STUDY

Trade Aspects of Nationally Determined Contributions in South and Southeast Asia

CUTS International

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Abstract

This study provides an in-depth analysis of the trade aspects of the Nationally Determined Contributions (NDCs) submitted by seven South and Southeast Asian countries, namely, Bangladesh, Cambodia, Lao PDR, Nepal, Pakistan, Sri Lanka and Viet Nam. Using a mapping methodology built on existing literature, it finds that trade elements are incorporated, in varying degrees, across the seven countries' NDCs, particularly in the energy, transport and tourism sectors. It is evident, however, that there is substantial room to expand trade considerations in climate action policies. Strengthening expertise, providing appropriate training and know-how and financing studies that raise awareness on trade and climate action synergies are key approaches that were discussed to assist countries in capitalising on their trade potential in their climate action strategies.

Abbreviation

ADB	Asian Development Bank
AFOLU	Agriculture, Forestry and other Land Use
APA	Ad-hoc Working Group on the Paris Agreement
ASEAN	Association of Southeast Asian Nations
BAU	Business as Usual
BCA	Border Carbon Adjustment
CEN	Clean Energy Nepal
COP	Conference of Parties
GATT	General Agreement on Tariifs and Trade
GBG	Green Building Guidelines
GDP	Gross Domestic Product
GHG	Greenhouse Gas
ESL	Energy Standards and Labelling
ESMAP	Energy Sector Management Assistance Program
FAO	Food and Agriculture Organisation
HEM	High Efficiency Motors
ICS	Improved Cookstoves Program
ICTSD	International Centre for Trade and Sustainable Development
ICTU	Information necessary for Clarity, Transparency and Understanding
IIA	International Investment Agreement
IISD	International Institute for Sustainable Development
INDC	Intended Nationally Determined Contribution

ISO	International Organisation for Standardisation
LDC	Least Developed Country
LULUCF	Land Use, Land-Use Change and Forestry
MEPS	Minimum Energy Performance Standards
MLMUPC	Ministry of Land Management, Urban Planning and Construction
MOIT	Ministry of Industry and Trade
NDC	Nationally Determined Contribution
NGO	Non-governmental Organisation
NGRS	National Green Reporting System
OEC	Observatory of Economic Complexity
OECD	Organisation for Economic Co-operation and Development
PIPA	Plan for Implementation of the Paris Agreement
R&D	Research & Development
RECP	Resource Efficient and Cleaner Production
SIDS	Small Island Developing States
SME	Small and Medium Enterprise
SSEA	South and Southeast Asia
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNFCCC	United Nations Framework Convention on Climate Change
VFD	Variable Frequency Drives
WTO	World Trade Organisation

SECTION 1

Introduction

Nationally Determined Contributions: Between Climate and Trade Regimes

1.1 NDCs and the Paris Agreement

In December 2015, all 197 members of the United Nations Framework Convention on Climate Change (UNFCCC) convened the 21st Conference of Parties (COP21) in Paris and adopted the historic international climate treaty known as the "Paris Agreement." The agreement charted a new course in the global climate effort, as all UNFCCC Parties jointly pledged their commitment to achieving three primary goals stated in Article 2 of the Paris Agreement:

(a) Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognising that this would significantly reduce the risks and impacts of climate change; (b) Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production; and (c) Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development. (UN, 2015).

At the heart of the Paris Agreement are Nationally Determined Contributions (NDCs). According to article 4.9 of the Paris Agreement, each Party is 'required to prepare, communicate and maintain successive Nationally Determined Contributions' every five years. Towards the end of each five-year cycle, a global stocktake takes place to assess the collective progress towards achieving the agreement's goals and provide feedback on individual actions to the Parties (UN, 2015). According to the UNFCCC webpage, all the parties were required to update their first INDCs/NDCs by 2020 to initiate the first five-year cycle of NDCs' review and update in COP26. The COP26 was then postponed to take place this November 2021.

As per Article 3 of the Agreement, NDCs represent the 'ambitious efforts' that Parties' are to undertake and communicate as defined in Articles 4, 7, 9, 10, 11, and 13, with the view to achieving the purpose' of the Agreement' (UN, 2015). Taibi & Al. (2020) explain that Mitigation is an element that Parties are required to include in their NDCs as per Article 4.2. Still, NDCs may also have the following elements: adaptation (Article 7), finance (Article 9), technology development and transfer (Article 10), capacity building (Article 11), and transparency (Article 13).

Guided by 'the principle of equity and common but differentiated responsibilities and respective capabilities, in the light of different national circumstances,' the Paris Agreement does not detail a specific scope

and format for Parties' to adopt when preparing their NDCs (UN, 2015). Furthermore, the Paris Agreement recognises the "special needs" and special situations of developing countries and least developed countries (LDCs); hence, Article 3 calls for supporting developing countries in implementing their contributions (Ibid, 2015). Parties are therefore at liberty to decide on the targeted sectors, the types of policies and measures to implement, and their breadth and level of detail, in line with their 'context of sustainable development and efforts to eradicate poverty'. (UN, 2015 - Paris Agreement, Article 2.1).

In essence, NDCs' are Parties' formalised expression of their progressive emissions' reductions and climate-related targets. They outline the policies and measures they intend to implement to achieve these targets and communicate their financial contributions (developed countries) or needs (developing countries and LDCs) for effective implementation. A crucial consideration, particularly for developing countries and LDCs, when devising their NDCs is to seek positive synergies between the different policies and measures embodied in their NDCs to support their national plans for economic growth, diversification, and development.

1.2 Trade And Climate Action: Between Synergies and Clashes

The Paris Agreement does not contain explicit trade-related provisions. However, it can be challenging for countries to align and synergise their economic growth and diversification policies with response measures to climate change without considering trade elements (Elkahwagy & *Al.* 2017). Consequently, more and more policymakers, experts, and academics have been interested in interlinkages between trade and climate change policies and the role that trade can potentially play among response measures deployed by the Parties in their NDCs. In the last five years, research and policy analysis avenues have been increasingly exploring opportunities for synergies and possible clashes between climate response measures and the international trading regime, i.e., the World Trade Organisation (WTO) agreements and rules, Regional Trade Agreements (RTAs), Investment Treaties, etc.

A study by Cosbey (2016), for instance, reported that 'the existing global market for low-carbon and environmental goods and services in 2012 was valued at approximately US$5.5 trillion, of which just under 80% was directly climate-related.' Therefore, the study argued that international trade flows could play a significant role in 'expanding the availability of climate-friendly technologies and goods at competitive costs and at a larger scale.' A 2018 study by the same author emphasised furthering the liberalisation of trade in environmental goods and services and called for WTO discussions to tackle non-tariff barriers to trade that 'may impede the flow of environmental goods' (Cosbey, 2018). In a similar vein, a study by Droege & *Al.* (2016) highlighted the need for "authoritative interpretations" of WTO provisions and agreements as well as "more expertise" in WTO dispute settlement mechanisms to facilitate the trade of climate-related technologies and services between countries.

