

Lim, Aik Hoe; Mathur, Sajal; Suk, Gowoon

Working Paper

Trade and environment: What can we learn from trade policy reviews?

WTO Staff Working Paper, No. ERSD-2020-06

Provided in Cooperation with:

World Trade Organization (WTO), Economic Research and Statistics Division, Geneva

Suggested Citation: Lim, Aik Hoe; Mathur, Sajal; Suk, Gowoon (2020) : Trade and environment: What can we learn from trade policy reviews?, WTO Staff Working Paper, No. ERSD-2020-06, World Trade Organization (WTO), Geneva,
<https://doi.org/10.30875/e4cb3fa0-en>

This Version is available at:

<https://hdl.handle.net/10419/215815>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

World Trade Organization

Economic Research and Statistics Division

**TRADE AND ENVIRONMENT: WHAT CAN WE LEARN FROM
TRADE POLICY REVIEWS?***

Aik Hoe Lim

*Trade and Environment Division, WTO***

Sajal Mathur

Trade and Environment Division, WTO

Gowoon Suk

Institute for Training and Technical Cooperation, WTO

Manuscript date: 22 January 2020

Disclaimer: The opinions expressed in this article should be attributed only to its authors. They are not meant to represent the positions or opinions of the WTO and its Members and are without prejudice to Members' rights and obligations under the WTO. Any errors are attributable to the authors.

[*] This paper was prepared as part of and for the event TPRM@30 in November 2019 celebrating the 30th anniversary of the TPRM.

[**] Address for correspondence: Trade and Environment Division, Rue de Lausanne 154, 1211 Geneva, Switzerland. email: environment@wto.org

TRADE AND ENVIRONMENT: WHAT CAN WE LEARN FROM TRADE POLICY REVIEWS?

Aik Hoe Lim
Trade and Environment Division, WTO

Sajal Mathur
Trade and Environment Division, WTO

Gowoon Suk
Institute for Training and Technical Cooperation, WTO

Abstract:

In order to ensure transparency and to keep abreast of trade policies in support of sustainability, the WTO Committee on Trade and Environment (CTE) mandated the WTO Secretariat to compile and collate all environment-related measures notified to WTO. The database also includes environment-related entries found in Trade Policy Reviews (TPRs). This information, which is updated annually, is contained in the WTO Environmental Database (www.wto.org/edb). It has nearly 11,500 measures drawn from WTO notifications and over 7,800 trade policy review entries. By analysing the trade policy review entries over time, we can better understand how the relationship between trade and environment is evolving in Members' trade policies, the relevant sectors involved, and the types of instruments which are most frequently used to pursue environmental objectives.

Keywords: Agriculture, Circular Economy, Climate, Energy, Environment, Environment and Trade, Fisheries, Forestry, International Trade, Policy Making, Trade, Trade Policy, Services, Waste, Wildlife, WTO

JEL-codes: F13, F18, F42, F64, F68, Q56

Table of Contents

1 INTRODUCTION	4
2 ANALYSIS – WHAT CAN WE LEARN FROM THE TRADE POLICY REVIEWS?	5
2.1 Trade policies by measures	6
2.2 Trade policies by sectors	8
2.2.1 Energy	9
2.2.2 Agriculture	10
2.2.3 Fisheries	11
2.2.4 Services	12
2.2.5 Forestry	13
2.3 Key environmental issues in TPRs	14
2.3.1 "Waste"	14
2.3.2 "Wildlife"	15
2.3.3 "Climate"	16
3 CONCLUSION.....	17
4 ANNEX.....	19

1 INTRODUCTION

The Trade Policy Review Mechanism (TPRM) has evolved over the last 30 years. At its inception, during the Uruguay Round, the reports covered only trade in goods before trade in services and intellectual property were added to the template with the establishment of the WTO.

Today, 30 years on, the WTO Trade Policy Reviews (TPRs) continue to focus on WTO members' trade policies and practices. However, the reports also take account of broader sustainable development considerations. The nexus between trade and environmental policies have increasingly come into focus with concerted global action on climate change and the implementation of the Sustainable Development Goals (SDGs). Trade and environment policies are cross-cutting and the Trade Policy Reviews are well placed to cover this interface in a holistic manner.

There is already a rich body of relevant information that has been extracted from the TPRs and disseminated through the **WTO Environmental Database (EDB)**. The EDB, like the TPRM, has transparency at its roots. In the very early days of discussions in the Committee of Trade and Environment (CTE), some Members noted that the absence of a centralized collection point in the WTO for notifications of trade-related environmental measures made it difficult to retrieve information about these measures easily and efficiently. The 1996 Report of the CTE recommended that the Secretariat compile from the Central Registry of Notifications all notifications of trade-related environmental measures and collate these in a single database which could be accessed by WTO Members.¹ Subsequent to that report and after further deliberations in the CTE, the EDB was established in 1998² in fulfilment of the recommendation in the 1996 Report of the CTE to the Singapore Ministerial Conference (WT/CTE/1) for the Secretariat to compile and update annually all environment-related notifications to the WTO and the environment-related information from TPRs. The WTO Secretariat was thus mandated to compile all environment-related measures notified to the WTO and to extract the environment-related information from TPRs. The EDB, first circulated in word and excel formats, was relaunched in 2018 with a new web-based platform (www.wto.org/edb).

The new EDB interface already has 10 years of data publicly available to all interested stakeholders. Between 2009 and 2018, 7869 TPR entries were recorded in the EDB.³ The number of environment-related entries in the TPRs have roughly doubled over the last decade (Chart 1 – TPR entries by year).⁴

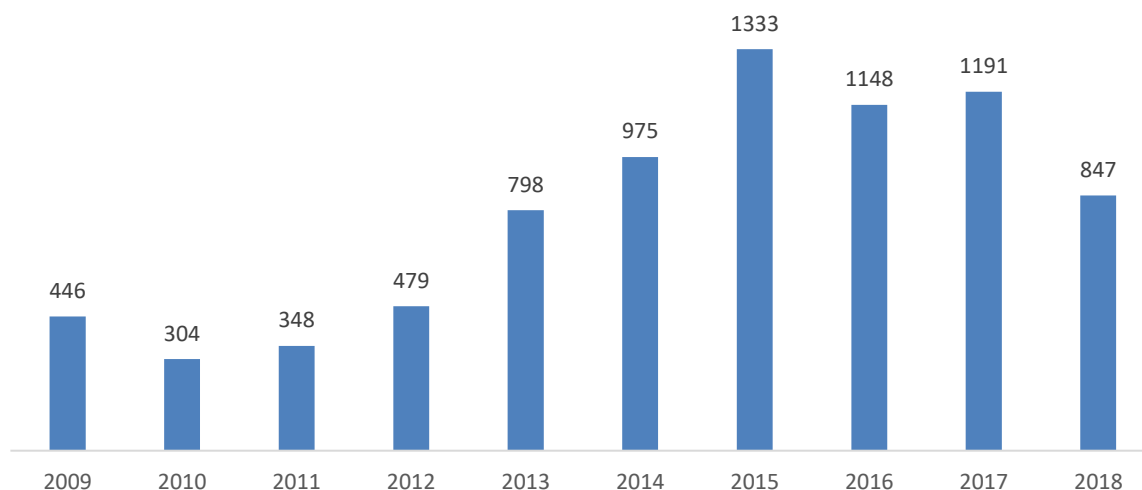
¹ WT/CTE/W/46.

