ENVIRONMENTAL GOODS AND SERVICES:
QUESTIONS AND POSSIBLE WAYS FORWARD IN THE TESSD

Working Paper No. 2 in Trade and Environmental Sustainability Series.

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This working paper has benefited from comments shared on a previous draft by a group of various stakeholders to whom we are grateful. These insights were shared at a meeting at Quaker House in Geneva on 02 September 2021. This is a work in progress and we welcome further comments. This is the second paper in the series on Trade and Environmental Sustainability, which also includes papers on the topics of circular economy, fossil fuel subsidy reform, and greening Aid for Trade.

The note ends by suggesting how the TESSD could advance the dissemination of and access to EGS.

Contents

1.1 WHY EGS?

Environmental goods and services (EGS)[1] can directly improve the quality of life for citizens by providing a cleaner environment and better access to safe water, sanitation or clean energy. In addition, the use of environmental goods can reduce harmful side-effects of various activities that damage the environment and are hazardous to human health and can help make the use of energy significantly more efficient.

The environmental-social-economic win-win-win situation of trade in EGS is typically given as the prime example of how trade can contribute to sustainable development and to achieving the Sustainable Development Goals (SDGs). Removing tariffs on trade in EGS can foster the diffusion of environmental technologies and support global expansion of renewable energy, pollution control, wastewater treatment, recycling, organic agriculture, and other green activities.[2]

An agreement to reduce barriers to trade in climate-friendly technologies is an obvious opportunity for synergy between the WTO and climate action. A 2017 World Bank study estimated that eliminating tariffs and non-tariff barriers (NTBs) on certain clean energy technologies and energy efficiency products could increase their trade volume by 14% and 60%, respectively. (Monkelbaan, 2013) For consumers, lower tariffs reduce prices, while for exporters they open up new markets and increase access to more innovative and cost-effective suppliers.

The development of EGS will require both global and local markets which are transparent and predictable, and which are based on a supportive enabling environment and on clear and coherent governance regimes for related goods and services. There is currently no specific framework or policy process for facilitating trade in sustainable energy technologies (SETs) for example. This is highly unfortunate as the creation of global markets for SETs can spur a low carbon transition (World Bank, 2015a).

The purpose of this paper then is to give an overview of, set out ideas around, and raise questions on the different elements of a deliverable on EGS from the Trade and Environmental Sustainability Discussions (TESSD) in the WTO. Such a deliverable could come in the form of an agreement, which could be either binding or non-binding.

[1]Environmental goods and services are products manufactured or services rendered for the main purpose of:
- preventing or minimising pollution, degradation or natural resources depletion;
- repairing damage to air, water, waste, noise, biodiversity and landscapes;
- reducing, eliminating, treating and managing pollution, degradation and natural resource depletion;
- carrying out other activities such as measurement and monitoring, control, research and development, education, training, information and communication related to environmental protection or resource management.

[2]*https://ec.europa.eu/eurostat/documents/3859598/5910217/KS-RA-09-012-EN.PDF/01d1733e-46b6-4da8-92e6-766a65d7fd60?version=1.0*

1.2 BENEFITS OF A DELIVERABLE ON EGS

A deliverable from the WTO on trade in EGS would have numerous benefits.

First, there are important benefits from wider dissemination of and access to EGS for the just transition to a circular and low-carbon economy, poverty eradication and raising of living standards, and gender, social and environmental justice (also see section 3 below).

Second, a deliverable on EGS would be good news for the WTO, which is in need of achievements to celebrate. When countries are seeking a successful outcome from the WTO and its Doha Round negotiations, such a deliverable could be an attractive win-win output for trade and the environment.

Third, for many countries that have been promoting the idea of 'green economy' and 'green growth' at the global stage it may make sense to support negotiations on EGS, even when they have to make major sacrifices in terms of tariff reductions.

Fourth, participating countries may not have export interests in environmental goods now, but they may foresee developing such interests in the future. Costa Rica for example joined the Information Technology Agreement (ITA) in 1997 when it had no exports of IT-related products. However, by joining the ITA, Costa Rica attracted investments in the area of IT and by now, 20 per cent of Costa Rica's exports consist of IT products. With this experience in mind, Costa Rica's motivation for joining negotiations on EGS may be related to its positive experience with the ITA.

Fifth, for the private sector some benefits are global alliance building, securing increased market volume and possibility of global scalability, and a level playing field for free sourcing and open supply chains. (based on Monkelbaan, 2014a)

Overall, providing greater clarity on trade policies affecting the scale-up of sustainable energy will allow greater certainty and predictability that both government and companies need for making long-term and efficient investments in sustainable energy.