Further, studies have also emphasised the potential for increased investment in certain sectors relevant for climate action, such as renewable energy, agriculture, waste management, and water (Cosbey, 2016; Working Group on Trade, Investment, and

Climate Policy, 2016; Granoff, 2016). Cosbey (2016) pointed to a Bloomberg Energy Finance prediction of 'over US$8 trillion over the next 25 years or equivalently US$300 billion per year in the renewable energy sector alone.' He highlighted that such investments could lead to opening new markets for exports. Furthermore, a study conducted by the Working Group on Trade, Investment, and Climate Policy communicated the significance of international investment agreements (IIAs) in 'scaling up and redirecting investments to meet climate change mitigation and adaptation needs'. From a development perspective, Granoff (2016) pointed to the importance of such investments, along with technology transfer to Small Island Developing States (SIDS), owing to the fact that they are often "highly dependent on fossil fuel imports" and vulnerable to "near-term global trade imbalances."

Some studies have highlighted the role trade policies, more broadly, may play in promoting economic diversification, which in its turn contributes to reducing the potential adverse effects of climate response measures. (Elkahwagy *et al.*, 2017; United Nations Conference on Trade and Development (UNCTAD), 2018; Cosbey, 2018). Elkahwagy *et al.* (2017) also pointed out that the previous equation can be reversed, as 'response measures can either be trade-supportive or trade-restrictive and promote or hinder economic diversification'. They remind the fact that climate response measures can clash with international trade rules. Examples of clashing response measures include introducing trade restrictions or protective measures to support infant low-carbon industries and address competitiveness concerns.

1.3 Study Objective

This study contributes to the recent research efforts to explore synergies between trade and climate change response policies in Parties' NDCs. It focuses on a group of seven select countries in South and South-East Asia; these are Bangladesh, Cambodia, Laos, Nepal, Pakistan, Sri Lanka, and Viet Nam. The study starts by giving an overview of recent comprehensive studies that examined trade aspects in NDCs. These inspire the classification of trade-related response measures and the methodology adopted by this study (Section 2). The study will then map and analyse trade-related measures in NDCs submitted by the seven mentioned countries (Section 3).

The objectives of this mapping are to explore: i) whether this group of countries explicitly indicated trade-related measures in their NDCs and relevant national action plans and implementation progress reports; ii) the breadth and types of trade-related measures each country adopted per key NDC targeted sectors, and iii) the potential for furthering trade-related measures for each country and the sectors representing a potential for trade and climate change synergies. The study concludes with the main trends and challenges to integrating trade in NDCs across the group and the prospects for furthering trade and climate action synergies in future submissions.

SECTION 2

NDCs' Analysis from a Trade Perspective

2.1 NDCs' Analysis from a Trade Perspective

While substantial research was conducted on the interplays between the trade and climate regimes, only a few studies provided detailed analyses of trade-related response measures in NDCs submitted by the Parties. This study is inspired by the following two:

- The study by Elkahwagy, Gyanchandani, and Piselli (2017) on "UNFCCC Nationally Determined Contributions: Climate Change And Trade" developed a mapping methodology to identify trade-related commitments in 163 NDCs, representing the total of Parties' NDC submissions at the study's time. The mapping differentiated between "actual interactions" and "hypothetical interactions" between NDCs and Trade. The former cover direct trade-related measures, while the latter include indirect trade-related measures, which consists broadly of actions that 'would unquestionably have effects on trade flows' but 'would not necessarily clash with existing trade rules' (Elkahwagy & *Al.*, 2017). The study provided individual country summaries and concluded that there is much potential for response measures contained in NDCs to positively impact economic diversification and stresses the need for mutual supportiveness with trade to fulfil this potential.
- The study by Brandi (2017) on "Trade Elements in Countries' Climate Contributions under the Paris Agreement" analysed NDCs from a trade perspective to identify the main opportunities and challenges for the climate and trade interface. It adopted a methodology that first assessed the occurrence of trade elements across all NDCs, then turning the spotlight on 22 select NDCs. The study identified 11 key trade-related elements in Parties' NDCs, namely: the reduction of trade barriers for various climate-friendly sectors, regulation of trade on climate grounds, regulation of timber trade, standards and labelling, border carbon adjustments, fossil fuel subsidies, renewable energy, technology transfer, international market mechanisms, general response measures and co-benefits in the context of trade. The study reports that "45% of the climate contributions submitted (at the time of the study) entail a direct reference to trade or trade elements"; however, the largest emitters are not among these (Brandi, 2017). Notably, the study found that most countries include trade-related elements that promote investments in the renewable energy sector and technology transfer. Therefore it emphasised the need to broaden the scope of climate-friendly trade elements to cover more sectors in future NDCs.

2.2 Classification of Trade-related Measures in NDCs

The mapping of trade-related measures in the select countries' NDCs, conducted in section (3) of the study, is inspired by the two categories classification of the measures proposed by Elkahwagy *& Al.* (2017): i) "direct trade-related measures" and "indirect trade-related measures."

Direct Trade-related Measures

Elkahwagy *& Al.* (2017) defined direct measures as 'directly relevant for trade, regardless of the structure and scope of the domestic instrument adopted to implement them.' Other than tariffs and import bans on polluting goods, direct trade-related measures also include, *among other things*: subsidies, taxes, Border Carbon Adjustment (BCA) or Market-based carbon exchange mechanism and green government procurement. Below is a brief overview of the potential implications of these measures on the Climate regime.

Subsidies

Subsidies can take the form of cash or land grants, low-interest loans, price floors, etc. Subsidies can be utilised to serve Climate action by (i) promoting the growth of infant green industries such as renewable energy; and (ii) levelling the playing field with imported conventional goods not taxed for their full environmental damage. Droege & *Al.* (2016) note the prevalence of existing subsidies for fossil fuels. These subsidies, which amount to USD 373 billion per year globally (OECD, 2018), not only undermine efforts to reduce GHG emissions but come at a high cost of removal. Various studies (Droege *& Al.*. 2016; Cosbey, 2018) have stressed the role of the WTO and international trade rules in hastening the reduction and elimination of these subsidies and improving the surveillance mechanism that allows countries to challenge them.

Taxes

In climate regimes, taxes may take various forms, including, *among other things*, carbon taxes, fuel excise taxes, taxes on inefficient technology use, tax exemptions, tax reduction, and preferential taxation for energy-efficient product use and production processes. Tax incentives can have similar implications as subsidies as they temporarily shield national firms in transition to decarbonisation and, to this end, protect them from foreign competitors. Levies of taxes on domestic industries, however, may have alternative implications. Other studies have also researched the long-standing "pollution haven hypothesis," which suggests that the levy of carbon taxes might merely promote the relocation of carbon-intensive industries to developing countries, where such taxes are often weakly enforced (Neumayer, 2001; Cosbey & Tarasofsky, 2007).

