



**Transforming the APEC Outcome on
Environmental Goods into a Broader Sustainable
Energy Trade Initiative: What are the Options?**

**ICTSD
December 2013**



International Centre for Trade
and Sustainable Development



Global
Green Growth
Institute

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ICTSD welcomes feedback on this document. These can be forwarded to Mahesh Sugathan, smahesh@ictsd.ch

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Abbreviations And Acronyms

| | |
|-----------------|--|
| APEC | Asia-Pacific Economic Cooperation |
| ABAC | Apec Business Advisory Council |
| AD | Automotive Dialogue |
| BMG | Business Mobility Group |
| BRICs | Brazil, Russia, India and China |
| CAP | Collective action plans |
| CD | Chemical Dialogue |
| CCS | Carbon capture and storage |
| CFGS | Climate-friendly goods and services |
| CHP | Combined heat and power |
| CO ₂ | Carbon dioxide |
| CPC | Central Product Classification |
| CSP | Concentrated solar power |
| CTI | Committee on trade and investment |
| DSU | Dispute settlement undertaking |
| DSB | Dispute settlement body |
| EBN | EWG Business Network |
| ECGS | Electronic commerce steering group |
| ECOTECH | APEC's economic and technical cooperation |
| EGS | Environmental goods and services |
| ETITF | Energy trade and investment |
| EWG | SCE energy working group |
| EU | European Union |
| FTA | Free-trade agreement |
| GATS | General Agreement on Trade in Services |
| GATT | General Agreement on Tariffs and Trade |
| GOS | Group on Services |
| GDP | Gross domestic product |
| GGGI | Global Green Growth Institute |
| GPA | Government Procurement Agreement |
| GPEG | Government Procurement Experts Group |
| GHG | Greenhouse gas |
| HS | Harmonized System |
| IAP | Individual action plans |
| ICT | Information and communication technologies |
| ICTSD | International Centre for Trade and Sustainable Development |
| IEA | International Energy Agency |
| IEG | Investment Experts Group |
| IET | International emissions trading |
| IEC | International Electrotechnical Commission |
| ILO | International Labour Organization |
| IPEG | Intellectual Property Experts Group |
| IRENA | International Renewable Energy Agency |
| ITA | Information Technology Agreement |

| | |
|--------|--|
| IPCC | Intergovernmental Panel on Climate Change |
| TISA | Trade in International Services Agreement |
| ITA | Information Technology Agreement |
| kWh | Kilowatt hours |
| LDC | Least-developed countries |
| LCR | Local content requirement |
| LSIF | Life sciences innovation forum |
| FIT | Feed-in tariff |
| FTA | Free-trade agreement |
| NAFTA | North American Free-Trade Agreement |
| NBP | Non-Binding principles on government procurement |
| TL | Tariff lines |
| TPD | Trade policy dialogue |
| TOE | Ton of oil equivalent |
| MAG | Market access group |
| MFN | Most favored nation |
| MOFCOM | Chinese Ministry of Commerce |
| OECD | Organization for Economic Co-operation and Development |
| PIIE | Peterson Institute for International Economics |
| PPM | Processes and production method |
| PTA | Preferential trade agreement |
| PV | Photovoltaic |
| R&DD | Research and development |
| RE | Renewable Energy |
| RECs | Renewable energy credits or certificates |
| SCCP | Sub-Committee on standards conformance |
| SEA | Sustainable energy agreement |
| SETS | Sustainable energy technologies and services |
| SCE | Steering committee on economic and technical cooperation |
| SCM | Subsidies and Countervailing Measures Agreement |
| SEGS | Sustainable energy goods and services |
| SETA | Sustainable energy trade agreement |
| SETIs | Strategic energy trade initiatives |
| SOM | Senior Officials Meeting |
| SWH | Solar water heaters |
| TBT | Technical Barriers to Trade |
| TPP | Trans-Pacific Partnership |
| TRIMS | Agreement on Trade Related Investment Measures |
| UN | United Nations |
| UNFCCC | United Nations Framework Convention on Climate Change |
| US | United States |
| WTO | World Trade Organization |

Foreword

Climate change is an unprecedented challenge facing humanity today. As fossil fuel-based energy use is the biggest contributor to anthropogenic greenhouse gas (GHG) emissions, a rapid scale up and deployment of renewable or sustainable energy sources could significantly reduce the emissions responsible for climate change. From a development perspective, developing countries face the enormous challenge of reducing carbon intake while ensuring people's access to energy and powering rapid economic growth. Most countries are also seeking ways to enhance their energy security by reducing reliance on fossil-fuel imports. Developing sustainable energy through a transition to cleaner, low-carbon transport fuels and technologies along with greater energy-efficiency measures could make a positive contribution toward achieving these goals.

Efforts to scale up sustainable energy require generation costs to be as low as possible. Relatively high capital costs associated with renewable energy investments, the lack of consideration of environmental and health externalities in fossil-fuel pricing, and the enormous levels of subsidies still granted to fossil fuel industries make this a challenging proposition. On the other hand, renewable energy costs are enduring a rapid global decline that will likely continue for some time. In certain locations renewable energy generation has already attained 'grid-parity,' equaling the cost of fossil fuel-based power generation.

Incentives such as feed-in tariffs and tax breaks help reduce the cost of renewable power. At the same time, lowering the costs of equipment and services used to produce sustainable power can facilitate the scale-up process, enabling economies of scale and cost optimisation for renewable energy projects. Addressing barriers to trade in sustainable energy goods and services can also contribute to scale economies and cost-optimisation, as trade in sustainable energy goods can be hampered by tariffs, subsidies, diverse or conflicting technical standards, and lack of harmonisation or mutual recognition efforts.

In striving to lower production costs, governments often seek to promote domestic manufacturing of renewable energy equipment and the provision of services, with many policymakers viewing the sustainable energy sector as a potential engine for job creation. These factors could potentially induce sustainable energy policies designed with protectionist intent and trigger trade disputes in the sector. The recent Appellate Body ruling at the World Trade Organization's (WTO) first trade dispute (Canada vs. Japan and the EU) over renewable energy feed-in tariffs and local content led to a clear ruling against local content measures in the province of Ontario. Yet, these measures persist in a number of countries, and more such disputes may be expected. A number of other disputes also concern trade remedy measures centered on unfair incentives for manufacturers of clean energy products.

Moving forward, the urgency of addressing climate change will require, among other policy responses, a clear and coherent governance regime for sustainable energy and related goods and services supported by trade rules and robust markets. The current stalemate in the WTO's Doha negotiations, particularly in efforts to liberalise environmental goods and services, has prevented action to address barriers to trade in sustainable energy goods and services. Even a successful conclusion of the round would leave a number of trade-related rules pertaining to sustainable energy – including government procurement of sustainable energy goods and services – unclarified, given the Doha mandate's lack of a holistic perspective on energy.

With such a scenario, sustainable energy trade initiatives (SETIs) may present worthwhile alternatives. These possibilities include a sustainable energy trade agreement (SETA), a stand-alone initiative designed to address barriers to trade and enable a trade policy-supported energy governance regime to advance climate-change mitigation efforts and increase sustainable energy supply.

This agreement might be pursued initially as a plurilateral option – either within or outside the WTO framework – and eventually be “multilateralised.” It could serve to catalyse trade in sustainable energy goods and services and address the needs and concerns of participating developing countries, many of which may not be in a position to immediately undertake ambitious liberalisation in sustainable energy goods and services. A SETA could also help clarify existing ambiguities in various trade rules and agreements as they pertain to sustainable energy and provide focalised governance through effective operational provisions.

It is possible, indeed probable, that a SETA, instead of springing up suddenly, would be the result of a process of evolution that could begin with a simple, perhaps voluntary, initiative focusing on cutting tariffs on sustainable energy goods to something that is more comprehensive (SETI to a SETA). The ‘kernels’ of an eventual SETA may very well be found in existing trade initiatives that focus on goods and services relevant to climate change.

The one successful trade initiative presently in existence that involves three countries or more is the voluntary APEC initiative following the 2011 Honolulu Declaration to reduce tariffs on a list of agreed upon environmental goods to 5 percent or less by 2015 and to reduce a number of non-tariff barriers to such trade. This declaration was set in the context of APEC economies’ broader green-growth objectives. Subsequently in September 2012 at Vladivostok, Russia APEC Economies agreed upon a set of 54 environmental goods that would be candidates for the 5 percent minimum tariff threshold. The actual number and type of goods affected by the initiative would depend on how APEC economies’ existing applied tariff profiles on these goods (most economies are already in compliance with the mandate for all or the majority of the 54 goods in question) as well as how Member states choose the individual national tariff lines covered by the 54 ‘goods’ (the ‘goods’ are actually 54 product sub-categories at the HS 6 digit level that include many more specific national tariff lines). Given the voluntary nature of the initiative, members could either be ambitious or selective in implementing the mandate. The relevance to SETIs stem from the fact that a large number of the environmental goods covered by the Vladivostok Declaration are relevant to the provision of sustainable energy. The Honolulu mandate requires APEC economies to go beyond tariff-cutting and deliver on removing non-tariff restrictions, such as local-content requirements in clean energy, and ensure that all government support and incentive programs aimed at promoting environmental goods and services are transparent and consistent with economies’ WTO obligations. APEC has also traditionally played a role as an ‘incubator’ of pioneering initiatives related to trade. A notable trade initiative that has had its roots in APEC-led processes has been the WTO’s plurilateral Information Technology Agreement (ITA).

This paper explores the various ways in which the APEC initiative on tariff-liberalisation in selected environmental goods could transform into a more comprehensive SETI and eventually into a SETA. It starts with a conceptual discussion and definition of the parameters of SETIs and a SETA and the avenues where they could be pursued. It then revisits not only the Vladivostok outcome on environmental goods but also the basic principles and evolution of APEC, focusing on their relevance to sustainable energy promotion and specifically on areas such as standards, government procurement policies, local-content measures, environmental services, and technology diffusion measures. The paper finally provides some options for transforming the APEC initiative on EGS into a broader SETI in various phases.

This paper was conceived by the International Centre for Trade and Sustainable Development (ICTSD) and developed by ICTSD’s Global Platform on Climate Change, Trade and Sustainable Energy. It is produced as part of a joint initiative of ICTSD’s Global Platform on Climate Change, Trade and Sustainable Energy and the Global Green Growth Institute (GGGI).

The concept of the research has been informed by numerous ICTSD policy dialogues. In particular can be mentioned a dialogue organised in Washington, DC in November 2011 by the PIIE with support of the GGGI and ICTSD; a session organised at the Global Green Growth Summit 2012 in Seoul, Korea in May 2012, a series of trade-related sessions organised by ICTSD in the context of the Global Green Growth Forum in Copenhagen, and a variety of Geneva-based ICTSD- Dialogues with trade delegates from 2011 and onwards.

As a valuable piece of research, it has the potential of informing innovative policy responses on sustainable energy trade initiatives and will be a valuable reference tool for policymakers involved with energy access as well as trade negotiators. 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.

A handwritten signature in black ink, appearing to read 'R-M-O', is positioned above the printed name.

Ricardo Meléndez-Ortiz
Chief Executive, ICTSD

Executive Summary

Sustainable energy trade initiatives (SETIs) that address trade barriers as well as provide focalised governance in terms of trade rules will be a major trade policy deliverable for climate mitigation as it will facilitate easier expansion and scale up of renewable energy.

Sustainable energy trade initiatives can be defined as intergovernmental frameworks, within or outside the WTO, involving at least three or more countries, either mandatory or voluntary, that explicitly provide for enabling governance to address trade barriers and domestic policies affecting trade in clean energy technologies and thereby facilitate the scale-up of sustainable energy. These initiatives may be construed flexibly in terms of their geographical extent (membership) as well as scope (subjects covered). A SETI could increase in comprehensiveness, effectiveness and scope in a number of ways by adding more members, subject areas, broadening or deepening the extent to which trade barriers are addressed and clarifying and providing more effective trade rules.

SETIs can be pursued in a number of forums. The ideal forum would of course be the World Trade Organisation (WTO). The WTO brings together all major trading economies under one umbrella and represents the primary multilateral institution for trade negotiations and the only multilateral framework for trade rules covering a diverse range of subjects from agriculture to industrial goods, services and intellectual property. A mandate already exists under the WTO's Doha Round for negotiating reductions of tariffs and non-tariff measures on environmental goods and services (which include sustainable energy goods and services). Any SETI that is concluded under the ambit of the WTO that mandate or possible under future negotiations would benefit from predictability (as all market access would be legally bound as well as subject to the WTO dispute settlement system). In addition to a multilateral agreement on environmental goods and services, which would only partially address the concerns relevant for clean energy technologies, there are also possibilities for a plurilateral, sectoral agreement within the WTO for example on the model of the Information Technology Agreement. Alternatively a sectoral agreement could be pursued as a standalone plurilateral initiative outside the WTO. While it would provide a forum for 'innovative' rule-making it could however also create complications if the rules eventually agreed upon rules are already covered under existing WTO Agreements. Another alternative would be to pursue SETIs at the regional level through regional free trade agreements.

Among regional trade agreements, the Asia Pacific Economic Cooperation is one initiative that has the potential for transformation into an eventual SETI. It explicitly provides, on a voluntary basis and non-binding manner, for liberalisation of environmental goods and services as part of its 2012 Honolulu Declaration including tariffs and non-tariff barriers. While trade and economic cooperation has been APEC's focus, the environment and more recently climate change has also taken centre-stage in APEC's work programme. APEC's mission statement says that its primary goal is to 'support sustainable economic growth in the Asia-Pacific region.' Promoting green growth and speeding the transition toward a global low-carbon economy is an important objective of the Honolulu Declaration. It not only provides the context for the specific mandate to liberalise environmental goods, but also lays down a number of steps to promote green-growth goals, such as the 'rationalisation and phasing out of inefficient fossil-fuel subsidies' and aspiring to reduce APEC's energy intensity by 45 percent by 2035 (with 2005 as the base year).

The Honolulu Declaration also provides for other trade-related non-tariff initiatives such as the elimination of local-content measures (including as part of domestic clean-energy policy), ensuring transparency of government support and incentive programmes as well as procurement programmes aimed at supporting environmental goods and services and ensuring consistency with Members' WTO obligations and with the 1999 APEC Non-Binding Principles on Government Procurement. It also provides for better alignment of approaches to standards and conformance in the environmental goods and services sectors. Further, as follow-up to the Honolulu Declaration, APEC economies also

agreed to liberalise tariffs to 5 percent or less on environmental goods contained within 54 HS codes at the 6-digit level that also include a number of intensively traded sustainable energy goods. All of these elements already make the APEC initiative on environmental goods a potential SETI that could eventually be further strengthened.

APEC has followed the principle of 'open-regionalism' and consistently expressed support for the multilateral trading system. Any voluntary reduction in applied tariffs (including to zero) would be extended to APEC non-members as well.

APEC also includes a number of relevant sub-groups and committees that could facilitate the process of a SETI. These include for instance the Committee on Trade and Investment (CTI)- the coordinating body for all of APEC's work on trade and investment and some of its subgroups such as the Business Mobility Group (BMG), Group on Services (GOS), Intellectual Property Experts' Group (IPEG), Investment Experts' Group (IEG), Market Access Group (MAG), Sub-Committee on Customs Procedures (SCCP) and the Sub-Committee on Standards Conformance (SCSC). Of particular interest from a SETI perspective is the SCE Working Group on Energy (EWG), launched in 1990, that seeks to maximise the energy sector's contribution to the region's economic and social well-being, while mitigating the environmental effects of energy supply and use. It is assisted by four expert groups (Clean Fossil Energy, Efficiency & Conservation, Energy Data & Analysis, New & Renewable Energy Technologies) and two task forces: one on biofuels and the other on Energy Trade and Investment (ETITF). The Group on Services also works in close collaboration with four service-related APEC Working Groups: Telecommunications and Information; Transportation; Tourism; and Energy. Thus, from a structural perspective it could be said that the APEC includes working groups and committees that are relevant from both a trade as well as a sustainable energy perspective and importantly has mechanisms that allow for coordination between the trade and non-trade aspects of sustainable energy goods and services (SEGS).

Options for transforming this APEC initiative stemming from the Honolulu mandate into a more comprehensive SETI (including a binding Sustainable Energy Trade Agreement, SETA) could be achieved in three 'phases.' The first phase would involve effectively fulfilling APEC's existing Honolulu Mandate (covering issues such as local-content requirements, sustainable energy product standards and diversity of testing requirements, diversity of procurement practices and clean energy subsidies) and prioritising sustainable energy goods & services for liberalisation efforts. It would also involve extending geographical coverage including non-APEC economies particularly the EU and key emerging economies such as Brazil, Argentina and South Africa. These non-APEC economies could voluntarily reciprocate concessions made by APEC economies perhaps not necessarily on the same set of goods and services as agreed upon by APEC. It may be desirable for these non-APEC economies to be engaged in dialogue and consultation with APEC and be 'plugged-in' to various discussions and processes, so they can monitor developments and make known their interests, views and concerns. Further, consultation and close coordination could also be ensured between regulatory bodies of APEC and non-APEC economies and through participation by non-APEC economies in APEC workshops or as observers in APEC working groups or committees.

The second phase would involve expanding the mandate further to cover other trade-related issues and addressing new subjects and barriers (for eg: harmonisation and mutual recognition initiatives on standards and certification and emerging sustainable energy technologies) while continuing to retain the voluntary nature of the initiative.