1.3 EVOLUTION OF EGS NEGOTIATIONS AND EMERGENCE OF RENEWABLE ENERGY TRADE DISPUTES

The WTO's Doha Ministerial Declaration of 2001 includes the mandate[3] to negotiate the liberalization of trade in EGS. Products under discussion in the environmental goods talks at the special sessions of the Committee on Trade and Environment (CTE-SS) included wind and hydropower turbines, photovoltaic (PV) cells, and biogas production tanks, among others.[4] Due to several reasons,[5] it was difficult to finalize these negotiations. Environmental services talks were conducted at the special sessions of the Council on Trade in Services (CTS) as part of the 'built in agenda' to liberalize services sectors in general agreed to at the Uruguay Round. These talks at the CTS also were suspended following the overall breakdown of the Doha round.

Following the demise of the Doha talks, in 2014 a group of eighteen WTO members began negotiating an Environmental Goods Agreement (EGA). The EGA was to become operational upon reaching a 'critical mass' of members calculated when a certain share of trade in the agreed upon goods had been reached. While this threshold has not been defined yet, it is generally understood to be about 90% of world trade in those goods. The agreement was to operate as an open plurilateral agreement within the WTO, where the benefits of the agreement are to be extended on a most favoured nation (MFN) basis to all WTO members. (UNEP, 2018) The initial omens were promising. The agreement was set to build on a list of fifty-four environmental goods that Asia-Pacific Economic Cooperation (APEC) economies decided to liberalize in 2012.[6,7] Supporters of the EGA argued that the agreement would boost exports, provide cheaper access to clean technologies and help countries meet their Nationally Determined Contributions (NDC) targets under the Paris Agreement.

However, EGA negotiations proved protracted and politicized. Despite a pledge by G20 trade ministers in July 2016 to complete them by the end of the year, they collapsed soon after. An inherent challenge of the EGA process is the lack of agreement on the definition of environmental goods. (Lim, 2017) Many so-called 'environmental' goods have 'dual' or multiple uses, raising questions on how appropriate it is to call them such. All this has led to lengthy and heated debates as to which goods should be listed for the EGA.[8]

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[3]Doha Ministerial Declaration, para. 31.
[4]*https://ustr.gov/trade-agreements/other-initiatives/environmental-goods-agreement*
[5]The main reasons for deadlock in in the EGS negotiations was overall lack of progress in the Doha Round (which is negotiated as a 'single undertaking', meaning that no issue is agreed upon until there is agreement on all topics in the Round), and disagreement over the identification of environmental goods and coverage of the agreement.
[6]Member Economies of APEC include: Australia; Brunei Darussalam; Canada; Chile; China; Hong Kong, China; Indonesia; Japan; Malaysia; Mexico; New Zealand; Papua New Guinea; Peru; The Philippines; Russia; Singapore; Republic of Korea; Chinese Taipei; Thailand; the United States; and Viet Nam.
[7]*http://www.apec.org/Meeting-Papers/Leaders-Declarations/2012/2012_aelm/2012_aelm_annexC.aspx*
[8]*https://ictsd.iisd.org/bridges-news/bridges/news/ministerial-talks-to-clinch-environmental-goods-agreement-hit-stumbling*

This all leaves the next steps towards the EGA unclear for the time being. Negotiators could take advantage of this situation by making it a time for reflection on the EGA work programme including on non-tariff barriers (NTBs)[9] and services, and by staying updated on developments in the cleantech sector. The run-up to the twelfth WTO ministerial that will be held in Geneva in December 2021 should create new momentum for restarting where the EGA talks left off.

APEC economies have also renewed their engagement on advancing EGS liberalization efforts. After their meeting on 4-5 June 2021, the APEC ministers responsible for trade (MRTs) have issued a joint statement reiterating the importance of promoting economic policies and growth that contribute to tackling climate change and other serious environmental challenges aligned with global efforts, such as the achievement of the 2030 Agenda for Sustainable Development and the goals of the Paris Agreement. In addition to committing to advancing trade and environment issues at the WTO, ministers also instructed officials to review the implementation of the original APEC list of 54 environmental goods in "contributing to green growth, addressing climate change and securing sustainable economic development objectives, and to update the list in terms of Harmonised System (HS) tariff classifications for reference purposes by the APEC Ministerial Meeting in November."[10]

The trade ministers also reaffirmed APEC Economic Leaders' commitments to work on environmental services and have asked "officials to advance work on enhancing trade in environmental services, including by identifying environmentally related services across service sectors, and to report on progress at our APEC Ministerial Meeting in November." To ensure that services contribute to long-term sustainability economies would then take forward discussions on ways to increase trade in environmental and environmentally related services, including by supporting liberalisation, facilitation, and cooperation. Ministers have instructed officials to report on the outcomes of these discussions at the 2022 MRT.[11]

