, this study builds upon the mapping of trade-related commitments in the INDCs/NDCs and evaluates such commitments against the long-standing UNFCCC work streams on economic diversification and response measures. While economic diversification had been mainly discussed in the past as a means of minimizing the adverse effects of response measures, the bottom-up nature of the INDCs/NDCs reverses this relationship. More specifically, the possibility for developing countries to design their nationally determined contributions in the light of respective national capabilities provides them with an opportunity to enact response measures that promote their own economic diversification and development.

Looking at the current mitigation commitments of UNFCCC Parties, there is certainly scope for the INDCs/NDCs to promote diversification, particularly in the countries where the measures are implemented. At the same time, it is important to realize that response measures might also entail cross-border effects (e.g. effects on the economic diversification of other countries), thus emphasizing the importance of coordinated mitigation actions at the regional and international level. The evidence for such cross-border effects is mixed, as the nature and magnitude of their impacts will largely hinge

upon the design of domestic policies which are not necessarily reflected in the INDCs/NDCs. In addition, the way in which national implementation is carried out will also likely involve trade-offs.

The incorporation of response measures in free trade agreements: the emerging evidence

The assessment of the climate-related provisions of current free trade agreements, conducted with the help of Professor Jean Frédéric Morin's TREND Codebook, suggests that the existing international trade regime provides many opportunities to mitigate climate change challenges while supporting economic diversification. First, economic growth that result from the liberalization of trade in goods and services generates useful economic resources to allow the transition from fuel intensive industries into cleaner and less polluting industries. Second, FTAs provide a suitable framework to reduce/eliminate barriers on environmental goods and services, which leads to lowering the cost of green energy technologies. Finally, many FTAs appear to incorporate some of the response measures included in the INDCs/NDCs as a way of strengthening the capacity of states to fulfill their climate change commitments and achieving more stringent and more precise obligations compared to multilateral environmental agreement.

In this context, the most pressing challenge when designing FTAs appears to be that of finding a balance between promoting trade liberalization on the one hand and allowing a policy space for countries to implement their obligations under the UNFCCC on the other, in order to ensure that trade rules positively contribute to, rather than undermine, the overarching objectives of climate change mitigation and economic diversification.

1. Introduction

Global climate change is one of the biggest challenges facing the international community.¹ As the United Nations Secretary General has explained, “it is the major, overriding environmental issue of our time, and the single greatest challenge facing environmental regulators. It is a growing crisis with economic, health and safety, food production, security, and other dimensions.”² The main characteristics of climate change are increases in average global temperature; changes in cloud cover and precipitation, particularly over land; melting of ice caps and glaciers and reduced snow cover; and increases in ocean temperatures and ocean acidity.³

Both mitigation and adaptation are complementary approaches to reduce risks of climate change impacts over different timescales. The Intergovernmental Panel on Climate Change (IPCC) maintains that well-designed systematic and cross-sectoral mitigation strategies are more cost-effective in cutting emissions than a focus on individual technologies and sectors, with efforts in one sector affecting the need for mitigation in others. In addition, climate change mitigation policies, programmes and actions (which are usually defined in the work of the UNFCCC as “response measures”)⁴ intersect with other societal goals, creating the possibility of co-benefits or adverse side effects. If properly managed, such interactions will solidify the basis for undertaking climate action.

In scenarios limiting CO₂-eq concentrations under 450 parts per million (ppm) by 2100, global CO₂ emissions from the energy supply sector are projected to decline over the next decade and are characterized by reductions of 90% or more below 2010 levels between 2040 and 2070.⁵ As such, the key measures to achieve climate change mitigation goals are expected to require the efforts of the entire international community, and will include the decarbonization of electricity generation as well as

¹ According to the United Nations Framework Convention on Climate Change (UNFCCC), climate change refers to a change in the state of the climate that is “attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods”. Human activities such as fossil fuel combustion, deforestation resulting from agricultural burning and logging forests, land use or cover changes, and industrial use of artificial chemicals are responsible for releasing GHG emissions into the atmosphere. Intergovernmental Panel on Climate Change, *Climate Change 2007: Synthesis Report* (UNFCCC 2007) <https://www.ipcc.ch/publications_and_data/ar4/syr/en/mains1.html> accessed 18 November 2016.

² Ban-Ki Moon, ‘Opening Statement to the High Level Segment of the United Nations Climate Change Conference’ (United Nations Climate Change Conference, Pozna, 11 December 2008).

³ UNFCCC, *Climate Change, Impact vulnerabilities and adaptation in developing countries* (UNFCCC 2007) 8.

⁴ Nama News, ‘Response Measures and Their Impacts: an Introduction’ (Nama News, 28 July 2015) <<http://namanews.org/news/2015/07/28/response-measures-and-their-impacts-an-introduction/>> accessed 18 December 2016.

⁵ Robert N Stavins and others, ‘International Cooperation: Agreements and Instruments’ in Ottmar Edenhofer and others (eds) *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press 2014).

efficiency enhancements and behavioral changes, in order to reduce energy demand compared to baseline scenarios without compromising the development needs of many countries.

From this perspective, the adoption of the Paris Agreement⁶ represents a historic milestone, requiring all Parties “to undertake and communicate ambitious efforts”⁷ with the view to “strengthening the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty”.⁸ At the same time, the Agreement recognizes that the implementation of its commitments will require a careful consideration of the specific economic and social needs of developing country Parties (especially those that are most vulnerable to the effects of climate change),⁹ and accordingly emphasizes the urgency of providing these countries with international assistance to support enhanced mitigation and adaptation efforts through capacity building, innovation, technology transfer and access to climate finance.¹⁰ In particular, the Agreement appears to encourage those Parties that are currently highly dependent on fossil fuel production and carbon-intensive exports to seek positive synergies between their response measures and the diversification of their economies, in order to reap mitigation co-benefits through a decoupling of economic growth and GHG emissions, and vice versa.¹¹

The concept that economic diversification and response measures can operate in a mutually supportive way is not a new one indeed, and is increasingly being explored by economists, policy-makers and academics alike. Most notably, it also provides an important background for the technical work of the UNFCCC, informing the forum and work programme on the impact of the implementation of response measures developed by the two subsidiary bodies to the Convention.¹² In a legal context, however, it is important to realize that the ability of countries to simultaneously pursue the two objectives of economic diversification and climate change mitigation will largely depend on a third element, whose role has so far been neglected: international trade. Even though the Paris Agreement itself does not include any trade-related provisions, trade has the potential to play a major role in the implementation of the response measures enshrined by the Parties in their Intended Nationally

⁶ UNFCCC, ‘Report of the Conference of the Parties on its twenty-first session, held in Paris from 30 November to 13 December 2015. Addendum. Part two: Action taken by the Conference of the Parties at its twenty-first session’ (29 January 2016) UN Doc FCCC/CP/2015/10/Add.1 [hereinafter Paris Agreement]

⁷ *ibid*, Art. 3.

⁸ *ibid*, Art. 2.1.

⁹ *ibid*, preamble.

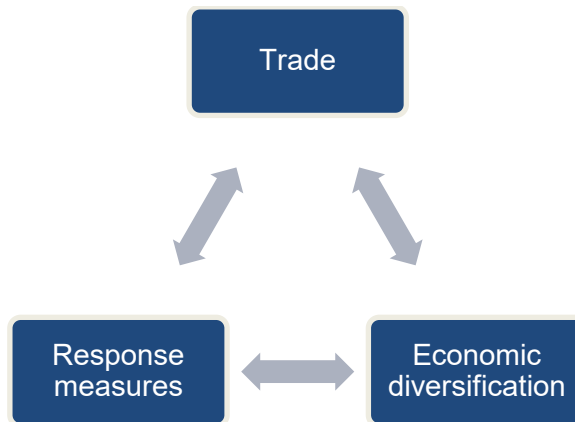
¹⁰ *ibid*, Artt. 3, 4.5, 6.6, 7.6, 7.7, 7.13, 9, 10, 11, 13.

¹¹ *ibid*, Art. 4.7.

¹² The idea was first endorsed by the Conference of the Parties to the UNFCCC (COP) at the Cancun Climate Change Conference (COP16) in 2010, which requested the Chairs of the two subsidiary bodies (the Subsidiary Body for Scientific and Technological Advice, or SBSTA, and the Subsidiary Body for Implementation, or SBI) to convene such a forum and develop a related work programme.

Determined Contributions (INDCs) and Nationally Determined Contributions (NDCs),¹³ while creating opportunities for many countries to achieve changes in the structure of their economies. On the one hand, trade policies could be used to promote economic diversification and thereby minimize the adverse effects of response measures for many countries which currently rely on vulnerable economic sectors.¹⁴ On the other, trade liberalization in low-carbon and environmental goods and services could also create positive synergies between diversification and the overarching goal of a long-term decarbonization of the world economy, particularly by supporting low-carbon innovation, promoting the transfer of technologies, and opening new markets for these exports.

Figure 1: Conceptual model of the interactions between response measures, trade and economic diversification. Response measures can either be trade-supportive or trade-restrictive, and can promote or hinder economic diversification. In turn, diversification in one country can influence international trade flows and support (or negatively impact) mitigation. Most importantly, however, trade rules do not only affect response measures and economic diversification directly, but they also provide the conditions under which response measures and economic diversification can be mutually supportive. Source: authors.



Despite its crucial relevance, the discussion around the relationship between economic diversification, response measures and trade still suffers from a high degree of abstraction, as shown by the conceptual model shown in Figure 1 above. As a consequence, this study seeks to achieve a better understanding of the impacts of the actual response measures contained in the INDCs/NDCs on economic diversification, including their interactions with existing trade rules, in order to build

¹³ The nationally determined contributions are regulated in Article 4 of the Paris Agreement.

¹⁴ In this context, we refer to the vulnerability of a sector to both climate change *and* climate change mitigation policies.

mutual supportiveness between the climate and trade regimes while also contributing to broader sustainable development objectives. The analysis is conducted in three parts. First, the study seeks to identify all the response measures contained in the INDCs/NDCs that appear to interact with existing trade rules. Second, the study investigates the potential of the response measures identified in the INDCs/NDCs to have domestic and cross-border effects on economic diversification. Third, the study examines the role of Free Trade Agreements (FTAs) in supporting such a potential through the incorporation of climate-related measures in the international trading system.

This study is divided into four Chapters. Chapter 2 maps trade-related response measures across the 162 INDCs and NDCs submitted by the Parties to the UNFCCC as part of their commitments under the Paris Agreement. Chapter 3 builds upon the mapping examined in Chapter 2 and evaluates country commitments against the long-standing UNFCCC work streams on economic diversification and response measures. Finally, Chapter 4 provides an analysis of relevant provisions in existing trade agreements which can be found to support the implementation of response measures, focusing specifically on those that are expected to do so through the promotion of economic diversification at the domestic and cross-border level. The results of the mapping included in Chapter 2 are included in Annexes 1 and 2.

2. Mapping trade-related response measures in INDCs/NDCs

2.1. Introduction and scope of the mapping

This Chapter maps 162 Intended Nationally Determined Contributions (INDCs) and Nationally Determined Contributions (NDCs) submitted by the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) as part of their commitments under the Paris Agreement. The agreement was adopted at the 21st Conference of the Parties to the UNFCCC on 12 December 2015 and entered into force on 4 November 2016, on the thirtieth day after the date on which both requirements laid down in its Article 21 had been met.¹⁵

The objective of the mapping is to identify and categorize response measures contained in the INDCs or NDCs which interact with the world trading system. From this perspective, three preliminary considerations shall be borne in mind. First of all, for the purpose and scope of the exercise, an interaction can be either actual or hypothetical. Actual interaction occurs whenever a response measures contained in a specific INDC/NDC refers directly to an action which is trade-relevant; in this case, the commitment in question explicitly involves a trade-related measure as a means of achieving the objectives of the Paris Agreement:

“By 2020, establish efficiency standards
for the importation of all vehicles and appliances.”
(INDC of Antigua and Barbuda, p.2)

By contrast, hypothetical interaction occurs whenever an intended outcome, rather than a concrete measure or action, is set. Outcomes may, or may not, have implications for trade depending on the instruments and measures adopted at the domestic level to implement them. For example, a commitment on the part of a country to increase its installed capacity of solar power would not necessarily be translated into a domestic policy which establishes a domestic content requirement for the purchase of photovoltaic (PVs) modules (trade restrictive) or eliminates tariffs on such goods (trade supportive). An overview of the mapping results indeed suggests that many of the interactions between trade and climate change policies in the INDCs/NDCs are of this second type, owing to the

¹⁵ On 5 October 2016, 10 countries (Austria, Bolivia, Canada, France, Germany, Hungary, Malta, Nepal, Portugal and Slovakia) deposited their instruments of ratification, thereby fulfilling the second requirement set in Article 21 (the Parties that have ratified the agreement must account for at least 55 per cent of total global greenhouse gas emissions). The first requirement (mandating that at least 55 Parties must have ratified the agreement for it to enter into force) had been met on 21 September 2016, when 31 additional countries formally deposited their instruments during a special event held at the United Nations Headquarters in New York.

fact that, in most cases, the listed response measures have yet to be designed and/or implemented at the national level.