A third and final phase could transform this voluntary initiative into a binding one creating a Sustainable Energy Trade Agreement. In this final phase, like-minded economies would agree to make binding market access commitments for SEGS, preferably with benefits being extended to all WTO-members, something which is referred to as granting treatment based on the principle of the Most Favoured Nation, MFN. Applying the MFN-principle would have as one of its advantages that it would exempt

participating members from needing to justify the agreement under the articles which allow for plurilateral or regional trade agreements under Article XXIV of the GATT (goods) and Article V of the GATS (services) respectively.

Such a SETA could be concluded either within or outside the WTO. Within the WTO, an agreement could be pursued as an 'open' agreement such as the Information Technology Agreement or a 'closed' one on the models of the Government Procurement Agreement. However, if such an agreement would include rule-making in areas that are already covered by the WTO, there could be risks for problems of consistency and alter the existing balance of rights and obligations vis-à-vis WTO Members. Hence, for an extra-WTO SETA that clarifies rules, it may be better to involve all WTO members to ensure WTO consistency and avoid future conflicts. In this sense, non-participating members could 'opt-out' of the market access component of a SETA but 'buy-in' to the rules part. This could perhaps also be achieved in terms of a negotiated waiver for SETA participants, agreed on by the rest of the WTO membership. A SETA negotiated outside of the WTO, however, could be a good opportunity to shape innovative rules in areas of sustainable energy governance where WTO rules are lacking or for which the atmospherics in the WTO may not yet be ripe to start discussing or introducing such rules. Good examples include areas of emerging technologies, such as renewable energy storage and regional electricity trading hubs.

Both voluntary and binding models for SETIs have their pros and cons. A voluntary SETI may obtain easier traction or 'buy-in' among APEC and non-APEC member economies but may not offer the predictability sought by the private sector. In either case it will be important to get political traction for the initiative across a number of major economies that would involve recognising their offensive as well as defensive interests as part of any initiative including provisions that could apply in a differentiated manner across economies at least at the start of an initiative. It will also involve a mobilisation of key stakeholders among the private sector within potential SETI members that would clearly stand to benefit from the initiative.

Chapter 1

Introduction

1.1 SETI as a Trade Policy Contribution to Climate Mitigation

Keeping global warming within 2 degrees Celsius, the target agreed on by policymakers to prevent adverse effects triggered by climate change, will involve a deep decarbonisation of the power sector (in addition to efficiency improvements and behavioural changes). Presuming an overall increase in energy demand, to maintain the same level of output while reducing greenhouse gas emissions, fossil-fuel use would need to be offset by sustainable energy. The largest increase, according to the World Bank's 2010 World Development Report, would have to come from renewable energy sources, with its share in total output reaching 30-40 percent by 2050, up from the present level of 13 percent. This entails widespread diffusion and deployment of renewable-energy technologies, such as solar panels, wind-turbines and hydro-power stations as well as importantly associated equipment, components and services that will support their deployment. Any barriers that impede the cross-border flow of sustainable energy equipment, goods and services will increase the cost of generating renewable energy, making the fight against climate change more difficult than it needs to be.

Trade barriers, such as tariffs, cumbersome product standards and accreditation procedures as well as procurement practices, immigration procedures for skilled personnel and other domestic policies all serve to impede cost-effective deployment of sustainable energy goods and services. They also hinder firms from optimising supply chains that are typically global in nature. Trade policy, therefore, can contribute to climate mitigation efforts by addressing these barriers. In addition to addressing barriers, trade negotiators could also focus on rules applicable to trade that are perceived to be unclear or that reduce predictability for suppliers of Sustainable Energy Goods and Services (SEGS). Therefore, what is needed are sustainable energy trade initiatives (SETIs) that address trade barriers as

well as provide focalised governance in terms of traderules.

Pursuing meaningful and effective SETIs will not be without its challenges. The trade policy landscape has seen the use of trade-restrictive policies, such as local-content requirements (LCRs) in many countries. It has also witnessed a number of trade disputes over the use of these measures as well as others, such as trade remedy measures and clean energy support policies perceived as favouring domestic clean energy industries. All of these as well as the slow progress of environmental goods negotiations at the World Trade Organization (WTO) and the contentious nature of discussions on environmental goods as part of even voluntary initiatives, like the Asia-Pacific Economic Cooperation (APEC) reveal that mercantile considerations often take centre stage in clean energy related trade policies and could strongly influence the scope, ambition and direction of future SETIs. Policymakers as well as the environmental community may need to accept this reality while striving to create SETIs that are as 'climate-change' responsive as is possible.

1.2 What are Sustainable Energy Trade Initiatives? How are they Different from Sustainable Energy Trade Agreements?

While there is no formal definition of a SETI, this paper attempts to offer a framework for such an initiative.

Sustainable energy trade initiatives are inter-governmental frameworks, within or outside the WTO, involving at least three or more countries, either mandatory or voluntary, that explicitly provide for enabling governance to address trade barriers and domestic policies affecting trade in sustainable energy technologies and services (SETS) and thereby facilitate the scaleup of sustainable energy. These initiatives may be construed flexibly in terms of their geographical extent as well as scope. For instance, a bilateral free-trade

agreement between three countries that specifically targets tariffs on solar energy goods could very well be a SETI, although much more limited in scope than a similar agreement that also addresses tariffs and non-tariff barriers to a wide variety of clean energy goods and services, which in turn may be less ambitious than another SETI within the WTO that involves a number of countries addressing not only trade barriers, but also clarifying rules within the WTO context. A voluntary announcement of trade concessions if undertaken formally by a number of countries could also constitute a SETI. For instance, if an APEC voluntary trade commitment is mirrored by non-APEC economies, it could constitute an expansion in geographical coverage of a SETI.

SETIs may also be distinguished from other trade agreements or initiatives based on their aims. For instance, general free-trade agreements that liberalise a range of goods and services across a number of sectors (or all sectors) among countries might have the effect of a SETI in that they also address barriers to SETS. However, they may not deliberately highlight environmental objectives or climate change or specifically single out SEGS. Such broad trade agreements, therefore, may not be considered SETIs, but if they specifically provide for environmental goods that contain solar energy goods, for instance, such agreements would be SETIs. This 'explicit reference to environment and sustainable energy' criterion would, therefore, prevent a number of free-trade agreements around the world being considered SETIs, even though their effects on goods and services may be the same as agreements that specifically highlight SEGS.

Any SETI that is codified in a formal binding agreement could be considered as a sustainable energy trade agreement (SETA). Like SETIs generally, SETAs can vary in terms of their ambition, scope and territorial reach, depending on the willingness and ambition of parties. While a SETA is always binding, it could very well achieve less than a voluntary SETI in terms of its actual effect on trade flows. For example, a binding SETA on tariffs and non-tariff measures for a few sustainable energy goods between three countries might

achieve less in terms of facilitating the scale-up and expansion of sustainable energy than a voluntary agreement that involves several countries and reduces tariffs and non-tariff measures on several sustainable goods and also addresses barriers to services. However, a binding agreement, while more difficult to achieve, provides greater predictability and certainty to the private sector. SETAs, like SETIs, could be negotiated either within or outside the WTO and involve a minimum of at least three or more countries. An agreement involving a limited number of countries within the WTO could be along the lines of a plurilateral agreement, and outside the WTO it could take the form of a stand-alone plurilateral agreement or be 'embedded' as a distinctly identifiable part of a broader regional trade agreement. A SETA could also form part of a broader sustainable energy agreement (SEA) or as a sustainable energy cooperation agreement as long as the trade section or component is distinctly identifiable and meets the minimum criteria set forth above.

Therefore, a SETI, at a minimum, involves:

- The participation of at least three or more countries
- An explicit reference to SEGS as part of its negotiating mandate or framework
- At least one trade-related restriction (tariff, standard or other non-tariff barrier) on SEGS.

A SETI could increase in comprehensiveness, effectiveness and scope if:

- It expands its geographical coverage (by involving more countries)
- It broadens its sectoral coverage by including a larger number of SEGS
- It adds breadth and depth to addressing trade-related barriers
- It clarifies and provides more effective trade rules that facilitate sustainable energy scale-up, preferably within the WTO context and consistent with WTO obligations of participating countries towards third parties.

1.3 Where Can Sustainable Plurilateral Initiatives Be Pursued?

At the WTO

The ideal forum for pursuing SETIs would be the WTO. The WTO brings together all major trading economies under one umbrella and represents the primary multilateral institution for trade negotiations and the only multilateral framework for trade rules spanning diverse areas, from agriculture to industrial goods, services, product standards and intellectual property rights.

Para 31 (iii) of the Doha Ministerial Declaration that launched a new round of multilateral trade negotiations in 2001 provides for the “reduction, or as appropriate, elimination of tariffs and non-tariff barriers on environmental goods and services.” The mandate provides one of the best opportunities for addressing barriers to SEGS. Unfortunately, the negotiations on SEGS have stalled, owing to lack of progress in the Doha Round as a whole. In addition, negotiations on environmental goods have also run into challenges, not least owing to questions related to the definition of an ‘environmental good’ and classification within the existing harmonised system of customs codes as well as ‘dual’ (environmental and non-environmental) uses of most environmental goods. Significantly, two products that are easily classified as environmental goods—solar photovoltaic panels and wind-powered generating sets—are both sustainable energy goods. In addition, WTO members differ on how to liberalise environmental goods. Many lists of environmental goods have been put forward by members for permanent reduction of bound tariff levels, but certain members have proposed a temporary reduction of tariffs for goods as well as liberalisation of services used in specific environmental projects under a ‘project approach.’ These diverging approaches on liberalisation have also led to a stalemate in the negotiations. Further, under the WTO’s ‘single undertaking,’ ‘nothing is agreed until everything is agreed,’ meaning even if tariffs and non-tariff measures to environmental goods and services are addressed, no deal can be concluded or

implemented until all other outstanding issues in other areas of negotiations are also resolved. That said, any SETI that is concluded under the ambit of the WTO through the EGS or possible future negotiations would benefit from predictability (as all market access would be legally bound as well as subject to the WTO dispute settlement system.)

In addition to a multilateral agreement on SEGS concluded as part of the Doha Round EGS negotiations, there are also possibilities for a plurilateral agreement for example on the model of the Information Technology Agreement (ITA). More details on various options within the WTO are laid out further in Chapter 4.

SETIs under Standalone Plurilateral Initiatives Outside the WTO

SETIs may also be concluded by ‘like-minded’ countries outside the WTO as a plurilateral agreement. However to the extent that such an agreement goes beyond market access and starts addressing trade-rules it could create complications if such rules are already covered under existing WTO agreements. However such agreements could also encourage innovative ‘rule-making’ for instance in areas where WTO rules do not exist. These issues are discussed in greater detail in Chapter 4.

SETIs under Regional Trade Agreements

Another alternative would be to pursue SETIs at the regional level through bilateral and regional free-trade agreements. The ambition of these agreements varies widely. Some, such as the North American Free Trade Agreement (NAFTA) are fairly wide-reaching and provide for far-reaching liberalisation, which makes a separate ‘fast-tracking’ for SEGS fairly redundant. Also, they often provide for dispute-resolution mechanisms. In other cases, the extent of market access offered may be more restricted—often excluding services and agricultural products. In general, the main limitation of a number of these regional trade agreements is their restricted geographical scope, which would exclude a number of important suppliers of SEGS.

APEC and the Honolulu Declaration

The Asia-Pacific Economic Co-operation has concluded one regional initiative that has explicitly included liberalisation of environmental goods and services as part of the 2011 Honolulu Declaration. This declaration was signed by the leaders of APEC economies, comprising 21 members,¹ as part of their green-growth objectives as well as in pursuit of greater regional integration and in accordance with the Bogor goals of free and open trade and investment. The Honolulu Declaration provided the 'greenlight' for APEC economies to work on developing a list of environmental goods on which tariffs would be reduced to 5 percent or less by 2015. This reduction, however, would take into account economies' economic circumstances and would take place "...without prejudice to their position on environmental goods at the WTO." In addition, Annex C of the Honolulu Declaration also addresses non-tariff measures in the following manner by stating that APEC economies would:

- "Eliminate, consistent with their WTO obligations, existing local-content requirements that distort EGS trade in the region by end-2012 and refrain from adopting new ones, including as part of any future domestic clean energy policy"
- Ensure that "...all government support and incentive programs aimed at promoting environmental goods and services are transparent and consistent with economies' WTO obligations"
- Ensure that all government procurement policies pertaining to environmental goods and services are transparent, consistent with the 1999 APEC Non-Binding Principles on Government Procurement
- Promote regulatory coherence and cooperation in areas affecting environmental goods, including by better aligning approaches to standards and conformance in the environmental goods sector.²

It should also be borne in mind that decisions taken under APEC processes are voluntary

and non-binding. There are thus no penalties, unlike in the WTO, for non-compliance. Yet, endorsement of the APEC outcomes by the economies' leaders would make it difficult or at least politically embarrassing to roll-back. So how has the post-Honolulu APEC process measured up so far?

The Vladivostok Outcome on Environmental Goods

A concrete follow-up outcome of the Honolulu Declaration has been the endorsement of a list of 54 environmental goods by APEC leaders in September 2012 at the Vladivostok, Russia summit. The list was agreed following intensive consultations among APEC negotiators. Several of the products on the list draw upon WTO submissions made by APEC economies, such as the '153' list of environmental goods proposed by the Friends of Environmental Goods in 2007 at the WTO.³

Although the APEC list is referred to as a list of '54 environmental goods,' it actually comprises 54 subheadings of the Harmonized System (HS) at the 6-digit level. APEC economies have the discretion not to reduce tariffs on the whole subcategory (which quite often contains goods that do not have environmental applications) so in most cases, tariffs will be reduced only for 'environmental goods' or 'ex-outs,' taking into account additional product specifications detailed by members in Annex C of the list. These 'ex-outs' will need to be identified by individual APEC economies within their individual national tariff lines (TLs). What TLs will actually benefit from tariff reduction remains to be seen, as often it may be difficult to pinpoint 'environmental goods' within national TLs as well.

An analysis by the International Centre for Trade and Sustainable Development (ICTSD) of the APEC list finds that if the aim is at least a minimum applied tariff of 5 percent, only a relatively small number of 'environmental products' on the APEC list may benefit from tariff reduction, as most APEC economies currently apply tariffs of 5 percent or less to most products on the list. The overall simple average most-favoured nation (MFN) applied tariff (excluding Russia) is only 2.6 percent (See

Table 1 below), and 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. However, certain APEC economies—such as Brunei Darussalam, China and Korea—could

potentially reduce tariffs on more of the goods on the list. Nevertheless, every APEC economy can also reduce to zero on individual national TLs or at the entire HS6 digit subheading as it may deem appropriate, given the voluntary and flexible nature of the APEC outcome.⁴

Table 1. 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 from Vossenaar, R. (2013). *The APEC List of Environmental Goods: An Analysis of the Outcome and Expected Impact*, International Centre for Trade and Sustainable Development, Geneva.

1.4 Is the APEC's 54 Environmental Goods List a SETI?

One indicator of an effective SETI is the coverage of sustainable energy goods in an agreement. The 54 product subheadings of the APEC list may seem small, but this was probably the best outcome that could have been obtained in the circumstances. The list does cover different sources of renewable energy (RE) generation, in particular, solar photovoltaic (PV) devices; solar water heaters (SWHs) 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 all, RE products make up 15 distinct subheadings in the APEC list (See Table 2 below) although it is possible several other subheadings could have applications in one or more environmental areas, including RE.⁵

Table 2. APEC List of Environmental Goods: Environmental Categories

| Categories of main environment 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 |

Source: Vossenaar, R. (2013). *The APEC List of Environmental Goods: An Analysis of the Outcome and Expected Impact*, International Centre for Trade and Sustainable Development, Geneva.

The APEC EGS list certainly promotes tariff liberalisation albeit not for the entire possible HS-tariff universe, which could include numerous other goods with sustainable energy applications. For instance, in the heat and energy management category relevant for climate change there are many more products that could be included.

In terms of actual implementation of tariff reduction, however, it remains to be seen on what national tariff lines APEC economies will reduce tariffs to 5 percent (which is the minimum

expected by the APEC outcome) and to what extent they would lower it below 5 percent. As noted previously, a number of sustainable energy products, such as solar PV panels already benefit from applied zero tariffs, so in a sense the tariff landscape for key sustainable energy products may be said to be quite liberal, if not duty free, for most APEC economies. Table 3 below shows the bound and applied tariffs for APEC economies. It must be remembered that tariffs may not be the only factor affecting imports, as import excise taxes may also be applicable even if the tariff is set at zero.

Table 3. Bound and Applied Tariffs on Solar PV Modules and LEDS (HS 854140) for APEC Economies

| APEC Economy | Applied Tariffs (Percentage) and Reporting Year | Bound Tariffs (Percentage) |
|----------------------------|---|----------------------------|
| Australia | 0.0 (2013) | 0.0 |
| Brunei Darussalam | 0.0 (2011) | 40.0 |
| Canada | 0.0 (2012) | 0.0 |
| Chile | 6.0 (2012) | 25.0 |
| People's Republic of China | 0.0 (2010) | 0.0 |
| Hong Kong, China | 0.0(2013) | 0.0 |
| Indonesia | 0.0 (2012) | 0.0 |
| Japan | 0.0 (2012) | 0.0 |
| Republic of Korea | 0.0(2012) | 0.0 |
| Malaysia | 0.0 (2012) | 0.0 |
| Mexico | 0.0 (2012) | 35.0 |
| New Zealand | 0.0 (2012) | 0.0 |
| Papua New Guinea | 0.0 (2010) | 30.0 |
| Peru | 0.0 (2011) | 0.0 |
| The Philippines | 0.0 (2012) | 0.0 |
| Russia | 6.7 (2011) | 0.0 |
| Singapore | 0.0 (2012) | 0.0 |
| Chinese Taipei | 0.0 (2013) | 0.0 |
| Thailand | 0.0(2011) | 0.0 |
| The United States | 0.0 (2012) | 0.0 |
| Viet Nam | 0.0 (2012) | 0.0 |

Source: WTO Tariffs Download Facility accessible at: <http://tariffdata.wto.org>

Chapter 2

APEC: Evolution and basic principles

APEC was established in 1989. The motivation to strengthen intraregional cooperation was a key driver in APEC's establishment, particularly in the context of limited progress under the WTO Uruguay Round of trade negotiations and the establishment of regional trade blocs in Europe (the internal market) and the NAFTA.

