

Environmental Goods and Services Series



The APEC List of Environmental Goods



An Analysis of the Outcome & Expected Impact

By Rene Vossenaar

ICTSD's Global Platform on Climate Change, Trade and Sustainable Energy



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LIST OF ABBREVIATIONS AND ACRONYMS

APC	Air pollution control
APEC	Asia-Pacific Economic Cooperation
CCS	Carbon capture and storage
CSP	Concentrated solar power
EC	European Community
EG	Environmental goods
EU	European Union
EVSL	Early voluntary sectoral liberalization
FTA	Free-trade agreement
GFR	Gas flaring emission reduction
HS	Harmonized System
LEDs	Light emitting diodes
M/A	Environmental monitoring, analysis and assessment equipment
NAMA	Non-agricultural market access
NTB	Non-tariff barrier
PV	Photovoltaic
RE	Renewable energy
SHW	Solid and hazardous waste
SWH	Solar water heaters
TAO	Tariff Analysis Online
TL	Tariff line
WTO	World Trade Organization
WWM	Waste-water management

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FOREWORD

Environmental goods and services (EGS) as a subset of goods and services was singled out for attention in the negotiating mandate adopted at the Fourth Ministerial Conference of the World Trade Organization (WTO) in November 2001. Increasing access to and use of EGS can yield a number of benefits including reduced air and water-pollution, improved energy and resource-efficiency and facilitation of solid waste disposal. Gradual trade liberalization and carefully-managed market openings in these sectors can also be powerful tools for economic development as they generate economic growth and employment, enable the transfer of valuable skills, technology, and knowhow, all of which are embedded in EGS. In short, well-managed trade liberalization in EGS can facilitate the achievement of sustainable development goals laid out in global mandates such as the Johannesburg Plan of Implementation, the UN Millennium Development Goals and various multilateral environmental agreements. A more recent development that provides significant policy momentum is the 2012 Rio +20 Summit where the declaration document reaffirm the importance of trade as an “engine for development and sustained economic growth”.

While Paragraph 31 (iii) of the Doha mandate calls for a reduction, or as appropriate, elimination of tariffs and non-tariff barriers (NTBs) on EGS, the lack of a universally-accepted definition on EGS has meant that trade delegates at the WTO have struggled over the scope of goods and services that could be taken up for liberalization. On the other hand the Asia-Pacific Economic Cooperation (APEC) economies have moved ahead concluding a first ever trade outcome on environmental goods, when on 9 September 2012, the leaders of the 21 Asia-Pacific Economic Cooperation (APEC) economies meeting in Vladivostok, Russia agreed to voluntarily liberalize tariffs on 54 environmental goods. The Vladivostok Declaration states that applied tariffs will be cut to five percent or less, taking into account economies’ economic circumstances and without prejudice to their positions in the World Trade Organization (WTO). The declaration is politically significant as it is the first time a large group of trading partners have decided to liberalize trade for an agreed list of environmental goods. This of course raises the issue of why APEC economies could make progress whereas the WTO, so far at the time of writing, can not. The same set of issues has hung, like a Damocles sword, over both negotiations particularly the issues of definition and the fact that numerous products could be used for both ‘environmental’ as well as ‘non-environmental’ purposes. One reason why the APEC negotiations succeeded probably was that APEC economies did not attempt to define an ‘environmental good’ rather only agree on a set of 54 broad product categories acceptable to all economies. The other more critical reason for success is the fact that the outcome is legally non-binding and implementation voluntary, yet bolstered by political commitment at the highest level.

This paper highlights important issues and considerations that APEC economies need to keep in mind in order to voluntarily implement and reflect the APEC outcome on EGS within their national tariff lines so as to ensure ‘minimum’ compliance with the APEC mandate. By ‘minimum’ compliance is meant lowering applied tariffs to 5 percent on national tariff lines. These tariff lines will ultimately be selected at the discretion of the APEC economies. However if economies choose to be selective, issues of what may or may not be an environmental good covered by a national tariff line could still be a challenge. There are obviously benefits for the environment and ‘green growth’ that APEC economies could enjoy if they go beyond this ‘minimum’, for instance lowering applied tariffs to zero. The paper however does not examine this and rightly assumes that it is upto every economy to decide how to do so and what tariff lines they may wish to select in accordance with their national priorities and circumstances.

The paper indicates that the overall impact of tariff-cuts is likely to be small given that applied tariffs are mostly quite low or zero, but that there may be significant impacts in some sectors

and some economies. The latter, however, largely depends on what only a few APEC economies will do. This again underscores the need for further building on the APEC initiative by addressing outstanding obstacles to environmental goods that remain, particularly non-tariff barriers in addition to addressing barriers to environmental services and rules that could impede access and affordability. In that regard the APEC outcome may well encourage further momentum at the WTO when the overall 'atmospherics' for a Doha deal improves as well as encourage similar initiatives on environmental goods and services in other trade-settings that may involve non-APEC economies outside the WTO as well.

René Vossenaar formerly worked with UNCTAD as Head of the Trade, Environment and Development Branch. After his retirement in March 2005, he has occasionally worked as an independent consultant. He has prepared several studies for ICTSD on linkages between the deployment of climate-friendly technologies and international trade, in particular on the renewable-energy supply, buildings and transport sector. He also contributed a paper on climate-related single-use environmental goods. Before joining UNCTAD, he worked for the Economic Commission for Latin America and the Caribbean (ECLAC) in Santiago de Chile, Buenos Aires and Brasilia.

The paper is part of a series of issue papers commissioned in the context of ICTSD's Environmental Goods and Services Project, which address a range of cross-cutting, country specific and regional issues of relevance to the current EGS negotiations. The project aims to enhance developing countries' capacity to understand trade and sustainable development issue linkages with respect to EGS and reflect regional perspectives and priorities in regional and multilateral trade negotiations. We hope you will find this paper to be stimulating and informative reading and useful for your work.



Ricardo Meléndez-Ortiz
Chief Executive, ICTSD

EXECUTIVE SUMMARY

In September 2012, Asia-Pacific Economic Cooperation (APEC) Economic Leaders endorsed the APEC List of Environmental Goods. The List had been developed in the course of 2012 following the commitment, adopted in 2011, to reduce, by the end of 2015, applied tariffs to 5 percent or less, taking into account members' economic circumstances, without prejudice to APEC economies' positions in the World Trade Organization (WTO).

The pledge to reduce tariffs is politically important, because it is the first time a large group of trading partners have decided to liberalize trade for an agreed list of environmental goods. But, how significant is it in practice in terms of trade liberalization?

The APEC List contains 54 6-digit sub-headings of the Harmonized System (HS), but in most cases, tariffs will be reduced only for certain 'environmental goods' or 'ex-outs.' It is hard to assess how significant the eventual tariff reductions may be, as it is not yet fully known how individual APEC economies will implement the commitment and how they will define the relevant ex-outs for which they would decide to reduce applied tariffs in terms of their own tariff schedules.

This information note discusses a number of issues that may help to enhance understanding of possible benefits as well as limitations of the APEC tariff pledge. It is hoped that the analysis presented may assist APEC economies in the analysis of their own tariff schedules and in determining the tariff cuts they may need to make. The note follows a two-step approach. It first identifies the incidence of most favoured nation (MFN)-applied tariffs of more than 5 percent, whether or not applied to 'environmental goods,' based on detailed tariff information submitted by APEC economies to the WTO. It then discusses how further analysis can find out whether tariffs of more than 5 percent affect 'environmental goods' as well as practical and conceptual issues that may arise in this process. In carrying out this analysis, it is assumed that APEC economies will seek to cut, to the greatest extent possible, MFN-applied tariffs greater than 5 percent to 5 percent or less. It does not consider possible additional tariff reductions (such as the further reduction of tariffs already at 5 percent or less).

The incidence of MFN-applied tariffs of more than 5 percent in the APEC List

Recent information on applied tariffs for the 54 sub-headings of the APEC List is available for 20 APEC economies (excluding Russia), i.e. 1080 sub-headings. Based on information from the WTO Integrated Database notifications, using the WTO Tariff Download Facility, 234 of these sub-headings have a maximum MFN-applied rate of greater than 5 percent, i.e. at least one tariff line (TL) with an MFN-applied tariff greater than 5 percent. In addition, using the WTO Tariff Analysis Online (TAO) Facility to access TL-level information, it was found that the APEC economies collectively have some 500 TLs with an MFN-applied tariff of more than 5 percent. The possible candidates for tariff reduction are to be found within these sub-headings and for these TLs (but only to the extent that 'environmental goods' are imported under the provisions of national TLs with applied tariffs of more than 5 percent).

