de Melo, Jaime; Solleder, Jean-Marc

Working Paper

Towards An Environmental Goods Agreement STyle (EGAST) agenda to improve the regime complex for Climate Change

FERDI Working Paper, No. P287

Provided in Cooperation with:
Fondation pour les études et recherches sur le développement international (FERDI), Clermont-Ferrand

Suggested Citation: de Melo, Jaime; Solleder, Jean-Marc (2021) : Towards An Environmental Goods Agreement STyle (EGAST) agenda to improve the regime complex for Climate Change, FERDI Working Paper, No. P287, Fondation pour les études et recherches sur le développement international (FERDI), Clermont-Ferrand

This Version is available at:
https://hdl.handle.net/10419/269567

FONDATION POUR LES ÉTUDES ET RECHERCHES SUR LE DÉVELOPPEMENT INTERNATIONAL

Working Paper 287 April 2021 Development Policies

Towards An Environmental Goods Agreement STyle (EGAST) agenda to improve the regime complex for Climate Change

Jaime de Melo & Jean-Marc Solleder

Jaime de Melo, University of Geneva and FERDI
Contact: jaime.demelo@unige.ch

Jean-Marc Solleder, University of Geneva
Contact: jean-marc.solleder@unige.ch

Abstract

Ever since the creation of the WTO, attempts at bringing together the trade and climate regime have failed. This paper reviews attempts at reducing tariffs on products classified as Environmental Goods (EGs), causes of failure in past attempts, and suggests requirements for a meaningful agenda in future attempts. The start is the failure at the negotiations on the Environmental Goods Agreement (EGA) negotiations started in 2014 and abandoned in 2016. Discussion on prospects is around elements that would enter 'EGA-STyle' (EGAST) negotiations among a small group of countries.

.../...

Keywords: Environmental Goods; WTO; Climate Change.
JEL classification: F18, Q56.

* This paper shortens and extends Melo and Solleder (2019). Melo acknowledges support from the French National Research Agency under program ANR-10-LABX-14-01. Solleder acknowledges support from the Global Governance Programme of the Robert Schuman Centre for Advanced Studies at the EUI. We thank Bernard Hoekman and Michael Jakob for comments.

… /…

The paper starts with new descriptive data on the inclusion of provisions in Regional Trade Agreements (RTAs) across the world encouraging trade in EGs. However, the presence of these provisions in RTAs has not been reflected in increased bilateral trade in EGs among RTA members, confirming the relevance of continuing to revive momentum to reduce barriers to trade in EGs. Discussion of reasons for failure at the EGA (and earlier at the Doha Round) follow. An EGAST agenda should go beyond the elimination of 'nuisance tariffs' to include high energy-efficiency EGs and high-tariff products. The EG list should also include Environmentally Preferable Products. As to the difficult-to-detect Non-tariff Barriers (e.g. non-tariff measures), among which some are protectionist in intent, they should be included in the agenda up for mutual recognition. The paper concludes that EGAST negotiations to reduce barriers to trade in EGs would still be a promising avenue for rapprochement between the trade and climate regimes.

Table of Contents

1. The Trade and Environment Regimes are still a world apart

Environmentalists claim that the interests of the trade community, as represented at the WTO, trump environmentalists' concerns. On the other hand, trade economists argue that an open world trading system is essential for carrying out the Sustainable Development Agenda (SDA). Environmentalists have raised two concerns. First, globalization-induced increases in trade flows can magnify trade-embodied pollution, as discussed in the abundant 'pollution haven' literature (production of pollution-intensive goods relocates from countries with strict environmental regulations towards countries with weak environmental regulations). Second, improvements in technology make it increasingly easy to intensify the exploitation of natural capital (e.g. timber, fish stocks), potentially exacerbating its depletion, especially in the weak governance environment of many least-developed countries (LDCs) that contain a large part of the natural capital on earth.

Because of growing physical linkage across countries, it is now indispensable to recognize that trade and environment policies need to be designed jointly. So far, all substantial attempts, beyond including a growing number of environmental provisions in RTAs have failed. Negotiations to remove tariffs on Environmental Goods (EGs) and Environmental Services (ESs) at the Doha Round, followed by negotiations towards an Environmental Goods Agreement (EGA) among 18 countries were the first shot at bringing trade policies closer to environmental goals across a number of countries. Though this objective has several advantages, both negotiations failed.

Concentrating on tariff removal has at least three advantages. First, tariffs are visible and easily measured which is not always the case for Non-Tariff Measures (NTMs) that can be protectionist or precautionary in intent. Second, they are easy to monitor. Third, their effects are more easily quantifiable than are other measures affecting trade. For these reasons, removing tariffs on EGs and ESs was, and still is, the logical first step for to bring closer the trade and climate regimes.

To recall, at least since the establishment of the WTO, observers have been warning about a legal collision between trade and environment 'rules', especially those relating to climate change. Looking back, governments have struggled to set up a strong,

integrated and comprehensive regulatory system for managing climate change. In recognition of this, Keohane and Victor (2010) described the situation as the "regime complex for climate change" to capture the multiple organizations involved in cooperation on policy issues relating to climate change. The same situation applies to what could be called the "trade and environment regime complex". In this paper, we assume that 'climate' is subsumed under 'environment'.

Two landmarks have influenced attempts at bringing closer the two regimes. The first started at the Doha Round[1] where successful negotiations on the elimination of tariffs on Environmental Goods (EGs) were to help decouple economic growth from environmental impact by creating a triple-win situation, for trade, for the environment, and for development.

On the heels of the decade-long stalemate at the WTO on the Doha negotiations, at the margin of the January 2014 Davos meetings, a group of 14 countries committed to pursue 'global free trade' in EGs. The joint statement reads that the group is to '…build on the ground-breaking [see below] commitment to reduce tariffs on the APEC [Asia-Pacific Economic Forum (APEC)] list of 54 Environmental Goods by the end of 2015 to achieve global free trade in Environmental goods'. This plurilateral agreement '…would take effect once a critical mass of WTO members participates….and we are committed to exploring a broad range of additional products' (Davos 2014). This initial group (eventually extended to 18) included many APEC members plus Costa Rica, the EU, Norway, and Switzerland. The negotiations towards an Environmental Goods Agreement (EGA), launched at the WTO in July 2014, broke down in December 2016.

So far, the only progress on the reduction of barriers to trade in EGs has been the agreement among the 21 APEC members at an Asia-Pacific Economic (APEC) Forum in Vladivostok in 2012 where they pledged, on a voluntary basis, that they would limit tariffs on a list of 54 EGs to a maximum of 5% by end 2015. All but two products on the list had already featured on lists submitted during the Doha Round negotiations, and APEC members accounted for 70% of world trade for the products on the list. Virtually all goods on the list are goods for pollution prevention (sometimes called goods for

[1] Paragraph 31(iii) of the Doha ministerial Decision of November 2001 stated that "…with a view to enhancing the mutual supportiveness of trade and the environment, we agree to negotiations, without prejudging their outcome, on (…) (iii) the reduction or, as appropriate, elimination of tariff barriers to environmental goods and services".

environmental management). In some cases (e.g. natural-gas related technologies) the environmental credentials of the goods have been challenged. In other cases (e.g. non-wind powered generators and alternating generators) the products can be combined with either renewable or fossil-energy sources so they face what is often called 'the dual-use problem'. Few products that inflict less damage to the environment in their production, use or disposal, were considered called Environmentally Preferable Products (EPPs) were included in the negotiations.

In spite of these shortcomings, and the fact that the overall simple average tariff on the 54 goods was 2.6%, the APEC agreement has been considered a success. It has been said that the voluntary non-binding nature of APEC decisions could have encouraged members to be bolder than they would have been at the WTO in maintaining these lower tariff levels. Benefits of the APEC outcome have been extended to non-participating WTO economies on an MFN basis, such as the EU. Unlike other Regional Trade Agreements (RTAs), the APEC is a loose membership organization based on cooperation rather than Treaty-like commitments found in RTAs. It is easier to obtain cooperation than commitments among sovereign states.

The second landmark was the adoption of the Sustainable Development Agenda (SDA) by the United Nations in 2015 (embraced by the G20 in 2016) and the Paris Accord of 2015. This agenda calls for taking action to combat climate change (Sustainable Development Goal (SDG 13)) implying that the WTO and the UNFCCC must move towards more affirmative actions. Indeed, the WTO-UNEP (2018) report made the case that international trade offers opportunities build a climate resilient and environmentally friendly sustainable world. The choice of appropriate trade policies (removal of barriers to trade) will encourage the diffusion of EGs and ESs.

