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STRENGTHENING THE GLOBAL TRADE SYSTEM

Clean Energy Technologies and the Trade System

Proposals and Analysis

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Clean Energy Technologies and the Trade System

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For more information on the E15, please visit www.e15initiative.org

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INTRODUCTION

THE E15INITIATIVE

A plethora of critical, impending issues mire the multilateral trading system of today. Ensuring food security in times of high and volatile prices, addressing concerns around natural resource scarcity, or scaling up sustainable energy production and diffusion are just a few of many. The fragmentation of production through highly complex global value chains also poses critical challenges at the analytical and policy level.

In the meantime, preferential trade agreements continue to proliferate and have now become the de facto locus to deepen integration and further liberalization. In the face of the Doha deadlock, some have questioned the way in which negotiations are conducted, arguing that the World Trade Organization's (WTO) established practices of decision-making, such as the notion of a single undertaking, are ill suited to the fast-changing challenges of our times.

In the light of these pressing challenges, the E15Initiative is a process aimed at exploring possible futures for the multilateral trade system. Launched in 2012 by the International Centre for Trade and Sustainable Development (ICTSD), the initiative engages top global experts and institutions in thinking ahead on critical issues facing the multilateral trading system, bringing fresh ideas to the policy environment, and solutions and opportunities for governance reform.

THE E15INITIATIVE ON CLEAN ENERGY TECHNOLOGIES AND THE TRADE SYSTEM

The Expert Group that was created on Clean Energy Technologies and the Trade System within the E15 process is jointly convened by the ICTSD with the Chatham House and the Friedrich Ebert Stiftung to examine the relation between the trade system and clean energy. This relates both to the fact that there is an increasingly tangible tension between clean energy policies and existing trade rules, and to the opportunities the WTO has to smoothen the transition to clean energy by addressing numerous trade-related barriers to clean energy goods and services.

Governments increasingly implement policies to promote a transition to clean energy. These measures are taken to facilitate a number of objectives underpinning sustainable energy transition, including climate change mitigation through a reduction of greenhouse gases; expanding access to sustainable energy; increased energy security; and economic imperatives such as establishing a domestic manufacturing base in clean energy goods and services, and creating "green" jobs.

Some of these domestic policies are in conflict with existing trade rules. Indeed, the WTO is currently facing an increasing number of disputes and cases on trade remedies related to clean energy and to countries' ambitions to build and strengthen their renewable energy sectors. At the same time, it should be clear that the multilateral trading system currently does not address energy in a holistic manner, and therefore fails to deliver certainty and predictability to governments and to private actors. Existing rules were agreed upon long before climate change was on the minds of policymakers.

It is in this context that the E15 Expert Group on Clean Energy Technologies and the Trade System was established to explore options to strengthen the multilateral trading system in the area of clean energy.

The overview paper in this compilation, "Winds of Change and Rays of Hope: How Can the Multilateral Trading System Facilitate Trade in Clean Energy Technologies and Services?" by Mahesh Sugathan set the context for discussions at the first E15 meeting by highlighting a number of issues important to considering how the multilateral trading system can play a more supportive role in facilitating greater deployment of clean energy goods and services. From this perspective, the paper examines five key issues at the interface of trade and clean energy policy—(i) tariffs; (ii) clean energy incentives, subsidies and local content measures; (iii) services; (iv) government procurement policies; and (v) standards and certification. It also examines WTO process-related issues and systemic questions and raises the issue of whether interim measures may be necessary to reduce the likelihood of trade disputes related to clean energy policies until meaningful progress may be made on the other WTO pillars such as market access, transparency, and rules.

The first meeting of the E15 experts identified a number of areas for further research and thinking in trade and clean energy, including in the realm of clean energy incentives; trade remedies; dispute settlement; and rules and services. Major questions and issues related to these areas were subsequently addressed through think pieces that were presented at the second meeting of the E15 experts.

"Does it FIT? An Assessment of the Effectiveness of Renewable Energy Measures and of the Implications of the *Canada–Renewable Energy/FIT* Disputes" by Aaron Cosbey and Luca Rubini considers whether the recent Canada-Renewable Energy/Feed in Tariffs (FIT) case gives any ammunition to the argument that the WTO's subsidy law, as embodied in the Agreement on Subsidies and Countervailing Measures(SCM), is in need of reform. Among others, it also considers the measures examined in the

dispute, their effectiveness in achieving their goals, and the extent to which they distort trade.

This is followed by a piece on "Securing Policy Space for Clean Energy under the SCM: Alternative Approaches" by Robert Howse, which proposes concrete options for addressing the need for policy space under the WTO SCM Agreement with respect to clean energy. This could help not only resolve uncertainty and potential market instability created by spiraling trade disputes, but also provide a secure policy space for clean energy initiatives justified by climate and other environmental objectives.

"Climate Change and a Renewable Energy Scale-up: Responding to Challenges" by Amelia Porges and Thomas Brewer discusses the costs and benefits of options for adjusting WTO rules to provide additional policy space under the General Agreement on Tariffs and Trade 1994 (GATT) and the SCM Agreement for subsidies or other measures to mitigate climate change and promote renewable energy. It discusses how rule changes of this sort could come about, how long they would take, what they would involve, and their scope of application.

Disputes and trade remedy measures are major problems that have arisen at the interface of trade and clean energy and constitutes the focus of the next two pieces in the compilation. The think piece "Trade Remedies on Clean Energy: A New Trend in Need of Multilateral Initiatives" by Jonas Kasteng initiates a discussion on the extent of the problem and explores different multilateral options for limiting the use of trade remedies on clean energy. It also considers the option of introducing special disciplines on trade remedy cases on clean energy.

The subsequent piece, "Trade Remedies and Development of Renewable Energy" by Gary Horlick, proposes a number of solutions relevant to each of the major trade remedy measures that have or could be applied in the context of clean energy—anti-dumping, countervailing duties, and safeguards—to prevent these measures from being applied in the first place.

The final think piece in the compilation, "Pushing the Renewable Energy Agenda Forward: Some Select Lessons from the GATS" by Johannes Bernabe, explores options to pursue market access for clean energy services as well as reforms that better address the coverage of rules pertaining to clean energy services, including domestic regulatory measures in the GATS.

The work of the E15 Expert Group on Clean Energy Technologies and the Trade System offers a creative and innovative set of ideas for ensuring that the WTO system is more responsive to the needs of scaling up clean energy expansion globally. The ideas articulated in the various papers will now form the basis for further concrete options and suggestions that will feed into various processes to take the WTO forward.

Further information about the Expert Group on Clean Energy Technologies and the Trade System, the experts, and the latest developments in the E15Initiative can be found at www.e15initiative.org.

Ricardo Meléndez-Ortiz
Chief Executive, ICTSD

WINDS OF CHANGE AND RAYS OF HOPE: HOW CAN THE MULTILATERAL TRADING SYSTEM FACILITATE TRADE IN CLEAN ENERGY TECHNOLOGIES AND SERVICES?

Mahesh Sugathan

EXECUTIVE SUMMARY

The world today confronts an urgent need to address climate change and the serious consequences that a global temperature rise of more than 2 degrees Celsius threatens to bring with it. At the same time, it is imperative for increasing global energy supplies to meet the needs of economic activity and continued growth in both developed and developing countries, as well as to provide energy access to the 1.3 billion people that lack it. The reality is that fossil-fuel use—the primary cause of human-induced global warming—is dominant in the global energy mix, and is expected to remain so for several decades to come. Efforts to keep global temperature rise within the 2 degrees Celsius mark will require both a rapid scale up of clean energy sources (solar, wind, hydro, and biomass) and greater efficiency in the use of energy. This is critical not only for countries in the Organization for Economic Co-operation and Development (OECD) that already contribute a significant level of carbon dioxide (CO_2) emissions, but also countries in the developing world, where most of the future growth of emissions is expected.

The transition to a low-carbon future will require an effective "enabling environment," shaped by a "toolkit" of domestic and international regulatory policies and frameworks that will influence price signals, and public and private resource allocation and consumption decisions, encouraging the deployment and diffusion of new clean energy and energy-efficiency technologies and discouraging the use of fossil fuels. Trade policies and regulatory frameworks will be an important set of tools in that context. While energy itself is "tradable" like other goods and services, it is also different and more fundamental in that it is also an "enabler" of economic activity, including manufacturing and trade.

For the purposes of this paper, clean energy has been taken to include only clean electricity generation technologies related to wind, solar, hydro, and biomass and in certain cases cleaner fuels, such as ethanol, in addition to clean energy services. While nuclear fuel and generation technologies produce no carbon emissions during generation, the associated environmental and safety risks lead to its being excluded from the scope of the paper, although there is no doubt that it will play an important role in climate change mitigation efforts. Also excluded from the paper is consideration of a broad set of measures, such as carbon taxes and fossil fuel subsidy reform, and measures such as carbon and border tax adjustments, all of which may indirectly promote clean energy by discouraging or removing incentives related to the use of fossil fuels.

Despite the gloomy investment climate resulting from the global economic recession, investment in renewable power and fuels increased by 17 percent to a new record of USD 257 billion in 2011, with 35 percent of investment flows going to developing economies. It is encouraging that some of the biggest greenhouse gas emitters, such as the United States (US), the European Union (EU), China, and India witnessed the largest volumes of clean energy investments or represent some of the fastest growing clean energy markets. Another noticeable trend has been a significant jump in investment inflows in solar helped by rapid cost declines in solar photovoltaic (PV) modules. Long-term forecasts by Bloomberg New Energy Finance (BNEF) predict a bright future for renewables, and in one scenario renewables account for between 69 percent and 74 percent of all new power capacity added between now and 2030, owing to increasing cost competitiveness. Large hydro is expected to remain the dominant form of renewable energy generation under all scenarios. According to the projections of the International Energy Agency (IEA's) 2012 World Energy Outlook, by 2035, renewables would comprise 31 percent of electricity generation in 2035, up from 10 percent in 2010. Falling costs and natural demand is also expected to take over from policy support as the main driver for renewables according to BNEF, which also foresees a need for public support at least until 2020.

Trade in clean energy goods has been growing rapidly and the growth in exports and imports of solar PV modules has been particularly impressive. Chinese solar PV exports, for instance, grew spectacularly from USD 644 million in 2004 to USD 27.94 billion in 2011. An interesting aspect is that the key traders in clean energy products, like solar panels and wind turbines, are often also the major greenhouse gas-emitting countries. Thus, the "critical mass," if it were to be defined as such, for both climate mitigation as well as trade in clean energy products comprises a handful of countries and often the same ones—China, the US, and the EU being fundamentally important in both spheres. The emerging economies among developing countries have been steadily increasing their share of exports

of clean energy products, and their rates of growth have been much larger than OECD countries. Another interesting aspect is the concentration of the major players in solar PV and wind turbines (and clean energy technologies more broadly) in the Asia-Pacific region. This has implications, particularly in the context of voluntary initiatives on liberalizing trade in clean energy goods and services (and environmental goods and services more broadly) under the aegis of Asia-Pacific Economic Cooperation (APEC).

From a World Trade Organization (WTO) perspective, there are ways in which the multilateral trading system could play a more supportive role to facilitate greater deployment of clean energy goods and services. These would include the following.

(i) Addressing measures that restrict trade in clean energy goods and services while being mindful of legitimate concerns with respect to the policy space that WTO Members, particularly developing countries. may have.

(ii) Enabling greater transparency on clean energy measures and policies that could restrict trade.

(iii) Improving clarity on existing trade rules that may affect deployment of clean energy and exploring the need for reformulating rules and new provisions through fresh negotiations among WTO Members with a view to ensuring greater predictability for policymakers and the private sector, and reducing the likelihood of future trade disputes.

From this perspective, the paper examines five key issues at the interface of trade and clean energy policy—(i) tariffs; (ii) clean energy incentives, subsidies and local content measures; (iii) services; (iv) government procurement policies; and (v) standards and certification. A review of these issues, including examination of the findings of the ICTSD, reveal that tariffs may be relatively easier to address compared with non-tariff measures. At the same time, tariff liberalization has faced its own set of challenges, as reflected by the contentious debates over defining and identifying "environmental" goods in the WTO Doha Round of negotiations. Such issues of classification and identification may also play an important role in addressing market access-related barriers on services. From the perspective of clarifying rules and examining the need for new rules, the significant issue areas appear to be clean energy subsidies and local content measures, standards, and certification and government procurement policies. Services also appear to be an important area for further developing and clarifying rules, particularly on subsidies and domestic regulatory aspects. From a rules perspective of all the issues, clean energy incentives and local content measures could arguably deserve priority attention from the WTO, especially keeping in mind the nature of disputes arising at it. Addressing trade remedies may also be important from a market access perspective, and it has taken centre stage in disputes between the US, the EU and China. Countervailing duties, to the extent they are applied in the future, will no doubt also be shaped by any clarification or development of subsidy rules that may take place within the WTO.

In addition to these five sectoral issues, the paper also examines WTO process-related issues and systemic questions. It contends that the WTO is at a crossroads. Given the lack of progress in the Doha Round of negotiations, activity is increasingly shifting to regional forums. At the same time, the WTO remains the only multilateral institution with binding rules and a robust dispute settlement system. It is also the only trade institution that brings all major greenhouse gas emitters—developed as well as developing—under a single set of trade-related rules and obligations. Hence trade-related decisions taken under the WTO would be politically and economically significant. Given that the WTO operates within the "single undertaking" framework, decision-making agreements may not be easy to reach. Progress may need to come incrementally, and the focus may have to be first on easily attainable reforms and issues. In other words, "fine-tuning the WTO's engine" will be easier than aiming for a rapid overhaul or transformation. The paper highlights three process-related problems in the WTO—(i) fragmentation of relevant rules across a number of WTO agreements; (ii) challenges on negotiating market access for clean energy goods and services, including fragmentation of negotiating forums; and (iii) lack of clarity and coherence in rules. The paper raises a number of questions for these process-related issues once again from the perspective of improving transparency, increasing market access, and clarifying existing rules and developing new ones if necessary.

In addition, the paper raises the issue of whether any interim measures may be necessary to reduce the likelihood of trade disputes related to clean energy policies until meaningful progress may be made on the other pillars—market access, transparency, and rules.

The paper will not attempt to address the WTO's coherence with the United Nations Framework Convention on Climate Change (UNFCCC) system and climate-relevant measures, such as treatment of fossil fuels, carbon taxes, labeling, and border carbon adjustments on carbon-intensive goods. Important as they are in determining market opportunities for the scale up of clean energy, any meaningful discussion of their range and complexity and relevant gaps in the multilateral trading system that will need to be addressed will require a separate paper. The current paper, therefore, focuses only on trade barriers, transparency measures, and rules that directly affect clean energy technologies and services.

CONTEXT

The danger posed by climate change is one of the greatest threats mankind has faced. The dangers of global warming triggered by rising atmospheric levels of greenhouse gases are well understood and documented—rising sea-levels, changes in weather and rainfall patterns, and increased frequency of extreme weather—and they impact human habitats and livelihoods, biodiversity, and species loss, among other things. In May 2013, carbon dioxide (CO2) concentration levels in the atmosphere exceeded 400 parts per million (ppm) for the first time in three to five million years (BBC News 2013). This puts further pressure on global efforts to rein in the rise in climate temperature to a maximum of 2 degrees Celsius (C) (36 degrees Fahrenheit), which is needed to avoid some of the worst effects of global warming.

The challenge of climate change mitigation is daunting, owing to the already high levels of per capita fossil-fuel energy use in much of the developed world; the rapidly growing global demand for energy fuelled by economic growth, particularly in newly emerging developing countries such as China and India; and the imperative to provide energy access to 1.3 billion people in the developing world, particularly in Africa and South Asia, to meet basic survival needs, such as cooking and lighting. Addressing these needs in a manner that does not harm the climate will require a shift away from fossil fuels toward clean energy sources. Because fossil fuels are expected to be dominant in the energy mix for the next several decades, climate change mitigation efforts and the transition to a sustainable energy future will require not only renewables, but also much greater efficiency in the use of fossil fuels themselves. Currently fossil-fuel combustion accounts for 90 percent of total CO2 emissions (excluding forest fires and the use of wood fuel) (Olivier et al. 2012). In 2011, global energy demand grew by about 2.5%, in line with the average for the past decade. Consumption of important fossil fuels, such as oil, coal, and natural gas, have continued to increase with oil consumption growing at 2.9 percent, coal at 5.4 percent, and natural gas at 2.2 percent. Coal consumption alone accounted for 30.3 percent of global energy consumption, which represents the highest share since 1969 (Olivier et al. 2012). While investments in renewables have been growing rapidly (see Section 2), they still account for a small portion of the overall power generation mix and will likely account for less than half of the mix even by 2030 (See Figures 2 and 6).

To stay within a "likely" chance (66 percent) of meeting the target of limiting the rise in global temperatures to 2 degrees C, emissions have to peak before 2020 and emission levels have to be around 44 GtCO2e (giga-tonnes of CO2 equivalent) in the same year. In addition, there would need to be an average decline of emissions of 2.6 percent a year after 2020. At present, there is a significant "gap" of 5 GtCO2e between this ideal target and the most ambitious reduction pledges (which would keep emissions at around 49 GtCO2e). The *Emissions Gap Report* by the United Nations Environment Programme (UNEP 2010) estimates a "gap" of about 5-9 GtCO2e, and its *Bridging the Emissions Gap* estimates the gap to be about 12 GtCO2e. Figure 1 illustrates the potential for bridging this gap through emissions reductions in various sectors. The power, building, and transport sectors (where most of the renewable energy and energy-efficiency technologies can be deployed) account for a huge share of potential reduction sectors. Energy efficiency (and by implication technologies and services that deliver it) will have an important role to play. Based on the International Energy Agency's (IEA) *World Energy Outlook 2012*, implementing economically viable energy-efficiency measures could reduce the growth in global energy demand by half, and the amount of oil saved would be equivalent to the current combined production of Norway and the Russian Federation, with similarly impressive savings for coal and gas. Energy efficiency gains would also cut emissions of local pollutants and carbon dioxide by significant amounts, resulting in a five-year postponement (until 2022) of the date when the world would become locked in by the existing energy infrastructure to an average temperature increase of at least 2 degrees C (WEF 2013).

While industrialized countries formerly accounted for the majority of CO2 emissions, future growth will come from the developing world. As Table 1 shows, emission levels in a number of Organization for Economic Co-operation and Development (OECD) countries have been declining while they have been growing in the developing world. China already accounts for the largest share of absolute emissions, although, for India and other developing countries, emission levels are still low in per capita terms.

A transition to a low-carbon future will require an effective "enabling" environment shaped by a "toolkit"' of domestic and international regulatory policies and frameworks that will influence price signals as well as public and private resource allocation and consumption decisions, thereby encouraging the deployment and diffusion of new clean energy and energy-efficiency technologies and discouraging the use of fossil fuels to the extent possible. A meaningful toolkit will involve, for instance, the reform of fossil-fuel subsidies—huge budgetary outlays that artificially lower the price of fossil fuels, like coal, and create an uneven playing field for cleaner energy sources, such as solar and wind.

Trade policies and regulatory frameworks will be an important set of tools in such a climate mitigation toolkit. Energy has a special significance. While it is tradable, like other goods and services, it more broadly is fundamental to the provision of agricultural and industrial goods and services. Energy prices can alter choices of manufacturing locations and patterns of trade. Recent trends in new investments and the relocation of certain energy-intensive industries to the United States (US) is one example (WEF 2013). Another example is the recent rise in coal-fired generation in Europe driven by coal imports from the US, as coal becomes increasingly displaced in the US power

generation sector by shale gas (WSJ 2013). Trade policies shape the nature of barriers and impediments that clean energy technologies and services face as they cross national boundaries. Clean energy goods and services, like other goods and services, are increasingly being driven by global value chains and networks involving trade in raw materials, intermediate components and services, and finished goods and services. Addressing barriers to trade ranging from tariffs to non-tariff measures and restrictions on services can enable firms to more cost-effectively optimize their global value chains and facilitate the scaling up of clean energy.

Well-crafted and transparent trade rules, particularly multilateral ones embodied in World Trade Organisation (WTO) agreements, will also give a greater degree of predictability to private actors in the clean energy space, encouraging greater levels of investment. This is critical, as it is widely acknowledged that the majority of the resources and investments needed to facilitate a transition to a clean energy future will have to come from the private sector. Clearer trade rules will also enable governments to ascertain their "policy-space" boundaries, that is, the extent to which they can deploy domestic policies in their toolkit to foster scaling up clean energy. Such policies may be introduced with the intention of not only responding to climate change, but also a host of other domestic economic objectives, such as ensuring economic growth, competitiveness, employment, and energy security. Such objectives could often compete with the requirement to provide non-discriminatory market access for clean energy goods and services to a country's trade partners. A lack of clarity on trade rules could conversely result in tensions between a country's domestic clean energy policies and trade-related obligations. It could also lead to trade disputes among countries regarding these policies, as is increasingly being seen, for instance, in cases brought to WTO's dispute settlement body, such as the Ontario Feed-in Tariffs case (*Canada vs. Japan and the EU*); China's complaint against solar photovoltaic (PV) local-content measures, and related incentives in the European Union (EU); and the US complaint against India's local-content measures in the solar PV sector. Trade friction has also led to domestic anti-dumping and countervailing measures being initiated or considered, for instance, by the US and EU against Chinese solar panels, and China on polysilicon imports from the EU. Annex 1, Table 1 provides an overview of the main trade disputes involving the clean energy sector.

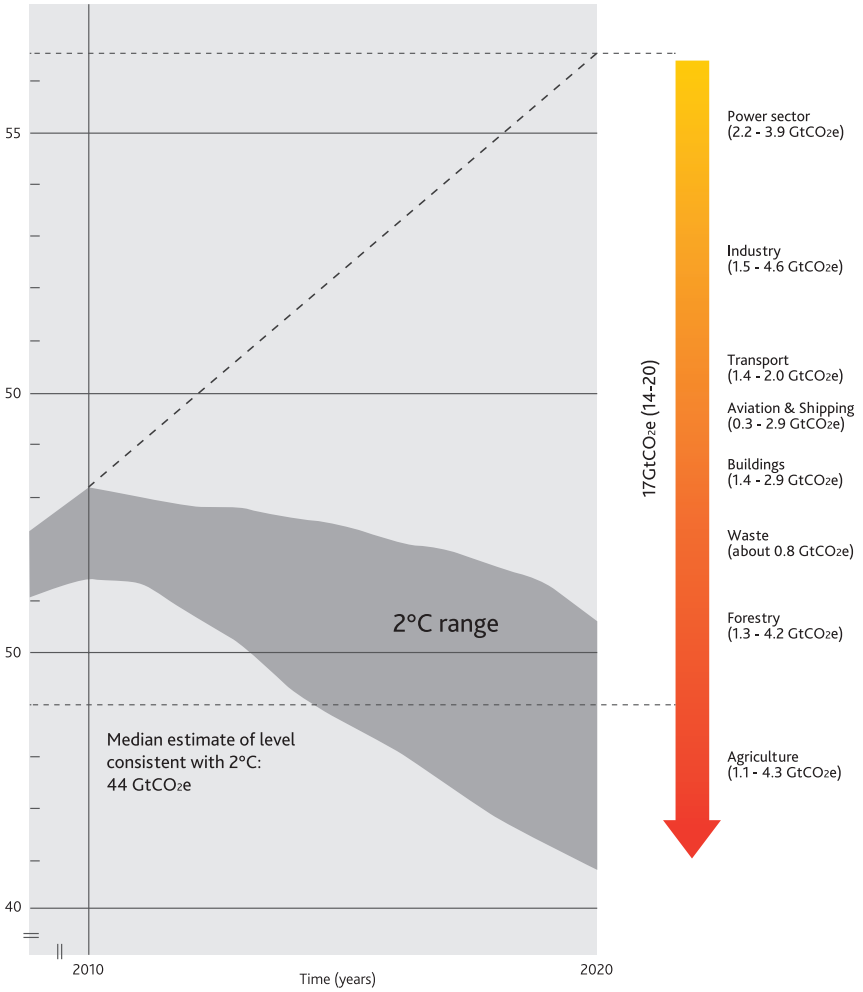


FIGURE 1:

Sectoral Potential in Bridging the 'Emissions Gap'

Improving energy efficiency
Improving energy efficiency so that primary energy production is up to 11% lower than business-as-usual levels in 2020 (with one study 18% lower). The amount of energy used per unitGDP decreases around 1.1 - 2.3 % per year from 205 to 2020.

Non fossil fuel energy sources
Producing up to 28% of total primary energy from non-fossil fuel energy sources in 2020. (As compared to 18.5 in 2005).

Energy from biomass
Producing up to 17% of total primary energy in 2020 from biomass. (As compared to 10.5% in 2005).

Renewable energy (solar, wind, hydro)
Producing up to 9% of total primary energy in 2020 with non-biomass renewable energy (solar, wind, hydroelectricity, other). (As compared to 2.5% in 2005).

Reduce non-CO2 emissions
Reducing non-CO2 emissions up to 19% relative to business-as-usual in 2020 (with one estimate of 2%).

Source: UNEP 2011.

This paper will attempt to examine how WTO can play an important role in climate mitigation efforts by facilitating both market access for clean energy goods and services as well as increasing transparency and clarity on domestic clean energy policies and trade rules It will begin with an overview of the landscape and trends in clean energy markets and trade, and identify a number of priority issues at the heart of the trade and clean energy interface. It will conclude by discussing important process-related considerations, and raising questions to enable a better understanding of how WTO could play a more meaningful role in addressing clean energy governance. This will be centred on three overarching themes—transparency; addressing market access issues and barriers for clean energy goods and services; and clarifying trade rules. It will also briefly raise the issue of whether there is a need for WTO to consider "interim" or "stop-gap" measures that will temporarily reduce or eliminate the risk of further trade disputes pending future clarification of rules, thereby reducing the lack of predictability or certainty for both governments and private sector actors.

TABLE 1:

CO2 Emissions in 2011(million tonnes CO2) and CO2 Per Capita Emissions, 1990–2011 (tonne CO2 per person)

Source: Source: Olivier et al. 2012.

*Annex I countries: industrialised with annual reporting obligations under the UN Framework Convention on Climate Change (UNFCCC) and emission targets under the Kyoto Protocol. The United States signed but not ratified the protocol, and thus the US emission target in the protocol has no legal status.

Country	Emissions 2011	Per capita emissions				Change 1990-2011	Change 1990-2011 in %	Change in CO2 1990-2011 in %	Change in population 1990-2011, in %
		1990	2000	2010	2011				
Annex I*									
United States	5420	19.7	20.8	17.8	17.3	-2.4	-12%	9%	19%
EU27	3790	9.2	8.4	7.8	7.5	-1.7	-18%	-12%	6%
Germany	810	12.9	10.5	10.2	9.9	-3	-23%	-21%	4%
United Kingdom	470	10.3	9.3	8.1	7.5	-2.8	-27%	-20%	8%
Italy	410	7.5	8.1	6.9	6.7	-0.8	-11%	-4%	7%
France	360	6.9	6.9	6.1	5.7	-1.2	-17%	-9%	10%
Poland	350	8.2	7.5	8.8	9.1	0.9	11%	11%	1%
Spain	300	5.9	7.6	6.3	6.4	0.5	8%	29%	16%
Netherlands	160	10.8	10.9	10.5	9.8	-1	-9%	2%	11%
Russian Federation	1830	16.5	11.3	12.4	12.8	-3.7	-22%	-25%	-4%
Japan	1240	9.5	10.1	10	9.8	0.3	3%	7%	3%
Canada	560	16.2	17.9	16	16.2	0	0%	24%	19%
Australia	430	16.0	18.6	17.9	19.0	3	19%	57%	24%
Ukraine	320	14.9	7.2	6.7	7.1	-7.8	-52%	-58%	-14%
Non Annex I									
China	9700	2.2	2.8	6.6	7.2	5	227%	287%	15%
India	1970	0.8	1.0	1.5	1.6	0.8	100%	198%	30%
South Korea	610	5.9	9.7	12.2	12.4	6.5	110%	141%	11%
Indonesia	490	0.9	1.4	2	2.0	1.1	122%	210%	24%
Saudi Arabia	460	10.2	13.0	15.8	16.5	6.3	62%	181%	43%
Brazil	450	1.5	2.0	2.2	2.3	0.8	53%	106%	24%
Mexico	450	3.7	3.8	3.9	3.9	0.2	5%	45%	27%
Iran	410	3.7	5.2	5.4	5.5	1.8	49%	100%	27%
South Africa	360	7.3	6.9	7.1	7.2	-0.1	-1%	35%	27%
Taiwan	270	6.2	10.5	11.7	11.8	5.6	90%	119%	13%
Thailand	230	1.6	2.7	3.3	3.3	1.7	106%	155%	18%

From a climate perspective, it is also important that WTO rules are cognizant and supportive of the multilateral framework on climate change as embodied in the United Nations Framework Convention on Climate Change (UNFCCC). There may be trade implications, for instance, of response measures that members of the UNFCCC undertake in pursuit of climate mitigation. In addition to coherence with the UNFCCC framework, there are a number of other important issues relevant to how the WTO system can be supportive of clean energy scale-up—for instance, in the manner in which measures on fossil fuels such as carbon taxes and fossil-fuel subsides are addressed, as well as measures such as carbon labelling and border tax adjustments. WTO can play an important role in all these issues by ensuring (i) good governance through sharpening and reforming trade rules; (ii) greater transparency; and (iii) avoiding protectionism.

This paper, however, will not attempt to address WTO's coherence with the UNFCCC system and climate-relevant measures such as treatment of fossil fuels, carbon taxes, labelling, and border carbon adjustments on carbon-intensive goods. Important as they are in determining market opportunities for clean energy scale-up, any meaningful discussion of their range and complexity, and relevant gaps in the multilateral trading system that will need to be addressed, will require a separate paper in itself. This paper will therefore focus only on trade barriers, transparency measures, and rules that directly affect clean-energy technologies and services.

TRENDS IN THE CLEAN ENERGY LANDSCAPE AND TENSIONS BETWEEN DOMESTIC CLEAN ENERGY AND TRADE POLICY

WHAT IS CLEAN ENERGY? DEFINITIONAL COMPLEXITY AND THE TRADE CONTEXT

Before examining the growth of clean energy markets and its implications for the multilateral trading system, it may be worthwhile to define what we mean by "clean energy." This is no simple matter, as energy is "clean" in most cases, though only in a relative sense. Even supposedly carbon-free sources of energy, such as solar and wind, may involve carbon emissions during the production of solar panels and wind turbines or require additional fossil-fuel sources to ensure continuous operation. Hydro-projects may have upstream environmental impacts, and production of ethanol could result in carbon emissions associated with land-use change.

From a trade perspective, "clean energy" goods and services could comprise the following categories, each of which may have different trade implications.

(i) **Fuels**: These may be used for power generation, industrial processes, transport, or all three. Good examples are fossil fuels, such as coal, natural gas, and petroleum; synthesised fuels, such as ethanol, biodiesel, and hydrogen; and nuclear fuels, such as uranium or thorium. Each of these fuels may have its own carbon footprint during consumption as well as production (depending on the processes and methods used). "Clean" or "cleaner" fuels may include those that have zero or lower carbon emissions in electricity generation or transport compared with fossil fuels. For instance, natural gas, though not clean, is cleaner than coal. The emissions associated with hydrogen, ethanol, and biodiesel may vary, depending on how they are produced. Nuclear fuels produce carbon-free electricity (although emissions may be involved in the construction of power plants), but are radioactive, and thus have other associated environmental and health risks. Fuels are classified under specific customs codes for international trade and are usually classified as industrial products. However, ethanol is also an agricultural product.

(ii) **Electricity-generation technologies**: These may be used to produce electricity from all the sources mentioned—fossil fuels, synthesised fuels, and nuclear fuels. In addition, electricity-generation technologies can harness naturally available sources of energy, such as the sun (through solar panels); wind (using wind turbines); and running water (hydro-electric dams and turbines). Certain technologies, such as steam turbines or alternating current (AC) generators, can be used to generate electricity from steam produced by burning fossil fuels or from heat generated from the sun (concentrated solar thermal). For the purposes of international trade, electricity-generation technologies are manufactured or "industrial" goods.

(iii) **Electricity**: This can be produced from diverse sources using diverse technologies. The implications for CO2 emissions may be very different, but for international trade purposes, any electricity traded across borders is indistinguishable and it has one single harmonized system (HS) customs code—271600.

(iv) **Energy-efficiency technologies**: These could include a wide variety of consumer goods that may be energy efficient in a relative sense, but physically indistinguishable from their counterparts—for instance, a more fuel-efficient car or air conditioner—or distinguishable—a light-emitting diode (LED) or compact fluorescent lamp (CFL) compared with an incandescent one. Or they could increase energy efficiency when applied within an energy system ("smart-grid" technologies).

(v) **Clean energy "services"**: These include a wide variety of services that may be involved in the provision of clean energy, such as consulting, engineering, and construction and installation services. They may also include services designed to increase the energy efficiencies of buildings and homes, such as energy audits and energy

management services provided by energy services companies (ESCOs).

Another category that could arguably be included would be policy measures that discourage "dirty" or "fossil fuel" energy, thereby indirectly promoting the scaling up of clean energy. These may range from carbon taxes to elimination of fossil-fuel subsidies and border tax adjustments, all of which have implications for trade policy and the multilateral trading system, but will require an extensive and detailed analysis exclusively devoted to these issues. They are therefore outside the scope of this paper.