Linking MFN-applied tariffs of more than 5 percent and 'environmental goods'

Separating HS sub-headings with a maximum MFN-applied tariff of more than 5 percent is a useful first step to narrow the analysis. However, tariffs of more than 5 percent will be reduced only for certain 'environmental goods' or 'ex-outs.' The more difficult task, to be carried out by individual APEC economies is to assess the extent to which TLs with MFN-applied rates of more than 5 percent include 'environmental goods' and to determine which TLs could be considered candidates for tariff reductions.

It is clearly not the objective of this information note to identify which TLs would have to be selected for tariff reductions as part of the APEC tariff reduction pledge. However, the note discusses some conceptual and practical issues that APEC economies may face in the process of selecting TLs as candidates for possible tariff reductions and in the implementation of possible tariff cuts.

Although a detailed analysis of tariff schedules of APEC economies is beyond the scope of this information note, some TL-level information has been considered for selected products and APEC economies with a view to supporting the analysis. In a number of cases, there appears to be a good correlation between the ex-outs and additional product specifications on the APEC List, on the one hand, and specific TLs in the tariff schedules of individual APEC economies on the other. Some national tariff schedules have certain designated TLs for 'environmental products.' In many cases, however, even at the TL level, 'environmental goods' may be hidden under TLs that also include other unrelated products (these TLs often serve as a 'basket' for all 'other' products under the same HS heading or sub-heading, not designated to more-specific TLs). In many cases, 'environmental goods' may represent only a small portion of all imports under the provisions of a particular TL.

Preliminary conclusions

This preliminary analysis concludes that only a relatively small number of 'environmental products' on the APEC List may benefit from tariff reduction. However, tariff reductions may still be very relevant in a number of cases. The tariff-reduction pledge affects APEC economies differently, as certain APEC economies, such as Korea and China, apply tariffs of more than 5 percent more frequently than others.

Further work on tariffs may be carried out to further enhance understanding of the ex-out/ additional product specification column of the APEC List, for example, by further identifying optional ex-outs in terms of national tariff schedules. Also, certain concepts (e.g. multiple-use and small trade values) may need to be further clarified. In the future, subsidies and non-tariff barriers may also need to be addressed.

Overall, the APEC tariff-reduction pledge is politically significant, because it aims to effectively reduce, within a given period, applied tariff reductions for a multilaterally agreed list of environmental goods. Lessons learned from the APEC approach to liberalizing trade in environmental goods and the experience that will be gathered in the process of working towards achieving the 2015 goal may also provide useful inputs to work on trade in environmental goods and services in other forums, in particular, the WTO.

1. DETAILS OF THE AGREEMENT

1.1 Details of the Agreement

What is the background of the APEC List?

APEC is an economic forum set up with the objective of supporting sustainable economic growth and prosperity in the Asia-Pacific region, including by championing free and open trade and investment.

APEC's activities on environmental goods and services are carried out under its core pillar of trade and investment liberalization and as part of its commitment toward green growth and sustainable development. APEC economies have been working on liberalization of trade in environmental goods for a long time.¹

Since 1993, APEC has held annual APEC Economic Leaders' Meetings. At their 2011 Annual Meeting – in Honolulu, United States (US) – leaders resolved to reduce, by the end of 2015, applied tariff rates on environmental goods to 5 percent or less, taking into account states' economic circumstances, without prejudice to APEC economies' positions in the WTO. Based on a process of consultations that lasted until early September 2012, APEC economies reached consensus on a list of environmental goods. At their 2012 Annual Meeting (Vladivostok, Russia), leaders endorsed the APEC List of Environmental Goods (Annex C to the APEC Economic Leaders' Declaration). These goods are supposed to “directly and positively contribute to green growth and sustainable development objectives.”

The APEC List contains 54 sub-headings of the HS, but in most cases, tariffs will be reduced only for ‘environmental goods’ or ‘ex-outs,’ taking into account additional product specifications listed in Annex C.

APEC decisions are reached by consensus, and commitments are undertaken on a voluntary basis. Therefore, the APEC List of Environmental Goods is not binding and does not prejudice APEC members' positions in the WTO. Also,

APEC members' economic circumstances are to be taken into account. The flexible and voluntary approach to trade liberalization has positively contributed to reaching consensus. The fact that the tariff-reduction target has been welcomed and endorsed by APEC leaders adds momentum to its successful implementation by the end of 2015.

1.2 Level of Ambition

What is the level of ambition of the APEC tariff-reduction commitment?

The APEC tariff-reduction commitment is ambitious, because it aims to effectively reduce, within a given period, MFN-applied tariffs for a multilaterally agreed list of environmental goods. The pledge deals only with tariffs. However, APEC economies are committed to implementing other measures as part of a long-term process aimed at liberalizing trade and promoting green growth. For example, according to the 2011 Leaders' Declaration, APEC economies “will also eliminate non-tariff barriers, including local content requirements that distort environmental goods and services trade.”

Inevitably, the level of ambition of the commitment is limited by the fact that applied tariffs in the APEC region are, in general, not very high in the first place. The overall simple average MFN-applied tariff (excluding Russia) is only 2.6 percent (Table 2).² Even if, as a result of tariff reductions, the simple average MFN-applied tariff for all sub-headings in each APEC economy were cut to no more than 5 percent, the overall simple average would be reduced by only 0.8 percentage points, to 1.8 percent. Five APEC economies do not have any national TL with an applied tariff of 5 percent or more, and some other economies have only very few tariffs of more than 5 percent. Certain APEC economies, in particular, Brunei Darussalam, China and Korea, use tariffs of more than 5 percent more frequently. Also, the real impact of a reduction in MFN-applied

tariffs, as part of the APEC target, is limited, because a large portion of APEC economies' trade already benefits from free-trade agreements (FTAs) or preferential schemes and because some APEC economies have already scheduled tariff reductions for the period up to 2015.

Opinions on what the number (54) of HS sub-headings of the final APEC List would indicate in terms of ambition may differ. Some would have preferred a larger number while others would have preferred a smaller number, but in general, this number is considered significant. Consultations started with about 300 sub-headings, but this number was finally reduced to 54. This reduction does not necessarily express a low level of ambition, but rather may be the result of careful consideration of the pros and cons of including specific sub-headings, taking into account the perceived environmental benefits of particular products and economic factors as well as conceptual and practical difficulties in identifying environmental goods and their links with national tariff schedules. In any case, Annex C lists a large number of optional 'ex-outs,' which seem to provide flexibility to APEC economies to identify, within their own tariff schedules, products with applied tariffs of more than 5 percent for which they would consider tariff reductions in the context of the APEC pledge.

How ambitious is the APEC process, for example, compared with the WTO?

Negotiations on environmental goods have not moved forward in the WTO due, among other things, to differences among WTO members on what goods to liberalize and how to do so (several WTO members argued against a 'list approach' in the first place) as well as disagreements on issues critical to successful closure of the Doha Round as a whole. Also, 'multiple-use' products, which have both environmental as well as non-environmental applications, are usually difficult to deal with, but particularly

in the context of the WTO negotiations. In the WTO, trade liberalization in industrial products was already being addressed under the WTO negotiating group for Non-Agricultural Market Access (NAMA), and many WTO members have argued that there is little or no justification for negotiating deeper cuts based on uncertain environmental benefits.

By way of comparison, in the WTO context a compilation of submissions by WTO members includes slightly over 400 6-digit HS sub-headings, with more than half falling under HS Chapter 84 (machinery and mechanical appliances), Chapter 85 (electrical machinery) and Chapter 90 (precision instruments for monitoring and analysis).³ Many of these products have also been considered in the course of the deliberations among APEC members.⁴

Even when WTO negotiations eventually resume, it remains to be seen how WTO members will be able to narrow the scope of the environmental products to be eventually selected for negotiations. While there may be a certain consensus on a range of products, including, for example, certain climate-related environmental goods, one reason the number of sub-headings submitted by individual members had grown so much was that a number of proposals included large ranges of products with little overlap among them (Gaëlle Balineau and Jaime de Melo, 2011). At some stage, a number of WTO members (Australia; China, Colombia; Hong Kong, Norway and Singapore) proposed a 'core list' of 26 environmental products to help start negotiations, but this approach was not further explored.

