Reducing Import Tariffs for Environmental Goods:

The APEC Experience

Rene Vossenaar

ICTSD

International Centre for Trade and Sustainable Development

Issue Paper No.22

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International Environment House 2
7 Chemin de Balexert, 1219 Geneva, Switzerland

Tel: +41 22 917 8492
ictsd@ictsd.ch

Fax: +41 22 917 8093
www.ictsd.org

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ICTSD welcomes feedback on this publication. These can be sent to Ingrid Jegou (ijegou@ictsd.ch) or Fabrice Lehmann, ICTSD Executive Editor (flehmann@ictsd.ch).

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LIST OF ABBREVIATIONS

AC	alternating current
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
BD	Brunei Darussalam
EGA	Environmental Goods Agreement
FTA	free trade agreement
GW	Gigawatt
GWEC	Global Wind Energy Council
HS	Harmonized System
ICTSD	International Centre for Trade and Sustainable Development
ITA	Information Technology Agreement
ITC	International Trade Centre
kVA	kilovolt ampere
MFN	most favoured nation
MW	Megawatt
Nes	not elsewhere specified
Nesoi	not elsewhere specified or included
NTB	non-tariff barrier
PNG	Papua New Guinea
PV	Photovoltaic
RE	renewable energy
SWH	solar water heater
TAO	Tariff Analysis Online (WTO)
TL	tariff line
UNCTAD	United Nations Conference on Trade and Development
USITC	United States International Trade Commission
WTO	World Trade Organization

FOREWORD

The world today faces a number of environmental challenges, not least the urgent issue of climate change. Addressing these challenges will require concerted efforts from policymakers to set the right enabling conditions that will facilitate environmental action in an efficient and effective manner. Trade policy is one sphere of governance that can play a supportive role to ensure greater environmental sustainability. Technologies required for addressing local and global environmental challenges will need to be deployed in a cost-effective manner. The production of many of these technologies takes place through global supply chains, with final equipment, components and associated services crossing multiple borders before they are finally deployed. A range of trade-related obstacles, tariffs as well as non-tariff barriers, stand in the way of their cost-optimal and efficient deployment.

In order to address such barriers the WTO's Doha Round launched in 2001 included a mandate under paragraph 31 (iii) of the Doha Declaration calling for the "reduction or as appropriate, elimination of tariffs and non-tariff barriers on environmental goods and services." The lack of a universally accepted definition of environmental goods as well as little or no progress in other negotiating areas of the Doha Round have seen trade initiatives to liberalise environmental goods shifting outside of the WTO.

In November 2011 in Honolulu, leaders of 21 Asia-Pacific Economic Cooperation (APEC) member economies met and agreed to voluntarily liberalise tariffs to no more than 5 percent on an agreed-upon list of environmental goods. On 9 September 2012, in Vladivostok, Russia, APEC leaders endorsed a list of goods contained within 54 product categories on which tariffs would be cut.

The APEC deal, even if voluntary, is significant in that it represents the first time that tariff negotiations on environmental goods have been completed among a large number of economies. While the negotiators did not attempt to define an "environmental good," their means of implementation, and particularly changes that some APEC economies have made to their customs schedules to more specifically "capture" such goods, could hold out useful lessons to trade negotiators undertaking similar trade liberalisation initiatives under other forums.

This paper presents the manner in which APEC economies have already implemented or are currently undertaking implementation of their tariff cuts for the environmental goods as they have identified them under the APEC 54 product subheadings, which environmental goods benefit most from tariff cuts and possible implications for trade. The paper offers practical lessons that can be drawn from the process for similar tariff liberalisation exercises in the future, most notably the plurilateral negotiations for an Environmental Goods Agreement (EGA) aimed at liberalising environmental goods initiated by a group of 14 WTO members at Davos in January 2014. The EGA, presently being negotiated by 17 WTO members (counting the European Union as one), seeks to build on the APEC outcome and may contain a much larger number of product subcategories. Benefits of an EGA deal, once implemented, will be extended by all EGA members to the rest of the WTO membership, providing a boost to trade in environmental goods destined for EGA members' markets. Contrary to the APEC deal, the EGA will address bound tariffs.

René Vossenaar is an independent consultant and formerly worked with UNCTAD as Head of the Trade, Environment and Development Branch. Since his retirement in March 2005, he has occasionally worked as an independent consultant. He has prepared several studies for the International Centre for Trade and Sustainable Development (ICTSD) on linkages between the deployment of climate-friendly technologies and international trade, including those relevant to APEC as well as the EGA

negotiations. Before joining UNCTAD, he worked for the Economic Commission for Latin America and the Caribbean (ECLAC) in Santiago de Chile, Buenos Aires and Brasilia.

This paper was conceived by ICTSD and developed for ICTSD's Programme on Trade and Environment and builds on an earlier (2013) paper by René Vossenaar analysing the outcome and expected impacts of APEC's environmental goods list. As a valuable piece of research, it has the potential of informing innovative policy responses for future trade initiatives on environmental goods and will be a valuable reference tool for policymakers and trade negotiators in the APEC region and elsewhere. We hope that you will find the paper to be a thought-provoking, stimulating and informative piece of reading material and that it proves useful for your work.

Ricardo Meléndez-Ortiz
Chief Executive, ICTSD

EXECUTIVE SUMMARY

Background

International trade and supply chain integration have played a key role in reducing the costs of environmental technologies. Removing barriers to trade may boost global markets for environmental goods and services and contribute to further cost reductions. In recent years, groups of members of the World Trade Organization (WTO) have engaged in negotiations aimed at reducing or eliminating import tariffs for lists of environmental goods agreed among participants.

In 2011, 21 Asia-Pacific Economic Cooperation (APEC) economies pledged that, by the end of 2015, applied tariffs for environmental goods would be reduced to 5 percent or less. The "APEC List of Environmental Goods" was developed and endorsed in 2012.

In early 2014, a Group of 14 WTO members[i] committed to begin negotiations to liberalise trade in environmental goods, building on the APEC List of Environmental Goods and exploring a broad range of additional goods. In July 2014, these WTO members launched negotiations on the Environmental Goods Agreement (EGA), through which they aim to achieve their "shared goal of global free trade in environmental goods."[ii] The EGA negotiations were later joined by another three WTO members.[iii]

Most APEC members have now finished their work on the APEC pledge. This is in fact the first time tariff negotiations on environmental goods, among a large group of WTO members, have been completed. It is therefore interesting to see how APEC economies have dealt with complex trade classification issues and the implementation of tariff reductions.

This paper describes already-implemented and planned tariff reductions to comply with the APEC tariff-cutting commitment (since 2012, to take into account early implementation), in particular:[iv]

- How have individual APEC economies implemented tariff cuts?
- Which Harmonized System (HS) subheadings and categories of environmental goods may benefit most?
- Can trade flows impacted by tariff reductions be estimated and put in perspective?
- What lessons can be learned for further tariff negotiations on environmental goods?

Negotiating tariff reductions for lists of environmental goods

The APEC experience shows that negotiating and implementing tariff reductions for lists of environmental goods involves complex issues. Trade negotiations are usually conducted based on Harmonized System codes, which are internationally harmonised only up to the six-digit

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i Australia; Canada; China; Costa Rica; the EU; Hong Kong, China; Japan; Republic of Korea; New Zealand; Norway; Singapore; Switzerland; Chinese Taipei; United States.

ii "Joint Statement Regarding the Launch of the Environmental Goods Agreement."http://eeas.europa.eu/delegations/wto/documents/press_corner/final_joint_statement_green_goods_8_july_2014.pdf.

iii Iceland, Israel and Turkey.

iv The review is based on Implementation Plans of individual APEC economies published on the APEC website in January 2016 (APEC 2016a), WTO tariff information and recent tariff schedules of key APEC economies, trade statistics (from COMTRADE, the WTO, International Trade Centre (ITC) Trade Map and United States International Trade Commission (USITC), APEC reports, and consultations with officials from APEC economies.

subheading level. With very few exceptions, HS subheadings are not specific enough to exclusively or predominantly include environmental goods. There is therefore a need to define "ex-outs" which are intended to capture the largest possible environmental share of each HS subheading. At the negotiating stage, participants seek to agree on the list of HS subheadings to be included *and* on the description of ex-outs for each HS subheading. Customs officials may play a role in helping to arrive at fully implementable ex-out descriptions.

Tariff reductions are implemented at the level of tariff lines (TLs) in national tariff schedules of WTO members participating in the negotiations. TLs are not harmonised internationally and are therefore not part of the negotiations (see Box 1).

Certain participants may adopt an HS-subheading approach to tariff reductions, that is covering *all* national TLs. However, for each HS subheading, individual participants are required to implement tariff reductions only for those TLs in their own national tariff schedules that are covered by the agreement, in accordance with the agreed ex-out descriptions (for each HS subheading, each participant has one or more national TLs covered by the agreement). Some participants have very aggregated tariff schedules with only one or very few TLs for each HS subheading, making it difficult to implement tariff reductions with a certain degree of specificity.

Although more detailed tariff schedules may have some national TLs that specifically capture certain ex-outs, TL descriptions are, in most cases, still (much) broader than those of ex-outs. Tariff reductions may therefore affect larger volumes of trade than necessary to meet the environmental objectives (UNCTAD 2011). To be credible, tariff negotiations on environmental goods should be driven primarily by environmental objectives. This does not mean that only environmental goods should benefit from tariff reductions. Reducing tariffs has larger benefits for international trade and sustainable development.[v] Participants, however, may seek to implement tariff cuts that are as specific (from an environmental point of view) as reasonably possible, including by creating additional TLs to implement tariff reductions for ex-outs that are described more narrowly than their existing national TLs (Vossenaar 2014).

One key challenge in negotiations on environmental goods is "wedding environmental credibility with the dynamics of a trade negotiation" (Santana 2015). The environmental credibility (e.g. whether the agreement covers key environmental technologies or not, and how well those technologies are defined in the agreement itself) depends to a large extent on the outcome of the negotiations on HS subheadings to be included and the description of ex-outs.[vi] Environmental credibility may be further enhanced at the stage of implementation of tariff reductions by individual participants, for example by creating additional TLs to reduce tariffs for specific ex-outs. In this paper the term "environmental credibility" is mainly used in this context of domestic implementation.