For the purposes of this paper, a reference to clean energy in the context of WTO will include only "clean electricity" generation technologies related to wind, solar, hydro, and biomass, as well as in certain cases, cleaner fuels, such as ethanol and clean energy services. While nuclear fuel and its generation technologies produce no carbon emissions, the associated environmental and safety risks lead them to being excluded from the scope of this paper, although it is clear they will play an important role in climate change mitigation efforts.

RECENT TRENDS IN CLEAN ENERGY INVESTMENT

The share of renewables in the global energy mix (excluding large-hydro) rose from 5.1 percent in 2010 to 6 percent in 2011. Despite the gloomy investment climate after the global economic recession, investment in renewable power and fuels increased by 17 percent to a new record of USD 257 billion in 2011 with 35 percent of investment flows going to developing economies. Renewables accounted for 44 percent of newly installed power capacity worldwide in 2011, an increase from 34 percent in 2010 and 10.3 percent in 2004. The US overtook China to be the lead investor with USD 51 billion, a 57 percent rise over 2010, while India showed the fastest growth of any large market with investments in renewables rising 62 percent to USD 12 billion. The market has also witnessed unprecedented declines in technology costs, particularly solar PV where costs dropped by close to 50 percent and onshore wind turbine prices fell by between 5 and 10 percent. Wind, usually the biggest sector in terms of attracting investment, was overtaken by solar in 2011. Solar attracted an investment of USD 147 billion in 2011 (an increase of 53 percent over the previous year), almost twice as much as wind (USD 84 billion) for which investments declined by 12 percent from 2010. The jump in solar investment may be attributed to increased rooftop installations in Germany and Italy helped by a dramatic fall in panel prices and a rapid rise in investments in the solar thermal sector in Spain and the US. The fall in wind energy investments was a result of the lower turbine prices; policy uncertainty in Europe; and a slowdown in China's previously hectic growth in wind installations (UNEP and Bloomberg 2012).

Despite the increase in investment, the financial climate for renewables has become more difficult in recent years with banks increasingly unwilling to lend to the renewable energy sector, given the recession and uncertain policy support for renewables in a number of countries. This has resulted in a focus on alternative sources of investment, such as pension funds and long-term institutional investors.

The future for renewables looks bright. Bloomberg New Energy Finance's (BNEF) latest forecast, known as GREMO (Global Renewable Energy Market Outlook), projects that renewables (including large-hydro) could account

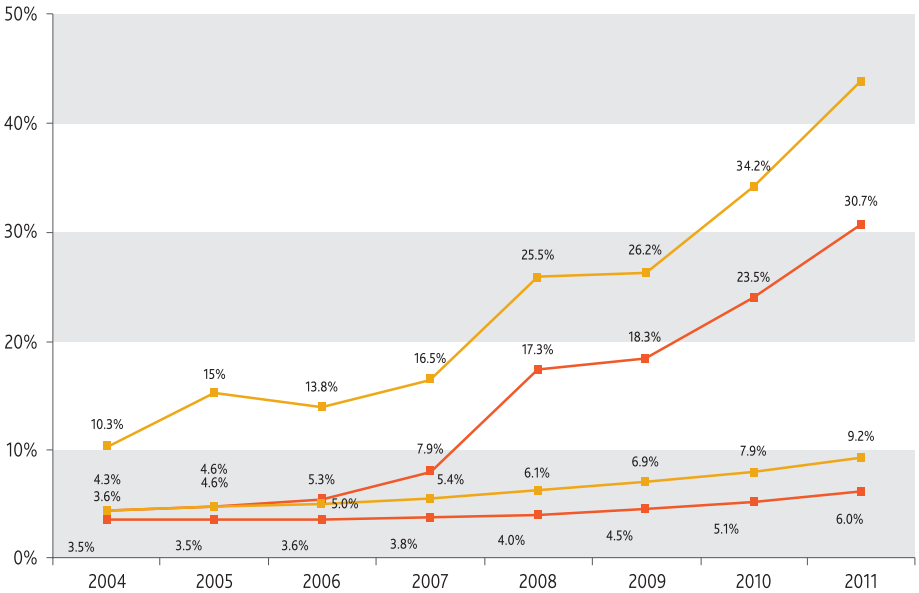


FIGURE 2:

Renewable Power Generation and Capacity as a Proportion of Global Power, 2004–2011

LEGEND:

- Renewable power capacity change as a % of global power capacity change (net)
- Renewable power generation change as a % of global power generation change (net)
- Renewable power as a % of global power capacity
- Renewable power as a % of global power generation

Source: UNEP and Bloomberg 2012.

Note: Renewable power excludes large hydro. Renewable capacity figures based on Bloomberg New Energy. Finance global totals.

for between 69 percent and 74 percent of all new power capacity added between now and 2030, owing to increasing cost competitiveness (See Figure 5). This compares with an estimate of 57 percent by the IEA (including large-hydro). Of this, wind and solar is expected to take up 30 percent and 24 percent of new power capacity added in terms of gigawatts (GW) between 2012 and 2030. This capacity addition involves a jump in investment by 230 percent from 2012 to USD 630 billion a year by 2030. These projections are based on the "new normal" scenario, considered most likely among three scenarios making up BNEF's predictions for world energy markets until 2030. The more optimistic "barrier-busting" scenario would require investments reaching USD 880 billion a year by 2030 (USD 9.3 trillion cumulative from 2013 onwards), and an additional USD 2 trillion (22 percent increase) in supporting infrastructure, such as long-distance transmission systems, smart grids and demand response. Under the more pessimistic "traditional territory" scenario, investment requirements would be USD 470 billion by 2030 (USD 6.1 trillion cumulative from 2013 onwards) (BNEF 2013).[1] Large-hydro will remain the dominant form of renewable energy generation until 2030 under all three scenarios (Figure 6).The IEA's *World Energy Outlook 2012* projects that by 2035 renewables will comprise 31 percent of electricity generation in 2035, up from 10 percent in 2010,[2] which is similar to the "traditional territory" projections in BNEF's 2013 Global Renewable Energy Outlook (Figure 6).

1 The three scenarios come from BNEF's Global Energy and Emissions Model, which integrates all the main determinants of the energy future, including economic prosperity; global and regional demand growth; the evolution of technology costs; likely developments in policies to combat climate change; and trends in fossil-fuel markets.

2 See IEA 2012, Factsheet, http://www.worldenergyoutlook.org/media/weowebsite/2012/factsheets.pdf.

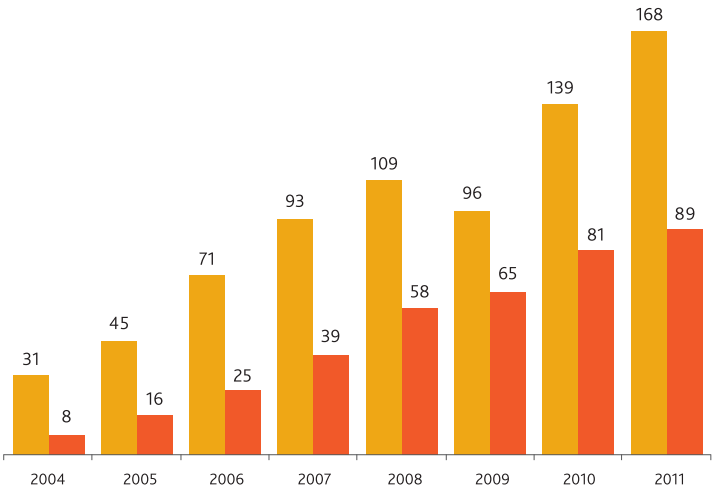


FIGURE 3:

Global New Investment in Renewable Energy – Developed versus Developing World, 2004–2011

LEGEND:

Developed

Developing

Source: UNEP and Bloomberg 2012.

Note: New investment volume adjusts for re-invested equity. Total values include estimates for undisclosed deals. Developed volumes are based on OECD countries excluding Mexico, Chile and Turkey.

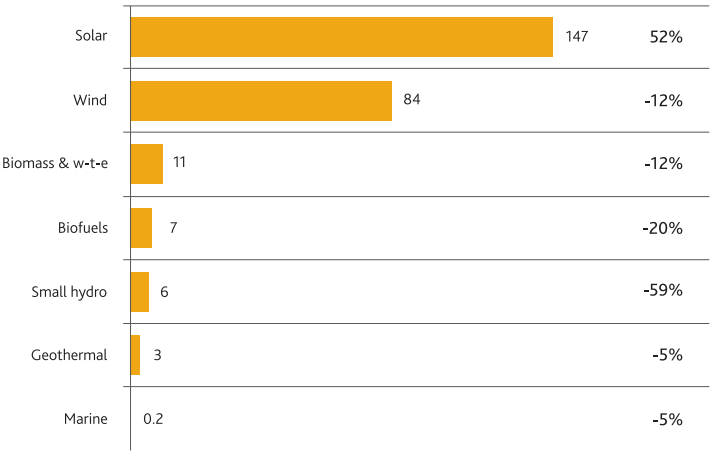


FIGURE 4:

Global New Investment in Renewable Energy by Sector, 2011, and Growth compared to 2010 (USD billion)

Source: UNEP and Bloomberg 2012.

Note: New investment volume adjusts for re-invested equity. Total values estimates for undisclosed deals.

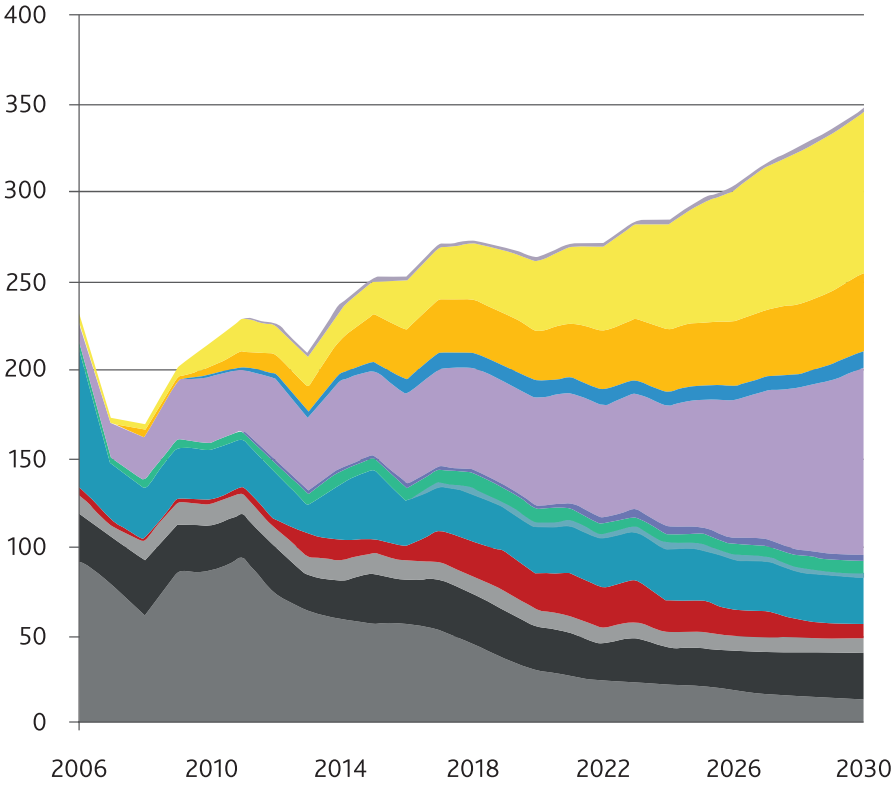


FIGURE 5:

Additions to Power Generation Capacity Under 'New Normal' Scenario, 2013 to 2030

LEGEND:

- Marine
- Solar thermal
- Small scale PV
- Solar PV
- Offshore wind
- Wind
- Energy from waste
- Biomass
- Geothermal
- Hydro
- Nuclear
- Oil
- Gas
- Coal

Source: BNEF 2013.

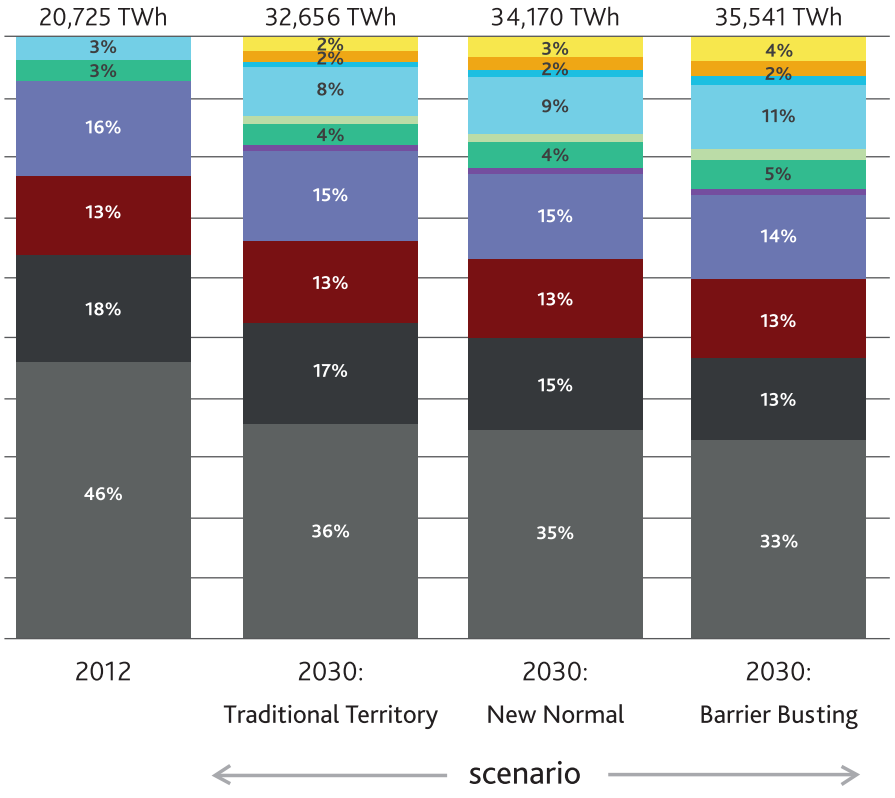


FIGURE 6:

Forecasted Evolution of the Power Generation Output Mix under Different Scenarios, 2013 to 2030

LEGEND:

- Marine
- Solar thermal
- Small scale PV
- Solar PV
- Offshore wind
- Wind
- Energy from waste
- Biomass
- Geothermal
- Hydro
- Nuclear
- Oil
- Gas
- Coal

Source: BNEF 2013.

According to BNEF, the main driver for future growth of the renewable sector over this time-frame (2013–30) is a shift from policy support to falling costs and natural demand. The falling costs of renewable energy and of all the technologies required to integrate it into our energy system suggest that "we are beyond the tipping point towards a cleaner energy future (BNEF 2013b)." However, some level of support for renewables will continue to be required at least until 2020, according to BNEF, under all three scenarios. The IEA's *2012 World Energy Outlook,* however, adopts a more cautious outlook, stating that support for renewables will reach USD 240 billion a year in 2035, up from USD 11 billion in 2011.[3]

This naturally leads us to a discussion on the role of an enabling policy environment for renewables.

ROLE OF AN 'ENABLING' POLICY ENVIRONMENT

The investment climate for clean energy in general depends on a mix of factors, notably policy and financial support for renewables; the price of competing fossil fuels (which, in turn, are determined by a mix of market forces and subsidies for fossil fuels); and technology prices. Policy support through various types of incentives, such as feed-in tariffs (FITs), investment tax-credits, and renewable portfolio obligations have played a critical role in the development of the clean energy sector. The cutting back of these incentives in 2011 has fuelled fears that the sector is coming under threat despite a fall in technology costs and the scenario of several renewable energy sources being competitive with fossil fuels in a couple of years. The discovery of shale gas in the US, and new technology, such as hydraulic fracturing, has also depressed gas prices, further adding to a challenging future environment for investment in clean energy.

Policy and financial support for clean energy is therefore important, given the challenges facing clean energy, although as with other subsidies it will cost taxpayers money and will need to be phased out over the longer term. Policy and financial support for clean energy has been an important driver for trade in clean energy goods. For instance, the production and export of solar PV panels in China has largely been driven by FITs for solar energy in Europe. It is also being deployed domestically in greater numbers following China's introduction of its own FITs for solar PV in 2011.[4] Similarly, higher electricity and energy prices would in general stimulate manufacturing and trade in energy-efficient products. However, as will be explained later, certain domestic clean energy policies, depending on their design and manner of application could distort trade and create frictions among countries that produce and trade clean energy goods and services.

Table 2 lists some of the commonly used clean energy policies and incentives in power generation. These can be oriented either toward producers or consumers.

According to a background document prepared by the Energy Advisory Board of the World Economic Forum (WEF), support schemes for renewables must be carefully designed to ensure their success. They should be based on predictable and transparent frameworks, focusing on a portfolio of technologies best suited to meet short- and long-term objectives. These should be backed up by ambitious yet credible targets, and support should be differentiated according to the maturity of each technology. Further, as cost reductions for renewable technologies are achieved, the level of support provided for new installations needs to decline to avoid excessive and unnecessary increases in the cost of energy services (WEF 2013).

TRENDS IN TRADE FLOWS

Trade flows in clean energy goods, such as wind-powered generating sets and solar panels, have grown rapidly over the period 2004–11. In terms of trade intensity, solar panels seem to be particularly important, as seen in Table 3. It is, therefore, hardly surprising that solar panels and local content measures affecting solar have assumed prominence in recent clean energy trade disputes and application of trade remedies (anti-dumping and countervailing duties). The tables below show the top ten exporters and importers of solar PV cells and modules, as well as wind turbines, as of 2010 (in shaded column) and their export and import volumes over the period 2004–11.

Based on these trade figures, it is possible to make a number of observations that have implications for the nature of discussion on WTO's role in clean energy governance. Some important aspects are:

- The top five greenhouse gas producers (China, the US, the EU, India, and Japan) are also among the top traders of solar PV panels and wind turbines. With a few variations, previous research by the International Centre for Trade and Sustainable Development (ICTSD) has revealed a similar trend in a number of other climate-friendly goods relevant to clean energy.[5]

- Emerging economies have been steadily increasing their share of exports of clean energy products, and their rates of growth have been much larger than OECD countries, such as the US, the EU (excluding intra-EU trade), and Japan. One country, China, is already the top exporter of solar panels, and Malaysia and Korea have steadily increased their exports, overtaking the US in 2010. In 2011, the emerging economies alone accounted for nearly 80 percent of solar PV exports and 33 percent of

3 See IEA 2012, Factsheet, http://www.worldenergyoutlook.org/media/weowebsite/2012/factsheets.pdf.

4 See http://www.businessgreen.com/bg/news/2098838/china-heats-solar-market-feed-tariff.

5 ICTSD Global Platform on Climate Change, Trade and Sustainable Energy, Research and Analysis, http://www.ictsd.org/research/

imports. However, for wind-powered generating sets, the US and the EU remain dominant exporters, with countries like India and Vietnam registering a presence among the top five exporters. The share of developing countries (including emerging economies) in exports of wind-powered generating sets has been much lower, accounting for about 16 percent of total global exports and 26 percent of total global imports in 2011.

- China's rise in terms of solar PV exports has been dramatic; its 2011 export value was 43 times that of the value in 2004. Gains of all the other major exporters have been much more modest over the same period, rising by about double to about ten-fold. China started becoming a major importer of solar panels only from 2010 onwards, after the government initiated bids for solar power projects and launched a series of subsidies under the "Golden Sun" programme in 2009 (Wigmore et al. 2012).

- Most of the top traders, in solar PV and wind turbines, but also more broadly for other clean energy goods are centred in the Asia-Pacific region. Hence, trade liberalisation initiatives as well as other clean energy and trade-related rules, guidelines, and principles developed as part of Asia-Pacific Economic Cooperation (APEC) processes will have implications for any initiatives or discussions within WTO.

RELEVANCE OF TRADE POLICY AND INTERFACE BETWEEN DOMESTIC CLEAN ENERGY POLICIES AND TRADE

International trade today is largely driven by global supply chains. Companies benefit from the cost-optimisation advantages of dispersing production locations for goods and services that enter at different points along the value chain in the manufacture of a final product. This is also true for clean energy products, and from a climate change mitigation perspective is significant, as it enables deployment of these goods at the lowest cost possible. Every advantage that these products enjoy in terms of cost reduction helps to tilt an already uneven playing field, even if slightly, in favour of renewables relative to fossil fuels. To the extent that trade policy can contribute to lowering the deployment costs of renewables, trade policy is also contributing to climate mitigation efforts. Figure 7 shows the value chain for the production of solar PV modules.

TABLE 2:

Typology of Clean Energy Policies

Source: ICTSD analysis based on REN 21 2012.

Producer-Oriented Policies and Incentives. (Incentivising supply of clean energy)			Consumer -Oriented Regulatory Policies and Incentives (Creating demand for clean energy)
Investment-related	Production-related	Other regulatory policies and Incentives	
Investment Subsidies/ Grants	Preferential Tariffs and Premiums (including Feed-in Tariffs)	Renewable Energy Targets	Carbon and Energy Taxes
Investment-tax credits. Eg: Accelerated depreciation	Production Tax-credits/ Generation-based Incentives	Binding Commitments to Reduce Greenhouse Gases	Removal/Reform of Fossil-fuel based Subsidies
Preferential Finance or soft loans	Power Purchase Agreements (providing stable guaranteed returns for 'X' number of years)	Carbon and Energy Taxes	Renewable Purchase Obligations
VAT and Sales Tax Reductions and Exemptions on Equipment		Removal/Reform of Fossil-fuel based Subsidies	Renewable Energy Certificates (RECs)
Income Tax holidays		Government Assistance for Business Development	Government Procurement (including through competitive bidding)
Customs-duty exemptions and reduction		Renewable Portfolio Standards	VAT and Sales Tax Reductions and Exemptions on Equipment (for instance: solar water heaters or rooftop solar panels)
		Subsidies/Grants for R&D	Financial incentives and soft loans to purchase RE equipment
			Net Metering

TABLE 3:

Exports of PV Cells and Modules (HS 854140), USD millions, 2004–2011, and Top Ten Exporters in 2010 (In descending order of 2010 values)

Note:
* excluding intra-EU trade;
** including intra-EU trade.
Source: COMTRADE, using WITS (Oct 2012).

	2004	2005	2006	2007	2008	2009	2010	2011
All countries*	10,331.4	11,751.0	14,696.1	19,410.8	30,485.7	27,898.4	54,005.3	57,622.9
China	644.2	1,257.5	2,459.7	5,252.3	11,745.4	10,721.2	25,178.6	27,946.2
Taiwan	1,175.3	1,403.2	1,689.1	2,580.0	4,002.3	3,871.8	7,424.9	6,951.2
Japan	4,628.9	4,796.2	5,198.8	5,472.2	6,189.8	4,673.4	6,397.3	6,604.1
Rep of Korea	317.3	315.2	422.1	563.2	805.1	1,307.3	3,807.2	3,884.3
United States	1,193.2	1,297.6	1,298.1	1,582.2	1,976.1	2,017.6	2,706.1	2,427.0
Malaysia	792.7	843.8	1,004.3	942.4	744.6	835.5	2,598.7	2,725.6
EU27*	688.6	764.0	1,072.8	1,260.3	2,024.9	1,748.4	1,835.4	2,100.1
Singapore	328.7	317.1	444.6	500.3	737.2	673.7	1,253.4	2,080.7
Mexico	81.6	140.8	218.5	200.6	397.6	560.1	711.0	931.9
India	87.2	93.7	133.9	212.8	528.8	437.3	585.7	327.5
Developing countries, including emerging economies	3,613.4	4,628.9	6,790.3	10,681.9	19,455.3	18,864.2	42,418.0	46,131.1
Intra-EU27	1,512.1	2,592.9	4,052	5,986.4	10,556.2	8,621.9	15,623.3	12,660.2
EU272	2,200.7	3,356.9	5,124.8	7,246.7	12,581.2	10,370.4	17,458.6	12,769.7
World **	11,843.5	14,343.9	18,748.1	25,397.2	41,042.0	36,520.4	69,628.6	70,283.1

TABLE 4:

Imports of PV Cells and Modules (HS 854140), USD millions, 2004–2011, and Top Ten Importers in 2010 (In descending order of 2010 values)
Note: * excluding intra-EU trade; ** including intra-EU trade.
Source: COMTRADE using WITS (Oct 2012).

	2004	2005	2006	2007	2008	2009	2010	2011
All countries	11,358.6	13,566.4	16,644	21,217.1	33,182.3	30,876.5	56,747.7	59,076.8
EU27*	2,948.7	4,093.8	5,513.7	8,411.0	17,102.2	15,160.0	30,646.4	26,536.6
China	1,930.5	2,362.4	2,680.8	3,288.6	3,743.9	3,606.5	6,144.7	6,719.7
USA	1,251.3	1,390.8	1,848.1	2,155.7	2,760.2	2,591.7	4,411.5	7,193.1
Hong Kong	1,204.8	1,334.8	1,715.4	1,817.5	1,983.8	2,109.1	3,204.7	3,637.0
Rep of Korea	858.4	865.1	978.9	1,276.8	2,143.8	1,996.0	2,793.8	2,822.8
Japan	1,001.7	1,135.9	1,207.1	1,131.3	1,412.3	1,212.1	2,189.2	2,305.9
Taiwan	472.6	462.1	524.6	544.4	660.2	696.8	1,285.9	1,153.1
Australia	55.4	55.4	52.5	59.2	171.1	400.0	1,047.4	1,509.8
Mexico	282.6	356.9	414.3	442.5	487.9	541.2	876.3	1107.1
Singapore	339.1	328.2	432.1	503.6	559.1	478.2	814.4	904.8
Canada	165.1	215.7	215	202.4	266.9	269	700.7	987.1
Malaysia	251.3	256.3	225.1	305.6	353.8	299.0	498.0	685.5
India	49.8	53.8	104.8	168.9	420	405.4	298.9	1,332.8
Developing countries	6,734.7	6,484.6	7,611.1	8,988.8	11,080.2	10,783.6	17,151.6	19,765.4
Intra-EU	1,121.4	1,991.0	2,790.3	4,216.7	7,762.0	6,472.7	12,721.5	11,062.9
EU27**	4,070.1	6,084.8	8,304	12,627.7	24,864.2	21,632.6	43,367.9	37,599.5
World**	12,480.0	15,557.4	19,434.3	25,433.8	40,944.3	37,349.2	69,469.2	70,139.7

TABLE 5:

Exports of Wind-powered Generating Sets (HS 850231), USD millions, 2004–2011 and Top 10 Exporters in 2010 (In descending order of 2010 values)

Note:
* excluding intra-EU trade;
** including intra-EU trade.
Source: COMTRADE, using WITS (Oct 2012).

	2004	2005	2006	2007	2008	2009	2010	2011
All countries*	561.1	1,104.3	2,467.1	2,802.9	3,337.6	2,503.4	2,487.8	2,509.4
EU27*	534.0	993.1	1,886.8	1,870.7	1,812.9	1,260.6	2,035.5	1,934.0
USA	4.4	3.6	83.3	14.2	22.1	117.0	142.1	126.0
India	1.2	23.8	199.0	335.8	651.1	335.6	122.9	41.1
China	0.2	0.4	3.2	78.0	210.9	151.1	56.6	351.1
Viet Nam	n/a	13.5	37.6	108.6	126.4	116.9	67.4	n/a
Developing countries	20.1	66.4	285.4	524.8	1,010.4	624.9	294.7	413.0
Intra-EU	517.1	811.8	629.2	1,062.4	2,062.3	1,646.8	1,973.3	1,898.4
EU27**	1,051.1	1,804.9	2,516	2,933.1	3,875.2	2,907.4	4,008.8	3,832.4
World**	1,078.2	1,916.1	3,096.3	3,865.3	5,399.9	4,150.1	4,461.1	4,407.8
Malaysia	251.3	256.3	225.1	305.6	353.8	299.0	498.0	685.5
India	49.8	53.8	104.8	168.9	420	405.4	298.9	1332.8
Developing countries	6734.7	6484.6	7611.1	8988.8	11080.2	10783.6	17151.6	19765.4
Intra-EU	1121.4	1991.0	2790.3	4216.7	7762.0	6472.7	12721.5	11062.9
EU27 **	4070.1	6084.8	8304	12627.7	24864.2	21632.6	43367.9	37599.5
World **	12480.0	15557.4	19434.3	25433.8	40944.3	37349.2	69469.2	70139.7

TABLE 6:

Imports of Wind-powered Generating Sets (HS 850231), USD millions, 2004–2011 and Top 10 Importers in 2010 (in descending order of 2010 values)

Note:
* excluding intra-EU trade;
** including intra-EU trade.
Source: COMTRADE, using WITS (Oct 2012).

	2004	2005	2006	2007	2008	2009	2010	2011
World*	588.2	1,064.0	2,426.8	3,578.5	4,751.3	4,641.0	3,431.0	3,853.1
United States	64.1	503.8	1,280.0	2,365.1	2,679.1	2,300.6	1,197.5	1,289.9
Canada	93.7	41.3	183.3	108.6	545.2	435.7	895.0	546.2
Turkey	5.9	0.1	54.3	92.4	285.0	506.2	405.2	353.6
Mexico	0.1	0.2	85.3	17.1	85.4	195.3	295.3	341.4
Brazil	3.9	5.6	61.7	42.3	121.7	221.1	273.9	456.3
Japan	112.6	43.8	232.9	62.5	173.7	55.5	40.0	30.9
EU27*/	3.3	12.5	6.8	98.2	153.3	165.6	74.7	64.5
Taiwan	2.3	67.9	49.3	123.9	90.9	124.6	36.5	45.7
Selected other reporters								
Australia	66.9	130.4	47.8	158.2	220.7	204.6	21.7	154.6
China	93.3	211.5	257.1	372.0	189.3	26.4	11.5	11.7
India	2.1	6.0	4.9	0.6	2.3	1.4	3.9	9.5
Rep of Korea	31.5	22.9	59.2	33.6	102.2	37.5	2.1	2.8
Developing countries	168.3	324.4	627.4	761.1	947.5	1,418.0	1,108.0	1,390.5
Intra-EU	632.1	1,128.3	1,592.3	1,766.2	2,157.9	2,160.5	2,507.1	3,314.1
EU**	635.4	1,140.9	1,599.0	1,864.4	2,263.9	2,313.8	2,581.8	3,378.6
World**	1,220.3	2,192.3	4,019.1	5,344.7	6,909.4	6,801.5	5,938.2	7,167.2

The example of the production value chain of a solar PV module (which is at the heart of a number of trade disputes) is a good illustration of the way global value chains operate in clean energy. According to a 2013 report by Pew Charitable Trusts, China and the US traded more than USD 6.5 billion in solar products. Of these, 95 percent of China's exports to the US comprised finished solar modules, and China exported USD 151 million of solar cells to the US. Both these categories represent China's strength in mass assembly and high-volume manufacturing. The US, on the other hand, enjoyed a competitive advantage in producing high-value inputs (polysilicon and wafers for making PV cells) as well as the machinery and equipment required for solar factories. Consequently, contrary to popular perception, the US actually enjoyed a trade surplus of USD 913 million in 2011 in the solar sector. Figure 8 provides of good illustration of the breakdown of this trade.

Despite the prominent role of global value chains in clean energy goods, tensions between domestic clean energy policies and trade have often arisen. The main reason for this is that governments design clean energy policies in a manner that is aimed at achieving a number of other domestic policy objectives, not simply the deployment of clean energy alone. Such objectives include the creation of domestic jobs and the development of a "green" manufacturing sector for economic strength in a strategic and fast-growing sector. These objectives often imply policies that restrict imports and often require a trade-off with acquiring and deploying clean energy goods and services at the lowest cost possible. Domestic clean energy policies may have either de jure or de facto trade effects, the former obviously intended to restrict trade and the latter restricting trade due to the manner in which a policy may be designed or applied. For instance, raising tariffs on imported clean energy goods or requiring

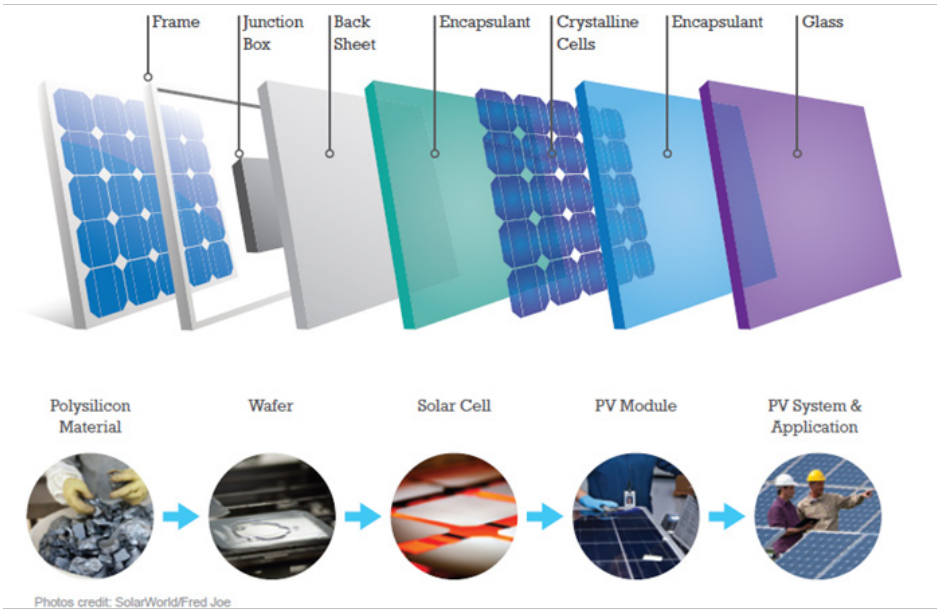


FIGURE 7:

Solar Modules Components and Assembly

Source: Pew Charitable Trusts (2013).

