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## Developing economies' participation in environmental services negotiations: What are the challenges and what should be done?

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**World Trade Organization**

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NEGOTIATIONS: WHAT ARE THE CHALLENGES AND WHAT SHOULD BE DONE?**

Sanvid Tuljapurkar\* and Ruosi Zhang†

*Manuscript date: 10 August 2023*

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# DEVELOPING ECONOMIES' PARTICIPATION IN ENVIRONMENTAL SERVICES NEGOTIATIONS: WHAT ARE THE CHALLENGES AND WHAT SHOULD BE DONE?

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## ABSTRACT

The urgency to tackle climate change has placed sustainable development at the centre of recent trade related narratives. With trade being considered as means to achieve sustainable development goals, one issue to be addressed is how to adjust trade negotiations which used to be the main approach to pursuing market opening. In this context, this paper examines trade negotiations on environmental services by focusing on developing economies' participation. Environmental services and related trade play a critical role in achieving environmental and sustainable development goals. Nevertheless, developing economies' participation in environmental services trade negotiations has been limited. By analysing the reasons behind such limited participation and assessing some new approaches, this paper attempts to explore how environmental services trade negotiations could be adapted to better engage developing economies and serve sustainable development goals.

**Keywords:** Environmental services, developing economies, trade negotiations.

**JEL classification codes:** F13; F18; F63.

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## 1 INTRODUCTION

The importance of environmental services has long been underestimated. Let alone trade in environmental services. While any modern society cannot function properly without such basic services as sewage treatment, waste collection and disposal, street cleaning, etc., very few people know the exact components of environmental services. Probably even fewer people know how environmental services are traded, who are driving those transactions, where trade flows go, and what are the trends in that area. The entry into force of the General Agreement on Trade in Services (GATS) in 1995 and trade negotiations within and outside the WTO since then have largely deepened worldwide understanding of environmental services and related trade. In recent years, the role of environmental services and related trade has gained more traction as the pursuit of sustainability and the urgency for climate change mitigation and adaptation have become the consensus of the international community.

Compared to other services, environmental services usually refer to those services provided to mainly achieve environmental goals. In the GATS context, environmental services are usually those classified under the heading "Environmental Services" in the Sectoral Classification List (MTN.GNS/W/120, 10 July 1991, hereinafter "W/120") and the 1991 provisional version of the United Nations Central Product Classification (hereafter "CPC prov."). These services can be divided into two broad categories, namely, infrastructure environmental services and non-infrastructure environmental services. Infrastructure environmental services include wastewater treatment, refuse collection and disposal services, and street cleaning services. Non-infrastructure environmental services usually cover air pollution prevention and mitigation, noise abatement and remediation of pollution sites, among others. In addition to "Environmental Services" in a strict sense, various services classified under other sectoral headings in W/120 such as engineering services, architecture services, technical analysis and testing services and installation and repair services are also important even essential to address the challenges posed by climate change and other environmental or sustainability issues. In particular, services are supplied in the R&D, design, generation, transmission, distribution and sale of renewable energy, which are arguably supplied to serve environmental goals as well. Therefore, in a broad sense, environmental services are sometimes referred to as "environmental and related services".

In addition to being supplied independently to achieve environmental goals, environmental and related services are often offered as a package together with environmental goods. They contribute not only to environmental benefits of using the final product, but also to its characteristics such as recyclability over its life cycle. For instance, research and development services contribute to sustainable material technology, more energy-efficient production processes, and less waste; distribution, marketing, and installation services are essential for installing the equipment when it is exported.

Governmental intervention is an important feature of environmental services. Some environmental services (e.g., sewage, waste treatment) are supplied or heavily subsidized by public authorities due to their characteristics of natural monopolies or public goods. Some environmental services (e.g., pollution mitigation, noise abatement, remediation of pollution sites) are provided as a result of the compliance with environmental requirements. In any event, governmental policies and regulations are the main market driver of environmental services and directly affect both the demand and supply of environmental services in a given market. As such, an economy's environmental services market including its imports and exports, to a large extent, depends on a government's will, capacity and means to promote and regulate environmental services. Given developed economies' dominant position in both supply and demand of environmental services, their environmental requirements and standards are the driving force of global trade in this respect.

Nowadays, with environmental concerns occupying the forefront of domestic and international policies, WTO Members have intensified regulatory efforts to address environmental challenges, including those focusing on climate change mitigation and adaptation and circular economy, which would have significant impacts on the trends of environmental services. In this context, the crucial

role of services in the implementation of domestic and international environmental policies is being highlighted, which goes beyond traditional environmental services. For instance, construction services for renewable energy projects; weather forecasting services for disaster preparedness; waste management and recycling as important contribution to the transition to a circular economy. Moreover, services are also integrated into the UN Sustainable Development Goals (SDGs).<sup>2</sup>

Like other services, environmental and related services are traded through the four modes of supply. For example, cross-border supply of environmental consulting or engineering design services (mode 1), shipbreaking or equipment recycling abroad (mode 2), establishment of wastewater treatment facilities with foreign investment (mode 3), and foreign engineers involved in solar panel installation (mode 4). It has been recognized that trade in environmental services can support the diffusion of environmental technologies, increase the availability and accessibility of environmental services globally, and help scale activities and initiatives necessary for climate change mitigation and adaptation.<sup>3</sup> Considering the importance of trade in environmental services, para 31(iii) of the Doha Declaration called for "the reduction or, as appropriate, elimination of tariff and non-tariff barriers to environmental goods and services" with a view to "enhancing the mutual supportiveness of trade and environment".

Environmental services were part of the first round of services negotiations under Article XIX of the GATS that began in 2000.<sup>4</sup> Several negotiating proposals were submitted in the first years of the negotiations with various issues raised, concerning the classification and definition of environmental services, trade restrictions, and domestic regulation.<sup>5</sup> Environmental services were also covered in many regional trade agreements (RTAs). Recently, a few developed Members have initiated exploratory discussions on environmental services in the Special Session of the Council for Trade in Services. In 2020, a group of WTO Members launched the Trade and Environmental Sustainability Structured Discussions (TESSD). The TESSD initiative currently has 74 WTO Members participating in the discussions on various environmental sustainability related issues including promoting and facilitating environmental goods and services. Another group of 75 Members have also initiated discussions to explore how the WTO could contribute to the efforts to reduce plastics pollution and promote the transition to more environmentally sustainable trade in plastics. Trade in environmental services such as waste management and related services are integral to addressing plastics pollution as well.

While no one seems to have questioned the critical role of environmental services and related trade in achieving global environmental goals, so far developing economies' participation in environmental services negotiations has been limited. Moreover, developing economies have expressed their reluctance on liberalization issues related to environmental and related services. They note that GATS Art. XIX:2 and XIX:3 allow developing Members to open their domestic services market at a

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<sup>2</sup> For instance, SDG 7 aims at ensuring access to affordable, reliable, sustainable, and modern energy for all. This includes increasing energy efficiency and facilitating access to clean energy. Achieving this goal requires a wide range of services including engineering, construction, and design. Moreover, renewable energy technologies are sold with several services such as installation, maintenance and repair services that are essential for a consumer to effectively use the technology. Services are also important for achieving other SDGs such as sustainable cities and communities (SDG 11), responsible production and consumption (SDG 12), and climate action (SDG 13).

<sup>3</sup> Joachim Monkelbaan, Soumyajit Kar, 'Accelerating Decarbonization through Trade 2022 in Climate Goods and Services' (World Economic Forum, September 2022) <[https://www3.weforum.org/docs/WEF\\_Accelerating\\_Decarbonization\\_through\\_Trade\\_2022.pdf](https://www3.weforum.org/docs/WEF_Accelerating_Decarbonization_through_Trade_2022.pdf)> accessed November 12 2022

<sup>4</sup> GATS Article XIX provides: "In pursuance of the objectives of this Agreement, Members shall enter into successive rounds of negotiations, beginning not later than five years from the date of entry into force of the WTO Agreement and periodically thereafter, with a view to achieving a progressively higher level of liberalization. Such negotiations shall be directed to the reduction or elimination of the adverse effects on trade in services of measures as a means of providing effective market access. This process shall take place with a view to promoting the interests of all participants on a mutually advantageous basis and to securing an overall balance of rights and obligations."

<sup>5</sup> Proposals include WTO document S/CSS/W/112, 1 October 2001; WTO document S/CSS/W/51, 14 March 2001; WTO document S/CSS/W/121, 27 November 2001; WTO document S/CSS/W/142, 22 March 2002; WTO document S/CSS/W/38, 22 December 2000; WTO document S/CSS/W/76, 4 May 2001; WTO document S/CSS/W/25, 18 December 2000.

slower pace and that they are not expected to reciprocate in terms of their liberalization given their developmental levels.<sup>6</sup> It becomes clear that trade negotiations which used to be the main approach to pursuing market opening need to be adjusted when they are associated with the pursuit of environmental goals. The urgency to tackle climate change has placed sustainable development at the centre of recent trade related narratives and trade is considered as means to achieve sustainable development goals. In this context, one issue to be addressed is how to deal with trade negotiations in the changing circumstances. This paper focuses on trade negotiations in one aspect: environmental services. By analysing the reasons behind developing economies' limited participation and assessing some new approaches, this paper attempts to explore how environmental services trade negotiations could be adapted to better engage developing economies and serve sustainable development goals.

This rest of the paper proceeds as follows: Section 2 presents the state of play of environmental services market in developing economies; Section 3 analyses developing economies' positions in WTO negotiations on trade in environmental services; Section 4 examines the engagement of developing economies on environmental services in FTAs; Section 5 discusses new approaches to negotiations on trade in environmental services. The paper concludes in Section 6.

## 2 ENVIRONMENTAL SERVICES MARKETS IN DEVELOPING ECONOMIES: STATE OF PLAY BASED ON LIMITED DATA

### 2.1 Limited data

Lack of data is one of the key challenges for any analysis of environmental services and trade in environmental services, which makes informed decision-making including that on trade negotiations extremely challenging. Environmental services are hardly clearly defined at either the national or the international level, and data is hardly reported or collected with environmental services disaggregated from other sectors.<sup>7</sup> Accurate information regarding the size of the global environmental services market is simply not available. According to the WTO estimates, environmental services are the least traded services sector, representing only 0.2% of world trade in services in 2017.<sup>8</sup>

There may exist some sporadic information which could be used to shed some light on the environmental services market at certain levels, in certain aspects, or in some economies or regions. For example:

- According to the estimates of the 2013 Report on Environmental and Related Services by the United States International Trade Commission (USITC), revenues in the global environmental services market increased by 41 % to 505.5 billion USD between 2000 and 2010; water and wastewater services accounted for 49 % of the market in 2010, solid and hazardous waste services accounted for 32 %, and remediation services accounted for 8%. The United States accounted for the largest share of the global environmental services market in 2010 (38 %), followed by Western Europe (28 %) and Japan (11 %). **Developing economies accounted for a very small share of the global market (Asia excluding Japan 8 %, Latin America 5%, Middle East 2 % and Africa 1 %).**<sup>9</sup>
- At the firm level, the *Engineering News-Record* (ENR) compiles and publishes annually the world top 200 firms providing environmental services covering hazardous/solid waste management and disposal, nuclear waste management and disposal, wastewater treatment, environmental management, environmental science, and other environmental services. According to ENR, the top 200 firms' environmental services revenue was 58.9 billion USD in 2019, jumped substantially to 90.2 billion USD in 2020, and reached \$112.7 billion at the

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<sup>6</sup> Article XIX of the General Agreement on Trade in Services

<sup>7</sup> For example, EBOPS SJ32 provides data on trade in waste treatment and de-pollution, agriculture and mining services between 2005-2017 without disaggregating waste treatment and de-pollution from the rest.

<sup>8</sup> 'World Trade Report 2019: The Future of Services Trade' (World Trade Organisation, 2019) pp. 25.