The core objective of APEC has been to strengthen regional economic cooperation, and toward this end, it has focused on the liberalisation of goods and services. The Bogor Declaration by APEC economic leaders in 1994 clearly established APEC's long-term goal of free and open trade and investment by 2010 for industrialised members and by 2020 for developing members. Subsequently, both the economic leaders' meeting and the 7th Ministerial Meeting in Osaka, Japan led to the adoption of a strategic roadmap called the Osaka Action Agenda (OAA) for the purpose of attaining those goals.

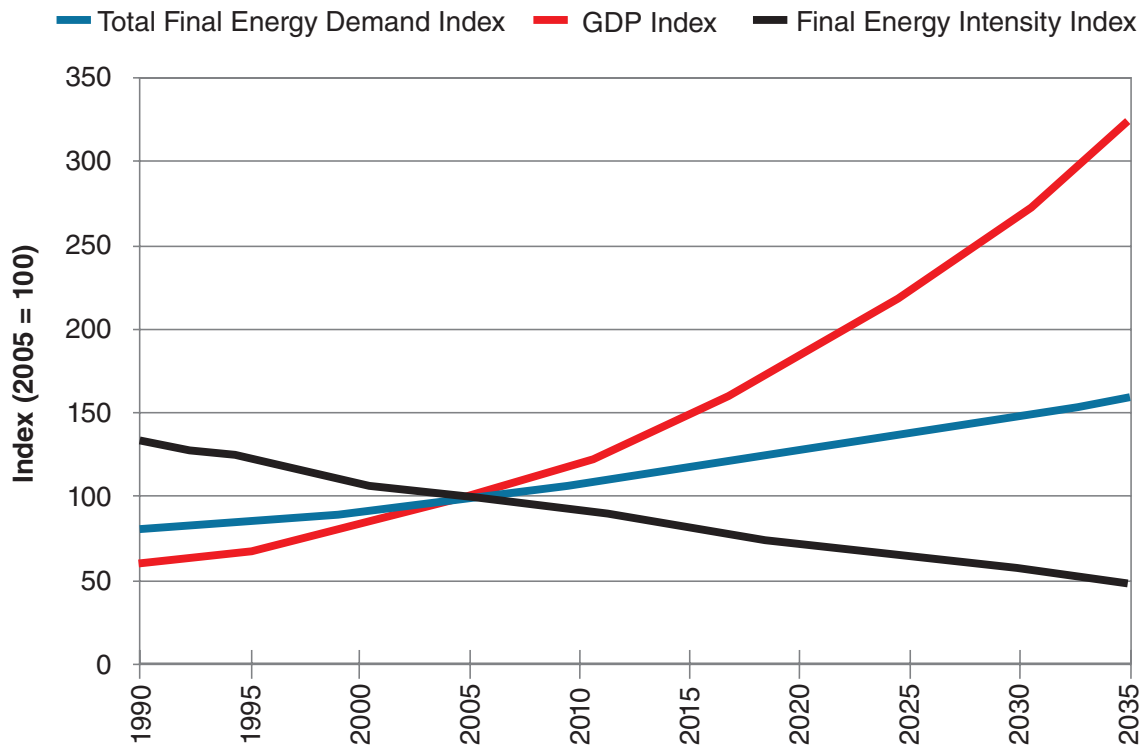
Through Individual Action Plans (IAPs) and Collective Action Plans (CAPs), which are submitted annually, APEC member economies report progress in achieving the goals of open trade and investment. In accordance with 'voluntarism,' one of APEC's fundamental principles, member economies set their own timelines and goals and undertake actions on a voluntary and non-binding basis.⁶

While trade and economic cooperation has been APECs' focus, the environment and more recently climate change has also taken centre-stage in APEC's work programme. APEC's mission statement says that its primary goal is

to 'support sustainable economic growth in the Asia-Pacific region.' Promoting green growth and speeding the transition toward a global low-carbon economy is an important objective of the Honolulu Declaration. It not only provides the context for the specific mandate to liberalise environmental goods, but also lays down a number of steps to promote green-growth goals, such as the 'rationalisation and phasing out of inefficient fossil-fuel subsidies' and aspiring to reduce APEC's energy intensity by 45 percent by 2035 (with 2005 as the base year). (For the full text on Promoting Green Growth in the Honolulu Declaration, see Annex 1.) Energy intensity is defined as energy use divided by gross domestic product (GDP). The APEC target decided at Honolulu in 2011 represents a revision from the earlier 2007 Sydney goal of a 25 percent reduction by 2035, as it became evident that this goal would be surpassed. According to the APEC Energy Demand and Supply Outlook (2013) there is an expectation that primary energy intensity would decrease by 53 percent. APEC's performance as a whole has been encouraging. Between 1990 and 2009, energy intensity declined at a rate of about 1.4 percent a year. Under our business-as-usual assumptions, between 2005 and 2035 it is projected to decline at a rate of about 2.5 percent a year.

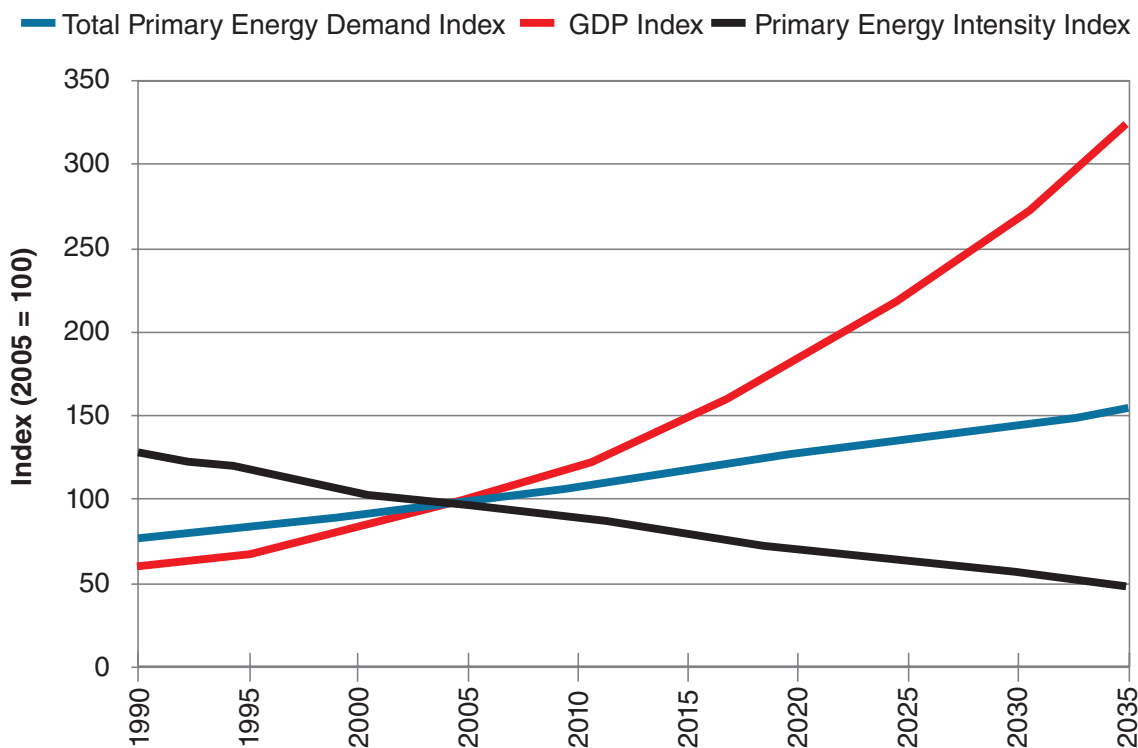
The APEC leaders did not specify whether energy-intensity is to be calculated based on final energy demand or primary energy supply. Figure 1 shows the intensity results based on final energy demand, while figure 2 shows the intensity projection based on primary supply.

Figure 2.1. APEC Final Energy Intensity Improvement



Source: APEC Energy Research Centre (2013), APEC Energy Demand and Supply Outlook, 5th Edition

Figure 2.2. APEC Primary Energy Intensity Improvement



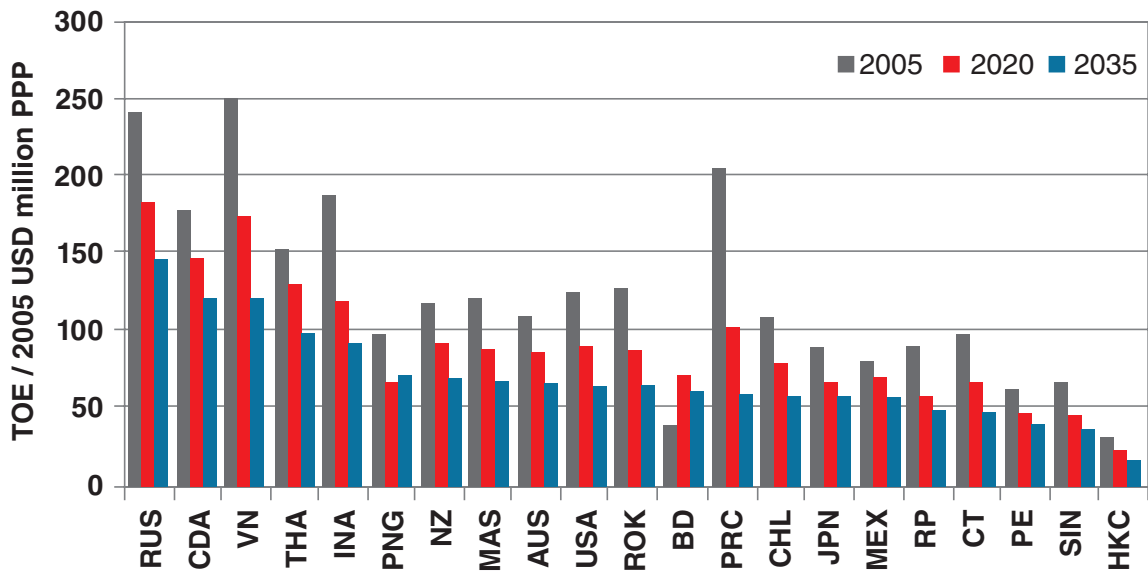
Source: APEC Energy Research Centre (2013), APEC Energy Demand and Supply Outlook, 5th Edition

The 45 percent reduction is an aggregate goal, which recognises that economies' rates of improvement may vary for many reasons.⁷ Changes in energy intensity can be related to a number of economic and non-economic factors, including energy efficiency and changes in the economic structure, climate, geography, home sizes, travel distances etc. Hence, according

to the APEC Energy Outlook report, it would be misleading to judge an economy's energy efficiency by its energy intensity alone.

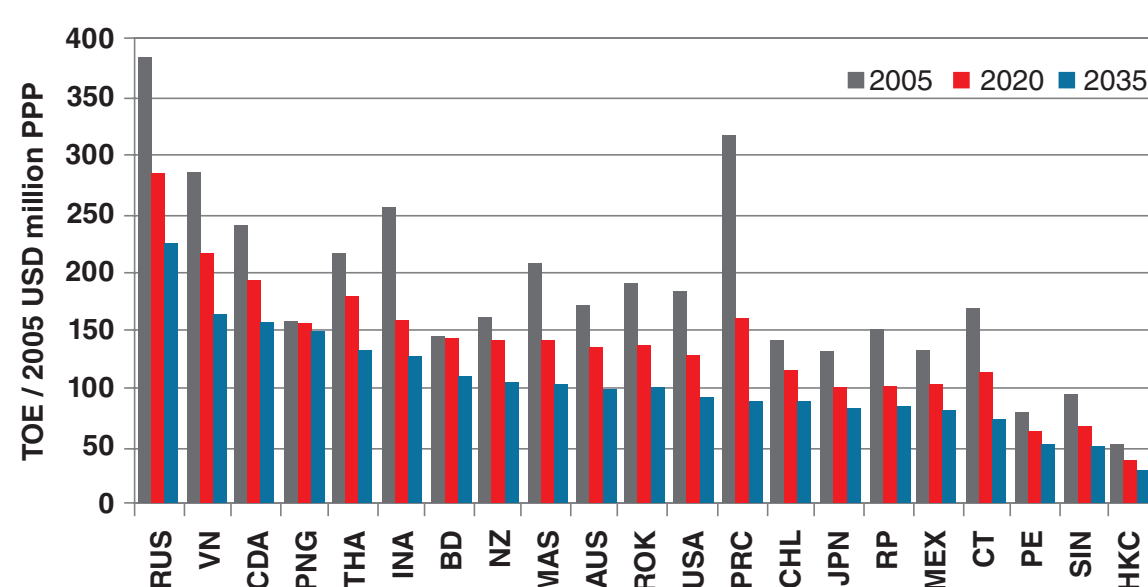
The report also shows the expected changes in final and primary energy intensity by economy from 2005 to 2020 and 2035. These are illustrated in the figures below.

Figure 2.3. APEC Final Energy Intensity by Economy



Source: APEC Energy Research Centre (2013), APEC Energy Demand and Supply Outlook, 5th Edition

Figure 2.4. APEC Primary Energy Intensity by Economy



Source: APEC Energy Research Centre (2013), APEC Energy Demand and Supply Outlook, 5th Edition

The figures show that, with the exception of Brunei Darussalam (owing to the inauguration of an energy-intensive, export-oriented methanol plant in 2010), every APEC economy is expected to show a significant improvement in energy intensity from 2005 to 2035. Economies with the highest energy intensity will show a tendency to make the largest improvements driven by global competitive pressures, government policy and international cooperation. The report warns that while this is likely to enable APEC to meet its energy-intensity goals under business as usual, there is no room for complacency, given that oil imports and greenhouse gases are likely to increase significantly, posing risks to energy security as well as climate change. The report also provides an interesting insight into lessons learned on APEC's energy -intensity goal, including difficulties of finding a definition of energy-intensity that can make it suitable for use as an indicator of regional energy efficiency. It also notes that the energy-intensity improvement calculations can be dramatically changed, depending on whether the GDPs of individual economies are converted to a common currency, using market exchange rates or purchasing power parity (PPP).⁸

APEC has followed the principle of 'open regionalism' and consistently expressed support for the multilateral trading system. There is no discrimination between members and non-members with regard to extending benefits from trade. Thus, if applied tariffs on selected environmental goods were lowered to zero the benefits from any voluntary reduction would be extended to APEC non-members as well. Since its establishment, from an initial membership of 12, APEC has accepted new members with the present membership reaching 21.⁹ An overview of APEC's structure and decision-making process is provided in Annex 3.

The APEC review and reporting process may, therefore, be comparable to the WTO peer-review process with a number of differences—the most obvious being the voluntary and non-binding nature of the process.

Relevant APEC Committees from a SEGS Perspective

An effective SETI process would involve the contribution of a number of subgroups and committees that would support and contribute to the work of trade negotiators.

Within APEC, the Committee on Trade and Investment (CTI) is the coordinating body for all of APEC's work on trade and investment. The CTI oversees eight subgroups: Business Mobility Group (BMG), Electronic Commerce Steering Group (ECSG), Group on Services (GOS), Intellectual Property Experts' Group (IPEG), Investment Experts' Group (IEG), Market Access Group (MAG), Sub-Committee on Customs Procedures (SCCP), Sub-Committee on Standards Conformance (SCSC); and three industry dialogues: Automotive Dialogue (AD), Chemical Dialogue (CD) and Life Sciences Innovation Forum (LSIF). The MAG is responsible for advancing and integrating work on environmental goods and services. It also works closely with other CTI groups, including the SCSC and the GOS, both of which are relevant from the perspective of SEGS.¹⁰

In addition to its sister groups established under the CTI, the MAG also works with the Senior Officials' Meeting (SOM) Steering Committee on Economic and Technical Cooperation (SCE), which coordinates and manages APEC's economic and technical cooperation (ECOTECH) agenda, which is outlined in the Osaka Action Agenda.

The objectives of the SCE are to: (i) strengthen the implementation of APEC's ECOTECH activities by prioritising work based on leaders' and ministers' commitments, and coordinating and providing oversight to the work of APEC to (ii) provide policy guidance on ways to contribute to APEC's ECOTECH goals and (iii) coordinate ECOTECH objectives and priorities between the APEC Economic Leaders' Meeting and Ministerial Meetings. In 2010, a new Framework to Guide ECOTECH activities was

endorsed to guide the APEC-funded capacity building and all ECOTECH and in 2012, the the SCE has focused on developing and improving the way APEC works on issues that cut across the work of many APEC working groups and task forces. At the second SCE meeting (SCE2) in 2012, a new Framework to Discuss Cross-Cutting Issues was endorsed that sets out ways in which fora can work with each other on issues of mutual concern was endorsed. The SCE also identified a number of current issues within APEC for which these activities would be particularly valuable, including food security, disaster management, blue economy, and advancing science and technology. The SCE has under it both working groups and task groups.¹¹

Of particular interest from a SEGS perspective is the SCE Working Group on Energy (EWG) launched in 1990 that seeks to maximise the energy sector's contribution to the region's economic and social well-being, while mitigating the environmental effects of energy supply and use.