Now, tired by the procrastination in these negotiations on reducing barriers to trade on EGs and ESs, five (now 6 with Swizerland) countries (Costa Rica, Fiji, Iceland, New Zealand and Norway) launched in September 2019 yet another round of negotiations, this time for an Agreement on Climate Change, Trade and sustainability (ACCTS). The ACCTS is an 'EGA-STyle' (EGAST) plurilateral endeavour among a small group of like-minded countries, though in contrast, in contrast with the EGA plurilateral approach, ACCTS members would extend their bilaterally negotiated reductions to trade barriers in EGs and ESs to all WTO members.

The ACCTS agenda is also more ambitious than the EGA agenda. The agenda includes: (i) Removing tariffs on Environmental Goods (EGs) and making new commitments on Environmental Services (ESs); (ii) establishing concrete commitments to eliminate fossil fuel subsidies; (iii) developing voluntary guidelines for eco-labelling programs and mechanisms. Countries taking seriously the threat of climate change were invited to join. Switzerland joined. However, Covid has halted progress on the ACCTS.

Acknowledging the urgency to bring closer the trade and environment regimes, this paper has two objectives. First, in section 2 we document the rise of environmental provisions that encourage trade in EGs in RTAs. We also show that one cannot yet detect any correlation between the number of provisions on EGs in RTAs and the intensity of bilateral trade in EGs. Then, in the remaining sections, we make a plea to pursue EGAST negotiations to remove tariffs on EGs. In section 3 we discuss factors accounting for failure of the EGA episode. Section 4 then discusses the elements that need to be added to the agenda to have a meaningful EGAST: high tariffs on an extended EG list and high-energy efficiency which will rest on extensions to the HS classification. The agenda should also include regulatory convergence or mutual recognition for Non-Tariff Measures (NTMs) The paper closes with concluding thoughts on needed reforms at the WTO to help realign the world trading system to face our environmental challenge.

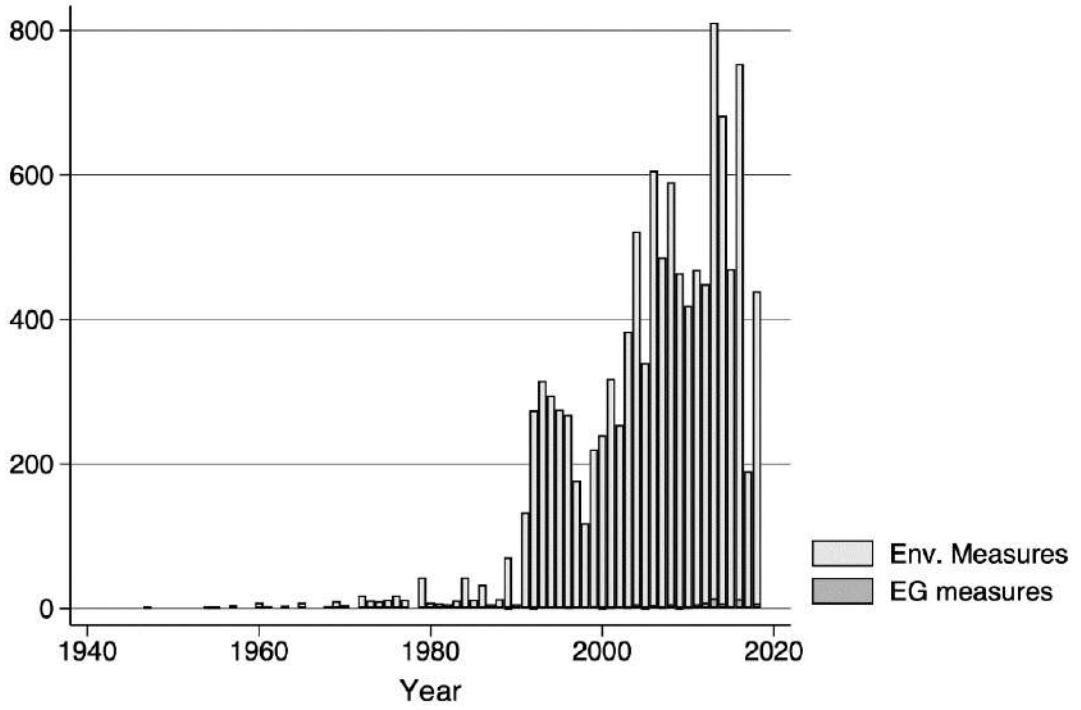
2. Environmental provisions in RTAs

Failure at the Doha Round to reach a bargain on reducing barriers to trade in EGs draws attention to Regional Trade Agreements (RTAs) as a promising alternative to address environmental sustainability. At least five reasons support incorporating environmental provisions in RTAs. First, the limited number of partners is conducive to reaching a conclusion during negotiations. Second, direct-reciprocity augurs well for a dispute-settlement process. Third, the small group environment and the application of the subsidiarity principle is conducive to policy experimentation. Fourth, RTAs are best positioned to address trade-related aspects (e.g. border taxes) of mitigation (Morin and Jinnah (2018, p. 543-44)). Fifth, PTAs can have the small group characteristics of 'climate clubs' (Nordhaus (2015) with a better progrnosis of self-enforcement.

Prior to 2000, 90 per cent of the 81 RTAs notified to the WTO dealt exclusively with provisions covering trade in goods. A drastic change occurred during 2000 to 2015 when 64 percent of the 194 RTAs notified to the WTO also included provisions on services trade (Egger and Shingal, 2016) and many included provisions not covered in the WTO negotiations (environment, intellectual property, investment, and movement of capital). Introduced by Horn et al. (2011), these are referred to as WTO-X provisions in PTAs.

Environmental provisions have become more common in RTAs. By 2013, RTAs had more than 800 environmental provisions. Among those, few concerned EGs. According to the TREND dataset used in figures 1 and 2, on average 1% of all environmental measures adopted since 2003 were characterized as "encouraging trade or investment in environmental goods and services" (Morin et al. 2018). Rather, most provisions covered the preservation of natural resources and biodiversity.

Figure 1: New environmental measures in RTAs per year



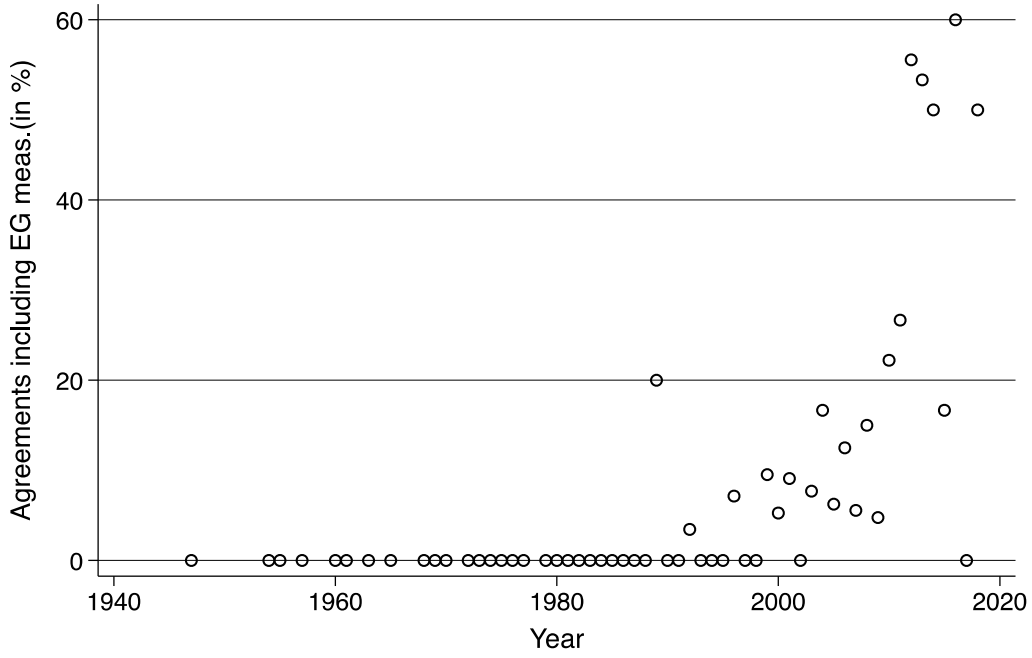
Note:

Environmental measures are defined as any environmental measure (see the codebook methodology chapter for details) recorded in the Trend Database. EG measures are measures defined as promoting EGs and ESs. A new measure is defined as a measure appearing in a treaty signed in a given year.

