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November 2017

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PROMOTING SUSTAINABLE DEVELOPMENT BY ADDRESSING THE IMPACTS OF CLIMATE CHANGE RESPONSE MEASURES ON DEVELOPING COUNTRIES

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NOVEMBER 2017

¹ This research paper primarily focuses on the mitigation dimensions of response measures. A forthcoming companion policy brief will explore response measures in the context of adaptation issues and challenges.

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I. INTRODUCTION

The issue of the economic and social consequences of the implementation of response measures (i.e., policies and actions to reduce emissions and address climate issues) that are undertaken by Parties with respect to addressing climate change is well-recognized in the United Nations Framework Convention on Climate Change (UNFCCC). The legal basis for the work undertaken in the UNFCCC with respect to response measures can be traced back to its Preamble, its principles², the commitments of Parties thereunder³, and the work of the Subsidiary Body on Implementation (SBI)^{4,5}.

Under these provisions, the UNFCCC essentially requires Parties to take into full consideration, in the implementation of the commitments of the Convention, the specific needs and concerns of developing country Parties arising from the impact of the implementation of response measures. As a result, discussions on how to address the economic and social consequences of the implementation of response measures has been a long-standing agenda item in both the SBI and the Conference of the Parties of the UNFCCC, with many conclusions and decisions having been taken by these bodies since the entry into force of the UNFCCC in 1994.⁶

Additionally, for those UNFCCC Parties which are also Parties to the Kyoto Protocol, they are committed under Articles 2.3 and 3.14 of the Kyoto Protocol to strive to minimize adverse economic, social and environmental impacts on other Parties, especially developing country Parties, and in particular those identified in Articles 4.8 and 4.9 of the Convention, taking into account Article 3 of the Convention.

Based on these legal provisions, it is clear that sustainable development is the agreed basis that should shape how the impact of response measures should be addressed. This is mandated in paragraph 54 of the Conference of the Parties (COP) Decision 1/CP.18, e.g.:

Reaffirming that Parties should cooperate to promote a supportive and open international economic system that would lead to sustainable economic growth and development in all Parties, particularly developing country Parties, thus enabling them better to address the problems of climate change; measures taken to combat climate change, including unilateral ones, should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade,

Also reaffirming the importance of avoiding or minimizing negative impacts of response measures on social and economic sectors, promoting a just transition of the workforce, the creation of decent work and quality jobs in accordance with nationally defined development priorities and strategies, and contributing to building new capacity for both production and service-related jobs in all sectors, promoting economic growth and sustainable development, (emphasis added)

² UNFCCC, Art. 3.4 and 3.5

³ UNFCCC, Art. 4.8 and 4.10

⁴ UNFCCC, Art. 10

⁵ See Annex 1: UNFCCC Provisions Relevant to Response Measures.

⁶ See UNFCCC, at http://unfccc.int/cooperation_support/response_measures/items/7475.php.

Furthermore, the outcomes of COP 21, both the Paris Agreement (PA) and the decision to give effect to the agreement, re-affirmed the importance of response measures, further strengthened the responsibility of Parties to exercise care with regard to the impacts of response measures and deepened the institutionalisation of the work on the impact of the implementation of response measures in the UNFCCC.

The preamble to the Paris agreement recognizes ‘*that Parties may be affected not only by climate change, but also by the impacts of the measures taken in response to it*’. Article 4.15 states ‘*that Parties shall take into consideration in the implementation of this Agreement the concerns of Parties with economies most affected by the impacts of response measures, particularly developing country Parties*’.

In the decision adopting the PA under section III, Decision to give effect to the agreement, the Conference of the Parties,

Also decides that the Forum on the Impact of the Implementation of response measures, under the subsidiary bodies, shall continue, and shall serve the Agreement; (para. 33)

Further decides that the Subsidiary Body for Scientific and Technological Advice and the Subsidiary Body for Implementation shall recommend, for consideration and adoption by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement at its first session, the modalities, work programme and functions of the Forum on the Impact of the Implementation of response measures to address the effects of the implementation of response measures under the Agreement by enhancing cooperation amongst Parties on understanding the impacts of mitigation actions under the Agreement and the exchange of information, experiences, and best practices amongst Parties to raise their resilience to these impacts; (para. 34)

In this context, addressing the impacts of the implementation of response measures will require taking into account the following obstacles to sustainable development:

- *Old technologies and low levels of technological capability.* Because of their lower income levels, developing countries use older technologies more heavily as both the technology and the inputs in the use of these technologies cost less and are more widely available. Developing countries have less well-developed educational sectors and suffer from an inadequate supply of skills in advanced technologies.
- *Low incomes and small domestic markets.* Lower skills lead to lower wages and incomes in non-OECD countries. These make domestic markets in developing countries generally significantly smaller and often more vulnerable to external shocks. Response measures should not obstruct the ability of countries to increase domestic incomes and the size of their economies.
- *Dependence on exports on a few commodities, often with high carbon content and oriented towards markets that require long distance transportation by air or sea.* Response measures must be assessed in terms of whether they have a negative impact on the efforts of developing countries to diversify their exports.
- *Low level of productivity and wages and vulnerable livelihoods.* To achieve sustainable development in developing countries, the working population must move from low productivity jobs to higher productivity jobs, from vulnerable livelihoods to secure, dignified jobs. Response measures should not obstruct the possibility of introducing new, more productive jobs in an economy and the pursuit of just transition of the workforce and the creation of quality jobs, taking into consideration gender and youth issues.

- *Low level of diversification of economic activities.* Developing countries seeking to achieve sustainable development are characterized as having a limited number of economic sectors and thus a more limited variety of occupations and jobs. They will also require support to transform the economy and to increase socio-economic resilience.
- *Low level of technology development and facility with tools, methodology and frameworks for the assessment of impacts and modelling.*

II. UNDERSTANDING RESPONSE MEASURES

Response measures arise in the context of developed and developing countries taking actions to combat climate change at global, national and regional levels, such as for the protection and stabilization of the climate, emissions leakages and/or the costs of environmental compliance. They may have unintended and adverse economic and social consequences for developing countries' economies, most often on the poorest and most vulnerable sectors of those economies.

Therefore the economic and social consequences of such actual and potential response measures are an important issue for all developing countries. Such measures may have positive effects, if on balance they support improved access to energy, health care, poverty reduction and decent and quality employment in developing countries. But they may have negative effects, if they constitute a means of transferring the burden of climate change mitigation to developing countries or otherwise distort national and social conditions. The adverse impacts of response measures constitute an additional burden that developing countries should not have to bear—undermining their economic and social development and poverty eradication efforts. These adverse impacts are also contrary to the expectations of the principles of the Convention with regard to common but differentiated responsibility, equity and respective capability.

There exists a wide variety of response measures. However, the question that is relevant to the approach to this issue as expressed in the UNFCCC is which measures promote (or at least do not prevent) sustainable development. While many response measures can be justified in terms of mitigation/adaptation, their economic and social impacts can obstruct sustainable development and thus unduly restrict more global participation in the climate change prevention.

Additionally, national response measures often have multiple co-impacts, aside from facilitating climate response. They can be used to protect old domestic industries. In climate change particularly, they can be used to build new economic sectors. The rapid introduction of new sectors and products that expand the use of clean energy and improve efficiency are both in the national and global interest. But their rapid propagation could be hindered by response measures that obstruct development of the same sectors by other countries. For example, when strong intellectual property protections prevent adaptive activities and reverse engineering or when the prices of goods for the new technology are subsidized in the same way that agricultural products from developed countries are today.

Response measures are multidimensional. Some are local, such as adaptation measures for infrastructure. Others such as trade-related and energy measures may have multilateral impacts. Response measures with multilateral impacts should be assessed multilaterally before deployment. For each specific response measure, there can be a variety of implementation approaches, including transition periods, exemptions, sliding scale based on income, and compensation.

In mitigation, there are two areas of particular importance. First is the transformation of energy supply, including the shift to renewable energy. Second is the quantum improvement in energy efficiency. Policy scenarios suggest that both areas of action are of equal importance as long as energy efficiency improvements actually result in a reduction in total

energy use (and not result greater production/consumption taking advantage of increased energy efficiency). For both purposes, the following response measures have been tried: Technological development; Investment and subsidies in cleaner technologies; Standards, regulations, and bans; Emission caps; Taxes on carbon.

At the basic level, mitigation-oriented response measures are economic policies. As such, all of them affect - through trade outcomes, employment outcomes and financing flows - the sectors in which developing countries currently enjoy competitive advantage. One example is tourism which will be adversely affected by carbon taxes on travel. Some developing countries have also benefited from the proliferation of global value chains in which developing countries often produce an intermediate product that are then shipped cross-border to other locations; levies on bunker fuel and other transportation costs could reduce the extent of such trade to the disadvantage of developing countries. Where developing countries currently enjoy competitive advantage, there is a direct impact on livelihoods and employment and a longer term impact on the decline in the availability of resources developing countries could use for investing in new sectors and economic diversification.

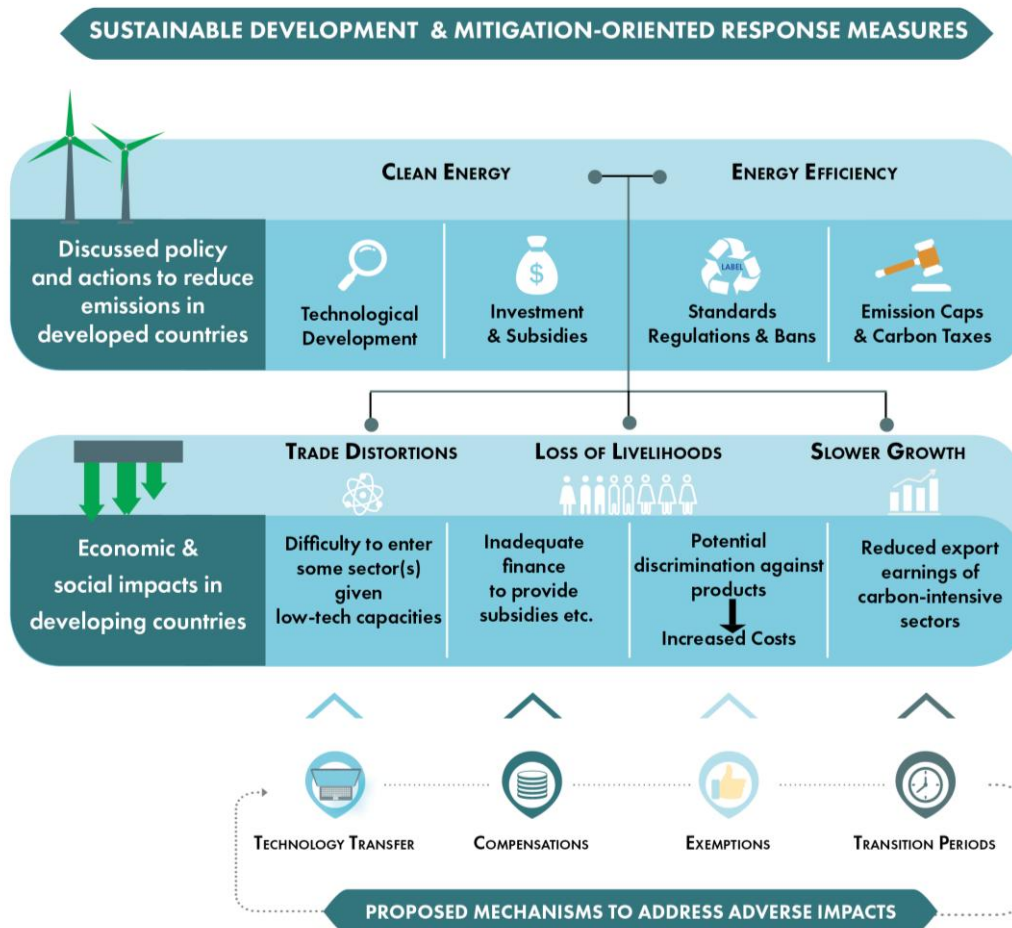
Because climate-change related sectors often are located at the current technological frontier, response measures which privilege enterprises – both private and public – in developed countries can kick away the ladder on which developing countries can improve their domestic productivity and incomes and participate in the global mitigation effort.