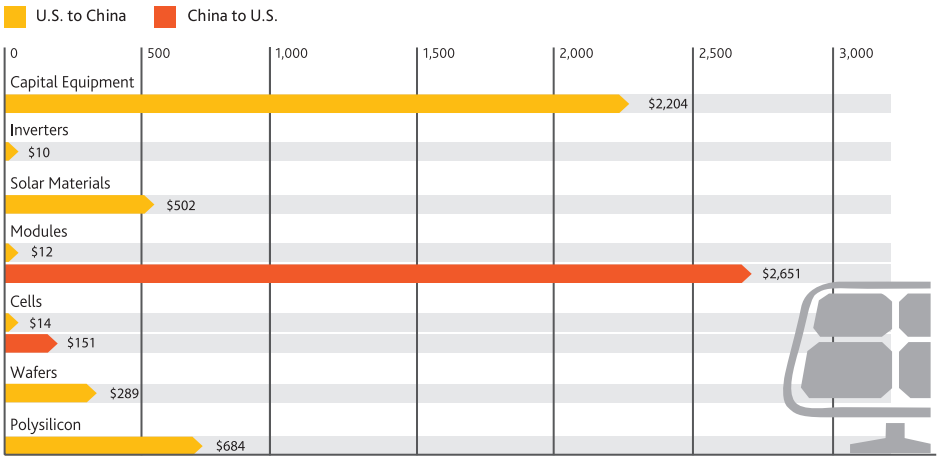


FIGURE 8:

US-China Solar Energy Trade Flows, 2011 (millions of dollars

Source: Pew Charitable Trusts (2013).

a certain proportion of domestic goods and services to be used for clean energy projects to benefit from renewable energy incentives—local content requirements (LCRs)—are obviously trade restrictive. The trade impact of others are not immediately obvious, but their restrictive effects can occur due to their design or the way they are applied—for instance designing standards for clean energy products in a manner that benefits local producers and keeps out imports. Countries may also require products to be certified by national test laboratories creating an additional burden for importers. Certain policies, such as "hidden" subsidies provided by a country to manufacturers of clean energy goods, can also distort trade in third-country markets by providing an undue advantage for the country's exporters.

The presence of global value chains, however, amply demonstrates why restricting trade in clean energy products could backfire in unexpected ways. The production of a certain good in Country A might create jobs in components or capital equipment in country B. Further, the import of that good from country A could also create downstream jobs in the services sector in country B. In September 2012, the EU launched its biggest ever anti-dumping investigation on the import of Chinese solar panels, and in May 2013, EU Trade Commissioner Karel De Gucht urged the imposition of provisional duties of up to 47 percent on Chinese imports for 'dumping' or selling products below production cost in Europe. However, the proposed measure has drawn protests from numerous solar panel installers who argue that by making solar panels more expensive in a price-sensitive market the duty would actually destroy jobs in installation. In addition, it could also provoke Chinese countermeasures on polysilicon imports from Europe, which are needed to manufacture these panels (an investigation by China is already under way). According to one estimate, European companies capture 70 percent of the value of Chinese panels sold in Europe when one accounts for European polysilicon suppliers to China and downstream installers in Europe. According to a study carried out by the German consultancy Prognos and flagged by the Alliance for Affordable Solar Energy, a coalition of mainly European companies, a 60 percent duty on Chinese solar panels could cost 240,000 European jobs over three years. However, the findings of this study have been contested. A PricewaterhouseCoopers (PwC) study on the Prognos report contends that in the US solar jobs and installations increased even after it had imposed countervailing and anti-dumping duties on Chinese solar panels in 2012 (Financial Times 2013). Those duties had been triggered by investigations after complaints by US solar panel producers regarding unfair subsidies enjoyed by Chinese manufacturers. In response, China announced its own investigation into US subsidies in the solar, wind, and hydro-electric sectors, and Chinese manufacturers also called for anti-dumping duties on polysilicon imports from the US worth more than USD 800 million annually. Within the US, firms dependent on imports of Chinese PV modules have formed a Coalition for Affordable Solar Energy to oppose US duties on China (Ghosh and Gangania 2012).

Table 7 shows a range of domestic sustainable energy and trade policies that could have direct or indirect trade impacts.

As can be seen, for most policies it may not be possible to immediately discern a trade impact if there is one. It is noteworthy that local content measures and subsidies have been at the heart of recent trade disputes involving clean energy measures. The table in Annex 1 provides an overview of some of the major disputes to date.

In addition to the various measures listed in Table 7, a number of other measures that could have impacts on clean energy trade include the operation of cartels, monopolies over electricity transmission; distribution grids that favour incumbent operators; other anti-competitive practices that may affect clean energy goods and services exporters; investment-related restrictions and discriminatory practices favouring domestic clean energy goods and services; and domestic intellectual property regimes that could encourage or discourage clean energy technology dissemination.

From a WTO perspective, there are ways in which the multilateral trading system could play a more supportive role to facilitate greater deployment of clean energy goods and services. These are:

(i) Addressing measures that restrict trade in clean energy goods and services while being mindful of legitimate concerns about the policy space that WTO Members, particularly developing countries, may have.

(ii) Enabling greater transparency with regard to clean energy measures and policies that could restrict trade.

(iii) Improving clarity on existing trade rules that may affect deployment of clean energy and exploring the need for reformulating rules and new provisions through fresh negotiations among WTO Members with a view to ensuring greater predictability for policymakers as well as the private sector, and reducing the likelihood of future trade disputes.

(iv) Interim measures that the WTO could consider to reduce the immediate likelihood of trade disputes related to clean energy policies.

KEY ISSUES AND IMPORTANT CONSIDERATIONS IN TRADE POLICY

While the issues at the interface of trade and clean energy policy are diverse, this section will focus on only four issue areas in clean energy. It will highlight areas where there may be a greater priority or urgency to address trade barriers, improve transparency on measures that have a potential impact on trade, and facilitate better governance through greater clarity in WTO rules. It will also highlight some previous research findings on these issues by ICTSD.[6] In the end it will pose questions for further discussion on how WTO may address these issues.

TARIFFS

Tariffs on clean energy goods are one of the most visible barriers that can be addressed. The Doha Round of WTO negotiations included a specific mandate to "reduce or as appropriate eliminate tariffs and non-tariff measures on environmental goods and services." However, such reduction has not been easy. This often has to do with the way that many clean energy goods are classified under the HS, which may group these goods at the six-digit level (the level at which all WTO Members use common HS nomenclatures) with other goods that may not have renewable energy or even environmental applications. It may be possible to locate these products in some cases by digging deeper into national tariff lines, but WTO Members will then need to come to a common agreement on product nomenclatures and descriptions, as otherwise there may be uncertainty as to what good is actually being liberalised. In other cases, the same good could have both clean energy as well as other environmental applications. For instance, ball bearings and pipes could be used in wind energy projects and solar-thermal power projects as well as in other industrial

6 Research carried out under ICTSD's Sustainable Energy Trade Initiative (SETI).

TABLE 7:

Trade Impact of Domestic Sustainable Energy and Trade Policies

Source: ICTSD Analysis based on literature survey

Policies with a Direct Trade Impact
Tariffs: Customs-duty Concebbions and Exemptions
Export Restrictions and Export-Taxes
Market Access for Suslainabic Energy Service Providers
Measures Affecting National Treatment for Sustainable Energy Sarvice Providers
Trade-Facilitation and Transit Measures
Local-content Requirements (LCRa)
Possible Trade Impact based on "Design"/Implementation/Price Signals
Renewable Energy Targets
Bining Commitments to Reduce Greenhouse Gases
Carbon and Energy Taxes
Removal/Reform of Fossil-Fuel based Subsides
Renewable Portfolio Standards
Investment Subsides/Grants
Investment-tax Credits. Eg: Accelerated Depreciation
Preferential Tariffs and Premiums (including Food-in Tariffs)
Production Tax-credits/Generation-based Incentives
Renewable Purchase Obligations
Renewable Energy Certificats (RECs)
Goverment Procurement (including through competitive bidding for SEGS)
VAT and Sales Tax Reductions and Exemptions on Equipment (for instance: solar water heaters or rooftop solar panels
Financial Incentives and Soft Loans to Purchase RE Equipment
Technical Standards/Regulations for Sustainable Energy Goods
Domestic Regulatory Measures affecting SEGS proviers
No Forseeable Trade Impact
Government Assistance for Business Development
Subsidics/Grants for R&D
Power Purchse Agreements (providing stable guaranteed returns for 'X' numbers of years)
Net Metering

applications. While some countries (Argentina and India) have proposed applying lower customs duties on ball bearings or pipes (and in fact on all goods) as long as it can be certified that they are being used in specific environmental projects, other WTO Members consider such an approach as imposing administrative costs and not providing the certainty that 'bound' tariff liberalization could provide.[7] The easiest solution may be for WTO members to reduce tariffs at the six-digit level whether or not such a reduction would also apply to "non-environmental" goods. But, many developing countries have been reluctant to apply such a "broad-based" liberalisation and argue that such liberalisation should be pursued within the Non-Agricultural Market Access (NAMA) group within WTO rather than being initiated as part of environmental goods liberalisation being discussed within special sessions of the WTO's Committee on Trade and Environment (CTE-SS). One solution could also be to start with a smaller list of clearly identifiable clean energy goods that are solely or predominantly used for environmental applications. Such a list has been identified by ICTSD based on a mapping exercise of clean energy goods in the energy supply, buildings and transport sectors (see Vossenaar 2010).

A study of tariff profiles for a number of clean energy products reveals that most countries in the Organisation for Economic Co-operation and Development (OECD), including the EU and the US, apply very low tariffs (5 percent or below) to a large number of clean energy goods. Emerging developing countries, such as Brazil, China, and India, apply tariffs ranging from 5 to 20 percent for a large number of clean energy goods and even zero (in the case of solar PV modules). Not surprisingly the highest tariffs are usually applied by lower-income countries, mainly in Africa, and this could also be due to customs revenue concerns and protection of domestic industries. It may be arguable whether these tariffs make sense for such countries and how long they should be retained, particularly given the need in many of these countries to provide energy access to the poor and reduce reliance on fossil-fuel imports.

Previous studies indicate that tariffs do not represent the greatest obstacle to the diffusion of clean energy goods (Hufbauer and Kim 2011) and may be less important as a driver of international trade in these goods than other variables, such as domestic environmental regulation. However, among various environmental goods categories that cover lists of goods submitted by WTO Members during the course of environmental goods negotiations, two categories of products relevant to climate change mitigation—renewable energy and heat and energy management imports—showed a higher sensitivity to tariff reduction than other categories of products (Jha 2008). Tariffs may also be the easiest barrier to address first in any trade negotiations, and for products where countries already apply very low tariffs this may not be too difficult to achieve even within WTO. Success is, however, conditional on progress in other trade issues being negotiated as part of the Doha negotiating mandate, as under the WTO's single undertaking approach "nothing is agreed, unless everything is agreed." This has been a big obstacle to progress on reducing tariffs in clean energy goods in the WTO context. However, in forums outside WTO, such as bilateral free trade agreements, clean energy goods have been liberalised as part of broad-based liberalisation for all manufactured products. Recently, as part of APEC's Vladivostok Declaration, there has been agreement to lower tariffs, albeit voluntarily and on a limited set of 54 tariff lines that does include a number of clean energy goods (Sugathan and Brewer 2012). Although it is a "drop in the ocean" in terms of measures to address climate change, tariff reduction could be a "low-hanging fruit" and an "easy deliverable" that WTO could make as a contribution. In trade terms too, there will certainly be gains. The World Bank estimates that a removal of tariffs alone in four categories of products—wind-power generation, solar power technology, clean coal technology, and efficient lighting—would increase trade volumes by 7.2 percent, while removing tariffs and a select set of non-tariff barriers (based on ad valorem equivalents of selected measures, such as quotas and technical regulations) would increase trade volumes by 13.5 percent (World Bank 2008).

A number of questions could be raised on WTO's role in promoting transparency and clarity to facilitate tariff reform and in addressing tariff barriers on clean energy goods in a more efficient manner given the negotiating challenges in WTO. These include:

Transparency

How can WTO address difficulties on tariff liberalisation for clean energy products with environmental and non-environmental uses? Should it promote greater discussion among members in further refining products that can be isolated at national tariff-lines (that is, beyond the six-digit level) and agree to common product descriptions to facilitate liberalisation?

Market access

Could an "early" tariff harvest on certain clean energy products be envisaged as a "deliverable" in the fight against climate change? What products should be emphasised? Should already low tariffs on certain products be reduced to zero or at least bound permanently?

7 A reference is frequently made to "bound" and "applied" tariffs. Bound tariffs are the maximum "ceiling" levels that are legally permissible under WTO. WTO Members may actually "apply" tariffs to any extent as long as it does not exceed the permitted bound levels. Such tariffs, actually in place at a given time, are known as applied tariffs.

CLEAN ENERGY INCENTIVES, SUBSIDIES AND LOCAL CONTENT MEASURES

Financial incentives for clean energy are among the most important tools used by governments worldwide to support the deployment of clean energy. Such incentives can take the form of grants, capital subsidies, soft loans, and tax-credits. Subsidies for clean energy production, particularly FITs, have played a major role in the rapid scale up of grid-connected solar PV in recent years in countries such as Germany and Spain, even when equipment costs remained high. While equipment costs have been declining, clean energy is, with the recent exception of solar energy in certain locations, still not competitive with fossil fuel-based energy sources for reasons discussed earlier in Section 1. As a result, some form of support for clean energy may be required until it attains "grid-parity" or price competitiveness with fossil fuel-based electricity generation. The conflict with trade may arise if subsidies provided by one country constrain trade opportunities for another. This may happen automatically under WTO rules on subsidies if they are conditional on exports, or need to be proven based on "adverse trade impacts" and "injury" suffered by a trading partner. Subsidies provided only to manufacturers of clean energy goods could very likely be trade restrictive. However, a source of trade disputes in clean energy have more commonly been subsidies and incentives linked to "local-content" measures that mandate the use of locally made components or technologies in clean energy projects so as to induce a certain degree of investment in local manufacturing. A list of LCRs in selected countries is shown in Table 8.

Subsidies that are contingent, whether solely or as one of several other conditions, on the use of domestic over imported goods are clearly prohibited by Article 3.1 (b) of the WTO Agreement on Subsidies and Countervailing Measures (SCM). LCRs are themselves also prohibited by WTO's Agreement on Trade-related Investment Measures (TRIMS). The recent decision by the WTO Panel and Appellate Body in the Ontario FITs case (*Canada vs. Japan and EU*) clearly ruled against the use of LCRs. The WTO dispute settlement body, however, did not rule on the legality of FITs per se. While it could be presumed that FITs by themselves do not distort trade, this is not a foregone conclusion, and much may depend on the design of the FIT scheme. In a future context where renewable electricity will be increasingly traded across international borders, FITs themselves could have trade effects if they favour domestic clean electricity providers.

An ICTSD General Equilibrium modelling study undertaken by Jha shows that LCRs by themselves may have little effect on trade in clean energy goods unless there is a viable clean electricity sector, which means they usually have to be linked to an incentive scheme for clean electricity generation. Hence, it makes sense to examine LCRs in the clean energy sector in the context of clean energy subsidy schemes (Jha 2013). It is clear, however, that LCRS raise costs of clean energy goods for domestic power producers and hinders immediate and cost-effective generation of clean electricity.

Given the increasing use of LCRs in the renewable energy sector by a number of countries, it may be asked whether there is a need to provide some sort of temporary exemption,

TABLE 8:

Local Content Requirements in Clean Energy in Selected Countries

Source: ICTSD research.

Country	Technology	LCR % (start year)	LCR % (2012)	Notes and Remarks
Brazil	Wind	60% (2002)	60% (2012)	
China	Wind	20% (1997)	70% (2009)	The LCR requirement was formally abolished in 2009
France	Solar	(2012)	60% (2012)	10% bonus on EDF repurchasing price
India	Solar	30% (2011)	30% (2011)	Feed-in tariff conditionality
Italy	Solar	Variable (2011)		5 to 10% bonus if local content used
Ontario (Canada)	Wind	25% (2009)	50% (2012)	Feed-in tariff conditionality
Ontario (Canada)	Solar	50% (2009)	60% (2012)	Feed-in tariff conditionality
Québec (Canada)	Wind	40% (2003)	60% (2012)1	
South Africa	Wind	35% (2011)	>35% (2012)	
Spain	Wind	70% (2012)2		
Turkey	Wind	Variable (2011)		Additional feed-in tariff if local content used
Turkey	Solar	Variable (2011)		Additional feed-in tariff if local content used

particularly for developing countries. Often the promise of local manufacturing jobs is a way of securing local "buy-in" for other renewable energy promotion measures that could involve higher taxes (such as carbon taxes) or higher electricity prices. At the same time, opening up TRIMs or SCM could be a potential "slippery slope," altering a carefully put together balance of rights and obligations under WTO. Further research on LCRs indicates that there is no real empirical evidence to back up claims that LCRs would have positive spillover effects, such as the establishment of a viable domestic manufacturing industry or increasing medium to long-term competitiveness and innovation, all of which could depend on a complex set of country and technology-specific factors (Kuntze and Moerenhout 2013).

What could be discussed or debated may be some form of time-limited, non-renewable waiver for certain countries for LCRs and perhaps regional or plurilateral variants of LCRs set at a low local content percentage, as suggested by Stephenson, to dilute its protective impacts. In addition, a moratorium or standstill on future LCRS could be an option. However, as Stephenson has argued, in the interests both of the global economy and efficient renewable energy production by developing as well as developed countries, less distorting options and alternatives for dealing with LCRs should be considered. It must also be borne in mind that once LCRs become a mainstay and expectation of local businesses, the withdrawal of government support will often be met with fierce resistance, and the LCRs themselves may do little to increase competitiveness of domestic firms or create jobs in services segments of the value chain, such as installation and maintenance (Stephenson 2013).

Identifying potentially trade-distorting subsidies can be a challenge. Another challenge would be ensuring they are captured by the definition of a "subsidy" under the Agreement on SCM. For instance, a grant of "free" land to clean energy equipment manufacturers could confer a "benefit," as required by the Agreement, but it does not likely fall within the parameters of a "financial contribution" laid out by it. While the Agreement on SCM also lays down a notification process under Part VII, information on subsidies is often incomplete or non-existent. This represents a serious lacuna in WTO practice in an important policy area (WTO 2006).

In a recent ICTSD paper on clean energy subsidies, Ghosh and Gangania (2012) highlight a number of sources of policy tensions surrounding clean energy subsidies (See Box 1). They point out that individual country policies, emerging disputes, and lack of clarity on exceptions to WTO rules underscore the tension between maintaining non-discriminatory trade practices while also promoting greater and faster adoption of clean energy. There is thus a need for greater legal and policy clarity and perhaps the need for a re-examination of the Agreement on SCM. For instance, Article 8 included a list of non-actionable subsidies, such as for research and development (R&D) and for environmental protection, but this provision lapsed in 2000 (WTO 2006). It is not clear whether the exceptions under Article IXX of the General Agreement on Tariffs and Trade (GATT) for environmental or health protection, for instance, could apply to the Agreement on SCM. In any case, it may be worthwhile for WTO Members to consider the design and nuances of various clean energy support schemes.

Following the issues that have arisen in recent clean energy disputes and based on the findings of Ghosh and Gangania (2012), it may be worthwhile to raise the following questions that WTO could consider.

Transparency

- Is there a need to consider improved or enhanced notification processes for clean energy subsidies?

- Should, and if so how could, relevant WTO committees debate the nature, purpose, scale, and impact of different types of clean energy subsidies so as to help clarify individual country measures (for instance at WTO Trade Policy Reviews)?

Clarity in existing subsidy rules/development of new rules

- Should there be a review of the definition of a "subsidy" under the Agreement on SCM so as to better capture certain types of clean energy subsidies that could have a potential impact on trade? Could this be linked to the debate on clean energy subsidies by WTO committees as highlighted above?

- Should there be a clear window of exemption for certain types of subsidies, for instance, under a revived "non-actionable" category of subsidies?

- Should a time-limited exemption be granted to certain types of local-content measures in clean energy, for instance, for developing countries, given the increasing frequency of use with the phase-out being strictly monitored by WTO?

- Should discussions on rules take into account the different natures and cost structures of various clean energy technologies? That is, should there be differentiation in rules to respond to differentiation in technologies, or should the same rules apply (keeping in mind the objective is cost-effective attainment of climate change goals and related environmental, social, and economic benefits)?

Services

Trade in services plays a critical role in the deployment of clean energy and comprises a major input into clean energy projects. A number of projects are actually built

by engineering, procurement, and construction (EPC) contractors to whom these projects are outsourced by power producers. After the project is commissioned, there is still a need for maintenance, and often monitoring. Producers may also rely on external sources for data, such as on wind speeds and solar radiation levels. Trade in services also spills over into the realm of foreign direct investment if it involves the commercial presence of a foreign services provider (also known as Mode 3). Other modes of trading services are through cross-border delivery, for instance, of consulting or monitoring services over the Internet (Mode 1); the movement of consumers abroad to consume a service, such as in tourism, or technicians travelling abroad to obtain training at a foreign institute (Mode 2); or the temporary movement of service personnel abroad to deliver a service, such as, for example, Spanish technicians moving temporarily to India to carry out repair work at a solar thermal power plant (Mode 4).

A mandate for the liberalisation of environmental services is also contained in Paragraph 31 (iii) of the Doha mandate. The pace of liberalisation has progressed very slowly at WTO. As of August 2008, only 48 WTO Members had made commitments in environmental services, compared to 100 members on financial services. Commitments in environmental services have been selective and do not cover all sub-sectors. For instance, most commitments have been on environmental sanitation and sewage treatment. Further liberalisation may be boosted through ongoing discussions on a plurilateral international services agreement within WTO (see below).

An important consideration for liberalising clean energy services in WTO would be to re-examine approaches for classification of such services under the General Agreement on Trade in Services (GATS). The classification issue is closely linked with the type of barriers that have to be addressed for clean energy services trade. Given that 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 clean energy services, particularly in critical areas such as design and installation, and construction and maintenance, for renewable energy projects. 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 on not only environmental services, but also sustainable energy services.

BOX 1:

Policy Tensions Surrounding Clean Energy Subsidies

Source: Ghosh and Gangania (2012).

1. **The environmental imperative:** The support needed to cover the incremental costs to enable clean energy sources to reach "grid-parity" or cost comparability with fossil-fuel energy sources. The tensions arise from the question of how the incremental costs will be covered, and whether the financial support will be sustained over a period sufficient to scale up deployment of new and emerging clean energy technologies. Many countries will also desire flexibility in terms of pathways to pursue a "green" and "low-carbon" economy and this will determine how clean energy subsidies are governed. However, different types of subsidies may also have differential impact on consumers, project developers, and equipment manufacturers at home and abroad.

2. **The technology imperative:** Technological initiatives including research, development and deployment through for example joint-venture partnerships will require some form of support. The question is how partner countries can or should support these joint ventures, such as through direct financial transfers or by contributions in kind — and how the fruits of such labour are to be shared.

3. **The economic imperative:** Countries may resort to subsidies to ensure economic viability and attractiveness of the renewable energy sector for investors, particularly during times of recession. However, periods of recession could also see subsidies that assume mercantilist purposes, especially if domestic industrial development, manufacturing capacity, and employment generation come at the expense of other countries. Governments, and firms, are interested not only in the collective good of cleaner, low-carbon energy, but also in industrial and economic competitiveness.

4. **The trade imperative:** Mercantilist policies discriminate between foreign and domestic firms in a country. They can also discriminate between imported clean energy products and local manufactures. Subsidies could be granted to promote clean energy exports, making domestic firms more competitive in the international market. The impacts of such policies are already being felt today, leading to high-profile trade disputes between countries such as Canada versus. the EU and Japan, and China versus the US and EU.

TABLE 9:

Sectoral Commitments on Other Professional, Technical and Business Services

Source: Derived from the WTO Services Data base on Members' Commitments Schedule and Initial Offers as well as Revised Offers (TN/S/O and TN/S/O rev.1).
Notes: The classification of sub-sectors is based on W/120.
√ = Unrestricted commitment,
x = No commitment,
O =Limited commitment,
[ ] = A new commitment included in the EU's 'revised offer' during the Doha Round.

* E/I=Major exporters as well as major importers.
** Among the EC member states, Cyprus and Malta have not made any commitment on "other professional, technical and business services" group.

Major Explorters/ importers	Architectural services	Engineering services	Integrated engineering services	Other business services			
				c. Management consulting services	e. Technical testing and analysis services	j. Services incidental to energy distribution	m. Related scientific and technical consulting services
Australia (E/I)*	√	√	√	√	√	√	√
Brazil (E/I)	o	o	x	√	x	x	x
Canada (E/I)	o	o	o	o	√	x	o
EU ** (E/I)	o	o	o	o	o	x [o]	x
India (E/I)	x	o	x	x	o	x	x
Korea, Rep. (E/I)	o	√	√	√	o	x	√
Norway (E/I)	√	√	√	√	√	x	√
Singapore (E/I)	√	o	x	√	x	x	x
United States (E/I)	o	o	o	√	x	√	√

TABLE 10:

Sectoral Commitments on Construction Services
Notes: The classification of sub-sectors is based on W/120.
X = No commitment, O = Limited commitment
E/I = Major exporter as well as importer
* Among the new EU member states, Cyprus, Hungary, and Malta have not submitted their commitments schedules on the construction services sector. Finland has made a partial commitment on this sector.
Source: Derived from the WTO Services Data base on Members' Commitments Schedule and Initial Offers as well as Revised Offers (TN/S/O and TN/S/O rev.1).

Major exporters importers	General construction work for buildings	General construction work for civil engoneering	Installation and assembly work	Other: site investigation work
China (E/I)	o	o	o	o
EU ** (E/I)	o	o	o	o
Egypt, Arab Rep. (E)	x	o	o	o
India (E/I)	x	o	x	x
Japan (E/I)	o	o	o	o
Malaysia (E/I)	o	o	o	o
Singapore (E)	o	o	o	o
Turkey (E)	o	o	o	x
United States (E/I)	o	o	o	o

A number of papers, including those commissioned by ICTSD, have highlighted various perspectives on the need for a clearer classification.[8] One is that the absence of an appropriate classification must not and should not prevent WTO Members from negotiating on climate 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.[9] The WTO Secretariat in a recent note to WTO Members suggested several ways in which clean energy services can be classified. It started by confirming the lack of explicit reference to services related to renewable energy or energy efficiency in both the Sectoral Classification List (W/120) and the CPC and the neutrality of classification of energy-related services, that is, it is neutral with respect to the energy source (clean 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 smart-grid related services. Smart grid, for instance, would cut across several W/120 sectors, including telecommunication and computer services and others that are perhaps incidental to energy distribution. According to the paper, engineering services, together with construction services, are key in 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. While developed countries have historically dominated the markets in many sustainable energy services, existing data reveal that countries such as Brazil, India, Russia, and Singapore are exporters of "other professional, business and technical services."

This raises another issue. While clean energy services and goods are often provided in an integrated manner, negotiations on liberalising these two are being carried out separately within WTO—the former in the CTE-SS and the latter in the Council for Trade in Services (special session). It may be appropriate to ensure some level of coordination between the two negotiations so as to ensure a coherent outcome on clean energy services.

Presently in terms of negotiating modalities for services liberalization, a significant development within WTO has been the agreement on 5 May 2012 by a group of Members—"the Really Good Friends of Services"—to start negotiations towards a plurilateral International Services Agreement (ISA). These members include key countries that make up a strong majority of services traders—the US, Canada, the EU, Norway, Switzerland, Australia, New Zealand, Hong Kong, South Korea, Japan, Singapore, Taiwan, Mexico, Chile, Colombia, Peru, Costa Rica, Israel, Pakistan, Turkey, and Iceland. Negotiations commenced in March 2013 and the options are to negotiate it within WTO as a plurilateral agreement similar to the Government Procurement Agreement (GPA) or an agreement outside WTO as permitted by GATS Article 5. The agreement would supposedly provide a new platform where the parties could work to build stronger international consensus on new and improved rules to address emerging issues. It will remain to be seen whether this will provide a boost to liberalization of clean energy services and whether major countries such as Brazil, China, and India that have been critical of a plurilateral agreement could accede at a later stage (Library of the European Parliament 2013). Given the limited liberalization commitments in major clean energy service sectors, such as construction and engineering (see Tables 9 and 10; they may have autonomously liberalized to a much greater extent), any progress made in this regard by an ISA would be commendable.

The Doha mandate also provides for the development of new disciplines in safeguards procurement and subsidies in services pursuant to Articles V, X and XIII of the GATS, although little to no progress has been made. However, any future disciplines could have positive implications for the trading climate in renewable energy services by offering greater predictability and clarity.

A few (non-process related) questions on clean energy services trade that WTO could consider could be:

Transparency

- Should WTO try to enable a better classification of clean energy services and promote a uniform approach on this to facilitate negotiations? (Members can now use whatever classification approaches they wish as long as the sectors are mutually exclusive.)

Market access

- Will the ongoing plurilateral services negotiations for an ISA facilitate addressing market barriers? Should there be a "critical mass" of countries that should participate, including from a climate change perspective?

Clarification of existing-rules/development of new rules

- What rules need to be clarified as far as trade in clean energy services is concerned? What new rules need to be developed? Is this a realistic possibility in the short to medium term?

8 For instance, Kim (2011); Monkelbaan (2013).

9 One issue that is important in relation to the classification of environmental services is how to classify "new" activities, particularly in a sector undergoing significant technological development. The field of carbon capture and storage may be a case in point (Cossy 2011).

Government procurement policies

Government procurement for sustainable energy and related equipment and services can play an important role as a driver of demand for clean energy goods. Energy-efficient government procurement was also identified by the Intergovernmental Panel on Climate Change (IPCC) as a possible policy tool to address climate change (Cottier et al. 2010), and many governments prefer to use procurement policies as a tool for promoting domestic clean energy capacities and industry. At the same time, procurement policies can also discriminate against foreign suppliers by favouring domestic suppliers in a de jure or de facto manner. This could result in restricted opportunities for trading partners. Greater transparency in clean energy procurement policies would enable foreign goods and services providers to clearly understand the criteria and requirements.

Because of their effect on trade, these discriminatory practices have been addressed in WTO law and more particularly in the GPA. The United Nations Commission on International Law (UNCITRAL) Model Law on Procurement of Goods, Construction and Services, the APEC non-binding guidelines on government procurement, and other regional non-binding instruments are an attempt to regulate public procurement as well. Also many free-trade agreements (FTAs) include "WTO-plus" obligations to regulate public procurement.

While transparency in government procurement was one of the issues included under the Doha Ministerial declaration, it was eventually dropped from the Doha agenda in the aftermath of a failure to reach an explicit consensus in Cancun. The GPA, which came into effect on 1 January 1996, also provides a framework for procurement issues. The GPA was initially intended to apply to all WTO Members, but this proved impossible. Consequently, the GPA is one of the few plurilateral agreements within the WTO legal framework, creating obligations and rights only for WTO Members that have signed it. In December 2011, parties meeting at the ministerial level in Geneva formally approved a revised version of the GPA, which also significantly improved market access in procurement as WTO Members committed to extend coverage to new sectors as well as government entities. The cardinal rule in the GPA is that standards and/or technical regulations "shall not be prepared, adopted or applied with a view to, or with the effect of, creating unnecessary obstacles to international trade." Similarly, any technical specifications inserted in the tender "shall be in terms of performance rather than design or descriptive characteristics" (Cottier et al. 2010).

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 Herve and Luff (2012). A major lack of clarity in the GPA as it exists, according to the authors, is the extent to which provisions of non-discrimination as contained in the GPA would permit the use of procurement policies that explicitly favour clean energy goods and services 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 the Agreement on Technical Barriers to Trade (TBT), 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, any preference based on process and production methods (PPMs) cannot be presumed. Cottier et al. (2010) have raised the issue that GPA Article XXIII does not contain the equivalent of the words "relating to conservation of natural resources," as found in GATT Article XX (g).

The revised version of the GPA contains two new provisions suggesting that requirements can be included in standards or labels. This would be particularly useful, for instance, when a standard or a label specifies that a good or a service must be produced through energy-saving methods.

Luff and Herve (2012) contend that it would be helpful if such ambiguity could be clarified and provisions expressly allow promoting clean energy goods and services by public purchases. The recently revised GPA specifies that sustainable procurement should be one of the subjects for future GPA negotiations. It will be interesting to examine the implications of these negotiations on future trade in clean energy goods and services from both a market access and a rule-creation perspective.

A number of issues WTO could address with respect to procurement of clean energy goods and services would be:

Transparency

- How can transparency be improved with respect to procurement measures in clean energy goods and services?

Market access

- Can future negotiations on sustainable procurement as mandated in the revised GPA contribute to addressing procurement-related market access for clean energy goods and services?

Clarification of existing rules/development of new rules?

- How can rules be clarified or developed further under a future GPA that provides greater certainty and predictability, or perhaps an explicit exception allowing governments to use green-procurement measures without running afoul of WTO rules prohibiting discrimination against "like" products?