² See WT/CTE/3.

³ A "TPR entry" is a textual excerpt identified and extracted from a WTO Members' TPR report containing relevant environment-related information.

⁴ This increase is partly due to a change in the methodology used to present TPR entries. Up to 2012, a TPR entry covering the same measure or policy in the Government or Secretariat reports were combined into a single entry. This practice was discontinued from 2013 onwards and now each environment-related paragraph or entry is recorded separately in the database.

Chart 1 – WTO Environmental Database: TPR entries by year



Source: WTO EDB - <https://edb.wto.org/tpr>

The EDB data over this period covers 146 Member and Secretariat TPR reports. The TPRs of individual members, customs unions or regional groupings are included in the database. To date, there are 127 WTO Members with environment-related TPR entries in the EDB (see Annex Table 1 – TPR entries by WTO Member).

2 ANALYSIS – WHAT CAN WE LEARN FROM THE TRADE POLICY REVIEWS?

Using search words (see Annex Table 2 for the list of EDB keywords), the TPR reports have been systematically analysed for environment-related "hits" which are then inputted into the EDB. Information is tagged and can be accessed using search filters such as by year, member, region, type of information, measure or sector. An excerpt of the relevant environment-related information extracted in the TPR is also available in the database.

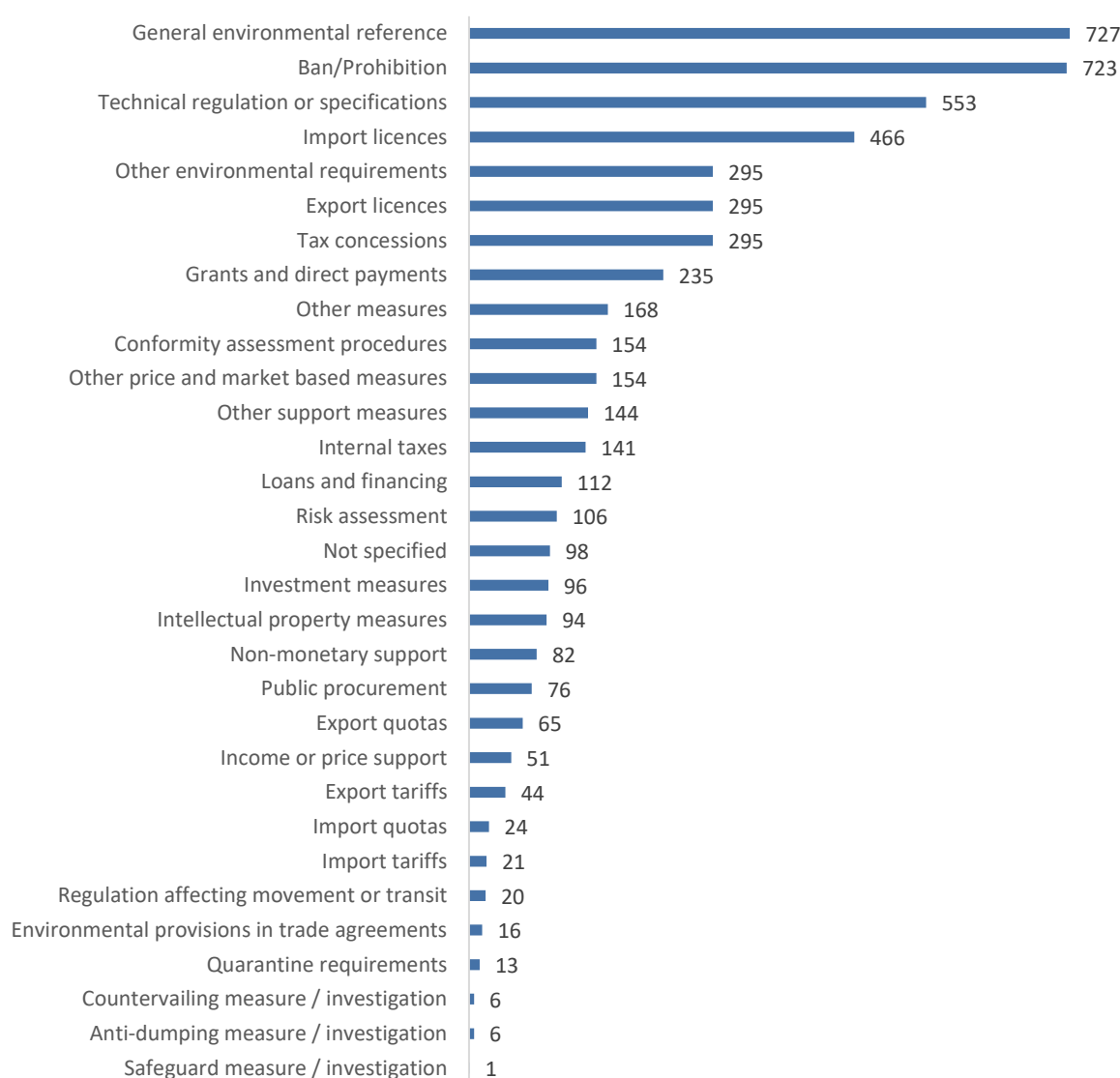
The database captures both environmental policies or measures that have trade effects and trade measures or policies designed *inter alia* to serve environmental purposes. The EDB further captures references to environmental risks or events that might have affected the trade policies of a Member. Trends can be discerned, and best practices from a wide range of policies can be identified. To analyse the data, it is useful to move beyond pure number counts of EDB entries because the relevant environment-related information extracted from the TPRs, is essentially qualitative in nature and rich in trade and environment policy information.

The type of environment-related information found in the TPRs has been tagged under 3 headings: trade policy framework; trade policy by measure; or trade policy by sector. There are 1864 trade policy framework entries in the EDB over the period 2009 to 2018. Trade policy framework entries include environment-related information in the trade or investment policy framework sections of the report such as with respect to bilateral, regional or free trade agreements, investment policies, and on government policies, plans, programmes and other general environmental references in the report. The environment-related TPR entries of trade policies by measures and by sector are covered in the following sub-sections.