Disputes on renewable energy equipment

Trade related tensions and indeed trade disputes on issues related to renewable energy have increased since 2010.[12] These trade tensions were due to the design and implementation of industrial policies in numerous countries to spur domestic production of renewable energy technologies (Kasteng, 2013). Governments often try to combine renewable energy goals with objectives such as stimulating domestic industrial development, 'green' job creation,

[9]In many countries, tariffs on environmental goods are already low. A 2017 study found that average tariffs on a selection of environmental goods in Asia-Pacific were just 3.8%, compared with 4.5% for all industrial goods. For these countries, NTBs constitute a bigger challenge. NTBs, such as opaque licensing practices, product standards and testing procedures, increase the cost and complexity of trade. The WTO's Technical Barriers to Trade Agreement prohibits technical requirements that are designed to restrict trade but allows members to impose them for legitimate purposes such as protecting consumers or the environment.

[10]Asia Pacific Economic Cooperation (APEC). APEC Ministers Responsible for Trade Meeting Joint Statement 2021.*https://www.apec.org/Meeting-Papers/Sectoral-Ministerial-Meetings/Trade/2021_MRT*

[11]Ibid.

and technological upscaling in what promises to be a growing sector in the twenty-first century.

Usually, governments exclusively focus their efforts on keeping or setting up the manufacturing of sustainable energy equipment within their own borders without considering supply chains and job creation by local installers. Valuable opportunities for green job creation and technological learning may be lost if the latter do not have access to equipment from abroad that is cheaper and better. Services and the creation of jobs beyond those related to manufacturing should therefore be a key component of trade, renewable energy and climate change policy considerations.

In terms of added value, 70% of the value that is added by an installed solar panel remains in the country of installation, even if the solar panel is imported. This is because there is more added value in the services sector related to renewable energy (e.g., marketing and sales, installation and maintenance of solar panels) than in the manufacturing of that panel. The solar panels themselves are often produced at a loss due to manufacturing overcapacity and are becoming a commodity. As such, manufacturers' interests in protectionism are often pitted against installers' and service providers' interests in having access to the best technologies at the lowest price.

Section two of this paper will go deeper into the potential environmental and economic benefits and impacts of a WTO outcome on EGS. Section three will look at justice aspects of EGS liberalization, especially regarding responding to needs and priorities in developing countries and will suggest a package of complementary measures in addition to trade liberalization. Finally, section four will suggest some ways forward for EGS in the TESSD and raises some questions in this regard.

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[12]Some recent WTO disputes related to renewable energy and local content requirements (LCRs) include:
• The Canada – Renewable Energy case which was initiated in 2010 by Japan against the province of Ontario's feed-in tariff (FIT) programme. The Japanese claim was that the programme's LCRs discriminated against foreign renewable energy products, placing Canada in violation of national treatment requirements of the GATT and the TRIMS Agreement, and constituting a prohibited subsidy under the SCM Agreement. The EU had separately challenged the same FIT programme in 2011. The WTO panels for these two cases acknowledged most of the claims by Japan and the EU, including the GATT and TRIMS violations, but were divided on the subsidy issue. Canada appealed the decisions. The Appellate Body (AB) in May 2013 held that Ontario's FIT programme violated the national treatment obligation under GATT and the TRIMs agreement, though it disagreed with the panel's analysis on a few points of law, including the subsidy determination. As a result, Canada had to bring its programmes into compliance, which it did by mid-2014.
• A second case on renewable energy, China – Measures Concerning Wind Power Equipment, was raised in 2010 by the US against China's Special Fund for Wind Power Equipment Manufacturing. It offered subsidies to Chinese wind turbine manufacturers that agreed to use key parts and components made in China rather than imported parts. This case was chosen out of multiple US investigations on China's renewable energy practices, including a series of anti-dumping and countervailing duties (CVD) investigations. The consultations that followed led to a revocation of the subsidy in 2011 by China.
• Another WTO dispute involving LCRs, India – Certain Measures Relating to Solar Cells and Solar Modules, was initiated by the US in February 2013 against Indian LCR provisions pertaining to solar cells and/or modules. The US complained that the LCRs were in violation of India's obligations under the GATT and the TRIMS and SCM Agreements. In its report released in February 2016, the panel found that the LCRs constituted trade-related investment measures, thus violating the national treatment obligation under the TRIMS Agreement and the GATT.

2.1 BENEFITS OF A DELIVERABLE ON EGS: THE NEED TO GO BEYOND TARIFFS

The decision of eighteen WTO Members (counting the then 28 Member States of the EU as one Member) to negotiate on an EGA from early 2014 was hailed as a major achievement for both the global trading system and for the environment. However, in a wider and more long-term perspective a deliverable on EGS might facilitate the diffusion and development of EGS. As such, an EGA may have a strong systemic and cumulative impact over time by enabling the creation of global markets, for example for sustainable energy and circular economy technologies.