Source: Authors' calculation based on Morin et al. (2018)

While the count of provisions measures corroborates a growing awareness for environmental provisions in trade agreements, it is only part of the picture. Figure 2 shows the percentage of RTAs signed in each year including EG provisions. The figure shows that, while EG provisions were not a common negotiation point before the end of the 1990s, they are now more common across RTAs. Sixty percent of the agreements signed in 2016 included an EG provision.

Figure 2: Percentage of RTAs including provisions on Environmental Goods (EGs)



Source: Authors' calculations based on TREND dataset (Morin et al. 2018)

This large increase in EG provisions across RTAs raises the question of a correlation between the prevalence of EG provisions and the intensity of bilateral trade in EGs The estimated equation is:

$$\log(trade_{ijt}) = \alpha_{it} + \gamma_{jt} + \omega_{ij} + EGmeasure_{ijt} + \mu_{ijt}$$

where $EGmeasure_{ijt}$ is a dummy variable taking a value of 1 when the RTA has an environmental measure encouraging trade in EGs $\alpha_{it}$and γ_{jt} are country-year FE controlling for omitted variables, and ω_{ij} are bilateral FE controlling for all time-invariant omitted variables like distance.

Table 1: Correlates of bilateral trade in Environmental Goods

	OLS			PPML		
	EPP	APEC	WTO	EPP	APEC	WTO
	1	2	3	4	5	6
	Log(trade)	Log(trade)	Log(trade)	Trade	Trade	Trade
EG measure in RTA	-0.00124	0.0345***	0.0381***	-0.0291	0.00794	0.00690
	(0.0185)	(0.0119)	(0.00533)	(0.0246)	(0.0299)	(0.0274)
N	648'622	1'465'168	7'412'390	1'643'338	2'908'443	7'942'532

Robust standard errors in parentheses, only EG trade in regression.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Source: Authors' estimates from COMTRADE data using EG list in Melo and Solleder (2020a) for years 2007-2016 (2011-2016 for WTO PPML due to computational limitations). Number of goods in each list in parenthesis: EPP (54), WTO (411), and APEC (106).

Columns 1 to 3 of table 1 show results for the OLS regression introduced above. Having an EG measure seems is uncorrelated with the intensity of bilateral trade in EPP products. This is hardly surprising as EPPs have are unlikely to be on the negotiation table. Goods on APEC and WTO lists see a statistically significant increase of about 3.5%. However, these results no longer hold when zero-trade flows are taken into account in the PPML estimaes reported in columns 4-6. Altogether, these results give support to the view that having EG provisions are not associated with increased bilateral trade in EGs. While increasing in number, EG measures in trade agreement seem to have little to no effect on EG trade.

3. Why success at EGAST negotiations is important

Few countries participated in the narrow EGA agenda that covered only reductions in bound tariffs.

First, as a plurilateral agreement (PA), if a 'critical mass' is achieved (usually between 85% and 90% of trade in the products covered), if there is no objection by other WTO members, the tariff reductions would be extended to all WTO members. Then, as with the Information Technology Agreement (ITA), the result would be, effectively, a global treaty, even though not all countries would have exchanged

concessions. With the world moving towards variable geometry, an issue-specific PA offers advantages over a preferential trade area (PTA) as it avoids the linkage issue (Hoekman 2013) and is open to newcomers wishing to join in the negotiations (this was the case early on with the ACCTS). If the critical mass is not reached, there would still be progress as was the case with the Government Procurement agreement.

In the current atmosphere where the viability of the multilateral trading system enshrined in the WTO is increasingly challenged, any progress would be welcome. This is so even after the US return to a more 'normal' stance towards the WTO and other multilateral organizations. It remains that the tensions between trade and the environment pre-dated the current situation. Arguably, a plurilateral success in an 'EGA'-style (EGAST) setting would be a shot in the arm, potentially a harbinger to a further rapprochement. The plurilateral approach would be an alternative to the multilateral and regional approaches to reach a negotiated agreement that would slash tariff barriers on green goods. A successful EGAST would also be a step towards reconciling trade and environmentalists' concerns.

Second, if one takes a 'value chain' perspective that recognizes that goods cross borders multiple times, low tariffs will have a cumulative effect, so a zero tariff is still the desirable goal. Moreover, benefits to consumers should not be ignored. As an example, using household expenditure surveys for the United States, Mahlstein and McDaniel (2017) estimate that lower prices on EGs would give a household saving of USD 485 million a year, disproportionately benefitting lower-income households. Switching to more energy-efficient light bulbs would save 238 million kilowatt hours, equivalent to 120% of the GHG emissions from coal in the state of Maine.

Third, an EGAST would satisfy the monitoring, reporting and verification (MRV) criterion of the UNFCC, which is still eluding implementation of the Paris Agreement on climate Change. This is because the pledges on tariff reductions are easily verified through the national treatment and non-discrimination principles at the GATT that apply to all WTO members.

Fourth, a success would have a much-needed demonstration effect. Success would give support to those who argue that an issue-specific 'club approach' to climate (and environmental) negotiations would be a promising route to build a sustainable climate and environmental architecture.

Fifth, if the experience of the ITA and of the Montreal Protocol Treaty repeats itself, momentum would be garnered for follow-up action. The original Montreal Protocol Treaty (1987) phasing out the production and consumption of ozone-depleting substances has been expanded several times, initially by increasing ambition, and lately by covering other gases.[2] One could hope that an initial success at EGAST negotiations might follow the same path.

Sixth, an EGAST would be an 'issue-based' (as opposed to the current 'country-based') WTO plurilaterals. Since it is often said that the WTO has to move towards 'issue-based' plurilaterals to deliver on the SDGs, the EGAST would then serve as a benchmark for other agreements among a subset of WTO members.

4. Why negotiations have failed so far

Three main reasons account for the stalled (and hence failed) negotiations: (i) Technical difficulties in defining EGs; (ii) a lack of commitment reflected in mercantilistic behaviour; (iii) crumbs on the table; (iv) non-participation by developing countries.

Technical difficulties

Start with the technical aspects. First, it is difficult to define an 'Environmental Good' (EG). EGs have been classified in two categories:

- Goods for Environmental Management (GEMs). GEMs have multiple uses, not all related to the environment. High-income countries have a comparative advantage in GEMs
- Environmentally Preferable Products (EPPs). These are difficult to discern because classifying is a matter of degree that is not visible in the final product. Taking the WTO (411) compendium of submissions as an indicator, not a single product appeared on all lists, only seven products were common to four lists,

[2] The Montreal Protocol initially called for reducing the production and use of chlorofluorocarbons (CFCs), then for their complete elimination. Since the Kigali amendment of 2018, the protocol now covers a phased reduction of hydrochlorofluorocarbons (HFCs), another potent emitter of GHGs.

and more than two-thirds of the products appeared on only one list. Low-income countries have a comparative advantage in EPPs.[3]

Mercantilistic behavior

Second, as expected from negotiations centred over lists of products drawn up by trade negotiators rather than experts, mercantilist behaviour carried the day. At the Doha Round, negotiators generally included in their lists goods in which their country had a revealed comparative advantage ($RCA_i>1$) while they systematically excluded from their lists, goods with high tariffs.[4] All countries systematically excluded goods with high tariffs from their submission lists, contradicting the objectives of the Doha mandate. If negotiators had taken on board the mandate of reducing barriers to trade in EGs, they would not have excluded systematically from their lists EGs with high tariffs.