Secondly, the intentions contained in the INDCs/NDCs can result in synergies between climate change policy and the international trading regime or, instead, run contrary to the standing rules of the World Trade Organization (WTO), the provisions of relevant Regional Trade Agreements (RTAs), bilateral investment treaties (BITs), and so forth. Synergies occur whenever trade openness can enhance and be beneficial to countries' efforts to mitigate climate change, for example by reducing barriers to trade for environmental goods and services or more generally facilitating technology transfer. Clashes, on the other hand, are bound to emerge whenever domestic measures modify the conditions of competition and thereby have an impact on international trade, as in the case of regulations, which discriminate like products on the basis of process and production methods (PPMs), introduce trade restrictions to alleviate competitiveness concerns, or seek to protect infant low-carbon industries from competition.¹⁶ Both trade-restrictive and trade-supportive response measures are covered by the exercise.

Finally, response measures relating to agriculture, land use, land-use change and forestry (LULUCF), water and waste fall beyond the scope of the exercise, and are not included in the country summaries. In addition, measures relating to the transportation and building sectors are included in the mapping only insofar as they appear to be potentially trade-related.

2.2. Methodology and mapping format

Negotiations under the UNFCCC Secretariat did not yield a common format for the submission of INDCs/NDCs. Consequently, there exists an extreme diversity of structure, wording, and degree of specificity in the countries' commitments. As such, the format adopted for this mapping study was developed *ex novo*, utilizing a country-by-country analysis based on a set of six categories. These categories were identified after a preliminary examination of the INDCs/NDCs, so as to ensure the inclusion of all trade-related response measures within the chosen format. Every country summary starts with a box which contains the overarching targets expressed by that country and then maps commitments according to the classification outlined below:

¹⁶ See for example Ilmi Granoff, 'Trade Implications of Climate Policy after the Paris Outcome' (Commonwealth Trade Hot Topics Issue 130, 2016) <http://www.oecd-ilibrary.org/fr/commonwealth/trade/trade-implications-of-climate-policy-after-the-paris-outcome_5jlwz7lt4k9q-en> accessed 12 October 2016; See also, Joost Pauwelyn, 'Carbon Leakage Measures and Border Tax Adjustments Under WTO Law' in Geert Van Calster and Denise Prévost (eds) *Research Handbook on Environment, Health and WTO* (Cheltenham, Northampton: Edward Elgar, 2013).

- **Measures related to the energy sector.** This category applies to any response measure relating to the energy industry and electricity generation, with the exception of specific financial contributions such as subsidies or taxes (which are listed in a separate category). Examples include measures seeking to increase the share of renewable sources of energy in the energy mix of countries, or phase out polluting power plants, or modernize the national electricity grid.
- **Green industrial policies.** This category includes any measure that supports low-carbon development, seeks to reduce emissions from the industrial sector and improve efficiency, and facilitates the uptake of new technologies. Similar to the first category, financial measures implemented as part of green industrial policy are listed separately.
- **Green government procurement.** This category encompasses any measure by which the public authority of the interested country seeks to procure low-carbon goods and services in order to contribute to emissions reduction and/or provide incentives for the development of new technologies and products. It does not cover measures, such as Feed-in-Tariffs (FITs), where government procurement is undertaken with a view to commercial resale, and it also excludes any procurement which entails subsequent distribution to private households. Examples include procurement of energy efficient lightbulbs for government buildings or street lighting, retrofitting, and modernization of aircraft or public transport fleets.
- **Financial and direct trade measures.** This category covers any measure which restricts trade, imposes a financial burden or provides a direct or indirect monetary contribution in order to promote the investment in and production or consumption of renewable sources of energy (i.e. phasing out fossil fuel subsidies, introducing a domestic carbon tax, restricting imports of certain goods). A subcategory is adopted to highlight financial measures related to environmental goods and services (i.e. domestic content requirements for PV modules, tax incentives for the importation of low-emissions vehicles), which continue to represent a hotly debated topic under the Doha Development Round of the WTO. To be included in the subcategory, a measure must specifically mention the environmental good or service in question, not merely refer to the general promotion of renewable energy projects or technologies.
- **International cooperation.** This category includes any bilateral, regional or international contribution or request of contribution towards the implementation of the INDCs/NDCs in developing or Least Developed Countries (LDCs). Examples include

access to sources of climate finance, establishment of international market mechanisms to sell carbon credits, technology transfer, and capacity building.

This mapping study adhered to the textual formulation of the response measures included in the INDCs/NDCs. For purposes of clarity and consistency, some expressions were changed (in particular, commitments beginning with a verb in their infinitive form were edited and the verb in question converted to a noun),¹⁷ while commitments contained in longer sentences were isolated from the context in order to remove discursive digressions which were not relevant to the assigned mandate. Every effort was made to ensure conformity to the original text.

In order to map the twenty-one INDCs/NDCs that were neither originally written in the English language nor accompanied by an official or unofficial translation provided by the submitting Party, an original translation was produced by the authors, as indicated in each country summary.¹⁸ For these INDCs/NDCs, a country summary in the original language of each submission (with the exception of Iraq) is also provided in an Annex.

2.3. Findings

2.3.1. Introduction

This section describes the main findings of the study. In doing so, it focuses on four main topics, covering the full range of UNFCCC Parties' response measures and making reference to the six categories identified in the mapping format. In section 2.3.2., we present a general overview of the similarities and differences in the scope, structure, and wording of the INDCs/NDCs. In section 2.3.3., we identify a list of proposed response measures that appear to be directly relevant for the international trading regime and which mainly consist of financial and direct trade measures and green government procurement practices. In section 2.3.4., we analyse the possibility that other commitments contained in the INDCs/NDCs (broadly listed in the study under the 'energy sector and emissions reduction' and 'green industrial policies' categories) also lead to interactions with international trade, depending on the domestic measures enacted to implement them. Finally, in section 2.3.5., we discuss commitments to international cooperation on climate change, focusing on climate finance, use of carbon credits, international market mechanisms, technology transfer and any other means necessary for the implementation of response measures.

¹⁷ For examples, commitments starting with the verb "promoting" were re-phrased as "promotion of".

¹⁸ In these country summaries, the word "translation" is put in brackets next to the name of the submitting Party, together with an asterisk (*).

2.3.2. General overview of the INDCs/NDCs: scope, structure, and wording

As explained in Chapter 2.2., and despite the guidance provided by the COP in Decision 1/CP.20 ('Lima Call for Climate Action'), no uniform template was provided to UNFCCC Parties for the submissions of their INDCs/NDCs. This obviously gave countries significant leeway in drafting their commitments, which resulted in several glaring inconsistencies in terms of structure, style and wording. At the same time, it is possible to identify some common features, mainly as a consequence of the information included in the Lima Call for Climate Action but also thanks to unofficial guidance documents provided by non-governmental organizations and international networks of stakeholders.¹⁹

First, most INDCs/NDCs indicate the intended GHG and non-GHG targets to be achieved during an identified time period. In formulating their GHG targets, many countries used a percentage change in future emissions levels (either economy-wide, per capita, or per unit of GDP), while others only indicated an absolute reduction in GHG emissions. These changes are usually expressed against either a baseline year (1990 and 2005 are the most common) or a business as usual scenario of uncontrolled development (BAU). Non-GHG targets, by contrast, are extremely diversified, and cannot be reduced into predefined categories.

Second, and beyond quantifiable information on reference points, time frames, and periods of implementation, many INDCs/NDCs also include sections that reflect Decision 1/CP.20 guidelines on topics such as, *inter alia*: (i) scope and coverage; (ii) planning processes, (iii) assumptions and methodological approaches; and (iv) how the parties consider that their INDCs/NDCs are fair and ambitious, in light of their national circumstances.

Lastly, the INDCs/NDCs of most developing country Parties follow the guidelines provided in section 16.5 of Decision 1/CP.20 and allocate their targets into two distinct categories, one unconditional, which countries are committing to achieve unilaterally using the state domestic efforts,

¹⁹ See for example CDKN and Ricardo-AEA, 'A Guide to INDCs' (2nd Edition, May 2015) <<http://cdkn.org/wp-content/uploads/2015/04/CDKN-Guide-to-INDCs-Revised-May2015.pdf>> accessed 19 October 2016; Kelly Levin and others, *Designing and Preparing Intended Nationally Determined Contributions* (WRI: Washington DC 2015) < <http://www.wri.org/sites/default/files/designing-preparing-indcs-report.pdf>> accessed 19 October 2016; and Niklas Höhne, Christian Ellermann and Hanna Fekete, 'Process Guidance for Intended Nationally Determined Contributions' (International Partnership on Mitigation and MRV Knowledge Product, November 2014) < https://mitigationpartnership.net/sites/default/files/ipmm_2014_process_guidance_for_intended_nationally_determined_contributions_indcs.pdf> accessed 19 October 2016.

and the second conditional on the provision of external support (finance, technology development and transfer, and capacity-building).²⁰ For example:

“The Republic of Colombia commits to reduce its greenhouse gas emissions by 20% with respect to the projected BAU by 2030. Subject to the provision of international support, Colombia could increase its ambition from 20% reduction with respect to BAU to 30% with respect to BAU by 2030.”

(INDC of Colombia, p. 2, translation)

Notwithstanding these similarities, it seems clear that countries largely differ on the approach they adopted to design the content of their response measures, and in this context a major divide can be drawn between developed and developing country Parties. Developed countries in particular (e.g. United States, Russia, Japan), together with the European Union, used very generic wording, and their INDCs/NDCs are relatively shorter compared to other countries:

In the energy sector, Japan commits to the “expansion of renewable energy introduction to the maximum extent possible.”

(INDC of Japan, p. 15)

On the other hand, developing countries have longer INDCs/NDCs (up to 35-40 pages) and more detailed and specific commitments. Their contributions are more elaborate in terms of both sectoral outcomes and means that will be used to achieve the outcomes, and they often include financial or direct trade measures. For instance:

In the energy sector, “Ghana intends to scale up renewable energy penetration by 10% by 2030.” (outcome)

(INDC of Ghana, p.3)

“Phasing out fossil fuel subsidies and setting up feed-in-tariffs for renewable energy technologies.” (actions)

(INDC of Ghana, p. 11, annex 1)

²⁰ UNFCCC, ‘Report of the Conference of the Parties on its twentieth session, held in Lima from 1 to 14 December 2014. Action taken by the Conference of the Parties at its twentieth session’ (2 February 2015) FCCC/CP/2014/10/Add.1.

In addition, some developing countries like Kuwait, Togo, and Panama, referred to specific provisions in their domestic laws to explain the details of their actions:

"[...] Article (122) and (123) of the Environment Protection Law 42/2014 mentioned the need to use energy-saving systems in the new state facilities. Also the law prevents importing any hardware or equipment that does not match the specifications of energy conservation."

(INDC of Kuwait, p.6, translation)

Finally, in contrast with developed countries' INDCs/NDCs, most developing country Parties: (i) included a list of intended projects to be implemented in the future and the cost of such implementation; (ii) stipulated their needs in terms of finance, capacity building, foreign direct investment, and technology transfer; and (iii) promoted the possibility of using international market-based mechanisms to achieve their targets through carbon crediting, within and beyond existing instruments such as the Clean Development Mechanism (CDM) and the Joint Implementation (JI) regime. For example, according to the INDC of Jordan:

The estimated cost to reach the 14% target is totaling USD 5,700,000,000 from which Government of Jordan has already secured USD 542,750,000 by its own means to meet the unconditional target; which means the Country is in need of USD 5,157,250,000 to fulfill its conditional target."

(pp.1-2)

2.3.3. Actual interactions between INDCs/NDCs and trade

The INDCs/NDCs analysed as part of this study have been found to include a significant number of response measures which are directly relevant for trade, regardless of the structure and scope of the domestic instrument adopted to implement them. In part as a consequence of the chosen mapping format, these measures broadly fall within two categories identified in the study, namely: (i) financial and direct trade measures; and (ii) green government procurement.

2.3.3.1. Financial and direct trade measures

UNFCCC Parties provide a variety of financial and direct trade measures to achieve their intended targets specified in the INDCs/NDCs, including, *inter alia*, taxes, subsidies, carbon pricing mechanisms, FITs and Renewable Portfolio Standards (RPS), tariffs, import bans, and investments in R&D. As described in section 2.2., these measures can interact with trade due to their effects on

international competition (in the case of taxes, subsidies and investments in R&D) or through the removal/establishment of barriers to trade (in the case of import bans and tariffs). A non-exhaustive list is provided below to highlight such a broad spectrum of commitments, which can be trade-restrictive or trade-supportive depending on the structure and scope of the domestic provisions enacted to implement them.

- **Taxes.** *Tax exemptions* on mass transit vehicles and 4T motorcycles and parts (Benin), on energy efficient appliances and products (Brunei Darussalam), for the development of renewable energy (Côte d'Ivoire), for maritime transport (Turkey). *Tax reductions* for use of solar panels and solar water heaters (Grenada), for electric and hybrid vehicles (Korea, Saint Lucia). *Tax incentives* for the investment in alternative vehicles and fuels such as compressed natural gas, liquid petroleum gas, ethanol, natural gas, hybrid and electric (Barbados). *Preferential taxation policies* for promoting the development of new energy and to improve mechanisms of pricing, grid access and procurement mechanisms for solar, wind and hydro power (China). *Introduction of a carbon tax* (Armenia, Chile, India, South Africa). *Introduction of taxation* on diesel and gasoline (Grenada), linked to mileage per gallon and engine capacity of cars (The Bahamas).
- **Subsidies.** *Provision of subsidies* for renewable energy (Afghanistan, Burkina Faso, Guatemala), for private residences to promote sustainable architectural structures (Burkina Faso), targeted subsidies for retrofits (Rwanda). *Removal of subsidies* on fossil fuel (Ethiopia, Ghana, India, Nigeria, Sierra Leone), gradual reduction of subsidies on electricity (Kuwait, Morocco).
- **Import bans.** *Import ban* on vehicles older than 3 years (Gabonese republic), on incandescent bulbs and inefficient devices (Venezuela), on old cars (Djibouti), on hardware or equipment that does not match domestic standards (Kuwait).
- **Tariffs and import duties.** *Custom tariffs* on the importation of motor vehicles (Cook Islands). *Removal of tariffs* on environmental goods and services, such as renewable energy products (Guyana, Suriname), fuel-efficient and alternative energy vehicles (Dominica, Saint Lucia, Saint Vincent and the Grenadines, The Bahamas).
- **Market-based mechanisms.** *Introduction or expansion of domestic carbon emissions trading schemes or other market-based mechanisms* (China, Costa Rica, Dominica, Egypt, Gabon, Panama, Saint Lucia, Samoa, Sierra Leone, Tunisia, Viet Nam) *Feed-In-Tariffs* or *Renewable Portfolio Standards* (Cameroon, Ghana, India, Mozambique, Malaysia, Thailand, Sierra Leone).