Border carbon adjustment (BCA)

Border carbon adjustment (BCA), applied to imports, refers to levying a charge on imported goods representative of what the good would have borne had it been produced under domestic emission standards. Conversely, when applied to exports, it can rebate any climate-related charges that could be applied to domestic exports in foreign markets (Cosbey, 2016). The use of such a tool is often explored in the realm of climate action as a possible solution to uneven carbon pricing across jurisdictions however remains controversial for several reasons. A study by Dumitru *et al.* (2021), for instance, highlighted the trade backlash BCA might

provoke amongst trading partners who differ in their degrees of carbon pricing. The same study also stressed the vulnerability of Small and Medium Enterprises (SMEs) and high-carbon foreign producers in developing countries and LDCs. They would ultimately "bear the brunt of the costs" due to limited market access (Dumitru *et al.*, 2021). In recent years, researchers have been increasingly addressing the WTO's role in ensuring the prevention of protectionist abuse of BCA. In particular, some of them stress the need for enhanced clarification regarding the WTO legality of BCA (Droege *et al.,* 2016); and more collaborative discussions between governments regarding an appropriate framework of its implementation (Cosbey, 2021).

Green government procurement

According to Elkahwagy *et al.* 2017, green government procurement can: stimulate the demand for environmental goods and services, support infant green industries, and promote technology transfer. Some NDCs adopted Regional Green Government Procurement as a response measure. Such a measure offer an opportunity for countries to scale up their climate actions while promoting regional trade and integration.

Indirect Trade-related Measures

When it comes to indirect measures, Elkahwagy *et al.* (2017) indicated that they are more challenging to define explicitly. They further explained that these measures 'would unquestionably have effects on trade flows'. Such measures often include energy efficiency or Greenhouse Gas (GHG) emissions standards, demand-side management provisions, and building codes.

Standards and labelling

According to the WTO's Environmental Database, technical regulations, including carbon standards and labelling, accounted for the largest share of all environmental measures notified to the WTO in 2016. Carbon standards discourage the use of carbon-intensive products and production methods (PPMs). While labelling may serve as a market approach to encouraging climate-friendly demand-side consumption habits, the rapid expansion of carbon standards and labelling in recent years has produced various methods for carbon accounting and approaches to conformity assessment.

A study by Holzer & Hoe Lim (n.d.) stipulates that the diversity of standards and labels raise the costs of compliance of importers. 'They have to adjust their production to comply with standards and conformity assessment procedures of different markets.' They may prevent small producers from participating in the market. Therefore, various studies have emphasised the need to align and harmonise carbon standards and labelling in regional trade agreements and globally (Holzer *et al.*, 2016; Bolwig & Gibbon, 2009). They argue that establishing common guidelines for communicating product carbon footprint information is a primary means of preventing unnecessary barriers to trade.

2.3 Mapping Methodology and Scope

In the following section, the study will map trade-related measures in the adopted climate actions of the seven selected countries in South and South-East Asia, based on the above classification. It will examine both the

Intended NDCs and their updated versions[1]. In the case of Nepal, which submitted two NDCs, the study looks only at its latest NDC. Unlike Elkahwagy &Al. (2017) and Brandi (2017), this study goes beyond the NDCs and covers governments' NDC implementation plans and progress reports. In fact, the NDCs of most of these countries provided only a general frame for climate targets and actions; these were further detailed and elaborated in strategies, plans and reports prepared by their governments after NDC submission.

When it comes to the sectors covered, most of the NDCs submitted by the selected countries covered a few sectors, and many of them are common. Sectors covered in the country-by-country mapping of measures were distributed among two groups:

- *Group of supply-side sectors* or sectors involved in the production or exchange of outputs. Common sectors under this group include energy, industry, and transport. The agricultural sector is included only in the case of countries where the sector contributes significantly to the Gross Domestic Product (GDP).

- *Group of demand-side sectors* or sectors involved in consuming public and private goods and services. Common sectors under this group include household, urban, and city planning (i.e., construction and building).[2] The tourism sector is considered only in countries that contribute significantly to the Gross Domestic Product (GDP).

1 Before concluding the Paris Agreement in 2015, some Parties submitted "Intended Nationally-determined Contributions". After the adoption of Paris Agreement, INDCs were automatically considered as Parties' first NDC. Some Parties chose to provide an updated version of the same NDC, while others submitted new NDCs reflecting more ambitious targets. The use of the term "NDC" also includes INDCs throughout this study.

2 Recognising that some countries used different groupings or naming of sectors, the author reconfigured the organisation of these to fit the proposed common grid of sectors for the purpose of consistency, clarity and allowing comparisons between the country profiles.

SECTION 3

Mapping Trade-related Measures in the NDCs of Select South and South-East Asian Countries

In this section, the study develops individual country profiles for the seven selected countries from the South and South-East Asia region, namely: Bangladesh, Cambodia, Lao PDR, Nepal, Pakistan, Sri Lanka, and Viet Nam.

Each country profile outlines the following: i) an overview of the country NDC submissions, emission reduction targets, and overarching climate actions; ii) a tabled mapping and classification of trade-related measures as per the NDC and other complementary national strategies or reports and; iii) analysis of the mapping to identify opportunities and challenges for expanding trade-related measures' consideration in NDCs.

3.1 Bangladesh

Overview of NDC submissions and set climate change objectives

Bangladesh first published its INDC in 2015 and submitted an updated version in 2021. The first foundational INDC communicates Bangladesh's unconditional target to reduce GHG emissions by 5% by 2030 in the power, transport, and industry sectors. Key climate actions promoted to achieve this objective include: diversifying the existing electricity generation mix with solar and wind power, integrating energy-efficient technology in all new coal generation, implementing a modal shift in transport from road to rail, developing public transport systems and carrying out energy audits to incentivise the uptake of energy-efficient and conservation measures in industrial sectors. On the demand side, actions consist of incentivising the use of more efficient cookstoves, promoting general energy efficiency and conservation in the household and commercial sectors, and improving energy efficiency in buildings, primarily through the use of solar power.[3]

Bangladesh's NDCs do not directly refer to trade policies or trade-related measures. However, these can be identified from Bangladesh's Roadmap and Action Plan for Implementing NDC, which provides greater detail on policies and measures deployed for implementing NDCs, particularly in the power, transport, and industry sectors. These elements are presented in

[3] In its updated version, Bangladesh's NDC incorporates additional sectors, namely Agriculture, Forestry and other Land use (AFOLU) and Waste sectors, although due to lack of identification of trade elements, these are not included in the analysis.

Table 1: Mapping of Trade-related elements in Bangladesh's NDC

Sector	Direct trade-related measures	Indirect trade-related measures
Supply-side		
Energy (Power)	Financial incentives to support solar power development (tax incentives, duty exemptions, repatriation facilities, etc.) Introduction of a market-based incentive scheme to promote renewable energy generation mainly by the private sector	
Industry	Introduction of different incentive schemes to promote Industrial Energy Efficiency measures Concessional financing to help fund uptake of energy efficiency measures (e.g., Energy Efficiency and Conservation Promotion Loan Programme) Subsidies to distributors of energy-efficient technologies Promotion of efficient (LED) lighting in the readymade-garment industry Phasing out of energy subsidies to incentivise industry to make efficiency improvements Low Duties (2%) for all imported energy-efficient industrial machinery	
Transport	Reducing demand for travel (and hence vehicles) Import of hybrid vehicles Replacement of old locomotives with new units with lower fuel consumption and GHG emissions Phasing out of old trucks with Euro II/III emission standard	Dredging project to encourage the use of inland waterways Improvement of transport infrastructure more efficient running Updating design and construction standards and materials to ensure that future infrastructure is more resilient to anticipated climate and extreme weather events
Demand-side		
Household	Rationalisation of import tax and all applicable duties to promote energy-efficient appliances and imported energy-efficient building materials	
Urban & City Planning		Development of Green Building Guidelines and certification

Source: Author, based on NDCs submitted by the country and other relevant implementation plans and reports.