<sup>9</sup> 'Environmental and Related Services' (Publication 4389, USITC, March 2013)

end of 2021.<sup>10</sup> More than half of the revenue was generated in the United States. Of the non-US revenue, in 2021, Europe accounts for 58.1 %, Asia 14.8 %, Canada 8.5%, Australia and New Zealand 7.6 %, Latin America 4.5%, Africa 4.1 %, Middle East 2.4 %. Of the 200 listed firms, about 90 % are based in the U.S., and the rest are in Europe, Canada and Australia with one exception in the 2021 list. For the first time, a company from a developing economy was listed: Larsen & Toubro LTD, based in Mumbai, India was ranked No.3 on the list, reporting 4.83 billion USD environmental services revenue, mainly from its work in renewable energy, air quality and waste infrastructure.<sup>11</sup> **The firm-level data not only confirms that the share of developing economies in the global environmental services market is very small, but also shows that developed economies have a competitive advantage in environmental services.**

- **The firm-level data also shows that the global environmental services market is highly concentrated.** According to the ENR, in 2021, the top 20 firms had the global market share of 78.6% in hazardous waste management, 82.7% in water treatment, and 70.8 % in wastewater treatment; the share reached 80.5% and 91.8% for top 10 firms in air-quality services and nuclear waste treatment respectively.<sup>12</sup> Most of these firms are based in the United State, and the rest are from Western European. A case-study by OECD confirms that companies engaging in environmental consulting and engineering services exports, mainly through mode 3, tend to be of large size and all from North America and Western Europe; the market is also concentrated in these two geographical areas.<sup>13</sup>
- According to the Eurostat estimates, the European Union (EU) environmental economy as a whole grew by 4.4 % in 2018, generating a total gross value added (GVA) of EUR 306.8 billion and contributing 2.3 % to the EU GDP. The majority of gross value added and employment in the EU environmental economy is related to environmental goods and services sold or intended to be sold on the market.<sup>14</sup> The Eurostat estimates that market output of environmental goods and services has generated EU-wide 90 000 new full-time equivalent jobs in 2018. Most employment in the environmental economy is related to waste management, the production of renewable energy, and energy-efficiency measures.<sup>15</sup> In 2018, environmental goods and services contributed to the economy-wide exports by almost 10 % in Finland, around 6 % in Romania, Austria and Denmark; Finland exports large amounts of wood and paper products, Romania products for protection of ambient air and climate, whereas equipment for renewable energy production accounts for a significant share of environmental goods and services exports of Austria and Denmark. These data suggest that environmental goods and services have been growing fast in the EU in recent years and constituted an important contribution to the EU economy including trade. These data could also used to derive sector-specific indicators, including services value added. For example, gross value added of the renewable energy sector comprises energy production itself but also the manufacturing of equipment such as photovoltaic cells and wind turbines, the installation of equipment, and any related research, consultancy, and management services.<sup>16</sup>

That some information on environmental goods and services as a sector (EGSS) in the EU market is available is thanks to the EU Regulation 2015/2174 of 24 November 2015 which made EGSS data

<sup>10</sup> 'Engineering New Record Top 20 Environmental Firms' (Engineering News Record) <<https://www.enr.com/toplists/#Top%20Environmental%20Firms>> accessed 5 August 2023

<sup>11</sup> 'ENR 2022 Top 200 Environmental Firms' (Engineering News Record) <<https://www.enr.com/toplists/2022-Top-200-Environmental-Firms-Preview>> accessed 5 August 2023

<sup>12</sup> Ibid

<sup>13</sup> Jehan Sauvage and Christina Timiliotis, 'Trade in Services Related to the Environment' (COM/TAD/ENV/JWPTE(2015)61/FINAL, OECD, 27 March 2017) pp. 27-28

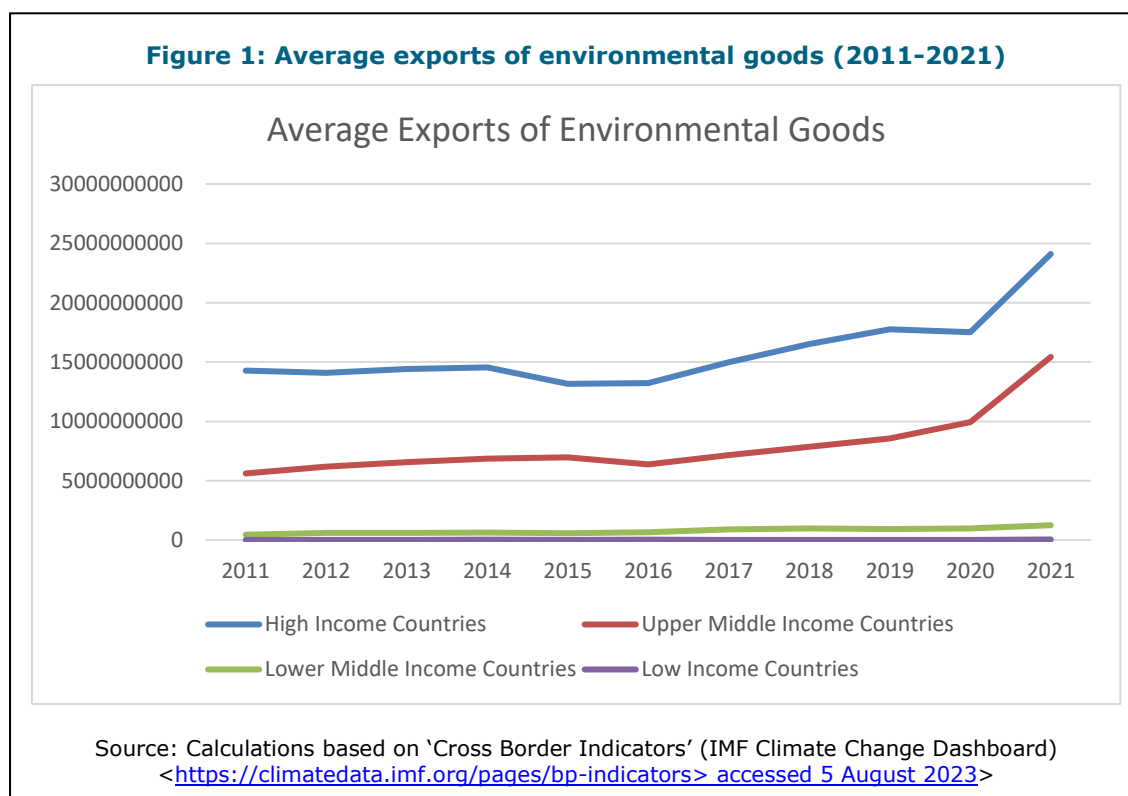
<sup>14</sup> 'Environmental economy – statistics by Member State' (Eurostat Statistics Explained) <[https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Environmental\\_economy\\_%E2%80%93\\_statistics\\_by\\_Member\\_State&oldid=571372#Key\\_figures](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Environmental_economy_%E2%80%93_statistics_by_Member_State&oldid=571372#Key_figures)> accessed 5 August 2023. The remainder of the environmental economy stems from production for own use (ancillary or final) or for non-market purposes (as give-away for free or at non-significant prices).

<sup>15</sup> Ibid

<sup>16</sup> Ibid

reporting mandarty within the EU. But this is not the case for other regions or for most economies. There is very little information on the size of environmental services markets in developing economies, let alone their capacity to engage in environmental services trade.

To square the circle, this paper attempts to get a sense of environmental and related services in developing economies through available information about their environmental goods market. This is because environmental services are usually supplied together with the sale of environmental goods. Various services such as installation, maintenance, monitoring, and repair services are also needed for the efficient use of environmental goods. In addition, services are necessary for the manufacturing of environmental goods. For example, a case study of a Chinese manufacturer of solar cells and solar modules found that the activity involved over 40 different services despite the manufacturing of solar cells and solar modules being a relatively low value-added activity.<sup>17</sup> The services involved in the value chain include traditional environmental services like sewage water treatment, and a variety of other services spanning across imports, sales and exports, operations, management, and in factory and factory-related services such as quality control, packaging, security, cleaning, and canteen operations.<sup>18</sup> The complementarity between environmental goods and services may help us have a glimpse of environmental and related services through the lens of environmental goods.

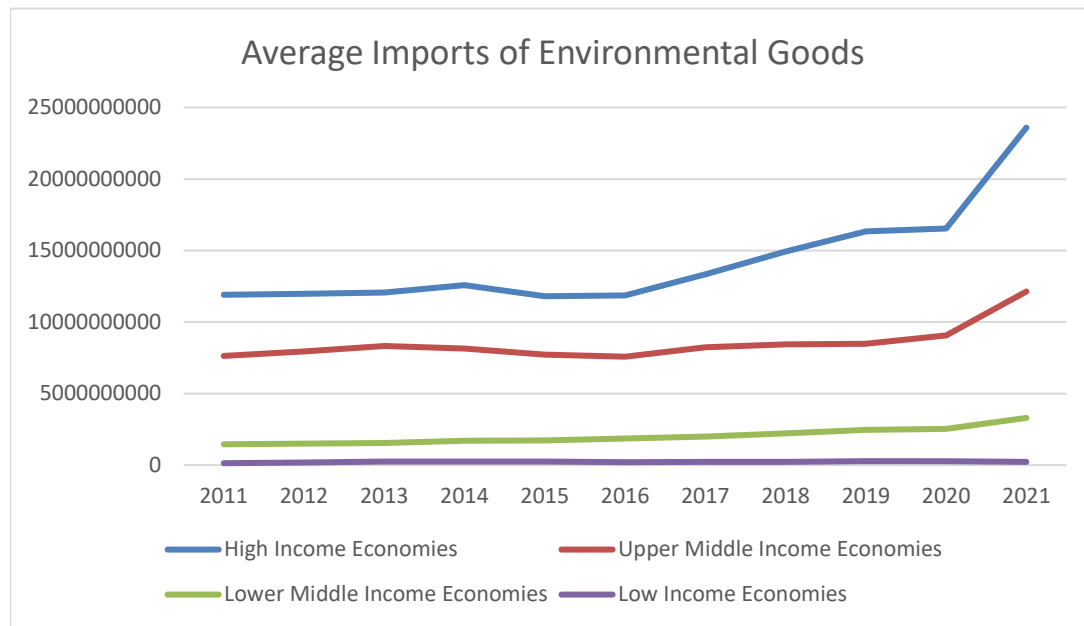


<sup>17</sup> Quan Zhao, 'Services in Global Value Chains: Solar Panel Manufacturing in China' (International Trade Center and Fung Global Institute, 9 April 2015) pp. 3

<sup>18</sup> Ibid



**Figure 2: Average imports of environmental goods (2011-2021)**



Source: Calculations based on 'Cross Border Indicators' (IMF Climate Change Dashboard) <<https://climatedata.imf.org/pages/bp-indicators>> accessed 5 August 2023>

Figure 1 and 2 show the average exports and imports of environmental goods calculated based on the IMF Climate Change Dashboard As dataset<sup>19</sup>. It is evident that there is a large gap between environmental goods imports and exports by low income economies and lower middle income as compared to upper middle income economies and high income economies. For instance, in 2021, while low income economies only accounted for 0.5% and lower middle income economies account for 8.4% of the total imports of environmental goods, upper middle income economies and high income economies accounted for 30.9% and 60.9% of total imports of environmental goods respectively.<sup>20</sup> In the case of environmental goods exports, low income economies and lower middle income economies only accounted for 0.12% and 3% of total environmental goods exports. However, upper middle income economies and high income economies accounted for 37.78% and 59.03% of total environmental goods exports respectively.<sup>21</sup> Given the complementarity between environmental goods and services, like environmental goods, environmental services are mostly traded between developed economies. Thus, our assessment is that the share of developing economies in the global environmental services market including trade is very small, consistent with the findings of the 2013 USITC Report.