2.3.3.2. Green government procurement

Green government procurement practices, although not widely included in the INDCs/NDCs, can also play an important role in stimulating the demand for environmental goods and services and thereby act as indirect support to innovation. Furthermore, depending on the conditions of their implementation, they can be powerful instrument of technology transfer or, by contrast, be used in a trade-restrictive way as a form of protection for low-carbon domestic industries. With respect to the specific measures mapped in this study, green government procurement covers three main areas: (i) transportation; (ii) public buildings; and (iii) public lighting.

- **Public transportation.** Green government procurement commitments relating to public transport focus on the improvement of fleet composition through the purchase of more efficient, hybrid or other alternative fuel vehicles (Cabo Verde, Costa Rica, Dominica, Lesotho, Mauritius, Monaco, Papua New Guinea, United Arab Emirates), or modern aircrafts (Equatorial Guinea).
- **Public buildings.** *Energy efficiency or retrofit programs* for public buildings (Bahrain, Bosnia-Herzegovina, Djibouti, Grenada, Kuwait, Palau, Senegal). *Solar rooftop programs* (Bangladesh, Djibouti). *Purchase obligation* of local and energy-efficient construction materials (Burkina Faso).
- **Public lighting.** *Installation of low-carbon technology in street lighting* (Cuba, Saint Vincent and the Grenadines, Senegal).

2.3.4. Hypothetical interactions between the INDCs/NDCs and trade

As discussed in section 2.1., a specific response measure contained in the INDCs/NDCs can be, *per se*, trade neutral, but become trade-relevant whenever the policy enacted at the domestic level interacts with the existing complex of rules governing international trade and investment. A majority of the measures that have been mapped as part of the study, particularly under the two categories identified as ‘energy sector and emissions reduction’ and ‘green industrial policies’, appear to fit this description. Three sets of motivations, which in turn correspond to three different ways in which the response measures themselves are presented, can be advanced to explain such results.

First, many Parties have provided information on sectoral targets or mitigation outcomes rather than, or in addition to, proper mitigation actions. It can be observed that this type of contribution occurs mainly in the energy sector, which is often addressed in the INDCs/NDCs as an overall sectoral target that may (or may not) be then specified through Nationally Appropriate Mitigation Actions (NAMAs), sectoral strategies and policies, and specific projects.²¹ Two examples of commitments expressed as an outcome are the following, which can be found uniformly, although in different forms and levels of ambition, across a number of country summaries:

“Expand the use of non-fossil fuel energy sources, increasing the share of renewables in the power supply to at least 23% by 2030 including by raising the share of wind, biomass and solar.”

(INDC of Brazil, p.3)

“The Power Development Plan sets a target to achieve a 20% share of power generation from renewable sources in 2036. The Alternative Energy Development Plan” aims to achieve a 30% share of renewable energy in the total final energy consumption in 2036. The Energy Efficiency Plan plans to reduce the country’s energy intensity by 30% below the 2010 level in 2036.”

(INDC of Thailand, p.3)

Secondly, even when response measures are formulated as actions, the use of vague language poses obstacles to the identification of the policies that will in practice underpin that action. This appears to be one of the most common occurrences in the INDCs/NDCs, with no particular distinction between targeted sectors. These two illustrations of vaguely-worded actions (mapped in the ‘energy sector and emissions reduction’ and ‘green industrial policies’ categories, respectively) suggest that countries have often adopted general commitments to ‘provide’, ‘promote’, ‘introduce’, ‘support’, ‘develop’ or ‘encourage’ low-carbon technologies or projects, to name but a few, without discussing the details of the proposed policies:

“Special programmes to promote small and mini hydel projects, new and efficient designs of water mills have been introduced for electrification of remote villages.”

²¹ It shall be noted that specific projects in the energy sector (e.g. renewable energy projects, conversion of existing power plants) are almost entirely absent from the INDCs/NDCs of developed country Parties, but frequently mentioned by developing country Parties (and particularly by LDCs and small developing countries). Such a discrepancy can arguably be explained by the different size of these economies (which allows a much finer examination of the structure and composition of their energy sector), but also by the specific emphasis put by developing countries on the need to link climate change mitigation with broader sustainable development concerns, such as access to energy and economic development.

(INDC of India, p.9)

“Promotion of low-carbon development of service industry, actively developing low-carbon business, tourism and food service and vigorously promoting service industries to conserve energy and reduce carbon emissions.”

(INDC of China, p.9, translation)

Finally, explicit actions implemented at the national level might interact with the world trading system only indirectly, for example through their impact on the competitiveness of domestic firms or by acting as forms of ‘indirect expropriation’ of foreign investment. In these cases, while the actions in question would unquestionably have effects on trade flows, they would not necessarily clash with existing trade rules, unless the interested country enacted competitiveness provisions to level the playing field between imports and domestic products. Actions mapped in the ‘green industrial policies’ category, which frequently include measures such as, *inter alia*, energy efficiency or GHG emissions standards for key industrial sectors, regulation of PPMs, demand-side management provisions, and building codes, provide the clearest example of this type of response measures:

“Research and formulation of greenhouse gas emission standards for key industries.”

(INDC of China, p.8, translation)

“Revision of the building code to improve energy performance by standards of construction and renovation, and a certification process.”

(INDC of Cameroon, p. 6, translation)

2.3.5. Response measures and international cooperation on climate change

The final aspect of this mapping concerns the trade dimension of country commitments in the field of international cooperation on climate change. Indeed, nearly all INDCs/NDCs devote at least some space to discuss the need to support developing country Parties in decoupling economic growth from carbon emissions while pursuing poverty reduction, trade and investment opportunities, job creation, and access to basic services. Furthermore, as discussed in section 2.2., developing countries (particularly LDCs and SIDS) have in many cases made their entire range of contributions, or at least an increased level of ambition, conditional upon such support. Consequently, topics such as market-based mitigation, climate finance, and South-South cooperation, all of which have implications for trade-led development, can be found to represent a major focus of both developed and developing

countries' submissions. Although the details and language adopted vary greatly, the INDCs/NDCs generally appear to be more coherent and consistent in this area than in those examined above.

First of all, while a number of Parties explicitly stated that they do not intend to purchase carbon credits under existing (CDM, JI) or emerging mechanisms (presumably, those identified in the Paris Agreement after most intended contributions had already been communicated)²² in order to meet their GHG targets, the INDCs/NDCs nonetheless reveal a widely shared commitment to the use of international market-based instruments as a means of mobilizing resources for developing countries and thereby contribute to cost-effective implementation of low-carbon development pathways.²³ At the same time, there appears to be widespread concern about the need to promote transparency and develop effective Monitoring, Reporting and Verification (MRV) systems as part of such mechanisms, with the goal of ensuring their environmental integrity and avoiding double counting.

Secondly, a broader focus on the importance of climate finance is evident for both developed and developing countries, but is particularly emphasized by the latter as a critical means to reach wider sustainable development objectives. In addition, the proposed strategies and channels of funding mapped in this study often go beyond market-based instruments to encompass grant-based funding, loan financing mechanisms and traditional development aid,²⁴ but also increased involvement of the private sector, including through domestic regulatory interventions aimed at strengthening intellectual property rights (IPRs) and more generally encouraging foreign direct investment (FDI).

Lastly, an emerging trend towards increased regional cooperation on climate change transpires from many INDCs/NDCs. From this perspective, three main themes can be identified: (i) integration of sub-regional energy markets and electricity grids, highlighted by a number of African countries (e.g. Cameroon, Chad, Côte d'Ivoire and Djibouti); (ii) further economic integration and cooperation between traditional trading partners, such as in the case of Canada and the United States; and (iii) accentuation of the importance of South-South cooperation, to be supported through bilateral and multilateral agreements for the mobilization of resources and the facilitation of technology transfer and capacity building (most notably promoted by Brazil, Brunei Darussalam, China, and Colombia).

²² Most notably the European Union, Russia and the United States.

²³ It shall be noted that an exception is represented by Bolivia, Cuba and Venezuela, which remain explicitly opposed to the use of market-based mechanisms under the UNFCCC.

²⁴ Institutions and mechanisms explicitly mentioned by countries are extremely diversified, but can be found to include the Green Climate Fund (GCF), the Global Environment Facility (GEF), the World Bank and the United Nations Development Programme (UNDP), as well as a number of multilateral and regional development banks.

3. The interplay between economic diversification and response measures in the INDCs/NDCs

3.1. Introduction

This Chapter seeks to expand our analysis of the interactions between climate change mitigation policies and the international trading regime by discussing the synergies and tensions emerging in this field through the lenses provided by the concept of economic diversification. More specifically, the Chapter builds upon the mapping of trade-related commitments in the INDCs/NDCs examined in Chapter 2 and evaluates such commitments against the long-standing UNFCCC work streams on economic diversification and response measures. By doing so, the Chapter also aims to identify the potential for the measures contained in the INDCs/NDCs to positively contribute to the goal of economic diversification, and accordingly argues that an integrated assessment of the extent to which the trade and climate regimes are currently mutually supportive with respect to this goal will be necessary for such a potential to be fulfilled.

3.2. Economic diversification in the UNFCCC work streams

3.2.1. A definition of economic diversification in the context of climate change

The notion of economic diversification has always been linked to the need to achieve sustainable economic growth through reduced vulnerability to product price fluctuations on world markets, increased resilience to economic conditions, and job creation.²⁵ In this sense, economic diversification can be described as a process or strategy in which some combination of the following occurs:

- diversification of markets for exports;
- diversification of income sources away from domestic economic activities;
- diversification of products and/or practices within an economic activity.²⁶

²⁵ Hugh O Nourse, *Regional Economics: a Study in the Economic Structure, Stability, and Growth of Regions* (McGraw-Hill 1968). See also UNFCCC, 'The concept of economic diversification in the context of response measures. Technical Paper by the Secretariat' (6 May 2016) UN Doc FCCC/TP/2016/3, 7.

²⁶ UNFCCC, *The Nine Work Areas of the Nairobi Work Programme. 9: Economic Diversification*. <<http://unfccc.int/3994.php>> accessed 18 November 2016.

At the same time, economic diversification has come to be closely associated with the concept of innovation, and more precisely with the production of “high-technology, high-value added” goods and services.²⁷

Economic diversification has been discussed under the umbrella of the UNFCCC at least since 2000.²⁸ Over time, such a concept has been understood as referring to at least two of the Convention’s work streams, and namely: (i) within the framework of the Nairobi Work Programme,²⁹ which emphasises the potential of diversification to promote adaptation to climate change by reducing the reliance of developing countries on vulnerable economic sectors; and (ii) in the context of response measures, as a means of reducing the adverse economic impacts arising from their implementation (especially in the case of measures having cross-border effects).³⁰ Whilst the focus on adaptation falls beyond the scope of this study, we will particularly analyse the interplay between economic diversification and response measures, in the light of the adoption of the Paris Agreement but also, more specifically, with respect to subsequent discussions among the Parties on both the domestic and cross-border effects of climate change mitigation policies on economic development.

From this perspective, three preliminary considerations shall be put forward. First, economic diversification in the context of climate change needs to be seen as essentially relating to developing countries, and in particular to those countries that are more vulnerable to the impact of a low-carbon transition because of their dependence on a narrow range of exports, such as:

- fossil fuel exporting countries;
- countries exporting energy-intensive, trade-exposed goods (e.g. steel, cement, chemicals, pulp and so forth) and consumer goods subject to standards and labelling requirements;
- tourism-dependent countries such as SIDS and LCDs; large exporters of agricultural commodities.³¹

²⁷ Paul G Hare, ‘Institutions and Diversification of the Economies in Transition’ in Rob Vos and Malinka Koparanova (eds) *Globalization and Economic Diversification* (Bloomsbury Academic 2011) 24.

²⁸ Economic diversification in the context of the UNFCCC was first mentioned during a workshop organized by the Subsidiary Body for Scientific and Technological Advice (SBSTA) and the Subsidiary Body for Implementation (SBI) on the consequences of the implementation of response measures. See UNFCCC, ‘Implementation of Article 4.8 and 4.9 of the Convention’ (10 May 2000) UN Doc FCCC/SB/2000/2, 6-8.

²⁹ See UNFCCC, ‘Nairobi Work Programme’ <<https://www3.unfccc.int/pls/apex/f?p=333:1:4253476579711040>> accessed 19 November 2016).

³⁰ UNFCCC, ‘Information note to facilitate deliberations on potential environmental, economic and social consequences, including spillover effects, of implementing tools, policies, measures and methodologies available to Annex I Parties, taking into account the submissions and views contained in documents FCCC/KP/AWG/2008/MISC.5, FCCC/KP/AWG/2009/MISC.4 and other relevant documents’ (16 March 2009) UN Doc FCCC/KP/AWG/2009/INF.3, 4.