2.1 Trade policies by measures

There are 2839 trade policies by measures entries in the EDB over the period 2009 to 2018. The database has 31 harmonized categories, to capture the various types of measures found in the EDB (see Chart 2 below and Annex Table 3). Environment-related trade policies and practices by measure include: (i) import/export restrictions or regulatory measures with environmental requirements such as import or export licences, bans and prohibitions or other quantitative restrictions, technical regulations or specifications, conformity assessment procedures; (ii) price and market based measures such as import or export tariffs, import or export quotas, and internal taxes; (iii) support measures including grants and direct payments, loans and financing, tax concessions, non-monetary support measures, income or price support; and (iv) other measures, that covers *inter alia* environmental provisions in trade agreements, investment and other measures.⁵

Chart 2 – WTO Environmental Database: Trade policies by measures (2009-2018)



Source: WTO EDB - <https://edb.wto.org/tpr>

⁵ In 2016, a new category "General environment reference" was added to the EDB so that environment-related entries that are "sector" but not "measure" specific will not be left as a blank-cell under "measures" as was being done previously. As a result of this change in methodology both measure and sector specific information in the EDB has been made more comprehensive.

About a quarter of the EDB entries by measures are quantitative restrictions, in the form of bans or prohibitions of imports or exports, import or export licences. Recent examples, include the 2017 TPR of the West African Economic and Monetary Union (WAEMU), describing regulations adopted to prohibit the production, sale and use of plastic bags or the 2018 TPR entry of China noting the prohibition on the importation of 24 kinds of solid waste from January 2018. Environment-related import or export prohibitions, restrictions, quotas, licensing requirements or permits are often applied pursuant to obligations agreed to in multilateral environmental agreements (MEAs) such as the Basel Convention or the Montreal Protocol, among others.⁶ For example, WTO Members have frequently been using import and/or export restrictions or licensing schemes to comply with obligations set out in the Montreal Protocol on Substances that Deplete the Ozone Layer. The TPRs of Japan (2007 onwards) refer to import quotas on controlled substances listed in the Montreal Protocol. Saudi Arabia (TPR 2016) also restricts the imports of recycled plastic waste under the Basel and Rotterdam Conventions, and the import of ozone depleting substances under the Montreal Protocol.

Regulatory measures, such as mandatory technical regulations, specifications or voluntary standards, risk assessment, conformity assessment procedures, and other environmental requirements together account for about 20 per cent of the TPR entries in the EDB and have been used to pursue environment-related objectives. This is not surprising as WTO TBT and SPS Agreement notifications account for the bulk of the environment-related notifications recorded in the EDB. Colombia's TBT notification record is highlighted in its 2018 TPR: between 2012 to 2017, Colombia submitted 62 notifications to the WTO (126 if addenda and corrections are included) and there were 105 technical regulations in force including products that have an environmental impact. The TPR of Kuwait (2012) mentions the restrictions in place on genetically modified organisms (GMOs) and the voluntary standard on the production, processing, labelling and marketing of organically produced food.

Tariffs, quotas and other price or market-based measures have also been cited in the TPR entries of the EDB. For example, the 2018 TPR of Chinese Taipei mentions the emission reduction target set under the 2015 Greenhouse Gas Emission Reduction and Management Act wherein entities that exceed their assigned carbon emissions allowances can procure unused allowances through carbon trading, or other approaches. The 2016 TPR of Solomon Islands details the Vessel Day Scheme to manage tuna stock by reducing catches of target species and increasing the rate of return from fishing activities through access fees. Mozambique's 2018 TPR mentions the introduction of new export taxes on raw and processed timber to protect the environment and Nepal's 2018 TPR details the export duties applied on about 100 products to *inter alia* protect the environment.

The TPR entries in the EDB also cover a broad range of support measures to pursue environment-related objectives. The 2017 TPR of the European Union, for instance, mentions that total state aid (excluding transport and agriculture) by EU member States increased largely due to an increase in aid for environmental protection (including energy saving). In Brazil (TPR 2017), the

⁶ See also the WTO Matrix on Trade-Related Measures Pursuant to Selected MEAs: https://www.wto.org/english/tratop_e/envir_e/envir_matrix_e.htm.

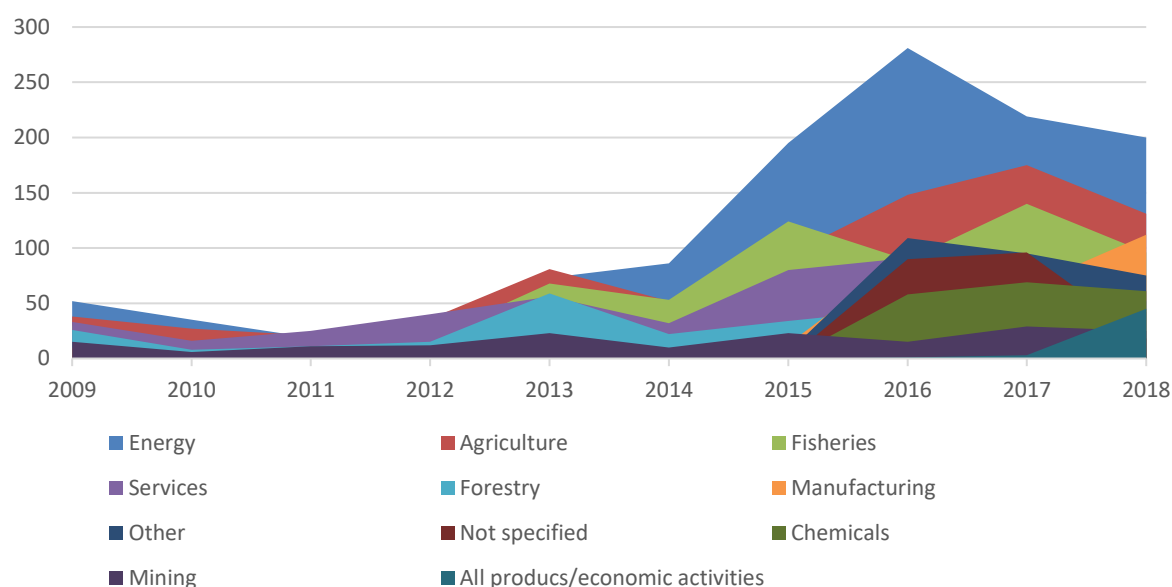
range of support measures includes: targeted long-term loans; tax incentives; non-repayable financial contributions; equity financing; accelerated depreciation; guarantees; grants; advisory services; and credit insurance with initiatives to promote energy efficiency among others. Other recent examples include, Malaysia (TPR 2017) providing funds to encourage R&D, promote SMEs, and boost the production and use of green technology. And Mauritania's 2018 TPR that highlights recent finance agreements signed and significant funding allocated for programmes and projects for inclusive, sustainable growth including *inter alia* investment for the environment.