The same mercantilistic behaviour carried over to the EGA negotiations. For example, until December 2016 when negotiations were put to rest, negotiators wrangled over the time frame for elimination of tariffs and over extensions to the APEC list. Because the proposed text circulated to negotiators allowed for delays and exceptions, China requested (and was denied) the possibility of maintaining a tariff of 5% on 11 tariff lines. China also requested a delay for removing tariffs as a developing country member. On the extensions side, bicycles and parts that have tariffs 9.7% in the US and 14.6% in the EU were proposed for inclusion by China, but their inclusion was opposed by the EU. Bicycles is an interesting case because, unlike different types of products subject to technical change justifying their addition or removal from an EG list (e.g. incandescent vs. led light bulbs), regardless of technical progress, bicycles are an obvious environmentally preferable product. By any criterion, bicycles would always remain on a living list of EGs. Bicycles emit no GHGs and have co-benefits by improving health indicators.[5]

[3] Balineau and Melo (2013) dicuss the extenr of differences in perceptions about what is an EG, another contriubtor to the stalemate at the Doha and EGA negotiations. See the discu

[4] An RCA value for a product above (below) 1 indicates a comparative advantage (disadvantage) for the good. For example, China has a revealed comparative in bicycles (HS 871200) because its share in the world trade of bicycles (about 20% in 2014) is greater than its overall share in world trade (about 7%). China's RCA for bicycles is RCA=0.2/0.07=2.8. A tariff peak is a tariff that exceeds three times the country's average tariff.

[5] See https://www.bmj.com/content/357/bmj.j1456

Also, at the time when negotiations were suspended, countries had not dealt with the possibility of defining products at the National Tariff Line (NTL) level, where EGs could be better distinguished than at the HS6 level. Nor had the modalities of importation (such as certificates of use) for goods with multiple end-use been discussed. Likewise, modalities for the functioning of the Agreement (revision of the list, membership access for newcomers) had not been discussed. In sum, discussions revolved essentially on the goods that would enter the EG list. Since then, changes brought to the Harmonized Commodity Description and Coding system adopted in 2020 (and to be effective in early 2022 (the HS2022)) should help negotiators in drawing goods for EG lists.

To illustrate the range of divergence across negotiators on products to enter EG lists, table 2 reports tariffs for three lists: Two lists, the APEC (54 HS-codes) and the WTO (411) lists are representative of the interests of the developed countries that submitted lists during the Doha negotiations. These lists focus almost exclusively on pollution prevention goods (i.e., environmental remediation technologies and natural resource management technologies). The third list of Environmentally Preferable Products (EPPs (106)) is taken from a list developed by the OECD (Tothova, 2006). This list includes mostly goods that cause less environmental damage in their production, end-use or disposal. The EPP list would be more representative of the interests of developing countries that have not participated in the submission of lists. A fourth, for comparison, the ALL list, is the universe of all HS6 level goods. Since production, use and disposal of any product has an impact on the environment, this list would be the most ambitious list EGA negotiators might envisage as point of departure for negotiations that would then take a negative (rather than the current positive) list approach.[6]

Crumbs on the table

Comparaisons of applied bilateral tariffs across EG list for EGA countries (see table 2) suggest that little was on offer at the negotiation table. First, for both the APEC and WTO lists, 6 of the 17 countries, Norway, Singapore, Hong-Kong, Switzerland, Japan,

[6] Many other lists have been proposed during the Doha and EGA negotiations. Short of delegating this task to a committee of scientific experts (see below), one could add the WTO and EPP lists. To save space, this option is not pursued here.

Iceland, have zero or quasi-zero bilateral tariffs. On the APEC list, only New Zealand and Korea have an average tariff of 2% and China of 4%. Second, for all countries, average tariffs are lower for the APEC and WTO lists than for the ALL list. This reflects the product composition of these lists. Most goods on these lists are intermediate products that face counter-lobbying by downstream producers using these goods as inputs. This pattern also hints at the political economy trade-offs facing negotiators. Upstream producers (e.g. producers of electric motors) want protection and downstream producers (e.g. vehicle producers) want zero tariffs on producers of energy-efficient of electric motors. Third, for all lists in table 2, China is the country with the highest average applied MFN tariff, slightly above 5% for all lists except the APEC list.

Including the EPP list as a possibility for negotiation shows that average applied tariffs are highest for this list. Broadly interpreted, this pattern shows that high-income countries protect this category of environmental goods more than for other categories. Had a larger group, including more developing countries, participated in the negotiations via submission of lists, welfare gains from tariff reductions would have been greater (welfare gains from tariff reductions increase more than proportionately with the tariff so the higher the tariff, the larger are the marginal gains). Also, this is a hint that disagreements would have been more widespread.

Table 2: Applied MFN Tariffs and peak tariffs (in percent)

	Simple average				Percentage of peak tariffs[a]			
	All	APEC	EPP	WTO	All	APEC	EPP	WTO
Country	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
AUS	2.8	1.9	1.8	2.8	0.2	0	0	1.9
CAN	2.8	0.1	2.2	0.6	3.6	5.7	7.8	9.0
CHE	1.1	0	0.4	0	1.6	0	2.2	0
CHN	7.8	3.1	7.9	6.1	2.4	1.9	0	6.4
CRI	4.2	0.2	3.2	1.5	1.4	5.7	0	12.5
EUN	1.4	0.3	1.0	0.7	0.9	0	0	0
HKG	0	0	0	0	0	0	0	0
ISL	1.9	0.1	0.9	0.3	3.8	9.4	2.2	9.8
ISR	1.7	0.7	1.4	1.2	4.8	5.7	7.8	0.8
JPN	2.7	0	2.9	0.2	3.2	1.9	1.1	2.4
KOR	5.8	1.8	10.5	2.3	2.3	0	2.2	0
NOR	1.8	0	0.1	0	4.1	0	3.3	0
NZL	2.3	2.4	1.8	2.1	4.4	0	5.6	0
SGP	0.6	0	0	0	0	0	0	0
TUR	2.2	0.4	2.4	0.7	6.9	0	2.2	0
USA	2.5	0.7	2.6	0.8	5.7	0	8.9	1.9
Average[b]	2.6(1.7)	0.7(0.7)	2.4(1.8)	1.2(1.5)	2.8	1.9	2.7	2.8

Source: WITS. Data for 2015.
Notes: Figures rounded to one digit after the decimal.EG lists in columns: APEC (54); EPP(106); WTO(410); ALL is all HS6 tariffs
a Share of products with tariff simple average tariff > 3 times simple average tariff
b. Corresponding trade-weighted average in parenthesis

As a first indicator on their dashboard, negotiators are likely to take a close look at goods with 'tariff peaks' (i.e., goods with a tariff that exceeds three times the average applied MFN tariff). Across all lists, the percentage of tariff peaks is low, only exceeding 10% for Korea for the EPP list (cols. 5-8). This low percentage is a reflection of the success of the formula-based multilateral tariff reductions that have applied larger percentage cuts for high tariffs, which are the most distortionary.

Two more indicators complete the anatomy of products in these lists: (i) the number of 'nuisance tariffs' defined as tariffs of less than 3%; (ii) the number of 'exchange tariffs' defined as tariffs above 10%, a threshold for an economically worthwhile bargain (counting tariff peaks when the average tariff is across the sample is 1.2% is not informative). Figure 3 reports the results of this count for the EPP and WTO lists (the APEC list is omitted for lack of tariffs for 'exchange'). With the combination of a high number of nuisance tariffs and very few tariff peaks, only crumbs made it to the negotiating table.

The count of nuisance tariffs for the WTO list (figure 3a) shows that, except for China and Korea, all countries have over 50% in the 'nuisance' range, and 10 more have almost all their tariffs in the nuisance range. By this criterion, only China, and to a lesser extent Costa Rica, have economically meaningful concessions to offer. Interestingly, the pattern is quite similar for the EPP list even though Korea and the United States could find it worthwhile to enter into an exchange of market access with China.

One interpretation of these low tariff averages and few high peaks is that negotiators have again been successful in their mercantilist tactics: making up lists as a political exercise in which countries select goods in which they have particular interests and others agree in return for their own suggestions being accepted. Occasionally, as in the case of bicycles, there is a clash and the good does not make it onto the collective list. A second is to remark that the foundations for a successful negotiation were not laid down: given the stalemate in the Doha Round negotiations, countries should have requested from negotiators a statement of purpose of the EGA.