## 2.2 Environmental laws and market potential

Environmental problems are a negative market externality as the cost of the damage is incurred by the society and not the producer. Environmental laws and policies are thus introduced to internalize the social cost of the environmental problems and address market imperfections. On the other hand, environmental laws and policies have also created markets for environmental goods and services. For instance, following legislation on air pollution control, Japan experienced an expansion of its air pollution industry in the 1970s and early 1980s.<sup>22</sup> In the Netherlands, efforts to overcome land

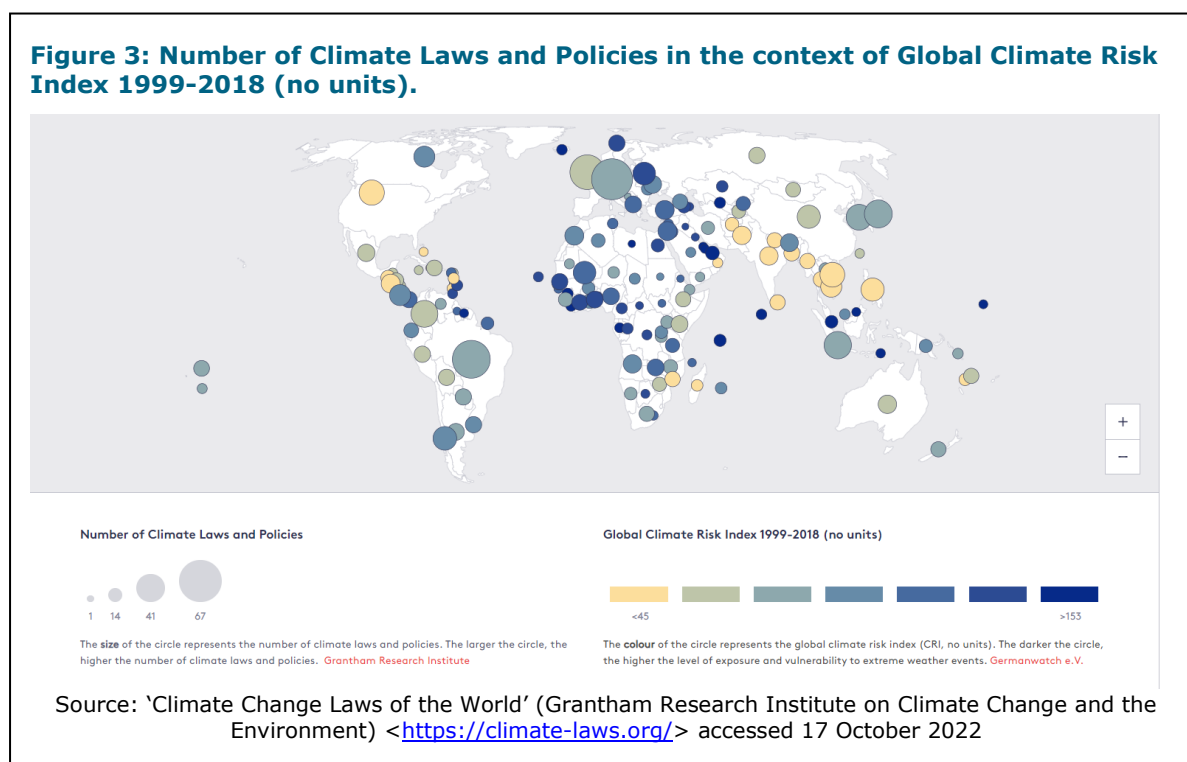
<sup>19</sup> 'Cross Border Indicators' (IMF Climate Change Dashboard) <<https://climatedata.imf.org/pages/bp-indicators>> accessed 5 August 2023>

<sup>20</sup> Based on calculations of the IMF data

<sup>21</sup> Based on calculations of the IMF data

<sup>22</sup> Simonetta Zarrilli (n 7)

contamination problems led to the development of advanced soil remediation technologies.<sup>23</sup> With growing awareness about the impact of environmental problems, a growing number of economies including most developing economies have put in place environmental laws and policies to tackle various issues such as deforestation, GHG emissions, and circularity as shown in Figure 3.



Considering the crucial role of services in environmental activities, the implementation and enforcement of environmental laws and policies may theoretically lead to growing demands for environmental and related services in developing economies. These laws and policies could also be a factor contributing to the creation of markets for environmental technologies and installation of environmental devices by mandating standards such as performance-based standards or technology-based standards.<sup>24</sup>

However, environmental services markets cannot be created solely through the enactment of environmental laws and policies. Many factors need to be in play for government regulations to effectively affect supply and demand. Given the capital-intensive nature of environmental activities, resources constraints are one of the main impediments preventing developing economies from effectively implementing environmental laws and policies. Noting that financing is critical for the growth of the environmental industry in developing economies, multilateral environmental agreements (MEAs) including the UNFCCC, the Kyoto Protocol and the Paris Agreement all highlight the role of international investments in developing economies' efforts to pursue the environmental goals including climate change mitigation and adaptation. Meanwhile, developing economies have often adopted laws and policies to attract foreign investment to overcome environmental challenges. For example, 30 per cent of the investment policy measures adopted in climate change related sectors between 2010 and 2022 concerned liberalization, mostly related to the unbundling of the energy market or the privatization of state-owned enterprises (SOEs).<sup>25</sup> Seven developing

<sup>23</sup> Ibid

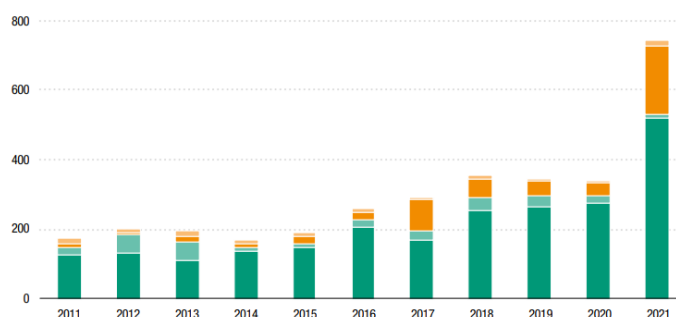
<sup>24</sup> Grant Ferrier, 'The Global Environmental Market: Trends and Characteristics' in *Industry Technology, and the Environment: Competitive Challenges and Business Opportunities* (OTA- ITE-586, U.S. Congress, Office of Technology Assessment, January 1994) pp. 89-116

<sup>25</sup> Mathilde Closset and Massimo Meloni, 'Investment Policy Trends in Climate Change Sectors 2010-2022' (Investment Policy Monitor, Special Issue 9, UNCTAD, September 2022) pp. 2

economies (China, Ethiopia, India, Indonesia, Syria, Türkiye, and the United Arab Emirates) adopted measures to open their electricity market to private and/or foreign investment during the last decade, while the Philippines and the United Arab Emirates have also adopted measures to specifically open the renewable energy sector to foreign investors. The remaining measures are aimed at promoting investment in renewable energy generation and in green technologies; or at introducing regulations to promote the green energy transition.<sup>26</sup>

Investment related environmental measures often focus on specific environmental objectives or concerns such as the promotion of green sectors and/or technologies, renewable energy, electricity and water.<sup>27</sup> As shown in Figure 4, there has been a rise in international investment for climate change mitigation and adaptation.<sup>28</sup> Private sustainable finance in emerging market and developing economies rose to a record \$250 billion last year.<sup>29</sup> While developing economies have often highlighted their adaptation needs, the investment has been concentrated on climate change mitigation with mitigation projects accounting for more than 95 percent of international climate investments.<sup>30</sup> The number of adaptation projects with international investment is also high in developing economies focusing on water management.<sup>31</sup>

**Figure 4: International mitigation and adaptation investment projects, 2011-2021 (Billions of dollars)**



Source: UNCTAD, based on information from Financial Times Ltd, FDI Markets ([www.fdimarkets.com](http://www.fdimarkets.com)) for greenfield projects and Refinitiv SA for international project finance deals

Developing economies are experiencing population growth, fast paced urbanization, and industrialization along with economic growth aspirations. On the other hand, there is also growing environmental awareness which is increasingly being translated into implementing and enforcing environmental laws and policies and undertaking international environmental obligations. (See Box 1). In this context, the environmental industry including environmental and related services may experience growth in developing economies.<sup>32</sup> For example, Larsen & Toubro LTD., the Indian company ranked No.3 on the Top 200 Environmental Firms, benefited from new governmental policies in clean water and sanitation that are driving market opportunities in India.<sup>33</sup> However, in general, insufficient financing, and competing needs and interests may create challenges for the growth of the environmental industry in developing economies. For instance, it is estimated that the

<sup>26</sup> Ibid

<sup>27</sup> Ibid

<sup>28</sup> 'International Tax Reforms and Sustainable Development', (World Investment Report 2022, UNCTAD/WIR/2022, UNCTAD, pp. 35

<sup>29</sup> Torsten Ehlers, Charlotte Gardes-Landolfini, Fabio M. Natalucci, and Ananthakrishnan Prasad, 'Scaling up private climate finance in emerging economies' (Financial and Monetary Systems, World Economic Forum, 14 October 2022) <<https://www.weforum.org/agenda/2022/10/how-to-scale-up-private-climate-finance-in-emerging-economies>> accessed 15 March 2023

<sup>30</sup> 'International Tax Reforms and Sustainable Development' (n 29)

<sup>31</sup> Ibid.

<sup>32</sup> Simonetta Zarrilli (n 7)

<sup>33</sup> Engineering News Record (n 12)

climate change adaptation market could be worth \$2 trillion per year by 2026, with the developing world standing to benefit from much of this.<sup>34</sup> But so far, the growth of international private investment in climate change has been concentrated in developed economies and in particular in the deployment of renewable energy<sup>35</sup> and it remains highly challenging to channel such investment into developing economies and to address their broader environmental and developmental concerns.

Very small market size and lack of capacity to engage in trade are the state of play of environmental services for most developing economies. Developing economies also see the needs and great potential for environmental services, including trade and investment opportunities. Therefore, when facing negotiations on trade in environmental services, the essential question for developing economies is what they can gain from the negotiations.

### **Box 1: Developing economies' changing position in waste management**

Waste generation is correlated with income levels and urbanization, not population. Therefore, the generation of waste is more in higher income economies as compared to developing or lower income economies. For example, high income economies account for 16% of the world's population and 34% of its waste while lower income economies account for 9% of population and 5% of waste.

From an individual economy's perspective, there are two main ways to deal with waste: domestic management and exports. In developed economies, management of waste is augmented by engaging in export of waste to developing economies due to relatively higher cost of waste treatment and more stringent regulation on waste management at home. Waste exports have increased significantly in recent decades, with shipments of recyclable items from the EU rising more than 70 percent since the turn of the century.

For years, developing economies were willing to import excess waste from developed economies due to economic advantages and regulatory freedom that permits it. However, developing economies became overburdened with imported and locally generated waste due to the lack of infrastructure and capital to adequately manage waste. For example, 66% of waste in lower-middle income economies and 93% of waste in low-income economies is dumped openly. Therefore, they adopted legislations to halt the influx of waste. China banned imports of most plastic waste by 2018. This ban led to an overwhelming amount of waste being exported to other economies. For example, economies such as Malaysia have had to send back thousands of ships full of illegal rubbish back to their jurisdiction of origin. In Türkiye, plastic products imported from the EU and the UK were often dumped on beaches and roadsides or burned, despite rules outlining that plastic waste should not be exported to economies unless it is to be recycled. In view of this, other economies followed China's example to quell the inflow of waste from developed economies.

The current waste management challenge, especially in developing economies, and the global momentum to address mismanaged waste presents a unique opportunity for economies around the world to collaborate with each other. Addressing mismanaged waste will require increased waste management and recycling capacity, access to necessary infrastructure and the requisite technology in developing economies. Given that the necessary technology, capacity, and resources are with the developed economies and the leading waste management companies are from developed economies, trade in waste management and related services have a critical role to play.

Source: Mariam George, 'Global Waste Trade and its Effects on Landfills in Developing Economies' (Global Waste Cleaning Network, 14 November 2021) < <https://gwcweb.org/2021/11/14/global-waste-trade-and-its-effects-on-landfills-in-developing-economies/> > accessed 8 August 2021; Bruna Alves, 'Waste trade worldwide - statistics & facts' (Statista, 16 July 2023) < <https://www.statista.com/topics/7943/global-waste-trade/#topicOverview> > accessed 8 August 2023

## **3 DEVELOPING ECONOMIES' POSITION IN WTO NEGOTIATIONS ON TRADE IN ENVIRONMENTAL SERVICES**

### **3.1 Overview of WTO negotiations on trade in environmental services**

WTO Members' GATS commitments on environmental services are limited as compared to other sectors. Only 59 Members (counting EU-25 as 1) have undertaken specific commitments in at least

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<sup>34</sup> Abhinav Chugh, Nathan Cooper, 'How climate finance and adaptation can help support vulnerable economies' (Climate Change, World Economic Forum, 7 November 2022) < <https://www.weforum.org/agenda/2022/11/cop27-how-climate-finance-and-adaptation-can-support-vulnerable-economies/> > accessed 15 January 2023

<sup>35</sup> Mathilde Closset and Massimo Meloni (n 26)

one of the seven environmental services sub-sectors listed in the CPC prov. This may be due to the low level of environmental awareness during the Uruguay Round and the limited role of the private sector in the provision of these services.<sup>36</sup> In comparison, the level of commitments on environmental services is notably higher in the case of recently acceded Members. The total of 36 recently acceded Members all have undertaken commitments on environmental services due to the particular nature of the WTO accession negotiation.