Many of the WTO members that participated in the EGA negotiations already have very low applied tariffs as well as duty free tariff treatment for EGs. Many EGs may also already enjoy duty free treatment in the context of regional trade agreements. In addition, certain technologies with both information technology as well as environmental applications, such as solar cells and modules, are already liberalized by WTO members that are parties to the Information Technology Agreement. There may also be merit in further removing even low levels of tariffs on many environmental goods. (UNEP, 2018) However, if an EGA follows the APEC model and only covers tariffs[13] then it is indeed unlikely to address the real obstacles to trade in these goods.

These obstacles include 'non-tariff barriers' such as anti-dumping measures, countervailing duties, standards, LCRs,[14] export subsidies. In addition, trade flows in environmental goods will also depend on the overall enabling environment in terms of political stability, technological and financial capacity, and regulatory frameworks. Thus, only taking away tariff barriers may be a first step towards better dissemination of environmental technologies including SETs but it is not a guarantee for sustainable development outcomes including the expansion of sustainable energy. In this context, the OECD has shown the importance of drivers for environmental goods trade such as the stringency of environmental regulations, the overall business environment, and access to financing[15] (OECD, 2014).

Therefore, the scope of a deliverable on EGS must extend beyond tariffs in order to maximize its beneficial impact on trade and on the environment.

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[13]On the current list of fifty-four environmental goods, the average current tariff is only 1.8%.

[14]Jha expects that removing local content requirements (LCRs) in the renewables sector will actually increase output, employment, and trade in China and other developing countries such as India and Brazil. The welfare gains that would result from reduced emissions in China through removal of LCRs, import tariffs and feed-in tariffs would amount to more than USD 4.5 billion.

[15]It is important that governments and development banks focus on leveraging their financial inputs by reducing risk for institutional investors in renewable energy projects in developing countries instead of spending directly on renewable energy equipment for example. There may be barriers here in terms of public visibility, as donors prefer to support projects where their inputs are directly visible (e.g., in a solar energy project), whereas they could have leveraged much bigger investments by guaranteeing banking loans indirectly. One recent example is the Lake Turkana wind project in Kenya, which was delayed for 6 years because of unclarity over investment guarantees. In the end, the World Bank took on the risk guarantee for this wind power project, which was a good addition to its renewable energy portfolio after the World Bank was criticized for supporting coal fired power plants in developing countries.

Through the removal of tariffs and working also towards the removal of NTBs to environmental goods, countries can improve market conditions for their domestic producers of EGS. Provided that reductions in prices are passed on to consumers, we can assume that the direct result will be that environmental technologies become more accessible in countries which join a WTO initiative on EGS.

Lowering of prices of environmental goods by addressing trade barriers will speed up the adoption rate of abatement technologies, with positive environmental impacts including a reduction of emissions from fossil fuel use. It would encourage investments in innovation, boost employment (also see the next section), and lower the stress on natural resources, increasing the overall social, economic, and environmental welfare of nations.[16] The impact of tariffs can be felt even when taken on goods not regarded as 'environmental'. For instance, it is estimated that the 25% tariff on steel imposed by the US in March 2018 would raise the overall costs of solar- and wind-generated power by up to 5%, negatively impacting on the overall market share of renewable energies (GTM Research, 2018).

2.2 TRADE IN ENVIRONMENTAL SERVICES

Beyond addressing tariffs and NTBs, there is a need for fostering trade in environmental services. Although the size of the market for sustainable energy services in value terms for example is twice bigger than the market for related goods (EBI, 2011), and such goods and services are often traded in tandem,[17] services related to sustainable energy are largely neglected in both national policy-making and in international negotiations (Monkelbaan, 2013).

Due to its higher potential for localization, the service sector is often considered promising as a low-hanging fruit for developing countries willing to participate in global value chains and foster market linkages with their local industry. (UNEP, 2018)

Trade in environmental services is particularly associated with cross-border commercial presence ('Mode 3') and movement of natural persons ('Mode 4') and therefore faces trade barriers that involve investment related restrictions as well as restrictions on the cross-border movement of people.

Environmental services negotiations in the CTS under the Doha round and subsequent efforts to renew momentum under the plurilateral Trade in Services Agreement (TISA) launched in

[16]Less, C. T. and McMillan, S. (2005). Achieving the Successful Transfer of Environmentally
Sound Technologies: Trade-Related Aspects. Trade and Environment Working Paper No. 2005-2. Paris: Organisation for Economic Co-operation and Development; UNEP (2013). Green Economy and Trade - Trends, Challenges and Opportunities. Geneva: United Nations Environment Programme; De Alwis, J. M. D. D. J. (2015). Environmental Consequence of Trade Openness for Environmental Goods. Sri Lankan Journal of Agricultural Economics, 16(1), pp.79–98

[17]E.g., solar and wind energy projects involve services such as the assessment of solar and wind resources, site analysis, project development, project financing, engineering and design services, and installation, operation and maintenance of equipment.