There is a hierarchy of response measures in terms of their positive impacts. For example, the positive impact of domestic subsidies for clean technology development is the emergence of new, cleaner technologies. However, the impact assessment must also recognize the disadvantage to developing countries wanting to enter the same sector if obstructed by intellectual property rights and because developing countries have more limited fiscal resources to provide technological subsidies. The kind of assessment that would be involved is similar to the assessment of agricultural subsidies of WTO members that are already subject to some – but not sufficient and quite inequitable – international disciplines.

Standards and eco-labeling can lead to trade distortions, leading to slower growth in developing countries. In the WTO, disciplines on treating like products in the same way exist and the assessment methodology could use those approaches in measuring the impact of discriminatory trade practices. In the WTO, there have been controversies whether products can be differentiated according to how they are produced (process and production methods). In the setting of internationally agreed standards, developing country governments and experts tend to be poorly represented in the committees designing them.

Carbon taxes and emission cap policies are meant to restrict the production and use of products that increase greenhouse atmospheric concentration. In the case of carbon taxes, particularly, this response measure affords higher fiscal revenues to the state, which can be used to reduce other taxes and applied to environmental, developmental, and social objectives. An assessment of these measures must include their impact on the export earnings of countries dependent on tourism, commodity and agricultural exports and the resulting constriction of their ability to transform and diversify their economies through investment. Carbon taxes, if applied in developing countries, could make the cost of access to modern energy sources prohibitive, increase poverty incidence and the use of non-priced resources by the poor.

A variety of response measures are already being implemented by developed countries. But in national reports, apart from the description of response measures, there is no assessment and analysis of the impact on developing countries. Thus, we do not know how much of the global mitigation burden developing countries are bearing involuntarily at the present time. This is the cost of delays in the application of assessment methodologies.



Future response measures with multilateral impacts should be assessed during design and before deployment. An assessment checklist can be developed in the following way:

- What, if any, and how much, is the net global climate change impact of the measure? (science basis)
- What are and how much are the adjustment costs that affected countries have to bear on the implementation of a response measure?
- What are the trade impacts of the measure? Are they consistent with multilateral rules? How much is the impact of the measure on net foreign exchange earnings of and industrial development policies in developing countries?
- What is the impact of the measure on the fiscal and investment resources of the developing countries? What and how much are the impacts of reduced resources on investment and on the growth of potential national output? What are and how much are the impacts on reduced resources on social development?
- What is the impact of the measure on developing country access to clean technology?

In this context, it is important that the UNFCCC regime with respect to response measures be considered in relation to its interlinkages with other relevant multilateral regimes. The most prominent of these other regimes that will have a great impact on developing countries with respect to the implementation of response measures and what the economic and social consequences on developing countries of such response measures would be is the multilateral trade regime.

III. PROMOTING SUSTAINABLE DEVELOPMENT BY ADDRESSING THE IMPACTS OF RESPONSE MEASURES: TRADE AND OTHER RELATED POLICIES AND THEIR IMPLICATIONS

A. Two Parallel but Interacting Universes: The Trade and the Climate Change Regimes

While the multilateral trade regime interacts with many other multilateral environmental legal regimes – e.g. on biodiversity, ozone depleting substances, hazardous and toxic wastes – among the interactions that are likely to come to the fore in multilateral policy-making is the interaction between the trade (i.e. the WTO) and climate change (i.e. the UN Framework Convention on Climate Change - UNFCCC) legal regimes.

Issues that link trade, environment and climate change policy reflect in many ways the policy considerations that underlie how developing countries⁷ view these two policy regimes. Negotiations are taking place among countries which are Parties to the United Nations Framework Convention on Climate Change (UNFCCC) under the Ad Hoc Working Group on the Paris Agreement (APA)/ the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA).⁸ At the World Trade Organization (WTO), countries that are Members of the WTO have been engaged in trade negotiations that commenced in December 2001 under the WTO Doha Ministerial Declaration and which places the needs and interests of developing countries at the heart of the negotiations.⁹ Though the WTO has had a number of meetings on trade and climate change, the subject is not yet official on the negotiations mandate.¹⁰

At the very basic level, the trade regime's overall purpose is the expansion of international trade, which often requires the cutting back on government interventions that inhibit trade expansion. On the other hand, the climate regime's basic purpose is the "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system," and this will often

⁷ For the purposes of this paper, the term "developing countries" may be used interchangeably with "South" or "Southern countries", and should be taken to mean as countries that are members of the Group of 77 and China in the context of the UNFCCC and countries which consider themselves to be developing countries in the context of the WTO.

⁸ The work of the APA will be transmitted by the Conference of the Parties (COP) to the CMA1 (Decision 1/CP.21, paras. 8–11, FCCC/CP/2015/10/Add.1). The decision in para. 34 of 1/CP.21: The Subsidiary Bodies shall recommend, for consideration and adoption by CMA1, the modalities, work programme and functions of the forum on the impact of the implementation of response measures to address the effects of the implementation of response measures under the Agreement by enhancing cooperation amongst Parties on understanding the impacts of mitigation actions under the Agreement and the exchange of information, experiences, and best practices amongst Parties to raise their resilience to these impacts. Elsewhere in the UNFCCC, the COP will make decisions with regard to pre-2020 issues related to response measures as indicated in relevant Subsidiary Bodies' conclusions forwarded to the COP vis à vis these items.

⁹ WTO, Doha Ministerial Declaration, WT/MIN(01)/DEC/1, 20 November 2001.

¹⁰ Please see, for example, https://www.wto.org/english/news_e/archive_e/clin_arc_e.htm and https://www.wto.org/english/tratop_e/envir_e/climate_challenge_e.htm.

require greater government regulation over private behavior and actions. It is important to stress, because it is an often forgotten reality, that government is not the only party that must decide between intervening and not intervening. Often, the private sector by itself, through non-competitive collusion is the obstacle to faster expansion of trade, for example; in such a case government must have the power to eliminate such practices.

The underlying framework agreed in Rio 1992 is that sustainable development is the approach for both areas and equity is the underlying principle to reconcile the two worlds when trade and environmental actions are in conflict. The 27 Rio Principles wrestled with the important reality that the trade and the climate change regimes are two parallel worlds, whose common areas will often lead to conflicting policies. In fact, the provisions of the United Nations Framework Convention on Climate Change (UNFCCC) illustrate very well the ways in which such conflicts can be resolved, even though it must be stated that the fulfillment of the obligations agreed in 1992 by the developed countries have not been commensurate with the challenge in the case of emission reduction and insignificant in the case of providing finance and technology transfer.

It can be said that trade and climate change (as a proxy for other environmental concerns) are, at a fundamental level, linked because addressing these and the issues that they raise are, essentially, policy questions that involve the fundamental economic policy framework of each individual country.

Global trade, as shaped by both the international rules and disciplines under the WTO, and the structure of the global trade market are important factors that can influence a developing country's economic development prospects. Trade policy therefore is an important element in any developing country's arsenal of policy tools to use in advancing its development objectives. At the same time, climate change/climate variability and its impacts are increasingly shaping the environment under which economic activity takes place in developing countries. Hence, climate change policy (including those shaped pursuant to the UNFCCC) with respect to climate adaptation and mitigation becomes an important element in a developing country's development policy toolbox. There are, of course, other policies (such as employment, social protection, finance, population, environmental and natural resource management, etc.) that would also be important in such a toolbox.

When one speaks, therefore, about trade and climate change linkages from the perspective of developing countries, the jumping off point is how both policy regimes and their linkages with each other affect the sustainable development¹¹ prospects of developing countries. Developing countries have tended to view many global issues – especially trade and climate issues – from a “development lens.”

This “development lens” reflects the fact that for developing countries, by and large, achieving such sustainable development remains the primary and overriding national policy objective to which all other policymaking should contribute. This is also the reason why, in both the trade and climate change negotiations, developing countries have been insisting on ensuring that any agreed outcomes be balanced and reflect the essential development concerns

¹¹ For the purposes of this paper, sustainable development means the achievement of improved living standards and income levels for the population with greater levels and types of diversified agro-industrial economic activity under conditions that generate full employment opportunities and are socially and intergenerationally equitable, ecologically sustainable and adapted to climate change impacts.

and interests of developing countries – not only in order to reflect the treaty foundations of these processes but also to ensure that there is no intended or unintended foreclosure of the sustainable development prospects of developing countries as a result of such negotiations.

The underlying treaty regime and negotiating mandates for both the current trade and climate change negotiations provide ample basis for such an approach by developing countries. In fact, sustainable development is the foundation for effective societal responses to trade and climate change challenges.

In the UNFCCC, the concept of sustainable development as the foundation for global action on climate change can be seen in, *inter alia*:

- Art. 3.4 which recognizes the right to promote sustainable development;
- Art. 4.7 which provides for the balance of obligations (see Figure 2) among UNFCCC Parties and which requires that in implementing UNFCCC obligations, the Parties must “take fully into account that economic and social development and poverty eradication are the first and overriding priorities of the developing country Parties.” This balance of obligations in Art. 4.7 basically states that the extent of implementation by developing countries of their UNFCCC commitments depends on the extent to which developed countries implement their commitments to provide finance¹² and technology¹³ to developing countries. Developed countries are also obliged to undertake binding reductions in their green house gas (GHG) emissions under Art. 4.2(a) and (b);
- Art. 2 on the objective of the UNFCCC requires that global climate actions to stabilize atmospheric concentrations of GHGs (such as the mitigation actions of developed countries under Art. 4.2(a) and (b) and the Kyoto Protocol¹⁴) must be done within such timeframes as would allow ecosystems to adapt, secure food supplies, and allow for sustainable development to take place.

In the same vein, the WTO Agreement in its preamble also explicitly states that sustainable development is an institutional objective. This preambular statement, according to the WTO Appellate Body in the US-Shrimp Turtle case, is supposed to give “colour, context and shading to the rights and obligations of Members under the WTO Agreement, generally, and under the GATT 1994, in particular.”¹⁵

The relationship between trade and climate change measures in the climate regime is governed by, among others, Art. 3.5 of the UNFCCC which states that “measures taken to combat climate change, including unilateral ones, should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade.” This language, in fact, reflects Art. XX of the General Agreement on Tariffs and Trade (GATT), which allows WTO Members to adopt measures that may be inconsistent with their WTO obligations if such measures are, *inter alia*, “necessary to protect human, animal or plant life or health” or

¹² Embodied in UNFCCC, art. 4.3, 4.4 and 4.5.

¹³ UNFCCC, art. 4.5.

¹⁴ Due to the application of the principle of common but differentiated responsibility, developing countries are not subject to binding emission reductions, although they do have some commitments in common with developed countries under Art. 4.1 of the UNFCCC.