The APEC Energy Working Group (EWG) is assisted by four expert groups (Clean Fossil Energy, Efficiency & Conservation, Energy Data & Analysis, New & Renewable Energy Technologies) and two task forces: one on biofuels and the other on Energy Trade and Investment (ETITF).

The ETITF was established to facilitate cooperation and promote regional energy trade and investment liberalisation, and in particular to consider climate change policies and approaches to reducing greenhouse gas emissions, which includes carbon pricing

across the region. The EWG recognises that that business can make an important contribution to the development and implementation of its work programme, and toward that end, it has established its own public-private sector dialogue mechanism— the EWG Business Network (EBN). The EBN advises the EWG on energy policy issues from an industry perspective and facilitates regular dialogues between energy policymakers and business sector representatives.

There is close coordination between the MAG under the CTI and the EWG under the SCE. For instance at the 44th EWG meeting held in Washington, D.C., United States on 5-9 November 2012, members discussed the new list of environmental goods and services recently approved in Vladivostok, Russia, particularly those related to the energy sector.¹²

From the perspective of sustainable energy services, a relevant group (similar to the MAG) established under the CTI is the GOS that works on TILF issues related to trade in services and coordinates APEC's work in this area. The GOS works in close collaboration with four service-related APEC Working Groups: Telecommunications and Information; Transportation; Tourism; and Energy.

Thus, from a structural perspective it could be said that the APEC includes working groups and committees that are relevant from both a trade as well as a sustainable energy perspective and importantly has mechanisms that allow for coordination between the trade and non-trade aspects of SEGS. Examples of APEC's work under these subcommittees will be described further below.

Chapter 3

Transforming the APEC outcome into a more comprehensive SETI: important cross-cutting and issue-specific considerations

3.1 Extension of Geographical Coverage

A truly comprehensive SETI should be global in scope. One option that could be considered, given the current stalemate of Doha negotiations is for non-APEC members, particularly those that are major traders of environmental goods, to voluntarily mirror the APEC commitment and extend it to all WTO members on an MFN basis. (The APEC outcome is automatically extended on an MFN basis and would benefit non-APEC economies.) Such mirroring could be either for the same basket of 54 product subheadings agreed by APEC economies or it could be for a similar set of subheadings that interested non-APEC economies decide voluntarily for themselves or a common set of subheadings (but with discretion to choose individual national tariff lines) after consultation with other interested non-APEC economies. In order to be meaningful, such a voluntary commitment should include major economies that trade SEGs goods, such as the European Union (EU) and at least Brazil, India and South Africa and a few other emerging economies.

3.2 Fulfilment of the Honolulu Mandate relating to nontariff measures

Effectively addressing the Honolulu mandate relating to non-tariff measures (local-content measures, government support and incentive programmes and procurement and standards) would be a major step forward in the transformation of the existing tariff outcome on environmental goods into a more comprehensive SETI. The Honolulu mandate addresses these measures in relation to environmental goods and services in general. (The only instance where clean energy is specifically mentioned is where the Honolulu Declaration calls on members to refrain from adopting new LCRs). Hence, in other areas

the extent to which SEGs will be affected will depend on whether they are included in the coverage of 'environmental goods and services;' otherwise, environmental goods and services are understood to apply to any product or service relevant to specific sectors, such as the provision of sustainable energy. (Others could include waste-water treatment, solid wastemanagement etc.). One question that may arise is whether APEC economies, while discussing non-tariff measures on 'environmental goods' will confine their discussion only to the 54 subheadings agreed on for tariff reduction (or only even specific national tariff lines that individual APEC economies may decide to liberalise). Obviously, the broader the scope of coverage of sustainable energy goods to which any disciplines on non-tariff measures apply the greater will be the impact of a future APEC outcome as a SETI.

Given the voluntary and non-binding nature of implementation, it is quite likely that different APEC economies may also implement the outcome on non-tariff measures differently or selectively (unless all economies agree in advance on a broad sweep of measures or the specific goods and services or even whole sectors to which they will apply). For instance, the APEC subcommittee on standards and conformance set up at a sectoral level (solar, greenbuildings etc.) has been engaged in preparatory work and consultations and any final outcomes that emerge could have an impact on a range of goods.

Against this background and recognising the voluntary and non-binding character of APEC implementation of any future outcome on non-tariff measures, this paper will provide options for specific measures that APEC economies (as well as APEC non-members interested in a similar outcome) could consider under three item areas—domestic support, procurement policies and standards and services—based on

what has been agreed so far and new areas for consideration.

The options proposed draw upon specific research on selected topics commissioned under ICTSD's SETA project as part of its Global Platform on Trade, Climate Change and Sustainable Energy. The options proposed will also be based on the extent of concordance and complementarity between APEC's ongoing processes in these areas, identified priorities if any and issues/recommendations highlighted by ICTSD research.

3.3 Issue Specific Considerations

3.3.1 Standards on sustainable energy products

The Honolulu Declaration calls on APEC economies to "...promote regulatory coherence and cooperation in areas affecting environmental goods, including by better aligning approaches to standards and conformance in the environmental goods sector."

Standards may be among the most important non-tariff measures to impact trade in environmental goods. The example of solar PV standards is illustrated below as solar PV modules are sensitive to standard setting and also heavily traded. APEC economies comprise the most important exporters and importers of solar PV equipment and use different technical regulations and standards. Hence, they are in a good position to address the major impediments to trade that result from existing challenges, such as the diversity of testing requirements.

Globally, International Electrotechnical Commission (IEC) standards, with local variations, make up the majority of the global market and form the basis of technical regulations effectively 'required' for the import of solar PV modules. The only significant global market that does not follow a variation of the IEC standards is North America, where Underwriters Laboratories (UL) standards are currently the standards recognised by government agencies and more important used by officials who conduct onsite inspections. Some notable issues that have a trade impact are:

(i) **Diversity of testing procedures and requirements specific to countries:**

In certain cases, the mandatory testing requirements are to be conducted in national laboratories. Multiple testing requirements impede market access for solar PV products. Further some additional requirements that may involve changes in product design may be for meeting legitimate local conditions, such as climate. For instance, the Salt/Mist Corrosion Test applied for solar panels used in coastal environments.¹³

(ii) **Diversity of product requirements caused by variations in grid codes:**

The diversity of requirements related to differing electrical grid codes are costly and cumbersome and hinder trade. Harmonizing these would reduce expenses associated with modifying solar PV modules to suit different markets.

(iii) **Conformity and accreditation of new and emerging products:**

A number of emerging technologies are not covered by existing standards, and there is little effort to communicate these budding technologies to the standard writing bodies or to ensure that when innovative technologies are ready and there will be applicable standards in place to test them. Sometimes even innovations to existing products can make them noncompliant with existing standards. Although the engineers that test a product have some ability to provide an engineering judgment, this is often limited and requires updates to the standards. To encourage continuous innovation in solar PV products and a faster introduction to the market, there should be speedier facilitation of acceptability with regard to 'up and coming' technologies and products involving regulatory authorities, standard setting, testing and certification bodies and organisations.

To turn into an effective SETI, future APEC initiatives could also address specific policies that may be important for the private sector as illustrated by the example of the solar PV sector highlighted in a recent ICTSD paper.¹⁴ These include for example:

- (i) Policies promoting training and informational support for inspectors and installers
- (ii) Support for organisations that work to harmonise standards while retaining the importance of variations for the purposes of grid interactivity, safety and specific policy compliance.
- (iii) Policies promoting assistance in preparation of product documentation for countries with barriers of language and cultural communications.
- (iv) Greater harmonisation and mutual recognition of testing procedures so that solar PV products do not need to go through unnecessary retesting to enter multiple markets except for justifiable reasons, such as differences in local climate etc.

In certain other areas where new disciplines may be required, for instance, to regulate standards for renewable energy installation services, a SETI based on the APEC model will have limitations, and such disciplines in any case may be best developed at the multilateral level, for instance as part of the Technical Barriers to Trade (TBT) Agreement or the General Agreement on Trade in Services (GATS). Tetyana Payasova (2013) highlights specific examples of such initiatives for the solarPV sector, which may also be relevant (with suitable adaptations or modifications) for other sustainable energy products as well.¹⁵

3.3.1.1 Developments in Standards and Conformity Assessment in APEC

APEC has set up a Solar Technology and Conformance Initiative (STCI) with a mission to increase transparency, encourage better standards alignment and provide a baseline on the use of standards, regulations and conformity assessment schemes for PV, SWH, and CSP among APEC economies. This is part of a series of sectoral initiatives being launched under the SCSC.¹⁶

The SCSC initiatives share a common formula that involves: (i) gaining consensus on project goals through discussions and consultations at the project proposal stage (ii) establishing

a strong sense of relevance to trade in the region (iii) bringing interested parties and relevant stakeholders together for a structured discussion around those goals, and (iv) developing consensus outcomes and next steps based on those discussions. A notable achievement of the SCSC has been the setting up of a mutual recognition arrangement (MRA) for electrical and electronic equipment that has three parts: (i) information Interchange (ii) acceptance of test reports and (iii) acceptance of certification with varying levels of participation. The text of the arrangement was endorsed and concluded by the SCSC in 1999, and participation began in 2000 when 10 APEC economies signalled their intention to take part in the information exchange.¹⁷

The STCI provides a platform that encourages cooperation and information exchange among experts involved in standards regulation and development of solar products. Prior to the Honolulu Declaration, an APEC survey was conducted on current standards and regulations for solar PV, CSP and solar water heaters in which 15 of 21 APEC economies participated. Subsequently expert workshops were held to discuss policies on standards and conformity and on the reliability and durability of solar panels. A number of outcomes emerged from these discussions, including on collaboration in standards bodies and with regulators, greater use of international standards, a common basis for test procedures and the establishment of standardised monitoring methods.

Two areas where experts identified opportunities for useful collaboration on new standards activities were (i) improving measurability of reliability and durability of solar panels and (ii) end of life Issues. It was also considered that greater efforts were required to build 'standards and conformance' infrastructure to enable expansion of renewable energy generation. Such infrastructure included not only the standards themselves, but also their successful adaptation to local conditions, robust and consistent test procedures employed by competent labs and test procedures and use of quality management systems in manufacturing as well as installation and maintenance.¹⁸

In addition to the solar PV study, an ICTSD paper, *Harmonising Energy Efficiency Standards-Building Foundations for Co-operative Action* by Rod Janssen, reveals that trade, primarily intra-regional trade is often a driver for harmonisation efforts. Such standards also have an impact on broader international trade, as importers have to meet the same standards and labelling requirements. Further, with technological improvements, revisions need to be made regularly. In addition, harmonisation of test procedures is important although this has not received the priority it deserves in developing countries.¹⁹

The findings of ICTSD-commissioned research on the specific example of solar PV standards by Rai and Payasova as well as that by Janssen are revealing, as they reflect similar issues and priorities identified within the STCI, such as the need for greater harmonisation. ICTSD's proposals do, however, enter new territory not covered by APEC in calling for harmonisation of national grid codes to the extent this could facilitate trade and also mechanisms to facilitate faster approval of new and emerging products.

Other research has also shed light on the nature of renewable energy standards. An IRENA paper, *International Standardisation in the Field of Renewable Energy* (2013), reveals that fewer standards are adopted at the national level than at the international level. Further, where organizations or trade bodies develop their own specific standards, they are often based on regional or international standards. There is also a larger volume of standards for the more mature technologies that are typically more in-depth. Involvement in the standards-making process is strongest when there are financial incentives, as illustrated by the case of standards for solar PV. A number of findings from the IRENA study could be relevant to APEC's ongoing work on standards. For instance, data collection for existing standards for renewable energy and those under development is particularly difficult, as there is no uniform format or repository for collecting the required information. There is scope for a more structured information platform that allows interested actors to get access and be guided to the relevant standards

at international, regional and national levels. There is also scope for further development of standards in certain areas, such as aspects concerning post-installation of renewable energy equipment, such as operation, maintenance and repair. One of the key messages from the IRENA study is "if standards are to remain of global relevance then the international standardisation route should support all regional, demographic, technical development, societal and environmental aspects of their use. This is particularly relevant in developing countries, where issues of cost, capacity or resource availability limit their involvement in the whole international standards development process."²⁰

All of these recommendations and priorities should be taken into account by policymakers as they engage in regional and multilateral standards processes including at the APEC level.

3.3.1.2 How can the APEC process shape a SETI on standards?

Many of ICTSD's and IRENA's recommendations are well reflected in APEC's work under the SCSC. However ICTSD's recommendations in some cases involve agreeing on trade disciplines pertaining to standards that may be outside the purview of APEC where the process is driven more by consultation, information-exchange and regulatory cooperation initiatives.

Hence, the objectives of a more comprehensive APECSETI may need to be recast in a manner that does not involve binding trade disciplines, but where economies aim at a similar set of objectives with a view toward reducing impediments to trade.

In addition to solar technologies, two areas identified by APEC where cooperation could advance collective environmental goals as well as prevent TBT are green buildings and smartgrid interoperability standards. A sub-committee on standards and concordance has already been established for green buildings and green growth based on surveys, information-exchanges and a series of consul-

tations. Notable outcomes from the process include encouraging greater stakeholder engagement and maximising use of international standards and referencing existing standards in meeting objectives. As of 2013, APEC is organising a series of collaborative workshops marking a year-long initiative to identify the commonalities and differences that exist between standards and conformance infrastructures, including addressing questions, such as who governs industry standards, through which systems and facilities and based on what sorts of information. The goal is eventually to establish a set of best-practice guidelines for APEC member economies on standards development and application.

In the area of green buildings there has also been an emphasis on enhanced policy coordination.

The forging of a working relationship between APEC's SCSC and ASEAN's Consultative Committee on Standards and Quality (resulting in the first ever joint APEC-ASEAN workshop in March 2013 in Lima, Peru on these issues) is considered a model for future cooperation. At the second workshop in Medan, Indonesia in June 2013, participants described their economies' standardisation bodies and processes and identified the key challenges they face on issues, such as organisation, budget, human resources, implementation and performance.

These challenges and recommendations for addressing them will be analysed, along with survey responses and other volunteered data, and will form the basis of the APEC guidelines to be issued in December 2013. The Medan workshop recognized that greater coordination to align industry standards and conformance requirements can improve the business environment and strengthen trade and investment flows in the Asia-Pacific region.²¹ Outreach initiatives, such as the ASEAN-APEC workshop, could potentially be replicated with other economic groupings outside the APEC region as well.

The SCSC also emphasises cooperation with UNEP and other organisations on understanding green metrics and expanding availability of data on green performance. These two sectors

are quite important from a sustainable energy perspective and could be expanded to other sustainable energy products and sectors, such as electric cars, batteries and charging stations.

In order to be meaningful from a broader perspective, it is desirable that the outcomes on standards agreed on in APEC be discussed with non-APEC economies, as they would certainly have implications for exports of solar PV modules or other environmental goods from major non-APEC economies, such as the EU, Brazil, India and South Africa. Involvement of these economies during negotiations, even if they are not APEC members, may provide an incentive and opportunity for them to shape the course of discussions, safeguard their interests and make their concerns known. In fact, if they are attractive enough it could eventually lead to a 'de-facto' set of guidelines that could eventually be adopted by these non-APEC economies and reflected if future conditions permit in the WTO legal framework as well. A SETI that involves non-APEC economies could also comprise consultations and co-ordination between the standards bodies and officials of these economies and APEC's SCSC with the broader goal of harmonisation and/or mutual recognition.

3.3.2 Domestic support and clean energy subsidies

The Honolulu Declaration states that APEC economies would ensure that "...all government support and incentive programs aimed at promoting environmental goods and services are transparent and consistent with economies' WTO obligations."

The reference to transparency and consistency with WTO obligations is understandable, but it is interesting to note is the reference to all government support and incentive programmes. This raises the question of whether forms of government support and incentive programmes that would normally not be captured by the definition of a subsidy under the Agreement on Subsidies and Countervailing Measures (SCM) would be discussed as well.²² As far as sustainable energy is concerned, a wide range of subsidies is used, such as certain types of end-use consumer financing and soft loans for solar panels as well as other forms of government support,

including free provision of land to manufacturing companies. These most likely fall outside the SCM, but may have trade implications.

A recent high profile trade dispute in the WTO on clean energy support, namely Canada vs. Japan and the EU, involves two major APEC economies and the use of subsidies. Similarly, the United States's imposition of anti-dumping and countervailing duties on imports of solar panel from China based on allegations on unfair subsidisation of solar panels by the Chinese government.

In recent years a number of solar panel manufacturing firms, including prominent firms such as Suntech and Solyndra, have gone bankrupt partly owing to excess capacity and a production glut created through government support. The increasing use of incentives linked to local-content in renewable energy equipment in a number of countries, and most recently in France, is a reality. All these developments should be viewed as a good opportunity to discuss and debate the design of clean energy support in a manner that helps the expansion of renewable energy while providing conditions for fair trade and keeping markets open. Greater clarity on the extent to which and the type of subsidies that governments can provide would also help avoid costly litigation at the WTO and provide greater predictability both for governments and the private sector.

An ICTSD paper on clean energy support presented by Arunabha Ghosh and Himani Gangania (2012)²³ presents a number of ways a SETA and other associated measures could address the fundamental tensions between trade and clean energy subsidies.