One of the most significant differences between the APEC and the WTO processes is that WTO negotiations on environmental goods aim at reducing bound tariff rates in a manner that is legally binding upon members, while the APEC outcome will affect only the MFN-applied tariff rates of APEC economies.

2. SCOPE OF THE APEC LIST

2.1 Environmental Goods and International Trade: Some Concepts

What is meant by the '54 Environmental Goods' on the APEC List?

The 'environmental goods' on the APEC List fall under 54 sub-headings of the HS, a classification system for traded products that is internationally harmonized up to the 6-digit

level. Therefore, the APEC List is sometimes known as the list of '54 Environmental Goods.' This may be confusing, because these sub-headings include more narrowly defined 'environmental goods,' which in most cases represent only part of the sub-headings (known as ex-outs).⁵ Trade figures based on 6-digit HS codes tend to significantly overestimate trade in 'environmental goods' that may benefit from tariff reductions.

Terminology

This note uses the term "sub-heading" to refer to a whole 6-digit HS sub-heading and 'environmental goods' to refer to more narrowly defined 'environmental goods' (or 'ex-outs'), which, in most cases, include only part of an HS sub-heading.

A tariff line (TL) is a product, defined in a national tariff schedule, for tariffs. TLs are not internationally harmonized and may have 8, 10 or more digits. Any tariff reduction will have to be implemented by reducing MFN-applied rates for relevant national TLs.

At the 6-digit level of the HS, product descriptions are, in most cases, too general to exclusively or pre-dominantly capture environmental goods. Consequently, other goods also are included (see box 1). In the APEC List, the term 'ex-out' is used to indicate that only part of a particular sub-heading is considered as an 'environmental good,' in accordance with additional product specifications and remarks provided by APEC economies (and included in Annex C). Only these ex-outs would benefit from tariff reductions.

Certain ex-outs have been clearly described in Annex C. For example, solar water heaters (SWH) have been included as an ex-out of HS 841919 (non-electric water heaters). However, in the case of many sub-headings, for example in the area of environmental monitoring, analysis and assessment equipment, Annex C lists "optional ex-outs," which "may include" a range of products that might be selected for tariff reductions as part of the APEC tariff pledge.

Box 1 HS sub-headings, 'environmental goods' and TLs

Information on tariff rates can (and must) always be found as any product can be imported only under the provisions of a particular item in the tariff schedule of the importing country (among other reasons because an import duty may be levied). In the vast majority of cases, customs authorities will use technical criteria (unrelated to the environment) to determine under the provisions of which TL a product should be imported. Many environmental goods may have to be imported under the provisions of TLs that serve as basket items that cover all products not falling under designated TLs (based on various criteria) of a particular sub-heading.

Box 1. *Continued*

With regard to trade, beyond the few cases where 6-digit HS sub-headings exclusively or predominantly cover ‘environmental goods’ (or where information on trade in environmental products can be drawn from more detailed national statistics) it is very difficult to know what portion of imports, if any, under the provisions of particular 6-digit sub-heading corresponds to ‘environmental goods.’

In a relatively small number of cases a whole 6-digit HS sub-heading could be considered as an ‘environmental good.’ Examples are sub-heading HS 850231 (wind-powered electric generating sets); HS 84042 (condensers for steam or other vapour power units); HS 842121 (filtering or purifying machinery and apparatus for filtering or purifying water) and HS 842139 (filtering or purifying machinery and apparatus for gases). HS 854140 (photosensitive semiconductor devices) could be considered a predominantly ‘environmental good’ even though, apart from solar photovoltaic (PV) devices, it includes light emitting diodes (LEDs).

In other cases ‘environmental goods’ included in the APEC List represent only part of a particular HS sub-heading. For example, HS 847989 (machines and mechanical appliances having individual functions) and HS 903289 (automatic regulating or controlling instruments and apparatus) include not only products with a wide range of environmental applications, but also products used for non-environmental purposes. HS 901380 is by far the most important sub-heading in terms of trade; it has been included because it covers heliostats, but heliostats may represent only a small part of trade. Similarly, SWHs may represent only a small part of trade in HS 841919 (non-electrical water heaters).

The APEC List includes 19 sub-headings consisting of parts (APEC imports were worth USD 75 billion in 2011, i.e. 28 percent of imports of all products on the APEC List (based on COMTRADE). These sub-headings include not only parts of different machines and appliances listed as ‘environmental goods,’ but also parts with wider applications, e.g. appliances covered by broader HS headings or chapters. For example, only a very small part of HS 841990 (parts of machinery, plant and equipment of HS heading 8419) may be used for maintenance and repair of SWHs.

The APEC List comprises some other products that have environmental as well as other applications. For example, the gas turbines of HS 841182 (other gas turbines of a power exceeding 5,000 kW) may be used for electricity generation, e.g. from biogas, but also have a wide range of other applications (e.g. as aircraft turbines).

2.2 Some Environmental Aspects

What are the environmental categories contained in the APEC List?

The APEC List contains environmental goods relevant for various environmental categories, such as renewable energy (RE) generation; environmental monitoring, analysis and assessment equipment (M/A); air pollution control (APC); management of solid and

hazardous waste (SHW) and water treatment and waste-water management (WWM). The list includes both finished products and parts.

The list covers different sources of RE generation, in particular, solar – PV devices, SWH and heliostats, used for concentrated solar power (CSP) – wind turbines and certain key parts (e.g. blades); biomass (e.g. parts for boilers for the production of heat and power on the basis of biomass); and biogas (e.g. gas

turbines for electricity generation from biogas). The list also includes key components for RE generation, such as electricity generating sets and parts for electrical transformers.

In the area of environmental M/A, the APEC List includes goods under 17 sub-headings of HS Chapter 90 (precision instruments for monitoring and analysis). There is a considerable overlap between this area and other environmental areas (in which M/A equipment is employed). In the case of several sub-headings, 'environmental goods' are listed as 'optional ex-outs.' For some other sub-headings, mostly under HS heading 9027 (instruments and apparatus for physical or chemical analysis, etcetera) do not list any

'ex-out.' This may be because there are very few applied rates of more than 5 percent.⁶

Other environmental areas include traditional 'environmental-protection' areas, in particular APC, SHW and WWM. Ex-outs include certain specific goods, such as catalytic converters (APC); filtering and purifying machinery and apparatus for gas (APC); waste incinerators (SHW); and evaporators and dryers for water and waste water treatment (WWM).

Although several sub-headings are relevant for more than one environmental area (Sugathan and Brewer, 2012), Table 1 presents key environmental areas listed (at times somewhat arbitrarily) in a mutually exclusive manner.

Table 1: APEC List of environmental goods: environmental categories

Categories of main environmental protection	Number of sub-headings
Renewable Energy (RE)	15
Environmental Monitoring, Analysis and Assessment Equipment	17
Environmental-protection (principally SHW, WWM and APC)	21
Environmentally Preferable Products (bamboo)	1
Total	54

In practice, environmental goods falling within a particular sub-heading may have more than one environmental application. The allocation of sub-headings to environmental categories may differ slightly from data presented in other papers.

What does the inclusion or exclusion of products mean for the environment?

Some products with environmental benefits that face tariffs of more than 5 percent in certain APEC economies, such as wind-turbine towers (which are part of HS 730820), thermostats (HS 930210) and manostats (HS 930220) had been submitted by APEC economies in the process of consultations, but have not been included in the final APEC List. That raises the question of what the inclusion or exclusion of specific products means for the environment.

This question is very difficult to answer, because environmental implications depend on multiple factors. An analysis of these factors is beyond the scope of this information note. However, two issues are discussed here: (a) under what conditions would inclusion of products in the APEC List contribute to effective reductions in applied tariffs?; and (b) under what conditions

could tariff reductions contribute to the larger deployment of products associated with environmental technologies?