¹⁵ See WTO Appellate Body, Report of the Appellate Body: United States – Import Prohibition of Certain Shrimp and Shrimp Products, WT/DS58/AB/R, 12 October 1998, para. 155.

are related “to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption”, provided that these measures “are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade.”¹⁶

Policy approaches to trade and climate change linkage are therefore premised under both the UNFCCC and WTO on a clear recognition of the right to sustainable development and the need to ensure that such right is promoted and effectively achieved. Maintaining the focus on promoting and achieving the right to development, especially development that is sustainable, is therefore essential for meeting the objectives of both the climate regime under the UNFCCC and the trade regime under the WTO.

In doing so, trade measures (including unilateral ones) that may be imposed to combat climate change must not, among other things, constitute arbitrary or unjustifiable discrimination or be a disguised restriction on the international trade of developing countries. In addition, such trade measures must be undertaken taking into account the development needs and priorities of developing countries – i.e. they must be designed and implemented in such a way that they support rather than hamper the achievement of developing countries’ development objectives.

From the perspective of developing countries, trade measures¹⁷ are not necessarily the best nor the most appropriate means for addressing climate change or other environmental concerns. Rather, there is great concern that the use of trade measures by developed countries ostensibly to address climate change or other environmental concerns may in fact have the effect of restricting the market access of developing country products in developed countries and of enhancing the competitive edge that developed countries have in global trade.

Addressing the challenges of development and climate change requires an integrated approach. Both the trade and climate regimes have a role to play. In each case, a development perspective must guide discussions to ensure an outcome that advances the needs and aspirations of developing countries and their peoples. The shift to a low-carbon economy requires a range of measures to support developing countries, and sufficient development policy space to allow those countries to tailor approaches to their national contexts. In particular, developed countries must fulfill their existing international obligations in both the trade and climate regimes, and ensure that their development-related rhetoric is matched by the reality of their actions.

Dissatisfaction with the lack of progress in both worlds is fueling an increasing number of proposals to deal with the intersection in a specific way. For example, Saner (2013, p. 75) suggests that:

There is an urgent call for re-considering TRIMS to foster green investment and to allow local content requirements, to ensure greening of the global value

¹⁶ See WTO, 1994 GATT, art. XX(b) and (g).

¹⁷ These trade measures include, but are not limited to, tariff liberalization for certain goods, standard setting, border adjustment measures (such as the imposition of carbon content-based duties on imports or tax rebates on exports), and sectoral approaches (e.g. establishing emissions caps for specific industrial sectors using sector-based rules or standards).

chains. Likewise, a green approach to TRIPS can provide a framework to support technology transfer into LI-DCs (“low income developing countries”) and LDCs in order to promote the development of low carbon production to fight climate warming. And finally, a green plurilateral agreement could help narrow development gaps between developed and developing countries in the interest of safeguarding sustainability and arresting of climate warming.

Making a call to, in effect, weaken the Agreement on Trade-Related Investment Measures (TRIMS) and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) through a “green plurilateral agreement” highlights their inhibiting impact on climate change action. However, the proposed solution is not the ‘comprehensive’ one as Saner (2013) characterizes it.

Our analysis suggests that the explanation behind the often-lamented lack of progress in the WTO Doha round of negotiations comes from the imbalanced nature of the existing trade regime and the imbalanced set of proposals under negotiation – including in agriculture, a sector with multiple environmental and developmental dimensions. Developing countries agreed to participate in the Doha negotiations because of the promise held out by developed countries to right some of the imbalances in obligations between developed and developing countries that emerged from the Uruguay Round. Two of the most important imbalances are the TRIPS and TRIMS obligations, which severely inhibit developing countries from upgrading their technology and harnessing private investment to their development objectives, not only in the climate change sector. There have been numerous arguments that “trade-related” obligations should not even be in the WTO (Bhagwati, 2005). These “trade-related” restrictions will slow down if not prevent the adaptation of green technology or make it prohibitively expensive to middle-income countries (not just least developed countries (LDCs) and low-income developing countries (LIDCs)), and create conflicts with the **urgency** in which the proposal is made. Removing internationally-imposed restrictions on development efforts by developing countries is as urgent as global climate change action.

In the global trade regime, the environmental exception is found in GATT Article XX. This carefully specified exception provides, that subject to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail or a disguised restriction on international trade, nothing in the GATT agreement shall be construed to prevent the adoption or enforcement by any party of various listed measures¹⁸. Two clauses cite measures linked to the environment: Clause (b) cites measures “necessary to protect human, animal or plant life or health” and Clause (g) cites measures “relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption.”

If undertaken in a manner that meets certain conditions in the Article and in line with what is interpreted by the Appellate Body, the exception in Article XX allows members to violate basic GATT rules such as the non-discrimination principles and the prohibition of quantitative restrictions. As it is an exception clause, Article XX comes into play only once a measure is found to be inconsistent with GATT rules.

¹⁸ The analysis in this section draws on Khor (2010), pp. 7-11.

The Article XX exception provisions for the environment have become an important part of the currently intense discussions on whether trade measures (and in particular border adjustment measures) linked to climate objectives are compatible with WTO rules. The argument by several researchers and groups is that even if the measures are found incompatible with Articles I or III of GATT on non-discrimination or Article XI on prohibition of quantitative restrictions, they could be compatible with Article XX: (b) or (g).

In this regard, an important case is the US-Shrimp dispute, in which the Appellate Body found that the United States was justified in discriminating between products on the basis of how these are produced, on the basis of the environment exception in Article XX. The case was not in the context of GATT Articles I or III on non-discrimination, but Article XI which prohibits bans and other quantitative restrictions placed on imports. The case involved the action of the US to impose an import ban on shrimp harvested by methods (involving fishing nets and trawl vessels) that may incidentally result in the killing of sea turtles. Exporters were required to show that they use turtle exclusion devices or TEDs or similar equipment, in order to avoid the ban. The Appellate Body found that the US prohibition on shrimps originating from countries that were not certified as using the TED was inconsistent with Article XI. However it also viewed the United States' measure as directly connected to the policy of conservation of sea turtles. The measure was thus considered to be *provisionally* justified under Article XX(g).

The Article XX exception does not provide an automatic permission for WTO Members to undertake unilateral environment-related trade measures. It allows such measures only within the context of its preamble, and the framing of the two environment-related provisions.

The “chapeau” of Article XX states: “Measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade.”

Thus the trade measure in its design and application must not be a means of arbitrary and unjustifiable discrimination or a disguised restriction on international trade. According to Kommerskollegium (2009), Article XX cannot be invoked to justify a measure to offset competitive disadvantages for domestic industry as Article XX does not cater for economic arguments. “Current discussions, however, emphasise the competitiveness loss if carbon measures are applied only in countries like the EU and the US, though combining it with environmental reasons such as carbon leakage would result in increasing greenhouse gas emissions globally. In order to justify a measure under Article XX, the environmental argument needs to be made” (Kommerskollegium, 2009, p. 13).

Article XX(g) states: “relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption.” In the context of climate change, the proponent of a trade measure has to show that the planet's atmosphere is an “exhaustible natural resource”, that the import restrictions relate to the conservation of the planet's atmosphere and the restrictions are made effective in conjunction with restrictions on domestic production and consumption.

Article XX(b) refers to the exception for measures that are “necessary to protect human, animal or plant life or health.” According to Kommerskollegium (2009), the challenge here is to show that the measure is “necessary.” This is seen as more difficult to meet than the requirement of “relating to” in Article XX(g), and thus countries may be more likely to resort

to Article XX(g). Decisions by the Appellate Body, including the Brazil-EU retreaded tyres case, have developed guidelines to determine “necessity.” These guidelines include: (1) how trade restrictive is the challenged measure?; (2) what is the value of the objective that the measure is designed to protect?; and (3) what contribution does the measure make to the stated objective? (Kommerskollegium, 2009, p. 14).

According to Kommerskollegium (2009, pp. 15-16), the WTO's Appellate Body has developed criteria in the previous environmental disputes and is likely to refer to at least three elements in future disputes: (1) Does climate legislation take account of local conditions in foreign countries or does it essentially require that foreign countries have to adopt their own policies?; (2) Before imposing the unilateral carbon legislation, did the imposing country engage in “serious, across-the-board negotiations with the objective of concluding bilateral or multilateral agreements” to address climate change?; and (3) Does the implementation and administration of climate legislation respect “basic fairness and due process”?

Kommerskollegium (2009, p. 16) concludes that to justify a measure under Article XX, the environmental argument would be decisive and the WTO is sensitive to uncovering measures that are allegedly for environmental reasons but in fact serve other interests such as protection of domestic producers.

Stilwell (2009) suggests that Article XX has been interpreted by the Appellate Body to permit measures relating to the conservation of exhaustible natural resources that are not arbitrary and that take into account the conditions of exporting countries. In applying any such provisions, it seems likely, based on previous practice that a WTO adjudicatory body could take into consideration a range of factors including:

- Whether the implementing country had made serious, good faith, across-the-board efforts to reach a negotiated solution with exporting countries in order to resolve issues relating to international competitiveness and/or related environmental issues before imposing unilateral measures (including, potentially, their good faith participation in relevant multilateral negotiations).
- The extent to which the measures reflect and take into account the different conditions which may occur in the territories of those other countries, and the comparability of efforts to work with those countries.
- The transparency and predictability of the process, the availability of review of decisions, the provision of formal, reasoned decisions in writing and other factors associated with due process.
- The relevant provisions of related international agreements – for example, the Climate Convention and Kyoto Protocol’s provisions calling on developed countries to take a lead in addressing climate change, provide supportive measures such as technology transfer and financial assistance, and explicitly call for efforts to minimize adverse effects on international trade and the economic prospects of developing countries.

In the WTO’s Committee on Trade and Environment (CTE) in 1996, the issues of environmental exception were discussed under the item of the relation between multilateral environmental agreements (MEAs) and the WTO. This discussion is significant in throwing light on the current and future discussions on this issue. There were several positions, as described by Shahin (1997). Firstly, the US argued that any trade measures (trade sanctions

and restrictions, defying WTO rules if necessary) are justified and permissible to protect the environment that lie outside the country's jurisdiction. The EU wanted to amend the WTO rules to ensure there was no conflict between the trading regime and the MEAs. Both the US and EU wanted recourse to trade measures whose use in future should not be prejudiced. On the other hand developing countries wanted to ensure that recourse to trade measures should be part of an integral policy package and conditional on trade being the root cause of environmental degradation, while consistency of the measures with WTO rules should be fully respected. These differences resulted in a delicate balance between the developing countries' position that cooperation provisions of financial and technological transfers and capacity building are indispensable elements of a policy package within the MEAs, and the "possible" use of trade measures. Eventually the CTE in its report agreed that trade measures (provided they are based on the agreed-upon provisions) "may" be needed in certain cases in the future (Shahin, 1997, p. 6).

On the issue of the scope of trade measures on environmental grounds, the US had in the early days of the WTO stood for unilateralism. In November 1994, at an environment sub-committee of the preparatory committee for the WTO, the US had argued that unilateral trade measures may be necessary for pursuing environmental policies. Several delegations criticized the US stand, stating that any unilateral trade restrictions would be contrary to the WTO's rights and obligations, and would also not contribute to environment protection but harm it (Raghavan, 1994b). In the CTE in 1996, the US pushed for language for continuing to use trade measures in the MEAs. Several other countries supported accommodating legitimate environmental concerns in the WTO but were against the use of the environment as a pretext for disguised protectionism or against allowing the use of extra-jurisdictional application of environmental laws. They wanted criteria that the trade measures are necessary and effective and non-discriminatory, but the US was opposed to such criteria. Many developing countries felt that GATT Articles III and XX, together with the Technical Barriers to Trade (TBT) and Sanitary and Phytosanitary (SPS) Agreements, were sufficient to accommodate legitimate environmental measures and that unilateral action that went beyond what was permissible under GATT Article XX should be condemned. While the developing countries proposed language that GATT Article XX does not permit a member to impose unilateral trade restrictions that are inconsistent with WTO obligations, this was also opposed by the US and the final text in the CTE report was weak, only restating the commitment to Principle 12 of the Rio Declaration.