³¹ *ibid* 22.

Second, economic diversification shall not be considered as a by-product (or a mere consequence) of economic development, not only because of the risks posed by climate change to the growth of developing countries characterized by high degrees of concentration but also, at least in part, when considering the opportunities and benefits of fostering early changes in the productive structures of these economies.³² On the contrary, economic diversification in the context of climate change goes beyond addressing the impact of response measures to pursue mitigation co-benefits³³ and wider sustainable development objectives. This is emphasized by, *inter alia*, the definition in May 2016 of a three-year work programme under the UNFCCC which identifies diversification as a crucial strategy to progress to a low-carbon economy, facilitate a just transition of the workforce and create decent work and quality jobs.³⁴ Third, whilst economic diversification ultimately needs to be undertaken at the national level, it is important to realize that international cooperation in the fields of trade liberalization, access to finance, and preferential market access, plays a major facilitative role in the process, for example by reducing non-domestic barriers to diversification (i.e. trade barriers), encouraging foreign direct investment in non-traditional sectors, and promoting the transfer of technologies.³⁵

This last point is particularly relevant for our analysis, in that it explains why economic diversification represents a useful framing device for exploring the linkages between the climate and trade regimes and identifying the potential for the trade system to contribute to climate change mitigation. In other words, from a legal perspective a low-carbon transition will require mutually supportive climate and trade regimes, as evidenced by the results of the mapping of INDC/NDC response measures contained in Chapter 2. In turn, international trade rules will be able to promote mitigation only insofar as they can enable economic diversification through innovation and adoption of low-carbon technologies in developing countries.

3.3.Potential impacts of response measures on economic diversification

³² Jodie Keane, 'Diversifying Exports in the Context of Climate Change' (April 2011) Overseas Development Institute Background Paper, 2 < <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/7090.pdf>> accessed 19 September 2016

³³ See Art. 4.7 of the Paris Agreement.

³⁴ UNFCCC, 'Improved Forum and Work Programme. Revised Draft Conclusions Proposed by the Chairs' (26 May 2016) UN Doc FCCC/SB/2016/L.2/Rev.1.

³⁵ During the 'Workshop on views and experiences on economic diversification and transformation and on a just transition of the workforce and the creation of decent work and quality jobs', held in Doha from 2 to 4 October 2016 and organized by the Secretariat upon request by the SBSTA and the SBI, it was emphasized that "trade and economic diversification are linked through the global value chain". See UNFCCC, 'Report by the Chairs of the Subsidiary Bodies' (28 October 2016) UN Doc FCCC/SB/2016/INF.2, 7.

The term “response measures” is not explicitly defined in the text of the UNFCCC. A non-technical concept adopted in the work of the two subsidiary bodies to the Convention, it mainly refers to every process, policy or programme undertaken by the Parties to mitigate and reduce GHG emissions, and as such it is included both in Article 4.8 of the UNFCCC *and* in Article 4.15 of the Paris Agreement, in the context of the need to take into consideration the concerns of developing country Parties about the adverse economic impacts arising from the implementation of emissions reduction activities. With a specific emphasis on the Paris Agreement, it can further be argued that the reference to response measures contained in Article 4 (which codifies the INDC/NDC process in the treaty text) clarifies how such measures should be seen as including the full range of commitments expressed by countries in their INDCs/NDCs. As shown by the mapping study conducted in Chapter 2, these commitments may take a variety of forms and pertain to different economic sectors, but can all be associated under the overarching notion of “activities that contribute to climate change mitigation”.³⁶ This section particularly analyses two aspects of the debate on response measure. First, it outlines what the implementation of response measures exactly entails in terms of their impacts on vulnerable economies. Secondly, it discusses the implications of the implementation of response measures for economic diversification, with an eye on the evolution of this relationship since the adoption of the UNFCCC.

As discussed in the previous section, the adverse impacts arising from the implementation of response measures are strictly related to the degree of economic diversification experienced by the affected country, and might entail domestic as well as cross-border effects. Fossil-fuel producing countries, countries exporting carbon-intensive goods and services, and tourism-dependent countries are particularly bound to be impacted, regardless of their exposure to the physical effects of climate change, due to structural changes in the demand for, and prices of, the products and services which comprise the bulk of their exports, as well as in the wider regulatory environment.³⁷ For the purposes of this study, these impacts can be grouped into five categories:

- First, **climate and energy policies in energy importing countries**, (e.g. domestic carbon taxes, cap-and-trade schemes and subsidies for renewable energy technology producers) are

³⁶ It should be noted that the concept of response measures is broader than that of mitigation, and includes the area of adaptation (which falls beyond the scope of this study).

³⁷ During the UNFCCC Doha Workshop (n 31), a representative of the World Bank Group referred to this concept as ‘transition risk’.

probably going to result in a loss of market share for foreign exporters of fossil fuels (but also for foreign competitors in the production of renewable energy technology, for example).³⁸

- Second, **border tax adjustments** that target carbon-intensive products might cause a similar loss of market share in carbon-intensive export sectors or require importers to “participate in emissions trading schemes and purchase emissions allowances according to the carbon content of products they supply”.³⁹
- Third, **higher technical standards and labelling requirements** enacted in both importing and exporting countries might lead to a loss of competitiveness, thereby impacting non-domestic firms as well as domestic firms that don’t have the financial and/or technical capacity to adapt to the new regulations, respectively.
- Fourth, **possible structural shifts in consumers and/or investors’ preferences**, coupled with the adoption of disruptive business models and low-carbon technologies, might further drive down competitiveness and cause unemployment due to the demand of new, highly-skilled work force and labour-market rigidities.
- Fifth, **plurilateral or multilateral efforts**, such as international carbon taxes or levies, might impact revenues and trade flows in certain sectors of the economy, such as maritime transport, air-freight, and tourism.⁴⁰

At the same time, it should be noted that the ongoing discussions around the issue of response measures have profoundly changed since the adoption of the UNFCCC. On the one hand, UNFCCC debates on the need to minimize the adverse impacts of response measures have had to bypass the initial emphasis on the obligation for developed countries to provide compensation for the cross-border effects of their mitigation policies (something which continues to represent a highly controversial issue) and slowly re-focus negotiating efforts on topics such as climate finance, technology transfer and technical assistance.⁴¹ On the other, the emergence at COP19⁴² of a new bottom-up approach to climate change mitigation (embodied by the INDC/NDC process and ultimately enshrined in the Paris Agreement) has effectively concurred to reshape the entire discourse around response measures, not

³⁸ See for example Philip Bagnoli and others, *The Incidence of Carbon Pricing: Norway, Russia and the Middle East* (2008) OECD Economic Studies No.44, 2008/1 <<http://www.oecd.org/eco/42505369.pdf>> accessed 19 November 2016.

³⁹ Keane (n 27) 4.

⁴⁰ UNFCCC (n 26) 22.

⁴¹ Chris Wold, Don Gourlie and Amelia Schlusser, ‘Climate Change, International Trade, and Response Measures: Options for Mitigating Climate Change Without Harming Developing Country Economies’ (2014) 46 *The George Washington International Law Review* 531.

⁴² UNFCCC, ‘Report of the Conference of the Parties on its nineteenth session, held in Warsaw from 11 to 23 November 2013. Addendum. Part two: Action taken by the Conference of the Parties at its nineteenth session’ (31 January 2014) UN Doc FCCC/CP/2013/10/Add.1.

only extending the applicability of emissions reduction obligations to all Parties (including developing country Parties), but more importantly doing so in a way which reflects their common but differentiated responsibilities and respective capabilities, as well as the different national circumstances.⁴³

The main consequence of this evolution is two-fold. First, it is no longer possible to only look at the cross-border effects of response measures implemented in developed countries. Rather, an increasing role will be played by purely domestic considerations, as more developing countries start to adopt their own climate change mitigation policies and programmes. Secondly, it is important to realize that the new bottom-up architecture of climate governance emphasizes the opportunities that the implementation of response measures brings for diversifying the economies of developing countries. In other words, if each country has the opportunity (and obligation) of designing its own response measures, this creates a powerful incentive to do so through actions that are conducive to economic diversification, just transition of the work force, and job creation. In turn, however, the potentially competing nature of countries' interests and priorities creates the urgent need to strengthen international cooperation and promote synergies between response measures and international trade, so as to avoid unilateral resort to trade-restrictive measures that could substantially reduce market opportunities and hinder the diversification efforts of the most vulnerable economies.⁴⁴

3.4. Framing the mapping of response measures through the lenses of economic diversification

As mentioned in the previous section, a necessary precondition for analysing the extent to which it is possible to build mutually supportive trade and climate regimes is represented by the need to understand how (and if) the response measures currently contained in the INDCs/NDCs can support (or hinder) economic diversification. Building on the mapping conducted in Chapter 2, the five categories of response measures identified thereby offer an opportunity to discuss the potential effects of such measures on economic diversification, at both the domestic and cross-border level. Although our grouping differs from the categorization of response measures proposed by the UNFCCC Secretariat in 2009 and based on discussions under the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP),⁴⁵ our analysis of positive and negative impacts broadly mirrors the one conducted at the UNFCCC level, and will be described below. Examples will be taken primarily from the INDCs/NDCs of countries that could potentially be

⁴³ Paris Agreement, Art. 4.3.

⁴⁴ Keane (n 27) 4; and Wold, Gourlie and Schlusser (n 37).

⁴⁵ UNFCCC (n 26).

most affected by the implementation of response measures and, consequently, most interested in the interplay between these measures and economic diversification (see Section 3.2.1). From this perspective, it should also be emphasized that the pursuit of diversification through actions and plans that have mitigation co-benefits is explicitly mentioned in the INDCs of five Gulf Cooperation Council members (namely Bahrain, Kuwait, Saudi Arabia, Qatar and the United Arab Emirates). The specific reference is in line with the commitments announced in 2012 by Bahrain, Saudi Arabia, Qatar and the United Arab Emirates during COP18 (i.e. the so-called Economic Diversification Initiative).⁴⁶

3.4.1. Measures related to the energy sector

As shown in Chapter 2, under this category we have mapped any measure relating to the energy sector with the exception of financial, market-based and direct trade measures (such as, *inter alia*, subsidies, domestic carbon taxes, and R&D expenditures), all of which are listed under ‘financial and direct trade measures’. To an extent, this represents a residual category, which essentially consists of green public investments and command and control measures such as energy policy reforms, regulatory standards and goods/technology mandates. Typical examples from this category that can be found in the INDCs/NDCs include commitments to increase the share of renewables within the domestic energy mix, construction of hydroelectric power plants, renewable energy mandates, improvements to energy grids, and so forth (Table 1):

Table 1: Examples of INDC/NDC response measures in the “Energy Sector” category.

Country	Response measures
Bahrain	“Bahrain Petroleum Company (BAPCO) project consisting of the installation of 21,000 smart solar panels to generate a substantial number of KwHs of electricity annually. The 5MW PV grid-connected plant aims at demonstrating PV solar technology under local conditions to support up scaling of renewable energy.” (p.3)
China	“Achievement of the installed capacity of wind power reaching 200 gigawatts, the installed capacity of solar power reaching around 100 gigawatts and the utilization of thermal energy reaching 50 million tons coal equivalent by 2020.” (p.7)
Saudi Arabia	“Investment in and implementation of ambitious programs for renewable energy to increase its contribution to the energy mix. The scope will include solar PV, solar thermal, wind and geothermal energy and waste to energy systems.” (p.3)

⁴⁶ UNFCCC Decision 24/CP.18, ‘Economic Diversification Initiative’ (8 December 2012) UN Doc FCCC/CP/2012/8/Add.3.

When implemented domestically in countries that experience a high degree of reliance on fossil fuel production and exports (such as GCC members), response measures in the energy sector are certainly positive for economic diversification, in that they facilitate the shift from vulnerable energy sources to a diversified energy mix while supporting increased demand for high-skilled labour.⁴⁷ At the same time, the impact of similar policies on other countries (especially developing countries) can be more uncertain. On the one hand, they might provide advantages for these countries' exporters and suppliers of environmentally sound technologies (when they exist, and provided that the measures themselves are not enacted in a discriminatory manner). On the other, they could instead block market access to foreign suppliers of substitutes for conventional goods and technologies (other fossil fuel producing countries, for example).⁴⁸

Given the vague wording with which the measures grouped in this category are phrased in the INDCs/NDCs, there is limited scope for predicting what the specific outcomes could be in practice, as much will depend on how the related domestic policies will be drafted. In particular, whilst it is clear that sustaining long-term growth through a diversification of the energy mix already constitutes a priority for many fossil fuel exporting countries (as emphasized by the Economic Diversification Initiative referenced above), it also remains evident that a substantial contribution from oil exports revenues will continue to be necessary to fund this transition.⁴⁹

3.4.2. Green industrial policies

The category of green industrial policies mainly concerns standards, labelling requirements and other command and control measures in the field of industrial production of goods, focusing either on the energy performance of the goods themselves or on PPMs.⁵⁰ In some cases, these measures go beyond standard-setting to ban the use of certain goods altogether (e.g. Viet Nam's commitment to "remove obsolete and energy consuming technologies in energy production and consumption systems") or flat-out develop plans to boost the service sector as an alternative to carbon-intensive industrial development (e.g. Qatar's pledge to diversify its economy by promoting the sustainable tourism sector).

⁴⁷ UNFCCC, 'Just Transition of the Workforce, and the Creation of Decent Work and Quality Jobs. Technical Paper by the Secretariat' (26 October 2016) UN Doc FCCC/TP/2016/7, 12.