With regard to (a), the possible implications for applied tariffs, the inclusion of products in the APEC List of Environmental Goods certainly increases the chances that high tariffs on such goods may be reduced. APEC members are committed to reduce applied tariffs for such goods to 5 percent or less by the end of 2015. Since the List has been reached by consensus and has been endorsed by APEC leaders, there is a good chance that tariffs for relevant products will be reduced.

However, the inclusion of a product in the APEC List does not imply that tariffs of more than 5 percent applied to 'environmental goods' will almost automatically be reduced. Tariffs are set at the national TL level. Tariff reductions may be easier to implement where national tariff

schedules already include national TLs for the 'environmental good' in question. This is more likely to be the case in highly-disaggregated tariff schedules, such as the 10-digit schedule of Korea. It may be more difficult if trade in products with the characteristics set out in Annex C represent only a small part of all imports under the provisions of an existing TL. This may be the case, for example, in APEC economies that have made less progress in implementing specific environmental policies.

The exclusion of products from the list does not mean that tariffs may not be reduced. Tariff reductions are voluntary, and any APEC economy may cut tariffs as it sees fit. In fact, certain APEC economies have already implemented significant autonomous tariff reductions on environmental grounds. Also, national consultations on the implementation of the APEC List may have trickle-down effects that may contribute to eventual tariff reductions for other products with environmental benefits.

With regard to (b), trade liberalization, including through reductions in import tariffs, may contribute to the wider deployment of environmental technologies in the world by reducing the domestic cost of imported goods associated with these technologies. Larger markets created by trade may also spread the fixed costs of innovation more thinly and reduce the costs of environmental products.

What effect, if any, reductions of MFN-applied tariffs for specific 'environmental goods' may

have on the larger deployment of environmental technologies is difficult to assess. Several factors may play a role, such as:

- The depth of the reduction in the MFN-applied rate, whether or not products are already imported under FTAs or preferential schemes and whether or not tariff reductions are additional to already scheduled reductions for the period up to 2015.
- Whether or not tariff liberalization is implemented in the context of broader policies to promote the deployment of environmental technologies. For example, tariff reductions alone may have little impact on the deployment of renewable-energy technologies if they are not implemented as part of broader policies and strategies that include targets, incentives and regulations.
- The relative impact of tariffs on trade in environmental technologies vis-à-vis non-tariff barriers (NTBs) and subsidies.
- The role of international trade as compared to other variables (e.g. foreign direct investment) in promoting the global deployment of environmental technologies.

The importance of a specific product in environmental applications (including the cost component) as well the extent to which prevailing tariffs raise the overall costs of final environmental end-use.

3. ANALYSING AVAILABLE INFORMATION ON TRADE AND TARIFFS

3.1 Trade Flows

What is the value of APEC's trade in the 54 sub-headings?

The total 2011 international trade of APEC economies in all products under the 54 sub-headings on the APEC List was USD 270 billion in

the case of imports and almost USD 300 billion in the case of exports. These figures represent almost 60 percent of both world exports and imports if intra-European Union (EU) trade is included, or about 70 percent if intra-EU trade is excluded. Intra-APEC trade accounted for about USD 200 billion (Table 2).

Table 2: APEC and world trade in 54 HS sub-headings (the APEC List), 2011 (USD billion)

	Imports from			Exports to		
	World	APEC	Rest of world	World	APEC	Rest of world
APEC	265.5	197.0	68.5	296.4	201.7	94.7
World, excluding intra-EU	391.6	278.3	113.3	415.3	265.1	150.0
World, including intra-EU	468.7	278.3	190.4	504.6	265.1	239.5

Source: COMTRADE using WITS (January 2013)

The value of trade in all products under the 54 sub-headings on the APEC List represented approximately 5 percent of total APEC economies' imports and exports of manufactured products in 2011.

Which sub-headings represent the largest trade flows?

Five sub-headings accounted for about 50 percent of the value of all imports and exports under the provisions of the 54 sub-headings of the APEC List in 2011 (Annex Table 1). HS 901380 (optical devices, appliances and instruments) alone accounted for 20 percent of imports and a quarter of exports under all sub-headings on the APEC List, in value terms. This sub-heading has been included in the APEC List, because it includes heliostats (used in CSP), but trade in heliostats may represent only a very small portion of total trade under the provisions of HS 901380. Interestingly, WTO members had never included heliostats (or any other product of HS 901380) in formal proposals on environmental goods in the context of the WTO negotiations on environmental goods and services. The second-largest sub-heading in terms of trade is HS 854140 (photosensitive semiconductor devices). This sub-heading predominantly includes 'environmental goods'

(solar PV devices). APEC imports (except for imports into Chile) are already completely duty-free.

Who are the major APEC players in trading under the 54 sub-headings?

Looking at the sum of imports and exports under all 54 sub-headings, the five largest traders are, in descending order, China, the US, Japan, Korea and Chinese Taipei (Annex Table 2). These economies are also the top five exporters. In the case of imports, Hong Kong enters among the top five at the expense of Chinese Taipei. Singapore, Mexico, and Canada are the next largest traders in terms of both imports and exports. On the other hand, New Zealand, Chile and Peru are very small traders.

How dynamic is APEC's trade in sub-headings of the APEC List?

When compared to trade in sub-headings for manufactured products in general, trade in sub-headings included in the APEC List as a group has been more dynamic. Between 2002 and 2011, APEC exports in the sub-headings on the APEC List grew by about 19 percent a year as compared with just 12.1 percent for all

manufactured products; imports grew by 16.1 percent compared with 10.5 percent for all manufactured products (Table 3).⁷ The value of APEC imports fell 16 percent in 2009, but in 2011, the value of APEC imports was 30 percent above their previous peak value in 2008.⁸

Trade in RE products has been especially dynamic, with imports growing at an annual rate of 17.7 percent and exports at 24.5 percent.⁹ Part of this dynamism may be

attributed to the fact that a number of products emerged as significantly traded products only after 2002.¹⁰ Most of the dynamism in RE exports can be attributed to HS 901380 (optical devices, appliances and instruments),¹¹ which includes heliostats, and HS 854140 (photosensitive semiconductor devices, largely solar PV panels). It should be noted, however, that only a small portion of trade in products covered by sub-heading HS 901380 may consist of heliostats.

Table 3: APEC: Growth of trade in sub-headings of the APEC List, 2002-2011 (HS02)

	Imports (USD b)		Annual growth (%)	Exports (USD b)		Annual growth (%)
	2002	2011		2002	2011	
APEC List (53 Sub-headings*)	83.7	321.6	16.1	70.5	336.1	19.0
- Of which RE products	29.7	129.0	17.7	24.6	182.4	24.9
- Of which other products	54.1	192.6	15.2	45.8	153.7	14.4
Manufactured products	2404.7	5922.8	10.5	2053.1	5759.8	12.1

Source: COMTRADE using WITS, December 2012.

* Excluding assembled flooring panels, multilayer of bamboo

3.2 Tariff profiles

Where can one find information on applied tariffs in the APEC region?

The WTO Tariff Download Facility has been used to extract data from the WTO Integrated Database notifications for all 54 6-digit HS sub-headings on the APEC List. The most useful information in the context of this information note is on maximum MFN-applied rates. Sub-headings with a maximum MFN-applied rate of more than 5 percent have at least one national TL with an applied tariff of more than 5 percent and may therefore be relevant in the context of the APEC tariff-reduction target. In addition, the WTO TAO Facility has been used to analyze more detailed TL-level tariff information, in

particular for those sub-headings that have a maximum MFN-applied rate of more than 5 percent.

What is the APEC economies' tariff profile for the APEC List?

Table 4 presents a profile of MFN-applied tariffs in APEC economies. To arrive at this profile a dataset was constructed, using the WTO Tariff Download Facility (HS07), comprising tariff information on MFN-applied tariffs for the 54 sub-headings of the APEC List in 20 APEC economies (excluding Russia), i.e. a total of 1080 sub-headings. Since the WTO database provides no information for New Zealand's MFN-applied tariffs for 4 sub-headings, the dataset includes only 1076 sub-headings.