This review of the early discussions in the WTO on the environment exception clause in GATT and the role and dangers of unilateral action (using trade measures for environmental purposes) is significant as these have influenced the understanding of the issues in the WTO in its initial years and up to the present. These early discussions also throw light on the present and future discussions on these issues in the context of climate change.

B. Green Protectionism: Emerging Practice, Policy Issues and Challenges for Developing Countries

Trade policies towards goods and services that have an environmental impact (or can be justified to have an environmental impact) have been the subject of unilateral actions and trade disputes submitted to the WTO. A major debate inside and outside the WTO on the possible role of trade-related environmental measures and in particular comes from the

possible use of the concept of “processes and production methods (PPMs)” (Khor, 2010). The idea of PPMs came from some countries and some non-governmental organisations (NGOs) to provide the means for distinguishing between products by the manner in which the products are made and the environmental effects (for example, the volume of pollution) of their production.

The WTO’s non-discrimination principle states that a member shall not discriminate between “like products” from different trading partners, providing them equally with most favoured nation status (General Agreement on Tariffs and Trade (GATT) Article I); and between its own and like foreign products, thus giving them national treatment (GATT Article III) (Khor, 2010). According to the national treatment principle, imported products “shall not be subject, directly or indirectly, to internal taxes or other internal charges of any kind in excess of those applied, directly or indirectly, to like domestic products” (GATT Article III:2). Thus the amount or rate of any taxes or charges on imports cannot be more than what is charged on “like” local products.

This raises the issue of what is a “like product” and the related issue of PPMs. A central point in the debate is whether the way in which a product is produced (i.e. non-product related processes and production methods) can be used as the basis of different treatment, for example to be subjected to an environment-related trade measure. Many developing countries are of the view that if two products are “like” because their physical characteristics are similar, they should be treated in a similar way, and that differences in the production processes or methods and the manner in which the production takes place (including the environmental aspects) would not make these products “unlike.” Thus, it would be against the GATT rules to take a trade measure (such as an extra import duty) on a foreign-made product on the grounds that the production method is less environmentally sound.

The WTO secretariat (WTO, 2008), in a note on WTO rules and the environment in its website, seems to take the view that different methods used in production do not per se make two products “unlike.” According to this explanatory note: “An important question in relation to environmental measures is whether products may be treated differently because of the way in which they have been produced even if the production method used does not leave a trace in the final product, i.e. even if the physical characteristics of the final product remain identical (referred to as non-product related processes and production methods). When comparing two products, different processes or production methods (PPMs) used in the manufacture of such products do not per se render these products “unlike”.”

The same WTO website note also remarks that the determination of the likeness of two types of a product (it provides an example of wood products from a sustainably grown forest and from a forest whose production method is unknown) may be particularly “challenging”. It cites the conclusion of the Appellate Body (in the European Communities (EC) - Asbestos case) that the analysis of likeness between two products should be carried out on a case-by-case basis.

According to the WTO Secretariat, in WTO case law, four criteria have been used in determining whether products are “like”:

- (i) the physical properties of the products;
- (ii) the extent to which the products are capable of serving the same or similar end - uses;

- (iii) the extent to which consumers perceive and treat the products as alternative means of performing particular functions in order to satisfy a particular want or demand; and
- (iv) the international classification of the products for tariff purposes.

In 1994, several NGOs published studies and engaged in dialogue with governments in the Organisation for Economic Co-operation and Development (OECD), proposing to amend GATT rules to enable WTO Members to use trade-related environmental measures (TREM). A World Wildlife Fund (WWF) study cited cases where environmental protection measures could affect competitiveness of national business enterprises and thus would need TREMs to enable import restrictions based on PPMs, citing as an example the European Union's difficulties in imposing a carbon tax because of concerns over competitiveness of European industry being affected. It advocated bilateral or multilaterally designed incentive-based TREMs to promote internalizing the environmental costs of traded goods and setting a "fair price" for a traded product so that an exporting country does not have to degrade its environment to trade profitably. It advocated qualification of the GATT's most-favoured nation and national treatment principles, wherever they conflict with sustainable development objectives, to enable discrimination in trade and traded products (of domestic and foreign origin) on environmental grounds (Raghavan, 1994).

The Third World Network (TWN), in response to the moves of some environmental groups and some developed country governments, published a paper arguing that the proposals to legitimize TREMs would add another burden of adjustment to the already-burdened South, and "could change the non-discrimination principles of the multilateral trading system and change the basic rules of the game and the conditions of competition under the guise of protecting the environment...In practice it will add additional burdens on the South (TWN, 1994). The paper pointed out that the three related concepts of PPMs, eco-dumping and internalization of costs, in the WTO context, would imply that if a country has lower environmental standards in an industry, the cost of the product is not internalized and the prices are too low and that country is practicing eco-dumping. Thus the importing country has the right to impose trade penalties such as countervailing duties. The paper described several examples of how these concepts would be difficult or impossible to implement and how they would unfairly be biased against the developing countries. "There is the danger, if not the likelihood, that through particular and narrow definitions of the trade-environment link, the powerful nations will try to shift the economic burden of ecological adjustment to the weaker parties in order to preserve and expand their own unsustainable consumption patterns," argued the paper. It suggested that the initiatives to introduce TREMs and legitimize PPMs in the WTO be abandoned. It proposed instead that any trade measures linked to the environment should be addressed by negotiations for an international treaty and any treaty containing obligations on developing countries must have provisions for technology transfer and financial resources as an integrated contractual obligation (TWN, 1994).

The PPM debate was taken up within the WTO in the Committee on Trade and Environment (CTE) in the run-up to the WTO's first Ministerial Conference in Singapore in December 1996. The PPM issue was especially prominent in the discussion under the item environment measures with trade effects, especially eco-labeling (Shahin, 1997, pp. 18-28). The discussion focused on the possible inclusion of PPMs in the rules of the Agreement on Technical Barriers to Trade (TBT), which contains disciplines on technical regulations and standards which may not be more restrictive than necessary to fulfill a legitimate objective.

The regulations and standards should also respect the non-discrimination principle and be based on international standards.

In the 1996 discussion, Canada proposed that the coverage and applicability of the TBT Agreement be clearly extended to cover measures based on non-product related PPMs and that the agreement should cover eco-labeling based on life-cycle analysis and on non-product related PPMs, with a gradual approach to introduce this. In contrast, several developing countries, including Egypt, India and the Association of South East Asian Nations (ASEAN) argued that the TBT Agreement does not cover non-related PPMs. They were of the view that agreeing to such coverage would allow PPMs to enter the WTO through the back door. On the issue of the trade effects of eco-labeling, many developing countries expressed fears about the growing trend of producers or traders resorting to eco-labeling and that eco-labels could have trade effects if combined with disguised protectionism. According to a leading developing-country negotiator, the outcome of the CTE's negotiations, as reflected in the CTE's report to the Singapore Ministerial, showed that the balance had tilted towards the views of the developing countries, which feared the inclusion of PPMs in the WTO and the precedent it could provide for other topics such as the social clause in the WTO (Shahin, 1997, pp. 26-27).

Because of the stand of the developing countries in the early years of the WTO, the attempts by some groups and countries to legitimize non-product related PPMs in the WTO rules did not succeed, and the PPM issue lay dormant for some years. However, with the increasing interest in introducing trade measures linked to climate change issues, the PPM issue has sprung back to prominent life in recent years.

1. Border tariff and tariff-like measures (e.g. tariffs and taxes on the carbon content of imported products; the EU aviation tax)

Environmental protection and climate change have become growing justifications for imposing additional border barriers on imports from developing countries. From the point of view of the trade regime, these actions represent new protectionist options on the part of developed countries. From the point of view of the environment regime, these actions could constitute a de facto extraterritorial application of domestic environmental legislation through their adverse impact on imports from other countries. In the climate change regime, these actions are an attempt to shift the costs of climate action to developing countries, with suggestions in developed countries to impose carbon-based taxes, such as border tax adjustment measures, on products imported from developing countries on the argument that such products are artificially cheaper and hence more competitive than similar products produced by developed countries because developing country producers are able to utilize less costly but higher carbon emitting production processes and methods for such products.¹⁹

¹⁹ For example, in November 2006, then-French Prime Minister Dominique de Villepin suggested that countries that "do not sign up to a post-2012 international treaty on climate change could potentially face extra tariffs on their industrial exports." This suggestion was opposed by the European Commission, citing potential conflicts with WTO rules. See "Global Warming Wars: EU Takes on France's Carbon Tax Plan", *Businessweek*, 18 December 2006. Such suggestions were reiterated by then-French President Jacques Chirac in January 2007 and then by then-French President Nicolas Sarkozy in November 2007. In early 2008, the European Commission discussed proposals that would impose a de facto carbon tax on imports by requiring companies importing goods into the European Union from countries that do not similarly restrict greenhouse gas emissions to first buy EU

In June 2009, the US House of Representatives passed the American Clean Energy and Security Act (also known as the Waxman-Markey bill). It requires the US President to impose a charge on importers of products from developing countries by 2020. Importers will have to buy “allowances” for the emissions in the production of goods they bring into the country. This imposes an extra tax or duty on the developing countries’ exports. The surcharge burden would depend on how much carbon dioxide is emitted during the making of these products. Such surcharges seek to safeguard the competitiveness of US domestic firms vis-à-vis imports because domestic firms’ cost structures will have to incorporate the additional cost of climate policies. Importers of goods from countries that have not undertaken emission reduction cost burdens as stringent as the US in an international agreement will have to purchase “international reserve allowances” (Khor, 2010). This bill has not become US law because the US Senate did not pass the bill. The nature of its provisions exemplifies the kind of protectionism through unilateral action that climate change policies could activate.

Some EU members like France and Italy have continuously been proposing applying border measures on imports (Dhar and Kasturi, 2011). The EU included Border Carbon Adjustment (BCA) elements in its post-2012 climate change and energy package finalized in 2009 (Dhar and Das, 2009). This package included measures intended to strengthen the EU Emissions Trading Scheme (EU ETS) beyond 2012.

Most controversially, in January 2012, the European Union incorporated the aviation section in its Emissions Trading Scheme (ETS). Under the Aviation ETS, aircraft operators must surrender one allowance permit per tonne of carbon-dioxide emitted on a flight to and from (and within) the European Economic Area (covering the EU 28 members and Iceland, Lichtenstein and Norway) (Anuradha, 2012). This applies to all aircraft operations including passenger, cargo and non-commercial flights no matter where the flight originated and the nationality of the operator. This means that airlines would have to meet the benchmark set by the EU on the basis of its average annual emissions in respect of flights to and from the EU.

The original scheme required compliance with the EU standard based on an operator’s emissions from the point of take-off. A flight from New Delhi to London, which flies within the EU only for a few hours, would have to account to the EU for its emissions from New Delhi. The “EU’s rationale in putting in place the system, evidently, is to ensure that its own operators are not at a competitive disadvantage” (Anuradha, 2012, p. 1). In reaction to the resulting international outcry, the EU suspended the implementation of the measure for one year. Subsequently, the EU offered that only the portion of flights over EEA territory would be subject to the emissions trading system²⁰.

emissions permits. See Reuters, “EU considers carbon tariff”, 4 January 2008, at <http://www.reuters.com/article/environmentNews/idUSL0464478420080106?sp=true>.