Negotiators should also decide which tariffs to include, applied tariffs (i.e. those actually imposed on imports) or bound tariffs (i.e. the maximum WTO members are permitted to impose), and whether to reduce tariffs to an agreed maximum level or to eliminate them altogether. Other issues are whether tariff negotiations may be complemented by other trade negotiations aimed at

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v APEC economies, for example, consider that the reduction of applied tariffs under the APEC commitment is a considerable contribution to their trade liberalisation objectives under the Bogor Goals and the green growth and sustainable development agenda (Thailand's Government report to the WTO Trade Policy Review Mechanism, WT/TPR/G/326, October 2015). The Bogor Goals are a set of targeted goals for realising free and open trade in the Asia-Pacific agreed by member economies in 1994 in Bogor, Indonesia.

vi Certain environmental non-governmental organisations have noted that environmental credibility also implies the need to avoid including goods that may have an adverse environmental impact.

facilitating the deployment of environmental technologies, for example on non-tariff barriers (NTBs) and environmental services. This paper focuses on the APEC experience, that is, the reduction of most favoured nation (MFN) applied tariff rates to 5 percent or less.

The APEC commitment

The APEC List contains 54 HS subheadings, but MFN-applied tariff rates of above-5 percent had to be reduced only for "environmental goods" or "ex-outs" within each subheading, which are identified taking into account additional product specifications.

Since five APEC economies did not have any TLs with an MFN-applied duty rate above 5 percent (i.e. Australia; Hong Kong, China; Japan; New Zealand; Singapore), action was required from 16 economies: Brunei Darussalam; Canada; Chile; China; Indonesia; Republic of Korea; Malaysia; Mexico; Papua New Guinea (PNG); Peru; Philippines; Russian Federation; Thailand; Chinese Taipei; United States; Viet Nam.

With the exception of some APEC economies that have followed an HS-subheading approach to tariff reductions (e.g. Brunei Darussalam and Chile), individual APEC economies have identified, for each of the 54 HS subheadings, which TLs (in particular those with an above-5 percent MFN-applied tariff) in their own tariff schedules are covered by the APEC List and its ex-outs. These are indicated as "yes" in their Implementation Plans. Action has been required if a TL with an above-5 percent MFN-applied tariff rate is covered by the APEC List. In most cases national TL descriptions are broader than the relevant "ex-out" descriptions (see Box 1). Yet, sorting out which national TLs are covered by the APEC List (and which are not) may provide a somewhat higher degree of specificity to tariff reductions.

Most tariff cuts have been implemented by reducing rates for *existing* national TLs. In addition, some economies have, in certain cases, reduced tariffs for a more narrowly defined environmental portion of existing national TLs, taking into account the relevant ex-outs on the APEC list. Mexico, for example, created nine new TLs. Almost half of the tariff reductions implemented in Korea and China affect parts of existing TLs.

Based on the Implementation Plans, it is found that APEC economies collectively had some 375 TLs that required tariff reduction. At the time of drafting (July 2016) cuts for 273 TLs had been fully implemented, including early implementation in Brunei Darussalam, Canada and Peru (see "Some Key Figures" presented below). Apart from Brunei Darussalam, Korea, China and Mexico have implemented the largest number of tariff reductions, both in terms of national TLs and HS subheadings covered. The deepest tariff-rate cuts were applied in Malaysia, Brunei Darussalam and Mexico.

Examples of environmental goods benefiting from tariff reductions in a relatively large number of APEC economies include solar water heaters (SWHs), floor coverings of bamboo, wind-powered generating sets and key components of the wind-energy value chain, other electric generating sets (mostly for generating electricity from renewable sources of energy), equipment for filtering or purifying water or gas, and waste incinerators.

For the 54 HS subheadings, the value of APEC economies' imports in national TLs with an MFN-applied tariff of over 5 percent—before implementation of tariff cuts—was around US$31 billion in 2014. This shows good potential for meaningful tariff reductions. It is noted, however, that this figure includes trade in TLs that are *not* covered by the APEC List of Environmental Goods. Also, where tariff reductions benefit only part of existing national TLs, trade flows cannot be estimated using existing trade statistics. No attempt has been made in this paper to assess what portion of

trade in TLs benefiting from tariff reductions actually corresponds mainly to environmental goods in accordance with the ex-outs of the APEC List.

Conclusions

The outcome of the APEC process has been positive as most APEC members have reduced their above-5 percent MFN-applied tariffs for national TLs covered by the APEC List of Environmental Goods, with a reasonable degree of specificity and environmental credibility. It shows that a tariff-cutting pledge involving various WTO members can work in practice. Various factors may have facilitated this positive outcome, such as the voluntary and non-binding nature of tariff cuts (but bolstered by political commitment) and the target of cutting tariffs to 5 percent or less (as opposed to full tariff elimination).

Despite certain shortcomings, the "ex-outs" on the APEC List have assisted APEC economies in identifying the TLs in their national tariff schedules requiring tariff reductions and, in certain cases, in implementing tariff cuts that are more specific than existing national TLs.

Certain APEC economies, have in certain cases, reduced import duties only for part of existing TLs. These TLs represent a significant portion of all tariff reductions, in particular in China and Korea, and include TLs with large values of trade. This may have facilitated domestic processes and increased the environmental credibility of tariff reductions. The creation of new TLs has contributed to greater transparency. Whereas the creation of additional national TLs involves costs, tariff reductions for well-designed TLs may be implemented easily by customs officials.

By targeting tariffs of over 5 percent, the APEC pledge has resulted in deep tariff cuts in certain APEC economies. Not counting Brunei Darussalam, MFN-applied tariff rates for some 60 national TLs across APEC economies have been reduced by more than five percentage points. The real impact of reducing MFN-applied tariffs may be limited, among other reasons because large portions of APEC economies' trade take place in the context of free trade agreements (FTAs).

Estimating trade in products covered by an agreement on environmental goods is very challenging. Trade figures based on six-digit HS subheadings significantly overestimate trade in environmental goods that may benefit from tariff reductions. This problem is somewhat narrowed down by using national TL-level trade statistics, which are, however, not internationally harmonised and are publicly available only for some countries. One lesson from the APEC process is that most national TL descriptions are still much broader than ex-out descriptions and that environmental goods are often traded under the provisions of TLs for "other" products. In addition, certain key APEC economies have implemented tariff reductions only for specific portions of existing national TLs (for which trade statistics are mostly unavailable).

Because of the dynamics of HS-based trade negotiations, implementation of environmental goods agreements tend to have implications for trade in both environmental goods and unrelated products, even where ex-outs clearly define environmental goods. Such implications may need to be considered in the selection of HS subheadings and descriptions of ex-outs.

The APEC process shows that a relatively large portion of tariff reductions (not counting economies that adopted an HS subheading approach) has been implemented at a level that is more specific than that of *existing* national TLs, including by creating additional national TLs. In other environmental goods agreements, other mechanisms, such as staged implementation for certain goods, may also be considered to make it easier for participants to make the necessary adjustments in their national tariff schedules. Such an option was not considered in the APEC process, given that economies were given three years to implement the tariff cuts .

SOME KEY FIGURES

- For the 54 subheadings of the APEC List, prior to implementation of tariff reductions, 16 APEC economies collectively had 520 national TLs with an MFN-applied tariff rate above-5 percent, of which 375 were covered by the APEC List of Environmental Goods (Table 1).

- At the time of drafting this paper (July 2016), implementation was as follows:

Implementation	TLs	APEC economies (number of national TLs)
Fully implemented	273	Brunei Darussalam (84); Canada (2); China (27); Korea (85); Malaysia (8); Mexico (29); Peru (3); Philippines (6); Chinese Taipei (6); Thailand (12); United States (6); Viet Nam (5)
In legislative process	73	Chile (73)
Pending	22	Indonesia (16); Russian Federation (5); PNG (1)
Other tariff reductions	7	Thailand (7) (tariff reductions only to 7%)

- Most tariff cuts have been implemented by reducing rates for existing TLs.

- Some economies have implemented tariff cuts for only part (i.e. more narrowly defined environmental portions) of certain existing TLs. Mexico has created nine new TLs, whereas Malaysia and the Philippines have created one new TL each. Thailand has subdivided two existing national TLs. Tariff reductions benefit part of 39 TLs in Korea and 13 TLs in China. In total this concerns 65 TLs, covering 35 different HS subheadings.

- When the APEC List was endorsed in 2012, almost a quarter of all TLs, for the 54 HS subheadings, in 16 APEC economies still had an MFN-applied tariff rate of over 5 percent (Table 1). The simple average tariff for the 375 TLs covered by the APEC List was 11.6 percent (not counting Brunei Darussalam's 84 TLs with a 20 percent tariff rate in 2011, it was 9.1 percent). Once all tariff reductions have been implemented the average rate for these TLs will be just below 5 percent.

- The value of APEC imports in national TLs with MFN-applied tariffs of over 5 percent under the 54 HS subheadings of the APEC List—before implementation of tariff cuts—is around US$31 billion. This includes *all* TLs, whether or not covered by the tariff reduction commitment.

- Nine HS subheadings each account for more than US$1 billion in APEC economies' imports at above-5 percent tariff rates (Table 6). In most cases, environmental goods are imported mainly under the provisions of TLs for "other" products, with tariff reductions in China and Korea only benefiting specific portions of existing TLs.

Box 1: Terminology

Tariff negotiations are usually conducted based on Harmonized System (HS) codes, but tariffs are set only at the level of national tariff lines (TLs).

HS codes are internationally harmonised up to the six-digit subheading level. For tariff purposes, each HS subheading has one or more tariff lines (TLs), defined at the national level by adding additional digits. TLs are not internationally harmonised and may have 8, 10 or more digits.

The APEC List contains 54 HS subheadings, each of which covers certain environmental goods, which are mostly identified as "ex-outs," taking into account additional product specifications. For the purposes of this paper, the term "ex-out" refers to a specific environmental good that is classified in an HS subheading together with other (non-environmental) goods.

For tariff purposes, any product can be imported only under the provisions of a particular TL in the tariff schedule of the importing economy. TLs covered by the APEC List include:

- TLs that specifically capture certain "ex-outs" of the APEC List (e.g. TLs for solar water heaters; catalytic converters; trash compactors or waste incinerators). Such TLs, including for their parts, are found in certain tariff schedules.
- TLs that provide for trade in one or more "ex-outs" of the APEC List, but also for trade in other products. Most TL descriptions are broader than those of the "ex-outs" (e.g. TLs for parts of the engines of HS heading 8412, which include wind-turbine blades and hubs).
- TLs for "other" products (or products that are "not elsewhere specified or included"—"nesoi"—in a particular subheading) that provide for trade in "ex-outs" of the APEC List (e.g. heliostats) together with non-environmental products.