Table 4: APEC list of environmental goods: Tariff profile of APEC economies

Sub-headings in APEC economies (excluding Russia) sorted by maximum MFN-applied tariffs	Number		MFN applied rates at TL level		
	Sub-headings	Tariff lines (TL)	Simple Average	Min	Max
Max applied rates above 5%	234	808	8.4	5.6	35
Max applied rates 5% or less	842	1854	1.0	0	5
- of which duty-free	578	1163			
Total	1076	2662	2.6	0	35
Above 5%	234	808	8.4		
- All national TL above 5%	128	282	9.2	5.6	35
- Some national TL above 5%	106	526	7.4	0	30

Source: based on WTO, using the Tariff Download Facility.

The following conclusions can be drawn from this tariff profile:

- There are 234 sub-headings with a maximum MFN-applied rate of more than 5 percent, indicating that at least one TL has an applied tariff of more than 5 percent. These 234 sub-headings comprise a total of 808 TLs. As shown in Table 5 below, 545 of these TLs have an applied rate of more than 5 percent.
- The majority of APEC tariffs are already quite low. More than three-quarters of all sub-headings (842 out of 1076) have tariffs of 5 percent or less; for more than half of all sub-headings imports are duty-free. These sub-headings will not be affected by the APEC tariff commitment to reduce MFN-applied tariffs to 5 percent or less. (However, APEC members are free to voluntarily reduce tariffs on appropriate TLs, for example, to zero.)
- There are 74 sub-headings that include only TLs with applied tariffs of more than 5 percent. The MFN-applied tariff of any TL may need to be cut to the extent that

‘environmental goods’ are imported under its provisions.

- In 106 cases, subheadings include a range of tariffs, some of which are above and others below the 5 percent threshold. Members may have to verify whether TLs with applied tariffs of more than 5 percent may affect ‘environmental goods’ on the APEC List (a tariff reduction may be needed) or to other products (no action seems to be required).

Table 4 also indicates that the overall simple average of APEC tariffs is only 2.6 percent (See also Annex Table 3).

Which APEC economies have MFN-applied rates of 5 percent or more?

Australia, China, Hong Kong Japan, New Zealand and Singapore do not apply any tariff of over 5 percent. Chile has a uniform MFN-applied tariff of 6 percent for all its imports.¹² The remaining 14 APEC economies (excluding Russia) collectively have 180 sub-headings with maximum applied tariffs of more than 5 percent (Table 5).

Table 5: APEC economies: number of sub-headings with MFN-applied tariffs of more than 5 percent and TLs

	Total			(a) All national tariff lines have tariffs of over 5%		(b) Certain national tariff lines have tariffs over 5%	
	Sub-headings with max applied tariffs above 5%	National tariff lines (TLs)		Sub-headings	Tariff lines	Sub-headings	Tariff lines**
		All TLs	TLs with tariffs above 5% *				
Brunei	38	121	91	13	36	25	85
Canada	4	13	4	1	1	3	12
Chile	54	80	80	54	80	0	0
China	26	70	47	15	29	11	41
Indonesia	8	21	16	5	13	3	8
Korea	44	211	163	22	90	22	121
Malaysia	6	24	10	1	1	5	23
Mexico	19	142	58	2	3	17	139
PNG	1	1	1	1	1	0	0
Peru	2	4	3	1	2	1	2
Philippines	3	6	6	3	6	0	0
Taipei	7	19	11	4	8	3	11
Thailand	14	62	36	4	9	10	53
US	6	26	11	1	1	5	25
Viet Nam	2	8	8	1	2	1	6
Total	234	808	545	128	282	106	526
Total exc. Chile	180	728	465	74	202	106	526

Source: based on WTO, using the Tariff Download Facility and the Tariff Analysis Online Facility.

* Figures shown in this column were obtained using the WTO Tariff Analysis Only Facility. All other figures shown were obtained using the WTO Tariff Download Facility

** Including TLs with MFN-applied tariffs of 5% or less.

Korea has the largest number of sub-headings (44) followed by Brunei Darussalam (38) and China (26).

In all cases, additional information and analysis is needed to find out whether 'environmental

goods' are imported under the provisions of a national TL with an applied rate of 5 percent or more. This is elaborated in one of the following sections.

Korea's applied tariffs

Most products imported into Korea under the provisions of HS Chapter 84 (machinery and mechanical appliances), Chapter 85 (electrical machinery) and Chapter 90 (precision instruments for monitoring and analysis) face an applied rate of 8 percent. Included among them are many products falling under 44 of the 54 HS sub-headings of the APEC List (See also Table 4). Based on COMTRADE, it is estimated that the value of Korea's imports under these 44 sub-items was USD 13.7 billion in 2011 (78 percent of the value of all imports under the 54 sub-headings of the APEC List).

For 22 of these sub-headings (with an import value of USD 4.9 billion), all national TLs have an applied rate of 8 percent. Another 22 sub-headings (with an import value of USD 8.8 billion) have maximum applied rates of 8 percent, but also include TLs with tariffs of 5 percent or less. In most cases, however, the latter have been created to grant tariff preferences (e.g. for semiconductor manufacturing, automatic data machines and telecommunication apparatus, or aircraft); any product imported for other purposes, including 'environmental goods,' would face the 8 percent applied tariff. This appears to be the case of 17 sub-headings, with a total import value of USD 7.8 billion (including imports under the provisions of TLs with lower applied rates, e.g. for semiconductor manufacturing).

The remaining 5 sub-headings with a range of TLs, both below and above 5 percent tariffs (with an import value of USD 1 billion), include HS 902780 (instruments and apparatus for physical or chemical analysis) and HS 902790 (parts). Both have a relatively large number of TLs for products that may have quite different characteristics.

The remaining 10 sub-headings (accounting for USD 3.9 billion of imports) are entirely duty-free: HS 854140 (photo-sensitive semiconductor devices) HS 847420 (crushing or grinding machines), 850164 – alternating current (AC) generators of an output exceeding 750kVA – and all four sub-headings of HS heading 9026 (instruments and apparatus for measuring or checking the flow, level, pressure or other variables of liquids or gases) and 3 sub-headings of HS heading 9027 (instruments and apparatus for physical or chemical analysis).

The above figures indicate that a significant portion of Korean imports under the provisions of the 54 sub-headings of the APEC List face applied rates of 5 percent (See also Table 5). A significant part of these imports will affect 'environmental goods.'

Source: WTO Tariff Download Facility, COMTRADE and Korean tariff schedule.

Can examples be given of sub-headings with tariffs of more than 5 percent?

As shown in Table 5 above, in the case of 74 sub-headings, all imported products face applied tariffs of more than 5 percent (a full list is presented in Annex Table 4). Key examples include:

- Wind-powered generators (HS 850231) imported into China, Chinese Taipei, Indonesia, Korea, Mexico and Thailand.
- Other generating sets (HS 850239) that may be applied in RE generation imported into the same economies at rates of 8-10 percent.

- Condensers for steam or other vapour power units (HS 840420) imported into Indonesia, Korea, the Philippines and the US.
- Non-electric water heaters (HS 841919), which include SWHs. The applied rate for non-electric water heaters in China is 35 percent and rates for Mexico, Thailand and Viet Nam are all set at 10 percent. In Korea, the applied rate is 8 percent, and in Peru, it is 6 percent. In these economies there seem to be no designated TLs for SWH.
- Alternating Current (AC) generators of an output exceeding 750 kilovolt-ampere (kVA) (HS 850164), which have applications in RE generation, imported into China, Chinese Taipei and Indonesia.

Which TLs with MFN-applied rates of more than 5 percent cover ‘environmental goods’?

APEC economies may have to find out whether ‘environmental goods’ or ‘ex-outs’ are imported under the provisions of a national TL with an applied rate of 5 percent or more. This may be where there is a good correlation between the APEC List and national tariff schedules.