²⁰ The EU was subject to legal disputes by many foreign airlines on the grounds that its action was counter to the open sky agreement, the Kyoto Protocol and the International Aviation Convention. However, the European Court of Justice ruled in favour of the EU. The EU was then subjected to ‘political offensive’ against the ‘unilateral character of its directive’ which countries such as the US, China, India, Brazil etc. argued went against sovereignty. These and other countries, such as Russia and Japan, also argued in favour of a global market-based mechanism. As a result of the political offensive and threats of retaliation against Airbus etc., the EU suspended the application of ETS to extra EU flights until 2016. See Jean De Ruyt, “The EU reaction to ICAO’s Agreement on Aviation Emissions,” October 31, 2016, <https://www.insideenergyandenvironment.com/2016/10/the-eu-reaction-to-icao-s-agreement-on-aviation-emissions/>.

In 2013, the International Civil Aviation Organization (ICAO) took up the issue. ICAO accepted the principle that a global scheme and standards are needed to address the airline emissions (FT, 2013b). However, on the objections of the US, Brazil, India, and other ICAO members, the ICAO did not recognize the EU ETS application on airline emissions. Moreira Franco, a Brazilian minister of state and former head of the secretariat for civil aviation, framed the objection thus: “Even though Brazil understands that every country or region has the right to develop market measures for the aviation sector within its jurisdiction, the extension of these measures to foreign aviation operators violates the basic principle of international law regarding state sovereignty” (FT, 2013a). The Paris Agreement, though it flags ships and planes in the sections on cutting emissions, does not address the aviation sectors (De Ruyt, 2016). Thus, neither the ICAO nor the International Maritime Organization (IMO) was obligated to set sector-wide emissions targets, which would have been opposed to by some developing countries (De Ruyt, 2016).

However, in October 2016, the ICAO assembly adopted a resolution for a global market-based mechanism for the aviation sector, called the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) which proposed to cap emissions and require offsetting for additional emissions by 2027 (In order to ease political tensions with the EU and others, the agreement will have an initial voluntary phase starting 2021-2026 and a mandatory phase from 2027-2035). As of August 2017, seventy-two countries including the US, and about twenty developing countries, such as China and the Kingdom of Saudi Arabia and Singapore have indicated that they will participate in the voluntary phase. Russia, India, South Africa, Brazil, Chile and the Philippines have not indicated participation.

CORSIA integrated exemptions and exclusions based on the principle of common but differentiated responsibilities (CBDR) during the mandatory phase of its implementation (2027-2035). There are exemptions for countries with a small aviation sector or highly dependent on international aviation. This will cover small island developing states (SIDs), LDCs and Land-locked developing countries. There are also exclusions for small airline carriers (emitting less than 10,000 metric tonnes of CO₂ from international aviation per year) and flights for humanitarian, medical or fire-fighting purposes.

The EU has accepted CORSIA and EU member states will participate in the voluntary phase. The EU Commission is undertaking assessment of the EU ETS and aviation in light of this development and the continuing evolution of the rules governing CORSIA. In the interim, the 2014 revision (2013-2016) of the state of play of the EU directive governing aviation in the EU-ETS will remain in place until a new decision covering the post 2020 period is made by the EU Parliament and the EU Council.

A third recent case concerned the threat by the EU trade directorate to impose import surcharges on solar panels from China starting in June 2013, a market worth 21 billion Euros. In the wake of an anti-dumping investigation, the EU imposed tariffs of 11.8 per cent on solar panels imported from China. These tariffs were scheduled to rise to 47.6 per cent in early July of that year. There was the threat of a trade war, with the Chinese initiating anti-dumping investigations on EU exports of polysilicon and tariff surcharges on European wine. The issue was defused with a so-called OMA (orderly marketing arrangement) which will permit Chinese companies sell up to 7GW of solar panel capacity into the EU a year at an agreed floor price which will protect the profits of European competitors. This resolution reconciled the interests of both the EU and China parties, but does not facilitate the faster

propagation of renewable energy both in the EU and globally. Previous experience with such arrangements in semiconductors and automobiles, sometimes called voluntary export restraints, forced users to pay higher prices while slowing down innovation and widespread use of needed technology.

In the EU, Brazilian exports of biofuels face significant barriers. The EU regulatory framework for biofuels comes from two main Directives adopted in 2008:

- The Directive²¹ on the promotion of the use of energy from renewable sources requires **10 per cent of the energy used in transport in the EU to come from renewables by 2020**, and most of this 10 per cent is expected to come from liquid biofuels. This regulation replaced Directive EC 2003/30, which established a non-binding target of 5.75 per cent for biofuels consumption in 2010; and
- The Fuel Quality Directive²², which requires **greenhouse gas emissions from transport fuels be reduced by 6 per cent by 2020**.

Furthermore, the use of biofuels to reach the mandatory targets from both Directives is conditioned on **compliance with three sustainability criteria**:

1. A reduction of at least 35 per cent of greenhouse gas emissions until 2017 when the threshold increases to 50 per cent (60 per cent for new plants).
2. No production in areas with high carbon stocks (like forests and wetlands) or in areas of high biodiversity (such as forests, wetlands, preserved areas, and highly biodiverse grasslands).
3. Reporting obligation on practices to protect soil, air and water quality, and on the ratification by biofuels exporting countries of some International Labour Organization and environmental conventions.

In early 2012, the EU enacted a new tax rule under which ethanol-gasoline blends that used to be classified as a chemical product with a lower tax rate would now be classified as a fuel with a tariff rate of €102/cu.m. ²³ The EU currently imposes a **€0.19/liter tariff** on undenaturated ethanol, while denaturated ethanol imports are imposed a tariff of €0.10/liter.²⁴ New non-tariff barriers, such as more sustainability criteria, are emerging and their potential to limit trade in biofuels is significant. **The impact of the rule has been to effectively limit the amount of Brazilian exports of ethanol to the EU.**

In an anti-dumping investigation undertaken by the EU in late 2011 to December 2012 in relation to US ethanol exports to the EU (but which also looked into Brazilian exports of ethanol to the EU), the investigators concluded that “although prices for Brazilian ethanol were well below the prices of EU producers, imports from this country decreased by 81 percent and in market share by 25 percent in the time period in question. Brazilian ethanol did contribute to the injury of the EU ethanol industry, it was concluded.

²¹ See <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0016:0062:en:PDF>.

²² See <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0088:0113:EN:PDF>.

²³ As reported in oilspot2.dtnenergy.com.

²⁴ See <http://sugarcane.org/global-policies/policies-in-the-european-union/policy-overview-ethanol-in-europe>.

However, it cannot be considered a major cause due to the significant decrease in volume of Brazilian ethanol imports.”^{25 26}

As a result of that investigation, the EU imposed in February 2013 an anti-dumping duty of €62.3/tonne of US ethanol imports into the EU (but not on Brazilian imports).²⁷

The impact of the EU’s directives and tax rule with respect to imported ethanol is expected to spur the revival of the EU ethanol industry. The EU biofuels directives and the EU ethanol-gasoline tax rule are prime examples of how the EU has used environmental considerations (in this case, greenhouse gas emission reductions) as the basis for the establishment of tariff and non-tariff barriers against imports that, in turn, had the impact of protecting domestic industries and promoting the expansion of shares in the domestic market.

However, it has been suggested that addressing carbon competitiveness concerns using a system of border adjustment measures may not necessarily be effective, especially in light of the “administrative requirements, costs and technical practicality” of border adjustments that serve as the “greatest barriers to their implementation.”²⁸ There are also legal, effectiveness and administrative feasibility aspects that need to be addressed with respect to border adjustment measures.²⁹ That is, imposing such measures might not even be effective in terms of meeting any objective they might have of getting other countries to adopt more stringent carbon emission regulations – especially if the trade flows of the countries concerned with respect to the products covered by the measures are not large or significant to the exporting country.³⁰

The World Bank has also modeled the competitiveness effect of such measures when imposed by importing countries and concluded that these would have adverse effects on the competitiveness of exporting countries – i.e. there would be “marginally significant” decreases in trade.³¹ Applied with respect to trade between an importing developed country and an exporting developing country, this conclusion would therefore imply that carbon taxes imposed by a developed country on imported goods reduces to some extent the export opportunities of the exporting developing country with respect to such goods.

The potential of having their exports be discriminated against and suffer adversely as a result of such subsidies and border measures in the name of climate change has raised deep concerns among developing countries. For many of them, the ability to access developed country markets for their exported goods and services remains a major component in their development strategy, and hence carbon-based border adjustment measures are likely to be

²⁵See <http://ethanolproducer.com/articles/9617/eu-tariff-on-us-ethanol-officially-in-place-for-five-years>.

²⁶ Brazilian ethanol exports to the EU in 2012 amounted to 150 million liters, mostly to Spain and the Netherlands. See <http://www.reuters.com/article/2013/04/18/biofuels-eu-idUSL5N0D51EC20130418>.

²⁷ See <http://www.reuters.com/article/2013/04/18/biofuels-eu-idUSL5N0D51EC20130418>.

²⁸ Julia Reinaud, “Trade, Competitiveness and Carbon Leakage: Challenges and Opportunities,” Chatham House Energy, Environment and Development Programme Paper 09/01 (January 2009), pp. 14-16.

²⁹ Aaron Cosbey, Border Carbon Adjustment: Background Paper to the June 2008 Copenhagen International Trade and Climate Change Seminar, August 2008, pp. 3-4.

³⁰ This was alluded to by Cosbey, *supra*, pp. 2-3, 5-6.

³¹ World Bank, *International Trade and Climate Change: Economic, Legal, and Institutional Perspectives* (2008), pp. 27-29, and appendix 4.

seen as disguised protectionist measures that would arguably be contrary to UNFCCC Art. 3.5. Hence, limitations on such access for their exports will have adverse implications on the extent to which developing countries will be able support development, not least in terms of being able to generate trade-derived capital surpluses to invest domestically in building up improved development-oriented physical, human and financial infrastructures.

2. Subsidies (e.g. on developed country domestic agriculture)

The biggest imbalance in agricultural trade policies come from subsidies by developed countries in the sector. From the point of view of the trade regime, the regime governing agricultural subsidies is the locus of inequity between developed and developing countries and an obstacle to development. The regime permits continuing, if not increasing subsidies to agriculture in developed countries, while severely restricting the space for developing countries to provide support for agriculture.

Agriculture is the sector where developing countries could compete with developed countries, provide livelihood for rural families, and reduce poverty but multilateral rules severely curb these possibilities. From the point of view of the climate regime, subsidies in the agricultural sector in developed countries protect inefficient, chemical-dependent, environmentally harmful production methods, not to mention the environmental impact of extended modes of transportation of such subsidized outputs to their markets. From both points of view, agricultural subsidies in the developed countries are a harmful form of protectionism applied to an economic sector.

The period after the Uruguay Round and during the Doha talks has seen no reduction in overall domestic supports in the EU and US, and has seen instead significant “box shifting.” The US’ and EU’s domestic supports have simply been shifted from trade distorting categories (especially the Amber box) to the supposedly non-trade distorting category of the Green Box. The US now houses 80 per cent of its domestic supports in the Green Box, and its total subsidy levels have also increased from about USD 60 billion (in 1995) to USD 94 billion (in 2008) (South Centre, 2011, paragraph 32).