⁴⁸ UNFCCC (n 26) 6.

⁴⁹ The Intended Nationally Determined Contribution of the Kingdom of Saudi Arabia under the UNFCCC (November 2015) <<http://www4.unfccc.int/submissions/INDC/Published%20Documents/Saudi%20Arabia/1/KSA-INDCs%20English.pdf>> accessed 24 November 2016.

⁵⁰ Like the commitments mapped in the 'energy sector' category, the measures listed here do not include financial direct and trade measures.

Despite being domestic in nature, standards and labelling requirements usually apply to imported goods as well, and as such might have both domestic implications and (un)intended cross-border effects. At the domestic level, it has been argued that these schemes, when properly crafted,⁵¹ can promote innovation and thereby boost so-called traditional economic diversification (which entails moving up value chains within traditional economic sectors),⁵² provided that the country already owns a domestic industry in the regulated sector. By contrast, whilst they might also have positive impacts for other countries which already have environmentally sound technologies, depending on the specifications they contain, these measures are also bound to have adverse effects for countries exporting carbon-intensive goods, inducing a loss of market share for those exporters that do not have the capacity to comply with new regulations. In turn, this could bring about diminishing revenues from traditional sectors, causing less capital to be available for diversification investments.

Efficiency standards and eco-labelling requirements (targeting either goods themselves or PPMs) represent a consistent component of many INDCs/NDCs (see Table 2), and as such might have an important role to play in the fulfilment of the respective commitments under the Paris Agreement. As with the measures discussed above for the energy sector, domestic legislation will prove instrumental in determining the contribution of green industrial policies to diversification, but it can already be argued that the widespread adoption of standards which can be observed in the INDCs/NDCs is certainly promising. More specifically, by preventing the dumping of obsolete goods in countries with lower standards and levelling the playing field, a relatively uniform take-up of these measures might create incentives to innovation in many developing countries which have the potential to move up value chains, especially if coupled with a parallel boost to technology transfer and FDI. In addition, it could help small and medium enterprises (SMEs) in developing countries access international markets from which they were once excluded because of lack of compliance with existing standards.

Table 2: Examples of standards and labelling requirements included in INDCs/NDCs (including focus on both PPMs and energy performance of goods):

Country	Industrial Sector	Response measure
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⁵¹ See for example Charles Edquist and Jon Mikel Zabala-Iturriagagoitia, 'Public Procurement for Innovation as Mission-oriented Innovation Policy' (2012) 41 *Research Policy* 1757; and Herman R J Vollebergh and Edwin Van der Werf, 'The Role of Standards in Eco-Innovation: Lessons for Policymakers' (2014) 8(2) *Review of Environmental Economics and Policy* 230.

⁵² UNFCCC (n 31) 4.

Colombia	Economy-wide	“Sectorial Mitigation Action Plans (SMAPs) that aim to maximize the carbon-efficiency of economic activities at the national and sectorial levels.” (p.8)
India	Home Appliances	“Standards and Labeling Programme to provide consumers with information about the energy consumption of an appliance.” (p.11)
Saudi Arabia	Building/Transportation/Various	“Introduction of efficiency standards in the building and transportation sectors as well as the implementation of energy efficiency measures, in various industrial establishments.” (p.3)
Uganda	Building	“Development and enforcement of building codes for energy efficient construction renovation.” (p.10)
United Arab Emirates	Transportation	“The UAE continues to improve the emission standards for new motor vehicles, in accordance with European emission standards, as well as through the introduction of standard labels.” (p.3)

3.4.3. Green government procurement

When discussing the category of green government procurement, we have stated that procurement practices, although not widely included in the INDCs/NDCs, are nonetheless considered to be important tools to support innovation and create demand for low-carbon goods and services. At the same time, however, we have emphasized that on the short term such measures can be trade-supportive (and thus promote technology transfer) or trade-restrictive (e.g. as a means of protecting infant domestic industries), depending on the way in which they are drafted. These connotations reverberate on the implications of green government procurement obligations for economic diversification, in the sense that such implications will be positive (both domestically and for other countries) whenever the obligations are drafted in a non-discriminatory way, so as to promote the transfer of low-carbon technologies, and negative whenever they are instead designed to protect inefficient domestic industries and thereby hinder innovation and beneficial competition.⁵³

With respect to the commitments mapped in Chapter 2, it appears that response measures relating to green government procurement are extremely limited, and while some potential for traditional economic diversification can be seen in the fields of public transportation, public buildings

⁵³ On the other hand, however, it has also been argued that economic diversification in developing countries might benefit from a certain degree of protection of domestic firms through domestic content requirements in government procurement practices. See for example Michael Warner, *Local Content in Procurement: Creating Local Jobs and Competitive Domestic Industries in Supply Chains* (Greenleaf 2011) 23.

and public lighting, further analysis will be needed to evaluate the possibility of domestic industries in many developing countries to effectively take part in the procurement process and move up value chains. Some examples are nonetheless provided in Table 3 below.

Table 3: Examples of response measures in the green government procurement category.

Country	Typology	Response measure
Lesotho	Public Transportation	“Investments in fuel-efficient vehicles for public transportation.” (page not numbered).
Burkina Faso	Public Building	“Promotion of architectural structures that use materials that are local, renewable and insulating and have a low energy cost for all public construction.” (p.38)
Senegal	Public Lighting	“Energy efficiency in street lighting (replacing 75,000 streetlights).” (p.9)

3.4.4. Financial and direct trade measures

Financial and direct trade measures comprise the most substantial category in our mapping study. This category encompasses two broad areas, namely: (i) purely domestic measures, such as domestic carbon taxes and levies, subsidies (or removal of subsidies), market mechanisms (e.g. FITs, RPS, and emissions trading schemes), and investments in R&D; and (ii) trade-related measures, such as tariffs and import duties, border tax adjustments based on carbon content, and import bans.⁵⁴ As evidenced in Section 2.3.3.1, purely domestic measures, and particularly taxes, subsidies and market-based mechanisms, represent a major focus in countries’ efforts to meet their obligations under the Paris Agreement, and from this perspective they also carry a lot of potential implications for economic diversification.

3.4.4.1. Domestic measures

⁵⁴ It should be noted that this distinction does not concern the effects of the measures, as subsidies or domestic carbon taxes, for example, can obviously also have impacts on competitiveness and trade flows. Rather, the distinction indicates the origin of the good or service targeted by a measure: domestic measures primarily target domestic products (with the exception of consumption subsidies, which do not discriminate between domestic and foreign producers), while trade-related measures are imposed on imported products.

The first sub-category consists of financial measures that are purely domestic in scope, such as taxes, subsidies to consumers of low-carbon goods, domestic market mechanisms and R&D expenditures (Table 4).

Table 4: Examples of domestic financial measures (mapped as part of the ‘Financial and direct trade measures’ category).

Country	Typology	Response measure
China	Taxes (preferential taxation)	“Implementation of preferential taxation policies for promoting the development of new energy and to improve mechanisms of pricing, grid access and procurement mechanisms for solar, wind and hydro power.”
Chile	Carbon tax	“CO2 emission tax. Annual tax benefit lien on carbon dioxide, among other gases, produced by facilities whose stationary sources, made up of boilers or turbines, have an aggregate thermal power equal or higher than 50 MWt.”
Guatemala	Subsidies	“Establishment of a program of tax incentives and subsidies focused on the use of clean energy for public and private transport, including legislation to regulate GHG emissions in the collective and individual public transport.”
Ethiopia	Removal of subsidies	“Removal of fossil fuel subsidies.” (already implemented)
Egypt	Emissions trading schemes	“A national market for carbon trading may be established. This national market may further be developed into a regional market.”
Ghana	Feed-in Tariffs	“Set up feed-in-tariff for renewable energy technologies.”

Domestic measures might not only provide more opportunities for national firms, but also expand the market share for green energy technology producers based in developing countries. At the same time, subsidies to domestic producers of environmentally sound technologies might be negative for foreign competitors, and domestic content requirements in FITs and RPS could also work as protectionist measures temporarily shielding national firms from the competition of economies in transition. In addition, the use of emissions trading schemes of carbon taxes might merely promote the relocation of carbon-intensive industries in developing countries (even though the point is controversial, in line with the long-standing pollution haven hypothesis),⁵⁵thereby blocking innovation

⁵⁵ See for example Eric Neumayer, ‘Pollution Havens: Do Developing Countries Set Inefficient Environmental Standards to Attract Foreign Investment?’ in Eric Neumayer, *Greening Trade and Investment: Environmental Protection Without Protectionism* (Earthscan 2001); Eric Neumayer, ‘Pollution Havens: An Analysis of Policy

and economic diversification in the latter. Finally, the removal of subsidies to fossil fuel consumption and production might be conducive to diversification domestically, but production subsidies could also increase the market share of other fossil fuel exporting countries, according to some estimates.⁵⁶

Within domestic measures, expenditures in R&D require a separate consideration. The importance of such public investments in promoting economic diversification, in fact, will primarily be determined by how R&D results are used to stimulate innovation and leverage the opportunity of a country to participate in global value chains,⁵⁷ because their free availability (or availability on commercial terms) might facilitate technology transfer to developing countries, whilst licensing could by contrast allow the innovating country “to use the new technology to gain a competitive advantage”.⁵⁸

3.4.4.2. Trade-related measures

Trade-related measures, including tariffs and import duties and import bans,⁵⁹ are predominantly mentioned in the INDCs/NDCs of developing countries, and as such can grant domestic producers of environmentally sound technologies with a form of protection of infant industries and a simultaneous loss of market share for competitors from developing countries. Some examples are provided in Table 5.

Table 5: Examples of trade-related response measures (mapped as part of the ‘Financial and direct trade measures’ category).

Country	Typology	Response measure
Cook Islands	Tariffs	“Customs Tariff Act 2012 established noteworthy duty rates on the importation of motor vehicles.”
Guyana	Removal of tariffs	“Legislation has been enacted to remove import duty and tax barriers for the importation of renewable energy equipment, compact fluorescent lamps and LED lamps to incentivize and motivate energy efficient behavior.”

Options for Dealing with an Elusive Phenomenon’ (2001) 10(2) *Journal of Environment and Development* 147; Jennifer Clapp, ‘What the Pollution Havens Debate Overlooks’ (2002) 2(2) *Global Environmental Politics* 11; and Aaron Cosbey and Richard Tarasofsky, *Climate Change, Competitiveness and Trade. A Chatham House Report* (Chatham House 2007).

⁵⁶ UNFCCC (n 26) 7.

⁵⁷ Daria Taglioni and Deborah Winkler, *Making Global Value Chains Work for Development* (Trade and Development Series, World Bank Group 2016) 185.

⁵⁸ UNFCCC (n 26) 8.

⁵⁹ In practice, border tax adjustments could be considered akin to tariffs, because their impact would be equivalent to that of an increased tariff, reducing market share for foreign producers.

Kuwait	Import ban	“Environmental Protection law prevents importing any hardware or equipment that does not match the specifications of energy conservation.”
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Trade-related measures can provide preferential treatment for low-carbon goods and technologies, positively impacting the exports of other countries that are also producing them. It should be noted that trade liberalization for low-carbon goods could also make it more difficult for developing countries to protect infant industries in the affected sectors. In turn, however, the technology spillovers and direct transfer of technologies would also drive diversification, and in some cases, give rise to ‘technological leapfrogging’ as developing countries “bypass intermediate technologies”.⁶⁰

3.4.5. International cooperation

As discussed in Chapter 2, commitments to international and regional cooperation on climate change mitigation represent an important component of several INDCs/NDCs. This reflects the centrality attributed to the themes of market-based mitigation, climate finance and technology transfer under the Paris Agreement, as well as the more general attention paid to the implementation of response measures in developing countries. By their very nature, the proposed actions mapped in this category would have to be agreed and coordinated internationally, which implies that there is ample scope for ensuring that their impacts on diversification are positive at both the domestic and cross-border level. At the same time, many of the contributions (or requests of contributions) contained in the INDCs/NDCs limit themselves to quantifying the estimated costs of the implementation of certain mitigation activities, thereby making it hard to evaluate such impacts in the absence of real financial flows and specific mechanisms for the disbursement of funds. As a consequence, the main measures for which it is possible to discuss the implications for economic diversification under this category are essentially two, and namely: (i) commitments to facilitate FDI and technology transfer (including through South-South cooperation); and (ii) statements of support for the establishment of international market-based mechanisms or the use of existing ones (e.g. emissions trading schemes, international offsets) (Table 6).

Table 6: Examples of INDC/NDC response measures to be implemented through international commitments.

⁶⁰ UNFCCC (n 26) 13.

Country	Typology	Commitment/Statement
Burundi	Technology transfer	“Promotion of technology transfer to support research and development, adopt new technologies, and harness them for the national context.” (p.11)
China	Technology transfer / Climate finance	“Establishment of the Fund for South-South Cooperation on Climate Change, providing assistance and support, within its means, to other developing countries including the small island developing countries, the least developed countries and African countries to address climate change.” (p.16)
Morocco	International market-based mechanisms	“Morocco considers the establishment of international market-based mechanisms of primary importance, in order to promote cooperation between parties with respect to their mitigation contributions, as per Article 6 of the Paris Agreement.” (page not numbered)
Sao Tome and Principe	International market-based mechanisms	“Sao Tome and Principe supports the use of market mechanisms including the results of mitigation pre-2020, such as the use of Emission Reduction Certificates (ERCs) generated by CDM projects and programs.” (page not numbered)

Even before the adoption of the Paris Agreement, policies in the fields of technology transfer and technology cooperation had been identified by the IPCC as measures that could “conceivably play a significant role in an international climate regime”.⁶¹ In addition to their potential to lower the relative cost of environmentally sound technologies, increase the efficiency of international R&D activities, and facilitate investment of foreign capital into non-traditional sectors, these measures might also generate positive technological spillovers for countries that do not participate in a specific bilateral or plurilateral agreement, and as such trigger a domino effect towards diversification.