The EDB entries extracted from the TPRs highlight the wide range of policy tools and measures used to pursue environmental objectives. The database could serve as a tool for policy makers and other interested stakeholders to review environment-related policies and to better understand how WTO Members are addressing environmental challenges through trade policy measures.

2.2 Trade policies by sectors

Moving on to the sectoral analysis, there are 3166 trade policies by sector entries in the EDB over the period 2009 to 2018. The EDB entries have been tagged to 11 harmonized categories to capture the sectors subject to environment-related measures (see Chart 3 below and Annex Table 4). While most of the sectors listed are self-explanatory, there are, of course, environment-related TPR entries on topics such as wildlife or waste which are clubbed together under the heading "Other". This sub-section examines the TPR entries in the energy, agriculture, fisheries, services and forestry sectors which together account for almost 75 per cent of all the sector specific entries in the database.

Chart 3 – WTO Environmental Database: Trade policies by sectors (2009-2018)



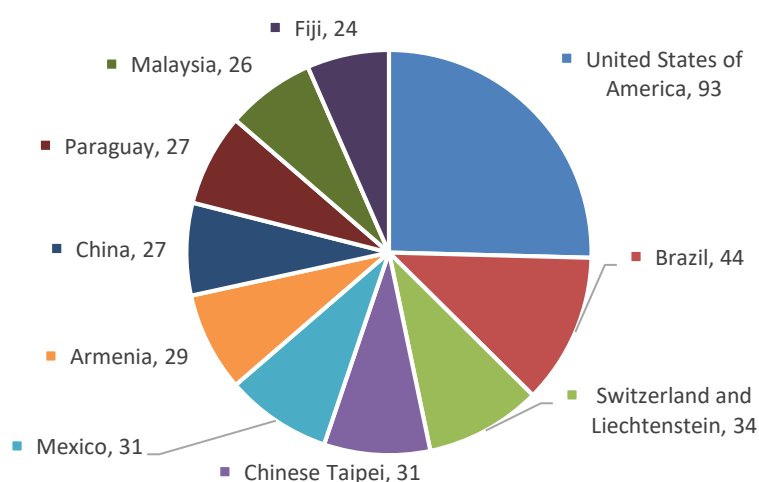
Source: Authors calculations from the WTO EDB (www.wto.org/edb)

2.2.1 Energy

The energy sector accounts for the largest number of sector-specific EDB entries. Between 2009 and 2018, 1184 entries related to the energy sector, covering *inter alia* policies or measures taken by Members to improve energy efficiency, increase the use of renewable energy or reduce dependence on fossil fuels. The number of EDB TPR entries related to the energy sector have significantly outnumbered the entries related to the other sectors since 2014 (see Chart 3 above).

A broad cross-section of the WTO membership have trade and environmental policies linked to the energy sector. The United States recorded the highest number of environment-related TPR entries on the energy sector, followed by Brazil, Switzerland and Liechtenstein (Chart 4).

Chart 4 – EDB: TPR entries related to the Energy Sector by Members (Top 10, 2009-2018)



Source: Authors calculations from the WTO EDB (www.wto.org/edb)

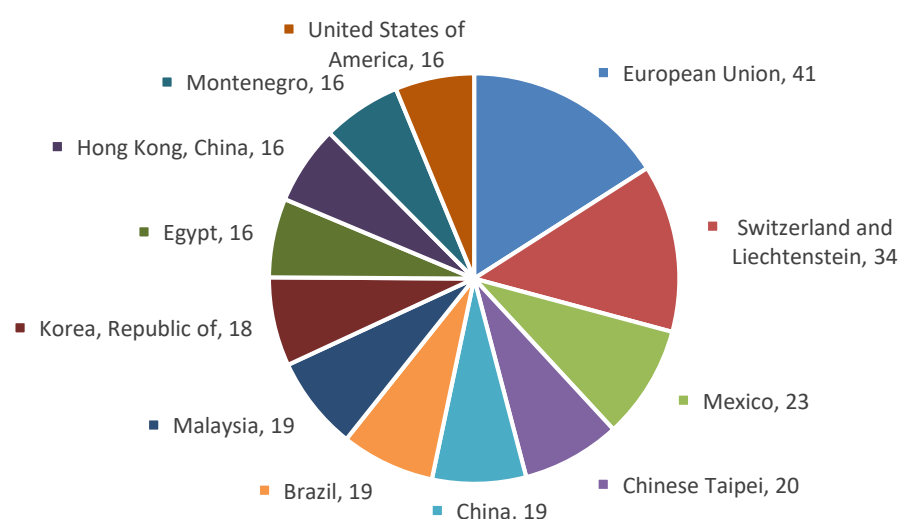
In terms of specific objectives, there have been efforts by Members to increase the share of renewable energy in the energy mix. For example, Paraguay's 2017 TPR details the National Plan Paraguay 2030 that aims to increase renewable energy consumption by 60% and reduce fossil fuel consumption by 20%. The 2018 TPR of Fiji mentions the tax incentives available to promote the development of renewable energy, including a five-year tax holiday to renewable energy and cogeneration power projects, and duty-free imports of renewable energy and energy efficient equipment. Armenia's TPRs of 2010 and 2018 highlight government's efforts in encouraging electricity production from renewable sources, with preferential and feed-in tariffs to encourage purchase of and investment in renewable energy. Switzerland and Liechtenstein's 2018 TPR details the CO₂ levy, which entered into force on 1 January 2008, and is designed to reduce the use of fossil fuels and thus the associated CO₂ emissions. The 2018 United States TPR outlines federal and state level programmes related to renewable energy. At the federal level, programmes support research and development projects and regulations to encourage the use of renewable energy, for example by requiring transportation fuel to include a minimum level of renewable fuel. At the state level, measures, include tax credit schemes, energy metering, and certification programmes, to promote the development and use of renewable energy.

Energy efficiency considerations also feature prominently in the EDB entries. For example, the 2017 TPR of Côte d'Ivoire, Guinea-Bissau and Togo, who are also member states of the WAEMU, mentions the Regional Sustainable Energy Initiative (IREN) programme, introduced in 2012, that enables the implementation of energy efficiency measures, including the distribution of low energy light bulbs. The 2011 and 2015 TPR of Australia outlines the National Strategy on Energy Efficiency, which involves legislation on appliance energy ratings and labels; mandating all new homes to achieve energy rating standards in the future; and accelerating the phasing-out of inefficient lighting.

2.2.2 Agriculture

Since 2009, the agriculture sector accounts for 803 (or about 17 per cent) of the environmental TPR sector-specific entries (Chart 3). Over the last 5 years alone, there were on average 120 agriculture sector entries per annum. The European Union recorded the highest number of environmental TPR entries in the agricultural sector, followed by Switzerland and Liechtenstein, and Mexico (Chart 5).