The shift to the Green Box does not remove the trade distorting content of subsidies. The use of the colour “Green” for these subsidies speaks more to their being characterized to be less trade-distorting than other policies. Some Green Box subsidies have been found to be trade distorting in a number of WTO dispute cases. Recent studies have also shown that many Green Box supports in fact have trade distorting effects and that a significant proportion of farms in the US and EU would not be viable if the Green Box subsidies are removed.

Based on the notifications available in the WTO Secretariat, the United States’ total domestic support to agriculture increased from US\$ 60.9 billion to US\$ 130.3 billion during the period 1995 to 2010.

In the last few decades, agricultural producers in many developing countries have been put in crisis as a result of OECD countries’ subsidies from artificially cheap agricultural imports which displace small farmers and destroy rural livelihoods. Imports have entered in such large quantities because of the low applied tariff levels most developing countries have adopted due to structural adjustment programs. The result is that many developing countries

have found that their food production capacity have declined, often even steeply. The recent trends in rising global food prices have contributed to crises. Whilst food imports have taken over local markets – sometimes to startling proportions – most developing countries' small farmers cannot meet the stringent food standards of export markets. Nor do they have the resources or infrastructure to expand their exports of agricultural products.

Developed countries are responsible for the main distortions in agriculture and therefore must be the ones to move to address these effectively (South Centre, 2008). To this end, there must be comprehensive solutions in export competition, domestic support and market access, and mechanisms that support the ability of developing countries to enhance food security and rural livelihoods. A strong and vibrant agricultural sector will enable developing countries to develop sustainably, especially in the context of climate change. Among other things, this requires that:

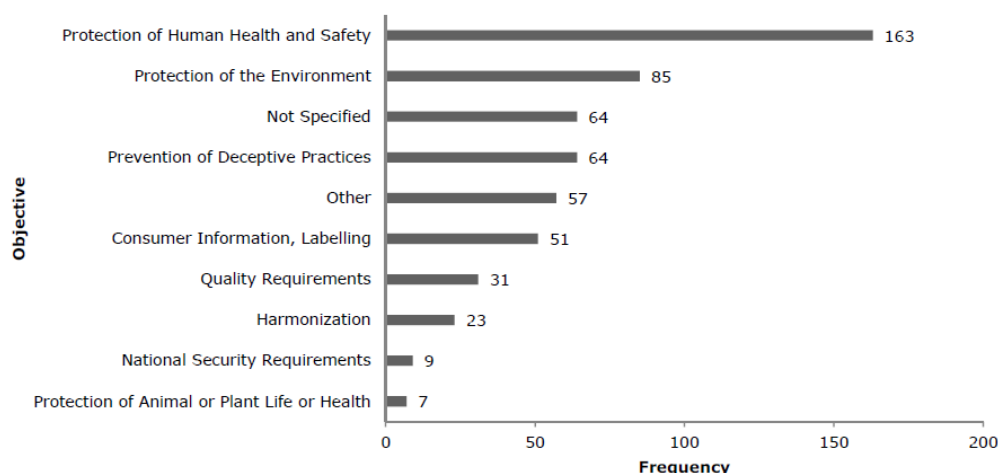
- (i) In domestic support, there should be effective cuts in overall trade-distorting subsidies (OTDS), at the lowest end of the ranges being discussed; credible and effective disciplines to avoid concentration of expenditures, product-shifting and box-shifting of support, with deeper and more expeditious commitments for cotton; the development of disciplines to ensure that green box policies are indeed non- or, at most, minimally trade-distorting and accommodate programmes of interest to developing countries;
- (ii) On market access, the formula for tariff cuts must be consistent with developing country proposals (especially of the G-20) on tiers, cuts, capping and average cuts. Developed countries must commit to meaningful tariff rate quota (TRQ) expansion to effectively compensate for the deviation from the formula cut for sensitive products and to the elimination of the special agricultural safeguard (SSG). Conversion of all agricultural tariffs to simple ad valorem terms is essential to ensure transparency, predictability, and an overall balanced result in market access in the Round. The modalities must also deliver on the mandate for recently acceded members (RAMs), small, vulnerable economies (SVEs), tropical and alternative products, tariff escalation and preference erosion;
- (iii) On export competition, the deadline of 2013 for the elimination of all forms of export subsidies as agreed in Hong Kong should be complied with and cannot be reopened. Strengthened and improved monitoring and surveillance to ensure compliance with new commitments and disciplines is also needed;
- (iv) Special and Differential (S&D) treatment must be made operative and integral to the negotiations in the three agriculture pillars. There must be overall proportionality in tariff reduction commitments. The vital importance to developing countries of special products (SPs) in addressing the food security, rural development and livelihood concerns of developing countries, and of the special safeguard mechanism (SSM) as core development instruments cannot be overstated and must be made integral parts of the modalities and the outcome of negotiations. In addition, sufficient flexibility should also be recognized as being needed with respect to the ability of developing countries to provide subsidies to their own domestic agricultural producers to promote food security, rural development and livelihood.

3. Standard setting (e.g. impacts of TBT and SPS barriers of developed countries on developing country exports)

Rio principle 11 provides guidelines on when environmental standards are legitimate in the pursuit of sustainable development. The use of standards has been a long-standing tool of protectionism in trade, using policies that are called technical barriers to trade (TBT). When applied for protecting domestic producers, TBTs inhibit developing countries to use international trade in the service of their development strategy because TBTs prevent the entry of their exports (and the subsequent upgrading of the quality of these exports) in developed country markets. In relation to the climate change regime, environmental concerns are often used as the justification for TBTs. Such measures would apply to consumption of these goods in national markets, and do not necessarily raise the environmental standard globally.

In the WTO, there is a regular review of TBTs in the Committee on Technical Barriers to Trade (CTBT). Table 1 summarizes the kinds of justifications as reported in a 2013 review (WTO, 2013a). The protection of the environment ranks only second to the protection of human health and safety as the statement of objectives of measures that have been brought up for discussion in the TBT committee. This ranking has been consistent through the previous annual reviews.

Table 1 Stated Objectives of Notified TBT Measures



A comprehensive review of the cases will require an extended treatment. For the present purpose, identifying key issues and general trends would suffice. Recent cases brought up to the Committee reflect the increasing application of TBT as a way to restrict policy space in environmental regulation. For example, the May 2013 minutes included this item (WTO, 2013b):

2.2.1.7 India – Proposed Amendment to 2008 Hazardous Waste Law (IMS ID 373)

2.49. The representative of the United States noted that India's Ministry of the Environment and Forests was considering adopting a "Fifth Amendment" to its 2008 Hazardous Waste Rules, the draft of which was provided selectively to members of the Indian industry for their input. Her delegation was disappointed that the previous four amendments to the Hazardous Waste Rules

were not notified to the TBT Committee. She expressed regret for such an approach which, besides disadvantaging foreign competitors, was unlikely to help India meet the objectives underlying the Hazardous Waste Rules since the Indian market relied on imports for many of the products covered by these Rules, such as electronic and electrical equipment. She hoped the Fifth Amendment would be notified to the TBT Committee, giving stakeholders an opportunity to provide comments.

2.50. The representative of India replied that if India did proceed with an amendment to this law, it would be notified at the draft stage to the WTO.

This item constitutes a warning shot on a prospective change in hazardous waste rules and an indication of a future discussion in the WTO.

In the same May 2013 meeting, questions were raised about the version 2 of France's Grenelle Law under which French listed companies with more than 500 employees are required to report on the environmental and social consequences of their operations. France is updating the law originally enacted in 2001. Under item "2.2.2.1.11 France – Loi No. 2010-788: The National Commitment for the Environment (Grenelle 2 Law) (IMS ID 306)" (WTO, 2013b, p. 23), the representative of India, supported by Argentina, Brazil, and China expressed concerns about:

"the absence of a TBT notification; the lack of clarity on the international standard on which the measure would be based; the scope of the measure; the methodology for computation of the carbon footprint; the lack of a risk assessment analysis; and, the work on consultations carried out with developing countries. He also said that there was still no ISO standard on carbon footprint."

The Grenelle law suggests that an important source of trade conflicts are government policies that try to provide some advantages to their domestic private sector and disadvantage private companies headquartered in other countries.

On the opposite side, new standards in sectors with future growth prospects are being introduced to protect domestic producers from foreign competition. Because biofuels have elicited increasing commercial interest, the EU parliament recently introduced the so-called indirect land-use change (ILUC) emission standards on biofuels. This will affect biofuel exporters to the EU. The direct land-use change emission impact occurs when uncultivated land is applied to growing crops. Direct land-use change occurs when the production of crops for biofuels in a given land pushes the previous cultivation to another location. The movement to a new location of the previous crop activity generates a land-use change which the EU proposes to attribute to the production of the biofuel crop. When crops grown on *existing* arable land are used to make biofuels instead of food, this will likely result in so-called indirect land-use change if it becomes necessary to grow the food elsewhere. Determining the extent of "ILUC" will require elaborate modeling techniques which are subject to measurement errors and uncertainties with regard to how different variables are related to each other. The attempt by the EU to apply this difficult-to-measure concept to determine which biofuel imports are truly emission-reducing will be subject to dispute for being discriminatory.

In the climate change context, the development and use of energy efficiency standards have been suggested as a cost-effective means to promote energy efficiency and change producer and consumer behaviour with respect to the production and use of energy. However, there are great variations in terms of the methodologies, technical bases, testing modalities and procedures, and enforcement processes in defining and implementing such standards. In the context of trade competitiveness, such standards are “more likely to adversely affect industrial competitiveness than carbon taxes”, according to the World Bank.³² They may have the effect of being non-tariff trade barriers. The World Bank has modeled the trade effects of energy efficiency standards and concluded that, whether such standards are imposed by importing countries, exporting countries, or both, there are “strong negative effects on competitiveness” – i.e. trade decreases.³³

Developing countries have generally stressed that the development of product standards (whether for environmental purposes or not) must be consistent with, inter alia, the WTO Agreement on Technical Barriers to Trade which requires, for example, that such standards be based on international standards where they exist.³⁴ Furthermore, they have also stressed that there must be due consideration for the specific national circumstances of developing countries when standards are to be applied. In relation to the UNFCCC and its applicability to climate-relevant standards-setting, it is important to note that the UNFCCC does recognize the need to ensure that such standards-setting does not adversely impact developing countries.³⁵

A corollary issue that many developing countries have also often raised is that in shaping such international standards, developing country participation must be ensured.³⁶ Also, standards must provide for some flexibility to allow developing countries to reflect in such standards their own development context. Absent such effective presence and participation by developing countries in international standards-setting, and the provision of appropriate flexibilities in international standards for developing countries, there is deep concern among developing countries that such standards could be used to block their exports.

4. Carbon footprint labeling and certification schemes (e.g. recent initiatives at the International Organization for Standardization)

Carbon footprint labeling and eco-labeling are a growing arena of policy conflict between developed and developing countries. Rio Principle 8 highlighted the need for States to

³² World Bank, *International Trade and Climate Change: Economic, Legal, and Institutional Perspectives* (2008), p. 11. (hereafter WB Trade and Climate)

³³ Ibid, pp. 27-29, and appendix 4.

³⁴ See e.g. WTO Agreement on Technical Barriers to Trade, art. 2.4.

³⁵ The UNFCCC preamble stresses that “standards applied by some countries may be inappropriate and of unwarranted economic and social cost to other countries, in particular developing countries”. It also states that “responses to climate change should be coordinated with social and economic development in an integrated manner with a view to avoiding adverse impacts on the latter, taking into full account the legitimate priority needs of developing countries for the achievement of sustained economic growth and the eradication of poverty” and further that all countries “need access to resources required to achieve sustainable social and economic development and that, in order for developing countries to progress towards that goal, their energy consumption will need to grow”.