During the multilateral services negotiations launched in 2000 pursuant to Article XIX of the GATS and later integrated in the DDA, 25 Members offered new or improved commitments on environmental services, most of them being developed economies. Several Members had also expressed willingness to reduce or eliminate trade restrictive measures in this area during the Ministerial level Signalling Conference held in 2008.<sup>37</sup> These aspirations did not materialize due to a slowdown in the negotiations. In any event, there is no enthusiasm from developing Members to undertake specific commitments on environmental services under the GATS.

Negotiations on trade in environmental services under the GATS, not different from the negotiations on trade in other service sectors, are aimed at achieving a higher level of liberalization, which "shall be directed to the reduction or elimination of the adverse effects on trade in services measures as a means of providing effective market access" (GATS Article XIX). More specifically, the negotiations shall pursue new or improved GATS commitments on environmental services by WTO Members, which are undertaken under four modes of supply, i.e. the forms of services trade transactions.

Like other service sectors, environmental services are traded through all four modes of supply. However, the importance of each mode varies depending on the service that is being supplied. Commercial presence (mode 3) is the predominant mode for the supply of environmental services due to the nature of environmental services and their infrastructural needs. Movement of natural persons (mode 4) is also important for the supply of environmental services as firms usually need to send abroad managers or technicians with specialized skills when operating through affiliates and professionals, such as environmental consultants, often physically supply their services abroad. While cross border supply (mode 1) traditionally had limited significance in reference to environmental services, technological advancements have opened new opportunities for this mode. During the DDA negotiations, it was noted that while the provision of infrastructure environmental services usually required the physical presence of services suppliers in the market, environmental consultancy services (e.g. the design and development of a waste management plan, consulting on environmentally-friendly solutions) could be supplied on a cross-border basis.<sup>38</sup>

A key issue raised and extensively discussed during the DDA negotiations on environmental services was classification. It appeared to be a general view that the classification of environmental services contained in W/120 was inadequate as it focused on "end-of-pipe" technologies (i.e. cleaning pollution) without capturing a range of activities aiming at preventing environmental degradation. Several written proposals pointed to this problem and submitted modifications of the classifications in W/120 which normally broadened the list of core environmental services and identified a list of environmental-related services, namely services that were not environmental *per se*, but nevertheless contributed to the provision of environmental services or overlap with environmental services in terms of end-use, such as construction, engineering, R&D, technical analysis services, etc.<sup>39</sup> (Please see the annex to this paper for a more detailed description on classification issues on environmental services.)

Barriers to trade in environmental services as identified by Members during the DDA negotiations included monopolies and exclusive providers, restrictions on legal forms, equity limitations, tax

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<sup>36</sup> Note by the Secretariat on *Experiences in the promotion and facilitation of environmental goods and services*, WTO document INF/TE/SSD/W/18, 23 March 2002, para 2.89

<sup>37</sup> WTO document JOB(08)/93, 30 July 2008, para 19 and 20

<sup>38</sup> WTO document TN/S/W/28, 11 February 2005, para 5

<sup>39</sup> Background Note by the Secretariat on *Environmental Services*, WTO document S/C/W/320, 20 August 2010; WTO document JOB/SERV/299/Rev.4, 21 July 2022; WTO document JOB/SERV/308, 22 June 2021

discrimination, limitations on the ownership of specific assets (such as landfills and sewage systems), requirement of joint training with a local firm, unspecified licensing and approval requirements, unspecified economic needs tests, etc.<sup>40</sup> Lack of transparency of regulatory regimes and inconsistent or arbitrary enforcement of environmental laws and planning restrictions were also mentioned.<sup>41</sup> Multilateral negotiations on trade in environmental services were targeted at eliminating or reducing these barriers with a view to enhancing market access in this sector.

While there were two negotiating proposals on environmental services by developing Members (Colombia and Cuba) during the DDA negotiations,<sup>42</sup> developing Members were generally on the defensive in negotiations aimed at further trade liberalization in environmental services. They seemed not convinced that they could benefit from such liberalization, arguing that liberalization would neither address the substantial trade distorting effect of subsidies of developed economies in this sector, nor infrastructure and capacity gaps.<sup>43</sup> In their view, such liberalization was being discussed for economic interests rather than environmental interests. For example, a developing Member noted that considering the history of services negotiations, specific commitments were made in the areas of comparative advantage for developed industrialised economies and did not reflect the interests and comparative advantage of developing economies.<sup>44</sup> According to developing economies, some of the barriers to trade identified by developed Members were legitimate policy requirements for them rather than barriers and Members had a right to establish environmental legislation as they view necessary.<sup>45</sup> Even in the discussion on classification of environmental services, developing Members underlined the importance of broad considerations including different levels of social and economic development among Members and the needs of developing economies.<sup>46</sup> In this context, developing Members highlighted their need to maintain the flexibility to design their domestic frameworks and regulations in accordance with their national realities, priorities and development strategies. Some developing Members also pointed to their interest in commercially meaningful outcomes in mode 4, an area where many developing economies believe they have comparative advantage, and requested that developed economies undertake commitments on market access in mode 4 for balanced trade in services.<sup>47</sup> It shows that developing economies are concerned about their development opportunities and benefits from engaging in environmental services trade. As such, they brought forward narratives on their defensive interests in environmental services negotiations.

### **3.2 Developing economies' position: development opportunities vs. trade liberalization in environmental services**

Developing economies' narratives have been focussing on the development dimension. While recognizing opening up markets through negotiations on environmental services might generate favourable conditions for development, and increase stability and predictability under the right circumstances, developing economies argued that this would not automatically enhance their

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<sup>40</sup> WTO document S/CSS/W/38, 22 December 2000, para 12.; WTO document S/CSS/W/76, 4 May 2001, para 9

<sup>41</sup> WTO document S/CSS/W/51, 14 March 2001; WTO document S/CSS/W/112, 1 October 2001.

<sup>42</sup> WTO document S/CSS/W/121, 27 November 2001; WTO document S/CSS/W/142, 22 March 2002. In S/CSS/W/121, Colombia proposed that developed economies undertake market access commitments for the movement of natural persons in order for trade in services to become more balanced. According to Cuba's proposal S/CSS/W/142, negotiations will have to provide appropriate guarantees with regard to: (i) the real transfer, on a favourable commercial basis, of technologies which ensure competitiveness; (ii) the transfer of associated know-how; (iii) the creation of national technical capabilities, both human and institutional, to promote development of these services; and (iv) the export of services from developing economies in the modes of supply identified as being of interest to them.

<sup>43</sup> WTO document JOB/SERV/303, 23 November 2020, para 1.16

<sup>44</sup> WTO document TN/S/M/13, 28 January 2005, para 187

<sup>45</sup> WTO document S/CSS/M/12, 28 November 2001, para 239

<sup>46</sup> For example, Peru and Brazil noted that the definition of environmental goods and services should be compatible with sustainable development needs of developing economies, consider different levels of social and economic development among Members, increase developing economies' participating in the production and international trade in environmental goods and ensure effective environmental benefits. WTO document JOB(09)/177, 27 November 2009.

<sup>47</sup> Ibid; WTO document S/CSS/W/121, 27 November 2001, para 5

competitiveness given their level of development and their limited domestic capacity.<sup>48</sup> Further, they noted the struggle when facing competition from transnational companies with access to their markets.<sup>49</sup> In their view, while commercial presence of foreign enterprises in the provision of environmental services may be beneficial through increased investment and contribution to capital formation, technology transfer, wider coverage and an improvement in environmental and sanitary conditions, Members' level of development should be taken into account while liberalizing this sector.<sup>50</sup> In this context, a Member underlined that Art. IV of GATS on increasing participation of developing economies calls for strengthening their domestic services capacity and their efficiency and competitiveness through access to distribution channels and information networks.<sup>51</sup>

Considering the challenges faced by developing economies, they have contested the assertion that environmental services liberalization would be beneficial for all importers and exporters as it would provide access to services inputs at competitive prices.<sup>52</sup> In their view, only focusing on environmental services liberalization is not a comprehensive approach and it may not build multilateral confidence.<sup>53</sup> According to developing economies, the discussions on environmental services liberalization should not contribute to entrenching and widening asymmetries but should unlock common ground and value for all.<sup>54</sup>

Developing economies also requested that services liberalization be considered in the broader context of the DDA to ensure that the elimination or reduction of trade restrictions and distortions shall lead to a triple win outcome, i.e., it shall benefit trade, environment, and development.<sup>55</sup> They identified technical cooperation and capacity building as core elements of the development dimension of the multilateral trading system and noted the need for special and differential treatment recognized by the Doha Declaration.<sup>56</sup>

More specifically on development in the context of environmental goods and services, developing economies identified **three main elements**, namely, a mechanism to ensure the development and transfer of environmental technologies; a financial mechanism to ensure access to and development of environmental technologies, investment in environmental projects and capacity development for production of the environmental goods; and, special and differential treatment for developing and LDC Members.<sup>57</sup> In addition to these three elements, a developing Member noted a fourth element, namely, the adoption of specific commitments which would guarantee the export of services from developing economies in the modes of supply of interest to them.<sup>58</sup>

The effectiveness of **environmental technologies** to address environmental challenges is dependent on the dissemination and deployment of these technologies. Nevertheless, equipment and operating costs involved with environmental technologies are so high that their widespread deployment is often constrained. Moreover, comparison with conventional technologies, the deployment of new environmental technologies is facing more challenges in terms of infrastructure, services, and institutions. Developing economies were concerned that liberalization without including the interests of developing economies could lead to technological dependence, even if the liberalization of services could play an important role in promoting innovation and lowering costs of new technologies.<sup>59</sup> For example, one developing Member noted that despite its high level liberalization under the GATS, its transition to a green economy had so far been largely supported by imports and had not triggered substantive investment in domestic production and exports of

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<sup>48</sup> WTO document TN/S/M/1, 5 June 2002, para 359

<sup>49</sup> Ibid; WTO document S/CSS/W/142, 22 March 2002, para 5

<sup>50</sup> WTO document S/CSS/W/121, 27 November 2001, para 4

<sup>51</sup> WTO document JOB/SERV/311, 30 July 2021, para 1.13

<sup>52</sup> WTO document JOB/SERV/304, 21 January 2021, para 3.2

<sup>53</sup> Ibid.

<sup>54</sup> WTO document JOB/SERV/311, 30 July 2021, para 3.14

<sup>55</sup> WTO document JOB/SERV/303, 23 November 2020, para 1.16

<sup>56</sup> WTO document TN/TE/W/79, 15 April 2011, para 1

<sup>57</sup> See WTO document WT/CTE/M/52, 6 September 2011; WTO document TN/TE/W/79, 15 April 2011;

WTO document TN/S/M/1, 5 June 2002

<sup>58</sup> WTO document TN/S/M/1, 5 June 2002, para 259

<sup>59</sup> WTO document TN/TE/R/11, 30 May 2005, para 67 and 69

these services.<sup>60</sup> Therefore, developing economies pushed for the inclusion of cooperative research and development of environmental technologies, sharing intellectual property rights for such development, enhancing capacities of developing and least developed Members to develop and implement such technology and ensuring effective transfer and implementation of such technology to be integrated into any environmental goods and services framework.<sup>61</sup> In this context, developing Members made specific suggestions regarding **technology transfer**, requesting that specific commitments on environmental services be linked to the effective technology transfer and aid/assistance to developing economies.<sup>62</sup>

Related to environmental technology transfer, developing economies also requested commitments on **financial support** to enable them to implement development measures in an environmentally sound manner.<sup>63</sup> They also voiced their need for trade finance for environmental services, development of related SMEs, and mitigating the adverse impact of response measures by developed economies on imports of developing economies.<sup>64</sup>

Developing economies also argued for **special and differential treatment** in the context of environmental goods and services. According to them, effective implementation of special and differential treatment would require less than full reciprocity in any commitments made by developing Members, and adequate transition periods allowing phased implementation of obligations for developing and least-developed Members should be an integral element of special and differential treatment.<sup>65</sup> In addition, a developing Member suggested that market access for environmental goods and services be made conditional upon international prices of all environmental goods and services being in check for trends of undue monopolization by major players; and governments of economies supplying goods and services taking up a substantial part of the cost of supply when destined to developing markets.<sup>66</sup>

Moreover, developing Members requested that the principle of **common but differentiated responsibility** included in various multilateral environmental agreements also be a part of the environmental goods and services framework, which meant higher commitments by developed economies due to their greater responsibility for environmental degradation.<sup>67</sup> Some developing Members also proposed that the proponents of liberalization of environmental services forego negotiations and unilaterally liberalize environmental services as it was more expedient and supported the premises articulated by them.<sup>68</sup>

Clearly, what developing economies want to pursue in trade negotiations on environmental services is more development opportunities through technology transfer, financial support, investment, as well as special and different treatment. It is evident that there are gaps between the multilateral negotiations aimed at further liberalization and developing economies' demand for economic development, at least in the view of developing economies.