By contrast, the consequences of the establishment (or use) of international market-based mechanisms have been described as uncertain, even though a distinction should be made between emissions trading schemes and offset mechanisms.⁶² With respect to the former, it has been argued that if regional or international trading schemes are stringent enough, they might induce relocation of carbon-intensive industries or redirection of investment, locking host countries into polluting traditional sectors (but evidence on the topic is mixed).⁶³ As for offset mechanisms, it is certainly possible that increased investment and employment in host countries promote economic diversification, but it is also evident that their success will in practice hinge on the effectiveness of MRV systems in ensuring the transparency and accountability of the entire framework.

⁶¹ Robert N Stavins and others (n 5) 1035.

⁶² UNFCCC (n 26) 8-10.

⁶³ For information on the EU Emissions Trading Scheme, see for example IEA, *Issues behind Competitiveness and Carbon Leakage: Focus on Heavy Industry* (IEA information paper, IEA 2008).

3.5. Trade rules as a precondition for promoting economic diversification through response measures

The main argument of this Chapter is that the universal, bottom-up nature of the INDCs/NDCs reverses the relationship between economic diversification and response measures. In other words, the possibility for developing countries to design their nationally determined contributions in the light of respective national capabilities provides them with an opportunity to consider response measures as drivers of their own economic diversification and development, rather than as policies designed by others (i.e. developed countries) and characterized by a range of (mostly) negative effects that shall be minimized. Our analysis suggests that there is certainly scope for the current INDCs/NDCs to promote diversification, particularly in the countries where the measures are implemented. At the same time, the evidence for cross-border effects is more mixed, as the nature and magnitude of their impacts will largely hinge upon the design of domestic policies which are not necessarily reflected in the INDCs/NDCs. In addition, the way in which national implementation is carried out will also likely involve trade-offs. For example, domestic content requirements included in green government procurement practices or FIT schemes might protect infant industries and thus promote diversification, but they could also hinder innovation and technology transfer.

Taken together, these considerations concur to explain why the multilateral regulation of international trade should play a major role in the debate around economic diversification and response measures, while also suggesting what this role could be in practice. There are at least two reasons for considering trade rules as necessary components of the equation. First, most of the adverse impacts outlined in Section 3.3. “are (or will be) felt through the mechanisms of trade”,⁶⁴ as specified in Section 3.4. Second, trade liberalization is widely considered as one of the main drivers of both import and export diversification, an argument that is confirmed by our analysis of the response measures contained in the INDCs/NDCs.⁶⁵

From a legal perspective, a precondition for response measures to be able to promote diversification is therefore represented by the need to take the international trade regime into account

⁶⁴ *ibid* 8. More specifically, the effects of response measures are felt through the mechanisms of trade in two ways. First, the change in the demand for a certain good or service in the country which implements a response measure is going to impact foreign exporters of that good or service. Secondly, the measure itself can influence trade flows, to the extent that it explicitly lifts barriers (or applies restrictions) to certain imports or otherwise *de facto* affects them.

⁶⁵ See Pushan Dutt, Ilian Mihov and Timothy Van Zandt, ‘Trade Diversification and Economic Development’ (28 October 2008) Mimeo, INSEAD; and OECD, ‘The Impact of Trade Liberalisation on Jobs and Growth’ (2011) OECD Trade Policy Paper No. 107 <http://www.oecd-ilibrary.org/trade/the-impact-of-trade-liberalisation-on-jobs-and-growth_5kgj4jfj1nq2-e> accessed 24 November 2016.

when implementing the INDCs/NDCs. On the one hand, domestic mitigation policies that are bound have trade-restrictive effects (e.g. a carbon tax on carbon-intensive goods) need to carefully consider design options that are consistent within the framework provided by the WTO and the relevant FTAs. On the other, trade rules should in turn be made more supportive of diversification, for example by recognizing a fair policy space for developing countries to subsidy a shift in their economic structure, preventing protectionist policies by developed countries in the environmental goods and services sector, and facilitating technology transfer and adoption of low-carbon technologies. Accordingly, Chapter 4 will conduct an analysis of the complex interlinkages that exist between the trade and climate regimes, with a particular emphasis on the possibility for FTAs to serve as positives driver for the implementation of the INDCs/NDCs at the national and regional level.⁶⁶

⁶⁶ With respect to the larger debate on the mutual supportiveness of UNFCCC and WTO rules, see for example James Bacchus, *Global Rules for Mutually Supportive and Reinforcing Trade and Climate Regimes* (E15 Expert Group on Measures to Address Climate Change and the Trade System – Policy Options Paper, E15Initiative, International Centre for Trade and Sustainable Development and World Economic Forum 2016).

4. The incorporation of climate-related measures into Free Trade Agreements

4.1. Introduction and methodology

Free Trade Agreements (FTAs) provide many opportunities to mitigate climate change challenges. First, economic growth that result from the liberalization of trade in goods and services generates useful economic resources to allow the transition from fuel intensive industries into cleaner and less polluting industries.⁶⁷ Second, FTAs provide a suitable framework to reduce/eliminate barriers on environmental goods and services, which leads to lowering the cost of green energy technologies.⁶⁸ Finally, many FTAs incorporate countries' response measures submitted in their INDCs/NDCs as a way to strengthen the capacity of states to fulfill their climate change commitments. When implementing these instruments, states are shifting the market space from carbon-intensive industries to green industries and hence promoting economic diversification. Therefore, the most pressing challenge when designing FTAs is to find a balance between promoting trade liberalization on the one hand and allowing a policy space for countries to implement their obligations under the UNFCCC on the other hand in order to ensure that trade and environment are mutually supportive. Examples of FTAs recognizing the relationship between trade and climate change include,

Canada-Peru, Art. 1701(2)

"The Parties recognize the mutual supportiveness between trade and environment policies."⁶⁹

EU-Korea, Art. 13.1(2)

"The Parties recognize that economic development, social development and environmental protection are interdependent and mutually reinforcing components of sustainable development."⁷⁰

⁶⁷ Joshua Meltzer, 'The Trans-Pacific Partnership Agreement, the environment and climate change' in Tania Voon (ed) *Trade and Liberalization and International Co-operation: A legal Analysis of the Trans-Pacific Partnership Agreement* (Edward Elgar 2014) <http://www.brookings.edu/wp-content/uploads/2016/06/Meltzer-TPP-Environment-Chapter_version-2.pdf> accessed 15 December 2016, 1.

⁶⁸ *ibid*, 20. Reducing tariffs on all goods and services to zero in FTAs would overcome the need to specifically target environmental goods and services. Even if it is not explicitly mentioned in the FTAs, trade liberalization covers all types of goods and services.

⁶⁹ Canada-Peru Free Trade Agreement (signed 29 May 2008, entered into force 1 August 2009) <<http://www.international.gc.ca/trade-agreements-accords-commerciaux/agr-acc/peru-perou/peru-toc-perou-tdm.aspx?lang=eng>> accessed 12 December 2016, art. 1701(2).

⁷⁰ European Union-South Korea Free Trade Agreement (signed 23 May 2009, entered into force 11 July 2011) <<http://ec.europa.eu/trade/policy/countries-and-regions/countries/south-korea/>> accessed 10 December 2016, art. 13.1(2)

This Chapter analyzes the role of FTAs in addressing climate change challenges with a particular emphasis on the possibility for these agreements to serve as positive drivers for the implementation of the climate change measures at the national and regional level.⁷¹ It emphasizes the need to ‘provide a level playing field between clean and fossil energies’ in order to achieve climate change mitigation obligation.⁷² As explained in previous chapters, states have realized that they need to use trade tools to undertake their climate change obligations, which is broadly manifested in the response measures adopted in the NDCs/INDCs as provided in the countries summaries. These measures could include taxes, feed-in-tariffs, subsidies to consumers of low-carbon goods and market-mechanisms, and other trade measures. To ensure their effective implementation these response measures need to be in line with states’ trade obligations under FTAs.

Section 4.2 identifies the general architecture of climate change provisions included in FTAs and the main issues that are covered. Section 4.3 deals specifically with different climate-related measures adopted by parties in their FTAs such as, policies promoting the production and trade in environmental goods and services, subsidy reform for green energy, standards, technical regulations and conformity assessment, and international cooperation (the provision of financial support, technology transfer from developed countries to developing countries to implement their climate change commitments). Section 4.3 identifies the exceptions adopted in FTAs related to the use of measures, including environmental measures, necessary to protect human, animal, or plant life or health. Such exceptions are specifically relevant for mitigation and financing measures to respond to climate change in developing countries.

With regard to methodology, this chapter relies on TREND Codebook (TRade and ENvironment Database), a project created by Professor Jean Frédéric Morin, aiming to identify more than 300 different types of environmental provisions in more than 660 trade agreements.⁷³ In addition, this chapter also focuses on environmental chapters included in the most recent trade agreements, such as Comprehensive Economic and Trade Agreement⁷⁴, Trans-Pacific Partnership⁷⁵ and EU-

⁷¹ Climate change provisions include any provision addressing environmental protection even when the terms climate change are not included.

⁷² James Bacchus (n 66) 7.

⁷³ Jean-Frédéric Morin, ‘TREND TRade and ENvironment Database Codebook,’ Canada Research Chair in International Political Economy, University of Laval (July 2016) <<http://www.chaire-epi.ulaval.ca/trend>> accessed 17 November 2016 [hereinafter Codebook].

⁷⁴ EU-Canada Comprehensive Economic and Trade Agreement (signed on 30 October 2016, not yet in force) <<http://ec.europa.eu/trade/policy/in-focus/ceta/ceta-chapter-by-chapter/>> accessed 12 December 2016.

⁷⁵ In Honolulu Hawaii, on 12 November 2011, the Leaders of the nine Trans-Pacific Partnership countries – Australia, Brunei Darussalam, Chile, Malaysia, New Zealand, Peru, Singapore, Vietnam, and the United States – announced the achievement of the broad outlines of an ambitious, 21st-century Trans-Pacific Partnership (TPP) agreement. See Trans-Pacific Partnership (signed 4 February 2016) <<https://ustr.gov/trade-agreements/free-trade-agreements/trans-pacific-partnership/tpp-full-text>> accessed 13 December 2016.

Singapore Free Trade Agreement.⁷⁶ The aim is to identify overall trends of climate change related provisions in trade agreements that have effect on the response measures we identified in Chapter 2, and specifically the ones that promote economic diversification.⁷⁷

4.2. The Architecture of climate change provisions in FTAs

In order to achieve coherence between climate change and trade, many FTAs include a separate chapter on environmental protection, which give parties a leeway to adopt numerous trade measures, which are specifically targeted to implement climate change obligations leading to economic development and diversification. While environmental protection provisions in trade agreements differ considerably, they usually cover six main areas that are directly relevant to climate change protection:

- The right of the parties to regulate the level of environmental protection
- The non-derogation commitment⁷⁸
- The commitment by the parties to adopt, maintain and implement laws and regulations to fulfill their environmental obligations
- Means to encourage environmental protection including, the promotion of renewable and clean energy, establishment of international standards, subsidy reform to promote climate-friendly goods and services
- International cooperation and technology transfer
- Dispute settlement mechanisms

These different provisions show the complementary role that FTAs can play to mitigate climate change challenges. As noted by Morin et al., FTAs offer another venue to strengthen climate commitments and sometimes to achieve more stringent and more precise obligations on states compared to the multilateral environmental agreements. This is mainly due to the limited number of

⁷⁶ EU-Singapore Free Trade Agreement (signed 17 October 2016, did not enter into force yet) <http://trade.ec.europa.eu/doclib/docs/2013/september/tradoc_151766.pdf> accessed November 14, 2016.

⁷⁷ This chapter does not include domestic policies and legislations adopted by countries for the inclusion of environmental protection in trade agreements. For more detailed information on this subject, see Clive George, 'Environment and Regional Trade Agreements: Emerging Trends and Policy Drivers' (2013) OECD Trade and Environment Working Papers 2013/04 <<http://www.oecd-ilibrary.org/docserver/download/5jz0v4g45g6h.pdf?expires=1479629689&id=id&accname=guest&checksum=7B40CA5DB225ECC41045E70E7033C180>> accessed 20 November 2016.

⁷⁸ An example for the non-derogation commitment is, 'it is inappropriate to encourage trade or investment by weakening or reducing the protections afforded in its environmental laws' United States–Korea Free Trade Agreement (signed 30 June 2007, entered into force 15 March 2012) <<https://ustr.gov/trade-agreements/free-trade-agreements/korus-fta>> accessed 21 November 2016, art. 20.3.1(b) [hereinafter KORUS].

parties involved and the breadth of issues covered under FTAs and hence the possibilities of bargaining and issue linkages.⁷⁹ Additionally some of the provisions adopted in the FTAs provide a policy space for the implementation of response measures included in the parties INDCs/NDCs in way that is consistent with trade rules. The analysis of climate provisions in trade agreements focus on those response measures identified in Chapter 3, which has positive effects on economic diversification, at both the domestic and cross-border level.