Clean energy equipment standards and certification

Standards, depending on how they are designed and applied, may be among the most important non-tariff measures to

affect trade in clean energy goods. Under WTO law, standards that are mandatory are known as technical regulations. Technical standards and regulations have an important role in ensuring safe and reliable performance of clean energy equipment. They are also relevant for clean energy services. For instance, installation of solar equipment can be done effectively only by properly trained and certified installers. Technical standards are important in conveying confidence and trust between manufacturers, operators, owners, financial institutions, and government authorities. Standards can either be based on "design" or "performance." Greater harmonization of standards enables easier and quicker deployment of equipment across projects and countries, supporting the development of economies of scale. Minimum performance standards for equipment are also necessary for clean energy producers to obtain project-specific financing from commercial banks; in other words, to enable projects to be "bankable." Standards are also important in enabling trade in energy-efficient goods. Given that many energy-efficient products are physically indistinguishable from their less energy-efficient counterparts, labelling based on energy-efficiency standards will be an important way of differentiating between them.

Ensuring compliance with different foreign technical regulations and standards, as well as getting them tested and certified, involves costs for foreign producers. There are also general costs, such as translation of foreign regulations, hiring of technical experts to explain foreign regulations, and adjustments to production facilities to comply with regulations. It is possible that countries might design and apply standards in a manner that protects their domestic producers of clean energy goods.

The TBT contains provisions intended to prevent this from happening. Article 2.2 of the TBT requires that "technical regulations are not prepared, adopted or applied with a view to, or with the effect of, creating unnecessary obstacles to international trade." The TBT also encourages members to base national regulations or parts of them on international standards. Such standards are presumed "not to create an unnecessary obstacle to international trade."

In reality, however, national technical regulations even if based on internationally accepted standards still throw up a number of issues. An interesting case in point is that of solar PV modules that are intensively traded. 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 import of solar PV modules. The only market-significant global region that does not follow a variation of IEC standards is North America, where Underwriter Laboratories (UL) standards are currently the standards recognised by government agencies. A forthcoming ICTSD study on solar PV equipment standards by Rai and Payasova (2013) identified the following issues that have a trade impact.

(i) Diversity of testing procedures and requirements specific to countries. For instance, in China mandatory testing requirements are to be conducted in national laboratories, which impose additional costs for exporters.

(ii) Diversity of product requirements due to varying local conditions such as climate and electrical grid codes. While some of these may be legitimate, it may be worthwhile to harmonize others, such as national electrical grid codes, when feasible.

(iii) Enabling standard-setting to keep pace with and not discourage new and innovative clean energy products.

Some of these issues may be outside WTO's regulatory reach, but in certain areas it could contribute. These areas are raised below as questions for further consideration.

Transparency

- Could the TBT notification process of diverse standards for various types of clean energy equipment and services be further streamlined and made coherent? If so, how?

- Should a special information system for clean energy standards be created based on the proposed WTO/ International Organization for Standardization (ISO) Standards Information System and the ISO/IEC Information Centre?

Clarification of existing rules/development of new rules

- Certification requirements appear to be more burdensome than the actual standards per se. What can WTO do to further discipline unnecessary and costly certification requirements?

- The GATS does not contain detailed rules for technical requirements for services, such as installation of clean energy equipment. These may include qualifications, licensing requirements, and so on, and are classified under domestic regulation addressed under Article VI of the GATS. The Working Party on Domestic Regulation has been established to develop coherent horizontal disciplines on domestic regulation for services, but so far it has developed only special rules for the accountancy services sector. Should new rules be similarly developed for the clean energy services sector?

- The effect of technical regulations that are not adopted by central governments still may have a crucial negative impact on trade in PV products. Should Article 2.1 and 2.2 of the TBT also explicitly discipline such regulations?

- Similarly, current TBT disciplines do not sufficiently address standardization activities of local governments and non-governmental bodies. What can be done in this regard?

WTO PROCESS-RELATED ISSUES AND SYSTEMIC QUESTIONS

While the previous section dealt with specific issues of substance and some key areas of intersection of clean energy and trade policies, this section will briefly raise a number of process-related issues and questions under the three thematic headings in the previous sections—(i) improving transparency; (ii) enhancing market access; and (iii) clarifying existing rules and developing new ones. While dispute settlement is another obvious area that has been under the spotlight, this section will not address it. Rather, it will argue that proactive steps taken by WTO to improve transparency, enhance market access, and clarify and develop rules could lessen the need for WTO dispute settlement. Indeed, the increasing number of renewable energy dispute cases in WTO underscores this.

WTO is at a crossroads. The Doha Round has not reached a successful conclusion even after a decade of negotiations, and trade negotiations are increasingly shifting to regional forums. Despite this, WTO remains the only multilateral trade institution with binding rules and an effective dispute settlement system. It is also the only trade institution that brings all major greenhouse gas emitters—developed as well as developing—under a single set of trade-related rules and obligations. Thus, any contribution it makes toward advancing climate goals will be significant, politically as well as economically. However, because WTO operates under a "single undertaking" framework and by consensus, it will not find it easy to speedily advance in negotiations or quickly take the innovative decisions required to facilitate a global scale up of clean energy. Progress may need to come incrementally, and the focus may have to be first on easily attainable reforms and issues. In other words, "fine-tuning the WTO's engine" will be easier than aiming at a rapid overhaul or transformation. Yet, in the process of doing so, WTO could take lessons from developments in other forums that deal with clean energy and trade issues, notably APEC, as well as innovative bilateral and regional trade agreements that address clean energy issues and agreements, such as the Energy Charter Treaty, which has developed comprehensive rules on energy transit.

Some major process-related problems under the WTO are:

Fragmentation: Issues of clean energy fall under the scope of a number of WTO Agreements—GATT, GATS, the SCM, the TRIMS, the Agreement on Trade-related Aspects of Intellectual Property Rights (TRIPs), and the GPA. Rules on anti-dumping and countervailing measures and steps taken pursuant to those rules could also affect market access opportunities for clean energy goods. While the diversity of rules and applicable agreements is understandable, it also leads to a fragmented approach in viewing trade issues for clean energy goods and services. For instance, there are notification requirements under various agreements, but a lack of systematic collection or compilation of measures affecting the clean energy sector. Similarly, negotiations on environmental goods and services are fragmented, each taking place in their respective committees despite the fact that these goods (including clean energy goods and services) are traded together. Ways need to be explored by WTO to reduce fragmentation in terms of notification processes as well as negotiations. Some experts are of the opinion that fragmentation in terms of rules on energy can be addressed only through a Framework Agreement on Energy (for instance, see Cottier et al. 2010).

Negotiating market-access challenges in clean energy goods and services: The challenges that have faced WTO negotiators in negotiating market access for clean energy goods and services are well-known and well-documented. (For instance, see Claro et al. 2007). At the same time, talks on opening up markets have made faster progress in forums, such as APEC, where members agreed to liberalize tariffs on a set of 54 product categories to 5 percent or less by 2015. While it could be argued that APEC members were able to achieve such progress because they were unconstrained by a "single undertaking," the initiatives were voluntary, and the outcome was non-binding, perhaps WTO could examine the ways and processes followed in APEC to see whether something could be borrowed that could help catalyze progress within the WTO context—such as, for instance, involvement of private sector associations in working groups, and peer reviews of voluntary liberalization initiatives in services. Similarly, WTO could explore ways in which the results of the APEC agreement on environmental goods could be built on. Plurilateral initiatives concluded within or outside WTO could also hold lessons for addressing market challenges in clean energy goods and services. For instance, WTO's Informational Technology Agreement (ITA) is a successful example of an agreement triggered by the participation of a "critical mass" of interested countries with a certain percentage of world trade extending benefits to all members (even non-participating ones) on a most-favoured nation (MFN) basis. On the other hand, the GPA and the proposed ISA are based on a "closed" model with benefits being enjoyed only by signatories. Such agreements could be one way of making progress by "like-minded" countries in addressing market access barriers on clean energy goods and services. However, the procedural steps, legality, and pros and cons of such agreements within or even outside WTO will need to be carefully evaluated, particularly if they go beyond market access and enter the "rules" arena. An ICTSD paper by Kennedy (2012) provides a detailed assessment of various legal aspects that may need to be considered in pursuing various plurilateral options for a sustainable energy trade agreement.

Lack of clarity and coherence in rules: This is also a major area of concern for clean energy goods and services. Effectively fulfilling the Doha mandate could address some aspects of this, such as through the development of subsidies and procurement rules in services. The lack of a formal negotiating mandate may make it difficult to draft

new rules or re-open existing ones. Nevertheless, discussion among WTO Members on where such rules should most usefully be developed or clarified would be worth having. Some examples of issues where rules may need to be clarified or new rules need to be developed have been provided in the previous section. It is also likely that new innovative or technological developments in the clean energy sector will raise the need for new rules even though there is no formal negotiating mandate. Perhaps such discussions on a regular basis could also be given an outlet in some form without the fear of upsetting the balance of rights and obligations of WTO Members.

Following an identification of these main problems, a number of questions that could be raised for further discussion follow.

Increasing transparency

- What can WTO do to increase transparency on clean energy measures that could have a trade impact? Is this something that could be "worked into" existing mechanisms (such as the Trade Policy Review Mechanism and various notification procedures) or is there a need to create completely new mechanisms?

- Should there be strict penalties for non-notification of measures that have a potential trade impact?

- How can various notification processes be "clustered" in a coherent manner so as to obtain an easy overview of measures prevailing in the clean energy sector? For instance, should subsidies and standards affecting the solar PV sector be "gathered" together? Which WTO body should be responsible?

Enhancing market access

- How can fragmentation in negotiations on clean energy goods and services be avoided? Should some kind of formal mechanism within WTO ensure this?

- How can WTO discuss and draw lessons from positive developments in market access negotiations on clean energy goods in other forums, such as the APEC and regional trade agreements (RTAs)? Where should such discussions take place?

- Should discussions on plurilateral initiatives within WTO be considered for clean energy goods? Are there systemic risks involved?

Clarifying existing rules and developing new rules

- Should already agreed upon WTO rules be re-opened for discussion and new rules be created? Or, is constructive ambiguity better despite the burden it places on the Dispute Settlement Understanding (DSU)? If it is decided that new rules are necessary, should such rules be part of a separate framework agreement or developed within the various individual agreements?

- Given that there is no negotiating mandate in most instances, how can discussions on rule clarification or development proceed within the WTO setting? Should the focus be on what can be done within the existing mandates and negotiating or working groups? Should new forums or working groups be created?

- Annex 2, Table 2 provides an overview of some of the main questions that could be raised on clean energy and trade in terms of both substance as well as process.

In addition to these points, it may be worth considering other interim, stop-gap measures WTO could take to reduce the likelihood of trade disputes related to clean energy policies until meaningful progress may be made on the other pillars—market access, transparency, and rules.

ANNEX I

TABLE 1:

An Overview of Some Prominent Clean Energy Trade Disputes

Sources: World Trade Organization, Chronological List of Dispute Cases, and ICTSD Bridges Weekly Trade News Digests.

Dispute name	Year of dispute initiation/WTO Case No (1. For WTO cases: date of request for consultations; 2. In trade remedy cases: date of filing of complaint by private sector or launch of investigation)	Defending/ targeted country (ies)	Complainant(s)	Measure	WTO relevant articles raised in complaint	Dispute status and year of resolution (if applicable)
1. China –Measures concerning wind equipment	Dec 2010 (DS 419)	China	United States	Grants, funds, or awards to enterprises on condition of manufacturing wind power equipment (including the overall unit, and parts thereof) in China	(i) GATT 1994: Art. XVI:1 (ii) Subsidies and Countervailing Measures: Art. 3, 25.1, 25.2, 25.3, 25.4 (iii) Protocol of Accession: Part I, para. 1.2	Measure unilaterally revoked by China in Feb 2011
2. Canada – FIT programme	Sep 2011 (DS 412 and 426)	Canada	EU and Japan	Local content requirements (LCRs) in Ontario's Feed in Tariff programme for wind and solar PV	(i) GATT 1994: Art. III:4 (ii) Subsidies and Countervailing Measures: Art. 1.1, 3.1(b), 3.2 (iii) Trade-Related Investment Measures (TRIMs): Art. 2.1	Resolved in 2013 (Appellate Body Report DS 426). Appellate Body rules Canada's measure inconsistent with GATT Article III and TRIMS Article 2
3. US trade remedies application on solar panel imports from China	Oct 2011	China	US (on basis of complaints by domestic solar panel manufacturers to US Commerce Department)	Alleged Chinese subsidisation of its solar panel manufacturers		(i) Countervailing duties imposed by US on March 2012 after finding of "injury;" (ii) Higher anti-dumping duties imposed by US on May 2012 after determination of "dumping" by Chinese panel manufacturers

4. US trade remedies application on wind tower imports from China and Vietnam	Dec 2011	China and Vietnam	US	Alleged Chinese subsidisation of wind tower manufacturers and dumping by Chinese and Vietnamese exporters		Preliminary CV duties (on Chinese imports) and AD duties (on Chinese and Vietnamese imports) announced by US Department of Commerce in May and July 2012. Final duties announced in Dec 2012
5. Chinese AD and CVD investigation on polysilicon imports from EU, US and Korea	Nov 2012	US, EU and Korea	China	Alleged subsidisation and dumping of solar grade polysilicon by US, EU and Korea		Investigation ongoing
6. US – countervailing duty measures on certain products from China	May 2012 (DS 437)	US	China	Various aspects of certain identified countervailing duty investigations by the US, including their opening, conduct and the preliminary and final determinations leading to the imposition of CVDs. China also challenges the "rebuttable presumption" allegedly established and applied by the US Department of Commerce that majority government ownership is sufficient to treat an enterprise as a "public body"	(i) Article VI of the GATT 1994; (ii) Articles 1.1, 2, 11.1, 11.2, 11.3, 12.7 and 14(d) of the SCM Agreement; and (iii) Article 15 of the Protocol of Accession of China.	Panel composed on 26 Nov 2012

7. EU trade remedies on solar panel imports from China	Sep 2012 (anti-dumping investigation launched) Nov 2012 (investigation of subsidisation launched)	China	EU (on basis of complaint by the EU Pro Sun coalition, a group of 25 European solar panel manu-facturers headed by the German-based So-larWorld)	Alleged dumping and subsidisation by China of solar panels and cells and wafers used in production of solar panels		EU's planned anti-dumping duties expected to be approved by June 2013; reports of potentially negotiated settlement of cases involving the US, EU and China. Investigation into subsidies ongoing. Results expected by Aug 2013.
8. EU – Certain measures affecting the renew-able energy generation sector	5 Nov 2012 (DS 452)	EU	China	Domestic content re-strictions affecting the renewable energy gen-eration sector relating to the FIT programmes of EU member states, including but not lim-ited to Italy and Greece	(i) GATT 1994: Art. I, III:1, III:4, III:5 (ii) Subsidies and Coun-tervailing Measures: Art. 1.1, 3.1(b), 3.2 (iii)Trade-Related Investment Measures (TRIMs): Art. 2.1, 2.2	In consultations
9.EU trade remedies on solar glass from China	15 January 2013	China	EU (on basis of complaint filed by ProSun Glass an ad hoc group rep-resenting European solar glass manufac-turers.	Alleged dumping by China of solar glass used primarily though not exclusively in the production of solar panels and accounting for 4 percent of panel costs		Investigation ongoing; provisional findings expected by Dec 2013.
10. India –Certain measures relating to solar cells and solar modules	6 February 2013 (DS 456)	India	US	Domestic content requirements under India's Jawaharlal Nehru National Solar Mission for solar cells and solar modules.	(i) GATT 1994: Art. III:4 (ii) Trade-Related Investment Measures (TRIMs): Art. 2.1 (iii) Subsidies and Countervailing Measures: Art. 3.1(b), 3.2, 5(c), 6.3(a), 6.3(c), 25	In consultations

11. EU –Certain measures on the import and marketing of biodiesel and measures supporting the biodiesel industry	15 May (DS 549)	EU	Argentina	Two types of measures adopted by the EU and certain member states: (a) measures to promote the use of energy from renewable sources and to introduce a mechanism to control and reduce greenhouse emissions; and (b) measures to establish support schemes for the biodiesel sector	(i) GATT-1994: Articles I:1, III:1, III:2, III:4 and III:5 (ii) SCM Agreement: Articles 1.1, 2.3, 3.1(b), 3.2,5(b), 5(c) and 6.3(a) (iii) TRIMS Agreement: Articles 2.1 and 2.2 (iv) TBT Agreement: Articles 2.1, 2.2, 5.1, 5.2 (v) WTO Agreement: Article XVI:4	In Consultations

ANNEX II

TABLE 2:

Key Issues and Considerations for WTO in Supporting Clean Energy Scale-up by Facilitating Trade in Clean Energy Goods and Services

Key issue areas	Questions and considerations for WTO		
	Enabling greater transparency	Market access -addressing trade restrictive measures	Clarifying existing rules and developing new ones
Tariffs	• How can customs classifications be better refined to more clearly identify clean energy products?	• Could an "early harvest" for clean energy products be identified? What products make good candidates?	
Clean energy subsidies and incentive measures	• Is there a need to consider improved or enhanced notification processes for clean energy subsidies? • Should and if so how could relevant WTO committees debate the nature, purpose, scale and impact of different clean energy subsidies so as to help clarify individual country measures? (for instance, at WTO Trade Policy Reviews).		• Should there be a review of the definition of a subsidy under the SCM so as to better discipline clean energy subsidies with an adverse trade impact on clean energy goods and services? Can this be linked to the debate on subsidies in relevant committees? • Should there be a clear window of exemption for certain types of subsidies, for instance, under a revived "non-actionable" category of subsidies? • Should there be a time-limited exemption granted to certain types of local-content measures in clean energy (for example, developing countries) given the increasing frequency of use?e?
Government Procurement Policies	• How can transparency be improved with regard to procurement measures in clean energy goods and services?	• Can future negotiations on sustainable procurement as mandated in the revised GPA contribute to addressing procurement-related market access for clean energy goods and services?	• How can rules be clarified or developed further under a future GPA that provides greater certainty and predictability for governments to use green procurement measures without running afoul of WTO rules prohibiting discrimination against "like" products?

Clean Energy Equipment Standards and Certification	• Could the TBT notification process of diverse standards for various types of clean energy equipment and services be further streamlined and made coherent? If so, how? • Should a special information system for clean energy standards be created based on the proposed WTO/ISO Standards Information System and the ISO/IEC information centre?		• What can WTO to do further discipline unnecessary and costly certification requirements that are often more burdensome than the actual standards per se? • Should new rules be developed to address domestic regulation disciplines in the clean energy services sector? Such regulation may be required, for instance, to address qualification and licensing requirements for installers of clean energy equipment. • The effect of technical regulations which are not adopted by central governments may still have a crucial negative impact on trade in PV products. Should Article 2.1 and 2.2 of the TBT Agreement explicitly discipline such regulations? • Current WTO TBT disciplines do not sufficiently address standardization activities of local governments and non-governmental bodies. What can be done in this regard?
Services	• Should the WTO try and enable a better classification of clean energy services and promote a uniform approach in this regard to facilitate negotiations?	• Will the ongoing plurilateral negotiations for an ISA facilitate addressing of market barriers? Should there be a critical mass of countries that should participate, including from a climate perspective?	• What rules need to be clarified as far as trade in clean energy services is concerned? What new rules need to be developed? Is this a realistic possibility in the short to medium term?

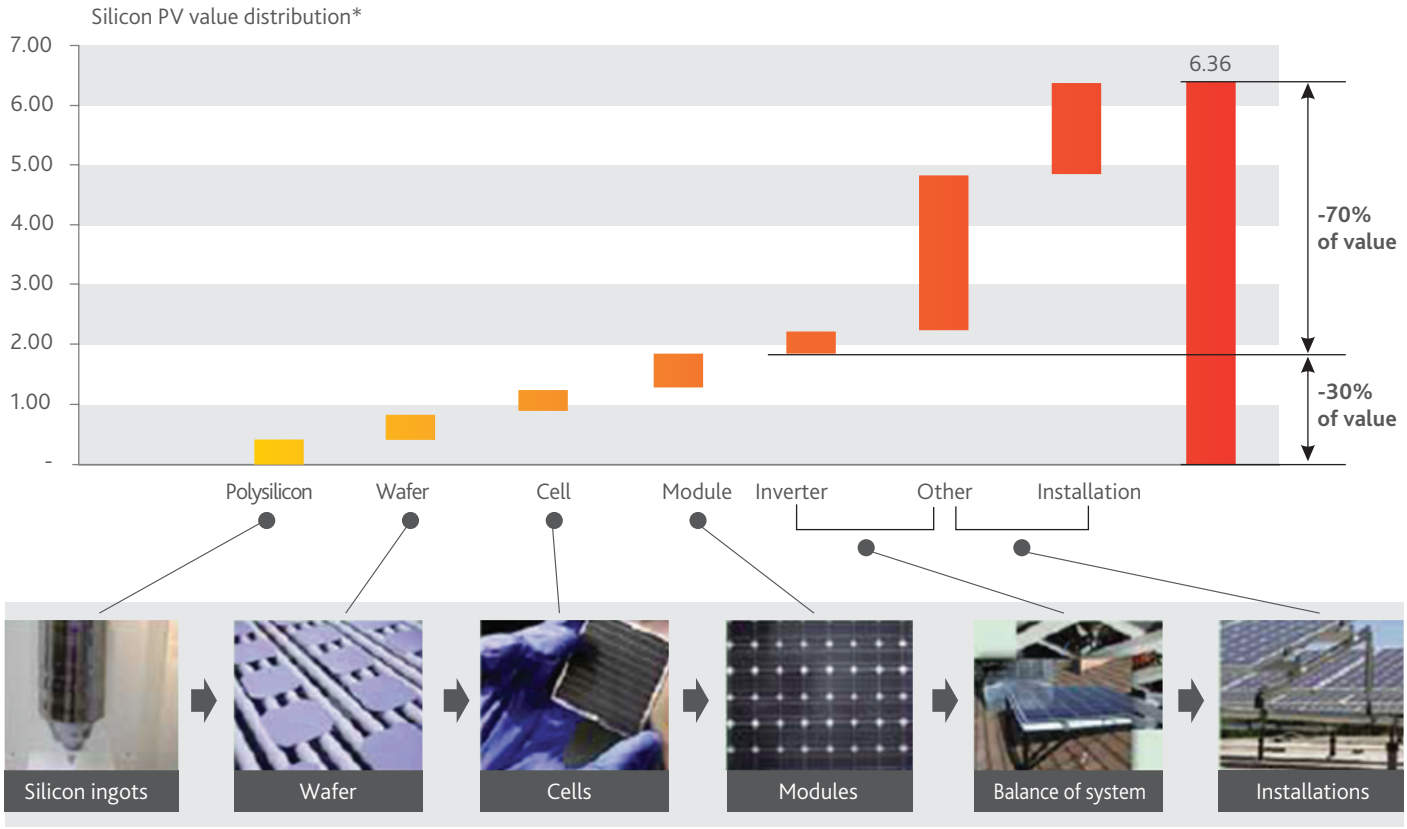
WTO process-related issues and systemic questions	• What can WTO do to generally increase transparency on clean-energy measures that could have a trade impact? Can it be worked into existing mechanisms (such as the Trade Policy Review Mechanism and various notification procedures) or is there a need to create completely new mechanisms? • Should there be strict penalties for non-notification of measures that have a potential trade impact? • How can various notification processes be "clustered" in a coherent manner so as to obtain an easy overview of clean energy measures? For instance, should subsidies and standards affecting the solar PV sector be 'gathered" together? Which WTO body should be responsible?	• How can fragmentation in negotiations on clean energy goods and services be avoided? Should some kind of formal mechanism within WTO ensure this? • How can WTO discuss and draw lessons from positive developments in market access negotiations in other forums such as the APEC and RTAs? Where should such discussions happen? • Should discussions on plurilateral initiatives within WTO be considered for clean energy goods? Are there systemic risks involved?	• Should already agreed upon WTO rules be re-opened for discussion and new rules be created? Or is constructive ambiguity better despite the burden it places on the DSU? If it is decided that new rules are necessary, should such rules part of a separate Framework Agreement or developed within the various individual agreements? • Given that there exists no negotiating mandate in most instances, how can discussions on rule clarification or development proceed within a WTO setting? Should the focus be on what can be done within the existing mandates and negotiating/ working groups? Should new forums/working groups be created?

ANNEX III

FIGURE 1:

Relevance of Downstream Jobs in the Solar PV Sector (More than half the jobs and value generated lie downstream of modules)

Source: Natural Resources Defense Council; Council on Energy, Environment and Water, *Laying the Foundation for a Bright Future: Assessing Progress under Phase 1 of India's National Solar Mission*, Interim Report, April 2012.



* Based on unsubsidized value chain analysis of U.S. silicon PV market. Roughly similar value distribution for thin film technologies.

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DOES IT FIT? AN ASSESSMENT OF THE EFFECTIVENESS OF RENEWABLE ENERGY MEASURES AND OF THE IMPLICATIONS OF THE CANADA – RENEWABLE ENERGY/FIT DISPUTES

Aaron Cosbey and Luca Rubini

MEASURES EXAMINED IN THE CANADA – RENEWABLE ENERGY/FIT DISPUTES

The *Canada – Certain Measures Affecting the Renewable Energy Generation Sector, Canada – Measures Relating to the Feed-In Tariff Program* case (WT/DS412/R, WT/DS426/R) involved a feed-in tariff (FIT) enacted by the Province of Ontario, Canada. This is a scheme that pays guaranteed premium rates for set periods to electricity produced by renewable energy sources; in this case, solar photovoltaic (PV) and wind generation were favoured. Typical FITs also guarantee access to the distribution grid on specified terms. To be eligible for the premium rates embodied in the FIT, the electricity generated had to come from equipment that had some minimum level of domestic content; the required levels varied from technology to technology.[1] This stipulation is known as a local content requirement (LCR).

FEED-IN TARIFFS AND LOCAL CONTENT REQUIREMENTS: DIFFERENT MEASURES, DIFFERENT GOALS

It is analytically useful to think of these two as separate measures, though of course in this case they were inseparable from a regulatory perspective. Their objectives are quite different, as is their treatment under WTO law (a point to which we return). Since our ultimate objective is to ask whether these sorts of measures should be legal under WTO law, a useful starting point is to clarify their objectives, and how effective they are in achieving them. If some good result will eventually have to be balanced against the principles of the multilateral trading system, we should start by knowing what result, and how good.

FITs are environmental measures that have as their objective the rapid dissemination of renewable energy, typically with climate change mitigation as a major goal. It is worth noting that this is a rather important goal. The most in-depth economic analysis of climate change conducted to date called it the biggest market failure the world had ever seen, capable, if unaddressed, of shaving up to 20 percent of global gross domestic product (GDP) now and forever (Stern 2006). Almost all the world's nations have a legal commitment to address climate change by mitigating the emission of greenhouse gases.[2]

An LCR is a condition that can be attached to some benefit (such as FITs) as a threshold condition, and is not fundamentally an environmental measure if assessed by its objectives; rather it is an instrument of industrial policy, which seeks to build up backward linkages in the domestic economy. In the case of Ontario, it sought to build up in-province capacity in the manufacturing sector that supplied the wind and solar PV-generating sector.

It can also be argued that the LCR is ultimately an environmental measure, since it is the "grease" that makes possible the environmental measure to which it is attached. That is, without the promise of local jobs as a payback, it might be difficult to convince voters to back a plan that would see their power bills increasing. In these times of fiscal restraint, it is difficult to sell environmental measures on their own, without also arguing that they will have economic benefits.

ARE FITS AND LCRS EFFECTIVE IN ACHIEVING THEIR GOALS?

Are FITs and LCRs effective in achieving their objectives? In the case of FITs, the consensus seems to be yes, they are highly effective at achieving a rapid deployment of renewable energy generating capacity. FITs are used in more than 90 jurisdictions worldwide, and numerous studies indicate their effectiveness at achieving this environmental objective (Lipp 2007; Butler and Neuhoff 2008; Fouquet and Johansson 2008; Deutsche Bank 2010). Of course, for any given regime of FITs it can be asked whether the objective could be achieved at a lower cost by other policy measures. The answer to this question is not so black and white. But this is not a particularly salient line of questioning if our ultimate objective is to consider these measures as they relate to WTO law.

1 Levels ranged from 25 percent for large wind projects to 60 percent for some solar PV. See Ontario Power Authority 2012.

2 The United Nations Framework Convention on Climate Change, Article 4.

There are a number of market failures that might argue the economic case for the use of FITs. They include:

- Renewable energy technologies (RETs): These face competition from highly subsidized competitors in the conventional generation sectors, subsidies going to both fossil fuels and research and development (R&D).

- Capital market imperfections: Lenders may have imperfect information about the new technologies and the associated risks.

- Latent comparative advantage: Market support may be necessary to bring out latent comparative advantage through learning by doing.

- Lack of appropriability: RET firms may underinvest (relative to the socially optimal levels) if their innovations, or even their discovery of a profitable market, may be easily appropriated by others.

- Environmental externalities: RET firms will certainly underinvest in both R&D and deployment of technologies if we consider the social returns to dissemination of renewable energy. These include the enormous returns that come from mitigating climate change, which is arguably our most significant global crisis; emissions from electricity generation account for more than 40 percent of global CO2 emissions (IEA 2012). If firms invested at levels that made the costs of investment commensurate with the global climate change-related benefits to be derived from that investment, it would mean much, much more investment.

To reiterate, these market failures are rationales for corrective government intervention. Most economists agree that the first best policy route would involve inter alia removal of perverse subsidies to the fossil fuel sector, and the imposition of a carbon tax. But other regulatory solutions may also be defensible, and the scale of the problem dictates that any effective solution will impact trade and investment flows in a significant fashion.

In the case of LCRs, the evidence is far less clear; there is not much out there, and what there is tends to be flawed (Kuntze and Moerenhout 2013). That is, we cannot say with certainty whether they are effective in achieving their industrial policy goals—certainly not at a general level, but even at the level of a specific LCR regime the question is difficult. We have some case studies of what seems to be successful use of these policies—as with autos in China, India and Mexico (Sutton 2004; Pack and Saggi 2006). But there are also many examples of unsuccessful use of LCRs—as with wind power in Ukraine (Hufbauer et al. forthcoming). And even in the case of the success stories, it is not clear what the counterfactual is—would those sectors have developed successfully even without the LCRs?

What evidence there is seems to coalesce around some basic guidance:

- LCRs will not work in isolation. They must be accompanied by complementary policies that build up the capacity of the upstream local sectors; the capacity of human resources; innovative capacity; and the capacity of domestic infrastructure and of domestic financial institutions to support the targeted upstream producers.

- LCRs will only work if the cost and quality differences between local and global suppliers are not too great. The objective is to have LCRs force a leap forward by local suppliers, but if the gap they are trying to clear is too wide, they will simply fall.

- LCRs that are too onerous (set at very high levels) simply drive up the costs of production or, worse, deter investment outright. Some schemes have been successful in gradually increasing the level of demand for local inputs.

- If the goal of an LCR is to create globally competitive firms, as opposed to creating temporary employment, the LCR and other protection will need to be phased out over time to expose domestic firms to international competition.

- LCRs require a large domestic market to make it profitable for investors to produce domestically in spite of the increased costs associated with them. Small markets imposing LCRs may see little or no investment.

It is also worth asking whether green LCRs achieve environmental goals, notwithstanding their basic industrial policy aims. It was noted that they can be argued to enable environmental measures such as FITs. Under specific circumstances, they might also be judged to be effective in addressing climate change. The test must be that the weaker dissemination of environmental technologies (due to higher costs forced on investors) must be more than compensated for by the environmental impacts of the supported industries. That is, there may be positive environmental outcomes from successful industrial policy if the infant industries mature and become significant innovators and competitors in the green technology space. This is not a test easily put into actual practice, but it conceptually highlights the key issues of concern.

As to the evidence that LCRs might actually accomplish such things, there is none available in the literature, this being a novel concept. But it should be noted that the discussion above on effectiveness is salient. If we were to find that LCRs are successful as industrial policy, they would also be successful in accomplishing the environmental goals described above, in creating new innovators and competitors.

ARE THEY TRADE-DISTORTING?

We also need to take into account the extent to which the two measures at issue are trade distorting. This consideration underlies much of current subsidy laws. The hierarchy of severity with which the Subsidies and Countervailing Measures (SCM) Agreement deals with subsidies is closely correlated with their trade-distorting potential; export-related subsidies, for example, are prohibited, while subsidies with little impact on trading partners (no adverse effects) are not in breach of obligations. And the now-expired Article 8 of the SCM, the only carve-out that Members created for otherwise actionable subsidies, arguably takes the trade-distorting nature of those subsidies into account. It is likely, for one thing, that Members considered these subsidies as circumscribed by the sub-paragraphs to be minimally trade-distorting, though this is not explicit in the text. For another thing, Article 9.1 allows for consultations over any subsidies qualifying under Article 8.2 that result in serious adverse effects.[3]

In general, supply-side policies such as FITs, where they do not favour domestic over foreign producers, actually act to increase flows of trade and investment. They create new markets for goods and services from both domestic and foreign suppliers, and similarly encourage investment from both domestic and foreign sources. LCRs cannot be examined in isolation for their trade-distorting impacts, since they almost always act as a condition for the receipt of some benefit. Where they are attached to incentives such as FITs, however, they have clear and significant trade-distorting impacts (Bahar et al. 2013).

CONCLUSIONS ON THE MEASURES

We are interested in the characteristics of the measures involved in this case because, as a starting point, we recognize the importance of dealing with climate change. FITs seem to be aimed at doing just that, and measure up well in terms of effectiveness at achieving their objectives, and in terms of minimal degree of trade distortion. The question to explore in the following section, then, is how FITs fared under WTO law.