Sometimes a more time-consuming analysis may go into finding out the need for any tariff reduction when APEC members apply a range of tariffs to different TLs for a same sub-heading, some above and others equal to or below the 5 percent threshold (see Tables 4 and 5). In most cases, this may be relatively easy to do with the help of national tariff schedules, the expertise of customs authorities, previous tariff rulings and the like. For example:

- Korea applies 0-8 percent tariffs to both HS 842129 (filtering or purifying machinery and apparatus for liquids) and HS 842139 (filtering or purifying machinery and apparatus for gases). Within these sub-headings Korea has designated TLs for the treatment of harmful waste water and for the treatment of exhaust gas, including their parts, both with a tariff of 8 percent. As these are clearly ‘environmental goods,’ tariffs for these TLs would have to be reduced to 5 percent (imports are already duty-free if imported for the purpose of semiconductor manufacturing, under designated TLs).
- The US applies 0-6.6 percent tariffs to HS 901380 (optical devices, appliances and instruments). This sub-heading is on the APEC List because it includes heliostats. The US does not have a designated national TL for heliostats, which are imported under the provisions of HTSUS code 9013.80.90 (‘other’) at a tariff rate of 4.5 percent. Similarly, China applies 5-12 percent tariffs for this sub-heading, but heliostats are imported under the provisions of a code that serves as a basket for ‘other’ devices, with a tariff rate of 5 percent. Consequently, the two economies already have MFN-applied tariffs of 5 percent or less for heliostats.
- Malaysia applies 0-25 percent tariffs to HS 842129 (filtering or purifying machinery and apparatus for liquids). The 25 percent tariff rate is applied only to machinery used in oil drilling operations (i.e. a non-environmental use). Other TLs are duty-free. In other words, environmental goods are already imported duty-free.
- China applies 3-12 percent tariffs to HS 850300 (parts suitable for use solely or principally with the machines of HS headings 8501 or 8502). China has a designated TL (85030030) for ‘parts of the generating sets of 85023100’, i.e. wind-powered generating sets with an applied rate of 3 percent.¹³ In this respect, China already has tariffs of 5 percent or less for relevant ex-outs of HS 850300. However, China may still wish to verify whether parts of HS 850300 imported under the provisions of other TLs (with rates of 8-12 percent) may include ‘environmental goods.’

In other cases, finding out whether ‘environmental goods’ or ‘ex-outs’ are imported under the provisions of a TL with an MFN-applied tariff of more than 5 percent may be more complex. For example, many ‘environmental goods’ may be hidden under TLs with MFN-applied tariffs of more than 5 percent that also include other

un-related products (such TLs often act as a 'basket' for all 'other' products under the same sub-heading, not designated to specific TLs). Authorities would probably want to know if imports actually include 'environmental goods.'

Those APEC economies that plan to implement tariff reductions have to decide whether they can do that using existing TLs. In some cases, they may wish to create new national TLs with a view to reducing tariffs only for 'environmental goods' or ex-outs, but not for unrelated products under the same existing TL (this may be costly). In order to take an informed decision they would probably like to assess what portion of their (potential) imports under key TLs with tariffs of more than 5 percent corresponds to 'environmental goods.' To which extent meaningful and cost-effective changes in national tariff schedules can be introduced depends, among other factors, of the level of trade in specific products and 'economies' economic circumstances.'

What other issues may emerge in assessing the need for tariff reductions?

Certain conceptual and practical issues may emerge in the process of selecting TLs as candidates for possible tariff reductions in the context of the APEC tariff commitment. For example, the concepts of 'x-outs' and multiple-use products may need to be further clarified. Also, some thought may need to be given to whether or not there would be merit in carrying out detailed work in the case of very small trade flows.

The APEC List contains many sub-headings that include products with different characteristics and/or end-uses, including non-environmental applications. It has been argued that for a product to be considered as an 'environmental good' at least one of a product's applications should contribute to green growth (APEC PSU Policy Brief No 5). APEC economies may be willing to liberalize tariffs for a larger range of products than is strictly necessary to achieve perceived environmental benefits (for example, because they consider that the benefits of tariff reductions may go beyond the

environmental benefits or because they want to avoid creating new TLs for more narrowly defined 'environmental goods'). However, the potential contribution of a tariff reduction to green growth may vary from case to case, for example in function of the level of aggregation of national tariff schedules and the degree of implementation of specific environmental policies. A particular HS sub-heading on the APEC List may include a significant portion of products with 'environmental applications' in one or more particular APEC economies. However, imports under the provisions of the same sub-heading (or comparable TL) into other APEC economies may not necessarily include a significant portion of products with environmental applications.

- HS 841290 (engine and motor parts) has been included in the APEC List, because this sub-heading includes blades that are used as integral parts of wind turbines (in its own tariff schedule, the US has created a specific TL for blades to be used in wind-power applications. US import statistics show that such blades account for a large part of all US imports under the provisions of HS 841290).¹⁴ Chinese Taipei has only one TL for HS 841290, with an applied tariff of 6 percent. Wind-energy capacity has been expanding much less than in the US, and it may well be that in Chinese Taipei engine and motor parts are imported mainly for non-environmental purposes.
- HS 841919 (non-electric instantaneous or storage water heaters) has been included in the APEC List because it includes SWHs. Some APEC economies apply tariffs of well above 5 percent to this sub-heading, but in most cases their tariff schedules do not have designated TLs for SWHs. The US, the world's largest importer of non-electric instantaneous or storage water heaters, with a share of over 50 percent in total world imports (in value terms), has a designated TL for SWHs (imports are duty-free). US imports of SWH account for only a small, although growing, share of all US imports under the sub-heading (6 percent in 2011). Since trade

flows into other APEC economies are very small, it may be difficult to assess whether SWHs account for any significant portion of their total imports under the provisions of HS 841919.

3.3 Trade Incidence of Sub-headings with Maximum Applied Tariffs of More Than 5 Percent

What is the trade incidence of applied tariffs of more than 5 percent?

COMTRADE does not provide information on tariffs and trade at the national TL level and can, therefore, not be used to accurately estimate the value of trade facing tariffs of more than 5 percent.

However, it is estimated that two thirds of total APEC imports under the 54 sub-headings of the APEC List, in value terms, corresponds to sub-headings with maximum applied tariffs of 5 percent or less (i.e. there are no TLs with an applied rate of more than 5 percent). These trade flows are not affected by the APEC tariff-reduction pledge.

COMTRADE data can only be used to accurately estimate the value of imports facing applied tariffs of 5 percent or more, when minimum applied tariffs are above 5 percent, i.e. all

imports under the same sub-heading face tariffs of 5 percent or more. Such sub-headings accounted for USD 19 billion in 2011, representing 7 percent of total APEC economies' imports.¹⁵ TLs with an applied tariff of more than 5 percent can also be found among sub-headings that have a range of applied tariffs, some above and others equal to or below 5 percent. The value of APEC economies' imports under such sub-positions was USD 71 billion in 2011. However, imports under the provisions of TLs with applied rates of more than 5 percent may represent only a small portion, in value terms, of total imports. One sub-heading, HS 901380 (optical devices, appliances and instruments) alone accounted for USD 42 billion, or almost half of all APEC imports under sub-headings with a maximum applied rate of more than 5 percent. Imports into China are worth USD 39 billion. (For this sub-heading, China has MFN-applied tariffs in the range of 5-12 percent, but heliostats are imported under the provisions of a TL with a 5 percent MFN-applied rate).

Based on TL-level tariff and trade data, using the WTO TAO Facility, it is estimated that TLs with MFN-applied tariffs of more than 5 percent accounted for 12 percent, in value terms, of total imports under the provisions of the 54 6-digit HS sub-headings of the APEC List in the period 2010-2011 (Table 5).

Table 6: APEC List: total imports and imports at an MFN-applied rate of over 5 percent, 2010-2011

APEC economy*	Year	All imports	Imports under TLs with an MFN-applied rate of over 5%	Share of Imports under TLs with an MFN-applied rate of over 5% (%)
Australia	2010	10594	0	0.0
Canada	2010	12156	187	1.5
Chile	2010	1038	1038	100.0
China	2011	82509	12194	14.8
Hong Kong	2011	15268	0	0.0
Indonesia	2010	3455	510	14.8
Japan	2010	13010	0	0.0
Korea	2011	17022	12441	73.1
Mexico	2011	14264	608	4.3
New Zealand	2011	647	0	0
Peru	2010	609	3	0.5
Philippines	2010	842	14	1.7
Singapore	2011	10594	0	0
Taipei	2011	8569	178	2.1
Thailand	2010	5005	1602	32.0
United States	2011	47440	717	1.5
Total		243023	29492	12.1

Source: WTO TAO Facility

*Including only economies for which TL-level trade information for either 2011 or 2010 is available in the WTO TAO Facility. Trade data may differ somewhat from those shown in Annex Table 3, which is based on COMTRADE.