Trade and climate response synergy potentials

Bangladesh's economy is composed of various industries, the most prominent of which include the textiles, pharmaceuticals, and shipbuilding industries. Most of its export earnings are from the textile and ready-made garment industries, with exports in 2020 valued at US $3.132bn (Central Bank of Bangladesh, 2020). Bangladesh has significant potential to transition to a low-carbon economy by implementing green industrial policies. The garment industry worldwide, for instance, was responsible for 4% of global GHG emissions in 2018 (McKinsey, 2020).

Bangladesh is the seventh-largest natural gas producer in Asia, with 56% of its electricity generated by natural gas. Bangladesh also has substantial coal reserves, with several coal mines operating in the northwest. The government of Bangladesh currently devotes a major share of its budget to provide direct subsidies for fossil fuels and electricity, with approximately US $1.5billion spent on energy subsidies in 2017 (Statista, 2021). Gradually eliminating these costly energy subsidies in future NDCs will be critical in reducing its dependence on fossil fuels and encouraging the development and use of renewable alternatives (International Monetary Fund (IMF), 2019). However, the role of the international trading system here is crucial, for instance, in reducing trade barriers on renewable energy technologies and infrastructure. Bangladesh will need additional multilateral support to phase out fossil fuels and diversify its electricity generation mix.

3.2 Cambodia

Overview of NDC submissions and set climate change objectives

Cambodia submitted its first INDC in 2017, as well as an updated version in 2020. To achieve its CO_2 emissions mitigation target of 27% by 2030, priority actions were proposed in key energy, manufacturing industries, and transport sectors. These include: connecting the national grid to renewable energy generation (solar, hydropower, biomass, and biogas), powering solar and hydro-home systems off-grid, promoting the use of renewable energy and adopting energy efficiency in garment factories, rice mills, and brick kilns, promoting public transport and increasing the use of hybrid and electric as well as non-motorised transport. On the demand side, main actions included promoting more efficient cookstoves and increasing energy efficiency in buildings.

Cambodia's NDCs do not mention specific trade-related measures. However, such measures were identified in Cambodia's NDC Roadmap and Stakeholder Engagement Plan and partly from Cambodia's updated NDC.

Table 2: Mapping of Trade-related elements in Cambodia's NDC

Sector	Direct trade-related measures	Indirect trade-related measures
Supply-side		
Energy	• Fossil fuel subsidy reductions • Promotion of renewable energy generation on-site through subsidies and feed-in tariffs • Introduction of solar panels for power generation	
Industry	• Tax incentives for the use of renewable energy and energy-efficient processes in garment factories, rice mills, and brick kilns	• Development of best resource and energy efficiency practices for industries and SMEs
Transport		• Launching of Vehicle Registration and Inspection system (JICA)
Demand-side		
Household	• Provision of improved cookstoves	
Urban & City Planning	• Introduction of High Efficiency LED lighting • Introduction of efficient electrical motors and boilers	• Building codes and enforcement/certification for new buildings and those undergoing a major renovation • Application of electrical equipment's labelling

Source: Author, based on NDCs submitted by the country and other relevant implementation plans and reports.

Trade and climate response synergy potentials

The textile and garment industry represents the main source of the country's export earnings, accounting for up to 80% of its exports (Observatory of Economic Complexity (OEC), 2019). As it stands, the garment industry is currently the largest emitter of toxic discharges into water bodies and land and air in Cambodia (San, Spoann, & Schmidt, 2018). Among direct trade measures to incentivise the sector to reduce pollution is to offer export incentives conditional on pollution reduction. Such incentives can include tax exemptions on profits from exports.

Another key sector offering potentials is the energy sector. As stated in its NDC, Cambodia plans to "promote the use of renewable energy." Approximately one-third of energy currently comes from fuel wood and other biomass, while another third comes from oil products (Asian Development Bank (ADB), 2018). Furthermore, Cambodia has also significantly developed its solar power capacities, launching the Cambodia National Solar Park, which reduced the cost of electricity by two-thirds and established a clear and transparent solar power auction system to attract investment (Climate Investment Funds, 2020). A key strategy to further develop this sector through trade would be lowering trade barriers on solar technologies and infrastructure. Such a measure would enable Cambodia to export its own solar energy while benefiting from lower-

priced and more advanced and efficient equipment abroad.

Finally, Cambodia's construction industry has been facing a boom due to increased tourist arrivals in recent years. In 2018, for instance, approved residential and commercial development projects in Cambodia (excluding mega projects of $1 billion or more) increased to USD 4.6 billion, representing a 14% year-on-year increase (Ministry of Land Management, Urban Planning and Construction (MLMUPC), 2018). Promoting Green Cities and Green tourism can be pertinent in future NDCs; however, adopting certification schemes and labelling may lead to adverse effects, such as increasing costs for SMEs, which may lead to their expulsion from the sector.

As a country heavily reliant on its garment industry, Cambodia also offers numerous opportunities to harness the potential of trade to implement its industry-related NDCs.

3.3 Lao People's Democratic Republic

Overview of NDC submissions and set climate change objectives

Lao PDR submitted its first INDC in 2015 and submitted an updated version in 2021. Both NDCs present mitigation and adaptation actions, particularly in agriculture, forestry, land-use change, water resources, energy, transportation, industry, and public health. Climate actions focus primarily on increasing the share of renewable energy, notably hydropower, in the energy generation mix, improving road network development and increasing the use of public transport, and increasing the use of energy-efficient cookstoves on the demand side.

Modest references were made to trade or trade-related measures in Lao's NDCs. More precise trade-related elements were identified through further research. These are tabulated in Table 1.3 below.

Table 3: Mapping of Trade-related measures in Lao PDR's NDC

Area	Direct trade-related measures	Indirect trade-related measures
Supply-side		
Energy	• Support policies such as feed-in tariffs, tax incentives, and import duties to implement Renewable Energy Strategy • Implementation of the electricity export agreement to expand the use of large-scale hydroelectricity and exploit its trade potential	
Industry		
Transport	• Increase share of electric vehicles in national vehicles mix	
Agriculture	• Importation of hardware to renovate irrigation systems to adjust water management practices in lowland rice cultivation	
Demand-side		
Household	• Introduction of 50,000 energy-efficient cookstoves, as per World Bank's Lao PDR Clean Cook Stove Initiative	

Source: Author, based on NDCs submitted by the country and other relevant implementation plans and reports.

Trade and climate response synergy potentials

High-profile investments in hydropower dams have enabled Lao to produce and export large quantities of hydroelectric energy to its neighbours at low costs (Vakulchuk, *et al.*, 2020). The development of Lao's hydropower generation industry that provides clean energy domestically and also accounts for a large part of its exports can be considered one of the key success stories for harnessing trade potentials of climate change response measures.