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<sup>60</sup> WTO document JOB/SERV/303, 23 November 2020, para 1.29

<sup>61</sup> WTO document TN/TE/W/79, 15 April 2011, section 4

<sup>62</sup> Ibid.

<sup>63</sup> Ibid. Suggestions in reference to a financial mechanism include creating a Trade and Environment Fund with objectives such as facilitating transfer of environmental technologies at reasonable prices; providing grants to developing Members that intend to import specific environmental technologies; financing the cost of change of production practices in existing manufacturing facilities in developing economies; financing research and development activities; financing appropriate environmental technical assistance and capacity building programmes; and establishment of technology transfer centres/exchanges/mechanisms in consultation and cooperation with the relevant multilateral environmental agreement Secretariats. Another suggestion involves developed and developing economies that declare themselves to be in a position to do so giving soft loans, aid for trade and other incentives to facilitate the purchase of goods, implementation of projects, the acquisition and transfer of technologies, and the contracting of environmental services by developing economies.

<sup>64</sup> WTO document JOB/SERV/303, 23 November 2020, para 1.28

<sup>65</sup> WTO document TN/TE/W/79, 15 April 2011, para 17

<sup>66</sup> WTO document TN/TE/R/16, 22 December 2006, para 221

<sup>67</sup> WTO document TN/TE/W/73, 9 July 2008, para 15

<sup>68</sup> WTO document JOB/SERV/311, 30 July 2021, para 1.13



Very recently, in the WTO, some developing economies expressed their caution about premature tariff liberalization on environmental goods and services associated with the green transition before building their own requisite capacities and capabilities in areas of revealed and latent comparative and competitive advantages.<sup>69</sup> They stressed that development remains the core focus of the WTO and called for greater policy space for economic growth and green industrialization, "as a critical complement to other adaptation and mitigation-related actions to build resilience against climate change".<sup>70</sup> Developing economies appear to have also become increasingly vigilant about "green protectionism" that has presented itself in the form of unilateral environment related trade measures and are keeping a close watch on possible negative impacts of "green cause".<sup>71</sup>

#### **4 DEVELOPING ECONOMIES' ENGAGEMENT ON ENVIRONMENTAL SERVICES IN FREE TRADE AGREEMENTS**

More and more economies are pursuing trade liberalization and economic integration by negotiating bilateral and plurilateral free trade agreements (FTAs). Environmental services are incorporated in FTAs through specific commitments<sup>72</sup> directly as well as environment-related provisions<sup>73</sup> indirectly.

Considerable progress on the liberalization of environmental and related services has been achieved in FTAs. In comparison to GATS commitments, market access and national treatment commitments on environmental services undertaken in FTAs are significantly deeper in substance and broader in scope. These commitments go not only beyond existing GATS commitments, but also beyond offers made during the DDA services negotiations. These new or better commitments in FTAs are significant for each of the four environmental services sub-sectors in W/120.<sup>74</sup> For example, as regards refuse disposal services (CPC 9402), 23 of the 59 Members (counting EU-25 as 1) that had GATS commitments or offers in the sector have undertaken improved commitments in FTAs by binding a better level of treatment for market access or national treatment, under any mode of supply. In addition, 30 Members that had no GATS commitments nor made offers in refuse disposal services have undertaken commitments in FTAs.<sup>75</sup>

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<sup>69</sup> WTO document WT/GC/W/868, 1 March 2023, para 9

<sup>70</sup> WTO document WT/GC/W/868, 1 March 2023, paras 5 and 9

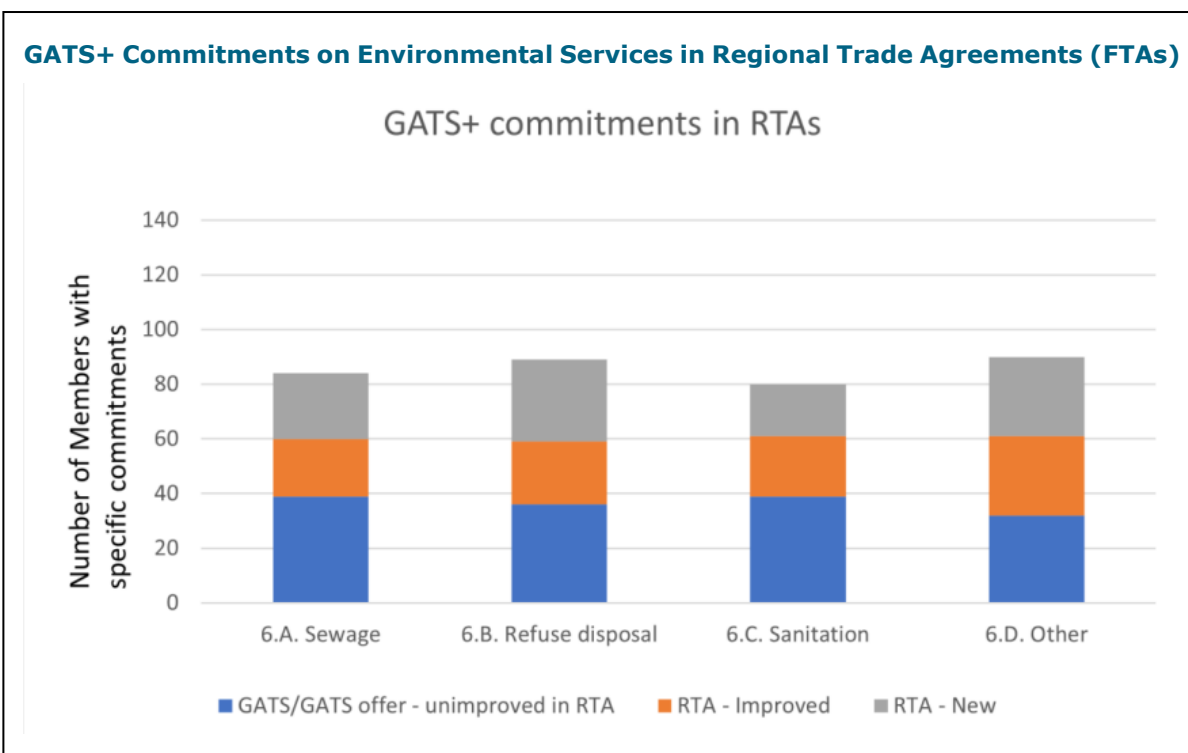
<sup>71</sup> WTO document JOB/TE/78, 10 February 2023

<sup>72</sup> Specific commitments may be undertaken based on a positive list approach, i.e., commitments apply to those modes and sectors where specific commitments are undertaken, or a negative list approach that removes all restrictions on all services unless specifically excluded from a party's market access and national treatment commitments.

<sup>73</sup> For example, Canada-European Union Comprehensive Economy and Trade Agreement (CETA), Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), and the United States-Mexico-Canada Agreement (USMCA) incorporate measures aimed at promoting trade in environmental services in "Trade and Environment" or "Trade and Sustainable Development" chapters. These are usually commitments by the parties to cooperate and facilitate trade and investment in environmental goods and services. Such provisions are generally soft obligations to cooperate and facilitate trade and investment in environmental goods and services and are often excluded from the scope of the dispute settlement mechanism.

<sup>74</sup> Note by the Secretariat on *Experiences in the promotion and facilitation of environmental goods and services*, WTO document INF/TE/SSD/W/18, 23 March 2022, para 2.94

<sup>75</sup> Note by the Secretariat on *Experiences in the promotion and facilitation of environmental goods and services*, WTO document INF/TE/SSD/W/18, 23 March 2022, para 2.95. Please see WTO-World Bank I-TIP database (<http://i-tip.wto.org/services/>) which provides information on WTO Members' GATS commitments, services commitments in regional trade agreements (RTA), applied measures in services, and services statistics.



In GATS-type positive list FTAs, several Members have undertaken preferential commitments on environmental services which are without equivalent in their GATS schedules. This is the case for various developing economies, such as the Cariforum economies<sup>76</sup> in their agreement with the European Union (EU-CARIFORUM), Chile (EU-Chile, EFTA-Chile), Philippines (ASEAN-AUNZ, ASEAN-China, Japan-Philippines), Singapore (ASEAN-AUNZ, ASEAN-China, China-Singapore, EFTA-Singapore, India-Singapore, Japan-Singapore), Pakistan (Pakistan-Malaysia) and Peru (Peru-China). Some developing economies have also undertaken market access and national treatment commitments in FTAs on a range of environment-related sectors including business services, energy services, or distribution services to list just a few.<sup>77</sup>

Many developing economies have also concluded services FTAs based on the negative list approach.<sup>78</sup> Compared to positive list FTAs, negative list FTAs usually bind market opening *status quo* as benchmark and are built upon the assumption that all services sectors are liberalised for the parties except those listed as existing or future "non-conforming measures" (namely "reservations"). As such, negative list FTAs tend to achieve a higher level of commitments than positive list FTAs. This is the case for developing economies' commitments in environmental services as well. For instance, Brunei Darussalam, Chile, Mexico, Malaysia, Peru and Singapore have no commitments on environmental services in their GATS Schedule of Specific Commitments; nevertheless, thanks to the *standstill and ratchet* obligations under the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), these developing economies are committed not only to bind the actual market opening level in environmental services at the time of first commitments, but also

<sup>76</sup> The Cariforum economies are Antigua and Barbuda, Barbados, Belize, Dominica, Dominican Republic, Grenada, Guyana, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadine, Suriname, Trinidad and Tobago.

<sup>77</sup> Examples of FTAs liberalising environment related services include EU-Singapore, EU-Korea, Republic of, and EU-Viet Nam FTA.

<sup>78</sup> According to Ruosi Zhang and Chuwankorn Sasanabanchakul, 'Means of Liberalization And Beyond: Understanding Scheduling Approaches In Services Trade Agreements' (2022) WTO Staff Working Paper ERSD-2022-13 < [https://www.wto.org/english/res\\_e/reser\\_e/ersd202213\\_e.pdf](https://www.wto.org/english/res_e/reser_e/ersd202213_e.pdf) > accessed 7 August 2023, out of the 187 services trade agreements notified to the WTO under Article V of GATS until 30 April 2022, 83 agreements have a negative list approach. Among the 83 negative list FTAs, 38 are concluded between developing economies.

lock in any future unilateral liberalization. By listing existing and future non-conforming measures related to environmental services under the CPTPP, they have undertaken important market access and national treatment commitments in this sector, going far beyond the GATS level.<sup>79</sup> These commitments provide more transparency to environmental services market in these economies than no commitments under the GATS, ensure the certainty of level of liberalization and prevent these economies from backtracking their commitments. Under the Regional Comprehensive Economic Partnership (RCEP), Indonesia which has no GATS commitments in environmental services, along with Brunei Darussalam, Malaysia and Singapore, has made new commitments in this sector. Similarly, Chile and Mexico have also made commitments in environmental services under the Australia-Chile FTA and the US-Mexico-Canada Agreement (USMCA) respectively.