First, a SETA could clarify rules for sustainable energy in which not only the adverse and non-adverse impacts on other countries, but also the purpose of the measure can be taken into account. Second, subsidies should be measured in a transparent way so they can be compared, and misinterpretation or future disputes can be avoided. Third, the relationship between rationalising fossil-fuel subsidy programmes and the use of subsidies to promote clean energy sources should be further investigated. Fourth, the purpose of and reasoning behind subsidisa-

tion of clean energy have to be discussed. Finally, independent assessments of alleged adverse impacts of subsidy policies could reduce the threat of unilateral trade sanctions or other penalties and could happen through the WTO Trade Policy Reviews, the Committee on Regional Trade Agreements or the United Nations Industrial Development Organization.

While an APEC SETI may not be able to clarify existing WTO rules without the risk of altering the balance of rights and obligations, particularly with regard to other non-APEC members of the WTO, it could pursue the other recommendations proposed by Ghosh and Gangania. Considering options at a regional level that does not attempt to clarify existing WTO subsidy rules but focuses on transparency and impact assessment would not expose APEC economies to the risk of complaints by other WTO members. For instance a SubCommittee on Domestic Support could be set up with a special working group on energy subsidies in general or on clean energy subsidies in particular that could aim to foster transparency and promote assessments of subsidies, including their design and impact as well as methods of comparative measurement. It could also serve as a point of data collection on subsidies in APEC economies. Such discussions could eventually involve non-APEC economies that may be interested, as national decisions pursuant to decisions emerging from such a subcommittee would have implications for trade opportunities for non-APEC economies as well. It would be desirable though for any discussions to have at least interested non-APEC economies present as observers (India, an important regional economy, already has an observer status in APEC.)

3.3.3 Procurement policies

In 1995, APEC established the Government Procurement Experts Group (GPEG) to consider ways to achieve increased liberalisation and enhanced transparency in government procurement markets in accordance with the Bogor Declaration. The GPEG developed a set of Non-Binding Principles on Government Procurement (NBPs), which were endorsed by APEC leaders at their meeting in 1999 in Auckland, New Zealand. The NBPs have reportedly contributed to the successful

promotion of transparency and the liberalisation of government procurement markets across member economies, and APEC member economies have subsequently submitted voluntary reviews and reports to the GPEG against these NBPs.²⁴ In line with the Osaka Action Plan, flexibility is a cornerstone of the whole process, and individual APEC member economies are considered in the best position to decide on the applicability of individual elements of the NBPs, taking into account the specific characteristics of their economies and the costs and benefits of adopting specific measures.

The NBPs identify elements and illustrative practices on the principles of transparency, value for money, open and effective competition, fair dealing, accountability and due process, and non-discrimination.²⁵

At their meeting in Los Cabos, Mexico, in October 2002, APEC leaders adopted the Statement to Implement APEC Transparency Standards, calling for the development of transparency standards specific to each work area of the Osaka Action Agenda. The GPEG developed Transparency Standards on Government Procurement (based on the transparency provisions in the NBPs), which were endorsed by APEC leaders and adopted as part of the Leaders' Transparency Statement at their meeting in Santiago, Chile in November 2004.

Consequently, the transparency standard for government procurement replaces the earlier transparency NBP. These transparency standards on government procurement aim to foster a level playing field by making all information readily available to competitors; requiring notice and comment periods prior to adopting procurement laws and regulations; providing an avenue to appeal administrative decisions; making publicly available the evaluation criteria and the name of the winning bidder and contract amount; and, upon request, notifying the losing bidders with an explanation as to why they lost. Once incorporated into domestic laws, it is expected that standards could significantly enhance fair competition, minimise corruption and official discretion and reduce competition for the benefit of people in APEC economies. A 2011 paper by Transparency International re-

viewed the state of compliance with transparency standards and found that, with the exception of Mexico, no APEC economy had incorporated all of the standards in its legal framework.²⁶

The Honolulu Declaration calls on APEC economies to “ensure that all government procurement policies pertaining to environmental goods and services are transparent, consistent with the 1999 APEC Non-Binding Principles on Government Procurement.”

From the perspective of promoting trade in sustainable energy goods and services, it may be useful to examine specific issues of concern as highlighted in an ICTSD paper by Alan Herve and David Luff.²⁷

A major lack of clarity in the WTO's Government Procurement Agreement (GPA) as it exists according to the authors is on the extent to which provisions of non-discrimination contained in the GPA would permit the use of procurement policies that explicitly favour SEGS against non-sustainable ones if they have the effect of favouring particular regional suppliers. One example could be a requirement to use energy-efficient methods in the delivery of a service. Unlike Article 2.1 of the TBT Agreement, Article IV of the revised GPA does not contain any reference to 'likeness,' as public procurement provisions are mostly addressed to suppliers and procuring entities of countries. However, while a possible justification could exist under the general exceptions provisions of the GPA that mirrors Article XX , it cannot be presumed that it would permit any preferences in government procurement based on processes and production methods (PPMs). It would be helpful if an APEC SETI could clarify this ambiguity and expressly allow for promotion of SEGS by public purchases. It could also be used by economies the world over as a standard when negotiating provisions of free-trade agreements. The revised GPA specifies that sustainable procurement should be one of the subjects of future GPA negotiations. However, to the extent that such clarification by a SETI is perceived by other non-APEC GPA members as altering the balance of rights and obligations vis-à-vis themselves, APEC economies could be vulnerable to challenges at the WTO. As seen in Tables 3.1 only 7 APEC economies, Canada, HongKong,

China, Japan, Korea, Singapore, Chinese Taipei and the United States, are members of the WTO's Plurilateral Government Procurement Agreement. So with regard to any SETI or SETA related provisions or rules on procurement, particularly binding ones, these 7 economies will need to be especially mindful towards their obligations under the GPA as well and ensure there is no conflict.

The paper by Herve and Luff provides the option of both 'hard' and 'soft law' options for procurement provisions within a SETA, as the latter could also address SEGS-related requirements with exchanges of best practices among members. Such 'soft-law' provisions could fit well into APEC's preferred non-binding and 'voluntary' model of doing business.

However, to the extent that the proposals may require mandatory compliance or binding obligations, it could be difficult to implement within an APEC SETI context. One such proposal by Herve and Luff includes quantitative objectives that could be imposed on the parties to a SETA to require certain proportions of SEGS-certified products in key sectors such as buildings, construction, transport etc. Objectives could be assessed through a peer-review mechanism, and requirements could vary based on the level of development of contracting parties, thereby encouraging broad participation in a SETA. While differential obligations based on levels of development may be desirable, the binding nature of the obligation could still make it unviable within an APEC SETI context.

Table 3.1. Parties and Observers to the GPA

| GPA members | APEC Economies | Non-APEC Economies |
|------------------|---|---|
| Parties | Canada; Hong Kong, China; Japan; Korea; Singapore; Chinese Taipei and the United States | Armenia, 27 states members of EU, Iceland, Israel, Lichtenstein, the Netherlands and Switzerland |
| Observers | Chile; China; Indonesia; Malaysia and New Zealand | Albania, Argentina, Bahrain, Cameroon, Colombia, Croatia, Georgia, India, Jordan, Kyrgyz Republic, Moldova, Mongolia, Montenegro, Oman, Panama, Saudi Arabia, Sri Lanka, Turkey and Ukraine |

Source: APEC, *Green Public Procurement in the Asia Pacific Region: Challenges and Opportunities for Green Growth and Trade*, APEC Committee on Trade and Investment, April 2013

Future discussions in APEC could, in addition to transparency in procurement policies on EGS procurement and consistency with the 1999 Guidelines, also begin the discussion of policies on sustainable procurement and the extent to which SEGS can be promoted. This could

provide additional clarity on the extent to which governments can use procurement as a tool to promote SEGS. These could be a significant advance towards a SETI by APEC economies that could be further strengthened by addition of non-members.

Table 3.2. Possible Procurement-Related Options in a SETA

| Characteristics of the SEAT Provisions on Government Procurement | Pros | Cons |
|--|--|--|
| Type of Agreement | | |
| Within the scope of the WTO | <ul style="list-style-type: none"> - Greater legal certainty - Non-discriminatory nature of sustainable procurement could be promoted with respect to all the WTO Members - Avoid forum shopping - Could facilitate with the Committee on Public Procurement Activities and the current negotiations on Public Procurement - More efficient when it comes to the justification of SEGS procurement before the WTO adjudicatory bodies | <ul style="list-style-type: none"> - Exclude non-WTO members - Difficulties deriving from the limited membership to the GPA will not necessarily be solved |
| Outside the scope of the WTO | <ul style="list-style-type: none"> - Can include non-WTO members - Negotiations of the provisions will not be suspended until resolution of other WTO issues - May provide useful lessons which will be replicated later within the WTO | <ul style="list-style-type: none"> - Risk of forum shopping - Possible conflicts between the GPA and the SETA provisions (especially before the WTO adjudicatory bodies) |
| Universal | Could allow a universal promotion of SEGS in public procurement | Long negotiation Limited results |
| Limited | Could allow a group of like-minded countries to develop tools aiming at promoting public procurement | The obligations contained in the agreement could preclude other parties from accepting them |
| Scope and Content | | |
| Soft promotion of SEGS in public procurement (with exchange of good practices) | Allow a proactive approach regarding SEGS in procurement instead of the current defensive approach | Weak added value considering that non-binding instruments and recommendations already exist at the international level |
| Quantitative objectives imposed on the states (varying with development levels), e.g. 50% of developed-country procurement should use SEGS by 2020 | Real incentive to develop SEGS in public procurement that is still lacking at the international level | <p>Resistance from the States could limit membership.</p> <p>Difficulty of establishing subjective criteria on which to determine quantitative objectives.</p> <p>Requires a proper legal definition of SEGS</p> |

| Characteristics of the SEAT Provisions on Government Procurement | Pros | Cons |
|--|---|--|
| Link with the Other SETA Provisions | | |
| Provision on public procurement binding on all SETA Members | Greater coherence of the entire agreement | Future SETA Members could advocate for limited provisions concerning public procurement, stressing their discriminatory nature |
| Provision on public procurement binding for some SETA Members (SETA à la carte approach) | Could allow a group of like-minded countries to develop an efficient and detailed legal framework | Difficulties inherent to limited membership |

Source: Herve, Alan and David Luff (2012); *Trade Law Implications of Procurement Practices in Sustainable Energy Goods and Services*; International Centre for Trade and Sustainable Development, Geneva, Switzerland.

3.3.4 Local-content measures

The Honolulu Declaration calls upon APEC members to eliminate, consistent with WTO obligations, existing LCRs that distort environmental goods and services trade in the region by the end of 2012, and refrain from adopting new ones, including as part of any future domestic clean energy policy.

APEC economies have previously implemented local-content measures in the renewable energy sector. Notable examples include the wind-energy sector in China, where the local-content measure was abolished in 2009. In May 2013, the WTO's Appellate Body ruled that the state of Ontario's LCRs in the wind and solar energy sectors was inconsistent with Canada's WTO obligations. While Canadian officials have stated that they would comply with the Appellate Body ruling, the specifics of implementation now lie with the government of Ontario, as the Canadian Federal government could not compel a province to change its policy.²⁸ So far, no other local-content measure in the sustainable energy sector appears to be in place among APEC member states. Following the enactment of the US anti-dumping measures against Chinese solar PV modules in May 2012, China also made public a complaint on US subsidy measures in five US states related to six mea-

asures, five of which involved the use of LCRs. Those presently in vogue include: (i) an additional 20percent financial support under California's Self-Generation Incentive Program "for the installation of eligible distributed generation or advanced energy storage technologies from a California supplier" (ii) additional incentives under Massachusetts' Commonwealth Solar II rebates (for homeowners and businesses that put in place solar PV for installations that use components manufactured in Massachusetts and (iii) Washington's Renewable Energy Cost Recovery Incentive Program which grants more support when domestic manufacturing is used. The Malaysian Renewable Energy Bill 2010 provides for a variable feed-in tariff (FIT) linked to LCRs. The scheme grants the payment of a basic FIT rate. In addition, biogas, biomass and solar PV producers receive a bonus FIT payment conditional on the use of locally manufactured or assembled components. The additional bonus is, however, small compared with the initial FITs.²⁹

Thus, it would appear that while not all APEC members are in compliance with the Honolulu mandate, none of these measures should have remained beyond the end of 2012. Given the voluntary nature of APEC, the mandate would not be binding in cases where countries did wish to undertake such measures; but, such measures

would certainly be in violation of their WTO obligations. Furthermore, as Kuntze and Mourenhout point out, procurement tenders containing LCRs would hardly be disciplined by WTO law as the GPA does not include many APEC economies, and even those who are members often exclude a number of their entities and sectors from the application of the agreement.³⁰

While Kuntze and Mourenhout also point out certain conditions under which LCRs could be beneficial, they also highlight the lack of clear evidence that would justify the application of LCRs. Hence, it appears unlikely that a more comprehensive SETI, or at least those involving APEC economies, would explicitly permit exceptions for continuing LCRs in certain cases, especially as they would contravene existing WTO rules that apply to all WTO members. Any possibility of a waiver under any SETI may be ineffective unless a waiver is sought in the WTO context as well. Otherwise, implementing economies would be vulnerable to a challenge brought under the WTO by an affected non-party to such a SETI.

At the First SOM on 6-7 February, 2013 in Jakarta, Indonesia, Japan, Korea and the US submitted a proposal that the CTI undertake a number of activities in 2013 to “further study the impact of local content requirements on regional integration and economic growth, and to discuss ways through which economies can promote job creation and competitiveness goals in ways that enhance, rather than distort, trade.” These activities were: (i) a Trade Policy Dialogue at the Second CTI to provide for a focused discussion with key experts from the private sector, governments, and academia on the impact of LCRs on trade and investment and economic growth, as well as on ways that economies can achieve their economic goals without resorting to these measures; (ii) the conduct of case studies on the impact of LCRs on APEC economies’ trade and investment interests and (iii) based on the results of the discussion at the TPD on LCRs and input from APEC economies, share and discuss possible ways by which economies can promote job creation and competitiveness goals in ways that enhance, rather than distort, trade, in lieu of using LCRs. The CTI, taking these discussions into account and considering different

circumstances in APEC economies, would then determine whether to draft and submit to APEC ministers and/or leaders a summary report describing possible ways, in lieu of LCRs, to promote their economic goals.³¹

3.3.5 Environmental services

Sustainable energy services could be considered a subset of the broader category of environmental services, and its delivery depends on a number of ancillary services, such as engineering and construction.

According to a 2010 APEC report highlighting the findings of a Survey on APEC trade liberalisation in environmental services, the Asia-Pacific region accounts for more than 67 percent of the world market for environmental goods and services. Given the difficulties of collecting data on environmental services, it is hard to estimate exactly their volume, including sustainable energy services, in the region or globally. However, it is estimated that the market for environmental services is much larger than the market for environmental goods. The environmental services market in the region is dominated by the US and Japan, although their share of the Asia-Pacific market has reportedly been declining.³² With the data available, it appears that the US, Japan and Germany have been traditionally dominant in environmental services exports, while Chinese Taipei, Mexico and Canada have been net importers. However, new countries have emerged as key players in the environmental services industry. It is predicted that environmental services growth will be fastest in developing countries, particularly China, and Eastern Europe, owing to strong economic development, increasing awareness as well as stringency of environmental regulations. The pace of liberalisation has progressed very slowly at the WTO. As of August 2008, only 48 WTO members had made commitments in environmental services compared with the 100 members that had made commitments on financial services. Commitments in environmental services have been selective and do not cover all subsectors. For instance, most commitments have been on environmental sanitation and sewage treatment. Within the APEC region, only 9 economies of the 21 APEC economies that are also WTO members, namely Australia,

Canada, China, Chinese Taipei, Japan, Korea, the US, Thailand and Vietnam, have reportedly made commitments on environmental services. Most commitments pertain to market access with limitations in Mode 3 (commercial presence) and Mode 4 (movement of natural persons) and only in Mode 2 (consumption abroad) are there no limitations.³³

The actual state of autonomous liberalisation in APEC economies, however, is further advanced. According to the 2010 APEC report,³⁴ trade liberalisation in environmental services is one of nine sectors of EVSL carried out by APEC economies. The number of APEC economies making commitments had increased from 5 in 2000 to 16 by 2008. By the end of 2008, 16 APEC economies—Australia, China, Chile, Canada, HongKong China, Indonesia, Japan, Korea, Mexico, New Zealand, Papua New Guinea, Singapore, Chinese Taipei, Peru, the US and Vietnam—had made concrete commitments for trade liberalisation in environmental services in their IAPs.

Even though the proportion of commitment of environmental services (71 percent) appears to be slightly more important within the APEC region—76 percent compared with 31 percent as a whole for the WTO—the APEC report points out that a number of restrictions still exist, notably in terms of sector-specific barriers, such as licensing requirements, joint-venture requirements, equity and visa restrictions. From the survey it is evident that there are also procurement-related restrictions, such as local preferences, threshold values for open bids and pre-determined excluded sectors.

Further from a sustainable energy services perspective, given that the classification of environmental services is based on Central Product Classification (CPC) categories, most of the environmental services listed (except possibly 'Other Environmental Services') may not adequately capture a number of sustainable energy services, particularly in critical areas, such as design and installation, and construction and maintenance, for renewable energy projects. However, it is likely that a number of horizontal policies, such as procurement and visa restrictions and even restrictions on the use of electronic payment methods, such as credit cards

for foreign transactions could have a restrictive effect not only on environmental services, but also on sustainable energy services.