For each HS subheading, each APEC economy has one or more TLs covered by the APEC List.

Even where the description of an HS subheading is broader than that of the "ex-outs" of the same subheading, as is normally the case, an individual APEC member may find that the whole HS subheading may, *de facto*, be covered by the APEC List, i.e. when *all* TLs in its national tariff schedule are covered. However, it is the TL that matters for tariff purposes.

In certain cases, an APEC economy may decide to reduce a tariff rate for environmental goods based on a description that is narrower than that of an existing TL. This can be done by creating a new TL with a lower rate, leaving the rate for other products unchanged. It can also be done by subdividing the tariff rate for the existing TL into two or more rates (normally these TLs have an "ex" suffix). In this case, WTO tariff and trade statistics may be for the TL as a whole, not for each subdivision.

The level of aggregation of national tariff schedules varies widely among APEC economies. For example, for the 54 HS subheadings of the APEC List, Korea has 228 TLs, whereas Malaysia has only 76 (see Table 1).

1. INTRODUCTION

1.1 Background

The APEC List contains 54 subheadings of the Harmonized System (HS), but MFN-applied tariffs rates of over 5 percent had to be reduced only for "environmental goods" or "ex-outs," taking into account additional product specifications included in Annex C to the 20th APEC Economic Leaders' Declaration.[1]

Import tariffs are set at the level of tariff lines (TLs) in national tariff schedules. A TL sets the tariff rate for *any* goods imported under its provisions (see Box 1). The APEC tariff pledge implies that an APEC member would have to take action if a national TL with an above-5 percent MFN-applied tariff rate is covered by the APEC List.

When the APEC tariff pledge was adopted in 2011, and the List of Environmental Goods endorsed in 2012, five APEC economies (Australia, Hong Kong, Japan, New Zealand, Singapore) did not have any TL with an MFN-applied tariff rate of over 5 percent and therefore did not have to take any action.

Excluding these five economies, action has been required from 16 APEC economies: Brunei Darussalam; Canada; Chile; China; Indonesia; Republic of Korea; Malaysia; Mexico; Papua New Guinea (PNG); Peru; Philippines; Russian Federation; Thailand; Chinese Taipei; United States; Viet Nam.

This paper reviews tariff reductions for products on the APEC List in these 16 economies, including both already-implemented cuts (since 2012, to take account of early implementation) and cuts in the process of implementation.[2]

1.2 Complying with the APEC Commitment

Brunei Darussalam already became fully compliant with the APEC pledge early in the process. Whereas, for the 54 subheadings of the APEC List, its 2011 tariff schedule (HS07) had 91 national TLs with a 20 percent MFN-applied tariff, its 2014 schedule (HS12) showed that these rates had all been cut to 5 percent.[3] The fact that Brunei Darussalam was implementing broader tariff-cutting measures around 2012 probably contributed to this successful development.[4]

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1 At their 2011 Annual Meeting—in Honolulu, United States—APEC Economic Leaders resolved to reduce, by the end of 2015, applied tariff rates on environmental goods to 5% 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." http://apec.org/~/media/Files/LeadersDeclarations/2012/2012_AELM_Declaration_AnnexC.pdf.

2 The review is based on the Implementation Plans of individual APEC economies published on the APEC secretariat's website (2016a), tariff information submitted to the WTO, recent tariff schedules of key APEC economies, trade statistics (from COMTRADE, the WTO, ITC Trade Map and USITC), APEC reports, consultations with officials from APEC economies as well as ICTSD and other studies.

3 Brunei Darussalam submitted tariff information to the WTO for 2011 and 2014. Dutiable TLs for the 54 subheadings of the APEC List had either a 5% or a 20% tariff rate in 2011. By 2014 all 20% rates had been cut to 5%, affecting 84 TLs in terms of the 2014 (i.e. HS12) tariff schedule. Brunei Darussalam's Implementation Plan therefore shows 84 TLs with a 5% tariff.

4 Whereas Brunei Darussalam's entire 2011 tariff schedule showed more than 1,300 TLs with a tariff rate of 10% or more, its 2014 schedule shows fewer than 500. Considering HS Chapters 84, 85 and 90—which include 53 of the 54 HS subheadings of the APEC List—the 2011 schedule showed close to 1,000 TLs with a tariff above 5%, whereas the 2014 schedule shows only 200. See also http://www.bt.com.bn/frontpage-news-national/2015/03/04/duties-machinery-imports-cut-boost-economic-activity.

Canada[5] and Peru also implemented their tariff cuts prior to 2015. Tariff reductions have also been fully implemented in China;[6] Malaysia;[7] Korea;[8] Philippines;[9] Mexico;[10] Chinese Taipei;[11] United States; and Viet Nam.[12]

According to Thailand's Implementation Plan, by the end of 2015 tariff reductions for 18 TLs were still "under consideration" and would be decided in the context of ongoing tax reform. Thailand's Cabinet approved its list of tariff cuts on 1 March 2016. Tariffs for 11 TLs, covering eight HS subheadings, were reduced to 0–5 percent in May 2016.[13] Tariffs for the remaining seven TLs were also reduced, but only to 7 percent.

In November 2015, Chile's President submitted draft legislation to the Chamber of Deputies to cut import tariffs corresponding to the 54 HS subheadings of the APEC List to 5 percent upon entry into force of relevant legislation, to 3 percent as of 1 January 2018 and to 0 percent by 2020.[14] Chile's tariff reductions will affect *all* 54 HS subheadings and their 73 national TLs in a uniform manner. Papua New Guinea (PNG) expected to reduce tariffs for one TL.[15] According to its Implementation Plan, the Russian Federation will reduce tariffs for five national TLs. These reductions may be implemented by September 2016 (APEC 2016b).[16]

According to its Implementation Plan, Indonesia will implement tariff reductions for three TLs (these reductions are expected to take effect in 2016),[17] with cuts for another 13 TLs to be implemented only gradually until 2021.

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5 To comply with the APEC commitment, Canada reduced tariff rates for two national TLs in March 2013. http://www.gazette.gc.ca/rp-pr/p2/2013/2013-03-27/html/sor-dors43-eng.html.

6 The Ministry of Finance included 27 TLs in its "Notice on Tariff Adjustment Plan 2016." http://gss.mof.gov.cn/zhengwuxinxi/zhengcefabu/201512/P020151210398875210772.pdf.

7 Customs Duties (Amendment) (No. 3) Order 2015, published in the Gazette on 28 December 2015. http://mltic.my/tax/legislation/customs-duties-amendment-no-3-order-2015-MY14714.html.

8 The Korean government amended the "Schedules for International Cooperation Duty Rates" to reduce tariff rates for products on the APEC List of Environmental Goods. The amendment was completed at the end of 2015 (Presidential Decree No.26764, 30 December 2015) and tariff rates were reduced as from 1 January 2016 (APEC 2016b).

9 See http://www.gov.ph/2015/06/26/executive-order-no-185-s-2015/.

10 Published in the Official Journal of 6 January 2016. http://www.dof.gob.mx/nota_detalle.php?codigo=5422212&fecha=06/01/2016.

11 Tariff cuts for four TLs took effect in December 2015. These cuts have been fully reflected in Chinese Taipei's 2016 tariff schedule submitted to the WTO. Tariff cuts for another two TLs were implemented in May 2016 (http://web.customs.gov.tw/rate/rate/esearch.asp)

12 Reduced tariff rates have effectively been implemented in Viet Nam's tariff schedule. http://www.customs.gov.vn/SitePages/Tariff-Search.aspx?language=en-US.

13 Publication (in Thai) by the Ministry of Finance on the Reduction and Exemption of Customs Tariff According to Section 12 of the Customs Tariff Act 2530, 14 May 2016. These tariff reductions became effective one day after publication.

14 The proposed legislation will *eliminate* tariffs by 2020. As a transitional measure, tariffs will be cut to 5% upon entry into force of the legislation, in accordance with Chile's APEC commitment. https://www.camara.cl/sala/verComunicacion.aspx?comuid=16310&formato=pdf.

15 According to its Implementation Plan, PNG expected to reduce the rate for its only TL with an above-5% tariff, i.e. floorings of bamboo, from 15% (20% in 2012) to 5% by creating a new TL by November 2015.

16 According to the Russian Federation's Implementation Plan, tariff cuts for flooring panels of bamboo (under HS 441872) required agreement by other EurAsian Economic Union countries. Agreement has now been reached and tariffs are expected to be reduced to 5% in 2017, with the 2017 revision of the HS nomenclature (APEC 2016b). The 2017 HS revision includes the deletion of HS 441872 and the creation of a new subheading (HS 4418.73) for "assembled flooring panels: of bamboo or with at least the top layer (wear layer) of bamboo."

17 APEC (2016b).

Collectively, APEC economies have consequently reduced or are in the process of reducing MFN-applied tariff rates for 282 national TLs.[18] This number (which includes implementation prior to 2015 in Brunei Darussalam, Canada and Peru) increases to 368 if future reductions in Chile and additional reductions in Indonesia are included in the analysis (Table 1).

18 Apart from the 273 TLs with tariff reductions already implemented, this includes tariff reductions announced in the Implementation Plans of PNG (one), Indonesia (three TLs) and the Russian Federation (five TLs).

Table 1: Tariff lines with above-5 percent MFN-applied tariffs in 16 APEC economies (54 HS subheadings)

APEC economy	Situation before implementing tariff reductions						Implementation				
	Base year*	Tariff lines					Above 5% and on APEC List	Implementation			HS-6 codes with tariff cuts
		All	Duty-free	Dutiable				All**	Existing TLs	"ex" or new TLs	
				All	5% or less	Above 5%					
Brunei Darussalam	2012	157	73	84	0	84	84	84	84	0	37
Canada	2012	92	85	7	4	3	2	2	2	0	2
Chile	2012	73	0	73	0	73	73	(73)	(73)		54
China	2013	139	49	90	41	49	27	27	14	13	23
Indonesia	2014	157	10	147	131	16	16	(3)	(3)	0	2
Korea, Rep. of	2015	228	57	171	14	157	85	85	46	39	43
Malaysia	2013	76	62	14	6	8	8	8	7	1	6
Mexico	2013	255	191	64	10	54	29	29	20	9	16
Peru	2013	104	101	3	0	3	3	3	3	0	2
PNG	2014	54	53	1	0	1	1	(1)	0	(1)	1
Philippines	2013	156	29	127	121	6	6	6	5	1	3
Russian Fed.	2015	126	98	28	23	5	5	(5)	(5)	0	4
Chinese Taipei	2014	129	66	63	52	11	6	6	6	0	4
Thailand	2012	156	100	56	22	34	19	12	10	2	8
United States	2012	152	85	67	56	11	6	6	6	0	3
Viet Nam	2012	156	143	13	8	5	5	5	5	0	2
All 16 economies		2210	1202	1008	488	520	375	273 (355)	208 (289)	65 (66)	54

Source: Implementation Plans and WTO Integrated Data Base, using the Tariff Analysis Online (TAO) facility.