Given that most developed economies have already undertaken GATS commitments in environmental services which usually bind market *status quo*, the difference between GATS commitments and FTA commitments in this sector for developed economies is less significant than that in the case of developing economies.<sup>80</sup>

More and more FTAs include environment-related provisions.<sup>81</sup> Developed economies such as the US, the EU, Canada, and New Zealand are the main promoters of the integration of environment-related provisions into FTAs, with most their signed FTAs including such provisions. In general, FTAs negotiated between developed economies and between developed and developing economies tend to include the highest number of environment-related provisions.<sup>82</sup> The fact that FTAs signed between developing economies contain much fewer environment-related provisions appears to suggest that developing economies are far from convinced that trade agreements should or could be used as vehicle to pursue environmental goals. Interestingly, several developing economies, in particular those that have already signed FTAs with high-income economies incorporating environment-related provisions, have also increasingly incorporated such provisions into their trade agreements with other developing economies, but the scope and level of commitments of these

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<sup>79</sup> Under the CPTPP, in Annex I – Existing Non-Conforming Measures, Brunei Darussalam only lists "Foreign nationals and enterprises are not allowed to provide consultancy services on environmental protection and management; waste management services; landscape design management and maintenance services and janitorial services, roadside and cleaning works services" unless "they are established as an enterprise in Brunei Darussalam", "register for either Certificate A or Certificate B, as a contractor or supplier", or comply with technology transfer requirements. Singapore, on waste management, including collection, disposal, and treatment of hazardous waste, requires that foreign service suppliers must be locally incorporated in Singapore; the public waste collectors (PWCs) rendering services to domestic and trade premises are appointed by public competitive tender with the number of PWCs limited by the number of geographical sectors in Singapore; for industrial and commercial waste, the market is opened to any licensed general waste collectors (GWCs); on Distribution and Sale of Hazardous Substances, only service suppliers with a local presence in Singapore shall be allowed to distribute and sell hazardous substances. In Annex II-Future Non-Conforming Measure, Chile reserves the right to adopt or maintain any measure imposing the requirement that the production and distribution of drinking water, the collection and disposal of waste water and sanitation services, such as sewage systems, waste disposal and waste water treatment may only be supplied by juridical persons incorporated under Chilean law or created in accordance with the requirements established by Chilean law; Malaysia reserves the right to adopt or maintain any measures relating to the collection, treatment and disposal of hazardous waste (excluding carbon gases), Mexico opens the mode 3 market for most environmental services while remains unbound for mode 1; Peru reserves the right to adopt or maintain any measure in relation to public sewage services; Peru undertakes commitments for environmental consultancy services under modes 1-3; Singapore reserves the right to adopt or maintain any measure affecting waste water management, including but not limited to the collection, treatment and disposal of waste water; Viet Nam undertakes new market access commitments for sewage services, sanitation and similar services, nature and landscape protection services under modes 1-3 and other environmental services under mode 2.

<sup>80</sup> Background Note by the Secretariat on *Environmental Services*, WTO document S/C/W/320, 20 August 2010, para 110. Nevertheless, a few Members, such as Australia, the European Union, Japan, and Norway, go further than their GATS commitments in some positive list FTAs. New Zealand, which does not have GATS commitments, has undertaken environmental services commitments in several positive and negative list FTAs.

<sup>81</sup> According to the World Bank Handbook of Deep Trade Agreements, about 20% of the preferential trade agreements contain various WTO-plus environmental provisions. See Aaditya Mattoo, Nadia Rocha, and Michele Ruta (ed), *Handbook of Deep Trade Agreements* (World Bank, 2020) pp. 8

<sup>82</sup> J.A. Monteiro and J.P. Trachtman, 'Environmental Laws' in Aaditya Mattoo, Nadia Rocha, and Michele Ruta (ed), *Handbook of Deep Trade Agreements* (World Bank, 2020) pp. 577

provisions are usually not as detailed as those found in trade agreements negotiated between developed and developing economies.<sup>83</sup>

Environment-related provisions vary in FTAs from the inclusion of environmental objectives in the preamble or a GATT Article XX-type environmental exception to a stand-alone environment chapter. It is worth noting that an increasing number of trade agreements identify environmental cooperation as an objective and that those negotiated between developed and developing economies often foresee or provide for technical assistance, financial support, and/or capacity building on environmental matters.<sup>84</sup> In particular, several FTAs between developed and developing economies include support measures aimed to address the technological and institutional capacity shortfalls of developing economies.<sup>85</sup> These measures are often in the form of promoting access, diffusion, or transfer of environmental technologies as well as technical assistance, financial support, and capacity building.<sup>86</sup> The depth and scope of such provisions range from one specific technology area to a comprehensive program.<sup>87</sup> Examples of what is included in these provisions include joint programmes and environmental technology demonstrations; research studies and reports; exchange of professionals, technicians, and specialists; exchange of technical information, publications, and regulations; organization of joint conferences, seminars, workshops, and training sessions; and outreach and educational programmes.<sup>88</sup>

## **5 NEW APPROACHES TO ENVIRONMENTAL SERVICES NEGOTIATIONS: IMPLICATIONS FOR DEVELOPING ECONOMIES**

As noted in Section 3, developing economies prioritize economic development in negotiations on environmental services and request that common and differentiated responsibilities be taken into consideration. This is understandable given their social and economic development needs and their disadvantageous position in global trade competition. In addition, climate change indeed has a disproportionate effect on developing economies. Therefore, to engage developing economies in trade negotiation on environmental services, their particular concerns need to be taken on board.

Some WTO developed Members have recently initiated exploratory discussions on environmental services in the Special Session of the Council for Trade in Services (CTS-SS) proposing a comprehensive approach in the context of advancing environmental objectives through trade liberalization.<sup>89</sup> In particular, they proposed a broader scope of negotiations on environmental services highlighting additional services sectors where international trade liberalization and improved GATS commitments could significantly contribute to advancing global action on environmental issues. The proponents argued that environmental and related services liberalization supported by all Members including developing economies and LDCs would have a positive impact on sustainable development and help to integrate them into global value chains.<sup>90</sup> According to the proponents, there are both direct benefits and indirect benefits accrued by environmental and related services liberalization. Direct benefits include the greater availability, accessibility and affordability of environmental and related services and the resulting reduction in cost of achieving environmental goals. In their view, an overall improvement in the level of commitments, reducing barriers to trade and removing limitations in all modes of supply would provide greater transparency and predictability

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<sup>83</sup> Ibid

<sup>84</sup> Ibid

<sup>85</sup> FTAs in this regard include China-Switzerland FTA, Japan-Mexico FTA, Nicaragua-Chinese Taipei FTA, EFTA-Indonesia CEPA, EU-Cariforum (Caribbean Forum) Economic Partnership Agreement and EU-SADC (Southern African Development Community) EPA.

<sup>86</sup> See Christophe Bellmann and Mahesh Sugathan, 'Promoting and Facilitating trade in environmental goods and services: Lessons from regional trade agreements' (Forum on Trade, Environment & SDGs (TESS) 20 June 2022); 'Study Report on Environmental Provisions in APEC Member Economies' FTAs/RTAs' (APEC Committee on Trade and Investment, November 2017)

<sup>87</sup> See APEC Committee on Trade and Investment (n 87)

<sup>88</sup> Ibid

<sup>89</sup> The environmental services proposal in the CTS-SS is sponsored by Australia, Canada, EU, Korea, Republic of, Mexico, New Zealand, Switzerland, and UK.

<sup>90</sup> WTO document JOB/SERV/293/Rev.2, 14 April 2021, para 1.2; WTO document JOB/SERV/299/Rev.4, 21 July 2022, para 1.4

to market access conditions and a more favourable business environment and thus facilitate environmental and related services trade from which all Members can benefit, including developing economies.

The proponents also highlighted a wide range of indirect benefits that could derive from the liberalization of environmental and related services, namely benefits accrued as a result of increased availability and accessibility of environmental services. For example, innovation and investment in environmental services sector resulting from liberalization may create further opportunities for skills transfers, job creation and incentives for new ideas and initiatives.<sup>91</sup> According to one of the proponents, restrictions to trade in environmental services could be linked to weaker export performance by firms which consequently leads to a less innovative sector where new clean technologies are so expensive that their wide deployment is inhibited.<sup>92</sup> The proponents contend that a more liberalized trade regime can help the domestic industry grow by increasing exports and getting integrated into global value chains.<sup>93</sup> They further highlight that improved commercial presence commitments could help attract foreign investment, create economic opportunities domestically including jobs and knowledge transfer via local partnership.<sup>94</sup>

In commenting on this proposal, the ACP Group recognized novel technologies and methods to carry out economic activity and living in a sustainable manner and the contribution of discussions in identifying key environment-related services to support developing economies, particularly Small Island Developing States and Least Developed Countries (LDCs) in mitigating the effects of climate change and of natural disasters.<sup>95</sup> They however raised interesting questions which clearly reflect developing economies' interests. For example, they asked how the proponents see the principle of common but differentiated responsibilities being applicable and what their contribution will be in this regard; they also asked the proponents to identify technologies which could be harnessed in the context of developing economies and Small Island Developing States to support climate change mitigation, while creating new business and trading opportunities. A follow-up question would be how the market access negotiation aimed at improving specific commitments on environmental services under the GATS could incorporate the principle of common but differentiated responsibilities and achieve a win-win outcome for developing economies in both climate change mitigation and better trade opportunities. Only with more clarity on this question would developing economies be willing to engage in the market access negotiations on environmental services.

In the framework of TESSD, the Environmental Goods and Services Working Group is also discussing issues related to the promotion and facilitation of environmental and related services.<sup>96</sup> The following are the guiding questions for discussion:

- How can trade in environmental goods and services aid in achieving environment and climate goals?
- What are the opportunities, best practices, and possible approaches for promoting and facilitating trade in environmental goods and services to meet environmental and climate goals, including through addressing supply chain, technical and regulatory elements, promoting and facilitating access to and uptake of new and emerging low-emissions and other climate friendly technologies, and *attention to issues of particular interest to developing economies?*
- *What challenges and policies impede the ability of developing economies and LDCs to engage in and maximise benefits from trade in environmental goods and services and how can these be addressed?*<sup>97</sup> (Emphases added)

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<sup>91</sup> WTO document JOB/SERV/293/Rev.2, 14 April 2021, para 1.2

<sup>92</sup> WTO document JOB/SERV/303, 23 November 2020, para 1.8

<sup>93</sup> WTO document JOB/SERV/311, 30 July 2021, para 1.10

<sup>94</sup> WTO document JOB/SERV/303, 23 November 2020, para 1.23; WTO document JOB/SERV/304, 21 January 2021, para 3.2

<sup>95</sup> WTO document JOB/SERV/305, 12 February 2021, para. 4.17

<sup>96</sup> The Members actively engaged in environmental services discussions in TESSD include Canada, Iceland, Korea, Republic of, Norway, Switzerland and UK.

<sup>97</sup> WTO document INF/TE/SSD/R/14, 30 November 2022, para. 3.1

While TESSD is not negotiation yet and discussions therein are still at the preliminary stage with priorities going forward or possible outcomes to be identified and agreed by Members, it is worth noting that issues of particular interest to developing economies and challenges to engage developing economies in environmental goods and services trade are already on the agenda for consideration. So far, a significant part of the discussions focused on Members' priorities in terms of objectives and sectors, and their views on how trade in environmental goods and services could achieve climate and environmental goals.<sup>98</sup> Members broadly agreed that discussions on environmental goods and services should have a broad scope. Members, *inter alia*, expressed interest to discuss non-tariff measures, regulatory cooperation, good regulatory practices, technology transfer, capacity building, biotrade, bottlenecks to the deployment of new technologies throughout the supply chain, etc.<sup>99</sup> It is evident that these issues are all highly relevant to the interests of developing economies. Also emphasized in discussions were challenges for developing economies, the importance of capacity building and aid for trade, and how environmental services could contribute to broader objectives, such as supporting economic growth including for MSMEs and for LDCs.<sup>100</sup> It was highlighted that technology transfer and technical assistance should be addressed first before discussing lowering tariffs on environmental goods and services in order to ensure that developing economies were not only seen as potential markets for exports from developed economies.<sup>101</sup> Stakeholders that form an important part of the TESSD discussions have also highlighted that some developing economies had liberalized EGS but had still not registered any scaling of technologies or investment in these areas, which pointed to technology transfer and investments as drivers for EGS.<sup>102</sup>

There is still a long way to go before the above ideas could become consensus among participants and materialized for moving forward. It is also not clear how Members want to pursue environmental services in the framework of TESSD in parallel with the work in the CTS-SS. In any event, innovative thinking is needed to take developing economies on board and achieve a meaningful outcome, be it under the GATS or in TESSD.