Figure 3: Count of Nuisance (<3%) and Exchange (>10%) Tariffs by EG list

Figure 3a: WTO (376 HS-1992) list

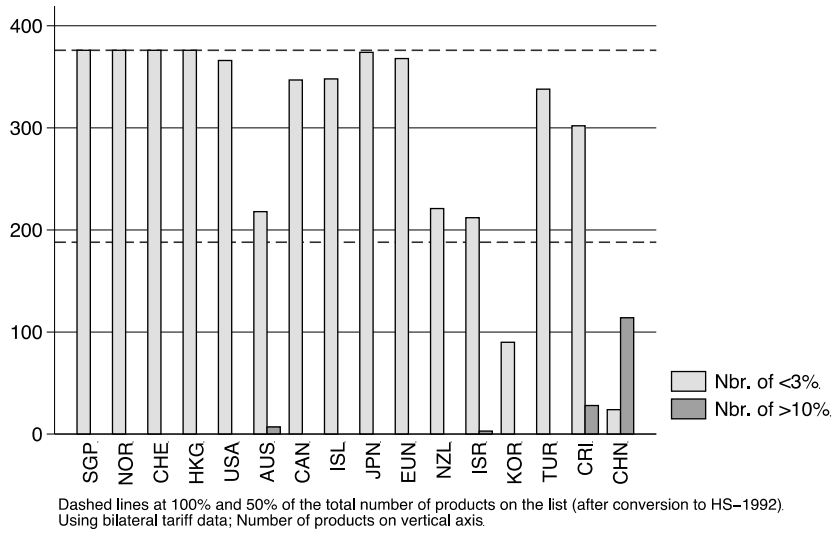
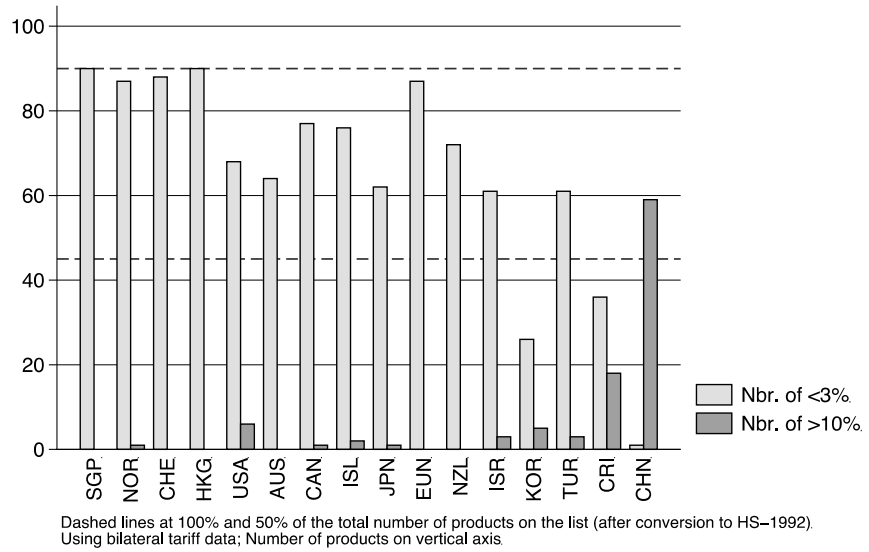


Figure 3b: EPP list (90 HS-1992)



Source: Authors' from WITS data
* Notes: Applied bilateral tariffs. Total number of products on vertical axis. Dashed lines at 100% and 50% of the total number of products on the list after conversion to HS-1992.

Then negotiators should have been instructed to entrust the choice of approach to a committee of experts (more on this below).[7] A third is to look into the patterns of comparative advantage in EGs as an explanation of the non-participation by developing countries.

The non-participation by developing countries

Countries participate in negotiations when they anticipate benefits. Three reasons contribute towards explaining their non-participation.

First, since the announcement by the 14 countries to start the EGA negotiations from the APEC list, developing countries knew from the stalemate in the Doha Round that not much market access for their products could be expected even if the APEC list were to be expanded to cover products on the WTO list.[8]

A second reason could be the loss of tariff revenues in situations wherein trade taxes are a non-negligible source of government revenue and they experience a large increase in imports. Using HS6-level price import demand elasticities, Melo and Solleder (2020b, table 3) estimate that a removal of tariffs for the EG and EPP lists would increase imports of low-income countries on average by, respectively, 15% and 12%. The corresponding estimates for high-income countries are 1% and 2%. A third reason is the small demand for EGs in these economies. This is because the demand for environmental quality, and hence for EGs rises with per capita income.[9] Low-income countries having few environmental regulations, their markets for EGs will de facto be small. Relatedly, economies with large home markets produce a greater variety of products. The price indexes for these products is then lower so countries with large markets should be low-cost producers of EGs and hence, have a comparative advantage

[7] Among others, the committee of experts would have considered adopting a living list with criteria for listing and delisting goods. Controversial proposals could then be decided by a 2/3 majority as under the Convention on International Trade in Endangered Species (CITES). See Cosbey (2015) for further discussion and the difficulties of dealing with delisting.

[8] Average MFN tariffs among EGA countries are 1.3% for APEC list and 2.2% for WTO list.

[9] Barbier et al. (2017) give evidence that the income elasticity of willingness to pay for eutrophication in the Baltic sea increases with income.

in these products (a distribution of indices of product complexity shows that EGs are more complex than other manufactures).[10]

Third, developing countries have been disappointed with the Technology Mechanism established in 2010 (as an application of article 4.5 of the UNFCCC adopted in 1992 that called for engagement by developed countries to transfer technology to developing countries). The Technology Mechanism was a key condition imposed by developing countries to agree to the breakdown of the firewall between Annex 1 and non-Annex 1 countries established at the Kyoto Protocol. This breakdown amounted to an engagement by developing countries to submit Intended Nationally Determined Contributions. Technology transfer in the broad sense (including hardware, software and 'orgware') is to develop credible mechanisms to allow developing countries to catch up technologically. Only then would developing countries be able to develop a strategy for participating in the value chains for renewable energy, electric vehicles, CO_2 capture installations and other environmental goods. Mastery of technology would allow developing countries to become suppliers and develop a comparative advantage as China has managed to do so for solar PV. However, adoption of the Technology Mechanism was not accompanied by a commitment for funding, nor by financial transfers (Coninck and Bhasin, 2015).

In conclusion, along with China, Costa Rica was the only developing country that participated in the EGA. Unlike China, Costa Rica's comparative advantage is for a narrow range of goods for both EGs and non-EGs so participation was not guided by the objective of getting market access for its exports. Rather, participation was part of Costa Rica's commitment to put the economy on a green industrialization track, an explanation corroborated by Costa Rica's participation in the ACCTS. At the COP21, unlike most signatories, Costa Rica selected an absolute CO_2 reduction target. By 2015, only 1.05% of its electricity was generated using fossil fuels (Araya 2016, p. 14)). Also, Climate Tracker (2015) selected Costa Rica among the four countries with a satisfactory target in relation to the Paris Agreement objectives.

[10] A comparison of the distribution of an index of product complexity for EGs and non-EGs shows greater complexity for EGs (see Melo and Solleder (2017, figure 1)).

5. Moving on towards a meaningful EGAST

For an EGAST to deliver meaningful benefits to participants (beyond building trust via an elimination of nuisance tariffs) at the very least, high-tariff goods must be included in the EG list. This will require entrusting negotiations to experts. The agenda should also include NTBs.

Include high energy-efficiency EGs and high-tariff products on the EG List

Fortunately, regular updates of the HS nomenclature (now HS-2017 soon to be HS2022) make it easier to add products to EG lists because several products can now be easily distinguished in terms of their energy performance. Composite LED light bulbs (but not the individual light-emitting diodes) are now distinguished from incandescent light bulbs. Three categories of automobiles are now included in the HS.[11] Inclusion of the LED category makes it easier for the many countries that have already banned the import of incandescent light fixtures (LEDs emit about 30% less CO_2 per watt than incandescent light fixtures). For automobiles, the reduction in emissions from plug-in hybrids and all-electric cars will depend on the source fuels used to generate the electricity that recharges their batteries. In the case of automobiles, economies of scale and the network infrastructure for recharging or replacing batteries is compatible with old combustion engines and the inherited stock of cars; it is even more the case for LED lamps as replacements for incandescent light bulbs.[12] The network characteristic for recharging batteries will also make it easier to eventually exclude low-cost non-compliers from benefits as was the case with MARPOL as non-compliers were excluded from major ports.

[11] Two examples of the new HS are separate HS-6 digit sub-headings for (a) LED lamps (HS 8539.90) and (b) hybrid-electric, plug-in hybrid-electric, and all-electric vehicles. The previous category of other vehicles (8703.90) has been replaced by the following sub-categories: (8703.40) non-diesel hybrid-electric vehicles not capable of being charged by plugging into an external source of electric power; (8703.50) diesel hybrid-electric vehicles not capable of being charged by plugging into an external source of electric power; (8703.60) non-diesel plug-in hybrid-electric vehicles; (8703.70) diesel plug-in hybrid-electric vehicles; and (8703.80) other vehicles, with only electric motor for propulsion.