Among the main recommendations of the APEC survey report is the need for APEC to recognise other service sector industries, such as architecture and engineering, construction and energy services, and understand the concerns of their private sector operators to ensure that liberalisation is promoted in these 'cluster' sectors as well. APEC also recommended working with regulators to better understand market access conditions and regulatory drivers and in turn help them better understand the GATS and work to ensure that GATS reflects current levels of market access and national-treatment. APEC members should also provide new market access and national treatment in subsectors and modes of supply where trade impediments remain. Looking ahead, the APEC report also came out with a few specific proposals. First, APEC should play an important role in the classification of environmental services. Second, APEC could promote mutual multiple and regional recognition of professional qualifications for environmental services among APEC economies. Third, APEC could strengthen capacity building on trade in environmental services, including by providing a website to carry information on trade requirements. Finally, APEC should promote trade facilitation and simplify procedures, including visa-related procedures, such as broadening the scope of the APEC Business Travel Card.

All of these recommendations could be relevant to the specific case of sustainable energy services. In addition, APEC economies could consider specifically reflecting progress in addressing trade impediments in sustainable energy services in their IAPs based on a clear classification of these services as decided upon by each economy.

An ICTSD paper on sustainable energy services in a SETA by Joachim Monkelbaan also reinforces some of these recommendations. The paper highlights various perspectives on the need for a clearer classification on environmental services. One point he raises is that the absence of an appropriate classification does not prevent WTO members from negotiating on cli-

mate change-related services. What is more important is to ensure that each schedule is internally coherent by avoiding overlap among sectors and defining the scope of the commitments clearly and precisely.³⁵ The WTO Secretariat in a recent note to WTO members, suggests several ways in which clean energy services can be classified. The Secretariat starts by confirming the lack of explicit reference to services related to renewable energy or energy efficiency in both W/120 and the CPC prov. and the neutrality of classification of energy-related services with respect to the energy source (sustainable energy services cannot be distinguished from services related to fossil fuels). The only explicit reference made to renewable energy is found in “engineering services for power projects” (CPC2 83324). Whatever the approach used, it will be important to give consideration to new and emerging technologies, such as carbon capture and storage and smartgrid-related services. Smartgrid, for instance, would cut across several W/120 sectors, including telecommunication and computer services and perhaps also energy distribution.

According to the paper, three highly concentrated sectors financial services, construction and ICT have a critical mass of countries that can together account for 90 percent of trade in these services, and two of them, construction and ICT, are directly related to sustainable energy services. Emerging economies, like China and India, have high export competitiveness in these two sectors. In addition, big emerging countries, like China, are shifting manufacturing toward higher value-added products, emphasizing the tertiary sector and searching for new market opportunities abroad.

As the WTO Secretariat notes, engineering services together with construction services are key among those falling within the category of ‘other professional, technical and business services’ in delivering effective public services and electricity generation and transmission. Engineering services, which predominantly entail advisory, design, consulting and project management functions, complement construction services. Therefore, many firms provide integrated packages of engineering and construction services together.³⁶ While developed

countries have, historically, dominated the markets in sustainable energy services, existing data reveals that countries like Singapore, the Russian Federation, Brazil, and India are rising exporters of ‘other professional, business and technical services.’

Most major economies have made only limited commitments in the key sectors relevant for sustainable energy, although autonomously they may have liberalised many more sectors. While ideally a SETA would aim for bound liberalisation, this may not be feasible immediately and it could be enough as part of a SETI for APEC members to address on a voluntary basis the remaining trade impediments in these key sectors as well as expand sector coverage as recommended in the APEC 2010 survey on environmental services keeping domestic priorities and considerations in mind. More could also be done in delivery modes like Mode 1 (cross-border trade) where a number of WTO and APEC economies have left their schedules unbound and on Mode 4 (movement of natural persons) where there are limitations restricting the temporary movement of workers.

The paper by Monkelbaan underscores with respect to services sectors, which are strongly linked with sustainable energy services (e.g. construction, financial, and ‘other’ services), that more commitments have been made in preferential trade agreements (PTAs). In the Australia-ASEAN-New Zealand free-trade agreement (FTA), for example, the financial services schedule shows more commitments under the ‘Banking and Other financial services’ subsector than those present in Australia’s GATS schedule – especially with regard to market access. All of the differences affect mode 3 (commercial presence) and some affect mode 1 (cross-border supply). Other relevant FTAs that have made progress on these services are EU-CARIFORUM, EU-South Korea, India–Japan and US-South Korea.

APEC economies could commit as part of the APEC process to voluntarily not rollback the greatest extent of liberalisation they have undertaken whether autonomously or as part of their commitments under bilateral and regional trade agreements. Domestic regulatory constraints

that affect the provision of sustainable energy services could also be discussed as part of a SETI, and the mechanisms set by APEC to facilitate such discussion and feedback could be the model for an expanded SETI that also includes non-APEC economies. It goes without saying that in addition to the APEC economies, a SETI on sustainable energy services would greatly benefit from including the EU, Brazil and India within its scope, given the importance of these economies in many of the key ancillary services, such as construction and engineering, as well as being important markets for renewable energy projects. As part of provisions and mechanisms on technical assistance and capacity building, a SETI could particularly focus on building regulatory capacity in developing countries in sustainable energy capacity where a need is expressed for instance in new and emerging areas, such as smartgrid management. Assistance toward building such infrastructure could also be part of potential SETI provisions on technical cooperation and capacity building.

It appears likely that any initiative that incorporates most of the recommendations and proposals of the APEC 2010 Survey on Environmental Services and for the services required to deliver sustainable energy services would take the shape of a SETI. The GOS could contribute constructively in this regard by informing the work of the MAG through analysis and data. According to the STAR Database, a GOS project currently contains services, market access, and behind-the-border requirements for market entry in the financial, mining and energy, transport and logistics, telecommunications and professional services sectors for 11 APEC economies. It is also undertaking a study programme on the APEC environmental services-related technology market aimed at better defining the market and encouraging higher levels of trade facilitation and investment. The programme hosted a workshop in Singapore in April 2012 and is undertaking a survey and study of the environmental services technology market in the APEC region. Recognising the importance of better services trade statistics, the GOS has also adopted a project aimed at capacity building and networking for statistics agencies in the APEC economies.³⁷

A SETI that addresses sustainable energy services should also take into account the ongoing negotiations on a plurilateral Trade in Services Agreement (TISA)³⁸ where innovative new approaches, such as ‘the hybrid approach’ proposed by Australia and the EU have been adopted.³⁹ The relationship between the TISA (covering all services) and the proposed services within a SETA/SETI are difficult to predict at this point, as SETIs could take various forms: voluntary with concessions on applied liberalisation also being extended to non-APEC economies on an MFN basis (like the APEC); binding with concessions limited to participating economies; a stand-alone SETI/SETA or as part of a larger regional trade agreement (RTA) covering other goods and services and sectors, all of which may have different legal implications in accordance with WTO and GATS provisions.

3.3.6 Technology Diffusion, Technology Co-operation and Transfer

One of the most attractive features of a SETI particularly for developing economies will be the extent to which it can facilitate technology diffusion of sustainable energy technologies. It is important to remember in this context that technology transfer can happen through various modes, such as foreign direct investment, licensing and trade in goods and services. So, to the extent that the APEC process and SETIs can facilitate these initiatives for SEGS it could contribute towards the technology diffusion process.

However, what is more interesting and attractive for prospective members of a SETI is the inclusion of specific provisions or structures that could directly address technology diffusion and cooperation either cross-cutting or on a sectoral level.

An ICTSD paper, *International Technology Diffusion in a Sustainable Energy Trade Agreement: Issues and Options for Institutional Architectures* by Tom Brewer, provides an overview of existing institutional and governance-related considerations and arrangements that affect trade and transfer and diffusion of green technologies, particularly with respect to the United Nations Framework Convention on Climate

Change (UNFCCC) and the WTO. Brewer states that a SETA should have a broad scope in terms of its coverage of industries and technologies and policies that act either as incentives or barriers. While addressing tariffs and non-tariff barriers (NTBs) on goods and services is important, the paper points out that NTBs on services and international investments could have much bigger effects on technology transfers in the form of know-how. The paper also emphasises the importance of government policies that facilitate innovation and investment in sustainable energy technologies because of the market failures associated with technology research, development and diffusion. It is important in this regard to resolve conflicts between sustainable energy subsidies and trade liberalisation, and the paper lays out two approaches to this challenge: formulating principles, which has the advantage of creating clarity and reducing uncertainty, and resolving dispute cases, which has the advantage of pragmatic adaptation to tangible circumstances.

Brewer also calls for comprehensively addressing a wide range of sectors, measures and barriers as part of efforts to facilitate technology diffusion. In addition, a SETA could also include specific provisions on capacity building and technical assistance and refer to existing agreements on technology cooperation. There were also other ways to incentivise developing countries to participate in a SETA particularly through linking SETA negotiations to other closely linked issues. For instance, bilateral SETIs could be linked to existing bilateral international technology cooperation agreements.

To what extent does APEC include provisions on technology co-operation? The APEC has a number of subcommittees whose work directly or indirectly facilitates technology diffusion. Under the CTI these include (i) the APEC Automotive Dialogue (AD) (ii) the Chemical Dialogue (CD) (iii) the Intellectual Property Rights Expert Group (IEG)(iv) the Life Sciences Innovation Forum (LSIF)and (v) the Subcommittee on Standards and Conformance.

Under the SOM SCEC, relevant working groups from the perspective of diffusion of sustainable energy technologies are the (i) EWG and (ii) the Policy Partnership on Science, Technology and Innovation. All these subcommittees and working groups are described in further detail in Annex 4 and 5. The process in these subcommittees and working groups is centred on dialogue and information exchange and supported in many instances with concretely funded initiatives. The involvement of the business sector also lends to quite a bit of dynamism. From a SETI perspective, it would be useful to have specific subgroups for instance by technology or sector and perhaps also something akin to an APEC version of a 'Green Fund' that has been set up at the UNFCCC to fund uptake of climate mitigation technologies in large-scale projects such as upgrading grid infrastructure in various APEC economies. APEC could also build on what has been happening in various settings, such as the UNFCCC and the Clean Energy Ministerial, and contribute to these processes as well. Such initiatives could complement and strengthen initiatives for trade and investment facilitation for SEGS.

Chapter 4

Options for transforming the APEC initiative on EGS into a broader SETI

Given what we know about the structure and functioning of APEC so far, the question now arises as to how to convert the APEC outcome on environmental goods into what could be a more comprehensive SETI. Here, we propose options for the phased evolution of a SETI that may be acceptable to the entire APEC membership as well as non-APEC economies. It is presumed that any SETI concluded within the auspices of APEC will retain its basic non-binding voluntary character and will also retain APEC's processes and structures.

Phase 1: Effectively Fulfilling the Honolulu Mandate, Prioritising Sustainable Energy Goods and Services in APEC's Work Programme and Extending Geographical Coverage

To the extent that environmental goods and services include SEGS (i.e. renewable energy goods and services and where feasible energy-efficient goods and services) it could be argued that the APEC Honolulu Declaration represents the most holistic embryo of a SETI to date. It goes beyond Para 31 (iii) of the WTO's Doha Ministerial Mandate, which only calls for liberalisation and as appropriate, elimination of tariffs and non-tariff measures on environmental goods and services in that it actually sets a minimum threshold target for tariff reduction (5 percent). The Honolulu mandate also specifically names a number of measures with actual or potential trade impacts—local-content measures, clean energy support and procurement policies—rather than merely stopping at a broad reference to 'non-tariff barriers' as with Para 31 (iii).

The mandate to promote regulatory cooperation and coherence in areas affecting environmental goods is significant as it potentially brings within its ambit a wide range of domestic regulatory measures, especially new ones that would be required to deal with evolving technologies (for instance smart grids and

electric vehicles). Indeed Annex C specifically singles out standards and conformance—a critical area for regulatory cooperation. The Honolulu Declaration recognises that “greater alignment in regulatory approaches, including to international standards, is necessary to prevent needless barriers to trade from stifling economic growth and employment.” A key step that the Honolulu Declaration recognises that economies would need to take would be to “... pursue common objectives to prevent technical barriers to trade related to emerging green technologies, including smart grid interoperability standards, green buildings, and solar technologies.”

While the Honolulu mandate contains the right ingredients for a SETI, it could also be argued that most provisions of the Honolulu mandate represent the declaration's best intentions of APEC economies, and what will ultimately matter is the nature, scope and contours of any agreements and outcomes that get implemented pursuant to the mandate.

Thus, the easiest option for converting the APEC deal into a more comprehensive SETI (including for the moment only APEC member economies) may be for APEC economies to effectively fulfil the existing Honolulu mandate, addressing elements particularly on non-tariff measures and ensuring that it goes beyond just a broad basket of 'environmental goods' to comprehensively address barriers to SEGS. Some ways of prioritising SEGS on the process side would be to set up a special CTI working subgroup on SEGS that could facilitate tradereform and market access by coordinating closely with both the MAG and the GOS as well as other relevant groups such as the SCSC; the EWG the EGS and the SCCP. In addition, it could engage in consultation and dialogue with the APEC Business Advisory Council (ABAC) and bodies, such as the Science, Technology and Innovation group under the SOM among others.

On the substantive side, it could ensure that APEC economies start addressing critical issues such as:

- Reflecting important sustainable energy technologies within national tariff lines in the implementation of tariff reduction for environmental goods following the Vladivostok Declaration.
- Phasing out or eliminating local-content measures across APEC economies in the clean energy sector.
- Fast-tracking discussions on standards and conformity pertaining to sustainable energy technologies, such as solar PV modules, where impediments to trade exist and engaging with private sector bodies and national standardising bodies as well as international ones like the IEC. Standards pertaining to renewable energy service providers, such as installers, could also be considered in addition to sectors, like greenbuildings and smartgrids, which have already been mainstreamed into APEC's mandate. A stand-alone, easily accessible database of standards and conformity assessment procedures for sustainable energy technologies for the APEC region could be proposed (which could subsequently also be extended to non-APEC members as well).
- Addressing the issue of domestic clean energy support with a view to fostering transparency and promoting assessments of subsidies, their design and impact including methods of comparative measurement. It could also serve as a point of data collection on subsidies in APEC economies where a database of ongoing clean energy support programmes and measures could be compiled through voluntary notification of APEC economies.
- Ensuring that all government procurement policies pertaining to environmental goods and services are transparent, consistent with the 1999 APEC Non-Binding Principles on Government Procurement. This part of the Honolulu mandate could be specifically prioritised to also include policies that af-

fect SEGS as well as perhaps listing specific entities and sectors. APEC's peer-review process of measures taken by APEC economies could specifically review voluntary implementation for the SEGS sector as well.

- Strengthening the Honolulu Declaration with regards to its mandate on environmental services as compared to goods and getting into details about the scope and extent of desired liberalisation in environmental services. Building on extensive discussions on the topic within APEC working groups, economies may wish to build on the recommendations in the 2010 APEC survey of trade liberalisation in environmental services and start identifying and prioritising services important for the delivery of sustainable energy, such as construction and installation and addressing remaining restrictions in key sectors and modes as well as taking steps to facilitate travel for business personnel, including further simplifying visa procedures and broadening the scope of the APEC Business Travel Card. A discussion on a commonly agreed classification of environmental services and those relevant for delivery of sustainable energy could begin among APEC member economies. This would also facilitate eventual trade liberalisation and the collection of statistical data on trade in these services, an initiative that is already underway. At a minimum, APEC economies could commit not to roll back the current state of autonomous liberalisation in an agreed list of environmental services as well as a number of other services relevant to sustainable energy delivery.

The fulfilment of various elements of the Honolulu Mandate may take much more time than originally envisaged and is not without challenges particularly given that non-fulfilment of the mandate does not carry any penalty given the voluntary nature of the APEC process. It is possible that several economies may have a low level of ambition with regard to designating national tariff lines for liberalising environmental goods. Certain issues, such as clean energy support, may take more time to resolve, particularly if there is disagreement on what constitutes clean energy subsidies.

Extension of coverage to key non-APEC member economies

The results of implementation of the Honolulu mandate resulting in Phase 1 of a SETI will also benefit non-APEC member economies. While APEC already accounts for a significant share of trade in the 54 subheadings in the Vladivostok list, for a meaningful SETI, it would be desirable to have at least the EU, the biggest producer and trader in SEGS outside the APEC region, and if possible a number of key emerging economies, such as Argentina, Brazil, India, and South Africa, actively participate.

One way in which non-APEC member economies could be part of such a SETI would be to reciprocate by similarly voluntarily reducing tariffs and non-tariff measures on at least the EGS, including SEGS addressed by APEC or including more goods and services if desired. On the other hand, non-APEC economies may wish to liberalise not exactly the same goods and services agreed on by APEC, but on others. If those goods are critical or important to the meaningful delivery of the SEGS covered, this could be regarded as a SETI that would cover both APEC and non-APEC economies with every economy modulating its goods and services coverage in accordance with its national needs and priorities. At a minimum, non-APEC economies could also agree to a standstill or non-rollback of applied tariffs on select environmental goods or autonomous liberalisation in sustainable energy services they have already put in place.

While voluntary market access measures on the part of non-APEC economies may not be difficult to implement (unless there are concerns about extending benefits on an MFN basis globally), in certain other areas such as standards and clean energy support, it may be desirable for these non-APEC economies to be engaged in dialogue and consultation with APEC and be 'plugged-in' to the discussions and processes, so they can monitor developments and make known their interests, views and concerns. Further, consultation and close coordination could also be ensured between regulatory bodies of APEC and non-APEC economies.

This could eventually be 'institutionalised' in some manner. All of this will help facilitate harmonisation efforts or at least a bridging of perspectives on these issues between APEC and non-APEC economies. A common understanding on issues, such as the types of clean energy support that have an impact on trade, facilitating conformity assessment requirements for sustainable energy products or services relevant to sustainable energy delivery will help facilitate trade among APEC economies with non-APEC economies as well. These issues will always have limitations, but initial efforts within the APEC could pave the way toward more binding solutions in the future.