The ongoing negotiation on the Agreement on Climate Change, Trade and Sustainability (ACCTS) currently among six WTO Members (Costa Rica, Fiji, Iceland, New Zealand, Norway and Switzerland) is worth attention as it recognises the particular vulnerability of Small Island Developing States to the impacts of climate change and is aimed to deliver WTO-consistent trade policy and trade rules that make a meaningful contribution to addressing climate change.<sup>103</sup> In terms of environmental services, it has been reported that significant progress is being made to classify and develop an environmentally ambitious list of environmental and environmentally-related services, which is based on a broad view of how services can contribute to addressing pressing environmental challenges, and thus also contribute to sustainable development.<sup>104</sup>

There are huge opportunities for trade in environmental services in the future driven by the increasing demand for environmental improvement worldwide including climate change mitigation and adaption as well as the pursuit of circular economy. For example, it is estimated that to achieve universal access to safe and affordable drinking water and significant improvements in sanitation by 2030 (No. 6 of the UN Sustainable Development Goals), developing economies of Eastern Asia and South-Eastern Asia would need capital investments of over USD 26 billion annually in water-supply

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<sup>98</sup> Ibid, para. 3.5

<sup>99</sup> Ibid para. 3.7

<sup>100</sup> Ibid; WTO document INF/TE/SSD/R/13, 21 October 2022, para 2.5

<sup>101</sup> WTO document INF/TE/SSD/R/8, 14 July 2022, para 3.7

<sup>102</sup> Ibid

<sup>103</sup> Damien O'Connor, 'Joint Statement on the Agreement on Climate Change, Trade and Sustainability (ACCTS) at MC12' (The Official Website of New Zealand Government, 15 June 2022) <<https://www.beehive.govt.nz/release/joint-statement-agreement-climate-change-trade-and-sustainability-accts-mc12>> accessed 18 January 2023

<sup>104</sup> Ibid

and sanitation infrastructure.<sup>105</sup> As noted above, climate change mitigation and adaptation would create a trillion-dollar market for cleaner energy and energy efficiency improvements over the next decades. It is important for developing economies to be convinced that they may also tap into these opportunities. To this effect, some developing economies' successful experiences of gaining competitiveness in environmental services are worth further study and sharing with other developing economies. *[See the case studies in Box 2 and Box 3.]*

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<sup>105</sup> 'Environmental Services in the APEC Region: Definition, Challenges and Opportunities' (APEC, May 2021) p. 41

## Box 2: How an Indian Company has risen in the supply of environmental services?

Larsen and Turbo Ltd. (L&T) is an Indian infrastructure company that also supplies environmental and related services. Its business offerings include renewables, green buildings, green hydrogen, water and sewage treatment and energy efficient power grids. L&T experienced a 10% growth in FY 2021-22, driven by its strong performance in power transmission and distribution and its hydrocarbon business. Government intervention and international focus on climate change, resource scarcity and universal coverage to basic amenities has played a critical role in this growth. In particular, the company has experienced significant growth in environmental and related services through its exports to developing economies, especially in the Middle East, Africa, and ASEAN region. L&T's five-year strategic plan "Lakshya 2026" envisages further venturing into emerging businesses like green hydrogen development, and electrolyser and battery manufacturing.

Power Transmission and Distribution: L&T provides integrated solutions for power transmission and distribution projects including transmission lines, substations, utility power distribution, infrastructure & industrial electrification through its 15 regional offices spread across the SAARC, Middle East, Africa, ASEAN, and CIS regions. According to its Integrated Annual Report 2021-22, L&T is currently executing power transmission and distribution projects in 30 economies worldwide.

The growing focus on net zero emissions, renewable energy, and increased funding opportunities have created expansion opportunities for L&T both domestically and internationally. For example, India's goal of achieving 500 GW of renewable energy by 2030 is driving L&T's growth within the country. Bangladesh's modernization of its power system creates a new market for L&T's transmission line projects. Additionally, the availability of funding in Africa from institutions such as JICA and Millennium Challenge Corporation is opening opportunities for L&T to participate in interconnector projects in the region.

Water and Effluent Treatment: L&T's water & effluent treatment business is engaged in gamut of vital water infrastructure covering water treatment plants, industrial water supply and treatment plants for recycling and re-use, wastewater treatment and network, sludge management, desalination plants, utility infrastructure for developing greenfield and brownfield areas. The business is operational across India and has successfully forayed into Middle East, East Africa, and SAARC region economies.

With 600 million people facing extreme water stress, growing urbanization and climate related water inequity, the Indian Government has launched various schemes that provide an opportunity for the growth of wastewater treatment business. For example, the Jal Jeevan Mission, a government initiative in India, aims to treat 100% sewage in 500 cities and meet 20% of the total water demand and 40% of industrial non-potable demand through recycle and reuse of wastewater. This is expected to provide L&T with new opportunities. The Indian Government's focus on building the country as an alternative manufacturing hub also provides L&T with opportunities in the areas of industrial effluent treatment and smart water infrastructure businesses.

The company's new business opportunities in the Middle East are driven by increased investments in water and wastewater treatment and in African and ASEAN economies as a result of investments in clean water and sanitation. Priority funding from multilateral agencies for social infrastructure projects are also opening new markets in East Africa. L&T is collaborating with well-known startups to enhance the efficiency and remote operation of its plants, which has the potential to significantly reduce costs. These partnerships are helping the company transform into a technology-driven player in the industry.

Challenges: The COVID-19 pandemic has been a significant challenge for the company as it has led to supply chain disruptions, delayed order finalizations and measured pacing of progress in ongoing projects. L&T's experience also shows that changes in government policies and priorities have also presented challenges for its operation. For example, the wastewater treatment business faced challenges due to the diversion of government funds towards mitigating the healthcare emergency during the pandemic. In the power transmission and distribution business, the consolidation of ongoing distribution schemes under a new, yet to be operationalized Revamped Distribution Sector Scheme impacted the domestic availability of distribution jobs. The company was also negatively affected due to limited Substation and Transmission Line orders from state utilities. Other risks faced by L&T include geopolitical risks, trade barriers, climate change and execution challenges (e.g., employee mobilization, delay in approval and clearances, and visa issues).

Source: 'Larsen and Turbo Annual Report 2020-21: Technology for Sustainable Growth' (Larsen and Turbo) <<https://investors.larsentoubro.com/upload/AnnualRep/FY2021AnnualRepLnT%20Annual%20Report%202020-21.pdf>> accessed 1 August 2023; 'Larsen and Turbo Integrated Annual Report 2021-22: Sustainability in Progress' (Larsen and Turbo) <<https://investors.larsentoubro.com/upload/AnnualRep/FY2022AnnualRepl&T%20Annual%20Report%202021-22.pdf>> accessed 1 August 2023



### Box 3: A South African wastewater treatment services exporter

Proxa, a South African company, specializes in advanced water treatment within the mining, industrial, food & beverage and municipal sectors. It provides a range of services that cover the entire water cycle from consulting and design, research and development, engineering and construction, and plant modernization to operational management, maintenance, repairs, after-market service, chemicals, consumables and spares for disposal and management of liquid waste streams, industrial effluent treatment, sewage treatment, and reuse of wastewater. With its offices in Leige, Perth, Adelaide, Dubai, Tanzania, Johannesburg & Cape Town, Proxa provides services in four continents, Asia, Australia, Africa, and Europe.

Examples of Proxa's cross border trade in wastewater treatment services includes a project it completed for Acacia Mining North Mara gold mine in Tanzania. The mine needed to safely discharge treated water into the environment without increasing plant operational cost. To complete this project, Proxa provided research, testing services, and modified and upgraded the existing membrane treatment plant. The company has also worked on a project to establish a Zero Liquid Discharge plant for molybdenum processing facility in Chile. This plant included services such as design, supply, installation services.

Source: Proxa <<https://www.proxawater.com/>>

## 6 CONCLUSION

Environmental services are both capital- and technology- intensive with developed economies being dominant in both supply and demand. For most developing economies, their market size of environmental services is very small, and they also lack capacity to engage in environmental services trade. While recognizing the contribution of trade liberalization to environmental goals, developing economies want to have more development opportunities in trade negotiations on environmental services, requesting technology transfer, financial support, investment, as well as special and different treatment in undertaking market access commitments. They have been reluctant in participating in multilateral services trade negotiations aimed at further liberalization, which in their view failed to address their interests. On the other hand, developing economies see the need to upgrade environmental protection in their territories and have increasingly enacted environmental legislation which would also mean potential for the growth of environmental services in these economies.

The changing landscape of global trade gives rise to new challenges for the world trading system. One of the challenges is to manage the interface between trade and climate change, which requires new approaches to deal with trade negotiations. Negotiations on trade in environmental services present an interesting example in this respect. Future negotiations on trade in environmental services need to address issues of particular interest to developing economies in order to have their engagement and achieve both trade and environmental goals. Developing economies should be convinced that their engagement would allow them to achieve a win-win outcome: better environmental protection and more economic development opportunities, namely sustainable development. Some FTAs between developed and developing economies have tested environmental cooperation with support mechanisms aimed to address the technological and institutional capacity shortfalls of developing economies. This may be inspiring for negotiations on trade in environmental services in the WTO which require innovative thinking to take developing economies on board. It is important to assure developing economies that they can tap into development opportunities brought by trade in environmental services. Better data on environmental services in developing economies could also help their governments make informed policy decisions, including participation in trade negotiations.

## Annex Discussions on the Classification of Environmental Services in the WTO

Most WTO Members have undertaken GATS commitments based on the Sectoral Services Classification List (MTN.GNS/W/120; hereafter "W/120") drawn upon the 1991 UN Central Product Classification Provisional (UN CPC Prov.). W/120 classifies environmental services into four sub-sectors, namely, sewage services (CPC 9401), refuse disposal services (CPC 9402), sanitation services (CPC 9403) and "other". The residue category "other" is usually considered to include cleaning of exhaust gases (CPC 9404), noise abatement services (CPC 9405), nature and landscape protection services (CPC 9406) and other environmental protection services n.e.c. (CPC 9409). While W/120 is not legally binding and theoretically Members are free to use any classification, using a common classification is important to ensure the comparability of commitments across GATS schedules. As such, the Guidelines for the Scheduling of Specific Commitments under the GATS encourage WTO Members to use W/120 and CPC as much as possible.<sup>106</sup>

The classification of environmental services in W/120 reflects the end-of-pipe environmental concerns such as waste management and pollution control at the time when W/120 and UN CPC Prov. were designed. Since then, the environmental industry has changed dramatically due to new regulatory requirements, technological advances, private sector involvement, and the growing public sensitivities to environmental problems. Today, it includes clean technologies, resource and risk management, and pollution prevention and control. Considering the changes in the environmental industry, some Members noted that the list of environmental services in W/120 became inadequate to capture a wide range of new environmental activities and the services relevant to these activities. In their view, the inadequacy of W/120 and CPC prov. is an impediment to the scheduling of meaningful commitments on environmental services. They thus proposed revisions of the classification of environmental services in W/120, which are broader in scope and more detailed in categorization. For example, the EU and Switzerland proposed restructuring the sector by introducing seven categories, namely, air, water, soil, waste, noise, etc., along the lines environmental service providers generally specialize.<sup>107</sup> Colombia proposed that services related to the implementation and auditing of environmental management systems, the evaluation and mitigation of environmental impact, and advice in the design and implementation of clean technologies be included in the revised classification of environmental services.<sup>108</sup> In addition, various services other than those classified as environmental services in W/120 were identified as relevant to environmental activities, such as engineering services, architectural services, construction services, distribution services, consulting services, maintenance, repair and recycling services, transportation services, storage services, R&D services, and technical testing and analysing services; a cluster approach was proposed for these environment related services which should entail commitments in these sectors as well.<sup>109</sup>

While climate change related concerns have not been prominently featured in the environmental services discussions, references were made to activities to combat climate change such as energy efficiency, clean energy, cap-and-trade, and carbon capture related services. Suggestions by Members regarding the classification of climate services include developing a broad criterion to circumscribe and identify climate related services; concentrating on services relating to technologies for the reduction of greenhouse gases and other climate mitigation measures; identifying services with specific environmental objective, including those against climate change.<sup>110</sup> In a broad sense, services supplied in the R&D, design, generation, transmission, distribution and sale of renewable

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<sup>106</sup> WTO document S/L/92, para 23

<sup>107</sup> See WTO document S/CSC/W/25, 28 September 1999; WTO document S/CSS/W/76, 4 May 2001

<sup>108</sup> WTO Document S/CSS/W/121, 27 November 2001, para 7

<sup>109</sup> See, for example, the proposals from the United States, WTO document S/CSS/W/25, 18 December 2000; European Union, WTO document S/CSS/W/38, 22 December 2000; Canada, WTO document S/CSS/W/51, 14 March 2001; Switzerland, WTO document S/CSS/W/76, 4 May 2001; and Australia, WTO document S/CSS/W/112, 1 October 2001

<sup>110</sup> See WTO document JOB/SERV/108, 12 July 2012

energy could also be considered as environment related services as they serve environmental goals as well. But renewable energy services were discussed as part of energy services in the WTO.<sup>111</sup>

Increasingly stringent regulations to address unprecedented environmental challenges have led to the deployment of new technologies to address environmental challenges, such as carbon capture & storage (CCS). How to classify services related to these new technologies also points to the inadequacy of W/120.