[12] Average applied tariffs on automobiles in EGA countries range from 0% in Singapore, Norway, Japan, Hong Kong, and Iceland to 24.7% in Chinese Taipei.

Encouragingly, a number of new entries in HS2022 will help identify EGs. For example, with the revised HS2022, a group of countries could apply zero tariffs on heavy-duty freight trucks that are electric/solar powered and positive tariffs on ("other") diesel-powered trucks.[13] A revision of the (or rather a construction of a new) HS for negotiations on EGs would be required to move towards a meaningful EGAST.[14]

Next, creating new HS6 codes at the WCO (HS codes are modified once every five years) would open the way for negotiated zero tariffs reductions for the most efficient category. This will help negotiators sharpen their criteria when drawing EG lists. [15] However, because technical progress will result in new products, procedures for a living list to add and take off products from the list would have to be agreed upon among members. This would be beyond the regular updates in the HS. Tariff reductions would then only apply for the most energy efficient category. Ideally, perhaps under the leadership of an EGAST agreement like the one under negotiation at the ACCTS, WTO law would be modified to allow imposing tariffs on the least efficient category, not presently possible under the GATT which precludes raising bound tariffs once lowered or eliminated.[16]

Inclusion of high-tariff goods on the EG list is also important. In the absence of an environmental externality, the efficiency benefits from tariff reductions increase more than proportionately with the height of the tariff, hence it is desirable to include high-tariff goods on an EG list.[17] If producing and using the good generates a smaller negative environmental externality than the good it replaces, a tariff reduction on that

[13] The International Electrotechnical Commission (IEC) has published a standard of efficiency for electric motors with three levels of efficiency that has been adopted by many countries. This standard could enter into a MEPs agreed by EGA members; see Sugathan (2016). Steenblik (2020) notes that the new HS2022 revision has introduced several new categories of electric vehicles including "road tractors for semi-trailors" that account for up to 40% of carbon emissions from vehicles.

[14] See Steenblik (2006) and Balineau and Melo (2013). Steenblik discusses challenges in improving HS descriptors through the extension to 'ex-outs' that would have to be harmonized across countries.

[15] Steenblik (2020) give several examples (e.g. catalytic convertes in autos or solar heaters (HS 8419.19) vs. other heaters (HS 84919-19)

[16] See the discussion in Mavroidis and Melo (2015).

[17] All formulas for across-the-board reduction in tariffs propose deeper cuts for high-tariff goods. The concertina method, which tackles high-tariff goods first, guarantees an improvement in welfare.

EG will confer an extra welfare gain as a result of reducing the externality.[18] To that end, the best approach would be to use a negative list, taking the entire HS as point of departure. Then high-tariff goods would be included.[19]

Entrust an independent Committee of Experts

The behaviour of negotiators during the past fifteen years strongly suggests that they will be unable to cooperate to put up an ambitious list. Then a first step is to devolve the function of setting up a list to an independent scientific body, as has been the case in other environmental treaties. Such a body would also be necessary to revise goods on the EG list.[20]

At best, negotiators represent the interests of producers and, rarely, of consumers. Mercantilist behaviour prevailed under the Doha and EGA negotiations. To overcome this situation, Cosbey (2015) argued that negotiators should have started with a statement of purpose clarifying the "objective" of the EGA. Clarifying the purpose in a preamble or stating the purpose in the Articles of the Agreement could have been followed by the nomination of a commission of experts that would have been instructed to define EGs by some criterion to avoid the repetition of disagreements over the lists encountered during the Doha Round and EGA negotiations. However, if past nominations of commissions of experts is a guideline, commissions of experts are likely to be, once more, populated by negotiators.[21]

[18] The principles of the theory of second-best call for eliminating the externality at source – that is, at the point of production or consumption.

[19] Bilateral exchange through the request-offer approach focussing on high-tariff goods, the norm under the GATT, requires that should be sufficiently high, perhaps 10% or more. This would require a larger list, perhaps starting from an aggregation of the WTO and EPP lists. Perhaps the request-offer could be successful with a smaller number of participants under an EGAST but it would then be unlikely that there would be enough tariffs in that higher range

[20] Cosbey (2015) gives examples of environmental treaties in which decisions are made with the help of scientific committees and majority voting procedures. Amendments to CITES are from criteria on decline of population and the Stockholm Convention of list.

[21] Coninck and Bhasin (2015) attribute the disappointing performance of the Technology Mechanism to a lack of resources and to the setting up of a policy arm (the 'Technology Expert Committee') made up in majority of '… climate negotiators which hampers practical discussions and replicates the same deadlocks and differences that can be observed in the climate negotiations' (p. 457).

Include non-tariff barriers (NTBs)

Because applied MFN tariffs are generally low among EGAST countries, NTBs are viewed as the most important barriers to trade in EGs. NTBs are difficult to select from the large number of non-tariff measures (NTMs) that have been growing rapidly in number and in complexity as they often serve multiple purposes. NTMs fall under two categories: (i) those that give information on the characteristics of the product that are precautionary in their intent; and (ii) those that are protectionist in intent and referred to as NTBs. NTBs include contingent-protection measures, local-content requirements, anti-dumping duties (e.g., against solar photovoltaic cells and modules), and weak intellectual property regimes.[22]

Melo and Solleder (2020, table 2), select NTMs that are likely to be NTBs. Assuming that the count estimates of NTMs represent NTBs, using estimates of the AVEs of NTBs, they estimate that NTBS represent an efficiency cost that is a multiple of those associated with tariffs. [23]. These estimates are, at best, orders of magnitude because they do not take into account that NTMs also have informational content that help address market failures. For example, Minimum Energy Performance Standards (MEPS) and labelling, mandatory and voluntary, help inform buyers and can reduce environmental damage. These MEPS vary greatly across countries which imposes costs associated with conformity assessments. In a comparison of emissions of GHGs across Regional Trade Agreements (RTAs) with and without environmental provisions, Bhagdadi et al. (2013) estimate that emissions of GHGs per capita are lower and converge only for RTAs with environmental provisions. This suggests that some form of regulatory convergence among EGA members could also be expected to improve environmental outcomes.

Regulatory convergence is also associated with increased bilateral trade at a disaggregated HS6 level. Melo and Solleder (2020a) estimate a gravity model of bilateral trade for the WTO and EPP lists for 2014 on a sample of 51 countries. For all

[22] Local content and contingent-protection measures were perceived by respondents as barriers to trade in a sample of 136 firms exporting EGs from 10 high-income countries. See Fliess and Kim (2008).

[23] Melo and Vijil (2016) estimate that the average uniform protection from NTBs when combined with tariffs is 4 (APEC list) to 10 times (WTO list) greater than the average uniform protection from tariffs alone

estimations, after controlling for the standard determinants of bilateral trade (distance, common language, etc.), their estimates suggest that a reduction in tariffs is associated with an increase bilateral trade. These estimates also show that, controlling for tariffs, an increase in regulatory overlap following from regulatory harmonization is associated with an increase bilateral trade.

Negotiations should not struggle on eliminating difficult-to-identify NTBs in the NTM data bases. Rather, regulatory recognition/harmonization would be the more promising approach. Mutual Recognition Agreements (MRAs) are encouraged under article 6.1 of the TBT agreement which obliges WTO members to use "relevant international standards" for both technical regulations (article 2.4) and Conformity Assessment (CA) measures (article 5.4). Sugathan (2016) documents the costs imposed by lengthy Conformity Assessment (CA) procedures. He suggests that cooperation among EGA members could lead to a plurilateral MRA on CA procedures. This would reduce trade costs. Cooperation could extend from a simple exchange of information to recognition of mutual equivalence as is the case in the EU Services Directive mentioned below.

Agreement on common labelling, a domestic measure, could also be a first-step objective for an EGAST. Obtaining cooperation would be easier in a small-group setting. Indeed, the ACCTS countries are addressing labelling in their negotiations. Take industrial electric motors as example. Adopting the same MEPs for electric motors through labelling, would be an example of regulatory convergence.