As stated in its NDC, Lao wishes to expand the use of "large-scale hydroelectricity" among other renewable energy sources such as biomass and solar. However, as also stated in its INDC, a "limited budget and access to finance" is a significant obstacle to achieving this. While Lao has highlighted intentions to providing carbon credits and low-interest loans to finance renewable energy projects through its Central Bank, the role of international cooperation remains imperative in improving access to climate finance and increasing investment. Lowering barriers to trade for climate-friendly infrastructure will reduce the costs of developing alternative renewable energy sectors while also facilitating the trade of renewable energy in the region.

Another area of significant potential is the cookstove industry. In 2010, Lao, under the EU Switch-Asia initiative, launched the Improved Cookstoves (ICS) Programme to promote more efficient cookstoves among Laotian households. Numerous programmes arose after that, such as the World Bank

initiative, who with support from the Energy Sector Management Assistance Program (ESMAP), introduced 50,000 clean cookstoves to replace charcoal and wood-burning cooking fires in three Laotian provinces 2018 (World Bank, 2018). With the growing production of these cookstoves in Laos, the country can benefit from trade-related measures, such as subsidies, tax incentives, and import duties to further protect the infant industry and encourage large-scale production. However, ensuring that these policies do not clash with global trade rules and lead to trade disagreements with its neighbours will be necessary.

3.4 Nepal

Overview of NDC submissions and set climate change objectives

Nepal submitted its first NDC in 2016. Later in 2020, it submitted its second and latest NDC. Its latest NDC specifies quantified targets for its mitigation actions, covering energy (including energy production, transport, and residential cooking), industrial processes and product use (IPPU), agriculture, forestry, and Other Land Use (AFOLU), and waste. Its primary contributions entail expanding clean energy generation from hydropower, solar, wind, and bio-energy, increasing sales of e-vehicles, promoting the use of electric stoves, adopting low emission technologies in brick and cement industries, and enacting emissions standards as well as subsidising the production of organic fertilisers for agriculture. As tourism is an important sector in the country, its NDC also lists specific tourism-relevant actions, such as the formulation of nature-based tourism plans and the carbon-neutralisation of at least five tourist destinations.

Though Nepal's NDCs make references to trade-related measures, for instance, in the energy and transport sectors, a more in-depth mapping of trade-related elements was obtained through Clean Energy Nepal's NDC Review report.

Table 4: Mapping of Trade-related measures in Nepal's NDC

Area	Direct trade-related measures	Indirect trade-related measures
Supply-side		
Energy	• Implementation of Subsidy Delivery Mechanism to promote renewable energy • Reduction of imported fossil fuels	• Sale of carbon credits at a better price
Industry		• Development and/or enactment of emission standards • Formulation and establishment of guidelines and mechanisms to monitor emissions from large industries
Transport	• Importation of e-vehicles • Promotion of public electric mobility through policy incentives, including	• Increased trade flows due to development of electric rail network

	subsidy policies and other financial mechanisms • Decrease in fossil fuel imports	
Agriculture, Forestry and Other Land use (AFOLU)	• Government subsidisation of organic fertilisers, climate-resilient seeds, etc	• Potential of increased investment in climate-friendly agriculture • Increased trade in agricultural products resulting from improved yields
Demand-side		
Household	• Import of electric stoves • Discount on electricity tariffs for electric stove users • Reduced dependency on imported petroleum for household use	
Urban & City Planning		• More stringent building code may reduce demand for high-carbon materials used in construction
Tourism	• Increased potential for ecotourism	• Regulation of tourism transport may restrict tourist arrivals

Source: Author, based on NDCs submitted by the country and other relevant implementation plans and reports.

Trade and climate response synergy potentials

Nepal's economy relies heavily on agriculture and remittances as its principal sources of revenue. However, Nepal's trade performance, notably its exports of the ready-made garment, fruits and vegetables, and carpets, has increased export revenues and international reserves in the past few decades. Tourism has also seen substantial growth over the years, contributing 7.9% of total GDP in 2019 (Prasain, 2019). Nepal imports include petroleum products, machinery and equipment, and electrical goods (Acharya, 2019).

Nepal has vast potential to develop its hydroelectricity sector as a country rich in water resources, such as rivers and streams, and with a naturally steep gradient in its topography. Estimates have put Nepal's economically feasible hydropower potential at approximately 42,000 MW, although only about 1100MW is currently being exploited (ADB, 2017). Nepal can overcome shortages of investment suffered by the sector by providing government subsidies in line with WTO rules, as it has underlined in its NDC. Specifically, by incentivising the production of hydropower aimed for export, Nepal would also benefit from increased trade.

The tourism sector is another area with potential, considered one of Nepal's largest and fastest-growing industries, and currently employs more than a million people (Prasain, 2019). Nepal indicated in its NDC its willingness to integrate climate change mitigation measures to decarbonise the sector, including the sector's transport and infrastructure. Though this may increase the appeal of ecotourism in the country, it is important that the country remains conscious of avoiding excessive regulation, which could lead to investment flight and impeding SMEs businesses' growth.

The country's significant challenge is the dependency on fossil fuels, particularly in the transport sector. Though Nepal conveys

efforts to reduce dependency on fossil fuels in its NDC 'through effective mass public transport means while promoting energy-efficient and electrical vehicles,' the import of electric vehicles is still negligible compared to other polluting vehicles (Sharma S. P., 2019). Exploring trade-related measures in the transport sector can be furthered to inform implementation plans and future NDCs.

3.5 Pakistan

Overview of NDC submissions and set climate change objectives

Pakistan submitted its INDC in 2016, which was converted to its first and only NDC upon ratification of the Paris Agreement in 2016. To achieve its goal of reducing GHG emissions by 20% below its projected 2030 emissions under a "business as usual" scenario, the NDC lists a range of mitigation and adaptation actions categorised by priority level. Given that the energy sector is the largest contributor to emissions in Pakistan (Pakistan INDC, 2015), the main contributions focus on increasing grid efficiency, improving coal efficiency, and establishing grids powered by solar, wind, and hydroelectricity. On the demand side, actions promote scaling up efficient technologies (space heaters, refrigerators, air conditioners). Given the importance of agriculture for the economy, the NDC also emphasises agriculture-specific mitigation and adaptation actions such as implementing climate-smart agriculture programs and improving irrigation, agroforestry and livestock practices, and manure use.

Pakistan's NDC makes modest references to trade-related elements. Therefore, identifying these elements was primarily through Pakistan's 2013 Framework for Implementation of Climate Change Policy.