The UN CPC has been updated regularly since the 1991 provisional version. The latest version, CPC Version 2.1 released in 2015, provides a more detailed classification of environmental services. It includes activities such as wastewater treatment (CPC 941), the collection and management of hazardous and non-hazardous waste (CPC 942-943), remediation services (CPC 944), sanitation and similar services (CPC 945), and other environmental protection services not elsewhere specified (CPC 949). The focus of the classification in CPC Version 2.1 is on the collection, treatment, or disposal of liquid or solid wastes, with a few subheadings for remediation services. Several environment related services are classified in other categories, such as general construction services of sewage and water treatment plants (54253), engineering services for waste management projects (hazardous and non-hazardous) (83326); engineering services for water, sewerage and drainage project (83327); materials recovery (recycling) services (894); and environmental consulting services (83931).

**Table: Comparison between the classification of environmental services in CPC Prov. and CPC Version 2.1**

<b>CPC Prov.</b>	<b>CPC Version 2.1</b>
<b>94 Sewage and Refuse Disposal, Sanitation and Other Environmental Protection Services</b>	<b>94 Sewage and waste collection, treatment and disposal and other environmental protection services</b>
<b>940 Sewage and refuse disposal, sanitation and other environmental protection services</b>	<b>941 Sewerage, sewage treatment and septic tank cleaning services</b>
<b>9401 94010 Sewage services</b> Sewage removal, treatment and disposal services. Equipment used are waste pipes, sewers or drains, cesspools or septic tanks and processes utilized may be dilution, screening and filtering, sedimentation, chemical precipitation, etc.	<b>9411 Sewerage and sewage treatment services</b> <b>94110 Sewerage and sewage treatment services</b> This subclass includes: - sewage removal services usually provided using equipment such as waste pipes, sewers or drains - sewage treatment services using dilution, screening and filtering, sedimentation, chemical precipitation, etc.
	<b>9412 Septic tank emptying and cleaning services</b> <b>94120 Septic tank emptying and cleaning services</b> This subclass includes: - emptying and cleaning of cesspools and septic tanks - servicing of chemical toilets
<b>9402 94020 Refuse disposal services</b> Refuse collection and disposal services. Collection services of garbage, trash, rubbish and waste, whether from households or from industrial and commercial establishments, transport services and disposal services by incineration or by other means. Waste reduction services are also included.	<b>942 Waste collection services</b> <b>9421 Collection services of hazardous waste</b> <b>94211 Collection services of hazardous medical and other biohazardous waste</b> This subclass includes: - waste collection specifically designed for the collection of:

<sup>111</sup> See WTO document S/CSS/W/60, 23 March 2001; WTO document S/CSC/W/42/Rev.2, 28 April 2006

	<ul style="list-style-type: none"> <li>• pathological wastes such as anatomical wastes, non-anatomical wastes, sharp wastes, such as syringes and scalpels</li> <li>• other biological-infectious wastes from hospitals, medical practices, dental practices, medical laboratories</li> <li>• other biohazardous wastes from non-residential locations</li> </ul> <p><b>94212 Collection services of industrial hazardous waste (except medical and other biohazardous waste)</b></p> <p>This subclass includes:  - waste collection from industrial locations specifically designed for the collection of: <ul style="list-style-type: none"> <li>• hazardous wastes (except medical and biological) including materials that may be hazardous to human health or the environment and that require special handling techniques specified by legislation or regulation</li> </ul> </p> <p><b>94219 Collection services of other hazardous waste</b></p> <p>This subclass includes:  - waste collection from non-industrial locations specifically designed for the collection of: <ul style="list-style-type: none"> <li>• hazardous waste including materials that may be hazardous to human health or the environment that require special handling techniques specified by legislation or regulation</li> </ul> </p> <p><b>9422 Collection services of non-hazardous recyclable materials</b></p> <p><b>94221 Collection services of non-hazardous recyclable materials, residential</b></p> <p>This subclass includes:  - waste collection specifically designed for the collection of non-hazardous recyclable materials: <ul style="list-style-type: none"> <li>• whether presorted or commingled waste, such as cardboard, paper, plastic, glass, aluminium, steel and organic yard waste from residential locations, including curbside collection, back door collection or automated collection on a flexible or regular schedule</li> </ul> </p> <p><b>94229 Collection services of non-hazardous recyclable materials, other</b></p> <p>This subclass includes:  - waste collection specifically designed for the collection of non-hazardous recyclable materials: <ul style="list-style-type: none"> <li>• whether presorted or commingled, such as cardboard, paper, plastic, glass, aluminium, steel, and other recyclable materials from non-residential locations, on a regular or flexible schedule</li> </ul> </p> <p><b>9423 General waste collection services</b></p> <p><b>94231 General waste collection services, residential</b></p> <p>This subclass includes:</p>
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	<p>- general collection of waste, garbage, rubbish, refuse, trash, and commingled materials from residential locations, including curbside collection, back door collection, or automated collection on a flexible or regular schedule</p> <p><b>94239 General waste collection services, other</b></p> <p>This subclass includes:  - general collection of waste, garbage, rubbish, refuse, trash, and commingled materials from nonresidential locations, on a regular or flexible schedule</p> <p><b>943 Waste treatment and disposal services</b></p> <p><b>9431 Waste preparation, consolidation and storage services</b></p> <p><b>94311 Hazardous waste preparation, consolidation and storage services</b></p> <p>This subclass includes:  - consolidation, temporary storage, and preparation of hazardous waste  - consolidation and preparation of hazardous waste for transportation to an appropriate facility that processes waste  - services of drop-off centres, transfer stations and container stations</p> <p><b>94312 Ship-breaking and other dismantling of wrecks services</b></p> <p>This subclass includes:  - ship-breaking  - dismantling of wrecks, such as cars, computers etc., in order to obtain and separate recoverable Materials</p> <p><b>94313 Non-hazardous recyclable materials preparation, consolidation and storage services</b></p> <p>This subclass includes:  - consolidation, temporary storage and preparation of non-hazardous recyclable materials  - transfer facility services of non-hazardous recyclable materials  - recovery and preparation of non-hazardous recyclable materials, such as bailing, cleaning, sorting, volume reduction and similar preparation and consolidation of recyclable materials, for transportation to an appropriate facility that processes recyclable materials</p> <p><b>94319 Other non-hazardous waste preparation, consolidation and storage services</b></p> <p>This subclass includes:  - consolidation, temporary storage and preparation of non-hazardous waste  - transfer facility services for non-hazardous waste  - consolidation and preparation of non-hazardous waste for transportation to an appropriate facility that processes waste</p> <p><b>9432 Hazardous waste treatment and disposal services</b></p> <p><b>94321 Hazardous waste treatment services</b></p>
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	<p>This subclass includes:  - treatment to reduce, eliminate, or transform hazardous waste</p> <p><b>94322 Hazardous waste disposal services</b></p> <p>This subclass includes:  - disposal services for hazardous waste at a facility that meets legal standards for the disposal of hazardous waste, such as at approved controlled containment facilities or landfills</p> <p><b>9433 Non-hazardous waste treatment and disposal services</b></p> <p><b>94331 Sanitary landfill services, non-hazardous waste</b></p> <p>This subclass includes:  - disposal of non-hazardous waste on or in a sanitary landfill which meets the sanitary landfill criteria specified by legislation or regulation, i.e. designed to prevent leaking etc.</p> <p><b>94332 Other landfill services, non-hazardous waste</b></p> <p>This subclass includes:  - disposal of non-hazardous waste on or in landfills other than a sanitary one</p> <p><b>94333 Incineration of non-hazardous waste</b></p> <p>This subclass includes:  - incineration of non-hazardous waste in a facility that meets legal standard and requirements form incineration of non-hazardous waste</p> <p><b>94339 Other non-hazardous waste treatment and disposal services</b></p> <p>This subclass includes:  - other non-hazardous waste disposal services, such as:</p> <ul style="list-style-type: none"> <li>• services of chemical or biological reduction of agricultural waste and similar treatment services</li> </ul>
	<p><b>944 Remediation services</b></p> <p>This group includes remediation services, i.e. services dealing with the effects of contamination caused by operation of facilities or by accidents. These services aim to eliminate or contain any existing contamination of the soil, water or air and have to be performed on site.</p> <p><b>9441 Site remediation and clean-up services</b></p> <p><b>94411 Site remediation and clean-up services, air</b></p> <p>This subclass includes:  - services involved in implementing approved plans for the remediation of air on a contaminated site, that meet requirements specified by legislation or regulation</p>

	<p><b>94412 Site remediation and clean-up services, surface water</b></p> <p>This subclass includes:  - services involved in implementing approved plans for the remediation of surface water on a contaminated site, that meet requirements specified by legislation or regulation</p> <p><b>94413 Site remediation and clean-up services, soil and groundwater</b></p> <p>This subclass includes:  - services involved in implementing approved plans for the remediation of soil and groundwater on a contaminated site, that meet requirements specified by legislation or regulation</p> <p><b>9442 Containment, control and monitoring services and other site remediation services n.e.c.</b></p> <p><b>94420 Containment, control and monitoring services and other site remediation services n.e.c.</b></p> <p>This subclass includes:  - services involved in preventing additional or wider contamination on the site  - preventing the movement of uncontrolled contaminants from the site  - monitoring the site to determine the effectiveness of remediation activities  - controlling access to the contaminated site  - other site remediation services, n.e.c.</p> <p><b>9443 Building remediation services</b></p> <p><b>94430 Building remediation services</b></p> <p>This subclass includes:  - development and implementation of a remediation plan that removes, destroys, contains or otherwise reduces contaminants in buildings, such as asbestos, lead, radon etc.</p> <p><b>9449 Other remediation services n.e.c.</b></p> <p><b>94490 Other remediation services n.e.c.</b></p> <p>This subclass includes:  - environmental emergency response services  - other remediation services, n.e.c.</p>
<p><b>9403 94030 Sanitation and similar services</b></p> <p>Other sanitation and similar services including outdoor sweeping services and snow- and ice-clearing services</p>	<p><b>945 Sanitation and similar services</b></p> <p><b>9451 Sweeping and snow removal services</b></p> <p><b>94510 Sweeping and snow removal services</b></p> <p>This subclass includes:  - street sweeping and cleaning services  - gritting and salting of roads  - snow ploughing and removal  - runway sweeping and snow removal services  - runway vacuuming services</p> <p><b>9459 Other sanitation services</b></p> <p><b>94590 Other sanitation services</b></p>

	<p>This subclass includes:</p> <ul style="list-style-type: none"> <li>- beach cleaning services</li> <li>- drain unblocking services</li> </ul>
<p><b>9404 94040 Cleaning services of exhaust gases</b></p> <p>Emission monitoring and control services of pollutants into the air, whether from mobile or stationary sources, mostly caused by the burning of fossil fuels. Concentration monitoring, control and reduction services of pollutants in ambient air, especially in urban areas.</p>	
<p><b>9405 94050 Noise abatement services</b></p> <p>Noise pollution monitoring, control and abatement services, e.g. traffic-related noise abatement services in urban areas.</p>	
<p><b>9406 94060 Nature and landscape protection services</b></p> <p>Ecological system protection services, e.g. of lakes, coastlines and coastal waters, dryland, etc., including their respective fauna, flora and habitats. Services consisting in studies on the interrelationship between environment and climate (e.g. greenhouse effect), including natural disaster assessment and abatement services. Landscape protection services not elsewhere classified.</p>	
<p><b>9409 94090 Other environmental protection services n.e.c.</b></p> <p>Other environmental protection services not elsewhere classified, e.g. acidifying deposition ("acid rain") monitoring, controlling and damage assessment services.</p>	<p><b>949 Other environmental protection services n.e.c.</b></p> <p><b>9490 Other environmental protection services n.e.c.</b></p> <p><b>94900 Other environmental protection services n.e.c.</b></p> <p>This subclass includes:</p> <ul style="list-style-type: none"> <li>- acidifying deposition (i.e., acid rain) monitoring, controlling and damage assessment services</li> <li>- other environmental protection services not elsewhere classified</li> </ul>