4. PRELIMINARY ASSESSMENT AND FUTHER WORK REQUIRED

4.1 Preliminary Assessment

The APEC deal seems politically important, because it is the first multilateral undertaking to liberalize trade on an agreed list of environmental goods. However, it is not yet fully clear how APEC economies will define certain ‘environmental goods’ for which they would agree to reduce applied tariffs in terms of their own tariff schedules.

The majority of APEC tariffs for products on the APEC List are already quite low. Three-quarters of all sub-headings have tariffs of 5 percent or less (for more than half of all sub-headings all imports are duty-free). At the end of the day, only a relatively small number of ‘environmental products’ may benefit from tariff reductions. However, tariffs reductions may still be very relevant in a number of cases.

4.2 Requirements for Further Work

Reaching agreement on a list of environmental goods for which applied rates are to be cut to 5 percent or less has been an important achievement. As mentioned in APEC PSU

Policy Brief No. 5, the challenge is now on APEC member economies “to actualize the 2015 goal.”

APEC economies that apply tariffs of more than 5 percent for certain sub-headings of the APEC List may need to check if these tariffs affect any ‘environmental product’ and, if so, consider a tariff reduction.

These APEC economies may wish to identify relevant TLs with tariffs of more than 5 percent potentially affecting ‘environmental goods’ in their own tariff schedules and assess whether meaningful and cost-effective tariff reductions can be implemented to comply with the APEC tariff commitment.

Further analysis is needed on trade flows, among other reasons to assist APEC to take informed decisions on possible tariff reductions, for example for certain goods that have both environmental and non-environmental applications.

Some conceptual and practical issues therefore still need to be worked out.

ENDNOTES

- 1 For example, in the 1990s they engaged in talks on APEC's Early Voluntary Sectoral Liberalization (EVSL).
- 2 The average tariff is presented for illustrative purposes only. In practice, tariffs are applied only to TLs. The APEC commitment is to cap applied rates at the TL level at 5 percent. The analysis presented in this note focuses on maximum rather than average applied rates for 54 sub-headings. Whereas 234 sub-headings were found with maximum applied tariffs greater than 5 percent, only 199 sub-headings were found with average applied tariffs of more than 5 percent. This is because averaging tariffs for a particular sub-heading may hide high tariffs of more than 5 percent applied to certain TLs.
- 3 The WTO compilation includes many sub-headings in other HS chapters proposed by individual WTO members. In particular, Japan had proposed a large range of motor vehicles that incorporate specific climate-related technologies, such as hybrid, electric vehicles and fuel-cell vehicles, covering practically all categories of motor vehicles of HS Chapter 87. Japan had also proposed a large range of household appliances and automatic data processing equipment, based on energy-efficiency criteria (such criteria, however, do not allow for differentiation among products without additional information and are therefore very difficult to include in negotiations). In addition, Saudi Arabia submitted a very long list (262 6-digit sub-headings) mainly as "carbon-capture and storage technologies (CCS), gas flaring emission reduction (GFR) technologies, and efficient consumption of energy (EC) technologies.", mostly falling under Chapter 29 (Organic chemicals) and Chapter 3 (Plastics and articles thereof). Some 34 of these sub-headings are also included in the APEC List, but may refer to different environmental goods
- 4 In 2007 the "Friends of Environmental Goods (EGs)" group of WTO members submitted a list of environmental goods comprising 153 6-digit HS sub-headings under 12 broad categories. The members of the "Friends of EGs" group include several APEC economies, in particular Canada, Chinese Taipei, Japan, New Zealand, and the US (the other members are the European Community (EC), Norway and Switzerland). The list submitted by the "Friends of EGs" group constituted a basis for submissions by certain APEC members in the context of the APEC tariff-reduction pledge.
- 5 The 'ex-outs' inserted in Annex C seem to be a mixture of:
 - Product specifications listed by APEC economies that themselves apply tariffs of more than 5 percent with a view to limiting the scope of any tariff reduction to only part of a 6-digit HS sub-heading tariff item, in particular 'environmental goods,' but excluding products with non-environmental applications that they may be considered 'sensitive' (i.e. a 'defensive approach'); and
 - Product specifications listed by APEC economies that themselves already comply with the APEC pledge but would like to see other APEC economies implement voluntary tariff reductions (i.e. an 'offensive approach'). Many of the 'ex-outs' included in Annex C are labelled 'optional' and seem to be intended to assist other APEC economies in identifying products (within the 54 6-digit HS codes) for which they could agree to voluntarily reduce tariffs that are more than 5 percent.
- 6 For a number of sub-headings of headings HS 9026 and HS 9027, no APEC economy other than Chile (which applies uniform tariffs of 6 percent to practically all imports) and Brunei Darussalam have any applied tariff of more than 5 percent. This concerns HS 902610 (instruments and apparatus for measuring or checking the flow or level of liquids); HS 902680 (other instruments

and apparatus HS 902680); HS 902690 (parts and accessories); HS 902720 (chromatographs and electrophoresis instruments; HS 902730 (spectrometers) and HS 902750 (other instruments and apparatus using optical radiations).

- 7 This section is based on HS02 trade statistics, because there is no information available on trade flows in the HS07 nomenclature prior to its introduction in 2007. Figures for the APEC List are based on 53 sub-headings only, as there is no comparable HS02 code for HS07 441872 (other assembled flooring panels, multilayer of bamboo), due to a reclassification.
- 8 By way of comparison, APEC imports of all manufactured products fell 19 percent in 2009, but their 2011 value was 19 percent above the previous peak in 2008.
- 9 Another area experiencing strong growth is hazardous waste and recycling systems. In this area, 87 percent of APEC's trade growth was explained by two sub-headings: HS 847989 (other machines and mechanical appliances) and HS 847990 (parts of machines and mechanical appliances of heading 8479). However, these results have to be interpreted carefully, as these HS codes are typical 'catch all' codes with a lot of products included in them. See APEC PSU Policy Brief No. 3.
- 10 Trade in wind turbines grew very fast until 2008, but the value of APEC imports in 2011 was 38 percent below its peak value in 2008.
- 11 APEC imports grew very rapidly until 2009.
- 12 There are a few exceptions, but these do not include any of the 54 sub-headings of the APEC List. The value of Chilean imports of products on the APEC List is very small, and a large portion of Chilean imports of 'environmental goods' already enters the country duty-free under FTAs. For an analysis of the advantages of uniform import tariffs see, for example, *Development, Trade and the WTO: A Handbook, Part 1* by Bernard M. Hoekman, Aaditya Mattoo and Edward Philip English.
- 13 Similarly, China has a designated TL (85030010, with an MFN-applied tariff of 3 percent) for certain parts of HS 850164 (this sub-headings is also on the APEC List)
- 14 US imports under the provisions of this sub-heading are duty-free.
- 15 No recent data are available in COMTRADE for Brunei Darussalam and Papua New Guinea. The Philippines is excluded because at the time of writing it had not reported trade data in HS07. Viet Nam is excluded because at the time of writing it had not reported 2011 trade data to COMTRADE.