LCRs, unlike FITs, are not primarily aimed at environmental goals. We noted that they could achieve environmental goals under certain circumstances—primarily if they were effective enough as tools of industrial policy in the clean energy space. But the evidence on this question is thin, and what there is seems to tilt away from considering LCRs as effective (Hufbauer et al. forthcoming). Certainly they are explicitly aimed at distorting trade and investment flows, and, for this reason, expressly prohibited under WTO subsidy laws.

The characteristics should be borne in mind as we turn to the question of how these measures fared under WTO law. There would seem to be a strong argument for legal flexibility to use tools such as FITs, while LCRs are a more difficult challenge.

THE DISPUTES

The disputes focus on how consistent the 2009 FIT programme of the Province of Ontario is with WTO law. Japan and the EU lodged complaints with the WTO dispute settlement, claiming in particular that

i) the LCR imposed on electricity generators using solar PV or wind power technology was incompatible with the prohibition of non-discrimination as laid down in the obligation of national treatment of Article III: 4 of the General Agreement on Tariffs and Trade (GATT) and Article 2.1 of the Agreement on Trade-Related Investment Measures (TRIMs), and

ii) the FIT was prohibited under Article 3 of the SCM Agreement because it did include the LCR.

It is worth highlighting that the focus of the two legal claims is partly different, with the first being exclusively concentrated on the legality of the LCR, and the latter on the FIT and the LCR. The two disputes were heard by a Panel and then by the Appellate Body, and reports were issued by them respectively on 19 December 2012 and 6 May 2013.

Now, does the *Canada – Renewable Energy/FIT* ruling allow for good incentives for green energy? What are its implications? The assessment cannot but be preliminary. The findings of the Appellate Body are not fully clear, since they are often expressed in terms of principles rather than detailed guidelines.

POLICY NARRATIVES AND LEGAL OUTCOME

Two different policy narratives surrounded the case and one arguably influenced the legal outcome. In particular:

- **Policy narrative 1:** At one level there was the narrative of local labour lobbies and green movements that unreservedly supported Ontario's programme, and criticized the legal challenge and possible WTO intrusions with what it perceived as a good policy. Crucially, this narrative does not distinguish between the two elements of the policy, that is, the FIT and the LCR, and seem to look at them as a single policy measure.

- **Policy narrative 2:** Another narrative comes out from recurring statements of the complainants during the legal proceedings. This narrative crucially separates FITs, as good policy, and LCRs, as bad policy. It is the latter's

3 It is interesting to note that this implies that Members understood that the subsidies covered by Article 8 might in some cases not be minimally trade-distorting. Actionable subsidies causing adverse effects as per Article 5 are, of course, in breach of obligations. But the Article 9.1 threshold is higher; subsidies classifying as non-actionable under Article 8 had to cause "serious" adverse effects before they triggered a consultation mechanism.

discriminatory element—not the FIT—that troubled Japan and the EU (and many of the intervening third parties) and prompted the litigation. It is this element—not the FIT—which they want to have struck down.

Three comments can be made. The first narrative is not appropriate since it does not distinguish between the different goals and effects of the two policies. The second narrative, with its approval of FITs and disapproval of LCRs, is partly in line with what happens and what is normally accepted in most countries. The legal discussion and the outcome of the case closely reflect the policy distinction of the second narrative. The national treatment route is explored up to its very end, and with a rigorous prohibition of the LCR. Once this goal is achieved, the subsidy route is pursued only in so far as it is necessary to determine that there is not enough evidence to conclude that the FIT is a subsidy. In other words, the bad, discriminatory element is expunged with surgical precision, leaving the tissue of the FIT ultimately intact.

LEGAL ANALYSIS AND POLICY IMPLICATIONS OF THE CASE

The legal interpretations of the Panel and the Appellate Body focus on two claims, one on the breach of the principle of non-discrimination, the other of subsidy rules.

NATIONAL TREATMENT AND GOVERNMENT PROCUREMENT EXCEPTION

Legal findings: Both the Panel and Appellate Body easily concluded that the LCR element of Ontario's programme did breach the prohibition of non-discrimination. It was comfortably found that the LCR did confer an "advantage" on local producers of inputs. This conclusion was not discredited by Canada's defence whereby the LCR could not be discriminatory because it was imposed as part of Ontario's purchasing of goods "for governmental purposes and not with a view to commercial resale or with a view to use in the production of goods for commercial sale."[4]

ANALYSIS AND POLICY IMPLICATIONS

- The flexibility allowed by this "government procurement" defence could indeed have been significant. But the Appellate Body interpreted it narrowly. The defence could not be accepted because the discrimination did not directly refer to what Ontario was purchasing, that is, electricity. By contrast, the obligation of sourcing locally did refer to another market, that of inputs.

- Neither the Panel nor the Appellate Body made a finding on whether Ontario's programme constituted a prohibited subsidy because they were unable to find whether there was a subsidy in the first place. But had they found the FIT to be a subsidy, they would arguably have found no particular difficulty in concluding that the LCR breached Article 3.1 (a) of the SCM Agreement that prohibits so-called "local content subsidies."[5]

- It is now clear that you cannot discriminate in such a patent way as with an LCR—a measure not motivated by environmental considerations.

- The prohibition of discrimination has also been reinforced by the narrow interpretation of the defence of "government procurement," whose availability looks now more limited.

- Clearly, the analysis above does not say anything about whether this strict legal conclusion is desirable or not, or if there is a need for a more flexible rule for LCRs.

SUBSIDIES RULES

Does Ontario's FIT constitute a subsidy? A positive subsidy determination would have been necessary to conclude that the programme was prohibited because of the LCR element. WTO's legal definition of subsidy is constituted of two parts. You need to have a form of "financial contribution" in one of the examples provided under Article 1 of the SCM Agreement, or, alternatively, a form of "income or price support." In addition to this, the measure must confer a "benefit."

Both the Panel and the Appellate Body concluded that Ontario's FIT was a "purchase of goods."[6] The focus then shifted to whether this purchase of goods could confer a "benefit"—which is the crucial legal issue in this case. This issue was so controversial that the Panel was split, with one member issuing a separate opinion.

A benefit is found to exist if the recipient does receive an economic advantage that would have been not received in the marketplace. It is therefore necessary to identify an appropriate commercial benchmark against which the measure under examination can be compared (Appellate Body report, Canada-Aircraft, para. 157). Now, Ontario's energy market was very complex and heavily regulated by the government through various public bodies. In such a scenario, could this market be considered "competitive"? Could the prices coming out from this market be regarded as reliable benchmarks for the benefit analysis? At the same time, it was crystal clear that the FIT programme had been introduced to facilitate the development of green energy.[7]

4 Article III: 8(a) of the GATT reads: 'The provisions of this Article [i.e., the prohibition of discrimination] shall not apply to laws, regulations or requirements governing the procurement by governmental agencies of products purchased for governmental purposes and not with a view to commercial resale or with a view to use in the production of goods for commercial sale."

5 Which prohibits "subsidies contingent, whether solely or as one of several other conditions, upon the use of domestic over imported goods."

The Panel majority was of the view that it was not possible to talk of a competitive energy market in Ontario (and perhaps even elsewhere). More fundamentally, it was crucially noted that no competitive market would even hypothetically attract the type of supply of energy sought. In other words, the supply-mix decisions of Ontario, which did include reliability of supply and environmental and human health considerations, did make a "public good" scenario, one which would not have existed but for public intervention.[8] Consequently, the various benchmarks put forward by Japan and the EU, all substantially relating to Ontario's wholesale market, were not appropriate. Similarly, the benchmarks based on what happened in other provinces or neighbouring US regions were not considered appropriate.

The dissenting panellist disagreed with the majority and essentially opined that an appropriate benchmark could well be found, even in a hypothetical competitive market. Further, he did note that the fact that the FIT is there to "facilitate" the development of certain technologies is indicative of the existence of a benefit.[9]

The Panel's majority approach seems to conflate the two separate issues of the existence of a subsidy with its economic and policy justification. The dissenting panellist seems to have been more sensitive to the need, and possibility, of keeping market and policy considerations separate. The benefit should be determined only on the basis of the former, keeping the latter aside.

Finally, it should be noted that the Panel majority did come out with its own benchmark, based on the average cost of capital in Canada for projects having a comparable risk profile in the same period. Now, this test looks wrong from an economic perspective. The risk profile of a comparable investment cannot be pertinent when, fundamentally, risk is not an issue in measures such as FITs, which involve long-term (20 or 40 years) contracts. Moreover, this test is not particularly useful in practice. It is not clear how we might quantify the risk profile of this or any other sector, much less find sectors with similar risk profiles and derive the undistorted cost of capital faced by that sector.

The Appellate Body introduced two important innovations with respect to the analysis of benefit (definition of relevant market, and concept of market creation) which may well have important implications for future policies in the area of clean energy (and perhaps even beyond).

The Appellate Body held that it is first necessary to define the relevant product market to identify the necessary benchmark to an alleged benefit. With an analysis that is reminiscent of anti-trust, they looked at energy markets from both the demand side and supply side. While the former, substantially based on what consumers do, would have pointed to one single energy market (irrespective of the source of generation), the latter led to narrowing it down to renewable energy only (and in particular wind and solar). The factor that led to concluding that a separate market existed was the extremely high upfront costs of renewable energy generating capacity (partially offset by low operating costs) and the intermittency of renewable energy production, both of which contribute to the inability of wind and solar PV producers to compete unaided with conventional electricity producers.

A couple of comments on the findings of the relevant market.

- **Legal point:** Is the definition of the relevant market something that should be done in the benefit analysis? Market analysis such as the one carried out by the Appellate Body was never used in benefit determinations before. This can probably be explained with the fact that the identification of the appropriate market benchmark was in the main clear. The definition of the relevant market is traditionally done to determine what the competitive constraints of firms are, and this is preliminary to the determination of whether there is market power and use of it. This type of analysis is already done in subsidy laws, but only at a subsequent stage, when it is necessary to establish whether the subsidy has caused a serious prejudice—which makes

6 There was no discussion of whether "energy," and in particular "electricity," is a "good" or a "service." The Panel did simply take note that the parties seem to agree it was a good. The issue did not come out before the Appellate Body. In fact, the classification of energy as either a good or a service is highly significant. Had energy been considered as a service, WTO subsidy disciplines would have simply not applied (the SCM Agreement only applies to subsidies to goods). National treatment considerations would have still been relevant but the analysis would have focused on the GATS and the commitments taken by Canada in its schedule for the relevant sectors. Further, neither the Panel nor the Appellate Body ruled on whether Ontario's programme could constitute a form of "price support." This leaves an important question open. The potential of this element of the definition of subsidy is still unexplored and could represent an easy gateway to cover FITs and other regulatory measures of support of green energy.

7 This clearly comes out in the litigation. "Canada accepts that 'most' of the contested FIT generators would be unable to conduct viable operations in a competitive wholesale market for electricity in Ontario. Indeed, Canada points out that one of the objectives of the FIT Programme was to *encourage the construction of new renewable energy generation facilities that would not have otherwise existed*" (Panel report, para. 7.277, emphasis added).

8 It is useful to quote the Panel itself. "The complainants have not convinced us of the premise underlying their two main lines of benefit arguments, namely, that in the absence of the FIT Programme, the FIT generators would be faced with having to operate in a competitive wholesale electricity market. The evidence before us indicates that competitive wholesale electricity markets, although a theoretical possibility, will only rarely operate in a way that remunerates the mix of generators needed to secure a *reliable* electricity system with enough revenue to cover their all-in costs, let alone a system that pursues *human health and environmental* objectives through the inclusion of facilities using solar PV and wind technologies into the supply-mix" (Panel report, para.7.309, emphasis in original).

9 It is again useful to quote one passage from his opinion. "I am of the view that facilitating the entry of certain technologies into the market that does exist—such as it is—by way of a financial contribution can itself be considered to confer a benefit. … The fact that a market is imperfect in its operation or does not meet the objectives that a government might have … does not shield financial contributions which take place in the market from the benefit analysis that is required under the SCM Agreement" (Panel report, paras. 9.3 and 9.6, emphasis added).

its use comparable to what is done in anti-trust.[10] By contrast, the focus of the benefit is different and perhaps more simple, that is, to determine whether the company or sector at issue has received an advantage from the measure. If this is correct, the market should be defined in the benefit context only if this is necessary to identify the relevant benchmarks.

- The practical concern is that a too comprehensive market analysis carried out at the relatively preliminary step of analysis of the benefit may make subsidy determinations unduly more difficult. In a word, increase the risk of "under-inclusion" of the disciplines. This risk would be particularly sensitive from the transparency and governance perspectives. If no benefit (and hence no subsidy) is found to exist, there is no duty to notify.

- **Economic point:** Assuming market definition is warranted at the level of the definition, has the Appellate Body done it correctly? Here the answer is clearly no. Assuming supply-side considerations are relevant when defining relevant markets, the factors relied on by the Appellate Body—costs of production of renewable energy—are not relevant to show substitutability or lack of it. They show the cost of production, not the cost of shifting production. This is a precedent that will come back to haunt us outside of the realm of clean energy.

The second innovation of the Appellate Body's benefit analysis is the introduction of the concept of market creation and its distinction from intervention in already existing markets. In particular, the Appellate Body noted:

> A distinction should be drawn between … government interventions that create markets that would otherwise not exist and … other types of government interventions in support of certain players in markets that already exist, or to correct market distortions therein. … While the creation of markets … does not *in and of itself* give rise to subsidies within the meaning of the SCM Agreement, government interventions in existing markets may amount to subsidies. (Appellate Body Report, para. 5.188)

This statement, duly prepared by the narrow definition of the relevant market, is probably the most important in the Appellate Body's report. It is the watershed that expressly lays down the new line on what can be done without triggering the application of subsidy rules. The importance of the Appellate Body's approach can be fully appreciated if it is contrasted to that of the dissenting panellist. The latter relies on the premise that we would have no FIT incentive but for the public hand. In such circumstances, we can clearly talk of a benefit and a subsidy.

By looking at the general finding on the "creation of the market" together with other parts of the ruling, it looks like the Appellate Body wanted to indicate that the "creation of the market" scenario does include supply-mix decisions.[11] Now, the definition of the supply-mix would cover the regulation of the quantity and type of electricity supplied through the network and the timing of supply, in order to ensure constant and reliable supply (Appellate Body Report, para. 5.185), or more generally the parameters of the system, but may also include price-setting, such as FITs (cost recovery and a reasonable margin) and quantity mandates (Appellate Body Report, para. 5.175). Once the market has been created, benefit benchmarks should be found in the resulting "competitive" markets (Appellate Body Report, para. 5.190, 5.219). In this respect, the attribution of more than adequate remuneration would appear to go beyond the creation scenario and constitute an intervention in an already existing competitive market (Appellate Body Report, para. 5.228).

Finally, the Appellate Body attempted to complete the analysis on the basis of the factual evidence on file and seemed to indicate that, at least for wind, appropriate benchmarks could have been represented by renewable energy initiatives where the remuneration was fixed through competitive bidding (Appellate Body Report, paras. 5.240–5.244). Eventually, it did not make any finding due to the "complexity of the issues" and "absence of full exploration" before the Panel.

A couple of remarks on the findings on the "creation of the market."

- First, does this notion of "creation of the market" make some economic sense?

- In any event, what is certain is that, through this general and powerful language, and the findings referring to the adequacy of the level of remuneration which make it partly operational, the Appellate Body is in effect creating a shelter for some significant measures of support to renewable energy.

- To be sure, if one wants to make the notion of "creation of the market" operational, a lot of questions about the precise boundaries of this safe harbour are left unanswered.

- These are important questions because they may ultimately lead to the conclusion that subsidy laws do not apply at all. This has important consequences for the transparency and monitoring of subsidies, even beyond renewable energy, if these findings are applicable beyond this sector.

- For example, the Appellate Body is suggesting that the dividing line for FITs is whether the remuneration is adequate or not. But the key legal issue is that the criteria to determine this adequate level are still vague. What

11 In particular, a common statement is that the definition of the energy supply mix does not *in and of itself* constitute a subsidy. See Appellate Body Report, paras. 5.175, 5.190, 5.227.

costs are we talking about? At any level? Further, what is the reasonable profit the Appellate Body is referring to? In sum, what does adequate remuneration mean? Is the fact that remuneration is set through "competitive bidding" always sufficient to avoid over-compensation when the process "sets prices for delivered electricity at the levels of the lowest bids *meeting specified conditions*"? (Panel Report, para. 7.29; emphasis added). What do these conditions pertain to? Can policy considerations go into them, and thus alter the commercial nature of the auction? In sum, how should this bidding process be designed so that the signals coming out of it are economically reliable?

THE PRICE OF FLEXIBILITY

More generally, this case shows the price that had to be paid to achieve policy flexibility. All this may support a need for reform.

- If it is desirable that the outcome of a legal case is "just," the correctness of the process to reach this outcome is also equally, if not more, important. Why? Because cases do create precedents which may be applied to other cases in the future, and even beyond the green energy sectors. Now, following this decision, it may be argued that the risk of under-inclusion of subsidy disciplines is unduly increased. This is clear with the "creation of the market" safe harbour, but may also be the result of the requirement to define the relevant market.[12] This under-inclusion may have serious consequences for subsidy transparency and good governance. We repeat one important point made above. If there is no benefit, there is no subsidy. If there is no subsidy, there is no obligation to notify to WTO, hence: fewer possibilities of monitoring and peer control. The central, but already shaky, pillar of subsidy governance control in the WTO would be seriously undermined.

- Further, one should ask whether this is a just outcome anyway. Remember that the measure at issue was not the FIT but the LCR. The conclusion that the FIT was a subsidy was not instrumental to objecting to it, but rather to have the discriminatory LCR struck down. It is not even clear that to comply with a ruling of the Appellate Body saying that Ontario's programme was a prohibited subsidy, Canada should have had to withdraw the FIT element too (and not only the LCR).[13]

- Ontario's FIT programme was certainly the "wrong" set of measures to test the rules because of its combination of good and bad policy elements. It can certainly be said, however, that if more generally subsidy rules had not been like this, that is, with no express shelter for certain good green energy incentives, neither the Panel nor the Appellate Body would have probably felt the need and pressure to do what they have done. The awareness that they were laying down a precedent for future cases—even without discriminatory elements—must have been very strong. Although a finding that a measure is a subsidy is not the last word—WTO subsidy laws do not object to subsidies as such, if there are no trade spillovers—it is a finding that has important political and symbolic connotations, and may trigger crucial transparency obligations.[14] In sum, the lack of a clear, well-defined carve-out led dispute settlement to create one, but a tortuous one.

- These considerations may support the case for reform with a clear set of rules outlining what subsidies are good and should be permitted. This would spare the Panel and Appellate Body from distorting the definition of subsidy in the first place, in order to put the good policies out of the way. The options are various. This could, for example, be done via an interpretive understanding, authentic interpretation, a temporary waiver, or treaty amendment.

THE IMPLICATIONS OF THE CASE

What are the main implications of the *Canada – Renewable Energy/FIT* case for future policies?

- First, it is now clear (if ever confirmation was needed) that you cannot discriminate in such a patent way as with LCRs—that is, measures that are not motivated by environmental considerations. This is the message of the legal analysis of the national treatment claim (arguably, a similar conclusion would have been reached under subsidy laws, if the Panel and the Appellate Body had determined that the Ontario's programme was a subsidy in the first place).

- Second, it is clear that this case has created a shelter for certain non-discriminatory support policies from the application of subsidy laws. This is especially clear if one considers the concept of "market creation." Those measures that are considered to contribute to creating a market are not subject to scrutiny under subsidy laws, they are protected.

- Crucially, this shelter is not full immunity. The Appellate Body has not said that a FIT is never a subsidy. They

12 Indeed, the narrower the market is, the more targeted the benchmarks for the benefit analysis are, and the less likely we are to conclude there is a benefit and hence a subsidy.

13 Although a finding that Ontario's programme was also a prohibited subsidy would have certainly required Canada to withdraw the "measure" "without delay" (a rapidity which is not required for a finding of breach of national treatment only and which may justify a policy and judicial preference for the latter route). See Article 4.7 of the SCM Agreement.

14 According to Article 25.2 of the SCM Agreement, specific subsidies must be notified to the WTO Committee on Subsidies.

have indicated that if they were provided with better evidence that the remuneration is more than adequate as compared to other relevant market benchmarks (that is, other closely comparable supported solar and wind power markets), they would conclude that the FIT at issue is a subsidy. In other words, although they have not concluded that a FIT is never a subsidy, they have raised the bar.

- That being said, the precise contours of this shelter are not fully clear yet. It remains to be seen what would be permitted and what would not. Future litigation will tell us.

- On the other hand, the creation of a partial safe harbour for non-excessive measures of support may have come at a certain price for transparency and subsidy governance. It should be asked whether the Appellate Body's approach has solid economic grounding. Most importantly, the implications of the flexibility achieved with respect to future subsidy cases and the system of subsidy control at large should be seriously pondered. The risk is that, unless rigorous conditions are imposed, this shelter will provide safe harbour for forms of industrial policy that are protectionist and trade distorting, without subjecting them to serious forms of scrutiny.

- All this supports the case for reform of subsidy rules. As this case shows, a case-law solution has inherent limitations. Members—not dispute settlement—should take the lead and responsibility for identifying what is good policy and should therefore be permitted. Only reform, which may take various forms (from official interpretation to permanent waiver, up to treaty amendment), all ultimately in the hands of Members, would enable reaching the objectives of desirable policy space; respect the integrity of the rules; and safeguard transparency and good governance. Only reform can ensure the legitimacy of the fundamental decision of what type of government intervention should be permitted and what should not. Only reform can ensure the necessary legal certainty to both government and business action.

- The prospect of more litigation on green energy support may further exacerbate the deficiencies of subsidy rules and make the case for reform even more evident. In this respect, the effects of policies in support of renewable energy (which may well go beyond FITs) can be so complex and diverse, depending on the circumstances, including supply chains and developments in technology and investment trends, that it is unwise to speculate or make generalizations, inevitably based on stylized factual scenarios, that "nobody will challenge this subsidy." Legal certainty is an essential value and needs to be re-instated.

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SECURING POLICY SPACE FOR CLEAN ENERGY UNDER THE SCM AGREEMENT: ALTERNATIVE APPROACHES

Robert Howse

INTRODUCTION

This paper considers concrete options for addressing the need for policy space under the World Trade Organization (WTO) Subsidies and Countervailing Measures (SCM) Agreement for clean energy. Essentially all WTO Members that produce clean-energy products maintain government policies that address the (albeit narrowing) gap between the cost of clean energy and that of dirty (fossil fuel-generated) energy. These range from production subsidies for clean energy technologies (often with domestic content conditions) to feed-in tariff programs to consumer subsidies. Some of these policies, over the last two years, have been the subject of an increasing number of trade disputes, whether trade remedy actions or challenges in WTO dispute settlement. The decision of the Appellate Body (AB) in the *Canada–Renewable Energy* case made it clear that many domestic content requirements or conditions are not compatible with the WTO law as written. At the same time, the AB suggested, in its analysis of "financial contribution" and "benefit" under the SCM Agreement that clean energy markets, as structured through government policy, may operate in different ways from conventional energy markets, and that the benchmarks in the SCM Agreement should be applied accordingly. This suggests some deference to government policies to ensure that, despite the cost gap, a viable clean-energy market can operate. However, the AB decision leaves open many questions, including how to apply the key concepts of the SCM Agreement, "financial contribution," "benefit," and "specificity" to the distinctive features of clean-energy markets.

The case for policy space for clean-energy policies has largely to be made in terms of the political and other challenges of adopting ideal or optimal policies to ensure that the relative pricing of clean and dirty energy reflects climate and other environmental externalities. Economists such as Joseph Stiglitz have argued that a general carbon tax is the rational way of doing this. In addition, price distortions have often resulted from past, and in some cases, present subsidization of dirty energy. There is a very limited logic to giving policy space for clean-energy incentives or support to WTO Members who undermine the sought-after environmental benefits by, at the same time, continuing to subsidize dirty energy. While such subsidies have been viewed as politically necessary, and also as a matter of wealth-redistribution, more governments are finding the resolve to reform them (Morocco, Indonesia, and Sudan are recent cases, and India may be soon). In the case of domestic content requirements, while infant-industry arguments might apply to justify them on economic principle in certain cases, many of the industries in question are now well established. While such requirements may have been a political necessity to get enough backing for the initial policy package, it does not follow that they remain a political necessity, now that the clean-energy market is up and running.

PROBLEM/OPPORTUNITY

The uncertainty and potential market instability from spiraling trade disputes concerning clean-energy policies creates a pressing need, but also an incentive, for the major existing players in clean-energy markets to facilitate clarification and evolution of SCM norms to provide secure policy space for clean-energy initiatives that are justified by climate and other environmental objectives, as well as arguably energy security concerns.

At the same time, it is unlikely that a consensus could be found among WTO Members simply to carve out clean-energy policies from SCM disciplines altogether. There was originally a category of non-actionable subsidies in the SCM Agreement, which expired and was never renewed, reflecting considerable disagreement about the need or desirability for such a category. Again subject to valid infant-industry concerns in the case of developing countries, however politically useful in gaining support for clean energy, domestic content requirements and other discriminatory measures actually undermine environmental objectives by shifting production to higher-cost jurisdictions, and therefore making clean energy, or clean-energy technologies, more expensive than they need to be.

It is notoriously difficult to obtain agreement on amending existing WTO treaties, especially outside a trade round. Members are focused on an effort to achieve results on Doha that have been long delayed. The issue of policy space under the SCM Agreement could conceivably be added to the Environmental Goods and Services (EGS) negotiations. While this is an area that has been particularly paralyzed, the Obama administration has announced that it will take the initiative to bring concepts from the Asia-Pacific Economic Cooperation (APEC) agreement in this area to the WTO negotiating forum, in an effort to re-energize the EGS talks. It is hard to imagine

how one would avoid getting SCM reform with respect to clean energy entangled with the negotiation on "rules" reform more generally.

For these reasons, the concrete options to be addressed in the section of the paper that follows will focus on alternatives that do not require formal amendment of the SCM Agreement, although this may be the longer term result. Perhaps here the trajectory of the access to medicines arrangements with respect to the Trade-Related Aspects of Intellectual Property Rights (TRIPS) is a useful precedent. The opportunity of focusing on agreement on the interpretation and application of the SCM Agreement rather than its amendment arises, at least in part, from the notoriously open-ended (some scholars would say ambiguous or, at least, economically incoherent) nature of the key concepts for determining whether subsidies are susceptible to challenge under the SCM Agreement, or susceptible to WTO legal trade remedy action. In addition, as already noted in the *Canada–Renewable Energy* case, the AB has suggested that there is some real flexibility under the SCM Agreement for governments to take measures to establish and ensure the viability of clean-energy markets, but has left open many questions about the exact contours of that flexibility.

At the present juncture, many clean-energy policies, including incentives, are undergoing reconsideration and reform in light of experience to date, the rapidly evolving technological and commercial realities of clean-energy markets, and fiscal pressures. At the same time, new initiatives are being introduced by, among others, major players such as India and China. This leads to another opportunity—the possibility of finding policy space for existing, arguably non-conforming measures through a time-limited conditional waiver.

RESPONSES: AN INTERPRETIVE UNDERSTANDING ON THE SCM AGREEMENT

Conceiving, at least in the short and medium term, the adjustment of the SCM Agreement through an interpretive understanding rather than an amendment makes sense for the following reasons.

- Experience with attempts at one-off amendments suggests that it would be politically difficult to detach a particular project for amending the SCM Agreement to deal with clean energy from the thorny issue of rules reform more generally.

- There remains an obsessive focus on Bali/Doha at the diplomatic and negotiating levels in the WTO.

- An amendment to a covered agreement can only be done through consensus among WTO Members, which is always hard to obtain.

- An interpretive understanding could be promulgated at the Committee level of the WTO and still have considerable weight in dispute settlement (as was the case, for example, for Technical Barriers to Trade (TBT) Committee norms on international standardization in the Tuna II AB decision).

- Alternatively, an interpretive understanding could be initiated as an open plurilateral agreement, starting with WTO Members who have the most at stake in production and consumption of clean energy.

AN INTERPRETATIVE UNDERSTANDING TO PROVIDE THE NEEDED FLEXIBILITY: ALTERNATIVE APPROACHES

Approach 1: Apply Article XX of GATT

In the *China–Publications* case, the AB raised the possibility that in some circumstances GATT provisions might continue to apply so as to protect the "right to regulate" under some other more specialized agreement (in that case, the Chinese protocol of accession). This would only be the case, however, the AB suggested in *the China–Raw Materials* case, if there was a textual "hook" that related the provision in question to the GATT.

Respected scholars disagree on whether, as a matter of the law as it stands, Article XX applies to the disciplines in the SCM Agreement. Several provisions of the SCM Agreement appear to suggest that the legal status of a subsidy and/or action against subsidies would be determined by applying the GATT and the SCM Agreement together (for example, 25.7). An interpretative understanding would be a legitimate way of resolving the ambiguity.

An advantage of the Article XX route is that of certainty. Through cases such as *EC–Asbestos*, and especially *Brazil–Retreaded Tyres*, the AB has charted a route to considerable policy space for legitimate non-protectionist measures with, among other things, health and conservation objectives (Articles XX [b] and [g]). An interpretive understanding would reinforce the dicta suggested in *Brazil–Retreaded Tyres* that climate change policies would fall within the objectives of these provisions. The chapeau of Article XX offers tested safeguards against abuse of policy space.

An advantage of an Article XX approach is that, especially under XX (b), a Member would have to establish the "necessity" of any trade-restrictive impact from the subsidy. A Member that continues to subsidize dirty (fossil-fuel) energy might well have a difficult time justifying its measure as necessary under Article XX, as there is the less trade-restrictive alternative of changing the relative pricing of clean and dirty energy through the removal of subsidies to dirty energy. The understanding could specify that Article XX should not be interpreted so as to make available policy flexibilities on renewable energy to Members who are unwilling to undertake other reasonably available measures to achieve their objectives, in particular Members who are

unprepared to reform or remove, in an appropriate manner, subsidies that distort energy prices in favour of dirty energy.

A disadvantage is that there may be Members who are prepared to grant policy flexibility on clean energy subsidies who would not want Article XX to be understood to be applicable to the SCM Agreement as a general matter. This might be solved by limiting the understanding to energy or climate-directed measures, but would that approach be coherent, or seen as such by the AB?

Approach 2: Define or Clarify the Concepts of "Benefit," "Financial Contribution," and "Specificity" in the SCM Agreement as they Apply to Clean-Energy Subsidies

For a subsidy to be challenged in WTO dispute settlement or targeted with countervailing duties by a WTO member, it must be established that there is a financial contribution by government, that there is a benefit conferred, and that the subsidy is "specific." All three requirements must be met. An interpretive understanding could focus on ensuring that each of these requirements is read in such a way as to respect the need for policy space for legitimate measures aimed at increasing the use of clean energy for climate mitigation and other important public interest reasons.

Specificity

Article 2.1 of the SCM Agreement reads in relevant part,

> Where the granting authority, or the legislation pursuant to which the granting authority operates, establishes objective criteria or conditions governing the eligibility for, and the amount of, a subsidy, specificity shall not exist, provided that the eligibility is automatic and that such criteria and conditions are strictly adhered to. The criteria or conditions must be clearly spelled out in law, regulation, or other official document, so as to be capable of verification.
>
> (c) If, notwithstanding any appearance of non-specificity resulting from the application of the principles laid down in subparagraphs (a) and (b), there are reasons to believe that the subsidy may in fact be specific, other factors may be considered. Such factors are: use of a subsidy programme by a limited number of certain enterprises, predominant use by certain enterprises, the granting of disproportionately large amounts of subsidy to certain enterprises, and the manner in which discretion has been exercised by the granting authority in the decision to grant a subsidy. In applying this subparagraph, account shall be taken of the extent of diversification of economic activities within the jurisdiction of the granting authority, as well as of the length of time during which the subsidy programme has been in operation.

An interpretive understanding could delineate what would be acceptable as "objective criteria or conditions" in the case of clean-energy subsidies. This would be based, in the first instance, on recognizing that increasing the use of clean energy relative to energy that contributes to climate change and to other environmental and health problems is a legitimate objective of subsidy policies in this area. As an indicative matter, illustrative lists might be developed of design features and operational practices that should be presumed to be consistent with the language "objective criteria and conditions" and others that are likely to be problematic, under the first and/or the second paragraph reproduced above.

Financial Contribution

There is considerable uncertainty and debate about whether and in what circumstances feed-in tariff schemes for clean energy constitute a "financial contribution" by government. There are at least two kinds of situations—one is where the government requires that private operators purchase clean energy at a price higher than that for dirty energy, and another is where the government itself is involved in the purchase of the energy, which could be for delivery through a state monopoly or state enterprise or for resale to private actors (where the government is playing the role of market operator, as was the case in the *Canada–Renewable Energy* dispute).

In addressing the relevant provisions of the SCM Agreement (particularly on "price" support, providing goods and services other than general infrastructure or purchasing goods, and entrusting and directing private bodies), an interpretive understanding might include the following principles.

- Because of differences in environmental externalities, among others, clean energy and fossil fuel-generated energy are not like products or services.

- Measures that address the relatively higher cost of generating clean energy should be presumed not to provide a financial contribution to clean-energy market actors unless they are shown to be in a quantity greater than that required to address fully the higher cost of clean-energy generation relative to fossil-fuel generation.

- Likewise, such measures shall be deemed not to provide "price support" within the meaning of Article 1 of the SCM Agreement.