** Tariff data from WTO tariff files prior to 2015 to reflect early implementation (in Brunei Darussalam, Canada, Peru and Thailand (for one TL)). Data for the Russian Federation is based on the Russian Federation's Implementation Plan.*

*** TLs with tariff reductions planned but not yet implemented at the time of drafting (July 2016) as well as totals including these TLs are shown in brackets. Not shown are 13 TLs that will only gradually benefit from tariff reductions (in Indonesia) and seven TLs with tariffs reduced to 7% (in Thailand).*

Notes:

Chile: The uniform 6% MFN-applied tariff rate will be reduced once legislation becomes effective.

Indonesia: Tariff cuts for three TLs to be implemented in 2016. Tariff cuts for 13 TLs will be implemented only gradually.

Mexico: With the creation of nine new TLs with a 5% tariff, the number of TLs increased to 264 in 2016. The number of dutiable TLs increased to 73. With reduced tariff rates for 20 existing TLs covered by the APEC List, the number of TLs with tariffs above 5% fell to 34 in 2016, none of which are covered by the APEC List.

Papua New Guinea: According to its Implementation Plan, PNG intended to create a specific TL to reduce tariffs for floor coverings of bamboo "hopefully by November 2015."

Russian Federation: The Implementation Plan shows fewer TLs than WTO tariff files for 2014 and 2016. Information is based only on the Implementation Plan. Tariff cuts for HS 441872 will be implemented in 2017 as the 2017 version of the HS includes a specific subheading (HS 441873) for "assembled flooring panels of bamboo or with at least the top layer (wear layer) of bamboo."

Thailand: The Implementation Plan shows 18 TLs with tariffs above-5% and covered by the APEC List (all at 10%). In May 2016, tariffs for 11 TLs, covering eight HS subheadings, were reduced to 0-5%. Tariffs for the remaining seven TLs were also reduced, but only to 7%. In addition, TL 850231.20 (wind-powered generating sets of an output exceeding 10,000 kVA), which had a 10% tariff rate in 2012-14, was exempted from import duties effective 30 December 2014. (Thailand's Integrated Tariff Database, http://igtf.customs.go.th/igtf/en/main_frame.jsp.)

2. IMPLEMENTING TARIFF CUTS

2.1. How Have APEC Economies Implemented Tariff Cuts?

As a first step, individual APEC members have identified, for each of the 54 HS subheadings, which national TLs (in particular those with an above-5 percent tariff) are covered by the APEC List (indicated as "YES"—covered by the Environmental Goods List?—in their respective Implementation Plans).[19] Since most national TLs are defined more broadly than the ex-outs of the APEC List, a "YES" does not necessarily mean that the TL *exclusively* or *predominantly* provides for trade in environmental goods. A TL sets a tariff for *all* products imported under its provisions, including unrelated products which may often account for a large portion of trade (see Box 1).[20]

As a second step, an APEC member therefore has decided whether to reduce the rate for *all* imports under the provisions of an *existing* TL or only for more narrowly defined environmental goods. In most cases, tariff cuts have been implemented by reducing rates for *existing* TLs. This is obvious where national TLs with an above-5 percent tariff specifically provide for trade in environmental goods on the APEC List (e.g. solar water heaters (SWHs) in Mexico; wind-powered generating sets in Chinese Taipei; and refuse incinerators in China). Even where a national TL includes unrelated products, reducing the rate for the existing TL is often the easiest option (also considering factors such as ease of implementation and costs of creating new TLs), apart from resulting in wider benefits for international trade. Most APEC members have only reduced rates for *existing* TLs.

Some APEC economies, in particular China, Korea and Mexico, have reduced tariffs for certain TLs only for more narrowly defined environmental goods. Mexico has done this by creating *new* TLs with a 5 percent rate, leaving the rates for existing TLs unchanged. China and Korea have subdivided certain MFN-applied tariff rates.[21] Korea has reduced tariff rates by amending the Schedules for International Cooperation Duty Rates,[22] which take priority over basic rates, but may have limited coverage. In the case of 39 TLs with an above-5 percent MFN-applied rate, the lower "international cooperation" rate only covers part of the TL (based on ex-outs of the APEC List).[23] Similarly, China attached an "ex" suffix to 13 TLs, indicating that tariff reductions will benefit only part of these TLs.

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19 Some economies (e.g. Canada) have done this only for TLs with a tariff rate of above-5%. A few other APEC economies have indicated a "YES" for all TLs (e.g. Indonesia) or have not addressed the "YES" or "NO" question.

20 A "NO" indicates that the TL does not provide for trade in environmental goods in accordance with Annex C. Some products may still be proposed in the context of other environmental goods negotiations. For example, Annex C does not cover light-emitting diodes (LEDs), but LEDs may be proposed as an environmental good (on the basis of energy-efficiency criteria) in the EGA context (Sugathan 2015).

21 Korea has two MFN-applied rates, the basic rate and the international cooperation rate (WTO Trade Policy Review WT/TPR/S/137, paragraph 25).

22 Article 73 of the Customs Act (International Cooperation Tariff) authorises the Government to negotiate tariff reductions of up to 50% of the basic tariff rate. Goods subject to reduced rates are prescribed by Presidential Decree and tariff rates under Article 73 take priority over basic tariff rates.

23 Korea has submitted 2016 tariff rates to the WTO (see WTO, TAO facility). As shown in TAO reports on Tariff Line Duties, the term "Suffix Family" is used in the case of the 39 10-digit TLs for which MFN-applied rates have been subdivided in a lower rate for environmental goods and the existing rate for other products under the same TL, each with its own suffix and description. The average rate shown for these TLs is the simple average of the two rates. Since rates for environmental goods have, in most cases, been reduced from 8% to 5%, leaving the 8% rate unchanged for non-environmental goods, in general a 6.5% rate is shown.

Tariff subdivisions or new TLs seem to have been created for several reasons, for example:

- To reduce rates for specific environmental goods (at times with descriptions similar to those of TLs in tariff schedules of other APEC economies). For example, Korea, Mexico and the Philippines[24] have subdivided tariffs, or introduced new TLs, for waste incinerators and Korea has reduced tariffs for SWHs.[25]

- To set a 5 percent tariff for *clusters* of ex-outs within an HS subheading. For example, under HS 847989 (machines and mechanical appliances having individual functions not elsewhere included or specified in HS Chapter 84), Korea has created a 5 percent tariff for a range of ex-outs on the APEC list, including, for example, trash compactors, shredders for waste treatment, and humidifiers and dehumidifiers.[26] Korea has also created a 5 percent tariff for a range of ex-outs under HS 841990.

- To reduce rates based on the environmental end-use of equipment, parts and components,[27] for example "for electricity generation from renewable sources of energy" in Mexico (under subheadings HS 850239 and HS 850164)[28] and "for the treatment of solid waste and waste water" in Korea and Mexico. This also has the potential to facilitate tariff liberalisation in the context of value chains.[29]

- To reduce tariffs for specific environmental goods currently traded *only* under TLs for "other" products (where available) in *all* APEC economies, for example solar heliostats (in Korea) and parts of heliostats (China and Korea).

- To reduce tariffs for "optional" ex-outs on the APEC List. For example, Korea has reduced rates for vibrometers, listed in Annex C as optional ex-outs under HS 903180 (other instruments, appliances and machines) and for associated parts under HS 903190.

In summary, as shown in Table 1, tariff reductions have been implemented either for full existing TLs or for more narrowly-defined environmental portions thereof . Mexico has reduced tariffs for 20 existing TLs and created

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24 The Philippines split its ASEAN Harmonized Tariff Nomenclature code 841780.00 in 841780.00A (waste incinerators) with an MFN-applied rate of 5% and 841780.00B (other) with a rate of 7% (the existing rate). http://www.gov.ph/downloads/2015/06jun/20150626-EO-0185-BSA.pdf.

25 China, Mexico and Chinese Taipei already have national TLs for SWHs and China already has a national TL for refuse incinerators.

26 The tariff schedule of Chinese Taipei already has TLs for "equipment for prevention of air pollution, noise treatment, vibration prevention, water contamination prevention and treatment of materials caused by factory wastage" (TL 84798950) as well as for parts thereof (TL 84799020). Both are duty-free.

27 In the HS nomenclature, products are classified according to their objective characteristics and properties at the time of import. Their end-use is normally not relevant, unless it has an impact on their objective properties, for example goods that are "of a kind used" for certain activities (Santana 2015). Creating additional national TLs may help implement tariff reductions when existing national TLs are not specific enough to capture a product's environmental use. However, where multiple use is inherent to a product, some kind of producer's or importer's declaration might be necessary to implement tariff reductions based on environmental end-use. This may at times reduce the benefits of tariff reductions.

28 Korea has also created reduced rates for, inter alia, co-generation and generating sets using various sources of renewable energy (under HS 850239) and parts for these generators (under HS 850300).

29 Creating new TLs specifying the end-use of equipment and parts thereof is a practice that has already been used to implement tariff reductions resulting from non-environmental negotiations, such as the Information Technology Agreement (ITA). For example, Annex A, section 2 of the ITA (Semiconductor manufacturing and testing equipment and parts thereof) includes a large number of HS subheadings (almost all with ex-outs). These have been incorporated into certain national tariff schedules (e.g. of Korea) by creating new TLs "for the purpose of semiconductor manufacturing" or similar indications.

nine new TLs.[30] Korea has reduced tariff rates for 46 existing TLs and subdivided rates for another 39 TLs. China has reduced rates for 14 TLs and attached an "ex" suffix to another 13 TLs. The Philippines has created one new TL (for waste incinerators) and so has Malaysia (for floor coverings of bamboo). Thailand has split tariffs for two national TLs.[31] According to its Implementation Plan, Papua New Guinea intends to create an additional TL to reduce the tariff rate for bamboo floorings.