Another way in which non-APEC economies could be involved in an APEC-led SETI initiative could be through participation by invitation in APEC-ASEAN-type workshops or as observers in various APEC working groups and committees. Such informal channels of participation and outreach to non-APEC economies will be particularly helpful in the process of regulatory cooperation and eventual regulatory convergence on sustainable energy-related issues as in other areas.

Phase 2: Expanding the SETI Mandate While Retaining the APEC Voluntary Model

During the second phase, and as part of future commitments, APEC members may wish to expand the scope of the mandate to facilitate trade in SEGS by including additional goods and services as part of voluntary liberalisation efforts. They could also consider new issue areas. For instance on:

- **Standards:** Greater mutual recognition and harmonisation of standards and conformity assessment procedures among APEC and participating non-APEC economies, including on grid-related requirements for products as feasible as well as for important products not already addressed in Phase 1.
- **Subsidies:** Voluntary disciplines and time-bound phase out of certain types of clean energy subsidies while allowing greater scope to retain others.

- **Procurement:** Clarifying the extent to which members can use procurement policies to promote SEGS and to the disadvantage of 'less' sustainable or environmentally friendly goods and services. This may, however, also require APEC to closely consult with non-APEC economies so as not to alter any perceived balance of rights and obligations under the WTO's GPA.
- **Technology Cooperation and Technical Assistance:** Provisions chapters on technology cooperation, financial and technical assistance towards SEGS infrastructure, as well as reference to existing technology-cooperation provisions whether in the WTO, UNFCCC or in relevant bilateral and multilateral treaties.

In addition to these new issues, a second phase could also involve a discussion of new and emerging issues and technologies in the sustainable energy realm. This could range to provide illustrative examples from new technologies, like energy storage technologies, and relevant issues, such as their classification under the HS system to incentives provided for cross-border renewable electricity exports. It may be useful in this regard for APEC economies during the second phase to consider setting up a mechanism to constantly monitor and review new and emerging issues that may arise in the sustainable energy and trade context and bring it to the attention of policymakers.

Once again non-APEC economies could engage on these SEGS issues with APEC either individually or collectively as a group including *inter alia* through participation in workshops and in APEC meetings as observers. In terms of certain issues, such as subsidies and procurement, any change in domestic regulatory measures will need to be compliant with existing WTO rules, particularly if it affects the rights and obligations of economies that may not be party to such an informal agreement, but may still be affected by a clarification of subsidy or procurement norms that could occur in such a SETI. It must be remembered that APEC norms always emphasise consistency with WTO rules and obligations, so there may be limits to which rules could be clarified,

particularly if it is perceived as changing the balance of rights and obligations. A better option may be for participating members in a SETI initiative to draft a set of guidelines and principles on sustainable energy subsidy rules and procurement measures, which they could then discuss with other non-participating members in the WTO.

Phase 3: Transforming the SETI into a Sustainable Energy Trade Agreement (SETA): Codifying and Binding to the Extent Feasible APEC SETI Liberalisation Measures, 'Norms' and 'Principles' among Like-Minded Economies

The third phase of a SETI drawing upon progress achieved by individual APEC member economies could be the conclusion of a more legally binding agreement involving like-minded economies that would involve binding market access granted for SEGS by these members but with benefits being extended on an MFN-basis. This would exempt participating members needing to justify it under Article XXIV of the GATT and Article V of the GATS.

SETA Option Within the WTO

The WTO represents the only multilateral framework for regulating global trade. It also has rules that cover a wide variety of sectors, such as industrial and agricultural goods, services and intellectual property as well as diverse issues, such as subsidies, procurement, health, safety and technical standards among others. It is based on the principles of MFN and NT.⁴⁰ The WTO is flexible enough to provide for plurilateral agreements if relevant rules are followed. Such agreements could extend benefits to all WTO members even if negotiated by a limited number of members, or it could restrict benefits to participating members if the subject matter covered does not already fall under the scope of the General Agreement on Tariffs and Trade (GATT) Article I:1 or GATS II:1. The Informational Technology Agreement (ITA) is an existing example of the former type of agreement, while the GPA is an example of the latter type.

- (a) The ITA-type option: A SETA could well be signed within the WTO and for sustainable

energy goods be similar to the ITA and for services could be simply reflected in participating members' GATS commitments. The ITA model allows for negotiations among a limited group of countries and gives effect to the outcome by adjusting member's goods and services schedules. Consequently, MFN treatment is extended to all members, and as its subject matter is restricted to GATT and GATS. An ITA type of agreement will be limited in scope. Further, it may only yield rights and not diminish obligations of members.

- (b) The GPA-type option: The GPA model requires adding SETA to Annex 4 of the WTO Agreement by a consensus vote at the Ministerial Conference. The consensus vote has to be considered when SETA is negotiated according to the GPA model. The only substantial requirement is that it concerns a trade agreement. Hence, the scope is much broader than that of the ITA model. A SETA as an agreement added under Annex 4 falls under the MFN obligation when the subject matter covered by it falls under the scope of GATT Article I:1 or GATS II:1. Since that is very likely to happen with a SETA, certainly with an ITA-type agreement and even under a GPA-type agreement, any decision to add SETA to Annex 4 should address MFN treatment specifically in the interest of certainty. It must be borne in mind that the reason the benefits of the GPA were limited to participating members was because the subject of government procurement does not fall within the scope of Article I:1 of GATT 1994⁴¹ or the other MFN obligations in the multilateral WTO agreements.

Hence, even if such an agreement is 'closed' similar to the GPA, benefits may still be need to be extended on an MFN basis to all WTO members.⁴¹

- (c) Integrating a 'closed' agreement negotiated outside the WTO into the WTO framework: If agreed on as a closed agreement outside the WTO, such an agreement would need to meet the 'substantially all trade' coverage criteria pertaining to RTAs as required by Article XXIV of GATT and 'substantial sector coverage' required by Article V of GATS. If this is what 'like-minded' economies may wish in

terms of a binding SETI, it may be preferable to integrate such an agreement as part of a broader liberalisation package involving FTAs among members for instance as part of the Trans-Pacific Partnership (TPP) Agreements or adding to existing bilateral or regional FTAs.

Matthew Kennedy (2012) lays out a number of considerations for negotiating a SETA within the WTO. For instance, he states that formal negotiations that have to be launched by consensus help to ensure openness and transparency, which can be important in securing agreement of non-parties to a SETA. A SETA should be open to new members to accede, and an accession clause should also be negotiated. An assessment of criteria requiring the implementation of an agreement also needs to be laid out.

The availability of an effective dispute settlement system that can enforce decisions is one of the attractions of concluding a SETA within the WTO. If a SETA was based on the ITA model, commitments would become effective through members' goods and services schedules and become integral parts of GATT and GATS. Other provisions of these agreements would apply, including the Dispute Settlement Undertaking (DSU) and no further consideration is necessary. If the SETA was based on the GPA, the DSU could apply only when the parties included a provision for the application of the DSU, the Ministerial Conference adopts a decision by consensus to amend the list of Covered Agreements of the DSU and the parties notify the dispute settlement provisions of SETA to the Dispute Settlement Body (DSB). When a dispute arises under both SETA and other multilateral WTO Agreements, the DSU could be amended to protect the rights of non-parties to SETA.⁴²

SETA Option Outside the WTO

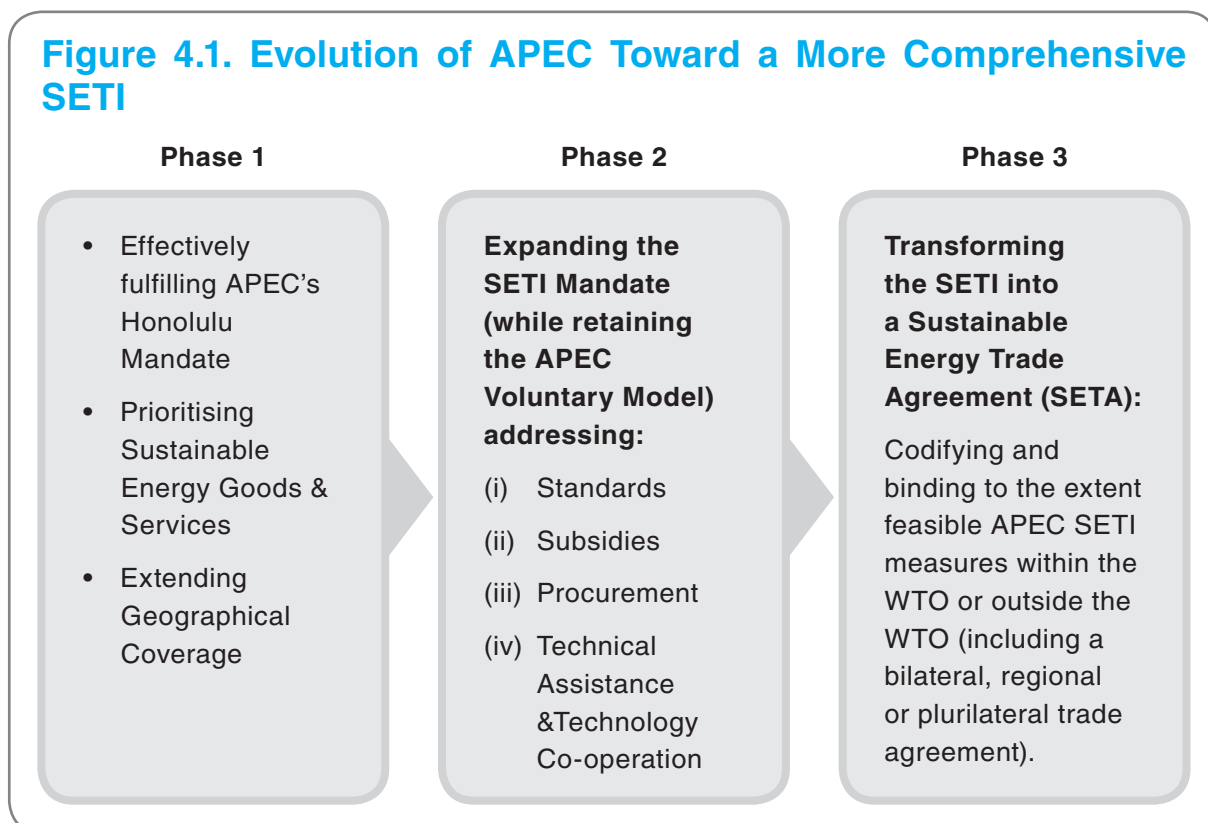
A more difficult proposition for transforming a SETI into a binding SETA agreed outside the WTO would be to change or clarify rules, particularly in areas such as subsidies, as this could alter the balance of rights and obligations with other WTO members that may not be parties to the agreement. Changes, for

instance, in domestic regulatory requirements pursuant to new subsidies or procurement rules that a binding SETA, or even a non-binding SETI, entails could also affect market access for WTO members that are not parties to the creation of such principles, norms or rules guiding internal domestic sustainable energy policies of countries. Hence, while it may be desirable to advance discussion on clarifying rules it may be better to involve all WTO members to ensure WTO consistency and avoid future conflicts. In this sense, non-participating members could ‘opt-out’ of the market access component of a SETA but ‘buy-in’ to the rules part. This could perhaps also be in terms of a negotiated waiver for SETA participants that is agreed on by the rest of the WTO membership. In all cases, it may also be necessary for a SETA, particularly one that is outside of the WTO, and provides for binding market access and makes rules to clarify how dispute settlement would apply among participating members and the relationship to the WTO’s DSU as well.⁴³

A SETA negotiated outside of the WTO, however, could be a good opportunity to shape innovative rules in areas of sustainable

energy governance where no WTO rules exist at all or the atmospherics may not yet be ripe to start discussing or introducing such rules. Good examples include areas of emerging technologies, such as renewable energy storage and regional electricity trading hubs. A SETA negotiated outside the WTO could focus exclusively on energy issues, including sustainable energy and could be a building block for innovative governance on new issues that technological change may throw up. As part of a broader stand-alone agreement it could also integrate non-trade aspects, such as technology cooperation and technical and financial assistance. Such an agreement could also eventually be a good conduit for introducing trade-related governance on these ‘sunrise’ issues and technologies back into the WTO when the time is ripe. In the interests of eventual consensus it is desirable that SETA initiatives outside the WTO also garner broad-based support and participation even from those WTO members that are unwilling to discuss these issues in a WTO context. More research on the opportunities for a SETA outside the WTO and how it might eventually be integrated or mainstreamed into the WTO will be important in the coming months.

Figure 4.1. Evolution of APEC Toward a More Comprehensive SETI



Chapter 5

Conclusion

As this paper has discussed, an APEC initiative, while itself constituting a SETI, can be transformed into a more comprehensive and effective one by fulfilling the existing mandate, expanding the scope of issues covered and extending geographical reach to include non-APEC economies. The pathways are dynamic and should be open to innovative solutions and creative permutations and combinations of various options as highlighted earlier. Sustainable energy governance and energy governance more broadly have a number of points of interaction with trade policy. While the WTO is an ideal platform to discuss these issues, the present difficulties with completing the Doha agenda may not provide an immediate incentive for WTO members to begin these discussions in the WTO context. Non-WTO forums, such as APEC, could therefore provide an ideal laboratory for innovative trade and energy governance initiatives that could subsequently inform WTO negotiations or even be integrated into the WTO's regulatory framework. For this to happen it is imperative that as many WTO members beyond the APEC region particularly the major traders of SEGS are involved.

A SETI that is voluntary and based on the APEC model and building upon APEC's progress and mandate with market access benefits being extended to non-participating economies is certainly feasible and could eventually also involve non-APEC economies. However, when such a SETI becomes (i) a 'closed agreement', (ii) a legally binding agreement and (iii) formulates principles or creates rules that affect WTO rights and obligations of non-participating WTO members, a number of additional factors including WTO rules will need to be considered in order to ascertain the extent to which it can be a viable agreement. A voluntary non-binding model will certainly have limitations particularly in terms of offering certainty and predictability of domestic policy measures such as subsidies or conformity assessment procedures. It

also provides no guarantee that non-binding principles and similar decisions taken will eventually be reflected in the domestic legal provisions of member states. The example of Mexico being the only economy reported to have incorporated into its legal framework the Transparency Standards on Government Procurement endorsed by APEC leaders in 2004 is a reminder of some of the limitations of a purely 'voluntary' approach. The private sector would certainly prefer the predictability that a binding set of market access measures and rules would offer.

One possibility for 'fast-tracking' progress could be to start with a voluntary APEC-model initiative that draws and builds upon APEC processes and institutional structures whose outcomes are mirrored by key non-APEC economies such as the EU in consultation with APEC. This could then evolve in the future toward a more binding agreement involving a market access component (with benefits extended or not on an MFN basis in consistency with WTO rules) and a 'rules' component where innovative rules and norms that impact other WTO members could be discussed within the WTO for reintegration as part of WTO law or secure a 'carve-out' or waiver from the rest of the WTO membership.

In all of these cases it will be important to get political traction for the initiative across a number of major economies that would involve recognising their offensive as well as defensive interests as part of any initiative including provisions that could apply in a differentiated manner across economies at least at the start of an initiative. It will also involve a mobilisation of key stakeholders among the private sector within potential SETI members that would clearly stand to benefit from the initiative. It was such mobilisation led by the private sector that was responsible for the successful conclusion of the ITA, and it could be the same for any successful SETI. In this regard, one example of a high-level political 'push' that

could help efforts for a SETI in a WTO context is the recognition of the significance of the APEC initiative by President Barack Obama of the US in his 25 June speech on climate change and energy at Georgetown University in Washington. His Climate Action Plan notes that the US will work with trading partners to launch negotiations at the WTO, which will build on the APEC agreement. Hopefully his words will find traction in other capitals around

the world and be translated into concrete action in the not too distant future.⁴⁴ As was pointed out earlier, there is a very real risk that in the shortterm mercantilist interests could dominate the ambition, scope and direction of SETIs, but as climate change visits more adverse effects on countries around the world, perhaps the goal of efficient reduction of greenhouse gas emissions will gain more prominence, relative to purely commercial considerations.

Endnotes

1. The APEC member economies (as of March 2013) are: Australia, Brunei Darussalam, Canada, Chile, People's Republic of China, Hong Kong, China, Indonesia, Japan, Republic of Korea, Malaysia, Mexico, New Zealand, Papua New Guinea, Peru, The Philippines, Russia, Singapore, Chinese Taipei, Thailand, The United States and Viet Nam.

2. http://www.apec.org/meeting-papers/leaders-declarations/2011/2011_aelm.aspx

3. The 'Friends of Environmental Goods' comprise 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).

4. Vossenaar, R. (2013); The APEC List of Environmental Goods: An Analysis of the Outcome & Expected Impact; International Centre for Trade and Sustainable Development, Geneva, Switzerland.