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ANNEX

Annex Table 1: APEC List of Environmental Goods, most-traded sub-headings, 2011

HS sub-heading	Description	Value (USD billion)		Share (%)	
		World	APEC	World	APEC
Imports					
901380	Other optical devices, appliances and instruments	52.4	52.0	19.7	26.4
854140	Photosensitive semiconductor devices	30.0	28.2	11.3	14.3
847989	Other machines and mechanical appliances	21.4	13.7	8.1	6.9
903289	Automatic regulating/controlling instruments	13.3	8.5	5.0	4.3
903180	Measuring/checking instruments	9.9	6.1	3.7	3.1
Sub-total		127.0	108.5	47.8	55.0
Total APEC List		265.5	197.0	100	100
Exports					
901380	Other optical devices, appliances and instruments	75.5	62.5	25.5	31.0
854140	Photosensitive semiconductor devices	53.9	25.5	18.2	12.6
847989	Other machines and mechanical appliances	16.8	13.3	5.7	6.6
901390	Parts and accessories of optical devices, appliances and instruments	11.1	10.6	3.8	5.3
903289	Automatic regulating/controlling instruments	9.4	7.4	3.2	3.6
		166.7	119.3	56.4	59.1
Total APEC List		296.4	201.7	100	100

Source: COMTRADE using WITS (December 2012)

Annex Table 2: APEC economies, trade under 54 sub-headings of the APEC List, 2011 (HS07 unless indicated otherwise)

Imports (in USD billion)			Exports (in USD billion)		
	World	APEC		World	APEC
China	88.8	72.8	China	86.8	47.3
United States	49.0	29.9	United States	49.2	27.2
Korea	17.6	13.4	Japan	48.7	37.9
Hong Kong, China	15.3	14.0	Korea	42.6	33.4
Japan	14.8	11.3	Chinese Taipei	27.4	23.8
Mexico	14.3	11.7	Singapore	14.3	11.1
Canada	12.1	8.7	Mexico	8.1	7.5
Singapore	10.6	8.0	Canada	6.9	5.6
Russia	9.4	2.3	Malaysia	5.6	3.7
Chinese Taipei	8.7	7.0	Thailand	3.0	2.4
Australia	6.6	4.2	Australia	1.5	1.1
Malaysia	6.3	4.9	Russia	1.1	0.2
Thailand	5.8	4.7	Indonesia	0.7	0.4
Indonesia	3.4	2.7	New Zealand	0.2	0.1
Chile	1.2	0.5	Hong Kong, China	0.1	0.1
Peru	0.9	0.7	Chile	0.07	0.04
New Zealand	0.7	0.3	Peru	0.04	0.01
Sub-total	265.5	197.0	Sub-total	296.4	201.7
Philippines (HS02)	1.4	1.1	Philippines (HS02)	0.7	0.4
Viet Nam (2010)	2.2	1.7	Viet Nam (2010)	0.5	0.4
Total	269.1	199.8	Total	297.6	202.5

Source: COMTRADE using WITS (December 2012)

Annex Table 3: APEC List (HS07): average applied rates and number of tariff lines

APEC economy (year)	Simple average applied rate (%)	Number of TLs	APEC economy (year)	Simple average applied rate (%)	Number of TL
Australia (2011)	2.6	109	Mexico (2011)	2.3	250
Brunei Darussalam (2011)	10.4	160	New Zealand (2011)	2.7	77
Canada (2011)	0.4	109	Papua New Guinea (2010)	0.5	54
Chile (2011)	6.0	80	Peru (2011)	0.2	105
China (2010)	5.0	134	Philippines (2011)	1.8	174
Hong Kong China (2011)	0.0	90	Singapore (2011)	0.0	159
Indonesia (2012)	5.3	161	Taipei, Chinese (2012)	2.2	129
Japan (2011)	0.0	73	Thailand (2011)	3.4	175
Korea, Republic of (2011)	5.4	247	United States (2011)	1.5	169
Malaysia (2012)	1.9	84	Viet Nam (2009)	0.6	161

Source: based on WTO, using the Tariff Download Facility.

Annex Table 4: Sub-headings having only applied tariffs of over 5 percent Excluding Chile

6-digit HS sub-heading		Reporter	Year	TLs	Avrg	Min	Max
441872	Assembled flooring panels, multilayer	Brunei Darussalam	2011	1	20.0	20	20
		Korea, Republic of	2011	2	8.0	8	8
		Malaysia	2012	1	20.0	20	20
		Mexico	2011	1	15.0	15	15
		Papua New Guinea	2010	1	25.0	25	25
		Thailand	2011	1	20.0	20	20
840290	Steam boilers, parts	Korea, Republic of	2011	2	8.0	8	8
840410	Auxiliary plant for use with boilers	China	2010	2	8.5	7	10
		Korea, Republic of	2011	5	8.0	8	8
840420	Condensers for steam or other vapor power units	China	2010	1	14.0	14	14
		Indonesia	2012	1	10.0	10	10
		Korea, Republic of	2011	1	8.0	8	8
		Philippines	2011	1	10.0	10	10
		United States	2011	1	5.6	5.6	5.6
840490	Auxiliary plant for use with boilers, parts	China	2010	2	8.5	7	10
		Indonesia	2012	5	10.0	10	10
		Korea, Republic of	2011	3	8.0	8	8
840690	Steam turbines, parts	Korea, Republic of	2011	2	8.0	8	8
841290	Engines, parts	Taipei, Chinese	2012	1	6.8	6.8	6.8
841780	Industrial/laboratory furnaces and ovens	Korea, Republic of	2011	6	8.0	8	8
		Philippines	2011	1	7.0	7	7
841790	Ind/lab furnaces and ovens, parts	China	2010	3	7.0	7	7
		Korea, Republic of	2011	1	8.0	8	8
841919	Instantaneous or storage water heaters, nonelectric (includes solar water heaters, SWH)	Canada	2011	1	6.5	6.5	6.5
		China	2010	2	35.0	35	35
		Korea, Republic of	2011	1	8.0	8	8
		Mexico	2011	2	10.0	10	10
		Peru	2011	2	6.0	6	6
		Thailand	2011	2	10.0	10	10
		Viet Nam	2009	2	10.0	10	10
841939	Dryers, others	China	2010	2	9.0	9	9
841960	Machinery for liquefying air/gases	China	2010	3	11.7	10	13
		Korea, Republic of	2011	1	8.0	8	8
841989	Machinery/equipment	Korea, Republic of	2011	10	8.0	8	8
842121	Machinery for filtering and purifying water	Philippines	2011	4	7.0	7	7
842129	Filtering or purifying machinery, other	Brunei Darussalam	2011	6	20.0	20	20
842139	Filtering or purifying machinery for gases	Brunei Darussalam	2011	2	20.0	20	20

Source: based on WTO, using Tariff Download Facility

Annex Table 4: *Continued*

6-digit HS sub-heading	Reporter	Year	TLs	Avrg	Min	Max
847982	Mixing, crushing, grinding machines	China	2010	1	7.0	7
		Korea, Republic of	2011	5	8.0	8
847989	Machines/appliances	Korea, Republic of	2011	12	8.0	8
847990	Parts	Korea, Republic of	2011	14	8.0	8
850164	AC generators (alternators) of an output exceeding 750 kVA	Brunei Darussalam	2011	1	20.0	20
		China	2010	3	7.3	10
		Indonesia	2012	1	10.0	10
		Taipei, Chinese	2012	4	9.6	10
850231	Wind-powered generating sets	Brunei Darussalam	2011	2	20.0	20
		China	2010	1	8.0	8
		Indonesia	2012	2	10.0	10
		Korea, Republic of	2011	4	8.0	8
		Taipei, Chinese	2012	1	10.0	10
850239	Other generating sets	Brunei Darussalam	2011	4	20.0	20
		China	2010	1	10.0	10
		Indonesia	2012	4	10.0	10
		Korea, Republic of	2011	4	8.0	8
		Taipei, Chinese	2012	2	10.0	10
850300	Parts (motors)	Brunei Darussalam	2011	5	20.0	20
851410	Resistance heated furnaces and ovens	Brunei Darussalam	2011	1	20.0	20
		Korea, Republic of	2011	4	8.0	8
851420	Furnaces and ovens	Brunei Darussalam	2011	2	20.0	20
		Korea, Republic of	2011	4	8.0	8
851430	Furnaces and ovens, other	Brunei Darussalam	2011	2	20.0	20
		Korea, Republic of	2011	1	8.0	8
851490	Parts	Brunei Darussalam	2011	2	20.0	20
854390	Parts	Brunei Darussalam	2011	6	20.0	20
901390	Parts/accessories for Liquid crystal devices	China	2010	2	7.0	8
		Thailand	2011	4	10.0	10
901580	Other instruments and appliances	Brunei Darussalam	2011	2	20.0	20
		Korea, Republic of	2011	6	8.0	8
902710	Gas or smoke analysis apparatus	China	2010	1	7.0	7
		Korea, Republic of	2011	1	8.0	8
903289	Automatic regulating or controlling instruments and Apparatus	China	2010	4	7.0	7
903300	Parts and accessories	China	2010	1	6.0	6
		Korea, Republic of	2011	1	8.0	8
		Thailand	2011	2	10.0	10

Source: based on WTO, using Tariff Download Facility

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