Benefit

Here the interpretive understanding could build on the AB decision in *Canada–Renewable Energy* and might include interpretive principles along the following lines.

- The determination of "benefit" under the SCM Agreement requires a comparison against an appropriate market benchmark. Clean-energy markets have different characteristics than conventional-energy markets. This must be taken into account in choosing an appropriate benchmark.

- In order to confer a "benefit," a challenged measure would have to provide a competitive advantage to the beneficiary over other participants in the clean-energy market.

- Measures targeted at addressing the cost difference between producing clean energy and conventional energy should be presumed not to confer a benefit, unless the magnitude of the financial contribution is significantly out of proportion to this goal.

Domestic Content Requirements

- It is often claimed that domestic content requirements are necessary for gaining political support for incentives and other measures to support clean energy. This may have been true at some point, but it may no longer be true, especially where the programs in question are now well established and have constituencies supporting them for other reasons.

- Domestic content requirements are unambiguously prohibited under the SCM Agreement and Article III: 4 of the GATT.

- Flexibility for new measures of this kind could conceivably be found in the case of developing countries through interpreting the infant-industry provisions of the GATT (Article XVIII: C as applicable to the SCM Agreement), on a similar theory as that discussed above in relation to Article XX.

- An interpretive understanding could facilitate the conversion of SCM-inconsistent domestic content requirements into other kinds of WTO-consistent measures that ensure that recipients of clean-energy subsidies provide benefits to the local economy. It could be affirmed that conditions such as training or hiring of local workers, and technology transfer (subject to any specific TRIPS disciplines) should be presumed to be consistent with the GATT, Trade-Related Investment Measures (TRIMs), and the SCM, provided they do not discriminate against imports or violate most favoured nation (MFN) norms.

WAIVER

An alternative, or perhaps even a complement, to an interpretive understanding could be a waiver for existing clean-energy policies pursuant to Article IX (3) of the WTO Agreement. Waivers have been not infrequently used to deal with new challenges. A recent example is the waiver for measures to implement the Kimberly Accord on conflict diamonds.

- A waiver must be time-limited and may be subject to terms and conditions.

- A disadvantage of a waiver is that, as a matter of WTO practice, it must be enacted by consensus whereas, as noted above, an interpretive understanding could take the form of an open plurilateral agreement.

- A waiver, on the other hand, has the advantage of providing a high degree of legal certainty and security with respect to a defined set of policies, a genuine "safe" policy space.

THE POSSIBLE CONTENT OF A WAIVER

- Policies could be defined in terms of objectives (climate mitigation, addressing environmental externalities more generally), and design (supporting clean-energy markets, shift from dirty energy to clean energy, and so on).

- The waiver could be conditioned on removal of discriminatory aspects of policies within a set, relatively short time-frame (for example, domestic content requirements).

- The waiver could also contain an Article XX chapeau-like provision requiring that policies under the waiver not be applied in a manner that constitutes arbitrary or unjustifiable discrimination.

- To benefit from the waiver, a WTO Member could be required to make a notification of the policies in question, and provide a detailed plan about removal of discriminatory aspects within a defined time-frame.

- To benefit from a waiver, a WTO Member could be required to eliminate or reform other policies that undermine the objectives on the basis of which the waiver is given, in particular, fossil-fuel subsidies.

THE PROBLEM OF TRADE REMEDIES

- An interpretive understanding of the kind sketched above would only partly address the threat to policy space from proliferating trade remedy actions against clean-energy products. It would certainly not address anti-dumping actions.

- A recent Cato Institute study (Lester and Watson 2013) has suggested that, as part of a US-led initiative on liberalization of trade in environmental goods and services at the WTO, listed environmental goods would be completely exempted from trade remedy actions. This is a desirable long-term goal. It would likely entail changes in domestic legislation, depending on the jurisdiction.

- Some scholars, such as James Wu and Salzman from Harvard Law School, believe that these kinds of reforms are inherently politically infeasible. However, as some of the recent disputes have illustrated, there are also domestic constituencies that are against imposition of

trade remedies, such as users of the products in question as inputs. A game-changing proposal on exemption from trade remedies could give additional power to those constituencies.

If the waiver alternative discussed above were adopted, there could be an agreement not to take trade remedy action against any policy covered by the waiver during the period of the waiver's validity, provided the conditions of the waiver are fully met. Disputes about whether those conditions are met, for purposes of determining whether trade remedy action is permissible, could be stipulated to be subject to arbitration under the Dispute Settlement Understanding (DSU).

More gradualist options could include the following measures.

- An undertaking by willing WTO Members to engage in consultations as soon as they are aware that policies and practices by another Member may give rise to a trade remedy action in their jurisdiction ("early warning").

- An interpretative understanding that positive environmental and other impacts in the importing country of the policies and practices being responded to by trade remedies be netted out when injury is determined.

- An interpretative understanding that a fair price comparison within the meaning of Article 2.4 of the anti-dumping agreement take into account distortions in domestic and global energy markets that make it difficult or impossible to properly compare prices using any of the methodologies prescribed in the Anti-Dumping Agreement.

- A commitment to publish an objective study of the costs and the benefits of the measures being responded to by trade remedy action as well as the trade remedies themselves. To the extent possible, this would include costs and benefits in the case of both the importing and exporting countries, as well as global costs and benefits, including environmental costs and benefits.

CONCLUSIONS

- The immediate, short- and medium-term focus should be on alternatives to formal amendment of the SCM Agreement.

- Neither environmental nor economic objectives are served by a carve-out approach of removing clean-energy policies from WTO disciplines altogether, especially non-discrimination, even if historically, discriminatory policies like domestic content requirements have been part of a political bargain to get clean-energy markets up and running.

- Whether the chosen alternative is an interpretive understanding or a waiver (or both), policy space should be conditioned on the elimination or reform of other policies that undermine the objectives for which policy space is being granted, in particular fossil-fuel subsidies.

- Protecting policy space against trade remedy action is a particularly difficult challenge politically. But there are important domestic constituencies in many instances whose interests are harmed by such action. Proposals that contain trade remedy action may not in the short term have political success in the WTO, but they may have a dynamic effect on the salience of anti-trade remedy constituencies.

- Approaches to policy space should work with trends to reform and redesign clean-energy subsidies for non-trade law reasons, and not provide a shield for those resisting reform.

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CLIMATE CHANGE AND A RENEWABLE ENERGY SCALE-UP: RESPONDING TO CHALLENGES POSED TO THE WTO

Amelia Porges and Thomas L. Brewer

INTRODUCTION

This paper discusses the costs and benefits of options for adjusting World Trade Organization (WTO) rules to provide additional policy space under the General Agreement on Tariffs and Trade 1994 (GATT) and the Agreement on Subsidies and Countervailing Measures (SCM Agreement) for subsidies or other measures to mitigate climate change and promote renewable energy. We explore eight paths to address this challenge—amendment of the WTO Agreement; waiver of WTO obligations; agreement on an understanding interpreting WTO rules; plurilateral agreement; litigation in the WTO dispute settlement process; agreement on a moratorium on dispute settlement regarding certain measures; conclusion of a plurilateral agreement; and/or unilateral action.

Other papers published by the International Centre for Trade and Sustainable Development (ICTSD) have proposed changes in WTO rules affecting government measures to promote clean energy, and have discussed reasons why the existing policy space is insufficient. This paper discusses how changes of this sort could come about, how long they would take, what they would involve, and their scope of application. It is essential to have a grasp of these fundamentals before investing time, effort, and political resources in advocacy for rule changes.

Actual and potential conflicts between the trade regime and the climate change regime continue to be problematic to both. There is an increasing sense of urgency based on the accumulating evidence from climate science that more effective efforts are needed to mitigate climate change and that trade rules and institutions might be barriers to such efforts. Clarification of the issues and development of options are needed now to facilitate constructive responses in both the trade and climate regimes.

We find that:

- Amending WTO agreements would be controversial, difficult, and time-consuming. In practice, it would be necessary to reach consensus in the WTO on how to amend GATT Article XX or the SCM Agreement, and on the text of any amendment. Negotiating a consensus agreement on such changes would require the proponents to make the case for the importance of climate change mitigation, set out the type of mitigation measures they wish to permit, explain why the changes are necessary, and engage seriously with other Members whose export interests would be injured by the mitigation measures. This negotiation would be difficult, although when completed, the results would be permanent and would have unquestionable legitimacy.

- No such amendment could enter into force unless it is accepted by two-thirds (106) of the 159 WTO Members. This process would take many years, during which climate change would continue and governments and stakeholders would face substantial uncertainty about their scope of action under trade rules.

- Amendments would only bind those WTO Members that accept them. For any WTO Member that does not accept an amendment, the un-amended WTO rules would still apply, and that Member could bring and win a dispute against any climate change/renewable energy measure that violates the un-amended (existing) WTO rules.

- To eliminate this free-rider problem and bridge the time period before entry into force, one possibility would be to seek consensus approval of a waiver of WTO obligations as a package with the amendment.

- Another possibility would be to seek agreement on an authoritative interpretation of WTO rules, or an understanding adopted by a WTO Committee regarding the interpretation and application of one of the WTO agreements. These interpretative understandings, adopted by consensus, would not change the law, but they could affect outcomes in WTO dispute settlement.

- Other alternatives include plurilateral agreements on interpretation and application of WTO rules; efforts to alter the rules through WTO litigation; collective agreement on a moratorium on dispute settlement; efforts to alter the rules through WTO litigation; or unilateral WTO-illegal action by governments that are willing to pay the price in trade retaliation. Each of these has costs and benefits in varying degrees.

- If it is not feasible to adjust WTO rules, it would be useful to look again at the ways in which the rules now provide flexibility for climate change mitigation measures, and to take a serious look at those measures that are WTO-compatible. Thus, if there is a desire for measures to increase the price of carbon, and to ensure against carbon

leakage through border adjustment measures, a serious look at carbon taxes rather than cap and trade systems may be what is needed. If a government wishes to levy a carbon tax on imports as a border tax adjustment, it may be able to do so consistent with the national treatment provisions of GATT Article III. If a border tax adjustment is consistent with Article III, it is consistent regardless of its objectives or how the money collected is spent.[1]

PROBLEMS IN MITIGATING CLIMATE CHANGE AND PRESERVING THE TRADE SYSTEM

The problems that are driving this analysis can be viewed from several perspectives–some current, specific and tangible, and others more conceptual but nevertheless fundamental to the futures of the trade and climate regimes. Two specific, tangible problems illustrate the diverse challenges that climate change and renewable energy pose for the WTO system—border adjustment measures for emissions trading systems (ETSs), and subsidies for renewable energy.

ETSs already exist in the European Union (EU), Switzerland, New Zealand, the Regional Greenhouse Gas Initiative (RGGI) in the northeastern region of the United States (US), and in California and Tokyo. Others are in advanced planning in Québec, Canada, the Republic of Korea, the Chinese provinces of Hubei and Guangdong and cities of Beijing, Tianjin, Shanghai, Chongqing, and Shenzhen.[2] No ETS has yet incorporated a border adjustment mechanism. If and when there is an ETS with a border adjustment mechanism, it is possible that another WTO Member will challenge the border adjustment measures in the WTO.

Subsidies benefiting renewable energy products have been the subject of WTO disputes, as well as trade remedy actions. These developments may impede a policy instrument that could accelerate the development of climate-friendly energy technologies, and thus prolong dependence on greenhouse-gas-intensive fossil fuels.

More generally, uncertainties about the evolution of WTO rules and the prospects of challenges in the WTO dispute settlement process create misgivings, and thus disincentives to governments' development of climate-friendly and renewable-energy policies. Just as government policy uncertainties can inhibit firms' investment decisions, WTO uncertainties can inhibit governments' policy development.

In addition, differences between the trade regime and the climate regime can pose difficult analytic and negotiating challenges. Trade economics and environmental economics start from different fundamental premises (Bhagwati 2009). Trade economics often (though not always) begins by assuming that markets tend to be economically efficient, and that government interventions in the form of trade policies tend to create economic inefficiencies. But for environmental economists, environmental problems such as climate change result from market failure, and require government policies to correct (Stern 2007). Market failures (such as innovators' inability to capture all of their innovations' benefits) also constrain research, development, and diffusion of technological solutions to the problem of climate change, such as solar, wind, and other forms of renewable energy. Markets may thus lead to over-production and over-consumption of energy technologies (including those based on fossil fuels) that involve negative externalities, and they may lead to under-production and under-consumption of renewable energy technologies that have positive externalities (Jaffe, Newell, and Stavins 2005).

Governments address these market failures and externalities through policies targeting greenhouse gas emissions, and through support for technologies to reduce such emissions. The former internalize the costs of greenhouse gas emissions in transaction prices (such as the price of producing and consuming electricity) to mitigate the emissions. The latter include subsidies and other efforts to incentivize businesses and consumers to increase investment in technologies that can reduce the emissions. In both cases, governments can choose to take measures that implement these policies in a WTO-compatible manner, or they can choose measures that are at odds with WTO rules.

The trade regime and the climate regime, in fact, share some common ground. Economic efficiency is an objective of both the multilateral trade system centered in the WTO and the multilateral climate system centered in the United Nations Framework Convention on Climate Change (UNFCCC). In that key aspect, there is a basic compatibility between the two systems.

From a climate change perspective, it is desirable to increase the world's changeover to forms of renewable energy that will reduce greenhouse gas emissions. Governments should act to reduce the cost of renewable energy inputs including traded equipment for solar and wind power. Reducing the cost of these inputs, and facilitating scale-up of renewable energy production, will help renewable energy get to the magic point of grid parity where the market price of renewable energy meets or undercuts the market price of fossil fuels. From a trade perspective, if grid parity is the goal, it should be possible for governments to work together to achieve this in a manner that is compatible with the flexibility built into trade rules.

As Intergovernmental Panel on Climate Change (IPCC) reports become increasingly gloomy, the climate community has an increasing sense of urgency that governments must

1 GATT Panel Report, *US – Taxes on Petroleum and Certain Imported Substances*, para. 5.2.4.

2 International Emissions Trading Association, *Greenhouse Gas Market 2013*, http://www.ieta.org/assets/Reports/ghgreport2013-web.pdf.

do more—tax policies; mandatory performance standards; carbon and pollution regulations; feed-in tariffs to subsidize generation of renewable electricity; or procurement preferences for renewable energy and green products. Resistance by economic actors with arguments based on trade rules then leads the climate change community to call for the trade rules to be remodeled to create more policy space—by modifying Article XX (the exceptions clause) of the GATT, or by modifying the SCM Agreement to create new exceptions to its rules. Clarification of the issues and development of options are needed now to facilitate constructive responses in the trade and climate regimes.

OPTIONS ON THE ROAD TO POLICY SPACE FOR RENEWABLE ENERGY/CLIMATE

AMENDING THE WTO AGREEMENT

The WTO's amendment process

The WTO can amend the GATT or the SCM Agreement if it wishes to do so. But before investing time, effort and political resources in advocacy for an amendment, it is important to understand how long it would take, what it would involve, and what benefits it might confer.

The WTO's amendment rules appear in Article X of the constitution, the Marrakesh Agreement Establishing the WTO. Under Article X:1, a proposal to amend any of the agreements on trade in goods could be submitted by any WTO Member or the WTO's Council on Trade in Goods, which oversees the administration of the GATT; any proposal submitted by a Member would most likely undergo extensive debate in the Council on Trade in Goods. The rules of procedure of the Council on Trade in Goods provide that its decisions are made by consensus, and that if a consensus decision is not possible, the matter is referred to the General Council for decision.[3]

When and if the Council on Trade in Goods reaches consensus on a decision to amend these agreements, it would then submit the proposal to the WTO's Ministerial Conference, or to the General Council, which carries out the functions of the Ministerial Conference between the Ministerial Conference's biennial meetings. The proposal would take the form of a draft of a Decision to amend, with an attached draft protocol of amendment. The Ministerial Conference or General Council would then consider whether to submit the proposed amendment to WTO Members for acceptance. For a period of 90 days after the submission of the proposal, this decision can only be taken by consensus, but thereafter it can be taken by a two-thirds majority of the Members[4] (106 of the current 159 Members).

Politically, advancing a proposal for amendment to accommodate climate change mitigation measures would involve substantial effort. The proponents of an amendment would have to make a factual and political case for the amendment proposal. They would need to explain the factual background of climate change, and the need to permanently alter the rules. They would need to explain the type of climate change measures that are needed, their impact on trade, and why these measures require an amendment—that is, why these measures would be inconsistent with the WTO Agreement and why they could not be taken in a WTO-consistent manner.

The discussion on the amendment would take substantial time. Because the Council on Trade in Goods decides by consensus, the amendment decision will not move forward until the concerns of all Members have been satisfied to the extent that they will not object.

Because the process would resolve Member concerns by negotiation and agreement, the ultimate decision would have a level of legitimacy that is not present in any rule change that comes about through litigation. When the Council on Trade in Goods agrees that an amendment is appropriate, it should not be difficult to obtain consensus support for the same amendment in the General Council or Ministerial Conference, which are composed of the same Members.

After the Protocol of amendment has been opened, each Member would then decide whether to accept the amendment and thereby bind itself under international law. Acceptance takes place through deposit of an instrument with the WTO Secretariat after a Member has gone through whatever internal approval process is required under its domestic law.[5]

Most amendments to the WTO Agreement, including any amendment to Article XX or the SCM Agreement, enter into force only after two-thirds of the Members have accepted the amendment and agreed to be bound under international law.[6]

Article X: 3 of the Marrakesh Agreement provides that amendments to the WTO Agreement take effect only with respect to the WTO Members that have accepted them. Even if a WTO Member participates in the consensus decision to propose an amendment and open a protocol of amendment for acceptance, it can later decline to accept

3 G/L/79, Rules of Procedure for Meetings of the Council for Trade in Goods, adopted on 31 July 1995, Rule 33. It would be extremely unlikely that a proposal for amendment would go forward to the General Council without consensus backing.

4 Marrakesh Agreement, Article X: 1.

5 Marrakesh Agreement, Article X: 7; discussion of formal requirements for an instrument of acceptance, http://www.wto.org/english/tratop_e/trips_e/accept_e.htm.

6 Amendments to a few provisions, not including Article XX, can only go into effect upon acceptance by all Members; Marrakesh Agreement, Article X: 2.

the amendment. Under Article X: 3, it is possible for the Ministerial Conference to set a deadline for acceptance of an amendment and decide to expel any Member that has not accepted the amendment by the deadline, but this decision requires a three-fourths majority of all Members (currently 120 votes), and is very unlikely for this and other reasons.[7]

Because the WTO Agreement is a treaty, it is subject to the rules of the Vienna Convention on the Law of Treaties concerning the effect of amendments. Article 40(4) of the Vienna Convention provides that an amendment does not bind any party to a multilateral treaty that it does not accept, and that in relations between a party to the amended treaty and a party to the un-amended treaty, the un-amended treaty governs their mutual rights and obligations.[8] Any new party to a treaty after an amendment enters into effect is considered generally to be a party to the amended treaty, but to be a party to the un-amended treaty in respect of parties not bound by the amendment.[9]

These rules would have the following effects in respect of a hypothetical amendment of GATT Article XX or the SCM Agreement:

- The amendment would not take effect until at least two-thirds of WTO Members take positive action to deposit instruments of acceptance. Obtaining acceptance by two-thirds of the Members would require getting 106 governments to make it a priority to obtain domestic approval and take positive action to accept the amendment. This could take a substantial period of time.

- The amendment will never go into effect for any Member that does not accept it. Any existing Member that does not accept the amendment will continue to be subject to the un-amended Article XX and SCM Agreement in its rights and obligations with other WTO Members.

- Suppose that a WTO Member enacts a climate change mitigation regime that includes measures that are inconsistent with GATT national treatment rules, and (for whatever reason) cannot be justified under the current text of Article XX or the SCM Agreement, but would be permitted under these provisions as amended. This Member accepts the amendment. Any Member that has not accepted the amendment can rely on the un-amended WTO Agreement, and if it brings a dispute against the climate measures, the WTO panel must apply the un-amended WTO Agreement. If a government anticipates that the amendment would facilitate trade measures against its exports, and it objects to such trade measures, it need only decline to accept the amendment.

- After the date when the 106th instrument of acceptance is received, until the date when all Members have accepted the amendment, there would be two competing texts of the WTO Agreement. As an example, on 10 March 1955 the GATT Contracting Parties agreed to a Protocol amending the Preamble and Parts II and III of the GATT. On 7 October 1957, when this Protocol had been accepted by two-thirds of the contracting parties, the amendments entered into force for those who had accepted it. The last acceptance by a government that had been a contracting party before 7 October 1957 took place on 7 February 1969. During that period, there were two texts of the GATT in force for different contracting parties.[10]

Experience with WTO amendment process

Only one amendment to the WTO Agreement has been agreed. On 6 December 2005, the WTO General Council adopted by consensus a Decision to amend provisions of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) to make it easier for poorer countries to obtain generic versions of patented medicines through compulsory licensing of patents.[11] This amendment will replace a waiver decision of 30 August 2003, which waived provisions of the TRIPS Agreement and established a regime for such compulsory licensing.[12]

The amendment decision included a Protocol Amending the TRIPS Agreement, and opened this protocol for acceptance until 1 December 2007. As of November 2013, 46 Members and the EU on behalf of 29 other Members had accepted the Protocol.[13] Eight years after the amendment protocol was initially opened, the amendment still needs 31 more acceptances before it can enter into force.

Amendment of the WTO Agreement would not in itself provide legal security for climate change measures that would be inconsistent with the current WTO Agreement and would negatively affect other Members' exports. Any Member that cares more about its exports than about climate change can decide not to accept the amendment,

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7 If a Member were expelled from WTO because of its non-acceptance of a WTO amendment to authorize climate change measures, it would then not be bound by WTO law and would be able to retaliate against the trade of any country taking climate change mitigation measures.

8 Vienna Convention on the Law of Treaties (1969), Article 30 (4)(b), as applied by Article 40 (4).

9 Vienna Convention on the Law of Treaties (1969), Article 40 (5).

10 Analytical Index of the GATT (6th ed., 1996), pp. 1006–07.

11 WT/L/641, Amendment of the TRIPS Agreement, Decision of 6 December 2005, http://www.wto.org/english/tratop_e/trips_e/wtl641_e.htm.

12 WT/L/540 and Add.1, Implementation of paragraph 6 of the Doha Declaration on the TRIPS Agreement and public health, Decision of the General Council of 30 August 2003, http://www.wto.org/english/tratop_e/trips_e/implem_para6_e.htm.

13 See http://www.wto.org/english/tratop_e/trips_e/amendment_e.htm.

free-ride on the climate change mitigation measures of others, and retain the ability to bring a WTO dispute against the climate change mitigation measures. The practical significance of such a dispute depends on the relative size of the parties to the dispute, but the possibility of such a dispute would undercut the signal that climate change mitigation measures give to governments, business, and stakeholders.

WAIVERS

How can WTO Members bridge the period before an amendment enters into force, and eliminate the free-rider problem? The waiver for TRIPS and public health shows a possible path.

Waivers are governed by Article IX: 3 and IX: 4 of the Marrakesh Agreement. Article IX: 3(b) requires that a request for a waiver concerning the agreements on trade in goods (including the GATT) must be submitted initially to the Council on Trade in Goods, for consideration during a period of not more than 90 days, and that the ultimate decision-maker is the Ministerial Conference/General Council. The Council on Trade in Goods operates under consensus decision rules, and under a 1995 General Council decision, decision-making on waivers is routinely done by consensus.[14] Article IX: 4 provides that the decision granting a waiver must state the exceptional circumstances justifying the decision, the terms and conditions governing the application of the waiver, and the date on which the waiver will terminate, and any waiver lasting more than one year must be reviewed annually.

Waivers of the GATT are also subject to special rules in the Understanding in Respect of Waivers of Obligations of the GATT 1994, which is part of the WTO Agreement. These rules require a request for a GATT waiver to describe the measures that a Member intends to take, the specific policy objectives that the Member seeks to pursue, and the reasons that prevent the Member from achieving its policy objectives by GATT-consistent means. These are the same issues that would need to be resolved in the course of advancing a proposal for amendment. The Council on Trade in Goods has dealt with many waivers since 1995,[15] sometimes quickly and sometimes over a substantial time period when trade concerns could not be resolved. When these waivers have been worked out in the Goods Council and passed forward to the General Council for decision, the General Council has quickly approved them, often as a package gaveled through in a matter of minutes.

As provided in Article IX: 4, all waivers are temporary, and all but one have stated a specific expiration date. The exception is the waiver on TRIPS and health, which states that it will terminate for each Member only on the date when an amendment to the TRIPS Agreement replacing its provisions enters into effect for that Member.[16]

A waiver has the effect of legally waiving the application of the stated WTO obligations. In compliance proceedings in the EC – Bananas III dispute, the Appellate Body found that "the function of a waiver is to relieve a Member, for a specified period of time, from a particular obligation provided for in the covered agreements, subject to the terms, conditions, justifying exceptional circumstances or policy objectives described in the waiver decision. Its purpose is not to modify existing provisions in the agreements, let alone create new law or add to or amend the obligations under a covered agreement."[17] However, for measures that are within the terms of a waiver, the waiver provides legal certainty that there will be no finding of rule violation in a WTO dispute settlement proceeding brought by any WTO Member, and that the measure will not be subject to WTO-authorized trade retaliation; it also provides legal security for traders and investors depending on those measures. The waivers dealt with in the EC – Bananas III dispute permitted the EU to discriminate against banana imports from some Members, and thereby provided legal security for the operations of banana traders and exporters.

If WTO Members want to authorize discriminatory climate change mitigation measures, they can do so by agreeing on an amendment package coupled with a waiver that expires for each Member when the amendment package has entered into effect for that Member. The combination will eliminate the free-rider problems with the amendment process. However, the unavoidable political problems of obtaining such authorization remain.

Requesting and obtaining a waiver, like requesting and obtaining an amendment decision, involves a political process. Those Members that want a waiver or amendment for climate change mitigation measures will need to make the environmental, economic, factual, and political case for the specific measures they want to take, and persuade other Members to go along. Climate change clearly involves exceptional circumstances, but the proponents of a waiver will still have to define the exact measures that would be covered within the scope of the waiver, and they would need to satisfy other Members that the proponents cannot achieve their policy objectives by WTO-consistent means.

The proponents would also need to actively engage with the concerns of other Members regarding the trade impact of the measures that the waiver would cover. This process cannot be skipped or scanted. WTO Members' concerns regarding

14 WT/GC/M/8, section 3; WT/L/93, Decision-Making Procedures under Articles IX and XII of the WTO Agreement, adopted on 15 November 1995.

15 For list, see Analytical Index of the WTO (3rd ed., 2011), p. 93; http://www.wto.org/english/res_e/booksp_e/analytic_index_e/wto_agree_04_e.htm#fntext492.

16 WT/L/540, para. 11; see note 12.

17 Appellate Body Report, *EC — Bananas III (Article 21.5 — Ecuador II)/EC— Bananas III (Article 21.5 — US)*, para. 382.

the impact of climate change measures on trade, jobs, and growth in their countries are real, and cannot be wished away. The WTO provides a place where these trade concerns can be aired and resolved.

INTERPRETATIVE UNDERSTANDINGS

Proponents of policy space for climate change mitigation measures may also consider seeking an authoritative interpretation of the WTO Agreement, under Article IX: 2 of the Marrakesh Agreement. Article IX: 2 gives the Ministerial Conference and the General Council the authority to adopt such interpretations. The Uruguay Round negotiators, who had experience with the power of the GATT Contracting Parties to take "joint action" under Article XXV of the GATT, created a similar power for WTO Members.

This power is limited. First, Article IX: 2 "shall not be used in a manner that would undermine the amendment provisions in Article X." As the Appellate Body has observed, "such multilateral interpretations are meant to clarify the meaning of existing obligations, not to modify their content."[18] Authoritative interpretations do not make new law and cannot impose new obligations. Second, a decision to adopt an interpretation of this sort must be taken by vote, but many WTO Members oppose any use of voting for decision-making; moreover, this decision must be taken by a three-fourths majority of all WTO Members (currently 120 votes). Third, Article IX: 2 requires that any proposal for an authoritative interpretation must first be recommended by the Council overseeing an agreement. A proposal for an interpretation of the GATT or the SCM Agreement would need to first go through the Council on Trade in Goods, and as discussed above, the Goods Council makes its decisions by consensus. The consensus process could take substantial time, but would provide an opportunity for all sides to resolve any concerns regarding the legal impact that an understanding might have in the real world.

Committees in the WTO have also adopted decisions interpreting and applying the obligations within their jurisdiction. The Committee on Technical Barriers to Trade (TBT), for instance, has adopted a series of decisions and recommendations, including a 2000 decision on principles for the development of international standards.[19] This decision set out, among other things, principles that should be observed in standardizing activities, and provided that membership of an international standardizing body should be open on a non-discriminatory basis to the relevant bodies of at least all WTO Members. All of these decisions have been adopted by consensus because the rules of procedure of all WTO Committees call for decision-making by consensus and not by voting.

If an authoritative interpretation is not an amendment, and not a waiver, then what is its legal status and what weight will it be given in a WTO dispute? The rules of treaty interpretation in the Vienna Convention on the Law of Treaties, which guide the interpretation of the WTO Agreement, provide that a "subsequent agreement between the parties regarding the interpretation of the treaty or the application of its provisions" shall be "taken into account" when interpreting a treaty.[20] A "subsequent agreement" in this sense is a "further authentic element of interpretation to be taken into account together with the context" of a treaty.[21]

In the dispute on US – Tuna II (Mexico), the Appellate Body agreed that the TBT Committee's 2000 decision referred to above qualifies as such a "subsequent agreement" because the decision was adopted by the TBT Committee after conclusion of the TBT Agreement, the Committee's membership comprises all WTO Members, and the decision was adopted by consensus; in addition, the decision was developed in relation to specific TBT Agreement provisions, to clarify and strengthen the concept of international standards, and to ensure the effective application of the TBT Agreement. The extent to which this decision informs the interpretation and application of a TBT provision depends on the extent to which it bears specifically on that provision.[22] The Appellate Body then used the principles in this decision as aids in interpreting the TBT Agreement. It determined that a particular standard for certification of "dolphin-safe" tuna did not qualify as an "international standard" because the body that made this standard was not open to all WTO Members.[23]

The Tuna example shows that a consensus-based interpretation adopted by a WTO Committee can have a clear impact on outcomes in disputes. Debate and discussion in WTO institutions, and consensus-based decision-making, provide means for the climate community to engage on issues where it believes more policy space is needed, persuade public opinion in the WTO of the importance of the climate issues at stake, answer the practical trade concerns of others, and achieve consensus decisions that affect the interpretation of WTO obligations.

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18 Appellate Body Report, *EC — Bananas III (Article 21.5 — Ecuador II)/EC— Bananas III (Article 21.5 — US)*, para. 383.

19 Decision of the Committee on Principles for the Development of International Standards, Guides and Recommendations with relation to Articles 2, 5 and Annex 3 of the Agreement, reprinted in WTO document G/TBT/1/Rev.10, "Decisions and Recommendations adopted by the WTO Committee on Technical Barriers to Trade since 1 January 1995," 9 June 2011, pp. 46-48.

20 Vienna Convention on the Law of Treaties (1969), Article 31 (3) (a).

21 Appellate Body Report, *EC — Bananas III (Article 21.5 — Ecuador II)/ EC— Bananas III (Article 21.5 — US)*, para. 390 (citing the "Report of the International Law Commission on the Work of its 18th Session, Geneva, 4 May-19 July 1966" (1966) II Yearbook of the International Law Commission 172, at 221, para. 14).

22 Appellate Body Report, *US – Tuna II (Mexico),* paras. 371–72.

23 Appellate Body Report, *US – Tuna II (Mexico),* paras. 396–99.

PLURILATERAL AGREEMENT OR UNDERSTANDING

Governments could also reach agreement on how they will interpret WTO rules in trade relations with each other. Nothing prevents WTO Members from entering into such an agreement, although its impact would depend on whether its parties included major players in the WTO.

WTO non-discrimination rules would still apply to any advantages under such an agreement. For instance, a club of like-minded countries could agree that they will interpret and apply the SCM Agreement's definition of subsidies in a specific manner that is favorable to the scale-up of renewable energy. However, if the application of this definition provides more favorable countervailing duty treatment to participants in the agreement, any non-participant that is a WTO Member can demand equal treatment under most-favoured nation (MFN) rules.[24]

A plurilateral agreement of this sort stands apart from the WTO, and cannot be blocked by one WTO Member that prevents consensus. On the other hand, such an agreement has no stable legal relationship with the WTO unless it is added to Annex 4 of the WTO Agreement (a decision which, under Article X: 9 of the Marrakesh Agreement, can only be taken by consensus). In addition, WTO dispute settlement procedures apply only with respect to the "covered agreements" listed in Appendix I of the WTO Dispute Settlement Understanding. This list can be amended, but only by consensus.[25]

LITIGATION

The cost and delay involved in achieving change through negotiation leads Members to try to make new rules through litigation (VanGrasstek 2013). However, the mandate of the WTO's dispute settlement mechanism, in Article 3.2 of the WTO's Dispute Settlement Understanding, is "to preserve the rights and obligations of Members under the covered agreements;" dispute settlement recommendations and rulings "cannot add to or diminish the rights and obligations provided in the covered agreements." WTO's dispute settlement mechanism does not make law, but interprets legal instruments.

Litigation also has practical limitations as a strategy. It is risky and may be unpredictable, as the outcome of a case depends on the particular facts and circumstances. Bad facts may create bad results.