Chart 5 – EDB: TPR entries related to the Agriculture Sector by Members (Top 10, 2009-2018)



Source: Authors calculations from the WTO EDB (www.wto.org/edb)

The EDB entries in the agriculture sector, include support measures for environment-related purposes such as to prevent soil erosion, promote water conservation, sustainable agricultural management, organic farming, and other eco-friendly farming practices. For example, the 2018 TPR of Egypt details the water management support provided through the Farm-Level Irrigation Modernization Project resulting in an estimated savings of about 15% of the amount of water used by Egypt in agriculture. Israel's 2018 TPR mentions the soft funding for agricultural research in areas such as water recycling; and precision application of inputs (water, pesticides, fertilizer, etc.). The 2018 TPR of Chinese Taipei mentions its New Agriculture strategies in its 5+2 Industrial Innovation Plan encouraging organic and environmentally-friendly farming and promoting green environmental payments on farmland.

Regulatory measures or restrictions, for example, for the protection of the environment, plant or animal life or health, or bio-safety concerns with respect to invasive alien species or GMOs are also found in the EDB. The 2017 TPR of the European Union, for instance, introduces a new regulation on protective measures against plant pests that extends the definition of pests to include non-parasitic plants that could have a severe economic, social, or environmental impact within the EU. The 2018 TPR of Uruguay mentions the responsibilities of the National Biosafety Board in regulating genetically modified plant organisms with prior authorization required and granted on a case by case basis, based on risk assessment/management with respect to the environment and biodiversity.

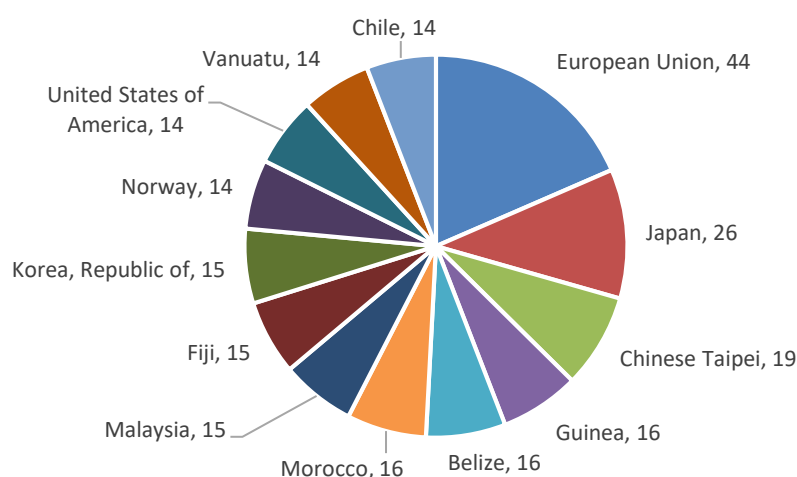
2.2.3 Fisheries

Over the period 2009-2018, there were 642 sector-specific TPR entries related to the fisheries sector in the EDB. The bulk of these entries are recent as over the last 5 years there are on average 100 fisheries sector entries per annum. Around 75 percent of the WTO members that underwent an analysis of their trade policy frameworks included at least one environmental concern or measure related to their fisheries sector. The European Union has the highest number of environment-related TPR entries on fisheries, followed by Japan, Chinese Taipei, Belize and Morocco (Chart 6).

WTO Members are increasingly including environment-related concerns in their fisheries trade policy frameworks. For example, Sierra Leone (TPR 2017) has developed a Policy Framework for Fisheries with the goal of turning fisheries into an ecologically sustainable and economically viable sector. Members, such as Belize (TPR 2017), Canada (TPR 2015), Philippines (TPR 2018), Mauritius (TPR 2014) and the Russian Federation (TPR 2016), among others, report on steps taken to update domestic legislation or upgrade monitoring, surveillance and enforcement capabilities to combat illegal, unreported and unregulated (IUU) fishing. Several Members mention their commitment to existing United Nations, FAO and other international instruments for the sustainable management of fisheries.

In terms of specific measures, the majority of the EDB entries relate to fishing quotas, catch certification schemes and bilateral or regional fisheries management agreements to sustainably manage fisheries. Tunisia (TPR 2016), for instance, has a catch certification scheme and has imposed biological recovery requirements for the sustainable exploitation and maintenance of fish stocks which are financed by a tax on fish exports (1% of the value exported). While Jamaica (TPR 2017) has an export levy on conch exports with proceeds going to the Fisheries Management and Development Fund for the sustainable management of fisheries and the reduction of IUU fishing. Other measures include penalties for violations, bans or licensing requirements, and support schemes. Chile's 2015 TPR details the different fishing permit regimes based on the status of the fish stock. Meanwhile, Korea (TPR 2016) reports that domestic support (schemes) for fishing have fallen significantly and that the government has introduced sanctions in recent years to fight IUU fishing. The growing number of EDB entries affecting the fisheries sector is evidence of the mutual supportiveness and the intertwining of trade, fisheries and environmental policies.

Chart 6 – EDB: TPR entries related to the Fisheries Sector by Members (Top 10, 2009-2018)



Source: Authors calculations from the WTO EDB (www.wto.org/edb)

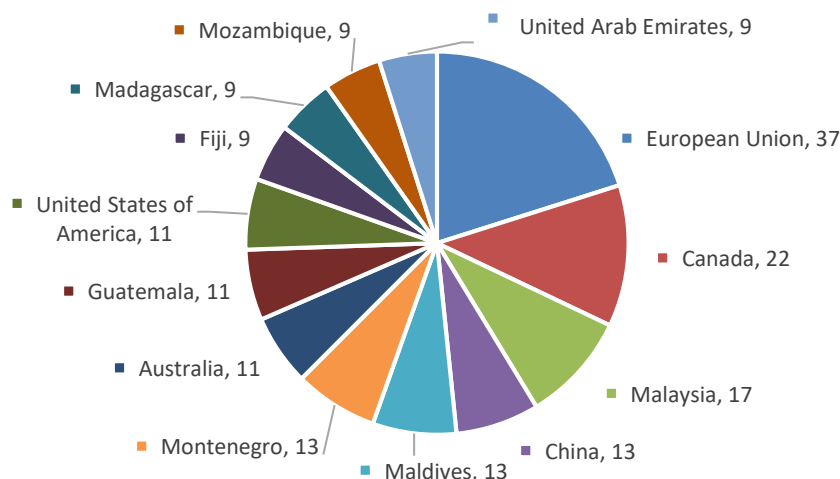
2.2.4 Services

The EDB contains 497 environmental TPR entries related to the service sectors between 2009 and 2018, and the bulk (211 entries) focus on the tourism, especially environmentally sustainable or ecotourism. The European Union has the highest number of environment-related TPR entries on services, followed by Canada, Malaysia, China and Maldives (Chart 7).