2013 have also been stalled. Parties have generally aimed for a high level of ambition under TISA with some exceptions being considered for sensitive public services such as the provision of drinking water. (UNEP, 2018) Given the close association between environmental goods and environmental services as well as the relevance of services such as construction, design and engineering to the provision of sustainable energy it would be desirable for future efforts at EGS liberalization to consider both goods and services in tandem and address barriers in a holistic and coordinated manner even if the negotiating avenues remain separate.

Environmental services sectors discussed under the Doha Round and TISA include sewage, refuse disposal, sanitation, cleaning of exhaust gases, noise abatement, nature and landscape protection, and other environmental protection services. Members are free to propose any classification approach as long as the sectors are mutually exclusive and do not overlap. The important interplay between the liberalization of environmental services and the liberalization of other related services, such as construction, engineering, technical testing and analysis, and management consulting has also been recognized and WTO members can also commit to deeper market access and national treatment obligations only for the environment-related services segments within these broader service categories. (ibid.)

The fact that many environmental services such as wastewater treatment, solid waste management and provision of clean drinking water are delivered by public utilities in many countries have also raised sensitivities around environmental services liberalization, impacts on domestic regulatory 'policy space' and concerns around pricing and affordability. In addition, during the Doha round CTS talks, developing countries have also raised issues of technology-transfer, and the creation of domestic capacities within environmental services. (Claro et al., 2007)

2.3 ECONOMIC AND EMPLOYMENT IMPACTS OF A DELIVERABLE ON EGS

The size of the global market for environmental technologies is expected to amount to about USD 2 trillion by 2020 (UNEP, 2014), and a major part of that market can be linked with sustainable energy. Trade and investment allow for comparative advantages to be exploited and for global competition which drives prices of sustainable energy down (Jha, 2013). In 2016, the European Commission estimated that the EGA could boost trade flows in green goods by EUR 21 billion, while also making clean technologies more cost-effective.

The majority of the trade in EGs takes place between developed countries, but a number of developing countries are catching up. For example, in the period 2001–2012, Malaysia increased its exports of EGS from less than EUR 1.8 billion to more than EUR 6.2 billion, while Thailand saw an increase from just over EUR 0.9 billion to more than EUR 5.3 billion, and India an increase from less than EUR 0.9 billion to above EUR 4.4 billion.[18] Due to high growth rates,

[18]WTO, Trade to Remain Subdued in 2013 After Sluggish Growth in 2012 as European Economies Continue to Struggle.

and large baseline market potential, countries such as Brazil, Russia, Malaysia, Thailand and India are increasingly significant actors in the trade in EGs.[19] In addition, South-South trade in sustainable energy technologies such as solar PV cells and modules, wind-powered generating sets, hydraulic turbines and biomass generation related products is actually growing faster than global trade in the same products. Most of the growth however has been regionally concentrated in East and South-east Asia. (UNEP, 2014) This underscores the need to broaden participation in sustainable energy related trade and value chains among other developing countries as well.

Then there is the impact of an EGS deliverable on employment (SDG 8). Many different definitions of green jobs exist, however there is general agreement that the rise in environmental regulation and concern for environmental conservation is leading to the rise of new industries and opportunities for innovation. The EU estimates that there are 20 million green jobs in the EU, defined as jobs that are 'linked to the environment in some way'.[20]

The shift towards a greener economy has already had impacts on employment. A 2012 report by the Green Jobs Initiative estimated that tens of millions of green jobs have already been created around the world in industrialized countries as well as in emerging and developing economies. The report predicted that between 15 and 60 million additional jobs could be created annually if a shift towards a greener economy was to be made. The renewable energy sector is expected to see the biggest job growth in the coming years. (ILO, 2018; ILO 2019)

A joint UNIDO - Global Green Growth Institute (GGGI) study looking at renewable energy and energy efficiency industries, showed that in five geographically diverse countries[21] new investments in energy efficiency and renewable energy will consistently generate more jobs for a given amount of spending than maintaining or expanding each country's existing fossil fuel sectors.[22] In the renewable energy sector alone, the International Renewable Energy Agency (IRENA) estimates that renewable energy employed 11,5 million people around the world in 2020.[23]

Analysis of trade flows in environmental services has been more challenging due to limitations in data availability. A UNEP study on environmentally sound technologies examined trends based on data from waste treatment and de-pollution for 33 countries (with agricultural and mining related services also analysed for a few of those countries) and estimated for example that global trade of selected environmental services had multiplied, rising from over USD 5.7 billion worth of total trade in 2006 to more than USD 41.5 billion in 2014, when it reached its peak, and falling back to USD 29.0 billion in 2016. There has been a growth of over 700%in environmental services between 2004 and 2016, much more than the growth of trade in environmental goods over the same period. (UNEP, 2018)