MORATORIUM ON DISPUTE SETTLEMENT

WTO Members have taken action to alter the effect of the WTO Agreement by adopting moratoriums on dispute settlement. The first example of such a moratorium, in the Peace Clause in Article 13 of the Agreement on Agriculture, provided that until 2004 certain measures would be exempt from claims based on provisions in the SCM Agreement or the GATT. Article 63 of the TRIPS Agreement provided for the theoretical possibility of dispute settlement in respect of "non-violation nullification or impairment" of rights under the TRIPS Agreement, but Article 63:2 provided a five-year moratorium on such disputes, with the option of extension, and this moratorium has been periodically extended.[26] In the WTO negotiations on basic telecommunications services, the negotiators agreed to disagree regarding the interface between MFN rules and accounting rates (charges for terminating international telecommunications traffic), and agreed to a non-binding understanding that the application of accounting rates "would not give rise to action by Members under dispute settlement under the WTO." [27]

The WTO could adopt a similar dispute settlement moratorium concerning some or all climate change mitigation measures. It is not clear whether such a moratorium would have an iron-clad effect or whether doctrines of estoppel could be invoked to prevent a Member from making arguments in a dispute that contradict statements it has earlier formally endorsed, or challenging measures where it has explicitly promised it would not do so.[28]

As in the case of the other possibilities for adapting WTO rules, the proponents would have to make the case for the urgency of action to mitigate climate change, the necessity of the Member actions contemplated, and why these actions cannot be taken in a clearly WTO-consistent manner. The

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24 GATT Panel Decision, *US – Denial of MFN Treatment as to Non-rubber Footwear from Brazil* (1992), para. 6.8: "the rules and formalities applicable to countervailing duties, including those applicable to the revocation of countervailing duty orders, are rules and formalities imposed in connection with importation, within the meaning of Article I: 1."

25 Marrakesh Agreement, Article X: 8.

26 The most recent extension took place through a Ministerial Decision of 17 December 2011 (WT/L/842, TRIPS Non-Violation and Situation Complaints), directing the TRIPS Council to continue examining the scope and modalities for such complaints and providing that "It is agreed that, in the meantime, Members will not initiate such complaints under the TRIPS Agreement." A further extension was proposed for the Bali Ministerial Meeting.

27 S/GBT/4, Report of the Group on Basic Telecommunications, 15 February 1997. The Panel Decision on *Mexico – Telecoms* (para. 7.125) notes the Chairman's statement in presenting this report on 15 February 1997, that "this was merely an understanding, which could not and was not intended to have binding legal force. It therefore did not take away from Members the rights they have under the Dispute Settlement Understanding; it was merely intended to give Members who had not taken MFN exemptions on accounting rates some degree of reassurance." The Panel found that "according to its own terms, the Understanding is explicitly non-binding, and concerns only procedural rights to dispute settlement, not substantive obligations" (Panel Decision on *Mexico – Telecoms*, para. 7.126).

28 The *Mexico – Telecoms* panel found that the understanding in that case did not apply to the substance of the claims at issue. Similarly, in EC – Aircraft, the panel found that a 1992 agreement did not explicitly agree that certain measures were lawful nor waive rights to challenge those measures (para. 7.104). However, in *EC – Bananas III, Article 21.5 (II) (Ecuador) – Article 21.5 (II) (US),* the Appellate Body found that "if a WTO Member has not clearly stated that it would not take legal action with respect to a certain measure, it cannot be regarded as failing to act in good faith if it challenges that measure" (para. 228).

proponents would also need to engage with and resolve the concerns of other Members regarding the impact on them of the proposed climate change mitigation measures. In order to provide legal certainty, a moratorium decision would need to clearly state an intention not to challenge certain measures, and clearly describe the measures not to be challenged.

UNILATERAL ACTION

As discussed above, all known methods of adjusting WTO rules take a substantial period of time, engagement in negotiations with other WTO Members, and political process. It would likely take many years to achieve agreement on a permanent change in WTO rules via amendment, and to obtain enough acceptances for the amendment to enter into force. Climate change would move forward steadily during that time.

If climate change is so large a threat to human economic and other interests that mitigation measures must be taken now—and carbon leakage from imports is significant enough to take action now without waiting for adjustment in WTO rules—then some might consider there is a rational case for civil disobedience to WTO rules. A government for which climate change mitigation is paramount may consider moving ahead and implementing its measures, defying the trade rules, and paying the price of trade retaliation.

But unilateral trade action on a large scale would be profoundly destructive to the trade regime that has been built at huge cost over many years. It would also likely be costly to the party taking unilateral action, and is not an option realistically available to smaller players.

CARBON TAX

If it is not feasible to adjust WTO rules immediately to accommodate WTO-inconsistent climate change mitigation or renewable energy measures, it would be useful to look again at the ways in which WTO rules already now provide flexibility for such measures. It would also be useful to prioritize those climate change mitigation measures that are relatively WTO-compatible.

Thus, if there is a desire for measures to increase the price of carbon, and to ensure against carbon leakage through border adjustment measures, carbon taxes rather than cap and trade systems deserve serious consideration. If there is a desire to justify border measures that violate national treatment rules, it may be desirable to limit WTO-inconsistent measures to those that clearly address carbon leakage in a non-protectionist manner, and can be justified under Article XX (g) and the chapeau of Article XX.

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TRADE REMEDIES ON CLEAN ENERGY: A NEW TREND IN NEED OF MULTILATERAL INITIATIVES

Jonas Kasteng

INTRODUCTION

Trade remedies are trade policy tools that allow governments to take remedial action against imports that cause material injury to a domestic industry because of alleged price dumping or foreign subsidies. The use of trade remedies is regulated in three agreements in the World Trade Organization (WTO), which are considered too weak to prevent abuse for protectionist purposes.

Trade remedies have traditionally been used to protect declining industries in industrialized countries, such as steel and consumer electronics. A new and worrying trend from an environmental perspective is the targeting of clean energy products in recent years, such as solar panels, wind turbines and biofuels. By making clean energy more expensive, these measures may slow down the transition from fossil fuels to clean energy, compromising both domestic and global climate goals.

The objective of this paper is to initiate a discussion on the extent of the problem, and potential multilateral solutions. In doing so, we will first demonstrate that the trade remedy cases on clean energy suffer from the same shortcomings as other trade remedy cases. We will then propose some reforms of the WTO agreements on anti-dumping and/or subsidies and countervailing measures. Chief among the proposals is to introduce a mandatory public interest test, which would force governments to assess the environmental consequences of their trade remedy actions. These reforms should preferably be available to all trade remedy cases, and not only to clean energy cases. However, given the resistance among many WTO Members to changes in the trade remedy rules, and the urgency of the climate change issue, we will also consider the option of introducing special disciplines on trade remedy cases on clean energy.

A NEW TREND IN TRADE REMEDIES

In recent years, the use of trade remedies on clean energy has intensified. This new trend has become apparent among most major producers of clean energy, such as the European Union (EU), the United States (US), Australia, India, and China. Trade remedies, which imply high duties on clean energy products, affect the use of clean energy to the detriment of the environment and, thereby, comes into conflict with national and international climate and environment policies. The global environment will be affected by the imposition of trade remedies on clean energy, regardless of where they are imposed.

BOX 1:

What Are Trade Remedies?

There are three kinds of trade remedies: (1) anti-dumping measures, targeting dumped imports; (2) anti-subsidy measures, targeting subsidized imports; and (3) safeguards, targeting sudden increases in imports. Trade remedies might only be used against dumped and subsidized imports if these are causing injury to the domestic industry. In certain countries there are "WTO-plus" provisions to consider. In the EU, trade remedies may only be imposed if it is not against the interests of the EU as a whole to raise tariffs, that is, the "Union interest test." Trade remedy investigations normally take a year. The measures are first introduced on a provisional basis, and thereafter on a definitive basis for about five years, after which it is possible to prolong the measures for further periods.

Concerns: The current WTO definition of "dumping" states that a product is being dumped if it is exported at a price lower than its domestic sales price. This definition does not consider the issue of abuse of dominant position or the degree of price undercutting sufficiently. Trade remedies should preferably only remedy truly anti-competitive behaviour and not normal (or "undesired") competition, as is currently the case. In addition, there are a number of procedural weaknesses that should be addressed, in particular with regard to the identification of "injury" and the "causal link" between dumping or subsidization and injury. If trade remedies would only target cases of truly anti-competitive behavior, the number of trade remedies on clean energy, as well as their levels and scope, would most likely be more limited compared with the current situation where the measures mainly target normal competition.

THE INCREASING USE OF TRADE REMEDIES ON CLEAN ENERGY

Over the last five years, trade remedy investigations have increasingly been directed towards different sorts of clean energy (National Board of Trade 2013). This new trend has intensified among all the major producers of clean energy (Lester and Watson 2013). The EU was the first major user of trade remedies on clean energy, but other major producers, such as the US, Australia, India, and China, have followed on their own initiative or as a measure of retaliation (Table 1).

In 2009, the EU imposed anti-dumping and anti-subsidy measures on imports of biodiesel from the US. In 2011, the measures were extended to imports of biodiesel from Canada in order to avoid alleged circumvention. Imports of biodiesel from Singapore were also investigated, but the investigation was discontinued because of the lack of evidence of circumvention. In 2011, a combined anti-dumping and anti-subsidy investigation was initiated against biodiesel from Argentina and Indonesia. The anti-subsidy investigation was postponed in mid-2013 because of the lack of evidence of the use of actionable subsidies, but anti-dumping measures were imposed in 2013.

TABLE 1:

List of Trade Remedies on Clean Energy

Source: Based on National Board of Trade (2013) and Lester and Watson (2013).
Note: Trade remedies in force are highlighted in bold. Investigations that have been terminated are ~~erased~~. The remaining trade remedies are under investigation, but might come into force during 2013. The use of […] means that the formal decision is not taken.

Product	Country	Trade remedies	Initiation of investigation	Measures in force
		EU		
Biodiesel	US	**AD + AS**	2008	2009
Biodiesel	Canada	**AD + AS**	2010	2011
Biodiesel	Singapore	~~AD~~ + ~~AS~~	2010	-
Biodiesel	Argentina	**AD** + AS	2012	2013
Biodiesel	Indonesia	**AD** + AS	2012	2013
Bioethanol	US	**AD** + ~~AS~~	2011	2013
Glass fibres	China	AD	2009	2010
Solar panels	China	**AD** + AS	2012	2013
Solar glass	China	AD + AS	2013	[2013]
		Peru		
Biodiesel	US	**AD**	2009	2010
		Australia		
Biodiesel	US	**AD + AS**	2010	2010
		US		
Wind towers	China	**AD + AS**	2011	2012
Wind towers	Vietnam	**AD + AS**	2011	2012
Solar panels	China	**AD**	2011	2012
		China		
Polysilicon	US	**AD + AS**	2012	2013
Polysilicon	EU	**AD + AS**	2012	2013
Polysilicon	South Korea	**AD + AS**	2012	2013
		India		
Solar modules	China	AD	2012	[2013]
Solar modules	US	AD	2012	[2013]
Solar modules	Malaysia	AD	2012	[2013]
Solar modules	Taiwan	AD	2012	[2013]
Solar modules	EU	AD	2013	[2014]
Solar modules	Japan	AD	2013	[2014]

In 2010, anti-dumping measures were imposed on imports of glass fibre filaments from China. Glass fibre filaments constitute an important input in the production of blades for wind turbines. In 2011, anti-dumping and anti-subsidy investigations were initiated on imports of bioethanol from the US. The anti-subsidy investigation was cancelled at the end of 2012 because of the lack of evidence of US subsidies, but anti-dumping measures were imposed in 2013. The most recent anti-dumping and anti-subsidy investigations are targeted at imports of solar panels (that is, solar cells, solar wafers, and solar modules) from China. The anti-subsidy investigation was postponed in mid-2013 but anti-dumping measures were imposed in combination with the use of minimum import prices in 2013. New anti-dumping and anti-subsidy investigations also encompassed solar glass from China.

In 2010, Australia imposed anti-dumping and anti-subsidy measures against biodiesel from the US. In 2010, Peru imposed anti-dumping and anti-subsidy measures against biodiesel from the US. In 2011, the US initiated a parallel anti-dumping and anti-subsidy investigation against imported wind towers from China and Vietnam. In 2011, the US also initiated an anti-dumping investigation against solar panels from China (Lester and Watson 2013). In 2012, India initiated an anti-dumping investigation against solar modules from China, the US, Malaysia, and Taiwan. In 2013, it was proposed to extend the investigation to also encompass imports from the EU and Japan (Lester and Watson 2013).

Finally, China initiated a parallel anti-dumping and anti-subsidy investigation on imports of polysilicon from the US, the EU and South Korea, in 2012, partly as a response to the measures that were imposed on Chinese exports. The decision to impose measures against the EU was delayed depending on the outcome of the negotiations between the EU and China (Lester and Watson 2013).

TRADE REMEDIES ON CLEAN ENERGY AFFECT CLIMATE OBJECTIVES

Trade remedy investigations have an effect on imports from the time they are initiated due to the unpredictability in terms of the scope of the duties, their level, and the date from which they will be imposed. However, most importers are only directly affected once the measures are imposed at provisional and/or definitive level. When it comes to trade remedy investigations on clean energy there has also been a tendency in certain countries, such as the EU, to impose the measures retroactively, something that affects imports more than the normal procedure would (National Board of Trade 2013).

Investigations and impositions of trade remedies on clean energy affect consumer demand for the products in question. Trade remedies on intermediate products are also negative for the production of clean energy, for example trade remedies on polysilicon or solar glass in the production of solar panels, and glass fibre filaments in the production of wind turbine blades.

Trade remedies, which imply high duties on clean energy products, accordingly affect the use of clean energy to the detriment of the environment (Table 2), and thereby come into conflict with national and international climate and environment policies. In the EU, for example, the objective of the EU's climate policy is to adopt legislation to raise the share of energy consumed produced from clean energy, such as wind, solar and biomass, to 20 percent by 2020 (European Commission 2010). The trade remedies will, however, make clean energy more expensive and less accessible for user industries and consumers in the EU. The same is true when it comes to the effects of trade remedies on WTO negotiations on environmental goods. The use of trade remedies on clean energy also leads to measures and countermeasures that might further affect the availability of clean energy negatively.

Since the EU is a strong user of trade remedies on clean energy, the import values that are affected by these measures are highlighted with the EU as an example (Table 3). Three of the trade remedies on clean energy, that is, trade remedies on solar panels from China, biodiesel from Argentina and Indonesia, and biodiesel from the US, are found in the top five of the EU's largest measures currently in force, when it comes to the import values that are affected. Two of the most recently imposed measures, that is, trade remedies on solar panels from China and biodiesel from the US, are the EU's two largest measures ever (National Board of Trade 2013).

The import value affected by the trade remedies on solar panels is one and a half times as large as that of the combined total of all of the EU's other trade remedies currently in force. The EU's other current trade remedies, that is, about 120 measures, together affect an import value of about EUR 8 billion. However, the trade remedies on solar panels alone affect an import value of about EUR 11.5 billion. The trade remedies on clean energy, taken together, affect an import value of about EUR 14 billion, which is almost 75 percent of the total for all of the trade remedies currently in force.

As a consequence of the high import values of clean energy that are affected by trade remedy investigations in the EU and in other major producing countries, there is a negative effect on the current high demand for clean energy. Ultimately, this has negative consequences for the shift towards clean energy and, in the long term, for the environment. The imposition of trade remedies in an innovative and growing environmental industry, dependent on specialization, skills and global value chains, clearly hampers the developments that are urgently needed for the environment. The global environment will be affected by the imposition of trade remedies on clean energy, regardless of where they are imposed. For the environment, it does not matter where the clean energy is produced (National Board of Trade 2013).

TABLE 2:

List of trade remedy duties on clean energy

Source: Based on National Board of Trade (2013) and Lester & Watson (2013).

Product	Country	Duty level
EU		
Biodiesel	US	EUR 172.2/tonne (AD + AS)
Biodiesel	Canada	EUR 172.2/tonne(AD + AS)
Biodiesel	Argentina	EUR 104.92/tonne (AD)
Biodiesel	Indonesia	EUR 83.84/tonne (AD)
Bioethanol	US	9.5%(AD)
Glass fibre filaments	China	13.8%(AD)
Solar panels	China	Minimum import price (EUR 0.56/watt) or 68% (AD)
Solar glass	China	[Investigation ongoing]
Australia		
Biodiesel	US	40% (AD)55% (AS)
Peru		
Biodiesel	US	USD 212/tonne (AD) USD 212+178=390/tonne (AS)
US		
Wind towers	China	44.99-70.63% (AD)21.86-34.81% (AS)
Wind towers	Vietnam	44.99-70.63% (AD)21.86-34.81% (AS)
Solar panels	China	24-26%(AD)
China		
Polysilicon	US	53.9-57%(AD + AS)
Polysilicon	South Korea	2.4-48.7% (AD + AS)
Polysilicon	EU	[Investigation ongoing]
India		
Solar modules	China	[Investigation ongoing]
Solar modules	US	[Investigation ongoing]
Solar modules	Malaysia	[Investigation ongoing]
Solar modules	Taiwan	[Investigation ongoing]
Solar modules	EU	[Investigation ongoing]
Solar modules	Japan	[Investigation ongoing]

MULTILATERAL INITIATIVES ON TRADE REMEDIES ON CLEAN ENERGY

Multilateral initiatives are needed to respond to the new trend of imposing trade remedies on clean energy. Due to the fact that the WTO agreements on trade remedies define the use of these measures, it is relevant to focus on new provisions that only target truly anti-competitive behaviour. This would decrease the use of trade remedies in general but also provide the most appropriate response to the increased use of trade remedies on clean energy. In this context, environment-specific provisions on the use of trade remedies in these agreements could also be considered. Moreover, it might be relevant to explore the pros and cons with environmental provisions on the use of trade remedies in other areas of the WTO, for example the possible future provisions on environmental goods, as well as the lapsed provisions on non-actionable environmental subsidies.

FOCUS ON IMPROVING THE WTO AGREEMENTS ON TRADE REMEDIES

In order to respond to the increasing use of trade remedies on clean energy, the current provisions in the WTO Agreement on Anti-Dumping and in the WTO Agreement on Subsidies and Countervailing Measures should be addressed on a general level. The concerns with the current trade remedy agreements are not limited to clean energy, even though the effects are particularly visible and negative in this area.

In most contexts, anti-dumping measures are claimed to be used to counter 'unfair competition' and to create a 'level playing field' in international trade. These concepts are, however, never considered in reality. According to most competition or anti-trust rules, abuse of a dominant position, such as price undercutting, might only be considered where one company has a market share of between 40 and 60 percent and the price undercutting is below the average variable cost of production. In anti-dumping proceedings, the market share of allegedly 'dumped' imports is occasionally only required to be above a *de minimis* level of about 1 percent, and dumping is defined as exports at prices under the domestic sales prices regardless of the degree of price undercutting, that is, the price level might include the total cost of production, including a reasonable profit (Table 4). In addition, there are many valid reasons for price differentiation on products, in particular on export markets.

There are also a number of procedural weaknesses in anti-dumping and anti-subsidy investigations with regard to the definition of injury, for example when it comes to the product definition, the selection of a sample of companies, the identification of indicators on injury, and so on, that might make the investigations biased towards a certain outcome. It is also difficult to verify the causal link between dumping or subsidization and injury. In many cases, the findings tend to be based on correlation rather than causality. In sum, the proceedings used by many WTO Member Countries, based on the WTO rules on trade remedies, make it fairly easy to impose trade remedies on imports from third countries, including trade remedies on clean energy.

TABLE 3:

List of trade remedies on clean energy by the import values affected.
Source: National Board of Trade (2013).

Product	Country	Import value (EUR millions)	Ranking (Highest import values)
Solar panels	**China**	**11 448**	**1**
Biodiesel	**Argentina/Indonesia**	**2 081**	**2**
Tableware	China	728	3
Biodiesel	**US**	**700**	**4**
Other products…		…	…
Bioethanol	US	430	Interval 5-10
Other products…		…	…
Biodiesel	Canada	122	Interval 15-20
Glass fibre filament	China	110	Interval 15-20
Solar glass	China	N/A	N/A

In order to limit the use of trade remedies on clean energy, the priority should, accordingly, be to link the anti-dumping rules more closely to the competition or anti-trust rules to only remedy truly anti-competitive behaviour, as well as to make proceedings more stringent. This would, for example, require higher thresholds on dominant position and price undercutting for initiating anti-dumping investigations than in the current rules. Other important reforms would be to make the anti-dumping and the anti-subsidy investigations more objective when it comes to the definition of injury and causality, as well as more transparent and predictable. Furthermore, it is necessary to involve input from different stakeholders (such as importers, user industry and consumers) to a higher degree than today in a 'public interest test,' and to limit the level of the duties and the time the measures are in force. A decrease in the level of the trade remedy duties in force, as well as a time limit for the measures to be in place might, for example, be inspired by the current WTO Agreement on Safeguards.

Since WTO negotiations on trade remedies are controversial among Member States, and accordingly might last for several years, it might be relevant to consider the inclusion of environment-specific provisions in the trade remedy agreements as an option. These provisions might be more easily accepted than the general changes, given their limited scope and the environmental concerns in general. They could also address the imperfect functioning of the markets when it comes to clean energy, and could lead to positive external effects on the environment. There are different viable provisions available for further discussion (Lester and Watson 2013, National Board of Trade 2013, and Wu and Salzman 2013).

- Trade remedies on clean energy might be limited in level

The trade remedies could be limited in level, for example by making use of the lesser duty rule for trade remedy investigations on clean energy. The lesser duty rule in the EU's current trade remedy investigations obliges the EU to impose a trade remedy that is not higher than the lesser of the dumping or subsidy margin and the injury margin. The lesser duty rule, accordingly, ensures that the trade remedies are not higher than necessary to remove the injury inflicted on the EU industry. As of today, only the EU makes use of the lesser duty rule on a general basis. In the context of trade remedy investigations, the lesser duty rule might be applied on an environmental basis.

- Trade remedies on clean energy might be limited in time

The trade remedies could be limited in level, for example by introducing a time limit for the trade remedies on clean energy to be in place There have been various recent examples of politically sensitive trade remedy investigations with shorter time-periods or where time limits have been imposed.

- Trade remedies on clean energy might be limited in scope

The trade remedies could be limited in scope, for example by only permitting measures on a certain number of clean energy products or a certain import value at the same time.

- Trade remedies on clean energy might be considered in the public interest test

A public interest clause on clean energy products could also be an option. In WTO, Member States, such as the EU, that make use of a "public interest test," the so-called "Union interest test" before trade remedies are imposed, it would be possible to include environmental interests as one of the interests to be considered. The EU's current regulation states that "[a] determination as to whether the Community interest calls for intervention shall be based on an appreciation of all the various interests taken as a whole" (European Council 2009). The EU's climate policy objectives should accordingly be considered in the 'Union interest test' analysis before trade defence measures on clean energy are imposed. Environmental stakeholders might be included as interested parties in the trade remedy investigations, something that is not the case today. In addition, an internal consultation within the investigating authority, or between different ministries, could be introduced in order to increase

TABLE 4:
Comparison between the EU's anti-dumping rules and competition rules
Source: Elaborated by the National Board of Trade.

	Competition rules	Anti-dumping rules
Market share	40% (one company)	1% (one country)
Price undercutting	<average variable cost	<average variable sales price (i.e. average variable costs + average fixed costs + profit)

policy coherence (National Board of Trade 2013). This initiative has actually been proposed in the "modernisation review" of the EU's trade remedies.

In line with this reasoning, the use of trade remedies could be considered in a broader context, including aspects of climate and the environment. These provisions might be implemented in current WTO agreements, or as "WTO-plus" provisions, by the Member States in a unilateral, or plurilateral, manner as an example for other Member States to follow.

EXPLORING OPTIONS TO LIMIT THE USE OF TRADE REMEDIES IN OTHER AGREEMENTS OF WTO

Besides the first option of revising the current WTO agreement on trade remedies, the option of introducing limits to the use of trade remedies on clean energy in other WTO agreements could be explored. It would also be necessary to consider the possible negative consequences of introducing new environment-specific exceptions to the rules in WTO agreements (something that falls outside the scope of this paper).

Of particular interest for further consideration are, for example, WTO negotiations on environmental goods and the now lapsed provisions on non-actionable environmental subsidies.

A clause on the "non-use" of trade remedies in the WTO provisions on 'environmental goods'

The Doha Ministerial Declaration, Paragraph 31 (iii), states that the objective of the negotiations on 'environmental goods' is "the reduction or, as appropriate, elimination of tariff and non tariff barriers to environmental goods and services" (WTO 2001).

In order not to circumvent or undermine the possible tariff cuts on bound tariffs on environmental goods in a future WTO agreement on environmental goods, introducing a clause on the "non-use" of trade remedies on these products could be explored (Lester and Watson 2013). The new trend of using trade remedies on clean energy was most likely not anticipated at the initiation of WTO negotiations on environmental goods but could be considered in future negotiations.

It would, however, also in this case, be necessary to consider the possible negative consequences of introducing specific exceptions to the rules on environmental goods.

The extension of the WTO clause on non-actionable environmental subsidies

Environmental subsidies are currently actionable in the WTO. Member States can, accordingly, impose trade remedies and initiate WTO dispute settlement cases on clean energy. The fact that many countries provide subsidies to increase the use of clean energy at the domestic level and, at the same time, impose trade remedies against third-country imports, has triggered the use of countermeasures at the bilateral level. This escalation of trade remedies and countermeasures on clean energy might entail a negative impact on the environment since it might limit the possibility for countries to use environmental subsidies for genuinely environmental purposes.

The WTO Agreement on Subsidies and Countervailing Measures (SCM) originally contained a category of non-actionable subsidies, as it permitted certain types of government "assistance to promote adaptation of existing facilities to new environmental requirements imposed by law and/or regulations which result in greater constraints and financial burden on firms" if certain conditions were

BOX 2:
The APEC Initiative on 'Environmental Goods'

The consensus reached by the Asia-Pacific Economic Cooperation (APEC) countries is to reduce tariffs to 5 percent or less by 2015 on 54 environmental goods. In the APEC List of Environmental Goods "that directly and positively contribute to green growth and sustainable development objectives", clean energy products that currently face trade remedies, such as photovoltaic cells, modules and panels, and wind turbine blades are selected as environmental goods for tariff reductions (APEC 2012). The APEC initiative on environmental goods was recently highlighted by President Obama in the US intention to use free trade to halt climate change: "The US will work with trading partners to launch negotiations at the World Trade Organization towards free trade in environmental goods, including clean energy technologies such as solar, wind, hydro and geothermal. The US will build on the consensus recently forged among the 21 Asia-Pacific Economic Cooperation (APEC) Economies in this area" (The White House 2013.) The US wants to create a "coalition of the willing" comprising countries that represent 90 percent of the world's trade in environmental goods (Lester and Watson 2013). This is particularly relevant since many of the main users of trade remedies on clean energy already participate in the APEC initiative, such as the US, Australia, India, China, and Peru.

fulfilled (WTO 1994). In order to avoid an escalation in the use of trade remedies and WTO disputes on clean energy, to the detriment of the environment, an extension of the WTO provisions on non-actionable environmental subsidies might be further considered in the multilateral negotiations. The provisions on non-actionable subsidies might also be revised to better target clean energy and/or be limited to the bilateral use of trade remedies on clean energy (and maintain the possibility of bringing environmental subsidies to the WTO's dispute settlement body). The provisions might also be limited in time, that is, a temporary "peace clause" on trade remedies on clean energy could be introduced, something that would imply that the environmental subsidies would not be targeted during a transition period (in line with the now lapsed provisions in Article 13 on "Due restraint" of the WTO Agreement on Agriculture).

Initiatives of this kind might explore the possibilities of making genuinely environmental subsidies on clean energy non-actionable with trade remedies to the benefit of the environment. It is necessary to also discuss the possible negative consequences of introducing environment-specific exceptions to the rules on subsidies in the multilateral trading system.

CONCLUSIONS

The paper explores different multilateral options for limiting the use of trade remedies on clean energy for further consideration. The main priority would be to improve the current WTO agreements on trade remedies. The concerns with the current trade remedy agreements are not limited to clean energy, even though the effects are particularly visible and negative for the environment. The current WTO provisions on trade remedies need to be improved to only target truly anti-competitive behaviour and not normal competition, as mainly is the case today. Environment-specific provisions could be considered before the imposition of trade remedies on clean energy, for example in a public interest test or with regard to duty level, product scope, duration of the measures and/or a combination of these provisions. These provisions might be implemented in the current WTO agreements, or as 'WTO-plus' provisions, by the Member States in a unilateral, or plurilateral, manner as an example for others to follow.

As a consequence of the concerns with the current trade remedy provisions, which are targeting normal competition, it could also be relevant to further explore the pros and cons with environmental provisions on the use of trade remedies in other areas of WTO agreements. In order not to undermine or circumvent future tariff cuts of bound tariffs in environmental goods, (i) the non-use of trade remedies in the WTO provisions on environmental goods could be explored. In order to avoid an escalation in the use of trade remedies in the field of clean energy, to the detriment of the environment, (ii) the extension or revision of the WTO provisions on non-actionable environmental subsidies with regard to the use of trade remedies could be explored. This initiative might make genuine environmental subsidies non-actionable at a bilateral level to the benefit of the environment. This initiative might also be limited in time, that is, a temporary "peace clause" on trade remedies could be introduced.

BOX 3:

What is the WTO Agreement on Subsidies and Countervailing Measures?

According to the WTO Agreement on Subsidies and Countervailing Measures, the definition of a subsidy is a financial contribution by a government or any public body within the territory of a Member that confers a benefit. There are three kinds of subsidies: (i) prohibited subsidies; (ii) actionable subsidies; and (iii) non-actionable subsidies. There are two kinds of prohibited subsidies: (a) export subsidies; and (b) import substitution subsidies. Subsidies are actionable if they are 'specific', that is, that they are provided to a specific enterprise, industry, region, and so on, and not 'horizontally' available to all. Actionable subsidies might be targeted with anti-subsidy measures, and they might be brought to the WTO dispute settlement mechanism. Subsidies identified as non-actionable were environmental subsidies, regional subsidies, and subsidies designated to research. The category of non-actionable subsidies lapsed in 2000. This implies that subsidies that previously were non-actionable are actionable today. Environmental subsides are accordingly actionable through the use of anti-subsidy measures and/or WTO dispute settlement today. This provision on non-actionable subsidies might be extended, or modified, by consensus of the Committee on Subsidies and Countervailing Measures. No such consensus has been reached as yet.

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TRADE REMEDIES AND DEVELOPMENT OF RENEWABLE ENERGY

Gary Horlick

INTRODUCTION

"Trade war" is frequently used in newspapers (Washington Post 2013), but rarely is it so justified as in the aggressive use of trade remedy law by the United States (US) and the European Union (EU) against China, and vice versa, in the renewable energy sector.[1] The recent EU-China "settlement" of the solar panel dispute is a possible partial "truce" in that war if it holds up. The settlement, in its simplest description, sets a minimum price on Chinese exports of solar panels to the EU and a maximum volume of sales.[2] Understandably, clean-energy advocates might be baffled by the eagerness of governments to raise prices for renewable energy—precisely the governments which were spending the most money to subsidize it, notwithstanding the realization that high-priced renewable energy will neither be competitive nor viable.

Each of the major "trade remedies" (anti-dumping [AD], countervailing duties [CVD], and safeguards) present different challenges to the development of renewable, non-greenhouse gas (GHG) emitting energy. So this paper will treat each of those separately, although some, but not all, of the possible solutions overlap.

ANTI-DUMPING

Anti-dumping laws were first created by Canada in 1904, based on claims of predatory pricing (steel rails in the US were reportedly sold in Canada by a US monopoly, protected by high tariff walls and a sanctuary home market, at prices calculated to drive the Canadian industry out of business, and then raising them to extortionate levels). Nothing in the Canadian law required proof of any of these claims, and anti-dumping law around the world and in the World Trade Organization (WTO) remains supported by the rhetoric of predation without any need to prove it. Worse, many trade remedy enforcement authorities around the world view their jobs as "defending domestic industry," so the opportunities for biased application are quite numerous and frequently used.

Anti-dumping was originally defined as selling different prices at different markets. Independent economists who look at anti-dumping are puzzled that anyone would care about differing prices in the absence of abuse of market power, but anti-dumping laws offer great scope for finding such price differences even where they do not exist (see Lindsey 2003 for a description of these "tilts").

Since the 1970s, dumping has also been found if sales in the export market are "below cost"—defined as "fully loaded cost," just at the time when competition laws around the world were gradually began to define predatory pricing by domestic firms as selling below "average variable cost," thus creating a substantial protectionist pricing wedge between the prices allowed by domestic producers and the prices allowed by imports. This wedge is particularly large for industries such as solar panels, which are examples of "Moore's Law," where costs (and prices) are cut in half every 18 months by "learning-curve" economics (solar panels in many respects are very similar to semi-conductors).Figure 1 on the prices of Chinese solar panel exports to the EU bears a close resemblance to "Moore's Law."

In effect, anti-dumping law as currently practiced around the world is designed precisely to prevent the kind of rapid cost and price decreases that are necessary to make solar energy, and probably other clean energy technologies, viable competitors with (often heavily subsidized) fossil fuels.

There are several possible solutions.