The 2011 and 2015 TPRs of India mentions the 37 quality standards the Ministry of Tourism has developed for tourism operators in cooperation with the UN Environment Programme and the UN World Tourism Organization for the sustainable development of tourism. Interestingly, 40 per cent of the entries related to environmentally sustainable or ecotourism are from the TPRs of Members in Africa, and more than half of the entries are from Least-developed Countries (LDCs). The 2017 TPR of Mozambique describes the country's significant potential in tourism with investments mainly focused on biodiversity, nature conservation projects and sustainable economic development, in accordance with Mozambique's strategy to make tourism a development priority since 2000. The 2009 and 2016 TPRs of Maldives outlines a number of measures to promote environmentally sustainable tourism, such as the Environment Impact Assessment and strict environmental conditions on building and operating tourist resorts and the green tax of US\$6 for each tourist bed/night for environmental protection and waste management.

In addition, there are EDB entries from a broad cross-section of Members, including Cambodia (TPR 2017), Cabo Verde (TPR 2015) and Georgia (TPR 2015) on specific commitments under GATS to cover the liberalisation of environmental services. For example, Cambodia's Schedule of Specific Commitments in environmental services seeks to attract FDI and remained unchanged in 2017.

Chart 7 – EDB: TPR entries related to the Service Sector by Members (Top 10, 2009-2018)



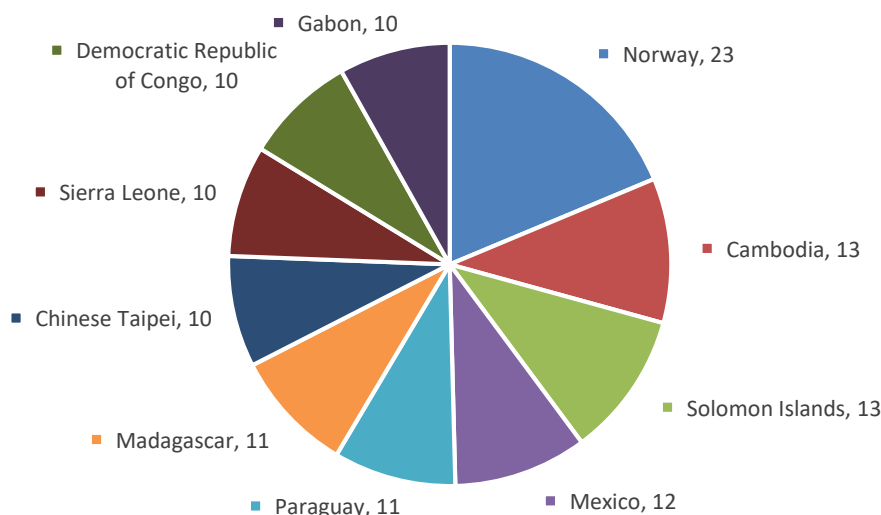
Source: Authors calculations from the WTO EDB (www.wto.org/edb)

2.2.5 Forestry

The forestry sector accounts for 351 (or about 7.4 per cent) of the TPR sector-specific entries in the EDB. Norway, followed by Cambodia and Solomon Islands have the most environment-related TPR entries on forestry in the database (Chart 8). Measures taken to stem illegal logging and deforestation figure prominently, as do support measures for reforestation and afforestation.

The 2016 TPR of Solomon Islands highlights the importance of the forestry sector as a source of livelihood for a large proportion of the population and a source of revenue with export duty for the Government and royalties for landowners. However, forest resources were projected to deplete completely by 2020 if there was no active reforestation. The 2010 and 2016 TPRs of Malawi details the various afforestation, forestry conservation and management programmes launched to check the alarming rate of deforestation due to overdependence on wood fuel for energy, amongst other factors. While Norway's 2018 TPR mentions its participation in international agreements or initiatives in the forestry sector such as the 2014 New York Declaration on Forests which aims to cut natural forest loss in half by 2020 and end it by 2030 and the Amsterdam Declaration in 2016, which set a goal to support deforestation-free supply chains of relevant forestry-based products by 2020.

Chart 8 – EDB: TPR entries related to the Forestry Sector by Members (Top 10, 2009-2018)



Source: Authors calculations from the WTO EDB (www.wto.org/edb)

Members have been taking action to combat illegal logging. Cambodia's 2017 TPR highlights the scourge of illegal logging. In 2013, Cambodia completed a study but was yet to conclude a Voluntary Partnership Agreement under the EU-led Forest Law Enforcement, Governance and Trade (FLEGT) initiative. Meanwhile, Ghana (TPR 2014) has been implementing a FLEGT licensing scheme since 2009 to ensure that only timber from legal sources is exported.

2.3 Key environmental issues in TPRs

The EDB keywords (Annex Table 2) have been periodically updated (most recently in 2018)⁷ and provides an additional tool to search and analyse the TPR entries in the database. Between 2009 and 2018, "Environment" is the most frequently used keyword in the EDB accounting for 3369 or over 40 per cent of the TPR entries.⁸ However, to capture the underlying focus or the objective of the policies or measures, it is more illustrative to examine other keywords such as "Waste" (462 entries), "Wildlife" (411 entries) and "Climate" (387 entries). Such searches allow for a deeper understanding of the policies associated with key environmental issues in TPRs.

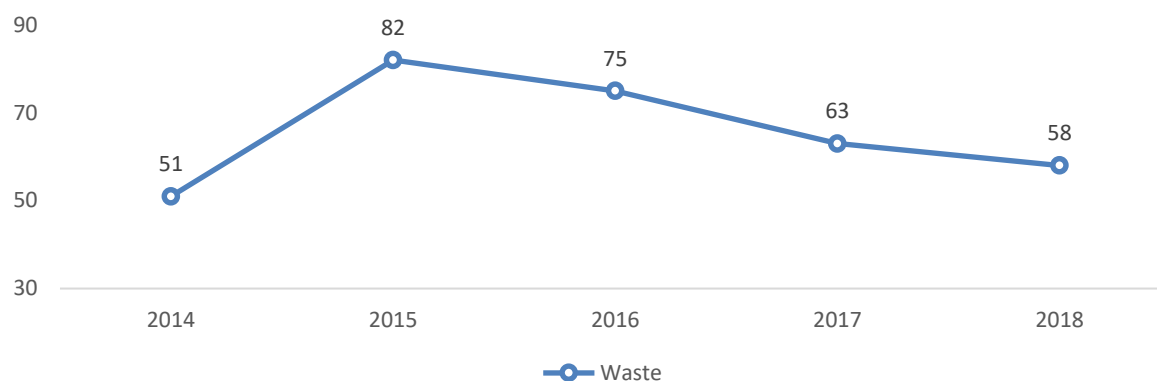
2.3.1 "Waste"

The last 5 years alone account for over 70 per cent of the EDB entries on "Waste". Since 2014, 50 or more of the TPR entries in the EDB have been tagged to the keyword "Waste" each year (Chart 9). Regulations for waste management or restrictions on trade in hazardous waste are among the EDB entries extracted from the TPRs. The 2017 TPR of the European Union highlights the ambitious new Circular Economy Package adopted by the European Commission in December 2015.