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[19]WTO, Trade to Remain Subdued in 2013 after Sluggish Growth in 2012 as European Economies Continue to Struggle, *https://www.wto.org/english/news_e/pres13_e/pr688_e.htm*

[20]Green Jobs: Europe's Environmental and Economic Future *http://ec.europa.eu/social/main.jsp?catId=370&langId=en&featuresId=130&furtherFeatures=yes*

[21]Included in the study were: Brazil, Germany, Indonesia, South Africa, and South Korea.

[22]UNIDO, GGGI, Global Green Growth: Clean Energy Industrial Investments and Expanding Job Opportunities 24 (2015), *http://www.peri.umass.edu/fileadmin/pdf/published_study/GLOBAL_ GREEN_GROWTH_REPORT_vol1_final.pdf*

[23]*https://www.irena.org/newsroom/pressreleases/2020/Sep/Renewable-Energy-Jobs-Continue-Growth-to-11-5-Million-Worldwide#:~:text=The%20seventh%20edition%20of%20Renewable,a%20third%20of%20the%20total.*

The main exporters were the US and EU followed by Russia and Canada whereas the main import markets were Russia, the EU and US with Colombia as the main developing country showing significant levels of imports. An analysis of company specific data of 61 companies reveal that the main suppliers in the category of environmental consultancy and engineering services were from the US, UK and Australia followed by the EU and Japan. The major company revenues for these services were also derived mainly from North America and Western Europe followed by the Asia-Pacific (for Japanese and Australian firms), the Middle East and Latin America. (UNEP, 2018) Given these trends, one strategy for developing countries to increase their participation in the global export share of environmental services may be to focus on services ancillary to certain environmental goods with local growth opportunities such as water purification, renewable energy such as hydro-power and services linked to organic agriculture. Water purification and the hydropower equipment accounted for around 23 and 45 percent of South-South trade analysed. (UNEP, 2014)

The importance of trade in services for the circular economy

Another area of growth opportunity may be services related to the circular economy (CE). Most of the firms supplying these services are small and medium enterprises based in Europe with most exports interestingly being delivered digitally (through Mode 1). (Tamminen et al., 2020) However, services such as repair and refurbishment of products could be where developing countries could have a cost advantage. Increased imports of recyclable waste can also create opportunities in waste processing and recycling. It can also generate employment opportunities as repair of products tends to be more labour intensive than manufacture from raw materials. (Monkelbaan and Liese, 2021). Such services could also be given further consideration for inclusion in any future launch of environmental services talks.

At the same time compliance with environmental, health and other standards will also be needed to circular economy scale-up in developing countries. Standards developed in export markets such as the EU eco-design directive could also impact developing countries. Technical assistance and capacity building to enable developing countries to upgrade their standards and thereby integrate into global value chains will also be important.

With the right enabling conditions, the CE could provide new opportunities for economic diversification, value creation and skills development. With adequate investment, developing countries can 'leapfrog' developed countries in digital

and materials innovation to embed sustainable production and consumption at the heart of their economies. (Monkelbaan, 2021)

There is a need for removing horizontal barriers affecting trade in services in general, addressing regulatory differences (such as in secondary materials and waste trade), adopting an integrated approach covering both circular-economy related goods and services and designing non-discriminatory circular economy policies such as extended producer responsibility (EPR) schemes, eco-design policies, circular procurement, or circular economy-related standards and regulations. In addition, there were also opportunities for including circular economy related goods and services in the EGA and support from other WTO initiatives such as the implementation of the Trade Facilitation Agreement (TFA), technical assistance and capacity building to developing countries including through the Aid for Trade initiative, coordination with relevant WTO bodies such as the TBT committee for guidance on best practices on standards as well as drawing upon liberalization models and regulatory cooperation initiative such as conformity assessment and harmonization initiatives pursued in the context of regional trade agreements(RTAs).

By promoting exports and increasing the efficiency of the EGS market, the EGS deliverable could have significant impact in furthering this trend of job creation in EGS sectors. Through the development of complementary industries, local economies can benefit as much or more from the import of new products and services as the exporter economy can.

3.1 HUMAN RIGHTS ASPECTS

By furthering the dissemination of environmental technologies and the increase in economic feasibility of related projects, a deliverable on EGS has the potential to impact on a range of human rights issues. The majority of human rights impacts can be expected to be indirect and are related to the anticipated changes in the trade of various goods rather than being direct impacts resulting from the provisions of the agreement itself.