Overall, six APEC economies have collectively created 65 new TLs (or reduced tariff rates for only part of existing national TLs without formally creating new TLs) in 35 HS subheadings. Not counting Brunei Darussalam and Chile, which have taken an HS-subheading approach to tariff reductions, it is found that this represents more than one-third of all TLs with tariff reductions and that tariffs in 10 HS subheadings[32] have been cut exclusively by creating new TLs (or similar methods).[33]

2.2 Which HS Subheadings and Categories of Environmental Goods Are Most Impacted?

The impact of tariff cuts on HS subheadings and categories of environmental goods may vary in accordance with several factors, such as the level of MFN-applied tariffs before implementation of tariff cuts (i.e. the depth of the tariff cut),[34] the "environmental share" of trade in a particular HS subheading, and the value of imports in TLs covered by the APEC List, among others.[35] Counting the number of APEC economies that have implemented tariff reductions (since 2012) for each HS subheading—or are in the process of doing so—also provides some indication of the impact of tariff reductions. This section first shows the HS subheadings benefiting from TL-level tariff reductions in relatively large numbers of APEC economies.[36] It then discusses tariff reductions in certain HS subheadings with large values of trade, in particular in TLs with above-5 percent tariff rates.

2.2.1 HS subheadings with tariff reductions in the largest number of economies

SWHs (under HS 841919) and floor coverings of bamboo (under HS 441872) benefit from tariff reductions in the largest number of economies (see Table 3). Both face high tariffs and can be easily recognised as environmental goods. With regard to environmental categories, renewable energy (RE), environmental monitoring and assessment, waste water treatment, solid waste management and air pollution control benefit from tariff reductions in relatively large numbers of APEC economies.[37]

30 As part of this process, Mexico has changed the description of six existing TLs with a 15% rate to exclude environmental goods.

31 These are 4418.72.00(01) (Other Assembled Flooring Panels, Multilayer, of Bamboo) and 9013.80.90(29) (Other).

32 These are HS subheadings 841182; 841199; 847982; 851410-90; 854390; and 901380-90.

33 Excluding these two economies, tariffs in 11 HS subheadings have been reduced exclusively by cutting rates for existing TLs, whereas eight HS subheadings did not require any tariff reduction because no economy other than Brunei Darussalam and Chile had any TLs with an above-5% rate. A mixture of tariff-cutting methods was used for the remaining 25 HS subheadings.

34 The relevance of MFN-applied rates vis-à-vis tariff rates applied in the context of FTAs also plays an important role.

35 The impact of tariff reductions may also depend on their importance in the context of value chains. Tariff reductions across APEC economies collectively impact on more than 130 TLs (in some 20 HS subheadings) providing for trade in parts and accessories.

36 Examples on Indonesia only include three TLs expected to benefit from tariff reductions in 2016.

37 Other categories have not significantly benefited. These are environmental remediation and clean-up; noise and vibration abatement; energy efficiency; resource efficiency; and environmentally preferable products (other than floor coverings of bamboo).

Tariff cuts favour various technologies used to generate electricity from renewable sources of energy, such as wind power, as well as technologies that use renewable sources of energy to function, such as SWHs:

- Exporters and importers of wind-power equipment and components are clear potential beneficiaries, with tariffs for wind-powered generating sets (HS 850231) being reduced in Brunei Darussalam, China, Indonesia, Korea, Mexico, Chinese Taipei and Thailand. Certain APEC economies have reduced tariffs for equipment and components, in particular blades and hubs (under HS 841290); AC generators (under HS 850164); and parts for these generators (under HS 850300), illustrating a value-chain approach to tariff liberalisation (see Table 2).[38]

- Brunei Darussalam, China, Indonesia, Korea, Mexico, Chinese Taipei and Thailand have cut tariff rates for the electric generating sets of HS 850239, mostly for generating electricity from renewable sources of energy.[39]

- Tariff reductions for solar heliostats (in Korea and Thailand) should benefit the concentrating solar power sector. Tariff reductions for other products, such as parts for boilers and steam turbines, although not directed only at RE, are relevant for biomass-based RE and the generation of steam for solar thermal electricity.

- Tariff reductions do not specifically target solar PV (solar photovoltaic cells and modules are already imported duty-free or at a rate of only 5 percent). However, Korea has reduced tariffs for parts of solar or wind energy inverters,[40] with China also cutting rates for specific portions of relevant national TLs.[41]

- Tariffs for SWHs have been reduced in Canada, China, Korea, Mexico, Malaysia, Peru, Thailand and Viet Nam.

38 China is the world's largest wind-energy market. According to the Global Wind Energy Council (GWEC), China installed 30.8 GW of new capacity in 2015 (almost half of the global total) to reach 154.4 GW in cumulative installations by the end of the year, surpassing the 28 countries of the European Union (GWEC 2016). Mexico installed 713.6 MW of new capacity to reach a total of 3,073 MW by end-2015. Chile added 169 MW to reach 933 MW by end-2015. New capacity was also added in Korea (225 MW to reach 835 MW) and Chinese Taipei (14 MW to reach 647 MW). According to the GWEC report, Viet Nam, Thailand and Indonesia are all "ripe for market growth" and new projects are expected to come online in Thailand (which had 223 MW of cumulative capacity in 2015) and Viet Nam in 2016 (GWEC 2016).

39 Tariff rates before implementation ranged from 8% in Korea to 10% in China, Indonesia, Chinese Taipei and Thailand, 15% in Mexico and 20% in Brunei Darussalam.

40 Under national TL 850490.9000.

41 The APEC List does not cover important components and materials of the solar PV value chain.

Table 2. Wind-energy equipment, national tariff lines with >5 percent tariffs (to be) cut to 5 percent

APEC economy	Equipment and parts under relevant HS subheadings (corresponding national TLs with >5% rates before tariff reductions)				
	HS 850231	HS 841290	HS 850164	HS 850300	HS 901580
Canada					6.5%
China	8%	8%	5.8–10%	8%	
Indonesia	10%				
Korea, Rep. of	8%	8%		8%	8%
Mexico	15%		15%		15%
Chinese Taipei	8%	6.8%	8.5%		
Thailand	10%		10%		

Source: WTO tariff data (using the TAO facility) and Implementation Plans.

Notes:

China: Rates for national TLs 850164.10 (10%); 850164.20 (5.8%) and 850164.30 (6%) cut to 5%.

Indonesia: Tariff for TL 850231.20 (wind-powered generating sets of an output exceeding 10,000 kVA).

Korea: Under HS 841290, 5% rate created for blades and hubs for wind turbines.

Mexico: Rate for TL 850231.01 (aero generators) is already 0%; rate for TL 850231.99 cut from 15% to 5%.

Thailand: Tariff reductions for TL 850231.10 (wind-powered generating sets of an output not exceeding 10,000 kVA) and TL 850164.00 were implemented in May 2016.

Other HS subheadings with a relatively large number of APEC economies implementing tariff cuts include:

- Machinery and apparatus for filtering or purifying water (HS 842121) in Brunei Darussalam, China, Korea, Peru, the Philippines and Viet Nam. Tariff cuts are significant on account of several factors, such as the high level of tariffs before implementation of tariff cuts (25 percent in China, 20 percent in Brunei Darussalam and 10 percent in Viet Nam), the environmental dimension of the subheading (all national TLs in these economies are covered by the APEC List) and the level of trade.

- Filtering or purifying machinery and apparatus for gas (HS 842139) in Brunei Darussalam, China, Korea, Malaysia and Mexico. Tariff rates before implementation of cuts were high (25 percent in Malaysia, 20 percent in Brunei Darussalam and 15 percent in China and Mexico) and trade is significant.

- Auxiliary plant for use with boilers (HS 840420) in China, Korea, the Philippines and the United States. In all these economies tariff cuts affect the entire subheading,[42] but trade flows are very small.

- Waste incinerators (mainly under HS 841780) in China, Korea, Mexico and the Philippines.

2.2.2 Tariff cuts in HS subheadings with large trade values

A priori, tariff cuts under HS subheadings with large values of trade may be particularly significant from both an environmental and a trade point of view. Table 6 in the Annex shows that nine HS subheadings of the APEC List each represent more than US$1 billion of APEC economies' imports in national TLs with an above-5 percent MFN-applied tariff rate. Some of these subheadings have already been discussed above, in relation to RE. Tariff reductions in HS 850239 (electric generating sets, other than wind-powered), for

42 All APEC economies have only one national TL for this HS subheading.

example, affect *all* imports in the subheading in Chile, Korea and Thailand,[43] although tariff reductions in China will benefit only part of the subheading. Subheadings HS 850300 and HS 850490 (both for Parts) also account for more than US$1 billion of imports at above-5 percent rates each, but tariff reductions in China and Korea only affect specific portions of existing national TLs.

Four HS subheadings with large values of imports at above-5 percent duty rates are HS 901380, HS 903289, HS 847989 and HS 903180 (for descriptions see Table 8 in the Annex). Together with another two subheadings providing for trade in associated parts and accessories (HS 901390 and HS 847990), these subheadings account for more than half of the value of all APEC imports facing above-5 percent tariff rates (Table 6). Not counting Chile, "ex-outs" on the APEC List are imported *exclusively* under the provisions of TLs for "other" or "not elsewhere specified or included (nesoi)" products in the corresponding subheadings. Most tariff reductions have been implemented by Korea and China, but only for parts of existing TLs, based on the relevant ex-outs on the APEC List. This has enhanced the specificity of tariff reductions. However, it is not possible to know from available TL-level statistics how much trade is actually covered by tariff cuts:

- Optical devices, appliances and instruments, nesoi (HS 901380) and their parts and accessories (HS 901390) are heavily traded and account for the largest part of APEC imports at above-5 percent tariff rates, but the "ex-outs" on the APEC List only include solar heliostats. Korea has reduced rates only for solar heliostats and parts thereof to 5 percent. China is doing the same for parts of solar heliostats.[44]

- The automatic regulating or controlling instruments of HS 903289 face above-5 percent rates in China, Korea and Thailand. China and Korea have reduced rates only for portions of national TLs.[45] Korea and Thailand also have above-5 percent tariff rates for parts (HS 903290); Thailand has also reduced rates, but only to 7 percent.[46]

- In the case of machines and mechanical appliances of HS 847989 and HS 947990 (Parts), Mexico has cut rates for specific goods covered by the APEC list. As mentioned earlier, Korea, which accounts for the highest value of imports at an above-5 percent rate, has reduced rates for a range of ex-outs on the APEC List.[47]

- In the case of HS 903180 (Other instruments, appliances and machines) and HS 901390 (Parts), Korea has reduced the tariff rate for vibrometers.