Table 5: Mapping of Trade-related measures in Pakistan's NDC

Sector	Direct trade-related measures	Indirect trade-related measures
Supply-side		
Energy	• Provision of subsidies for the promotion of hydropower generation • Provision of incentives for introducing solar water heaters in the country • Introduction of investment-friendly incentives to attract private sector interest in renewable energy projects • Promotion of local manufacturing of power generation equipment • Development and encouragement of indigenous low-cost technology (renewable energy) through research and development (R&D) activities • Restriction and discouraging of import of sub-standard technology used for conversion of waste into energy	• Promotion of Energy Standards and Labelling (ESL) for manufacturers and importers, and promotion for consumers. • Creation of a mechanism to ensure stable funding for new hydropower projects through international financial lending institutions

	• Provision of market-based incentives, such as emission trading credits to private energy producers to help reduced carbon emissions • Plan Green Fiscal Reforms for providing subsidies for renewable technology transfer; local innovations of renewable technology; efficiency improvement for carbon fossil fuel-based technologies	
Industry	• Provision of economic incentives to conserve energy in the form of replacing high-energy consuming machinery with energy-efficient machinery in the industrial sector • Development of Green Fiscal Reforms for the introduction of polluter pays/carbon tax • Development of fiscal reforms for the introduction of carbon credit market • Provision of financial incentives to encourage industries to adopt energy-efficient motors voluntarily • Provision of financial incentives to the industrial and corporate sector to complete energy efficiency audits	
Transport	• Provision of incentives for efficient vehicle operations • Application of subsidised price or cost control for customers, to popularise mass transit system over the use of individual cars • Identification of funding resources to develop environmentally-friendly transportation technologies	• Update and strict enforcement of vehicle emission standards • Development of a law enforcement system with a clear mandate to enforce vehicle emission standards.
Agriculture	• Facilitation of technology transfer to small farmers by giving them incentives through subsidies etc. • Set-up system to control the illegal import of pesticides and for applying quarantine measures at dry/seaports, particularly in Balochistan	• Launch of 'Reduced Impact Logging (RIL) techniques in commercial forests to minimise damages during forest operations to save the future carbon stocks and avoid soil disturbance and erosion risks
Demand-side		
Household	• Provision of subsidies for the promotion of low-energy consuming devices in the household and commercial uses such as energy saver lights; • Introduction of incentives for energy-efficient products which often cost more than the less-efficient versions, especially when they are first introduced to the markets	

Urban & City Planning	• Identification and introduction of energy-efficient building materials, designs, and technologies • Adoption of strategy to promote and install solar panels in both public and private sector buildings to conserve energy • Possible cross-border government procurement of solar equipment	• Setting of appropriate building construction criteria/ codes according to climatic conditions for energy conservation •

Source: Author, based on NDCs submitted by the country and other relevant implementation plans and reports.

Trade and climate response synergy potentials

Pakistan's economy is mainly driven by its services sector, followed by industry. Specifically, within the industry sector, the textile and cement industries make up the most significant contributors to the country's exports. The textile industry accounts for about 65% of merchandise exports and contributes 8.5% to GDP (Board of Investment Pakistan, 2021) Though it only contributes about 18.9% to Pakistan's GDP, the agricultural sector is still considered the backbone of the economy. Major crops which contribute to Pakistan's export revenues include wheat, cotton, and mangoes (KF, 2021). Furthermore, despite extensive energy resources, such as natural gas and coal, exploitation of these resources has been slow. Petroleum products and crude petroleum account for a large part of Pakistan's import commodities.

Given the high dependence on oil imports and the current energy crisis Pakistan faces, the renewable energy sector is a key area of opportunity. Pakistan's energy crisis is characterised in two ways in its NDC: "(i) lack of access to sustainable energy sources and products (energy poverty); and (ii) power sector (electricity) demand and supply gap" (Pakistan INDC, 2015). The role of trade in attempting to remedy this crisis is crucial. Firstly, reducing trade barriers to sustainable energy sources and products would provide Pakistan with the technology and infrastructure necessary to develop its sustainable energy sector. Further, subsidies and financial incentives to renewable energy manufacturers, as highlighted in Pakistan's NDC, are key tools to incentivise the development of the renewable energy sector, particularly solar and hydropower. Doing so would help bridge the power supply shortfall in Pakistan and reduce its current dependence on fossil fuel sources such as coal and oil. Subsidies can be provided while ensuirng they do not conflict with WTO rules.

Another critical area is agriculture. In its NDC, Pakistan highlights the climate change mitigation potential in its agricultural sector. Among the direct trade-related measures the country proposes in the sector is controlling imports of illegal pesticides. However, it may risk restricting the imports of legitimate pesticides if not implemented correctly. Vigilant monitoring and checking of these procedures to verify pesticides' legitimacy are necessary to ensure these systems do not serve as unnecessary trade barriers. In addition, Pakistan also plans to "abolish tax duties on the import of solar equipment". The international trading regime can additionally play a role in incentivising the reduction or removal of tax duties in bilateral or regional trade agreements to lower the cost further and facilitate trade of climate-friendly technology in the region.

Finally, although the share of industrial-process emissions contributes only marginally to Pakistan's GHG emissions (5%), future economic growth could lead to an exponential rise in industrial emissions in coming years, particularly from the textile sector (Pakistan INDC, 2015). In consideration of this, Pakistan would benefit from reduced trade barriers on energy-efficient motors and machinery and tax incentives to manufacturers transforming their high-carbon processes in favour of low-carbon processes. The development of international or regional carbon credit markets would also lay the foundation for future large-scale emissions mitigation and growing international and regional trade cooperation among industries in the region.

3.6 Sri Lanka

Overview of NDC submissions and set climate change objectives

Sri Lanka submitted its first NDC in 2016 and submitted its updated version in 2021. Sri Lanka's NDCs can be described as one of the most detailed amongst the countries analysed. Its latest NDC communicates its contributions in many different sectors: electricity, transport, industry, waste, forestry, agriculture, fisheries, livestock, water, biodiversity, coastal and marine, health, urban planning, and human settlement, tourism, and loss & damage sectors. However, given the importance of certain sectors, such as power, transport, industry, waste, agriculture, and forestry, mitigation and adaptation actions are focused primarily on these sectors. Among the envisioned climate change response targets are: enabling policies for renewable energy, energy efficiency, green industry, and transportation initiatives, ensuring climate sensitivity and environmental sustainability of domestic food production systems in the agricultural and fisheries sectors, and promoting energy-efficient appliances in the household sector. Due to the significant contributions of the tourism sector to Sri Lanka's GDP, tourism-related actions are also mentioned, such as the promotion of sustainable tourism establishments.

Sri Lanka makes several direct references to trade-related measures in its NDC and relevant complementary reports and national policies, among which the following have been analysed by the study: i) the Readiness Plan for Implementation of INDCs; ii) the 2007 National Agricultural Policy and; iii) Sri Lanka's National Adaptation Plan for Climate Change Impacts (2016-2025).