5. For full list of the 54 HS subheadings, see http://apec.org/Meeting-Papers/Leaders-Declarations/2012/2012_aelm/2012_aelm_annexC.aspx

6. Individual and Collective Action Plans are available through a dedicated e-IAP website-<http://www.apec-iap.org/>. From 2012-20 IAPS will be submitted biennially under a revised IAP process, and the IAP peer-review process adopted in 2011 can also be found there. The site also enables searching individual APEC member economy IAPs, comparing IAPs across years as well as viewing IAP peerreviews and CAPs. For further details see <http://www.apec.org/about-us/how-apec-operates/action-plans.aspx>

7. In 2013, APEC launched a project study to respond directly to the 2011 energy-intensity reduction mandate, which is aimed at creating a framework of indicators to optimize the reduction of energy intensity through various measures. The project tender document recognizes that while many technical options exist to reduce energy intensity, there is limited guidance regarding the effectiveness of these options in terms of impact, cost and prerequisites for implementation and the appropriateness for different situations. This project would provide such guidance drawing on experiences across the APEC region. The project focuses on six broad types of measures for reducing energy intensity, namely low-carbon industry, low-carbon layout, low-carbon energy, low-carbon buildings, low-carbon transportation and resources recycling. For further details see http://www.apec.org/Projects/~media/Files/Projects/TendersRFPs/2013/20130326_EWG_23_2012A_RFP_final.pdf

8. APEC Energy Research Centre (2013), APEC Energy Demand and Supply Outlook, 5th Edition. Accessible at <http://publications.apec.org>

9. This includes 19 countries and 2 economies-Hong Kong and Chinese Taipei

10. <http://www.apec.org/Groups/Committee-on-Trade-and-Investment/Market-Access-Group.aspx>

11. <http://www.apec.org/Groups/SOM-Steering-Committee-on-Economic-and-Technical-Cooperation.aspx>

12. <http://www.apec.org/Groups/SOM-Steering-Committee-on-Economic-and-Technical-Cooperation/Working-Groups/Energy.aspx>

13. Rai, S. and Payasova, T. (2013, Forthcoming). *Selling the Sun Safely and Effectively: Solar Photovoltaic (PV) Standards, Certification Testing and Implication for Trade Policy*, International Centre for Trade and Sustainable Development, Geneva, Switzerland.
14. Rai, S. and Payasova, T. (2013, Forthcoming). *Selling the Sun Safely and Effectively: Solar Photovoltaic (PV) Standards, Certification Testing and Implication for Trade Policy*, International Centre for Trade and Sustainable Development, Geneva, Switzerland.
15. Ibid.
16. The SCSC was established in 1994 to help reduce the negative effects that differing standards and conformance arrangements have on trade and investment flows in the Asia-Pacific region. In this way, the SCSC helps the CTI achieve APEC's trade and investment liberalisation and facilitation agenda. The SCSC also promotes open regionalism and market-driven economic interdependence by encouraging greater alignment of APEC member economies' standards with international standards.
17. http://www.apec.org/Groups/Committee-on-Trade-and-Investment/Sub-Committee-on-Standards-and-Conformance/apec_eemra.aspx
18. Julia Doherty, *Regulatory Co-operation in APEC*, Presentation at WTO Workshop on Regulatory Co-operation between Members, 8-9 Nov 2011.
19. Janssen, R. (2010). *Harmonising Energy Efficiency Requirements – Building Foundations for Co-operative Action*, ICTSD Issue Paper No. 14, International Centre for Trade and Sustainable Development, Geneva, Switzerland.
20. IRENA (2013), *International Standardisation in the Field of Renewable Energy*, accessible at http://www.irena.org/DocumentDownloads/Publications/International_Standardisation_%20in_the_Field_of_Renewable_Energy.pdf
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22. Article 1.1 of the SCM lays down the definition of a subsidy. The definition contains three basic elements: (i) a financial contribution (ii) by a government or any public body within the territory of a member (iii) which confers a benefit. All three of these elements must be satisfied in order for a subsidy to exist. For further details see http://www.wto.org/english/tratop_e/scm_e/subs_e.htm#Top and http://www.wto.org/english/docs_e/legal_e/24-scm.pdf
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35. One issue that is important in relation to the classification of environmental services is how to classify 'new' activities, particularly in the sector undergoing significant technological development. The field of carbon capture and storage may be a case in point (Cossy, 2011).
36. Monkelbaan, J. (2013) Forthcoming, *Sustainable Energy Services in a SETA*, ICTSD.
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38. The WTO allows countries to negotiate stand-alone agreements such as TISA if they represent a 'critical mass.' Based on this, the 27 countries representing 90 percent of services trade could unite to withdraw all or some of the current barriers constraining the market of services. The TISA's focus is however market access and does not cover regulation (Monkelbaan, J. 2013)
39. The EU-Australia proposal would obligate countries to open to foreign competition for only those sectors that they specifically schedule on a so-called positive list. But, it would obligate countries to adopt a 'negative list' approach to national treatment obligations, which means they are required to treat foreign competitors no less favourably than domestic ones even in sectors not scheduled for market access in the plurilateral agreement
40. The MFN principle provides that, with certain exceptions, as in the case of RTAs, WTO members cannot discriminate between their trading partners. The NT principle provides that WTO members must accord the same treatment to their trading partners as they do to their domestic producers of goods and services.
41. For more details, see *Legal Options for a Sustainable Energy Trade Agreement (2012)* by Mathew Kennedy. The full paper is accessible at: <http://ictsd.org/i/publications/138050/?view=details>. The views presented in the paper reflect the authors' personal views and do not necessarily represent the official views of ICTSD.
42. For a discussion of the various forms a binding SETA could take and its legal implications, see *Legal Options for a Sustainable Energy Trade Agreement' (2012)* by Mathew Kennedy accessible at: <http://ictsd.org/i/publications/138050/?view=details>

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46. The ISTWG has 4 subgroups: Human Resource Development, International Science and Technology Networks, Connecting Research and Innovations and Technological Cooperations and Strategic Planning.

47. Among other activities, the PPSTI works to: Strengthen collaboration and enhance member economies innovative capacity; Develop science, research and technology cooperation; Build human capacity; Support infrastructure for commercialisation of ideas; Develop innovation policy frameworks; and Foster an enabling environment for innovation.

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Annex I

2011 APEC Honolulu declaration

Promoting Green Growth

We are committed to advancing our shared green growth objectives. We can and must address both the region's economic and environmental challenges by speeding the transition toward a global low-carbon economy in a way that enhances energy security and creates new sources of economic growth and employment.

We have advanced these objectives significantly in 2011. In 2012, economies will work to develop an APEC list of environmental goods that directly and positively contribute to our green growth and sustainable development objectives, on which we are resolved to reduce by the end of 2015 our applied tariff rates to 5% or less, taking into account economies' economic circumstances, without prejudice to APEC economies' positions in the WTO. Economies will also eliminate non-tariff barriers, including LCRs that distort environmental goods and services trade (see Annex C). Taking these concrete actions will help our businesses and citizens access important environmental technologies at lower costs, which in turn will facilitate their use, contributing significantly to APEC's sustainable development goals.

We will also take the following steps to promote our green growth goals:

Rationalise and phase out inefficient fossil-fuel subsidies that encourage wasteful consumption, while recognizing the importance of providing those in need with essential energy services, and set up a voluntary reporting mechanism on progress, which we will review annually;

- Aspire to reduce APEC's aggregate energy intensity by 45 percent by 2035;
- Promote energy efficiency by taking specific steps related to transport, buildings, power grids, jobs, knowledge sharing, and education in support of energy-smart low-carbon communities;
- Incorporate low-emissions development strategies into our economic growth plans and leverage APEC to push forward this agenda, including through the Low-Carbon Model Town and other projects; and
- Work to implement appropriate measures to prohibit trade in illegally harvested forest products and undertake additional activities in APEC to combat illegal logging and associated trade.

Annex II

APEC structure and decision making process: Committees, subcommittees and working groups

In the context of the liberalisation of sustainable energy goods and services, it is important to understand APEC's organizational structure and functioning.

While not formally classified as an international organization, APEC has a similar hierarchical institutional structure. The major institutions of APEC are:

- (i) Annual Economic Leaders Meeting
- (ii) Annual Ministerial Meeting,
- (iii) Senior Officials' Meeting,
- (iv) Committees, Subcommittees and Working Groups,
- (v) APEC Secretariat,
- (vi) APEC Business Advisory Council.

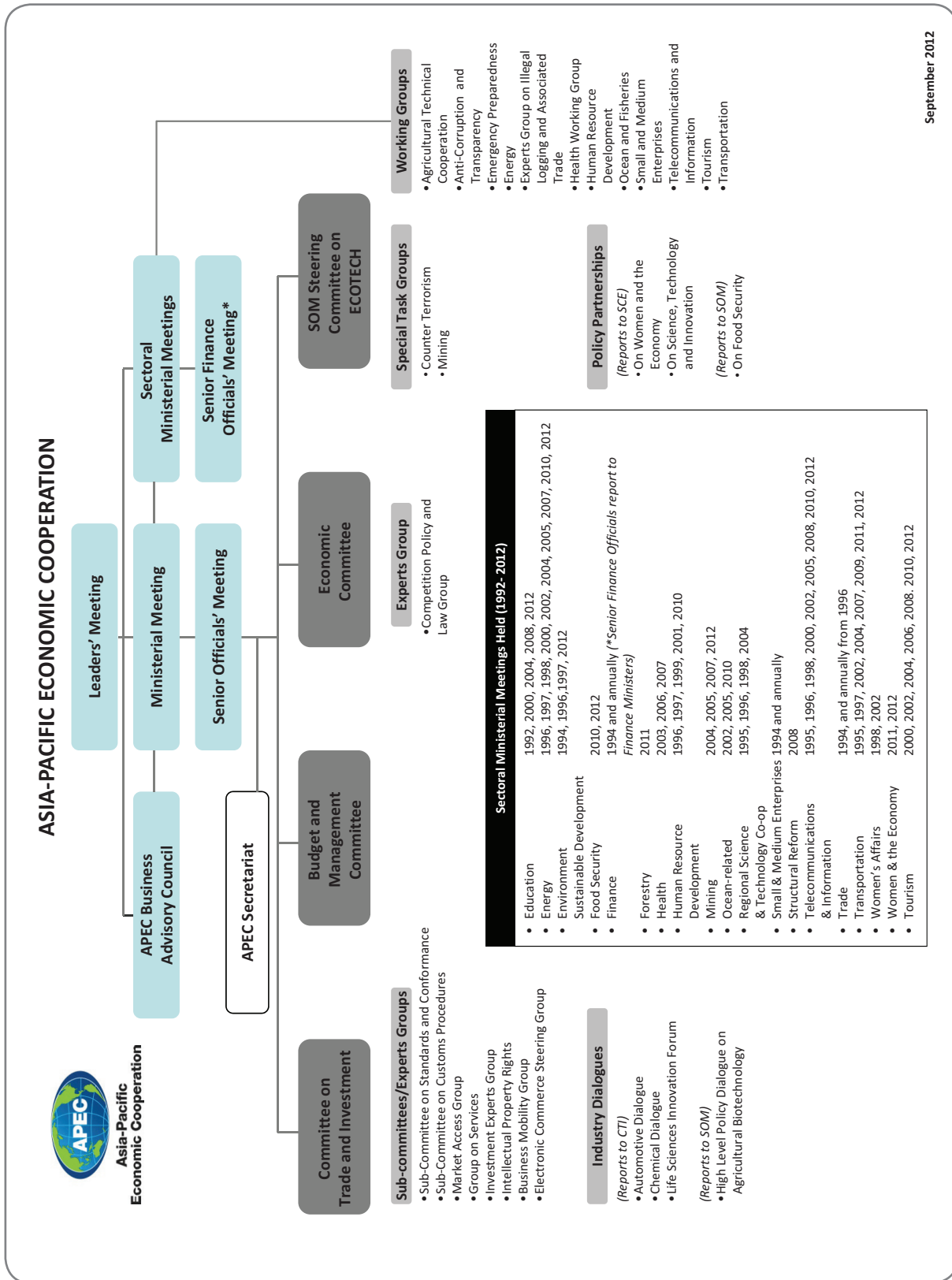
APEC provides members with a multi-level forum for discussion. APEC's informal international instruments are prepared in lower level meetings and endorsed or recognized in higher level meetings. The Annual Economic Leaders Meeting is at the top of the structure and is a Summit meeting. Below these are Ministerial meetings that are attended by one minister of foreign affairs and one minister of economy and industry for each member economy, and several sector ministerial meetings which are attended by trade ministers, finance ministers etc. One member economy is appointed as the President every year. For instance, the 2012 APEC meetings were organized under the Russian presidency, and in 2013 Indonesia assumed the presidency.

Within the Ministerial meetings are organized senior official meetings (SOMs) comprising the Economic Committee, the Committee on Trade and Investment, the SOM Steering Committee on Economic and Technical Cooperation (SCE) and the Budget and Management Committee (BMC). Many groups or subcommittees are organized for the purpose of discussing each subject. A small secretariat office also exists in Singapore. APEC businesses are closely associated with APEC's work through the APEC Business Advisory Council (ABAC). Established by the 1995 Osaka Ministerial and Summit meeting, the ABAC is an official organ with the task of monitoring APEC activities and advancing suggestions from APEC businesses' point of view to the Leaders Meeting and Economic Meeting. As part of its Annual Economic Dialogue with APEC leaders, ABAC presents recommendations on ways of improving business and investment environments in the Asia-Pacific region. ABAC representatives attend the SOM, Annual Ministerial Meetings and Sectoral Ministerial Meeting. Representatives from the private sector are also invited to join APEC working groups and expert groups.

All decisions are made by consensus within the APEC framework, and any APEC member economy can veto decisions. Decisions also usually include principles and certain exceptions, and as they are not legally binding, they are drafted in a manner that is different from ordinary legal texts.⁴⁵

Annex III

APEC structure overview



Source: <http://www.apec.org>

Annex IV

Subcommittees under APEC's committee on trade and investment (CTI) relevant to sustainable energy technology diffusion

(i) **The APEC Automotive Dialogue (AD)** serves as a forum for APEC member economy officials and senior industry representatives to work together to map out strategies for increasing the integration and development of the automotive sector within the region.

(ii) **The Chemical Dialogue (CD)** serves as a forum for regulatory officials and industry representatives to find solutions to challenges facing the chemical industry and users of chemicals in the Asia-Pacific region. It reflects APEC members' recognition of the importance of engaging with the private sector and building public-private sector dialogue and cooperation for mutual benefit. One issue area that is the focus of the Chemical Dialogue's work programme includes challenges imposed by different approaches to regulation, including the difficulty in balancing the protection of trade secrets and confidential information with the need for transparency.

(iii) **The Intellectual Property Rights Expert Group (IEG)** was first established in 1996 as an Intellectual Property Rights Get-Together (IPR-GT) with the aim of ensuring adequate and effective protection, through legislative, administrative and enforcement mechanisms, of intellectual property rights in the Asia-Pacific region based on the principles of the WTO's TRIPS Agreement. It was renamed as IEG in 1997 and was made an official APEC group with explicit terms of reference. The work programme

implemented by the IEG aims to deepen the dialogue on intellectual property policy, survey and exchange information on the current status of IPR protection and administrative systems, study measures for the effective enforcement of IPRs, fully implement the TRIPS Agreement and facilitate technical cooperation to help economies implement TRIPS.

(iv) **The Life Sciences Innovation Forum (LSIF)**: was established by APEC Leaders in 2002 and it has since grown to become APEC's leading initiative on health and health sciences innovation. It is a tripartite forum that engages representatives from the highest levels of government, industry and academia with the aim of creating the right policy environment for life sciences innovation. The LSIF brings together scientific, health, trade, economic and financial considerations to address the challenges of infectious and chronic disease and ageing populations. Guiding principles include transparency, meaningful dialogue with stakeholders and recognition of due process and the LSIF forum also acknowledges that capacity building is critical to successful implementation.

(v) **The Subcommittee on Standards and Conformance**: referred to in the paper includes work on technology areas, such as solar PV and smartgrids, that could facilitate greater diffusion and absorption of new and innovative sustainable energy technologies in the APEC region.

Annex V

Subcommittees under APEC's SOM steering committee on technical and economic co-operation relevant to sustainable energy technology diffusion

There are two relevant subcommittees of the SOM SEC. (i) The **Energy Working Group** and (ii) the Policy Partnership on Science, Technology and Innovation. The Energy Working Group has been discussed in this paper. In the APEC Leaders' Declaration on Climate Change, Energy Security and Clean Development, endorsed in Sydney, Australia on 9 September 2007, APEC Leaders emphasized the importance of improving energy efficiency and resolved to work towards an APEC-wide aspirational goal of a reduction in energy intensity of at least 25 percent by 2030. An Asia-Pacific Network for Energy Technology (APNet) was also established to strengthen collaboration on energy research in the region, particularly in the areas of clean fossil energy and renewable energy sources. In July 2009, Japan contributed approximately USD 1.3 million to the APEC Secretariat to promote energy-efficiency activities throughout the APEC region to specifically fund the

development and implementation of energy-efficiency policies, goals and action plans in line with the Leaders' Declaration. **The Policy Partnership on Science, Technology and Innovation** (PPSTI) was originally known as the APEC Industrial Science and Technology Working Group (ISTWG)⁴⁶ before it acquired its present nomenclature in 2012, when APEC economies decided to broaden the ISTWG's mandate by including issues of innovation policy development and also to intensify cooperation among governments, businesses and academia. Prior to this the ISTWG was itself known as the Working Group on Expansion of Investment and Technology Transfer, which was initiated at the APEC Ministerial Meeting in Singapore in 1990. The PPSTI supports the development of science and technology cooperation and effective innovation policy in APEC economies and serves as APEC's primary forum to engage government, private sector actors and academia in joint scientific research.⁴⁷

Annex VI

APEC and world trade in the 54 HS-sub headings in 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), Jan 2013 from Vossenaar,R.(2013). *The APEC List of Environmental Goods: An Analysis of the Outcome and Expected Impact*, International Centre for Trade and Sustainable Development, Geneva.