43 Imports under the provisions of TL 850239.31 ("Of an output of 12,500 kVA (10,000 kW) or more") are already duty-free.

44 In China, solar heliostats are imported under a national TL for "other" products (TL 901380.90) with a 5% rate. China's implementation plan shows an "ex" suffix.

45 In China, imports under the relevant TL accounted for US$4 billion in 2014 (Table 7). Korea has reduced tariffs for "Differential temperature controller for solar boiler or water heater", an ex-out mentioned in Annex C.

46 The two subheadings together accounted for two-thirds of the value of Thai imports at an above-5% duty rate (see Table 6 in the Annex). HS 903289 alone accounted for US$1.3 billion of Thai imports in 2013, slightly over half of which was covered by the APEC List (according to the Thai Implementation Plan only national TL 903289.90 (Other) is covered by the APEC List, with imports accounting for 53% of the value of imports in the subheading in 2011–15 (ITC Trade Map)). In May 2016, Thailand reduced tariffs for relevant TLs in these two subheading, but only to 7%.

47 In China, all TLs under these two subheadings are duty-free.

Table 3. Tariff reductions by HS subheadings

HS subheading (see Table 8 for descriptions)	APEC economies with tariff cuts*	Tariff reductions		APEC imports in TLs with >5% rates (US$ millions)**
		Number of economies	Number of national TLs	
841919	Canada, China, Korea, Malaysia, Mexico, Peru, Thailand, Viet Nam	8	12	201.5
441872	Brunei Darussalam (BD), Korea, Mexico, Malaysia, PNG, Russian Federation, Thailand, United States	8	9	111.0
850231	BD, China, Indonesia, Korea, Mexico, Chinese Taipei, Thailand	7	12	317.1
850239	BD, China, Indonesia, Korea, Mexico, Chinese Taipei, Thailand	7	17	1034.5
842121	BD, China, Korea, Peru, Philippines, Viet Nam	6	14	330.4
850164	BD, China, Mexico, Chinese Taipei, Thailand	5	8	334.4
842139	BD, China, Korea, Mexico, Malaysia	5	10	625.9
841780	China, Korea, Mexico, Philippines	4	5	186.8
840420	China, Korea, Philippines, United States	4	4	91.6
841290	China, Korea, Russian Federation, Chinese Taipei	4	5	315.5
842129	BD, Korea, Mexico, Malaysia	4	11	276.1
847982	BD, China, Korea, Mexico	4	8	767.6
850300	BD, China, Korea, Thailand	4	5	1482.2
901580	BD, Canada, Korea, Mexico	4	13	122.4
903289	BD, China, Korea	3	6	3286.6
847989	BD, Korea, Mexico	3	6	3098.7
850490	BD, China, Korea	3	11	1270.5
840690	Korea, Russian Federation, United States	3	6	549.8
842199	China, Korea, Malaysia	3	6	567.0
901390	China, Korea, Thailand	3	3	4364.9
841989	BD, Korea, Mexico	3	8	493.8
902710	BD, China, Korea	3	3	804.8
847990	BD, Korea	2	6	1010.4
901380	Korea, Thailand	2	2	2559.5
841199	Korea	1	1	559.9
903180	Korea	1	1	1228.3

Source: Implementation Plans, WTO Trade and Tariff Profiles

** Chile will reduce tariffs for all HS subheadings. Not included are 13 TLs in Indonesia and seven TLs in Thailand.*

*** See Table 6.*

Note:

The table shows HS subheadings with at least four APEC economies (other than Chile) cutting rates and/or more than US$450 million in imports at a rate of above 5% before implementation of tariff reductions.

3. IMPLICATION FOR TRADE FLOWS

3.1 Trade Flows

It is difficult to estimate how much trade is taking place in TLs that are directly impacted by tariff reductions across APEC economies and to put this in perspective. WTO Tariff and Trade Profiles show that, for the 54 subheadings of the APEC List, the value of APEC imports in national TLs with MFN-applied tariffs of over 5 percent—before implementation of tariff cuts—was around US$31 billion in 2014 (Table 4 and its note). Table 6 in the Annex breaks the overall trade figure down, illustrating potential impacts on different HS subheadings.

Table 4. Value of imports in 54 subheadings of the APEC List by tariff classes (Based on TL-level trade statistics, most recent year available)

APEC member economy*	Imports (US$ millions)					At rate above 5% as a portion of total imports
	Total	Duty-free	Dutiable			
			All	At rate of 5% or less	At rate above 5%	
Brunei Darussalam (2010)	84.1	58.7	25.3	0.0	25.3	30.1%
Canada (2012)	11735.7	11401.4	334.3	146.9	187.4	1.6%
Chile (2014)	1777.8	0.0	1777.8	0.0	1777.8	100.0%
China (2014)	89116.0	29612.0	59503.3	49519.3	9984.8	11.2%
Chinese Taipei (2014)	7428.1	4511.5	2916.5	2821.1	95.4	1.3%
Indonesia (2014)	4334.0	262.0	4082.0	3589.3	492.7	11.4%
Korea (2014)	19157.5	5119.4	14038.2	142.5	13895.7	72.5%
Mexico (2014)	17789.6	15884.5	1905.0	1088.9	816.1	4.6%
Peru (2014)	912.5	907.8	4.7	0.0	4.7	0.5%
Philippines (2014)	1249.6	195.4	1054.2	1005.0	49.2	3.9%
Thailand (2013)	6936.5	2112.7	4823.6	2741.9	2081.7	30.0%
United States (2014)	50694.2	28789.9	21904.3	21360.5	543.8	1.1%
Subtotal (12 economies)	211215.6	98855.3	112343.9	82415.4	29954.6	14.2%
As a portion of total imports in the 54 HS subheadings (%)	100	46.8%	53.2%	39.0%	14.2%	

Source: WTO TAO facility, Tariffs and Trade Profiles

**No information was available in the WTO Tariffs and Trade Profiles for Malaysia, Papua New Guinea, the Russian Federation and Viet Nam. According to COMTRADE, the value of total 2014 imports in subheadings with tariff cuts was as follows: Malaysia US$497.2 million; Russian Federation US$234.0 million and Viet Nam US$69.1 million, i.e. US$800 million in total. Total trade in TLs with above-5% tariffs may therefore be close to US$31 billion.*

This figure provides a reasonable starting point for an analysis of trade potentially impacted by tariff cuts, because it excludes trade in TLs with MFN-applied tariffs of 5 percent or less which is unaffected by the APEC tariff pledge. For the 16 APEC economies as a group, imports at an above-5 percent rate still represent around 14 percent of the value of *all* trade in the 54 HS subheadings of the APEC List,[48] and this portion is much higher in Korea and 100 percent in Chile.

It is noted, however, that the US$31 billion figure includes trade in TLs that are not covered

48 Figures for trade in the APEC List usually include *all* trade in the 54 HS subheadings. See, for example, APEC secretariat, "APEC Cuts Environmental Goods Tariffs," Singapore, 28 January 2016. http://www.apec.org/Press/News-Releases/2016/0128_EG.aspx.

by the APEC List of Environmental Goods.[49] Some of the most-traded subheadings of the APEC List may benefit relatively little from tariff reductions.[50] Also, as discussed earlier, some APEC economies have implemented tariff reductions for certain TLs only for more narrowly defined environmental goods, either by subdividing tariffs or by creating new TLs. In these cases, trade flows cannot be estimated using existing trade statistics.

For example, China's Implementation Plan shows 27 TLs that have a tariff of over 5 percent and are covered by the APEC List. Imports in these TLs were worth US$10 billion in 2014 (Table 6, see Annex). However, 13 of these TLs are marked with an "ex," indicating that tariffs are reduced only for more narrowly defined environmental goods. As shown in Table 7, the 13 TLs with an "ex" suffix accounted for 85 percent of the value of Chinese imports in the 27 TLs in 2014.

A key objective of the APEC tariff pledge has been to help boost future trade in environmental goods. Apart from the current trade coverage of tariff cuts, the potential of tariff reductions to contribute to increased trade in environmental goods needs to be considered. Although such analysis is outside the scope of this paper, some factors point to potential future gains, such as the fact that the APEC pledge has targeted high tariffs. The next section therefore illustrates the depth of tariff cuts. It has also been noted by many observers that tariff reductions need to be complemented by efforts in the areas of NTBs and trade in services.

3.2 MFN-Applied Tariff Rates

For the 54 HS subheadings of the APEC List, the simple average MFN-applied tariff before implementation of tariff reductions was 2.3 percent (HS-averaging method) for all 21 APEC economies and 3 percent for the 16 economies required to take tariff action.[51] These low rates can in part be explained by the large portion of duty-free TLs in various economies. In some economies, for example Malaysia and Mexico, relatively low average rates may hide high rates in certain TLs.[52] Simple-average rates for *dutiable* items were below 3 percent in the Philippines, United States and Canada, but above 5 percent in Brunei Darussalam, Malaysia, China, Korea, Chile, Mexico, Thailand and Indonesia (HS-averaging method).[53] Almost a quarter of all TLs in the 16 APEC economies still had an MFN-applied tariff rate of over 5 percent.

The simple average tariff for the 375 TLs with an above-5 percent tariff before implementation of tariff reductions is 11.6 percent (excluding Brunei Darussalam's 84 TLs with a 20 percent tariff rate in 2011, it is 9.1 percent). With tariff reductions, the average rate will fall significantly, as shown in Table 5.[54]

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49 In China, for example, around 90% of imports at an above-5% rate in HS subheading 901390 (Parts and accessories of optical devices, appliances and instruments), worth US$4 billion in 2014, was accounted for by parts of Liquid Crystal Display (LCD) panels (TL 901390.20), i.e. non-environmental goods.

50 Reinvang argues that 46 of the 54 HS subheadings on the APEC list cover mainly products that are not used primarily for environmental purposes (Reinvang 2014). Ferrier estimates that many subheadings of the APEC List "may be only 5 or 10 percent environmental" (ICTSD 2014). Certain heavily traded HS subheadings provide only marginally for trade in environmental goods (Vossenaar 2013).