⁷ Concordance tables have been used for the keywords assigned to the TPR entries before 2018 to allow for the analysis presented in this section.

⁸ Since more than one keyword may be assigned to the EDB entries, the total number may exceed 100 per cent.

Chart 9 – EDB: TPR entries with the Keyword: "Waste" (2014-2018)



Source: Authors calculations from the WTO EDB (www.wto.org/edb)

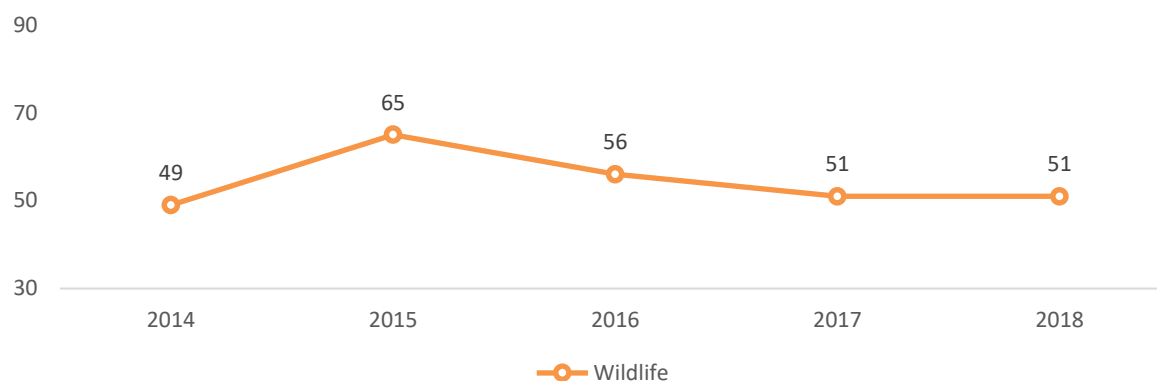
About 60 entries specifically refer to the measures taken by WTO Members pursuant to MEAs such as the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal.⁹ Hazardous wastes and materials can come from a myriad of sources such as residues from industrial operations, manufacturing, processing plants and hospitals, or they can be obsolete materials such as waste lubricants and pesticides. In this regard, according to Canada's TPR in 2015, Canada was controlling and tracking the movement of hazardous waste and hazardous recyclable material between Canada and other countries, especially the United States. There are 130 TPR entries that refer to bans or prohibitions on waste. For example, Colombia (TPR 2018) has imposed a ban on the importation of, *inter alia*, nuclear and toxic waste. China (TPR 2018) in July 2017 notified the Catalogue of Solid Wastes Forbidden to Import into China, which included 4 classes and 24 kinds of solid wastes, and this prohibition has been continued in 2018. Meanwhile, Iceland prohibits the exportation of waste and an export licence is required from the Environment Agency of Iceland for hazardous wastes according to its TPR published in 2017.

2.3.2 "Wildlife"

The keyword filter is useful to track the EDB entries on "Wildlife" as these entries do not get captured under other search filters. Chart 10 covers the period 2014 to 2018 which accounts for over 65 per cent of the 411 "Wildlife" entries in the EDB.

⁹ The Basel Convention is the most cited. There are fewer EDB entries on the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade; Stockholm Convention on Persistent Organic Pollutants; and the Minamata Convention on Mercury.

Chart 10 – EDB: TPR entries with the Keyword: "Wildlife" (2014-2018)



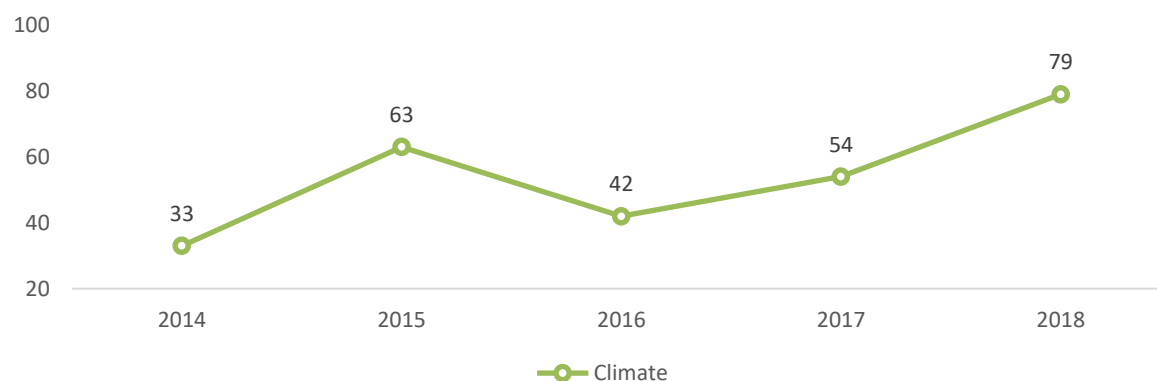
Source: Authors calculations from the WTO EDB (www.wto.org/edb)

Most entries relate to conservation measures for wildlife taken pursuant to either domestic legislation or international obligations. Norway's 2018 TPR mentions that as a party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) since 1974, Norway has been protecting 35,000 threatened species listed by CITES through a licensing system. The 2018 TPR of the United States highlights its commitment to combating wildlife trafficking through existing and future FTAs, environmental cooperation mechanisms, and other trade-related initiatives. A new US law - The Eliminate, Neutralize, and Disrupt (END) Wildlife Trafficking Act of 2016 - supported anti-poaching efforts on a global scale, strengthening the capacity of partner countries to combat wildlife trafficking, and designating major wildlife trafficking countries for further strategic collaboration.

2.3.3 "Climate"

EDB data shows that climate measures are often closely related to trade. Roughly one-third of environmental measures notified to the WTO are related to climate action. Moreover, around half of the Trade Policy Reviews conducted in recent years include at least one reference to climate change.¹⁰ Since 2016, there has been a steady increase in the number of TPR entries in the EDB with the keyword "Climate" (Chart 11).

Chart 11 – EDB: TPR entries with the Keyword: "Climate" (2014-2018)



Source: Authors calculations from the WTO EDB (www.wto.org/edb)

¹⁰ The EDB keyword "climate" has been expanded in 2018 to include references to "carbon" and "greenhouse gas" (GHG).

Climate change is a global challenge, though the impact can vary across countries, with small economies often especially vulnerable. Some recent examples of EDB entries, include the 2018 TPR of Vanuatu which highlights Vanuatu's inability to increase and sustain agricultural production due to the negative effects of climate change and climate variability. Maldives (TPR 2016) seeks to take a leading role in international efforts on climate change and has focused on the development of a national climate change adaptation strategy to mobilize grants and concessional loans. The TPR of Barbados (2014) mentions the impact of climate change as one of the challenges facing the fisheries sector.