(a) The only real solution for the application of anti-dumping rules to clean energy is to prohibit cases from even starting. The biggest problem with WTO rules is that they permit national authorities to impose high AD/CVD duties for political reasons with no effective recourse before a neutral body for four to six years (that is, when WTO-authorized retaliation can begin). A detailed study of the impact of trade cases on exports (Campos and Vita2004) concluded that there was a noticeable negative impact on exports for some time even after exporters won cases in the initial phase. This is consistent with the leading academic work on the subject (Prusa and Skeath 2002), and with the common wisdom among trade remedy practitioners (they rarely put in writing what the US

1 China has retaliated by imposing duties on polysilicon—the input for solar panels—from the US and South Korea, and threatened to impose duties on a more traditional, higher valued form of solar energy and wine from Europe. This presumably has been solved by the "price undertaking" agreed in principle on 28 July 2013. This undertaking could keep solar panel prices high for at least two years—just when lower prices are needed to be competitive with fossil fuels. Meanwhile, China put a low antidumping (AD) duty on South Korean polysilicon while continuing the possibility of high AD duties on EU polysilicon, which means that that polysilicon prices in China do not rise, but the threat to EU polysilicon exports remains (see NPD Solarbuzz, http://www.solarbuzz.com/.

2 COMMISSION REGULATION (EU) No 748/2013, 2 Aug 2013, amending Regulation (EU) No 513/2013 imposing a provisional anti-dumping duty on imports of crystalline silicon photovoltaic modules and key components (that is, cells and wafers) originating in or consigned from the People's Republic of China. Official Journal L 209/1.

lumber industry stated, in a thinly veiled manner—"Even if we reduce artificial price suppression by even 1 percent for one year, we will pay for a three-year effort four times over." This meant that the case would create enough trade disruption that even if the claim was disproven after 12 months, the return on the investment would be 400 percent—much better than the return on investment from improving the product or customer service [US Lumber Group 1995]). Thus, technical tinkering will not do the job, notwithstanding the alternatives listed below. If cases can be started, they will be solely to disrupt trade.[3]

As can be seen in these "solar panel wars," the EU and China have trade remedy systems flexible enough to "adjust" AD and CVD duties as needed, while the US does not. Thus, the US faces high AD duties on its polysilicon exports to China in return for its AD/CVD duties on Chinese panels.

(b) If it is not possible to abolish AD cases for renewable energy items, these are some possible partial fixes.

- Enforce existing law.

The current WTO Anti-Dumping Agreement (ADA) includes provisions (Ant 2.2.1.1; fn. 6) that in effect require recognition of Moore's Law. Dumping calculations must take into account costs spread out over the product cycle, and the "startup" situation of new products and new factories.[4]

The EU and the US, having signed the ADA, have made a mockery of this, and refused to implement it honestly. For example, the US ordained that start-up costs do not include marketing costs (19 USC Section[f] [1] [iii]; limited to production costs), which would sound strange to a Silicon Valley startup or to a professional US accountant.

- Require that the complaining companies show that their costs are lower than the costs of exporters, using identical methodologies.

- Require that the AD duties not be high enough to raise the cost of the renewable energy above actual or likely fossil fuel competitors.

There are numerous other potential palliatives (for example, raise the *de minimis* level below which AD duties are not charged from the current 2 percent to 5 percent) but they would be mainly empty political gestures, and recognized as such.

3 The US agricultural community recently came to the same conclusion, requesting the US government to negotiate with Europe the abolition of AD and CVD on food in the Transatlantic Trade and Investment Partnership (TTIP) negotiations. "Eliminate antidumping on all food and agriculture products once the tariff on those products reaches zero. Past experiences with NAFTA [North American Free Trade Agreement] indicate that anti-dumping has been a major barrier to trade within that FTA [free trade agreement] even after tariffs end (Food and Agriculture Working Group, Business Coalition for Transatlantic Trade, 2 July 2013).

4 This was forced upon the reluctant US Government by a coalition that included IBM, Hewlett Packard, Sun Microsystems, and others—ironically, against the opposition of Intel, of which Moore was vice chairman at the time, since Intel had been using anti-dumping to keep out foreign competitors.

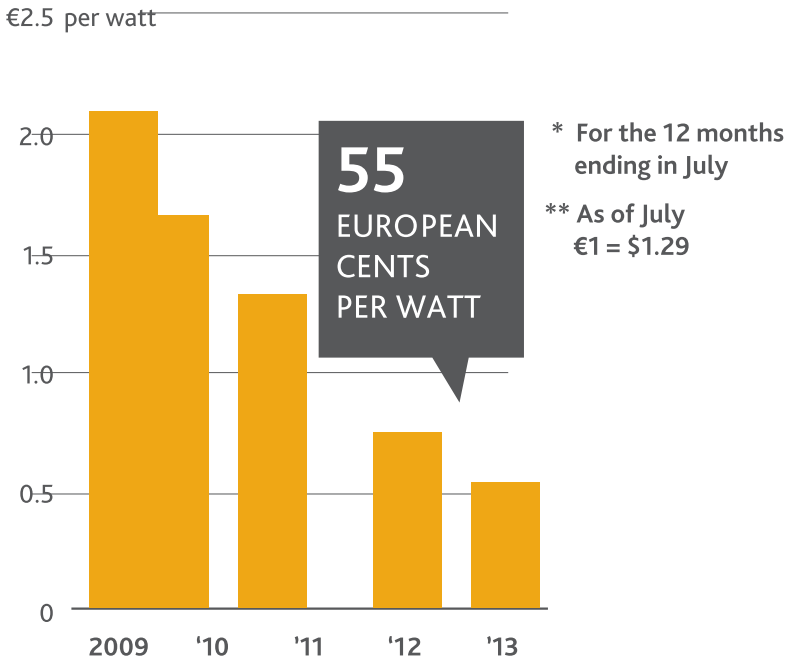

FIGURE 1:

Average Cost of Chinese Solar Panel Exports to Europe, 2009–2013

Source: European Commission.

SUBSIDIES AND COUNTERVAILING MEASURES

The first CVD law, passed by the US in 1890, was to mandate offsetting ("countervailing") duties to offset the subsidies given on sugar exports by Czarist Russia. By definition, that CVD law was not protectionist, since it could not exceed the amount of subsidy to maintain the amount of the existing (admittedly protectionist) tariff. The US added non-export subsidies to its CVD law in 1922, but the Treasury effectively refused to enforce that part until the late 1970s, and even then it had to claim that certain Canadian investment "incentives" to Michelin were export subsidies because all the production was assumed to go to the US[5] (it helps to know that there was no practical judicial view of these laughably unsupported decisions until the late 1970s). These CVDs by definition were also not protectionist because all they did was maintain the level of tariffs that would be effectively negated by export subsidies. It was a fairly simple law to administer, as the export subsidies involved were typically a fixed percentage of value of the export so that the CVD was the same amount.

But the trade-distorting effect of non-export subsidies ("domestic subsidies," or, in WTO terms, "actionable" non-prohibited subsidies) was already being recognized, for example, in Articles 85-86 of the 1957 Treaty of Rome establishing the Common Market (see Baldwin 1970).

The General Agreement on Tariffs and Trade (GATT) had no real discipline on such subsidies. It contained permission for CVDs in Article VI (this was necessary because the US had such a law and could not accept anything in the GATT that changed it and thus required Congressional action). Even the 1979 Tokyo Round Subsidies Code had only hortatory statements about the possible trade-distorting effects of domestic subsidies (Article 11.3), and not even a definition (the US proposed an "Annex B" with examples, along the lines of Annex A on export subsidies, which was carried over mostly into the Agreement on Subsidies and Countervailing Measures [ASCM], but this was not agreed). In the wake of the 1979 Tokyo Round Agreements, the responsibility for AD/CVD law was moved from the US Treasury Department to the Commerce Department, in part because of a widespread perception that the Treasury would not pursue domestic subsidies. After two years, the Commerce Department was inundated with literally hundreds of CVD cases filed against domestic subsidies. By pure accident, involving the appointment of three different people in the Commerce Department line-up, the Department constructed a relatively non-protectionist set of methodologies for evaluating and measuring subsidies (with the exception of a distorted view of regional subsidies mandated in 1979 by certain senators).

This has changed over time, under pressure from protectionist lobbies, and the duties on solar panels demonstrate the potential for very high CVDs, whether related or not to reality. Even with a non-protectionist methodology, the near initiation of cases still has a trade-depressing effect (although less than anti-dumping, since the parties in a CVD case can presumably calculate their exposure in advance, unlike the irrationality of AD law). Thus, all the proposals suggested above for anti-dumping apply equally well to CVDs.

But the big difference is that unlike AD, where truly predatory pricing can be met by national competition laws (for example, the US has even extended criminal anti-trust laws extraterritorially[6]) and the rest of anti-dumping is just protectionism, subsidies present more of a problem, because disciplines (but not prohibitions) on subsidies for renewable energy need to be constructed instead of CVD laws.

This is not an entirely new endeavor. The entire topic of subsidy law and the environment was actively discussed during the Uruguay Round, and the result was a time-limited "trial period" of a very limited exemption from CVD law for certain environmental subsidies (as well as for certain research and development and regional subsidies) in Article 8 of the ASCM. This was based on the observation that certain subsidies, most notably subsidies for environmental clean-up, could have enough positive social benefit to justify trade distortions that could not be eliminated by drafting limitations and conditions. While the specific drafting of the environmental "green light," Article 8.2(c) of the ASCM, was accidental (the Mexican delegate, under huge time pressure at the very end of the negotiation, pulled a six-year-old EU proposal out of his file, crossed out half of it and handed it to Director-General Peter Sutherland, who had been the EU Commissioner for Competition under whose aegis the proposal had been made. Understandably, he agreed it was a good draft) (Horlick and Clarke 1994). The Article 8 "green light" categories disappeared because of the inaction of the 1999 Seattle Ministerial, rather than a general agreement to get rid of them. There is no reason why they should not be revived, at least with regard to environmental subsidies (it is likely that lots of WTO Members will come up with some "countervailing" concession that they want in return for a "green subsidy" provision).

The specific possibilities include the negotiation of the definitions by which subsidies should be treated specially. This should be by a group, including the main stakeholders and experts on different aspects of renewable energy (technical, political, and so on), and experts on subsidy rules (mainly WTO and EU; the WTO Member with the most active discipline on subsidies). The negotiation should be guided by at least three principles.

1) There should be a presumption against any subsidy which would lead to increased persistent contamination (for example, the mercury in compact fluorescent lamps

5 Treasury Decision 73-10, 7 Cust. Bull. 24(1973), 38 Fed. Reg. 1018 (1973).

6 US v. Nippon Paper Industries, 109 F.3d 1 (1st Cir. 1997).

[CFLs] when light-emitting diodes [LEDs] were just around the corner), or to significant emissions of GHG.

2) The good projects should not be captured for private stakeholders while they leave the bad projects to governments. Even with all this, some of the money will be "wasted," because it is inevitable that not all new technologies will succeed.

3) All new knowledge created with the help of public money or assistance should be made public.

Decision-making and dispute resolution on individual subsidies must be rapid and binding. The WTO agreement on pre-shipping inspection has binding dispute resolution within 10 days, and there is no reason, in an electronically linked world that does not require experts to fly around, why this cannot be done. Another possible model would be the ASCM's Permanent Group of Experts, which was designed for this task but whose mission was taken away at the last minute at the assistance of big powers (see footnote 35 to the ASCM). It is inevitable that whatever tribunal that is set up will make some mistakes, but there should be no appeal. The mistakes will even out over time, even those the losing party will complain loudly about, but the task is too important to be stifled with even more red tape.

SAFEGUARDS

Safeguards were little used before the Uruguay Round, as Article XIX GATT required that any increase in tariffs or imposition of quotas be "compensated" for by the importing country. This became increasingly difficult, especially for developed countries, as negotiated tariff reductions gradually made duties that protected the most sensitive domestic constituents the only ones that could be lowered as compensation. One of the EU's major negotiating goals in the Uruguay Round was elimination of that requirement. The EU succeeded, to the extent that the Safeguards Agreement (SGA) removed the requirement for compensation for the first three years of the duties or quotas as long as imports had increased absolutely rather than relatively (Art. 8.3).[7]

The use of safeguards has increased since then, but mainly by developing countries which find AD and CVD too expensive. In effect, the three-year non-compensation period has become a norm backed by the coincidence that WTO dispute challenges to safeguards last about three years, and the Appellate Body has never found a safeguard it approved. Consequently, it would seem that the main problem with safeguards as applied to renewable energy would be the same as with AD and CVD—initiation of cases in themselves could have trade-distorting affects. Beyond that, there are fewer methodological issues to deal with. There is no calculation of dumping or subsidies, and the determination of injury in safeguards cases is whimsical, as it is in AD and CVD. So the first recommendation is to abolish safeguards for renewable energy, as with AD and CVD. Other possibilities would include the following.

- Having a fast-track multinational expert group issue binding decisions on the legitimacy of proposed safeguards against imports of green energy items before they are initiated or put into effect.

- Introducing a "public interest test" as discussed above and similar tweaks from the AD and CVD recommendations.

- In addition, the SGA is virtually devoid of the procedural protections and rights of defense in the AD and CSM agreements, so some of those could be brought over as well.

- A leisurely two to three-year wait for dispute resolution and compliance such as that with WTO dispute resolution is laughable in a context of rapidly changing technology and markets.

7 Ironically, the EU could not take advantage of this change as a change in voting rules inspired by France, coupled with the addition of Austria, Finland and Sweden on 1 Jan, the date of entry into force of the Round, meant that the EU could not find the votes to impose safeguards.

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PUSHING THE RENEWABLE ENERGY AGENDA FORWARD: SOME SELECT LESSONS FROM THE GATS

Johannes Bernabe

INTRODUCTION

As the focus on the generation of power continues to veer towards renewable sources of energy, several pockets of influence in the international policy community increasingly seek various modalities through which the supply of renewable energy can be facilitated. In the context of international trade, initiatives such as the advocacy for a Sustainable Energy Trade Agreement (SETA), or the inclusion of renewable energy as a distinct services sector in the ongoing discussions for a new Trade in Services Agreement (TISA) have gained some support.[1] In a regional context, the Asia Pacific Economic Cooperation (APEC), for instance, hatched an agreement among participating member countries in 2012 to lower tariffs on a range of environmental goods, a substantial number of which relate to sustainable energy. Advocates of sustainable energy regard this as an initiative which could ripen into a SETA. In certain preferential trading arrangements, such as the one between the European Union (EU) and South Korea, the parties have incorporated the objective to "facilitate and promote trade and foreign direct investment in environmental goods and services, including environmental technologies, sustainable renewable energy, energy efficient products and services and eco-labelled goods, including through addressing related non-tariff barriers" (Article 13.6).[2] Similarly, the Japan-Switzerland (Free Trade Agreement (FTA) provides that the parties shall "encourage trade and dissemination of environmental products and environment-related services in order to facilitate access to technologies and products that support the environmental protection and development goals, such as improved sanitation, pollution prevention, sustainable promotion of renewable energy and climate-change-related goals" (Article 9).

To the extent that many in the policy community still view the World Trade Organization (WTO) as the most effective platform for pursuing enforceable commitments that compel trading partners to allow access for the supply of renewable energy and investment in it in their markets, it is said that the various initiatives and developments should dovetail into the WTO's work programme. Arguably, a TISA, which includes renewable energy as a services sector or sub-sector where participating member countries undertake liberalization commitments within the broader rubric of the WTO framework, represents an ideal scenario now. In the absence of that, a specific reference in the WTO 9thMinisterial Conference in Bali, Indonesia, for the need to pursue discussions in the renewable energy sector, akin to the specific mandate in paragraph 31 of the Doha Work Programme could have represented as good an outcome as can be expected at this point in time. Still, it may be argued that the above should be without prejudice to the assertion that the cited mandate, particularly sub-paragraph 31 (iii) on "the reduction or, as appropriate, elimination of tariff and non-tariff barriers to environmental goods and services," already includes the renewable energy sector, as has been recognized in the FTAs mentioned earlier. Indeed, perhaps all that is needed in the WTO is for a Member or group of Member countries to make the argument and table a negotiating proposal.

PROBLEM STATEMENT

Regardless of the modality pursued, the challenge will be daunting, that is, how will the anticipated liberalization or reforms be best implemented? In the case of a negotiating mandate, if any, one presupposes that a scoping exercise that helps Member countries better understand the coverage of products and activities that may be included in the sector will, as a matter of course, be a prerequisite. Several concerns will need to be addressed there, including the inseparability of certain goods and services where trade will need to be liberalized if the renewable energy sector is to be genuinely developed or optimized. Here, the same issues that have challenged WTO Members in negotiations to liberalize trade in environmental goods and services arise. The issue of "dual use," for instance, will be further exacerbated in the renewable energy debate: Investments for the transmission, dispatch, and distribution of energy generated from renewable sources, apart from necessarily making use of equipment and goods which may be used for other industrial activities, may prove too limited if energy generated from fossil fuels were excluded from the use of such facilities.

For the purposes of the E15's agenda, large hydro power generation projects are excluded from this discussion.

1 This presupposes that the supply of energy is a service, rather than a good. Notably, a number of WTO Member countries tabled negotiating proposals on "Energy Services" under the Doha Round of negotiations on services trade. On the other hand, rightly or wrongly, electricity appears to have been accepted by the parties and the Appellate Body in its ruling in *Canada – Certain Measures Affecting the Renewable Energy Generation Sector and Canada – Measures Relating to the Feed-in Tariff Program* (WT/DS412/AB/Rand WT/DS426/AB/R) as a good, rather than a service.

2 Art. 13.6, EU-South Korea FTA.

This is consistent with the core value of renewable energy as a driver of climate change mitigation and sustainable development. But this exclusion, in a sense, while simplifying the debate going forward, also implicitly provides a glimpse into the definitional and coverage issues that may prove sticky in negotiations. Which types of renewable sources of energy qualify for classification as sustainable energy? Should biofuel-sourced power generation facilities be included in the classification of sustainable energy? Extrapolating further, if the supply of transmission, dispatch, and distribution services cannot be conveniently limited to renewable energy alone, should the coverage of proposed liberalization be targeted at power generation, notwithstanding that the activities referred to are direly needed, or in dire need of expansion, in many countries as well?

Additionally, there may be different thresholds among countries on what qualifies as renewable energy power generation. Where hybrid power generation plants are involved, some countries regard even a low 20 percent of power generated from renewable energy sources as qualifying a plant as a renewable energy facility. Should liberalization cover only investments or the supply of services pertaining to the 20 percent of renewable energy? Or is it unrealistic to make a distinction and bifurcate between the supply of services that are allowed and not allowed?

Offering a menu of possible discrete activities as items for liberalization—a checklist, as it were—that Member countries can cherry-pick through obviously redounds to a mitigated solution. The alternative of a "cluster approach," which is more familiar to negotiators in the services context, although more likely to lead to comprehensive liberalization and growth in the renewable energy sector, did not gain much traction during the Doha Round because it was seen by many members, particularly developing countries, as being too encompassing and involving activities covered under other, more sensitive sectoral classifications. Further, it cannot be discounted that any discussions or negotiations in the renewable energy sector may be bogged down yet again by negotiating dynamics reflecting the more conventional perspective that the bulk of developing countries have limited offensive interests in the liberalization of this sector, and that they may be better off adopting a defensive stance with a view to parlaying any potential concessions in this sector into some advantage in another negotiating issue.

What creates further complications is that in many jurisdictions, government-owned or controlled entities continue to engage in power generation, transmission, dispatch and distribution, whether as monopolies or alongside private commercial enterprises. The extent to which these government-owned or controlled entities may be regarded as engaged in public procurement was a subject of discourse by the WTO Appellate Body in *Canada – Certain Measures Affecting the Renewable Energy Generation Sector and Canada – Measures Relating to the Feed-in Tariff Program*.

Apart from these definitional and coverage issues, domestic regulations may likewise prove a hindrance in the effective implementation of liberalization. In the context of the General Agreement on Trade in Services (GATS), domestic regulations are non-discriminatory measures that neither limit market access nor national treatment, and thus apply equally to foreign and local services suppliers. Domestic regulations may take the form of licensing requirements and procedures, qualification requirements and procedures, or technical standards. To the extent that these types of measures may be skewed against the optimal usage of renewable energy, liberalization commitments may end up being stunted on the ground. For example, unduly lengthy periods with a myriad of requirements to obtain a service contract from the government for the provision of power and electricity in a particular territory can result in an unintended non-discriminatory trade barrier. Another concrete example would be where domestic regulation views the dispatch of power generated from renewable sources to the electricity grid as a lesser priority. Given the lack of "smart grids" in most countries,[3] this measure acts as a disincentive to foreign service suppliers of renewable energy who may want to come in and invest in an otherwise liberalized sector.

Indeed, if a survey were undertaken of the different domestic regulatory measures in place in different jurisdictions, it may reveal a number of trade barriers whose damaging effects on the promotion of sustainable energy are equal to outright market access and national treatment limitations.[4]

SOME POSSIBLE RESPONSES

A number of useful papers have lent insights into and suggestions on how to resolve the issue of coverage of the renewable energy sector in Services. ICTSD's recent publication *Sustainable Energy Services in a SETA* (2013) provides an overview of some of these and underlines that WTO Members are free to specify their commitments on related services across different sectors in their schedules within the current structure of classification (p. 20). Cossy (2011) argues that the absence of an appropriate classification should not prevent members from negotiating on climate change-related services (presumably including renewable energy services) and that what is more important is that each schedule be internally coherent and avoid overlapping with other sectors. Indeed, in the absence of an agreed classification, each Member, if so inclined, can unilaterally define the scope of its commitments by clearly

3 "Smart grids" are defined by the International Energy Agency (IEA) as "an electricity network that uses digital and other advanced technologies to monitor and manage the transport of electricity from all generation sources to meet the varying electricity demands of end-users;" http://www.iea.org/papers/2011/smartgrids_roadmap.pdf.

4 The OECD has conducted a series of studies on regulatory measures which effectively pose barriers to trade in different services sectors; see www.oecd.org.

and precisely describing the specific activities it wants to liberalize, including the conditions or criteria that must be met, if any, by service suppliers. Issues regarding "dual use" on account of possible non-renewable energy usage will be for each liberalizing member's appreciation and delineation.

Nonetheless, what will provide beneficial guidance is a negotiating proposal on Sustainable Energy Services by a Member or group of Members. This may be in the context of such Member(s) tabling the proposal in the TISA discussions or in the WTO Council for Trade in Services, assuming the mandate to negotiate is affirmed or exists. The document could set out all the different activities—or services subsectors—that will aid in the development and optimal usage of sustainable energy through their liberalization. The proponents could undertake the task after consultation with other technically knowledgeable agencies such as the International Energy Agency (IEA), similar international institutions, and Members' own local energy agencies. The document should outline the services sectors and the different sub-sectors or services activities contemplated within each main sector. The proposal would need to be more detailed in its description of the services activities that will contribute to the scaling up of supply and use of sustainable energy to more effectively capture the nuances that would differentiate services more particularly geared towards renewable energy. Further ideas that may be gleaned from the GATS or some GATS-derived agreements, and which could be built around or in parallel with the proposal, will be examined below.

With such a guide, WTO Members could at least come to a first step of understanding what the relevant services activities are and how they may incorporate these as a part of their liberalization commitments. Precisely because it is a negotiating guide or tool, Members would have the flexibility to adopt and adapt the proposed sectors/sub-sectors and descriptions in accordance with the peculiarities of their respective jurisdictions.

As mentioned, some elements from the GATS or agreements based on it may be worth adapting into the negotiating proposal or undertaken as parallel initiatives. For instance, as far as providing a description of certain services activities are concerned, the GATS Annexes on Air Transport, Financial Services and on Telecommunications, as well as the Understanding on Commitments in Financial Services, provide some illustrative value in terms of defining technical terms or service activities with specificity. In particular, the Telecommunications Annex's definitions of "Public telecommunications transport service;" "Public telecommunications transport network;" and "Intra-corporate communications" may resonate with the need to describe the transmission and distribution aspects of bringing renewable energy to end-users. On the other hand, the Understanding defines what a "new financial service" and a "non-resident supplier of financial services supplier" are. As technologies evolve in the field of renewable energy, it would arguably make sense to have an analogous definition of what "new renewable energy services" might entail for the sector.

Terms such as "services supplied in the exercise of governmental authority" and "public entity" in the context of the particular sector are also defined in the Annex on Financial Services. Given the relevance of these terms in the renewable energy sector, as exemplified in the *Canada* disputes, it stands to reason that members may likewise want to define such terms themselves.

Assuming only certain WTO Members opt to make commitments, it may be more sensible to incorporate the definitions or description of renewable energy sectors and sub-sectors or activities within the schedule of commitments these members will offer. Otherwise, if at least a sufficient critical mass of members agrees to take on commitments, it would be reasonable to try and negotiate an agreement incorporating these definitions and descriptions reflecting the liberalizing members' understanding of the services activities they are making commitments on. This agreement could be akin to the Annexes to the GATS in the sense that they would apply to the entire membership and bind Members to the extent that they have made commitments in the renewable energy sector. Admittedly, there is a risk that should the negotiations on such an agreement be carried out by the entire membership, not only will the discussions likely drag on, but also the provisions may end up fairly limited in coverage and application.[5] Since the definitional provisions will determine the precise nature and extent of commitments a Member will undertake, in the absence of concurrence by a Member, it may opt not to make a commitment on those services sub-sectors or activities with whose definitions it disagrees.

An agreement that may necessarily be multilaterally negotiated would be on possible disciplines on domestic regulatory measures. As earlier alluded to, non-discriminatory regulatory measures may result in inhibiting not only the supply, transmission, dispatch, and distribution of renewable energy, but- more relevant in the context of international trade- the foreign services suppliers who are intent on investing in and supplying those services.

A number of GATS agreements provide some elements that may be worth considering in this regard. The foremost example is the "Disciplines on Domestic Regulation in the Accountancy Sector," which was developed by the Council for Trade in Services' Working Party on Professional Services. The disciplines will apply to all WTO Members that have scheduled specific commitments for accountancy under the GATS, and is intended to be the first step in the development of GATS disciplines on the domestic regulation

5 One school of thought is that definitions will not likely be diluted into general terms because Members inclined to liberalize would want to know with specificity what they are committing to; Members intent to "free ride" on these commitments would not want to dilute these either as it may lessen the extent to which they are able to do so.

of services. Similar to the Accountancy Disciplines, the purpose of disciplines negotiated for Sustainable Energy Services will be to facilitate trade in that sector by ensuring that domestic regulations affecting trade meet the requirements of Article VI:4 of the GATS.[6]

Key to the disciplines must be the general requirement that measures taken for these purposes should not be more trade restrictive than is necessary to fulfill a legitimate objective. Examples of legitimate objectives specified in the Accountancy Disciplines are the protection of consumers (including all users of accounting services and the public generally), ensuring the quality of the service, ensuring professional competence, and ensuring the integrity of the profession. It stands to reason that a similar set of legitimate objectives could be drawn up in the case of the Sustainable Energy Sector.

The Accountancy Disciplines include a "standstill provision," effective immediately, under which all WTO Members, including those without GATS commitments in the accountancy sector, agree, to the fullest extent consistent with their existing legislation, not to take measures which would be inconsistent with them. In the sense that certain Members may not have liberalization commitments and yet participated in the negotiation of disciplines, this at the very least bars regression from the mean or what has been multilaterally agreed. Any future set of disciplines on the Sustainable Energy Services sector should incorporate a similar "standstill provision."

The Accountancy Disciplines likewise expand on the transparency obligations required on WTO Members under Article III of the GATS. Among others, the names and addresses of contact points which regulate the sector; the requirements and procedures to obtain, renew, or retain any licence or qualification; and the opportunity for comment and considering such comments before adoption of regulations are to be made available to other Members.

The Annex on Telecommunication Services may be even more in point with regard to transparency obligations. It provides that "(…) in the application of Article III of the Agreement, each Member shall ensure that relevant information on conditions affecting access to and use of public telecommunications transport networks and services is publicly available, including: tariffs and other terms and conditions of service; specifications of technical interfaces with such networks and services; information on bodies responsible for the preparation and adoption of standards affecting such access and use; conditions applying to attachment of terminal or other equipment; and notifications, registration, or licensing requirements, if any" (Section 4).

Again, these elements would logically be included in a parallel set of disciplines for the Sustainable Energy Services sector.

Basic tenets on facilitating trade and investments in the supply of a service are likewise provided for in the Accountancy Disciplines. While it may seem a matter of common sense, the Disciplines nonetheless spells out elements of good governance in implementing Members' respective licensing procedures.

> "Licensing procedures (i.e. the procedures to be followed for the submission and processing of an application for an authorization to practice) shall be pre-established, publicly available and objective, and shall not in themselves constitute a restriction on the supply of the service.
>
> Application procedures and the related documentation shall be not more burdensome than necessary to ensure that applicants fulfill qualification and licensing requirements. For example, competent authorities shall not require more documents than are strictly necessary for the purpose of licensing, and shall not impose unreasonable requirements regarding the format of documentation. Where minor errors are made in the completion of applications, applicants shall be given the opportunity to correct them. The establishment of the authenticity of documents shall be sought through the least burdensome procedure and, wherever possible, authenticated copies should be accepted in place of original documents.
>
> Members shall ensure that the receipt of an application is acknowledged promptly by the competent authority, and that applicants are informed without undue delay in cases where the application is incomplete. The competent authority shall inform the applicant of the decision concerning the completed application within a reasonable time after receipt, in principle within six months, separate from any periods in respect of qualification procedures referred to below.
>
> On request, an unsuccessful applicant shall be informed of the reasons for rejection of the application. An applicant shall be permitted, within reasonable limits, to resubmit applications for licensing.
>
> A licence, once granted, shall enter into effect immediately, in accordance with the terms and conditions specified therein." (Section IX, Disciplines on Domestic Regulation in the Accountancy Sector)

6 Art. VI: 4 provides: "With a view to ensuring that measures relating to qualification requirements and procedures, technical standards and licensing requirements do not constitute unnecessary barriers to trade in services, the Council for Trade in Services shall, through appropriate bodies it may establish, develop any necessary disciplines. Such disciplines shall aim to ensure that such requirements are, *inter alia*:
(a) based on objective and transparent criteria, such as competence and the ability to supply the service;
(b) not more burdensome than necessary to ensure the quality of the service;
(c) in the case of licensing procedures, not in themselves a restriction on the supply of the service."

The foregoing would seem to be too reasonable to be opposed in a set of disciplines applicable to the Sustainable Energy Services sector. The fact that the same has been previously agreed upon by WTO Members also augurs well for its adoption in another sector, especially one imbued with the urgency of helping address climate change.

Perhaps a little more controversial but worth considering would be provisions in the Understanding on Commitments on Financial Services stating, for instance, "Each Member shall grant financial service suppliers of any other Member the right to establish or expand within its territory, including through the acquisition of existing enterprises, a commercial presence" (Section B, para. 5), and further, that "(…)under terms and conditions that accord national treatment, each Member shall grant to financial service suppliers of any other Member established in its territory access to payment and clearing systems operated by public entities, and to official funding and refinancing facilities available in the normal course of ordinary business" (Section C, para. 1).

In the context of the Sustainable Energy Services sector, both provisions would appear relevant and useful, and take into account challenges faced by prospective foreign investors and service suppliers on the ground. The first allows an explicit opportunity for expanding and scaling up operations, thus making use of the advantages of economies of scale. As is well known, current supply of renewable energy in many countries, especially developing ones, do not necessarily occur in adjacent territorial areas and are generally of the mini- to small-scale variety of generation facilities. The aforequoted provision, as applied in the Sustainable Energy Services context, makes an initial investment on the current scale more attractive because it removes limits to growth.

On the other hand, Section C, para. 1 of the Understanding applied *mutatis mutandis* to a Sustainable Energy Services sector would expressly recognize fundamental issues critical to service suppliers' interest and the feasibility of operating in the sector. By analogy, access to payment and clearing systems could relate to and be adapted to take account of participation in feed-in tariff programmes, and automatic or preferred priority dispatch to the grid of electricity generated through renewable sources. Given that many countries maintain nationality or joint venture requirements for the supply of renewable energy services, and that proponents in developing countries tend to be small- and medium-sized enterprises, which need access to financing in partnership with foreign investors or service suppliers, a provision stipulating access to local funding or refinancing is a crucial condition.

CONCLUSION AND RECOMMENDATIONS

Whether through a new TISA or negotiations initiated under the WTO, Members' understanding of what comprises a Sustainable Energy Services sector would need to be enhanced. While each member can nominate and inscribe services sectors or activities in its schedule of commitments according to its own, unilateral determination and description, it will be useful to have guidance provided through a negotiating proposal that defines or describes such services from one of the Members or group of Members. There is precedent in a number of GATS Annexes and an Understanding specific to certain services sectors which provide such definitions. Further, these agreements also provide certain concepts and elements which can be usefully analyzed and, where appropriate, adapted into the context of Sustainable Energy Services. These concepts and elements may relate to, among others, the need for developing disciplines on domestic regulation as applied to the Sustainable Energy Services sector; the necessity of addressing inter-connectivity or inter-operability issues which another sector (telecommunications) may have had to similarly confront in the past; or the imperative to resolve growth and financing issues peculiar to the Sustainable Energy Services sector, which lie at the core of a viable operation.

Provisions in other GATS agreements, or even other trade agreements, could also provide a wealth of elements and ideas that may well be worth surveying, analyzing, and adapting into the Sustainable Energy Services sector. The foregoing represents a simple first attempt at providing a snapshot of what may be possible.

What must not be discounted in the end is the benefit of clearly and specifically setting out the rights and obligations of Members in the Sustainable Energy Services sector, such that a modicum of legal predictability and certainty will—hopefully—ensure Members make commitments in the sector.

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