³⁶ The TBT Agreement recognizes this need implicitly in art. 2.6.

eliminate unsustainable consumption and production patterns. Labeling schemes are a kind of a halfway house, arising principally from private initiatives which are taken up by governments with the aim of stimulating voluntary private reduction in unsustainable consumption and production. Because it relies on voluntary private behavior, the approach is seen to avoid conflict with states' international obligations under the trade regime even though the participation of official bodies has proven to be important in actual projects.

The Environment Directorate of the European Commission operates a labeling scheme that "identify products and services that have a reduced environmental impact throughout their life cycle, from the extraction of raw material through to production, use and disposal" (European Commission, 2013), which is made official through a regulation of the European Parliament and the European Council. A possible justification for official participation in such efforts is that introducing private incentives can result in drawing closer to the objective of eliminating unsustainable consumption and production activities.

This approach can have undesirable impact on equity from the point of view of both the trade and climate regimes. In a trade interdependent world, the first equity problem from this approach is that producers have differing capabilities – especially in technology and finance – to afford the investment to produce goods that will meet the labeling standards. As explained above, the global climate regime embodies an obligation on the part of developed countries to provide these means of implementation. A second equity conundrum of this approach is that the schemes can be very demanding in terms of technical expertise to implement; these are skills that are in short supply in developing countries.

5. Environmental goods trade liberalization (issues and challenges for developing countries)

Since the start of the WTO Doha negotiations in 2001, WTO Members have sought to reach agreement on the liberalization of trade in environmental goods and services. Under various paragraphs of the Doha Ministerial Declaration, these environmental goods and services negotiations have the objective of ensuring the mutual supportiveness of trade and environment in the context of achieving the objective of sustainable development, and should fully take into account the principle of special and differential treatment and the need for technical assistance to be provided to developing countries.

Under the July 2004 Framework Package, market access negotiations for environmental goods and services are to take place in the Negotiating Group on Market Access for Non-Agricultural Products (NAMA) and the Council for Trade, in Services Special Session (CTSSS) respectively, with the Committee on Trade and Environment, Special Session (CTESS) focusing on, inter alia, clarifying the concept of environmental goods. This working arrangement as to the negotiating forum for market access in environmental goods was further confirmed by the Negotiating Group on NAMA and by the WTO Ministerial Conference in 2005.

In October 2009, a group of mostly developed countries (Canada, the European Union, Japan, Korea, New Zealand, Norway, Taiwan Province of China, Singapore, Switzerland, and the United States) put forward a negotiating proposal in the WTO environmental goods negotiations suggesting that tariffs on all environmental goods be eliminated (i.e. zero percent) with developing countries to be given a transition time of a few years within which to

do so. They argue that this would result in a “win-win” proposition: one that is good for trade and good for the environment, because trade flows in environmental goods would increase while at the same time the environmental impacts would be decreased.

A major problem is that the developed countries have designated a large number of products as “environmental goods.” Many developing countries view this as being opportunistic, that the developed countries are simply including in the list many of their products that they want to promote, and which should not be categorized as “environmental goods.”

In an April 2007 proposal (JOB(07)/54, 27 April 2007), a group of developed countries proposed a list of 166 6-digit Harmonized System (HS) tariff lines as a possible “convergence list” for environmental goods. This is 2.92% of the 5,677 tariff lines at the 6-digit HS level. Given that under any given 6-digit tariff line, there may be a large number of specific goods identified through their individual 8- or 10-digit HS codes. These 166 tariff lines would cover literally thousands of individual products that may or may not have positive environmental end-uses.

Using data from the United Nations Conference on Trade and Development (UNCTAD)/WTO International Trade Centre’s TradeMap statistical database, as of 2012, OECD exports of the 166 environmental goods to non-OECD countries amounted to US\$ 293.86 billion, whereas non-OECD countries exported US\$168 billion worth of environmental goods to OECD in the same year (of which around US\$ 24 billion are solar cells). In other words, OECD countries’ exports to non-OECD are approximately double the value of non-OECD exports to OECD countries, resulting in a trade surplus in favour of OECD countries of US\$125.8 billion. As comparison, OECD’s trade surplus with non-OECD in medicines (HS300490) amounted to US\$21.2 billion in 2012.

In the September 2012 Asia-Pacific Economic Cooperation (APEC) summit in Vladivostok, leaders identified 54 environmental goods and services (at the 6-digit tariff line level), which they indicated “directly and positively contribute to green growth and sustainable development objectives” and committed to “reduce applied tariff rates to 5 per cent or less by the end of 2015 taking into account economies’ economic circumstances” (APEC, 2012). Some countries have limited the goods that would be included in each 6-digit classification, and this is reflected in column 5 in the schedule. Almost any good can be classified under ‘environmental’ purposes. The current list does not prevent parties from developing customs procedures which identify goods according to their end use and thus must be treated according to the lower tariff level proposed under the liberalization program.

In 2012, the value of OECD exports to non-OECD countries of products covered by the APEC list of environmental goods was US\$ 157.8 billion, while OECD imports from non-OECD countries amounted to US\$64.1 billion (of which 37% consist of solar cells). In other words, OECD countries export 2.5 times more to non-OECD than vice versa, resulting in a trade surplus in favour of OECD countries of US\$93.7 billion in 2012 (146% of the value of non-OECD exports). For the OECD, non-OECD countries are the most dynamic market for environmental goods. Total OECD exports of APEC environmental goods grew 2.1% (annual compounded growth) between 2008 and 2012, whereas non-OECD imports of environmental goods exported by OECD grew 6.4% each year.

A few preliminary conclusions could be drawn from the above analysis:

- First, OECD countries have a comfortable lead in exporting environmental goods compared to non-OECD countries. The OECD's trade surpluses in environmental goods are large and significant, also seen in relation to other industries where OECD countries and their companies are dominant such as medicines.
- Second, OECD trumps non-OECD regardless of the forum where the definition of environmental goods is being negotiated. In fact, the trade surpluses of OECD countries for the APEC list of environmental goods and the WTO's "convergence list" are roughly similar – around US\$100 billion.
- Third, it appears that OECD has a relatively stronger trading position in the APEC list of environmental goods than in the "convergence list" under discussion at the WTO. This might not come as a surprise because developed countries usually can get better deals in plurilaterals.

Many developing countries have therefore expressed concerns over the list of tariff lines proposed as "environmental goods." Some have suggested that these tariff lines essentially cover products that are mainly produced by developed countries. Others have pointed out that these products may be difficult for resource constrained developing countries to acquire or, once acquired, to adequately maintain using only local technicians and materials. Still other developing countries have suggested that the use and promotion of environmental goods and services would still need to be anchored on a solid institutional and regulatory framework (including on technology transfer) to ensure that these are absorbed and utilized in a way that provides developmental benefits. Finally, a market access focus on the elimination of trade barriers is overly narrow and, in a developing country context, has the potential to limit or wipe out the ability of developing country producers to develop sufficient production and competitive capacity with respect to such environmental goods and services.

Following the market access focus that adopting a list-based approach entails would create a development "loss" for developing countries. Since developed countries already apply quite low or zero tariffs on most industrial goods, including environmental goods, their burden of effective tariff reductions would be relatively much less than for developing countries. In short, developed countries are effectively asking developing countries in the context of the WTO negotiations in environmental goods to:

- Radically reduce their applied and bound tariffs on industrial products under the pollution management category by much more than what developed countries would be required to reduce. Developing countries' applied tariffs on such products average more than 8% (with most low- and middle-income developing countries having applied tariffs around 15-30%) and the bound tariffs on average around 32%;
- Treat the environmental goods negotiations as a separate tariff reduction or elimination sectoral negotiations exercise that would be effectively subjected to modalities different to those applied for other industrial goods under the NAMA negotiations.

Providing the market access treatment above as proposed by developed countries would move the environmental negotiations away from fully reflecting the principles of less than full reciprocity and special and differential treatment in favour of developing countries. Furthermore, creating a winning situation for developing countries in relation to trade in

environmental goods lies in ensuring that such trade provides developmental benefits to the importing developing countries in terms of enhancing the transfer of technology and know-how in producing such goods so that endogenous environmental goods could then be developed and produced by the importing developing countries.

Trade liberalization for environmental goods per se in developing countries will have little developmental impact and may, in fact, even result in a situation of technology dependence on the part of developing countries unless other measures are put in place to ensure that such trade supports endogenous technology development and innovation in developing countries.

Viewed in this light, proposals for the elimination by developing countries of their tariffs on environmental goods would not constitute a reflection of the principle of special and differential treatment and of less than full reciprocity. The argument that the tariff elimination would benefit developing countries as they can import the products cheaply runs into the same type of criticism regarding proposals for import liberalization in food products. Just as most developing countries promote local food production and thus are against large cuts to their food tariffs, they are against tariff elimination on environmental goods as they wish to preserve policy space to be able produce these goods and their infant industries would need protection at least initially.

That is, on the argument of promoting climate change actions, many developed countries have been advocating the removal of barriers on trade in environmental goods and services. The proposed liberalization of this specific sector can be seen as the counterpart of continued protectionism on the part of developed countries in the agricultural sector. Developed countries, because of their more modern technology, have a significant lead in producing and exporting goods in a sector whose economic size is expected to grow in the future. If trade liberalization in the environmental sector – defined on the basis of an international list of goods and services – is achieved, developing countries will be providing generous market access to imports of such products and services, disadvantaging their future potential in developing their own capabilities in these modern sectors. From the point of view of the international trade regime, environmental goods liberalization could expand the volume of trade at the cost of inhibiting faster development and economic diversification in poor countries and locking them into dependence on foreign technology. From the point of view of the climate change regime, the proposed policy is an implicit subsidy, financed by loss of employment and economic diversification in developing countries, to developed countries. The policy conflicts with the equity and development aspects of the Rio principles.

Market opening by developing countries to developed countries' environmental goods and services through precipitate tariff and non-tariff barrier elimination outside of their development context could lead to a situation of technology-dependency in which developing countries depend on developed countries as the providers of such goods and services. A more appropriate approach requires the promotion of broader policy measures designed to support developing countries' ability to adopt, adapt, and innovate on such goods and services (such as flexibilities in innovation and intellectual property regimes, non-commercial technology and skills transfers, support to research and education, support to infrastructural development) as well as develop their own environmental goods and services in order to support economic development and diversification efforts. Such an approach would also need to be accompanied by adequate financing facilities, to ensure that trade liberalization, modernization or innovation effectively materialize.

Many developing countries have already put forward other suggestions on how to conclude the environmental goods negotiations. The post-2008 ones include the following:

- Special and Differential Treatment in Environmental Goods and Services, by Argentina and Brazil (30 June 2010);³⁷
- WTO Negotiations on Environmental Goods and Services: Addressing the Development Dimension for a “Triple-Win” Outcome, by China and India (15 April 2011).³⁸

A genuine effort to contribute on trade and environment issues would involve identifying not merely market-based trade liberalization of environmental goods and services across the board for all WTO Members, but rather an approach that responds effectively to developing country proposals for an integrated and development-oriented approach which is required for a more coherent approach to trade policy, environmental protection, and development, especially in developing countries.

6. Intellectual Property Rights

Green protectionism by developed countries can also be seen in their drive in various multilateral forums – including in the World Intellectual Property Organization and the WTO – to strengthen the protection and enforcement of intellectual property rights (IPRs) such as patents, trademarks and trade secrets, in developing countries. This is particularly relevant in relation to the transfer of environmentally-sound technologies (ESTs) from developed to developing countries that are necessary to support the sustainable development efforts of the latter in the context of climate change.