The greater diffusion of environmental technologies, particularly in LDCs can improve the right of access to a healthy work environment, as defined in the Universal Declaration of Human Rights. In reducing barriers to the flow of technologies which combat air pollution and are necessary for environmental remediation, a deliverable on EGS can contribute to facilitating projects and business models which are directed at abating these environmental issues and facilitate the actions of the various actors which are pursuing these objectives.

A possible concern could lie in the forecast that a deliverable on EGS could facilitate the construction of large hydroelectric power projects. Human rights impacts associated with these projects may include the criminalization of social protest with freedom of association and speech being restricted, forced displacements of people and communities infringing the right to free movement and property rights.[24] Qualitative feedback from stakeholders has highlighted that potential negative impacts would be acute at the local level such as for individuals at risk of displacement.

Incorporating human rights in climate policies and actions is known as a rights-based approach. Rights-based approaches are proven to lead to public inclusion, greater policy acceptance and more successful mitigation and adaption outcomes.[25] States have the obligation to respect human rights, whether these are civil and political or economic, social and cultural rights. They have to ensure the full enjoyment of these rights by its citizens. If a rights-based approach is adopted from the outset, it can improve lives, realize policy coherence with legitimate and sustainable outcomes, and thus increase the success of for example mitigation efforts. (QUNO, 2019)

Based on the experience of countries that have adopted constitutional rights to a healthy environment, recognition of this right has proved to have real advantages[26], including access to mitigation approaches that can be both equitable and cost-effective. (Duyck, 2016) Fairness brings community support and leads to more effective policy. Failure to incorporate rights can result in ambitious projects failing if communities reject them, increasing the likelihood of legal challenges due to rights violations and abuses. A rights-based approach can transcend these challenges, aligning projects with existing obligations.

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[24]Don Anton & Dinah Shelton, Problems in Human Rights and Large Dams, ANU College of Law Research Paper No, 11–18 (2011) and Interamerican Association for Environmental Defense, Large Dams in the Americas: Is the Cure Worse than the Disease? (2009).

[25]Feminist Participatory Action Research (FPAR) for Climate Change A project run by Asia Pacific Forum on Women, Law and Development (APWLD) more at *https://apwld.org/* and QUNO's leaflet on rights based approaches *(https://quno.org/resource/2019/6/human-rights-based-climate-action)*

[26]See e.g., Vanuatu's National Policy on Climate Change and Disaster-Induced Displacement available online

3.2 IMPACTS ON GENDER ISSUES

Policy decisions that appear to be gender neutral might in fact have a differential impact on women and men, even when such an effect was neither intended nor envisaged. The impact on gender of the liberalization of trade in EGS should be taken into consideration.

While it has been recognized that world-wide gender inequalities have decreased in recent years, women still remain more affected than men by under-employment, discrimination and pay gaps. (European Women's Lobby, 2000) UNCTAD estimates that 600 million women are working in vulnerable jobs which are not protected by labour laws. (UNCTAD, 2014) Additionally, recent studies have shown that women are more exposed than men to the impacts of climate change as many of them play a key role in certain environmental services such as recycling and are more heavily dependent on natural resources. (Global Initiative for Economic, Social and Cultural Rights, 2020) Women are often tasked to collect, transport and manage traditional biomass fuels and water supplies. Time spent on managing these basic livelihood supplies has adverse impacts on the wellbeing, educational opportunities and productivity of women and girls.[27] Easier access to energy technologies could empower women in LDCs while contributing to climate change mitigation.

An initiative in Bangladesh launched by non-profit social enterprise Grameen Shakti has been successful in not only installing more than 100,000 solar home systems in rural areas but also in training and employing over 5,000 women as solar PV technicians and maintenance workers. By 2015, Grameen Shakti was aiming at creating more than 100,000 employment opportunities in rural Bangladesh in the renewable energy (RE) sector.[28]

[27]Women Rio+20 Steering Committee, A Gender Perspective on the 'Green Economy' Equitable, Healthy and Decent Jobs and Livelihoods, *http://www.wecf.eu/download/2011/March/greeneconomyMARCH6docx.pdf*

[28]Grameen Shakti's website, *http://www.gshakti.org/*

3.3 NEED FOR BROADER SUPPORT PACKAGE FOR DEVELOPING COUNTRIES

The maximum conceivable GHG emission reduction expected from liberalization (using the much larger list of 153 goods proposed in the WTO under the Doha Round negotiations on EGS), under optimistic assumptions, in 2009 was expected to be between 0.1% and 0.9% of 2030 total GHG emissions (Wooders, 2009). Thus, trade liberalization should be seen as only part of a governance package that should lead to climate action. Jha's (2013) calculations show that amongst the countries surveyed, removal of import tariffs on EGs would have the greatest impacts in China in terms of emission reduction (minus 0.8%) and lowering of electricity prices (minus 0.3%).