The 2016 TPRs of the Democratic Republic of Congo, Tunisia, the 2017 TPRs of European Union, Paraguay, Switzerland and Liechtenstein, and the 2018 TPRs of Egypt, Israel and Norway, explicitly refer to their commitment to the Paris Agreement. This trend has continued in the 2019 TPRs as WTO members take cognisance of the interplay of trade response measures to tackle climate change.

3 CONCLUSION

This paper is illustrative and seeks to provide the reader with a glimpse of the trade and environment information found in the TPRs. It points to the wealth of data that can be extracted from the WTO Environmental Database and the potential to do more analytical work to better understand trade and environment interactions. Such information and analysis could also potentially enrich discussions in the context of trade policy reviews.

The number of EDB entries drawn from the TPRs is growing over time. This trend can be expected to continue in the future and policy makers will increasingly need to coordinate and collaborate to ensure the mutual supportiveness of trade and environmental policies in the 21st Century. In the early TPRs, environment-related references pertained mainly to import/export restrictions, some pursuant to multilateral environmental agreements (MEAs), and national environmental and resource conservation programmes. While such references continue to account for a large share of references found in TPRs, the range of measures and sectors involved have grown significantly. This is not surprising as governments face increasing pressure to respond to mounting concerns about the breadth, intensity, and urgency of environmental challenges.

Greater transparency of trade-related environmental measures is therefore required. However, since trade-related environmental measures do not fall neatly into one box and span across agreements, tracking such measures is an onerous task. By providing a single portal for all WTO trade-related environmental notifications and relevant references in TPRs, the EDB has improved access to such information. From the EDB, environment-related notifications can broadly be grouped in two categories. The first consists of those notifications that list environmental or related factors as the principal reason and objective for notifying. While the second includes notifications that are not primarily environment-related, but that include reference to environment-related aspects. For instance, notifications containing the text of regional trade agreements may include a clause or a specific environmental provision.

Less is known of environmental references in TPRs. There may be scope to have a dedicated sub-section on trade and environment policies' in Members' TPRs. Presently the TPRs across time or Members do not necessarily tackle the same trade and environmental issues. Having a dedicated section on trade and environment in the TPRs could allow for further cross-country and cross-temporal analysis in the future.

4 ANNEX

Table 1 – WTO Environmental Database: TPR entries by WTO Member (2009-2018)

Members	Count	Members	Count	Members	Count
European Union	342	Guatemala	61	Panama	36
China	335	Mozambique	61	Costa Rica	36
United States of America	330	Saudi Arabia, Kingdom of	60	Niger	35
Japan	177	Viet Nam	59	Burkina Faso	34
Malaysia	175	Senegal	59	Argentina	34
Switzerland	168	Solomon Islands	59	Mongolia	34
Chinese Taipei	168	United Arab Emirates	58	Eswatini	34
Liechtenstein	168	Jamaica	58	Vanuatu	33
Brazil	148	El Salvador	56	Jordan	33
Australia	136	Ukraine	55	Mauritania	33
Thailand	133	Albania	55	Ghana	31
Canada	129	Armenia	55	Moldova, Republic of	31
Hong Kong, China	121	Bolivia, Plurinational State of	53	Congo	31
Korea, Republic of	117	Sierra Leone	53	Cameroon	27
Mexico	111	Macao, China	52	Grenada	26
Norway	109	Tonga	51	Chad	25
New Zealand	107	Nigeria	51	Suriname	25
Chile	102	Zambia	47	Côte d'Ivoire	24
Madagascar	97	Gabon	47	Saint Vincent and the Grenadines	24
Fiji	95	Benin	47	Dominica	24
Paraguay	91	Lesotho	46	Papua New Guinea	24
Maldives	90	Pakistan	45	Central African Republic	24
Georgia	82	Israel	44	Oman	23
Morocco	80	Russian Federation	44	Kyrgyz Republic	23
Montenegro	78	Mali	44	Saint Kitts and Nevis	23
Iceland	75	Botswana	44	Qatar	22
Mauritius	74	Cabo Verde	43	Croatia	22
Egypt	72	Angola	43	Antigua and Barbuda	20
Honduras	72	Dominican Republic	41	Kuwait, the State of	19
Turkey	70	Guyana	41	Nicaragua	19
India	70	The Gambia	41	Trinidad and Tobago	19
Belize	70	Indonesia	40	Zimbabwe	19
Nepal	68	Singapore	40	Djibouti	19
Uruguay	68	Peru	40	Bangladesh	19
Cambodia	68	Barbados	40	Rwanda	18
Democratic Republic of Congo	67	Haiti	39	Bahrain, Kingdom of	16
Colombia	66	North Macedonia	39	Kenya	15
Philippines	66	Malawi	39	Tanzania	14
South Africa	65	Guinea-Bissau	39	Uganda	13
Tunisia	65	Brunei Darussalam	38	Burundi	13
Namibia	65	Myanmar	38	Saint Lucia	13
Sri Lanka	63	Togo	38		
Guinea	62	Ecuador	37	Total*	7962
* Total includes double counts for TPRs of regional groupings					

Table 2 – EDB Keywords (28)

Keywords		
Bio	Fish	Ozone
Clean	Forest	Pollution
Climate	Genetic	Recycle
Conservation	Green	Renewable
Desertification	Hazardous	Soil
Eco	Indigenous	Sustainable
Emissions	Labelling	Waste
Endangered	MEAs	Wildlife
Energy	Natural resources	
Environment	Organic	

Table 3: EDB Harmonized Categories - Type of Measures (31)

Type of Measures	
Anti-dumping measure / investigation	Investment measures
Ban/Prohibition	Loans and financing
Conformity assessment procedures	Non-monetary support
Countervailing measure / investigation	Not specified
Environmental provisions in trade agreements	Other environmental requirements
Export licences	Other measures
Export quotas	Other price and market-based measures
Export tariffs	Other support measures
General environmental reference ¹¹	Public procurement
Grants and direct payments	Quarantine requirements
Import licences	Regulation affecting movement or transit
Import quotas	Risk assessment
Import tariffs	Safeguard measure / investigation
Income or price support	Tax concessions
Intellectual property measures	Technical regulation or specifications
Internal taxes	

Table 4: EDB Harmonized Categories – Type of Sectors subject to the measure (11)

Type of Sectors		
Agriculture	All products/economic activities	Chemicals
Energy	Fisheries	Forestry
Manufacturing	Mining	Services
Other	Not specified	

¹¹ "General environmental reference" is a harmonized category that was introduced for EDB TPR entries from 2016 onwards.