Table 6: Mapping of Trade-related measures in Sri Lanka's NDC

Sector	Direct trade-related measures	Indirect trade-related measures
Supply-side		
Energy	• Introduction of policy supportive measures such as tax benefits, low-interest financing, etc. to expedite the implementation of renewable energy development and energy efficiency improvement programmes • Implementation of viable carbon trading mechanisms to promote the shift towards clean energy sources • Introduction of mechanisms for phasing out obsolete technologies	• Potential for international investment to open up climate financing mechanisms for solar, wind power generation, and biomass power plants.
Industry	• Introduction and promotion of suitable tax incentives to promote the acquiring of sustainable technologies • Facilitation of entry of ISO certified companies to the Green Public Procurement system of Sri Lanka • Facilitation of transformational investment and favourable loans through financing institutions linking with green financing • Introduce tax holidays/concessions for green investments and imports • Promotion of green purchasing among enterprises	• Conduct RECP and energy audits and develop baselines based on industry classifications & the importance • Adopt RECP practices including low carbon technologies and processes • Promote High-Efficiency Motors (HEM), Variable Frequency Drives (VFD), trigeneration, and other energy efficiency measures in the industrial sector • Make necessary amendments to Sri Lanka Standard Institute (SLSI) standards for cement production, enabling the increase of ash and other similar materials as substitutes for clinker in line with industry standards and trends worldwide • Promote National Green Reporting System (NGRS)
Transport	• Introduction of taxes and other instruments to promote public transport • Restriction of entry of individual modes of transport to sensitive areas and congested areas of major cities during peak hours through a levy Development of park and ride infrastructure combined with Corden based pricing mechanism • Increase in tax and duty concessions for electric & hybrid vehicles, as well as batteries used in these vehicles to promote the import of fuel-efficient vehicles • Introduction of a fuel-based carbon tax	• Development of new railway lines, expansion of existing railway network, provincial and rural road infrastructure could facilitate trade

Agriculture	• Production and supply of high-quality seeds and planting materials of commercial varieties in a competitive environment • Discouragement of importation of crop varieties having terminator gene • Promotion of production and utilisation of organic and bio-fertilisers and reduction of use (and hence import) of chemical fertilisers through Integrated Plant Nutrition Systems • Promotion of manufacturing fertilisers using locally available raw materials • Strict implementation of testing and inspecting regulations when importing chemicals related to pesticides • Introduce simple procedures in providing loan facilities for agricultural activities and agro-based industries • Ensure availability of credit to farmers at concessionary interest rates • Encouragement of product branding, certification, and use of geographical indicators for products to enter competitive markets	• Encourage public and private sectors to develop and supply modern, low-cost, high-quality machinery with improved technology to sustain agriculture • Promote mechanisation to make agriculture more efficient and cost-effective
Demand-side		
Households	• Phasing out of incandescent bulbs • Introduction of efficient lighting, fans, refrigerators, and chillers	
Urban & City Planning		Implementation of Energy Efficiency Building Code Formulation of guidelines, rules, and regulations for housing settlements
Tourism	Increased number of tourism establishments and destinations certified under the National Sustainable Tourism Certification Scheme by Sri Lanka Tourism Development Authority (SLTDA) in collaboration with Global Sustainable Tourism Council (GSTC)	Enforcement of Green Building Guidelines (GBG) for all new constructions and refurbishments in the tourism sector Introduction of an "Energy Audit System" in the tourism industry

Source: Author, based on NDCs submitted by the country and other relevant implementation plans and reports.

Trade and climate response synergy potentials

Sri Lanka's economy is largely dependent on services such as shipping, tourism, and aviation. The services sector accounted for 58.2% of the economy in 2019, industry 27.4%, and agriculture 7.4% (Department of Census and Statistics, 2021). In addition, Sri Lanka is the largest solid industrial tyres manufacturer globally, and its textiles and apparel sector has gained in export growth over the years (Sri Lanka Export Development Board, 2021). Sri Lanka's imports consist mainly of fuels, including petroleum products, electrical machinery, equipment, and vehicles.

Though agriculture only contributes modestly to Sri Lanka's GDP, the sector still holds economic importance due to its competitive export orientation, especially of tea, spices, and rubber, as well as its role as an employer of 30% of Sri Lanka's workforce (Sri Lanka Updated NDC, 2020). Recognising the importance of this sector, Sri Lanka's NDC identifies various ways to promote sustainable agriculture and environmentally conscious farming, such as modern and advanced technologies, the use of renewable energy, waste and surplus management, etc. One way the trading system can facilitate the implementation of these is by lowering trade barriers on modern, climate-friendly agricultural technology and machinery. Doing so would support the development of low-carbon agricultural processes and foster domestic innovation. Further, Sri Lanka's NDC also outlines its commitment to discourage imports of chemical fertilisers. To lessen the potential negative trade repercussions this may have provision of subsidies to producers of organic fertilisers, designed in line with WTO and GATT rules. This could serve as a buffer against the subsequent shortage of fertilisers and would also present an additional area for export potential.

Another potential area is the transport sector, one of the primary GHG emitting sources in Sri Lanka. It comprises high ownership of private vehicles powered by imported petroleum oil (Sri Lanka NDC, 2016). Indeed, as noted in Sri Lanka's first NDC, the total expenditure for petroleum imports is "about 6% of the country's GDP". The measures Sri Lanka has proposed in its NDC to realise GHG mitigation targets in the transport sector include improving the transport sector system, promoting public passenger and non-motorised transport, and shifting freight to efficient modes. The country also adopted tax measures, including a levy on individual access to congested areas of major cities and a fuel-based carbon tax. It also includes tax incentives and duty concessions to promote the import of fuel-efficient vehicles and electric and hybrid vehicles.

Challenges that may be encountered, with particular implications for trade, are establishing and enforcing standards for production and procurement of materials in industrial sectors. Though intended to promote energy-efficient production, stringent implementation of standards could harm industrial firms reliant on specific processes or imports of certain intermediate goods for production. Harmonisation of standards across regional and international trading systems and low barriers to trade for energy-efficient intermediate goods and technology are vital in preventing domestic environmental standards from having trade-restrictive impacts.

3.7 Viet Nam

Viet Nam submitted its first INDC in 2016 and later submitted an updated version in 2020. Both NDCs express Viet Nam's unconditional target to reduce total GHG emissions by about 9% compared to the BAU scenario, with this figure rising to 25% conditional on international support. Viet Nam targeted various sectors in its NDC, energy (which further covers the energy industry, industrial production and construction, transportation, household, and commercial sectors), agriculture, land use, land-use change, and forestry (LULUCF), and waste. Key actions in these sectors include improving energy efficiency in production, manufacturing, transport, and household sectors, developing renewable energy in accordance with Viet Nam's potential, shifting from private to public means of transport, and in the agriculture and LULUCF sectors, applying energy-efficient and conservation-friendly technology in cultivation and livestock production, shifting

crop production structure and changing land-use methods.

Viet Nam's NDCs do not make direct references to trade or trade-related elements. Therefore, the study also referred to Vietnam's 2016 Plan for Implementation of the Paris Agreement (PIPA) to identify these elements.

Table 7: Mapping of Trade-related measures in Vietnam's NDC

Sector	Direct trade-related measures	Indirect trade-related measures
Supply-side		
Energy	• Development and implementation of financial and technical mechanisms and policies to support research and the application of appropriate advanced technologies • Development of a renewable energy technology market, domestic industries, and local service providers • Application of energy savings and efficiency, and renewable energy applications in trade • Provision of fiscal incentives and export credits to further incentivise renewable energy investment • Exemption from import duty for imported goods which serve project production, and exemption and reduction of corporate income tax similar to projects in fields of investment priorities • Provision of fixed feed-in-tariff for grid-connected projects • Implementation of the roadmap to phase out subsidies for fossil fuels	
Industry	• Provision of tax and other incentives for energy-efficient manufacturers and products (Law on Economic and Efficient Use of Energy) • Application of market instruments to promote structural change and improve energy efficiency • Encouragement of use of clean fuels • Replacing clinker in cement production	• Labelling of energy-saving equipment and issuing of national standards for the quality of equipment
Transport		• Establishment of standards on fuel consumption
Demand-side		
Households		

Urban & City Planning		• Enactment of mandatory technical standards to achieve energy efficiency in the design and construction/retrofit of civil buildings, such as offices, hotels, hospitals, schools, etc. with a gross floor area of 2,500 m^2 or larger (Viet Nam Energy Efficiency Building Code)

Source: Author, based on NDCs submitted by the country and other relevant implementation plans and reports.