51 Mariana Vijil, quoting de Melo and Balineau, found that the tariff protection for the 54 subheadings of the APEC list is lower than for different lists of environmental goods proposed in the WTO (Vijil, 2014).

52 For example, in Malaysia the simple average of MFN-applied rates was 1.9%, but for dutiable items it was 9.3% (2013, HS-subheading method). In Mexico the simple average rate was 2.1% for all items, but 5.8% for dutiable items (2013-15); following the implementation of tariff cuts these rates fell to 1.6% and 4.3% respectively in 2016. The simple average tariff for TLs with tariff reductions was very high in both economies (Table 5).

53 Bound rates are much higher. The simple average of bound tariffs for the 54 subheadings of the APEC List in the 21 APEC economies is close to 12% (subheading-averaging method, WTO Tariff Download Facility). The simple average is above 20% in Brunei Darussalam, Chile, Indonesia, Mexico, Papua New Guinea and Peru.

54 The real impact of reductions of MFN-applied tariffs may be limited because large portions of APEC economies' imports already benefit from FTAs or preferential schemes.

Table 5. Tariff reductions by APEC economies Simple average MFN-applied tariffs before and after implementation of tariff cuts TLs with tariff reductions

	Number of TLs with tariff cuts	Tariff range before cuts	Simple average tariff before cuts	Simple average tariff after cuts	Percentage reduction
Brunei Darussalam	84	20%	20%	5%	−75%
Canada	2	6.5%	6.5%	5%	−23.1%
Chile*	73	6%	6%	5% (2016)	−16.7%
				0% (2020)	−100%
China	27	7%-35%	10.3%	5%	−51.5%
Indonesia	3	10%	10%	5%	−50%
Korea, Rep. of	85	8%	8%	5%	−37.5%
Malaysia	8	20%-30%	25.6%	5%	−80.5%
Mexico	29	10%-15%	14.5%	5%	−5.5%
Peru	3	6%	6%	0%	−100%
PNG	1	20%	20%	5%	−75%
Philippines	6	7%-10%	7.5%	5%	−33.3%
Russian Fed.	5	6.3%-11%	8%	5%	−37.5%
Chinese Taipei	6	6.8%-10%	9.2%	5%	−45.5%
Thailand	9	10%-20%	10.9%	5%	−52.4%
	7	10%	10%	7%	−30%
	3	10%	10%	0%	−100%
United States	6	5.6%-8%	6.7%	5%	−25%
Viet Nam	5	10%	10%	5%	−50%
Total	362	5.6%-35%	11.6%	4.9% (2016)	−57.4%
				3.9% (2020)	−66.1%

** Under legislative review.*

4. CONCLUSIONS

The outcome of the APEC process has been positive as most APEC members have reduced their above-5 percent MFN-applied tariff rates for environmental goods in 54 HS subheadings, or will reportedly do so in the course of 2016, with a reasonable degree of specificity.[55]

It therefore seems that a tariff-cutting pledge involving various countries can work in practice, including from a value-chain perspective, as shown for wind energy. Various factors may have facilitated this positive outcome, such as the voluntary and non-binding nature of tariff cuts that are nevertheless bolstered by political commitment at the highest level, and the target of reducing tariffs only to 5 percent or less (as opposed to full elimination of tariffs).[56] In the case of Brunei Darussalam, early implementation of tariff reduction for environmental goods may have been facilitated by broader tariff-cutting measures adopted around 2012, aimed at boosting economic activity.

The APEC process has helped clarify issues related to the identification and classification of ex-outs of the APEC List in national tariff classifications. For example, the listing of "ex-outs" (in Annex C) has provided useful guidance to APEC member economies in identifying environmental goods within their own tariff schedules, as well as in creating new national TLs specifically covering environmental goods. Well-described descriptions of "ex-outs" play an important role in the environmental goods negotiations.

Most tariffs have been reduced to 5 percent by lowering MFN-applied rates for existing TLs. Certain APEC economies, in particular China, Korea and Mexico, have also subdivided existing TLs or created new TLs with a view to reducing tariffs for more narrowly defined environmental goods, leaving rates unchanged for unrelated products under the same existing TL. This may have facilitated domestic processes and contributed to greater transparency and specificity of tariff reductions, which in turn may induce domestic and global stakeholders to take advantage of new opportunities.

Subdividing tariffs or creating new TLs to reduce the tariff for narrowly defined environmental goods while leaving the rate for other products under the same existing TL unchanged may work fine when it is clear what specific environmental goods are targeted. Examples from the APEC List are SWHs or solar heliostats. Participants in the negotiations should seek to ensure that relevant environmental goods are adequately covered by the lower rates.[57] This may be particularly relevant in the case of TLs that serve as catch-all TLs for "other" products.[58]

Certain APEC members have reduced tariff rates for equipment, parts and components used for specific environmental purposes, including by creating new TLs. Creating additional national TLs may help implement tariff reductions when existing national TLs are not specific enough to capture a product's

55 Individual APEC economies may seek different levels of specificity. For example, wind-turbine blades and hubs are an ex-out of HS 841290 (Parts). For the subheading, Chinese Taipei has one TL with an MFN-applied rate of 6.8% which was reduced to 5% (i.e. tariffs were reduced at the subheading level). In Korea, blades and hubs are imported under a national TLs for "other" parts, at a rate of 8%. Korea created a reduced 5% rate specifically for wind-turbine blades and hubs. China reduced its 8% at the TL level, but attaching an "ex" suffix. The United States tariff schedule includes a designated statistical code (which is not used for tariff purposes) for wind-turbine blades and hubs). Trade statistics show that US imports in wind-turbine blades and hubs accounted for around 30% of the value of US imports at the TL level (imports are duty-free).

56 Several economies only had to reduce tariffs for a handful of TLs, covering only 1–3 HS subheadings

57 In the case of the APEC tariff reductions, some bilateral consultations have been conducted to ensure that all ex-outs on Annex C were covered by tariff reductions.

58 This is less an issue of concern in countries where national TLs for "other" products in relevant HS subheadings are largely duty-free or with a low tariff (such as Mexico).

environmental use.[59] Customs officials may be involved to help create TLs that are implementable at the border.

The APEC outcome seems particularly relevant in key sectors, such as renewable energy, also showing a value-chain approach to tariff reductions, for example in wind power. Other environmental goods benefiting from tariff reductions in a relatively large number of APEC economies include equipment for filtering or purifying water (HS 842121) and gas (HS 842139), and waste incinerators.

The creation of *new* TLs, or the application of other mechanisms to target environmental goods more specifically than existing national TLs permit, while contributing to transparency and specificity of tariff reductions implies that trade flows affected by these reductions will be smaller than global HS-based trade statistics, including TL-level national statistics, may seem to indicate. It is therefore very challenging to estimate trade in products covered by an agreement on environmental goods.

59 For example, under HS 841780, Mexico has created a new TL for "Heaters and catalytic incinerators recognisably intended solely for the elimination of toxic wastes." An alternative would be to use producer's or importer's declarations, but these may create certain administrative problems.

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ANNEX: TRADE FLOWS AND OTHER TABLES

APEC Economies: Trade in TLs with Tariff Cuts

This Annex provides elements that help to consider trade in national TLs directly affected by tariff reductions across APEC economies.

Table 6 shows, for each APEC economy and each subheading of the APEC list, trade in TLs with MFN-applied rates of above-5 percent, based on the WTO Integrated Data Base (IDB), using the Tariff Online Analysis facility (Tariff and Trade Profiles). For example, Canada's 2012 imports at an above-5 percent rate reached US$187.4 million. Canada's Implementation Plan confirms that imports in HS subheadings 841919 (US$136.6 million) and 901580 (US$3.9 million) were in TLs covered by the APEC List. However, imports under HS 847989 corresponded to carpet sweepers (national TL 8479889.20 with a rate of 7.5 percent), that is, a TL not covered by the APEC List. Therefore the value of Canada's imports in TLs with an above-5 percent tariff rate and covered by the APEC list was US$140.5 million.

Although WTO Tariff and Trade Profiles are based on TL-level statistics, they do not allow full TL-level trade information to be retrieved. For some economies, TL-level information can be retrieved from other sources, such as the ITC Trade Map and national sources (e.g. USITC DataWeb). For example, based on the ITC Trade Map it is found that around 90 percent of China's imports at an above-5 percent rate in HS subheading 901390 (Parts and accessories of optical devices, appliances and instruments), worth US$4 billion in 2014, was accounted for by parts of Liquid Crystal Display (LCD) panels (TL 901390.20), that is, non-environmental goods.

More importantly, as discussed in this paper, key APEC economies have implemented certain tariff reductions for only part of existing TLs (China, Korea) or by creating new TLs (Mexico). Based on Korea's Implementation Plan, it appears that around US$1.9 billion worth of imports at above-5 percent rates may fully benefit from reduced tariff rates. However, the remaining US$12 billion worth of imports would be in TLs that benefit only partially from the lower "international cooperation" duties for environmental goods or are not covered by the APEC List.