Many FTAs recognize the use of trade measures to achieve environmental protection, including climate change mitigation commitments. For instance:

Chile-US, Art. 19.9

“The parties recognize the importance of multilateral environmental agreements, including the appropriate use of **trade measures** in such agreements to achieve specific environmental goals.”⁸⁰

4.3. Climate-related measures included in FTAs

FTAs recognize the right of states to regulate the protection of the environment in their own territory. This regulation takes numerous forms, such as the right to determine their own environmental policies and the right to enforce environmental measures. In the context of climate change, the INDCs/NDCs submitted by countries and analyzed in details in Chapter 2 are considered the core commitments established by parties to the Paris agreement to exercise their regulatory right. The next sub-sections identify different climate-related measures adopted in FTAs relating to climate change mitigation:

- Policies promoting the production and trade/investment in environmental goods and services
- Subsidy Reform for green energy and development
- Standards, Technical Regulations and Conformity Assessment
- International Cooperation

⁷⁹ Jean-Frédéric Morin, Nicholas Michaud and Corintin Bialais, ‘Trade negotiations and Climate Governance, the EU as a frontrunner but not yet a leader’ (September 2016) IDDRI Issue Brief N°10/2016 <[http://www.iddri.org/Publications/Les-negociations-commerciales-et-la-gouvernance-climatique-l-UE-comme-precursur,mais-pas-\(encore\)-meneur](http://www.iddri.org/Publications/Les-negociations-commerciales-et-la-gouvernance-climatique-l-UE-comme-precursur,mais-pas-(encore)-meneur)> accessed 12 Dec 2016.

⁸⁰ United States-Chile Free Trade Agreement (signed 6 June 2003, entered into force 1 January 2004) <<https://ustr.gov/trade-agreements/free-trade-agreements/chile-fta>> accessed 10 December 2016, art. 19.9. Chile’s INDC reveals its commitment to use trade measures to promote environmental goods, by imposing a tax on initial sale of lightweight vehicles, and charging a tax inversely proportional to vehicle performance. This climate change commitment is in line with Chile’s obligations under the Chile-US FTA.

Climate-related measure	Free Trade Agreements	Relevant Provision
Policies promoting the production of environmental goods and services	EU-CARIFORUM (EPA)	<i>“The Parties agree to cooperate, including by facilitating support in the following areas: (e) assistance to producers to develop and/or improve production of goods and services, which the Parties consider to be beneficial to the environment.”</i> (art.191.2.e)
Policies promoting the trade and investment in environmental goods and services	Comprehensive Economic and Trade Agreement (CETA)	<i>“The Parties shall ... pay special attention to facilitating the removal of obstacles to trade or investment in goods and services of particular relevance for climate change mitigation and in particular trade or investment in renewable energy goods and related services”</i> (art. 24.9)
Subsidy Reform for green energy	EU-Singapore	<i>“The Parties share the goal of progressively reducing subsidies for fossil fuels”</i> (art. 13.11.3)
Standards, Technical Regulation, Conformity Assessment	EU-Singapore	<i>“The Parties shall specify technical regulations based on product requirements in terms of performance, including environmental performance...”</i> (art. 7.5)
International Cooperation	Trans-Pacific Partnership (TPP)	<i>“The Parties recognize the importance of cooperation as a mechanism to implement this Chapter, to enhance its benefits and to strengthen the Parties’ joint and individual capacities to protect the environment and to promote sustainable development as they strengthen their trade and investment relations.”</i> (art. 20.12.1)

4.3.1. Policies promoting the production and trade in environmental goods and services

Reducing tariffs on environmental goods and services is one of the trade measures that directly promote not only climate change mitigation efforts but also economic diversification. As explained by Meltzer, “providing a tariff cut for such goods would create the strongest incentive for industry to use less carbon-intensive production processes and thereby contribute the most to

reducing GHG emissions.”⁸¹ In addition, investment in the production and trade in these goods will have a major potential of creating new markets and trade opportunities.⁸² From July 2014, the EU and 16 other members of the WTO have been negotiating an Environmental Goods Agreement (EGA) to remove barriers to trade in environmental or “green” goods that are crucial for environmental protection and climate change mitigation.⁸³ The first stage of the negotiations focus on removing tariffs on a broad list of environmental goods, the negotiators build on a list of 54 products on which the member countries of Asia-Pacific Economic Cooperation (APEC) have agreed to reduce 5% tariff or less. EGA is proposed to be a living agreement, which would allow for addition of new products in the future.⁸⁴ All these efforts aim to create “win win win” situations for trade, environment and development by establishing new markets for climate-friendly goods and services thereby promoting economic diversification.⁸⁵ Trade agreements include various types of norms encouraging the (i) production of, (ii) trade or investment in environmental goods and services. Examples of FTAs promoting the production of environmental goods and services include:

Canada-Colombia, Agreement on the Environment, Annex I

“The priority areas identified by the Republic of Colombia for consideration in the initial Work Program include, inter alia: (f) promotion of the production of environmental-friendly goods and services.”⁸⁶

⁸¹ Meltzer (n 67) 21; see also Edvokia Moise and Ronald Steenblik, ‘Trade-Related Measures Based on Processes and Production Methods in the Context of Climate-Change Mitigation’ (3 August 2011) OECD Trade and Environment Working Paper 2011/04.

⁸² Veena Jha, ‘Trade Flows, Barriers and Market Drivers in Renewable Energy Supply Goods’ (December 2009) Issue Paper No 10, International Centre for Trade and Sustainable Development <<http://www.ictsd.org/downloads/2011/12/trade-flows-barriers-and-market-drivers-in-renewable-energy-supply-goods.pdf>> accessed 15 December 2016, 3.

⁸³ See generally Ronald Steenblik, ‘Environmental Goods: A Comparison of the APEC and OECD Lists’ (29 November 2005) OECD Trade and Environment Working Paper No 2005-04; and Robert Howse and Petrus van Bork, ‘Options for Liberalising Trade in Environmental Goods in the Doha Round’ (July 2016) Issue Paper No 2, International Centre for Trade and Sustainable Development.

⁸⁴ The Environmental Goods Agreement is being negotiated among Australia, Canada, China, Costa Rica, Chinese Taipei, the EU, Hong Kong (China), Japan, Korea, New Zealand, Norway, Switzerland, Singapore, US, Israel, Turkey and Iceland. Together these countries account for the majority of the world trade in environmental goods. See International Trade Department of the European Union, ‘The Environmental Goods Agreement (EGA): Liberalising trade in environmental goods and services’ (updated July 2016) <<http://trade.ec.europa.eu/doclib/press/index.cfm?id=1116>> accessed 13 December 2016

⁸⁵ World Trade Organization, ‘Eliminating Trade Barriers on Environmental Goods and Services’ <https://www.wto.org/english/tratop_e/envir_e/envir_neg_serv_e.htm>. For more information, see Mark Wu, ‘Why Developing Countries Won’t Negotiate: The Case of the WTO Environmental Goods Agreement (2014) 6(1) *Trade Law & Development* 93.

⁸⁶ Canada-Colombia agreement on the environment (signed 21 November 2008, entered into force 15 August 2011) <<https://www.ec.gc.ca/caraib-carib/default.asp?lang=En&n=FFEF249E-1>> accessed 19 November 2016, Annex 1.

CARIFORUM EC (EPA), Art. 191(2)(e)

"2. Subject to the provisions of Article 7, the Parties agree to cooperate, including by facilitating support in the following areas: (e) assistance to producers to develop and/or improve production of goods and services, which the Parties consider to be beneficial to the environment."⁸⁷

Some FTAs aim at encouraging trade and investment in environmental goods whether by promoting wide-ranging categories of goods and services or by identifying specific goods and services such as, solar panels, LED light bulbs, green vehicles etc. For instance,

Canada-Colombia, Agreement on the Environment, Art. 2(6)

"The Parties shall encourage the promotion of the trade and investment of environmental goods and services."⁸⁸

When examining Canada's response measures as identified in the country summary, investment in the development of clean technology products such as electric vehicle charging stations and wind hybrid power plants is included. This shows the consistency between response measures adopted by Canada and its trade obligations included in this trade agreement. Other examples include,

EC-Georgia, Art. 231:

*"The Parties shall strive to facilitate the removal of obstacles to trade or investment concerning goods and services of particular relevance to climate change mitigation, such as sustainable renewable energy and energy efficient products and services."*⁸⁹

New Zealand-Taiwan, Chapter 17, Art.3 (2)(a)

"The Parties shall eliminate all tariffs on environmental goods upon entry into force of this Agreement [...]. A list of environmental goods is attached as Annex 7. Annex 7: 8712.00 – Bicycles and other cycles (including delivery tricycles), not motorized

⁸⁷ Economic Partnership Agreement between the CARIFORUM States and the European Community and its Member States (signed 15 October 2008, provisional application began 29 December 2008) <<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:289:0003:1955:en:PDF>> accessed 18 November 2016, Art. 191(2)(e) [hereinafter CARIFORUM].

⁸⁸ Canada-Colombia (n 86) Art.2.6.

⁸⁹ EC-Georgia Association Agreement (signed 27 June 2014, entered into force 1 July 2016) <[http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22014A0830\(02\)&from=EN](http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22014A0830(02)&from=EN)> accessed 14 December 2016.

- Bicycles and their spare parts exert positive effect on reducing exhaust emissions from automobiles, air pollution and greenhouse effect.⁹⁰
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CETA includes a separate article encouraging the trade and investment in Environmental goods and services whether by using tariff or non-tariff barriers.

Article 24.9 - Trade favouring environmental protection

1. The Parties are resolved to make efforts to facilitate and promote trade and investment in environmental goods and services, including through addressing the reduction of non-tariff barriers related to these goods and services.
 2. The Parties shall, consistent with their international obligations, pay special attention to facilitating the removal of obstacles to trade or investment in goods and services of particular relevance for climate change mitigation and in particular trade or investment in renewable energy goods and related services.⁹¹
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4.3.2. Subsidy Reform for green energy

Subsidy reform is one of the main tools used by governments to promote green energy. Free trade agreements include two types of norms addressing this issue,

- First type: subsidies granted for environmental purposes, such as green subsidies, subsidies necessary to adapt existing facilities to new environmental requirements, and subsidies granted for research in connection with environmental issues or programs.
- Second type: the elimination of subsidies harmful to the environment such as fossil fuel subsidies,⁹² which are considered the largest category of energy subsidies.⁹³

As demonstrated in chapter 2, when submitting their response measures, states have largely used subsidy reform to achieve their mitigation commitments, such as, the provision of subsidies for renewable energy (Afghanistan, Burkina Faso, Guatemala), or the removal of subsidies on fossil fuel

⁹⁰ Agreement between New Zealand and the Separate Customs Territory of Taiwan, Penghu, Kinmen, and Matsu on Economic Cooperation (signed on 10 July 2013, entered into force on 1 December 2013) <http://www.nzcio.com/webfm_send/59> accessed 30 November 2016, Chapter 17, Art.3 (2)(a), 10 July 201. [hereinafter ANZTEC].

⁹¹ EU-Canada (n 74) art 24.9.

⁹² For more information on elimination of fossil fuel subsidies, see Laura Merrill, Andrea M Bassi, Richard Bridle and Lasse T Christensen, *Tackling Fossil Fuel Subsidies and Climate Change: Leveling the Energy Playing Field* (Nordic Council of Ministers 2015) <http://www.greengrowthknowledge.org/sites/default/files/downloads/resource/Tackling_Fossil_Fuel_Subsidies_and_Climate_Change_Leveling_the_Energy_Playing_Field_Nordic_Council_of_Ministers.pdf> accessed 16 November 2016.

⁹³ According to the International Energy Agency, fossil fuel subsidies amounted to \$550 billion in 2013, whereas renewable energy subsidies amounted to \$120 billion. See Kasturi Das and Kaushik Ranjan Bandyopadhyay, *Climate Change and Clean Energy in the 2030 Agenda: What Role for the Trade System?* (ICTSD 2016) 4.

(Ethiopia, Ghana, India, Nigeria, Sierra Leone), or the gradual reduction of subsidies on electricity (Kuwait, Morocco).⁹⁴

To provide coherence between response measures and trade agreements obligations and to provide a complementary role to the fight against climate change, some FTAs include explicit reference to the permissibility of providing or eliminating subsidies to achieve environmental protection purposes. For example:

EU-Singapore, Article 13.11.3

“The parties recognize the need to ensure that, when developing public support systems for fossils fuels, proper account is taken of the need to reduce GHG emissions and to limit distortions of trade as much as possible ... the Parties share the goal of progressively reducing subsidies for fossil fuels. Such a reduction may be accompanied by measures to alleviate the social consequences associated with the transition to low carbon fuels. In addition, both Parties will actively promote the development of a sustainable and safe low-carbon economy, such as investment in renewable energies and energy efficient solutions”⁹⁵

4.3.3. Standards, Technical Regulation and Conformity Assessment

In addition to the financial and economic measures adopted by states in their INDCs/NDCs and their FTAs, states also rely on a set of non-tariff barriers to reduce costs and mitigate climate change challenges. These measures include, labeling, setting standards, and conformity assessment.

EU-Singapore FTA, Article 7.5

- (1) Where international or regional standards exist with respect to products for the generation of energy from renewable and sustainable non-fossil sources, the Parties shall use these standards, or their relevant parts, as a basis for their technical regulations [...]
 - (2) Where appropriate, the Parties shall specify technical regulations based on product requirements in terms of performance, including environmental performance, rather than design or descriptive characteristics.⁹⁶
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Energy-efficiency labeling have been used widely to inform consumer on the energy efficiency of certain products, such as washing machines, cars or other devices, this labeling technique encourage producers to invest in more energy-efficient product.⁹⁷ FTAs provide a way for governments

⁹⁴ See Chapter 2.3.3.1, 12.