Furthermore, under current WTO law, labelling falls under the Technical Barriers to Trade (TBT) agreement where 'likeness' is not adjudicated by reference to the HS but by consumers. So, in case of a complaint by a WTO member that is not part of the EGAST that the labelling is unnecessary and discriminatory, so far WTO case law has ruled that it is up to the consumer to decide if the labelling, which has to be non-discriminatory, is necessary. A move towards a 'WTO 2.0' is necessary for labelling. It is also necessary to prevent collision between the trade and environment regimes (Mavroidis and Melo, 2015).

6. Final thoughts

Notwithstanding the Montreal Protocol and its amendments to protect the ozone layer by reducing emissions of HFCs and HCFCs, the EGA, and now the ACCTS, are the only attempts at mitigating climate change using trade measures. However, under the current agenda concentrating on tariff reductions, a successful EGA-type that only lowered tariffs on EGs, rather than by using tariffs to prevent leakage or to deter free-riding, would make only a modest contribution to reducing emission. The approach we are proposing here, which would require changes in the GATT, would have the potential to reduce GHG emissions significantly, especially so for the energy sector.[24]

The top-down approach in the Kyoto Protocol failed. Lessons were drawn and greater progress is expected with the bottom-up approach in the Paris Climate Agreement. When the EGA negotiations were launched, few lessons were learnt from the stalemate at the Doha Round negotiations to eliminate tariffs on EGs. Instead, members thought that the modest accomplishments of the APEC agreement on environmental goods provided sufficient momentum for this plurilateral approach at the WTO to deliver success with a list approach as it had under the ITA and APEC. While negotiations were on a voluntary basis as in the case of APEC, implementation of any agreement would have been mandatory. Entrenched interests were far more visible during the EGA negotiations than when the ITA was concluded in 1996 over what were then new products. In conclusion, mercantilist behaviour prevailed throughout the EGA discussions, as negotiators opposed including products with high tariffs in their submission lists. More generally, EPP goods where comparative advantage resided in non-participating developing countries were rarely present in the submission lists.

Moving on towards an 'EGAST' (EGA-STyle) agreement could take inspiration from the ACCTS negotiations in a small-group setting where the agenda is more ambitious than at the EGA. First, participating countries would eliminate 'nuisance tariffs' (those with an ad valorem equivalent of 3% or less). Eliminating EGs with high tariffs (10%

[24] The international Energy Agency (IEA) projects that until 2050, improvements in Energy Efficieny (EE) alone is to account for 38 percent of cumulative reduction emissions required to limit warming to +2° C. with the rest made up by renewables deployment (30 percent), carbon capture and storage (CCS) (14 percent) and fuel-switching and nuclear energy (18 percent) (Sugathan (2015, figure 1)). Clean energy figures among the Nationally Determined Contributions (NDCs) of 108 signatories of the Paris climate accord with 75 countries also specifying targets for the share of clean energy.

or greater) would also be necessary for minimal EGAST. Extension of lists to include high-tariff EGs would, however require agreement. This is unlikely among negotiators that typically represent producer interests rather than those of the polity at large. Entrusting discussions to an independent scientific body is, however, beyond the institutional character of the current WTO. And for the environment, the agenda would need to be extended to include NTBs (and barriers to trade in environmental services not covered here), which are complementary to trade in EGs and have not yet been liberalized under the GATS. Such a deeper engagement would be the acid test that would show that the WTO can help build the cooperation that will be needed to fulfil the SDA.

A sectoral approach taking into account the political economy of the sector (what Cullenward and Victor (2021) call an extensive toolkit for compensation) would also be a way to devise workable climate policies. For example, climate policy like a carbon tax would be more promising in the electricity sector than in the transport sector. This shift to a sector/ climate club approach, combining trade and the necessary accompanying domestic policies would appear promising but would require an overhaul of WTO rules.

It remains that even with an EGAST agenda, the trade and climate regimes would still need further alignment. Recall that, to obtain participation, the framers of the GATT left the selection of domestic policies, including environmental policies, to the discretion of members so long as they were applied in non-discriminatory terms. The result was a 'negative contract' that has not yet evolved under the WTO. A total recall— call it WTO 2.0 — is needed to address the growing transnational externalities. Under this 'positive contract', members would protect and preserve public goods with the WTO mandated by members to play a more active role in protecting public goods. Entrusting decisions— or at least giving greater weight to — independent scientific advisory bodies, perhaps through decisions by majority, would be an integral part of this new WTO and perhaps the first step in a shift towards comprehensive regime-governing efforts to bring closer the current Environment and Trade regimes.

References

Abman, R., C. Lundberg, M. Ruta (2021) "The Effectiveness of Environmental Provisions in Regional Trade Agreements", mimeo.

Anderson, J. I. Borchert, A. Mattoo and Y. Yotov (2017), "Dark Costs, Missing Data: Shedding Some Light on Services Trade", WBSP #7465, World Bank, Washington, D.C.

Araya, M (2016), 'The Relevance of the Environmental Goods Agreement in Advancing the Paris Agreement and SDGs: A Focus on Clean Energy and Costa Rica's Experience', Geneva, Switzerland: International Centre for Trade and Sustainable Development.

Bacchus, James (2018), 'Triggering the Trade Transition: The G20's Role in Reconciling Rules for Trade and Climate Change', Geneva, Switzerland: International Centre for Trade and Sustainable Development.

Baldwin, R. (2010), "Understanding the GATT's Wins and the WTO's Woes", Policy Insight paper #49, CEPR, London.

Balineau, G. and J. de Melo (2013), 'Removing Barriers to Trade on Environmental Goods: An Appraisal', *World Trade Review*, 12, pp. 693-718.

Barbier, E. , M. Czajkowski and N. Hanley (2017), "Is the Income Elasticity of Demand to Pay for Pollution Control Constant", *Environment and Resource Economics*, 68, 663-82.

Barrett, S. (1999), "Montreal vs. Kyoto: International Cooperation and the Global Environment", in I. Kaul, I. Grunberg, and M. Stern (eds.), Global Public Goods: International Public Goods in the 21st. Century, Oxford University Press, page numbers?

Barrett, S. (2011), "Rethinking Climate Governance", *The World Economy*, 34(11), 1863-82

Barrett, S., C. Carraro, and J. de Melo (eds.) (2015), *Towards a Workable and Effective Climate Regime*. CEPR e-book, https://voxeu.org/sites/default/files/image/FromMay2014/Climate%20change%20book%20for%20web.pdf

Baghdadi L., Martinez-Zarzoso I., and Zitouna H., (2013), 'Are RTA agreements with environmental provisions reducing emissions?', *Journal of International Economics* 90:378–390.

Brainard, L. and I. Sorkin, eds. (2009) "Climate Change and Competitiveness: Is a Collision Inevitable?", *Brookings Trade Forum 2008/2009*

Bucher, H., J. Drake-Brockman, A. Kasterine and M. Sugathan (2014), 'Trade in Environmental Goods and Services: Opportunities and Challenges', Geneva, Switzerland: International Trade Centre.

Coninck, H. de and S. Bhasin (2015), "Meaningful Development and Transfer: A Necessary Condition for a Viable Climate Regime", chp. 31 in Barrett et al. (eds.) (2015).

Cosbey, A. (2014), 'The Green Goods Agreement: Neither Green nor Good?', Winnipeg: International Institute for Ssustainable Development.

Cosbey, A. (2015), 'Breathing Life into the List: Practical Suggestions for the Negotiators of the Environmental Goods Agreement', Bonn? Berlin? Ottawa? Washington?: Friedrich Eibert Stiftung.

Cosbey, A., S. Aguilar, M. Ashton, S. Ponte (2010), 'Environmental Goods and Services Negotiations at the WTO: Lessons from the multilateral environmental agreements and ecolabels for breaking the impasse', Winnipeg: International Institute for Ssustainable Development.

Cullenward, D, and D. Victor (2021) *Making Climate Policy Work*, Wiley

Davos (2014) "Joint Statement regarding trade in environmental Goods", http://trade.ec.europa.eu/doclib/docs/2014/january/tradoc_152095.pdf

Egger, Peter and Shingal, Anirudh, 2017. Granting preferential market access in services sequentially versus jointly with goods. World Economy 40(12): 2901-2936.

Esty, D. (1994), *Greening the GATT: Trade, Environment, and the Future*. Washington, DC: Peterson Institute for International Economics.

Fischer, C. (2015), 'Options for Avoiding Carbon Leakage', chp. 21 in Barrett et al. eds.