Table 6. APEC imports in TLs with an MFN-applied tariff rate of over 5 percent, by HS subheadings (US$ millions)

HS	Brunei Dar.	Canada	Chile	China	Indonesia	Korea	Mexico	Peru	Philippines	Chinese Taipei	Thailand	United States	Subtotal
441872	0.1		14.8			15.5	6.8				0.2	73.6	111.0
840290			24.9			155.5							180.4
840410			5.2	11.7	2.2	39.3							58.4
840420			0.0	3.5	6.6	1.2			23.4			56.9	91.6
840490			8.2	8.7	71.3	168.3							256.5
840690			4.0			220.7						325.1	549.8
841182			2.4			192.4							194.8
841199			34.6			525.3							559.9
841290			18.5	251.8		36.5				8.7			315.5
841780			2.3	97.2		16.7	66.7		3.9				186.8
841790			5.8	101.3		30.8							137.9
841919		136.6	6.2	0.8	0.4	4.5	44.4	2.2			6.5		201.6
841939	0.1		12.8	194.3		37.3							244.5
841960	0.1		4.6	133.8		5.2							143.7
841989	0.6		47.8			395.2	50.1						493.7
841990	0.1		25.1			176.4							201.6
842121	0.4		98.2	65.4		142.0		2.5	21.9				330.4
842129	0.3		62.7			209.3	3.4						275.7
842139	0.7		53.6	188.9		255.0	128.4						626.6
842199			71.2	105.7		302.4					87.7		567.0
847420	..		37.0			0	63.6						100.6
847982	0.3		20.2	549.3		169.9	27.5						767.2
847989	3.1	46.9	102.3		190.6	2766.3	35.5			0.9			3145.6
847990	0.4		36.6			973.4							1010.4
850164	0.7		93.6	137.9	22.9	0	40.0			24.6	14.7		334.4
850231	..		244.5	8.5	0.2	54.2	0.9			5.6	3.1		317.0
850239	0.2		247.4	259.6	198.4	189.9	22.5			40.8	75.9		1034.7

Table 6. APEC imports in TLs with an MFN-applied tariff rate of over 5 percent, by HS subheadings (US$ millions)

HS	Brunei Dar.	Canada	Chile	China	Indonesia	Korea	Mexico	Peru	Philippines	Chinese Taipei	Thailand	United States	Subtotal
850300	0.2		25.2	890.5		323.8					201.7	40.9	1482.3
850490	0.6		24.0	968.5		277.4							1270.5
851410			3.8			39.4	52.1						95.3
851420			3.1			8.5	19.7						31.3
851430	0.1		3.7			20.3	2.5						26.6
851490	..		1.2	5.4		70.8							77.4
854140			120.1										120.1
854390	0.2		9.9			338.9					33.6		382.6
901380			1.6	2.3		2470.9					52.4	32.3	2559.5
901390			0.3	3981.5		304.6					63.5	15.0	4364.9
901580	0.7	3.9	25.5			53.6	42.6						126.3
902610	1.3		26.2										27.5
902620	5.4		18.2				24.4						48.0
902680	0.9		7.2										8.1
902690	0.3		9.5										9.8
902710	0.4		11.5	792.9									804.8
902720			4.4										4.4
902730	0.1		12.4										12.5
902750	0.1		11.6										11.7
902780	0.6		51.7	0.3									52.6
902790	0.4		21.8			83.6							105.8
903149			4.8	15.7		220.8							241.3
903180	3.8		39.0			1176.7	12.6						1232.1
903190	0.3		6.1			312.2							318.6
903289	2.4		31.3	1051.6		740.9	172.5			0.2	1287.2		3286.1
903290	0.1		11.7			323.0					83.6		418.4
903300	0.5		3.6	157.8		47.5				14.7	171.7		395.8
Total	25.3	187.4	1774.1	9984.8	492.7	13895.7	816.2	4.7	49.2	95.5	2081.7	543.8	29951.6

** See table 4 for the years for which trade data are reported.*

Table 7. China's tariff reductions, MFN-applied tariff rates and import values

National TL		Description	MFN-applied tariff rate		Imports* in 2014 (US$ thousands)
			2015	2016	
	84041010	Auxiliary plant for use with generating boilers of 84.02	7%	5%	11568
	84041020	Auxiliary plant for use with generating boilers of 84.03	10%	5%	420
	84042000	Condensers for steam and vapour power units	14%	5%	3514
	84049010	Parts of auxiliary plant of 840410-20	10%	5%	2572
	84049090	Parts of auxiliary plant/condensers of 840410-20	7%	5%	6149
ex	84129090	Parts of engines/motors of heading 84.12	8%	5%	254520
	84178050	Incinerators for waste	10%	5%	10562
	84179090	Parts of other appliances of heading 84.17	7%	5%	91743
	84191910	Solar water heaters	35%	5%	80
ex	84193990	Other dryers, nes	9%	5%	290851
	84196090	Machinery for liquefying air or other gases, nes	10%	5%	127675
	84212110	Filtering and purifying machines for water, household type	25%	5%	65512
	84213910	Filtering and purifying machines for gases nes, household type	15%	5%	191697
	84219910	Parts for filtering and purifying machines of household type	10%	5%	124268
ex	84798200	Machines for mixing/kneading/crushing/grinding, etc.	7%	5%	553737
ex	85016410	AC generators of an output exceeding 750 kVA	8%	5%	130034
ex	85016420	AC generators of an output exceeding 750 kVA	10%	5%	7768
ex	85016430	AC generators of an output exceeding 750 kVA	5.8%	5%	0
	85023100	Wind-powered electric generating sets	6%	5%	8572
ex	85023900	Electric generating sets, nes	10%	5%	259672
ex	85030090	Parts of other machines of heading 8501 or 8502	8%	5%	899997
ex	85049090	Parts of ballasts, static converters and other inductors	8%	5%	953055
ex	90139090	Parts and accessories of other appliances/ instruments of HS heading 9013	8%	5%	401439
	90271000	Gas or smoke analysis apparatus	7%	5%	797195
ex	90314910	Profile projectors	10%	5%	15684
ex	90328990	Other Automatic regulating or controlling instruments	7%	5%	4006241
ex	90330000	Parts and accessories nes for machines of Chapter 90	6%	5%	1810644
	Total				9395589

Table 7. China's tariff reductions, MFN-applied tariff rates and import values

National TL	Description	MFN-applied tariff rate		Imports* in 2014 (US$ thousands)
		2015	2016	
Indicators (2014)				
Imports in TLs with above-5% tariffs and covered by the APEC List				US$9.4 bn
Of which with "ex"				US$8.0 bn
Total imports in the 54 subheadings of the APEC List				US$102.0 bn
TLs with above-5% tariffs covered by APEC List as a portion of imports in 54 HS subheadings				9.2%
Imports in TLs with "ex" as a portion of all TLs with tariff reductions				85%

Source: China's Implementation Plan and trade statistics compiled using ITC trade map.

** Trade figures include re-imports.*

Table 8: HS subheadings of the APEC List, descriptions

HS code	Description
441872	Assembled flooring panels: Other, multilayer
840290	Parts of steam or other vapour generating boilers
840410	Auxiliary plant for use with boilers of heading 84.02 or 84.03
840420	Condensers for steam or other vapour power units
840490	Parts of HS 840410 and HS 840420
840690	Parts of steam turbines and other vapour turbines
841182	Other gas turbines, of a power exceeding 5,000 kW
841199	Parts of other gas turbines
841290	Parts of other engines and motors (of 84.12)
841780	Incinerators, non-electric
841790	Parts (of 84.17)
841919	Instantaneous or storage water heaters, non-electric: other
841939	Dryers
841960	Machinery for liquefying air or other gases
841989	Machinery, plant or laboratory equipment, for the treatment of materials by a process involving a change of temperature
841990	Parts (of 84.19)
842121	Filtering or purifying machinery and apparatus for liquids: For filtering or purifying water
842129	Filtering or purifying machinery and apparatus for liquids: Other
842139	Filtering or purifying machinery and apparatus for gases: Other
842199	Parts
847420	Crushing or grinding machines
847982	Mixing, kneading, crushing, grinding, screening, sifting, homogenising, emulsifying or stirring machines
847989	Machines and mechanical appliances having individual functions, nesoi in Chapter 84, other
847990	Parts (of 84.79)
850164	AC generators (alternators) of an output exceeding 750 kVA
850231	Wind-powered generating sets
850239	Other generating sets
850300	Parts suitable for use solely or principally with the machines of heading 85.01 or 85.02
850490	Parts of electrical transformers, static converters and inductors
851410	Resistance heated furnaces and ovens
851420	Furnaces and ovens functioning by induction or dielectric loss
851430	Other furnaces and ovens
851490	Parts
854140	Photosensitive semiconductor devices, including photovoltaic cells whether or not assembled in modules or made up into panels; light emitting diodes
854390	Parts of electrical machines and apparatus, having individual functions, nesoi in Chapter 85
901380	Optical devices, appliances and instruments, nesoi
901390	Parts and accessories for optical devices, appliances and instruments, nesoi

Table 8: HS subheadings of the APEC List, descriptions

HS code	Description
901580	Surveying, hydrographic, oceanographic, hydrological, meteorological or geophysical instruments and appliances
902610	Instruments and apparatus: For measuring or checking the flow or level of liquids
902620	Instruments and apparatus: For measuring or checking pressure
902680	Other instruments or apparatus
902690	Parts and accessories. Of instruments and apparatus for measuring or checking the flow, level, pressure or other variables of liquids or gases
902710	Gas or smoke analysis apparatus
902720	Chromatographs and electrophoresis instruments
902730	Spectrometers, spectrophotometers and spectrographs using optical radiations (UV, visible, IR)
902750	Other instruments and apparatus using optical radiations (ultraviolet, visible, infrared)
902780	Other instruments and apparatus (ultraviolet, visible, infrared)
902790	Microtomes; parts and accessories
903149	Other optical instruments and appliances; profile projectors
903180	Other measuring or checking instruments, appliances and machines, nesoi in Chapter 90
903190	Parts and accessories of heading 9031
903289	Automatic regulating or controlling instruments and apparatus (excluding thermostats, manostats and hydraulic types)
903290	Parts and accessories of automatic regulating or controlling instruments and apparatus
903300	Parts and accessories (nesoi in Chapter 90) for machines, appliances, instruments or apparatus of Chapter 90.

Source: Based on World Customs Organization, http://www.wcoomd.org/en/topics/nomenclature/instrument-and-tools/hs_nomenclature_2012/hs_nomenclature_table_2012.aspx.

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Other relevant publications from the ICTSD Environment Programme include:

- The Nexus between the WTO and the Energy Charter Treaty in Sustainable Global Energy Governance: Analysis and Policy Implications. By Anna Marhold, 2016.
- Global Rules for Mutually Supportive and Reinforcing Trade and Climate Regimes. By James Bacchus, 2016.
- Addressing Energy Efficiency Products in the Environmental Goods Agreement: Issues, Challenges and the Way Forward. By Mahesh Sugathan, 2015.
- Identifying Products with Climate and Development Benefits for an Environmental Goods Agreement. Rene Vossenaar, 2014.
- Lists of Environmental Goods: An Overview. By Mahesh Sugathan, 2013.
- Transforming the APEC Outcome on Environmental Goods into a Broader Sustainable Energy Trade Initiative: What are the Options? By ICTSD, 2013.

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The International Centre for Trade and Sustainable Development (ICTSD) is an independent think-and-do-tank, engaged in the provision of information, research and analysis, and policy and multistakeholder dialogue, as a not-for-profit organisation based in Geneva, Switzerland. Established in 1996, ICTSD's mission is to ensure that trade and investment policy and frameworks advance sustainable development in the global economy.