Trade and climate response synergy potentials

Viet Nam's economy is largely dependent on its agricultural sector. Agro-food products, such as cashews, black pepper, coffee, cassava, rice, and fisheries make up Viet Nam's primary export commodities (FAO, 2018). Recently, certain manufacturing sectors, such as electronics, food processing, textiles, cigarettes, and tobacco, have experienced rapid growth (OEC, 2019). Furthermore, Viet Nam has substantial hard coal as well as oil and gas reserves. Petroleum (crude oil) is the primary energy source, followed by coal, which contributes around 25% of the country's energy. In addition, Viet Nam is also a net exporter of crude oil (Ministry of Industry and Trade (MOIT), 2017).

As a country dependent on fossil fuels, both as the main sources of its power generation, as well as a substantial portion of its export commodities, Viet Nam's efforts to shift to alternative renewable energy sources are valuable and necessary. In its NDC, Viet Nam underscores specific trade measures that could play an important role in transforming Viet Nam's economy if implemented effectively. Specifically, "export credits…to incentivise renewable energy investment" as well as "exemption from import duty for imported goods which serve project production" are concrete trade measures that could foster development in Viet Nam's renewable energy sector. It also refers to the provision of subsidies to solar, biomass, and wind power projects as well as international agreements to encourage foreign investment in these sectors to boost growth in the sector.

In addition to the energy sector, the industry sector can be subject to further substantial trade-related mitigation measures in future NDCs. Overall, Viet Nam's industry has a high energy intensity compared to global benchmarks, mainly because many key sectors operate with relatively old technology. Though, in its NDC, Viet Nam expresses its commitment to apply "market instruments to promote structural change and improve energy efficiency" in industry, no specific mention of the type of market instruments to be employed is made. Implementing trade measures, such as reduced import duties on energy-efficient infrastructure and technology, are key ways to reduce GHG emissions and enhance the competitiveness of these sectors (Audinet, Singh, Kexel, & Suphachalasai, 2016).

3.8 Deductive Summary

The following general observations can be deduced from the mapping of trade-related measures in the NDCs (and other relevant

documents) of the seven identified countries of the S&SEA region:

- Most countries adopt trade-related measures as a means of implementing their climate actions. However, these measures are few to appear in the submitted NDCs themselves. In facet NDCs consisted of vaguely-worded actions for example, "promote", "introduce", "support", "develop" or "encourage", etc. These vague words do not indicate the specific policy interventions intended. Rather, specific trade-related measures are found more in subsequent relevant action and policy plans and Governments' reports on NDCs' implementation progress.

- The most common trade-related measures in countries' NDCs came in the form of subsidies provided to renewable energy producers, tax incentives for the use of energy-efficient technology in industrial sectors, and standards, and labelling to improve efficiency in construction and buildings. Specifically, subsidies and financial incentives to renewable energy producers were most prevalent in countries with strong renewable energy potential, such as hydropower in Nepal and Lao PDR. Conversely, for countries whose economies are heavily dependent on fossil fuel reserves, either as an imported source of energy like Nepal, or as a significant export commodity, such as Pakistan, Sri Lanka, and Vietnam, supply-side sectors NDCs focused primarily on: phasing out from fuel-based old machinery, introducing fuel-based carbon taxes, reducing fuel-based subsidies and imports and providing incentives for producing, exporting or importing clean energy, machinery, appliances and vehicles.

- Most of the climate change response measures were focused on the energy and transport sectors in most countries.

- Despite its declining share in countries' GDPs and its reliance on subsistence methods, the agriculture sector, remains significant in some countries where it is still a major employer of the workforce and provides livelihoods and food security. . Hence, climate mitigation, as well as adaptation efforts in this sector featured prominently, particularly in the NDCs of Nepal, Sri Lanka and Pakistan. The most common of these efforts involved adopting more energy-efficient technology and increasing the use of renewable energy in agricultural practices, reducing the use of imported chemical fertilisers, encouraging organic agriculture, and reducing GHG emissions from livestock. Due to the consistency and overlapping of goals across all countries' NDCs, the agricultural sector thus presents a significant opportunity for countries to benefit from regional cooperation in the trade and climate change realms and explore regional trade and climate policy synergies. Technology-sharing, reduction of trade barriers on organic products and fertilisers, and cross-border infrastructure provision are a few ways to harness the potential of trade to jointly foster more sustainable and climate-friendly agricultural practices in the region.

- All countries emphasised the crucial role of international cooperation and climate finance in providing technical assistance, capacity building and support technology transfer. While there are many established climate finance mechanisms and schemes at the national level, they emphasise that these cannot be enough to meet the level of ambition needed and achieve Paris Agreement goals.

SECTION 4

Conclusion: Ways Forward for Further Integration of Trade in NDCs

It is becoming more and more evident that climate change and trade policies cannot be formulated in silos. In fact, trade measures are key instruments for implementing climate actions elaborated in countries' NDCs. Moreover, climate change policies encourage the rise and expansion of new industries and environmental goods and services, which offer trade growth and expansion opportunities. By mapping trade-related measures in NDC submitted by Bangladesh, Cambodia, Lao PDR, Nepal, Pakistan, Sri Lanka and Viet Nam, this study found that trade measures are alluded to in various forms and sectors. Renewable energy, transport and green tourism, and other emerging green industries were found to be key sectors of support to climate action targets. At the same time, in some countries, they induce new exports, markets and promote regional trade. However, there is still considerable room for further integrating trade-related measures and considering trade potentials and impacts in future NDCs and their implementation plans.

Various challenges to exploiting trade measures and trade potential in NDCs were also identified across the seven countries, comprising developing countries and LDCs. Among these challenges are: the dependence on fossil fuels as a source of energy and export revenue, limited access to technology, limited climate finance support and the lack of expertise and resources to further investigate trade potential in NDCs. In fact, these countries would lack the capacity, resources or know-how to effectively strategise and implement trade measures as part of their climate action strategies. Addressing these gaps by strengthening expertise, providing appropriate training and know-how, facilitating transfer of technology, providing the required finance, and raising awareness of trade measures and opportunities are key ways in which development partners can assist these countries in capitalising on their trade potential in their climate action strategies.

Finally, COP26 marks the initiation of the first NDC cycle and the first global stocktake will take place between 2021 and 2023. The global stocktake process aims to assess the collective progress of NDC implementation and the support provided towards the Paris Agreement goal. The outcome of this process will eventually inform future NDCs to be submitted by the Parties. This imminent process offers a significant opportunity for conducting more detailed assessments of trade measures' contribution to NDCs and the impact of climate action on trade in various economic structures. It also offers a platform for countries to share their experiences and lessons learned. Financing and supporting studies and research on trade and climate change synergies and means of exploiting them in NDCs can be of utmost interest to developing countries and LDCs, including in South and South-East Asia, during these coming years.

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