Fliess, B. and J. Kim (2008), "Non-tariff Barriers Facing Trade in Environmental Goods and Associated Services", *Journal of World Trade*, 42(3), 535-62

Helble, M. and B. Shepherd (eds.) (2017), *Win-Win: How International Trade Can Help Meet the Sustainable Development Goals*. Tokyo: Asian Development Bank Institute.

Hoda, A. (2002), *Tariff Negotiations and Renegotiations under the GATT and WTO: Procedures and Practices*, Cambridge: Cambridge University Press.

Hoekman, B. (2013) "Sustaining Multilateral Trade Cooperation in a Multipolar World Economy", Robert Schuman Centre for Advanced Studies, WP2013/86.

Kee, H. , A. Nicita, and M. Olarreaga (2008) "Import Demand Elasticities and Trade Distortions", *The Review of Economics and Statistics,* pages?

Kee, H. , A. Nicita, and M. Olarreaga (2009), "Estimating Trade Restrictiveness Indices", *Economic Journal*, 90(4), 666-82.

Kellenberg, D., and A. Levinson (2014) "Waste of Effort? International Environmental Agreements", *Journal of the Association of Environmental and Resource Economists*, vol.1/2, pp. 135-169

Keohane, R. and D. Victor (2010), "The Regime Complex for Climate Change" DP 10-33, Belfer Center, Harvard

Mahlstein, K. and C. McDaniel (2017), 'The Environmental Goods Agreement: How would US households fare', ICSTD https://www.ictsd.org/sites/default/files/research/the_ega_-_how_would_us_households_fare.pdf

Mavroidis, P. and J. de Melo (2015), 'Climate Change Policies and the WTO: Greening the GATT Revisited', in S. Barrett et al. eds. https://voxeu.org/sites/default/files/file/mavroidi%20and%20de%20melo.pdf

Melo, J. de (2020) « Negotiations for an Agreement on Climate Change, Trade and sustainability (ACCTS) : An Opportunity for Collective Action » https://www.tradeeconomics.com/wp-content/uploads/2020/04/JDM-ACCTS-2.pdf

Melo, J. de and M. Vijil (2014) “The Relaunching of Negotiations on Environmental Goods: Any Breakthrough in Sight” https://voxeu.org/article/relaunching-negotiations-environmental-goods

Melo, J. de and M. Vijil (2016), ‘The Critical Mass Approach to Achieve a Deal on Green Goods and Services: What is on the Table? How Much Should One Expect?’, *Environment and Development Economics*, 21(3), pp. 393–414.

Melo, J. de and A. Nicita (2018) “Non-tariff Measures: Data and Quantitative Tools of analysis”, WP#218, FERDI.

Melo, J. de and J.M Solleder (2019) “The role of an Environmental Goods Agreement in the quest to improve the regime complex for Climate Change” https://cadmus.eui.eu/bitstream/handle/1814/63811/RSCAS_2019_55.pdf?sequence=4

Melo, J. de and J.M Solleder (2020a) ‘Barriers to Trade in Environmental Goods? How Important they are and what should developing countries expect from their removal*, World Development*, 130.

Melo, J. de and J.M Solleder (2020b) “The EGA Negotiations: why they are important, why they are stalled, and challenges ahead”, *Journal of World Trade*, 54(3), 333-47

Messerlin, P. (2013) “The Quest for an Efficient Instrument in Services Negotiations” in S. Evenett and A. Jara eds. Building on Bali: A Workprogram for the WTO, A VoxEU.org book

Messerlin, P. (2017) “From MDGs to SDGs: The Role of Trade”, in M. Helbe and B. Shepherd eds. *Win-Win: How International Trade Can Help Meet the Sustainable Development Goals*, Asia Development Bank

Morin, JF, A. Dür and L. Lechner (2018), "Mapping the trade and environment nexus: Insights from a new dataset", *Global Environmental Politics*, vol. 18(1).

Morin, J.-F. and F. Jinnah (2018) “The Untapped Potential of preferential trade agreements for climate governance,”, Environmental Politics

Miroudot, S., J. Sauvage, and B. Shepherd (2013), “Measuring the Costs of International Trade in Services”, *World Trade Review*, 12(4), 719-39.

Nordhaus, W. (2015) “Climate Clubs: Overcoming Free Riding in International Climate Policy”, *American Economic Review*, 105(4), 1339-70.

OECD (2005), “Trade that Benefits the Environment”, *OECD Trade Policy Studies*, Paris: OECD Publishing.

OECD (2014), “Services Trade Restrictiveness Index: Policy Brief” https://www.oecd.org/mcm/MCM-2014-STRI-Policy-Brief.pdf

Prag, A. (2017), “Trade and Climate Change”, Chp. 10 in Helble and Shepherd eds.

Sato, M. (2014) “Product level embodied carbon flows in bilateral trade”, *Ecological Economics*, 105 106-37.

Sauvage, J. and C. Timiliotis (2017), ‘Trade in Services Related to the Environment’, *OECD Trade and Environment Working Paper*, No. 2017/02, Paris: OECD Publishing.

Steenblik, R. (2006) “liberalizing Trade in Environmental Goods”, in *OECD Trade that Benefits the Environment and Development: Opening Markets for Environmental Goods and Services*, OECD Publishing, Paris

Steenblik, R., G. Stubbs and D. Drouet (2016a) Synergies between Trade in Environmental Services and Trade in Environmental Goods” in *OECD Trade that Benefits the Environment and Development: Opening Markets for Environmental Goods and Services*, OECD Publishing, Paris

Steenblik, R., S. Vaughan and P. Waide (2006b) “Can Energy-Efficient electrical Appliances Be Considered “Environmental Goods”?, in *OECD, Environmental and Energy Products: The Benefits of Liberalising Trade*, OECD Publishing, Paris

Steenblik, R. and M. Geloso Grosso (2011) “Trade in Services Related to climate change: An Exploratory Analysis”, *OECD Trade and Environment Working Paper* 2011/03, Paris: OECD.

Steenblik, R. (2020) “Code Shift: The environmental significance of the 2022 amendments to the Harmonized system”, IISD, https://www.iisd.org/publications/code-shift-environmental-significance-2022-amendments-harmonized-system

Sorgho, Zakaria, Mohamed Ramzsi Mhissen and Guy Chapda Nana (2018) 'Trade and Global Warming: Do Environmental Goods (EGs) Matter in Climate Change Mitigation', mimeo.

Sugathan, M. (2015), 'Addressing Energy Efficiency Products in the Environmental Goods Agreement: Issues, Challenges and the Way Forward', *ICSTD Issue Paper*, No. 20, Geneva, Switzerland: International Centre for Trade and Sustainable Development.

Sugathan, M. (2016), 'Mutual Recognition Agreement on Conformity Assessment: A Deliverable on Non-Tariff Measures in the EGA', *Issue Paper*, No. 21, Geneva, Switzerland: International Centre for Trade and Sustainable Development.

Sugathan, M. (2017), 'International Trade Governance and Sustainable Transport: The Expansion of Electric Vehicles', Geneva, Switzerland: International Centre for Trade and Sustainable Development.

Tothova, M. (2006), 'Liberalising Trade in Environmentally Preferable Products', in *Environmental and Energy Products: The Benefits of Liberalising Trade*, OECD Publishing, Paris, pp. 15–71, https://doi.org/10.1787/9789264024823-3-en.

Velders, G., S. Anderson, D. Daniel, D. Fahey and M. McFarland (2007), "The Importance of the Montreal Protocol in Protecting Climate", PNSA, 104. 4814-19.

Victor, D. (2015), 'The Case for Climate Clubs', E15 Initiative, available at: http://e15initiative.org/publications/the-case-for-climate-clubs/

WTO-UNEP(2018) Making Trade Work for the environment, prosperity, and resilience,https://www.wto.org/english/res_e/publications_e/unereport2018_e.htm

Wu, M. (2014), 'Why Developing Countries won't negotiate: The case of the WTO Environmental Goods Agreement', *Trade, Law and Development*, 93,6(1), 94-180.

"Sur quoi la fondera-t-il l'économie du monde qu'il veut gouverner? Sera-ce sur le caprice de chaque particulier? Quelle confusion! Sera-ce sur la justice? Il l'ignore."

Pascal

FERDI

Created in 2003 , the **Fondation pour les études et recherches sur le développement international** aims to promote a fuller understanding of international economic development and the factors that influence it.

Contact
www.ferdi.fr
contact@ferdi.fr
+33 (0)4 73 17 75 30