Any EGS liberalization initiatives should not only be broader in scope and go beyond tariffs and address non-tariff measures but also include a support package that enables benefits to flow from trade-opening. Implementing such a package may go beyond the WTO's mandate but could then be taken forward by other relevant organizations that have the mandate. This could include support for developing countries to introduce and implement well-designed regulatory frameworks to maximize social and environmental benefits and minimize harm from EGS-driven economic activity, incentives to boost employment of women in green sectors, skills and training packages to build skills and capacities in green economy sectors and financial assistance packages to small and medium enterprises in developing countries to build technological capacities, upgrade standards and enable greater participation in global value chains. Priority EGS sectors for such assistance could include for example those related to sustainable energy, circular economy activity and plastic pollution.

[12]E.g., equipment to sort and process e-waste, recycling equipment, and equipment for extracting secondary raw materials from products in a safe manner could significantly boost access to CE activities. (Preston et al. 2019)

4. CONSIDERATIONS FOR SHAPING AN EGS DELIVERABLE FROM TESSD

The TESSD launched this year in Geneva provides an excellent platform to shape a meaningful work programme on EGS. Based on the issues, opportunities and challenges highlighted earlier in this paper the following could be options to consider:

- Broadening the scope of the EGA beyond tariffs: to include non-tariff measures within the scope of discussions.
- Prioritizing urgent and global environmental challenges in particular climate action: while discussing the scope and coverage of environmental goods and services to be negotiated. Another possible sector includes goods and services to address plastic pollution and environmentally preferable substitutes for plastic.
- Exploring ways to achieve trade outcomes on environmental services: in co-ordination with and complementary to the goods being negotiated under an EGA to deliver a meaningful outcome for the environment. This could include consideration of a parallel launching of talks either within the CTS and/or plurilaterally (e.g., with a faster track in TESSD), while the first option would be more promising in terms of being a multilateral approach and as such ensuring the inclusion of developing countries' interest per se. These could focus on 'core' environmental services sectors such as waste management as well as prioritize services related to delivery of key environmental goods such as sustainable energy technologies, services associated with the circular economy including those of potential interest to developing countries such as repair and refurbishment) and others relevant to the environmental goods sectors negotiated under the EGA.
- Adopting a value-chain approach: to ensure that goods and services critical for smooth and efficient operation of environmental projects are not excluded from consideration
- Include products of export interest to developing countries: including environmentally preferable, nature-based and sustainable agriculture-based products that could be of interest to smaller developing economies and LDCs.
- Pursue a package approach: integrating elements of regulatory, development and technical and capacity building assistance that complements a market access outcome on EGS and which can be implemented by relevant international and development organizations.

Other considerations could include ensuring that an EGS work programme can evolve in future to keep pace with technological change including for example through a 'living list' that can be updated as technology evolves with the scope to add further technologies and services in future if required. (Cosbey, 2014a)

While reducing trade barriers to access environmental goods can contribute to technology diffusion and technological cooperation, many other flanking policies, including enabling environments, are also required to ensure such diffusion takes place and is used in support of the SDGs.

A statement of purpose and a description of environmental goods would be important so that environmental realities and not mere negotiating dynamics influence decisions on which goods to liberalize. Also, a scientific advisory body could be created to ensure the environmental integrity of the overall deliverable on EGS and there should be options for adding new relevant technologies to the list of EGs that are to be liberalized in the future. The deliverable should also be a 'living' agreement in the sense that trade barriers beyond tariffs (e.g., standards, local content, subsidies, barriers to trade in services and investment) can be discussed in following iterations of the negotiations.

Some specific questions for further discussion on EGS in the context of TESSD could include the following:

- Should specific EGS sectors relevant to urgent or priority environmental challenges or sectors such as climate-change mitigation, plastic waste and circular economy be prioritized or fast-tracked for liberalization?
- How can future negotiations on environmental goods go beyond tariffs and address non-tariff measures by ensuring a rights-based approach?
- Should negotiations on environmental services be launched in parallel with environmental goods negotiations? Would the CTS or a plurilateral setting be more feasible?
- What specific EGS sectors and or value-chain segments could be included that offer export opportunities for developing countries including LDCs?
- How can negotiators ensure that important EGS value-chain segments are not excluded while responding to sectoral sensitivities among WTO members?
- What lessons or best-practices can be drawn from regional trade liberalization initiatives that also cover EGS that can feasibly be adopted at the multilateral level?
- What elements of a broader package of technical assistance and capacity-building would it be feasible to pursue in the context of EGS talks? How can the WTO coordinate with other relevant international and development organizations for the implementation of a such a package?
- Can lists of environmental goods evolve to keep pace with technological advances and how should trade negotiators respond so that market access gains are preserved as well as broadened in future to include new technologies and services that may emerge?

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