⁹⁵ EU-Singapore Free Trade Agreement (n 76) Art.13.11.3.

⁹⁶ *ibid*, art. 7.5.

⁹⁷ Meltzer (n 67) 22; see also Rod Janssen, ‘Harmonising Energy Efficiency Requirements – Building Foundations for Co-operative Action’ (November 2010) Issue Paper No 14, International Centre for Trade and Sustainable Development.

to harmonize their technical standards and labeling schemes to promote transparency and incentivize industries to develop green technologies.

FTAs can promote convergence in energy governance, which aims to create grid stability in order to promote Renewable Energy.⁹⁸ It is provided that given the huge amount of energy produced by renewables, it is difficult to store the energy produced for later use. Governance in energy convergence aims to promote harmonization of energy-related standards on consumption and production, while stabilizing power grids to circulate energy from renewables as produced over a vast area of network.

The Eurasian Agreement on Economic Union (EAEU)⁹⁹ formulates a legal proposal for a common energy market, which represents the world's largest energy markets, strategically located between Europe and Asia and comprising a population of about 182 million. The affected countries together present 14.6% of the world's oil production and 17.3% of natural gas.¹⁰⁰ EAEU includes important provisions with regard the creation of an Energy Union among the Members. Article 79 of EAEU outlines the kind of interaction proposed in the energy sector among the Parties. Article 81 of EAEU envisages phased creation of common energy market on the basis of parallel operation of electric power systems. It is provided that properly integrated markets are without doubt best suited to address the challenge as it enables plausible connection of areas with complementary energy mixes and hence make the energy system more resilient to swings in demand or supply.

EAEU, Section XX – Energy

Article 79 - Interaction of the Member States in the Energy Sector

For the purposes of the effective use of the potential of fuel and energy complexes of the member States as well as providing national economies with... a coordinated energy policy, implement the gradual formation of common markets of energy resources in ... based on the following basic principles:

1. ensuring the market pricing of energy resources;
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⁹⁸ European Commission, 'DG ENER Working Paper: The Future Role and Challenges of Energy Storage' <http://ec.europa.eu/energy/sites/ener/files/energy_storage.pdf> accessed 19 December 2016; and European Commission, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Progress towards completing the Internal Energy Market (COM2014) 634 Final (13 October 2014).

⁹⁹ Treaty on the Eurasian Economic Union signed in 29 May 2014 by the leaders of Belarus, Kazakhstan and Russia (entered into force on 1 January 2015). <http://www.un.org/en/ga/sixth/70/docs/treaty_on_eeu.pdf> accessed 19 December 2016

¹⁰⁰ *ibid.*

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2. ensuring the development of competition in the common market of energy resources;
 3. lack of technical, administrative and other barriers to trade in energy resources, appropriate equipment, technology and services related to them
 4. provision of transport infrastructure development of common markets of energy resources;
 5. ensuring non-discriminatory conditions for economic entities of member States in the common markets of energy resources;
 6. creation of favorable conditions for attracting investments in the energy sector of the member States;
 7. harmonization of national norms and rules of the technological and commercial infrastructure of common markets of the energy resources.

Article 81 - Creation of a Common Energy Market of the EAEU

Member States shall carry out phased creation of a common energy market of the EAEU on the basis of parallel operation of electric power systems...¹⁰¹

4.3.4. International Cooperation and Climate finance

In order to implement their climate related measures, developing countries need international assistance in the form of climate finance¹⁰², technology transfer to access environmental sound technologies,¹⁰³ and capacity building support to integrate best practices in various sectors for climate change action.¹⁰⁴

EU-Central America, Art. 63

“The Parties agree to cooperate, including by supporting technical assistance, training and capacity building actions in, *inter alia*, the following areas: (b) promoting trade related cooperation mechanisms as agreed by the Parties to help implement the current and future international climate change regime.”¹⁰⁵

In many FTAs, states have included capacity building and technical assistance commitments to implement specific programs such as, the Clean Development Mechanism of the Kyoto Protocol, or to assist developing countries in domestic carbon markets, and in the trade and dissemination of environmentally sound goods and services.¹⁰⁶ Examples include:

¹⁰¹ *ibid*, art. 79-80

¹⁰² Paris Agreement (n 6) Art. 9.

¹⁰³ *ibid*, art. 10.

¹⁰⁴ *ibid*, art. 11.

¹⁰⁵ EU-Central America Association Agreement (signed 29 June 2012, entered into force 2013) <<http://trade.ec.europa.eu/doclib/press/index.cfm?id=689>> accessed 17 November 2016, art.63.

¹⁰⁶ Markus W Gehring and others, 'Climate Change and Sustainable Energy Measures in Regional Trade Agreements' (August 2013) Issue Paper No 3, International Centre for Trade and Sustainable Development.

Mexico-Japan FTA, Article 147 - Cooperation in the Field of Environment

“1. The Parties, recognizing the need for environmental preservation and improvement to promote sound and sustainable development, shall cooperate in the field of environment. Cooperative activities under this Article may include:

- (b) Promotion of capacity and institutional building to foster activities related with the Clean Development Mechanism under the Kyoto Protocol to the United Nations Framework Convention on Climate Change, as may be amended, by means of workshops and dispatch of experts, and exploration of appropriate ways to encourage the implementation of the Clean Development Mechanism projects;
- (c) Encouragement of trade and dissemination of environmentally sound goods and services¹⁰⁷

EU-Singapore FTA, Art. 11.52

“The Parties agree to cooperate with a view to supporting the implementation of the commitments and obligations undertaken under this Chapter. Areas of cooperation include, but are not limited to, the following activities:

- (d) Capacity-building and technical cooperation in relation, but not limited, to: ... facilitation of industry collaborations, including on intellectual property rights that may be applied towards environmental conservation or enhancement which may include establishing a platform or database; and public private partnerships to support culture and innovation;
- (e) Exchange of information and cooperation on intellectual property issues, where appropriate and relevant to developments in environmentally friendly technology¹⁰⁸

CETA, Article 24.11 - Cooperation on environmental issues

“ The Parties commit to cooperate on trade-related environmental issues of common interest, in areas such as (e) trade-related aspects of the current and future ... domestic climate policies and programmes relating to mitigation and adaptation, including issues relating to carbon markets, ways to address adverse effects of trade on climate, as well as means to promote energy efficiency and the development and deployment of low-carbon and other climate-friendly technologies.

International cooperation mechanisms will allow developing countries to diversify their economies by creating market opportunities for green goods and services, promoting green energy production and consumption, producing electricity using renewable energy resources, developing green infrastructure. This will reformulate the economic growth agenda of developing countries by linking long-term sustainable development – including climate change concerns – with short term economic and trade policy priorities.

¹⁰⁷ Agreement between Japan and the United Mexican States for the Strengthening of the Economic Partnership (signed 17 September 2004, entered into force 1 April 2005) <<http://www.mofa.go.jp/policy/economy/fta/mexico.html>> accessed 18 December 2016, art.147.

¹⁰⁸ EU-Singapore (n 75) art.11.52.

4.4. Exceptions allowing the implementation of response measures

In addition to incorporating climate related measures in FTAs, trade agreements include trade exceptions allowing states to adopt domestic measures for the implementation of climate change commitments. These exceptions are essential for the implementation of trade related response measures adopted by states in their INDCs/NDCs and FTAs. Some bilateral and regional trade agreements have adopted general exceptions similar to those included in the WTO agreements;¹⁰⁹ others have expanded the general exceptions norm to permit a higher level of environmental protection. For instance,

CETA, Article 28.3

“The Parties understand that the measures referred to in Article XX(b) of the GATT 1994 include environmental measures necessary to protect human, animal or plant life or health. The Parties understand that Article XX(g) of the GATT 1994 applies to measures for the conservation of living and non-living exhaustible natural resources.”¹¹⁰

These general and specific exceptions allow states to implement trade-related response measures, which modify market conditions in favor of green industries¹¹¹ given that, these measures are not “applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries.”¹¹² Trade agreements also allow the possibility to derogate from the regular adoption of a TBT measure in case of environmental emergency.¹¹³ For example:

Canada-Peru FTA, Art. 608

“Each Party shall ensure that transparency procedures regarding the development of technical regulations and conformity assessment procedures allow interested parties to participate at an early appropriate stage when amendments can still be introduced and comments taken into account, except where urgent problems of safety, health, environmental protection or national security arise or threaten to arise. Where a consultation process on the development of technical regulations and conformity assessment procedures is open to the public, each Party shall permit persons of the other Party to participate on terms no less favourable than those accorded to its own persons.”¹¹⁴

¹⁰⁹ Marrakesh Agreement Establishing the World Trade Organization (signed 15 April 1994) 1867 UNTS 187, 33 ILM 1153, Annex 1A, General Agreement on Tariffs and Trade 1994, Article XX(g).

¹¹⁰ EU-Canada (n 74) art.28.3.

¹¹¹ Codebook, 35. According to the Codebook, 122 trade agreements include the exclusion of environmentally harmful inventions from patentability and the use of geographical indications to protect the environment.

¹¹² Marrakesh Agreement (n 109) Annex 1A, GATT, art. XX chapeau.

¹¹³ Codebook, 33. According to the Codebook, 231 trade agreements include the right to derogate.

¹¹⁴ Canada-Peru (n 69) art. 608.

The incorporation of trade exceptions in FTAs is essential to implement response measures related to climate change mitigation. To avoid inconsistency with trade obligations, states can invoke the relevant exceptions and have a leeway to adopt legitimate policy purposes regarding the promotion of renewable energy and energy efficiency. Therefore, to support climate action, states can either include climate related measures into their FTAs or provide a list of general or specific exceptions that allow for the adoption of climate change policies.

5. Conclusion

This study is divided into three parts. First, it uncovers the typology of response measures included in INDCs/NDCs submitted by the Parties to the United Nations Framework Convention on Climate Change. Second, it shows that response measures have the potential to become important policy tools used by states to promote economic diversification. Finally, it argues that to undertake their effective implementation, response measures ought to be incorporated into FTAs to support economic diversification and ensure the mutual supportiveness between trade rules and climate change obligations.

Chapter 2 maps 162 INDCs/NDCs submitted by the Parties to the United Nations Framework Convention on Climate Change to identify and categorize response measures that interact with the world trading system. These measures are classified as follows:

- Measures related to the energy sector
- Green industrial policies
- Green government procurement
- Financial and direct trade measures
- International cooperation

A number of results are identified from the mapping exercise. First, a major divide can be drawn between developed and developing countries when designing their response measures. Developed countries use very generic wording, and their INDCs/NDCs are relatively shorter compared to other countries whereas developing countries have longer pledges and more detailed and specific commitments. Second, the parties provide a variety of financial and direct trade measures to achieve their intended targets specified in their pledges, including, *inter alia*, taxes, subsidies, carbon pricing mechanisms, FITs and Renewable Portfolio Standards (RPS), tariffs, import bans, and investments in R&D. Lastly, the effect of these measures on the world trading system depends mostly on the way of their domestic implementation and on their consistency with international trade rules.

Chapter 3 builds upon the mapping of response measures examined in Chapter 2 and evaluates such commitments against the long-standing UNFCCC work streams on economic diversification. First, this chapter identifies the potential for the measures contained in the INDCs/NDCs to positively contribute to economic diversification, and how the mutual supportiveness between trade will be necessary for such potential. Second, it finds that the adverse impacts arising from the implementation of response measures are strictly related to the degree of economic

diversification experienced by the affected country, and might entail domestic as well as cross-border effects. For instance, fossil-fuel producing countries, countries exporting carbon-intensive goods and services, and tourism-dependent countries will be impacted due to structural changes in the demand for, and prices of, the products and services which comprise the bulk of their exports, as well as in the wider regulatory environment. Lastly, the analysis suggests that there is certainly scope for the current INDCs/NDCs to promote diversification, particularly in the countries where the measures are implemented.

Finally, Chapter 4 analyzes the possibility for FTAs to serve as positive drivers for the implementation of the INDCs/NDCs at the national and regional level. First, the Chapter identifies the following climate-related commitments in existing FTAs, suggesting an increasing incorporation of response measures into the international trading regime:

- Policies promoting the production and trade in environmental goods and services
- Subsidy Reform for green energy and development
- Standards, Technical Regulations and Conformity Assessment
- International Cooperation

Second, the Chapter argues that FTAs offer a useful venue to strengthen climate commitments and sometimes to achieve more stringent and more precise obligations on states compared to multilateral environmental agreements. Therefore, the most pressing challenge when designing FTAs appears to be that of finding a balance between promoting trade liberalization on the one hand and allowing a policy space for countries to implement their obligations under the UNFCCC on the other, in order to ensure that trade rules positively contribute to, rather than undermine, the overarching objectives of climate change mitigation and economic diversification.

Overall, the study shows the potential impact of the response measures contained in the INDCs/NDCs on economic diversification and describes how policies aimed at creating new markets, new jobs, and new innovative technologies to implement climate change obligations will lead to economic growth, especially for developing countries. In addition, the study provides an overview of the different trade-related response measures adopted by countries in their INDCs/NDCs and their interactions with the broader framework of international trade rules. Recent discussions on this topic have been ongoing at the UNFCCC level, suggesting that the relationship between trade and climate change is finally established and it is here to stay. However, further research is needed to delve deeper into this interaction, in order to offer best practice models for domestic implementation of climate change commitments as well as informing future developments in the field of international trade.

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Annex 1: Country Summaries