Although the transfer of ESTs from developed to developing countries is under the UNFCCC and its Kyoto Protocol, a treaty commitment on the part of developed countries,³⁹ actual transfers on a non-commercial basis are scarce.⁴⁰ Developed countries, in general, tend

³⁷ WTO Doc. No. TN/TE/W/76

³⁸ WTO Doc. No. TN/TE/W/79

³⁹ UNFCCC, Art. 4.5. See also Kyoto Protocol, Arts. 10(c) and 11.2(b). On this same point, TRIPS Art. 66.2 also contains a treaty obligation for developed countries to provide incentives to their enterprises and institutions in order to promote and encourage technology transfer to least-developed countries.

⁴⁰ For example, a recent study of the extent to which climate-relevant technologies have been transferred from their origin countries, as measured by the extent to which an invention is patent in a country outside of the country of invention, indicates that the Kyoto Protocol (and by extension the UNFCCC) “does not seem to have had a significant impact on the international diffusion of climate mitigation technologies”, pointing out that there was essentially no additionality in terms of the internationalization and diffusion of patented technologies as a result of the UNFCCC and the Kyoto Protocol. See Antoine Dechezleprêtre et al., *Invention and Transfer of Climate Change Mitigation Technologies on a Global Scale: A Study Drawing on Patent Data – Final Report*, December 2008, p. 23. Such a conclusion clearly implies that developed country Parties, which are mainly the countries of invention for many patented technologies, have not taken any effective steps to comply with their UNFCCC and Kyoto Protocol treaty commitments to promote and encourage technology transfer (if they had done so, there would have been greater increases in the growth rate for climate mitigation technologies as compared to the overall average growth rate for all technologies). In fact, the study points out that 75 percent of patent internationalization and transfers (e.g. patenting outside the country of invention) “occur between developed countries” and that the same phenomenon with respect to developing countries “are still limited (18%) but are growing rapidly” (p. 29).

to view commercial trade in these ESTs as the primary means for transferring them to developing countries, while developing countries have generally viewed such transfers as non-commercial activities that must be undertaken in compliance with treaty commitments.

Having EST transfers from North to South primarily take place through private sector-driven commercial transactions would subject such transfers to the vagaries and difficulties of international commercial trade relations – in terms of accessibility due to the cost and other terms of transfer, sale or licensing, the adaptability and appropriateness to the development and other conditions of the receiving party, and the innovation constraints arising from IPRs that may be embedded in such ESTs.

IPRs are considered to be a major factor in the debate related to technology transfer, particularly in cases where technology is patented. By granting monopoly rights to their holder, IPRs effectively allow patent holders, for example, to acquire market development lead times, increase prices and charge royalties. In this context, IPRs influence the international policy environment needed to facilitate development, transfer and diffusion of ESTs in developing countries and LDCs. However, international co-operation on technology transfer has been largely limited to voluntary actions.⁴¹

Transfers of ESTs raise various IPR issues since most involve patented technologies owned by firms in developed countries.⁴² As developed countries have not fulfilled the technology transfer commitments under the UNFCCC, overcoming IPR barriers to technology transfer – both perceived and actual – is a challenge for developing countries. In this context, it is important to identify the barriers to effective technology transfer of climate-related ESTs to developing countries, in particular those that pertain to the relationship between IPRs over such ESTs.⁴³

There are an increasing number of patents on climate related technologies, including with respect to the number and scope of patent claims in wind energy and biofuel technologies.⁴⁴ This poses serious concerns about the adverse effect of patents on climate-related technology transfer.

Developed countries and many scholars contend that IPRs are not a barrier to transfer of technology to developing countries. Rather, they argue that strong IPR protection and their effective enforcement in developing countries creates a facilitative environment for transfer of technology to the developing countries. Moreover, it is also argued that the intellectual

⁴¹ Mukul Sanwal, “Leadership in the Climate Change Negotiations”, *South Bulletin: Reflections and Foresights*, South Centre (1 November 2008), p.2.

⁴² At present the global frontier in technology invention and innovation is dominated by the developed world. The vast majority of patents and scientific journals are concentrated in developed countries, with very little or no activity in most developing countries. Core technologies are mainly imported from developed countries. China estimates that over 85% of patents in many of its core high-technology economic sectors are owned by companies based in developed countries. See e.g. Shane Tomlinson et al., *Innovation and Technology Transfer: Framework for a Global Climate Deal* (E3G and Chatham House, 2008), p.56.

⁴³ As Khor notes, “[w]hether IPRs constitute a barrier or an important barrier depends on several factors, such as whether or not the particular technology is patented, whether there are viable and cost-effective substitutes or alternatives, the degree of competition, the prices at which it is sold, and the degree of reasonableness of terms for licensing, etc” (Khor, 2012). Some technologies are in the public domain, or are not subjected to patents. But many key technologies are patented. And many technologies of the future will also be patented.

⁴⁴ See e.g. <http://www.epo.org/topics/innovation-and-economy/emerging-technologies/article-10.html> and <http://www.epo.org/topics/innovation-and-economy/emerging-technologies/article-7.html>.

property (IP) system also encourages domestic institutions to make greater investments in research and development (R&D) and further develop new and improved technologies in various sectors.

However, a United Nations Development Programme (UNDP) study on transfer of low carbon technologies to developing countries points out that it is questionable whether technology transfer under stringent IPR regimes in developing countries can have long term benefits for the recipient developing country because recipient firms in these countries may be less likely to gain access to the underlying knowledge that is necessary to develop technological capacity within the recipient country, and thus it can retard the recipient country's long-term ability to absorb and innovate on the basis of new low carbon technologies, which is critical for their sustainable development.⁴⁵

Another study also points out that the informative effects of patent grants through disclosure do not necessarily amount to enhancing technological capacity for developing countries because of several reasons, including:⁴⁶

- the information disclosed may be very minimal and insufficient to enable competing firms to learn much from the same;
- use of the accessed information is conditioned by terms of licensing agreements by the patent holder;
- in multiple claim patents information disclosed is likely to be so provided that competitors cannot reproduce all aspects of the claims;
- patent specifications may not transfer actual know-how; and
- by the time firms in developing countries may learn the same, the technology may have become obsolete or further updated.

Furthermore, it has been pointed out in a study by the Sussex Energy Group that developing country firms do not seem to have access to the most cutting edge technologies, and where they have had access to cutting edge technologies, there are doubts about the extent to which they have had access to the know-how underlying those technologies.⁴⁷

Another study suggests that the practice of patent exportation – i.e. the patenting of inventions in another country outside of the country of invention – could have a “crowding out effect” with respect to domestic innovation and invention. That is, as more “foreign” inventions are patented in a technology-needing country, domestic inventors wishing to patent local inventions may find it difficult to do so as similar “foreign” inventions may have already

⁴⁵ Jim Watson et al., “Technology and Carbon Mitigation in Developing Countries: Are Cleaner Coal Technologies a Viable Option?” in Human Development Report 2007/2008, *Fighting Climate Change: Human Solidarity in a Divided World*, Human Development Report Office, UNDP Occasional Paper 2007/16, p.6. Moreover, the study also points out that access to key patents by developing country firms in itself is not sufficient for effective technology transfer because full use of the patent is likely to require access to a variety of related information sources that are not sufficiently disclosed or fully explained in the patent itself.

⁴⁶ Carlos M. Correa, “Technology Transfer under International Intellectual Property Standards”, in *International Public Goods and Transfer of Technology under a Globalized Intellectual Property Regime*, Keith E. Maskus and Jerome H. Reichman, eds. (Cambridge University Press, 2005), pp. 239-40.

⁴⁷ David Ockwell, *Intellectual Property Rights and Low Carbon Technology Transfer to Developing Countries – A Review of the Evidence to Date*, UK-India Collaboration to Overcome Barriers to the Transfer of Low Carbon Energy Technology: Phase 2 (Sussex Energy Group, UK, TERI, India, Institute of Development Studies, UK, April 2008), p.5.

taken up the patent. On the other hand, in the context of climate change, should domestic demand for more climate change-related technologies increase (whether as a result of policy changes arising from UNFCCC negotiations or as a result of domestic environmental and economic needs), the crowding out effect of “foreign” imported inventions which are patented domestically is lessened as domestic innovations and inventions are spurred by demand.⁴⁸

Finally, since most of the ESTs are available in developed countries, IPRs held over these technologies by firms in developed countries can impede the ability of developing countries to have meaningful and affordable access to ESTs through:⁴⁹

- High royalty fees;
- Refusals to license;
- “Ever-greening” of patents;
- Increasing patent litigation; and
- Impediments to innovation.

Under the WTO TRIPS Agreement, there are some flexibilities available to developing countries in order to promote their development policy objectives (including effective adaptation to climate change). These flexibilities include, but are not limited to, compulsory licensing, parallel importation, exemptions to patentability, exceptions to patent rights and competition policy. In addition to these, national IP laws may also contain flexibilities on which the TRIPS Agreement is silent, such as the grounds for revocation of patents.⁵⁰ Finally, least-developed countries could seek full compliance by developed countries of their TRIPS Agreement obligation to provide “incentives to enterprises and institutions in their territories for the purpose of promoting and encouraging technology transfer to least-developed country Members in order to enable them to create a sound and viable technological base.”⁵¹ In addition to such TRIPS flexibilities, developing country WTO Members could also seek a WTO Ministerial Declaration on TRIPS and Climate Change in order to provide greater clarity and additional flexibility to the use by developing countries of TRIPS flexibilities in relation to climate-related ESTs.

There have also been suggestions for the relaxation of IPR regimes in relation to climate-friendly ESTs such as (a) An exemption for patents on climate-friendly technologies and products; (b) An exemption on patents in developing countries only, while patents can still be granted in developed countries, to allow for recovery of innovation cost, and provide incentive; (c) Developing countries, if they so desire, are allowed to exclude patents on climate-friendly technologies and products; (d) Voluntary licenses must be automatically granted on request, which will be free of royalty; (e) Voluntary licenses are automatically given and compensation is provided.

⁴⁸ See, for example, Antoine Dechezleprêtre et al., *supra*, pp. 27-28.

⁴⁹ Examples of these barriers can be found in Khor, 2012.

⁵⁰ However, the extent to which these flexibilities can be used for facilitating transfer of ESTs is debatable because of the possibility of narrow or liberal interpretations of these flexibilities.

⁵¹ TRIPS, art. 66.2. Unfortunately, however, as in the UNFCCC, developed countries have not complied with this treaty obligation and discussions within the WTO’s Working Group on Transfer of Technology (WGTT) have been inconclusive. LDCs have generally considered the implementation of TRIPS Art. 66.2 to be virtually non-existent and inadequate in promoting effective technology transfer and it is still unclear where technology transfer has actually taken place pursuant to this treaty obligation.

As a result of such concerns, and taking into account TRIPS flexibilities available to them, developing countries in the UNFCCC negotiations have pushed for a relaxation of existing IPR regimes in relation to the transfer of climate-related ESTs to developing countries. In their proposal for a technology mechanism to operationalize UNFCCC Art. 4.5, the G77 and China proposed that a technology action plan to be established under their proposal would “ensure that privately owned technologies are available on an affordable basis including through measures to resolve the barriers posed by intellectual property rights and addressing compulsory licensing of patented technologies.”⁵² The same proposal suggested that the mechanism should be able to support and finance, inter alia, the costs of “compulsory licensing, cost associated with patents, designs, and royalties.”⁵³

In various other individual submissions and statements in the UNFCCC negotiations, developing countries have called for, inter alia:

- a suitable IPR regime for accessing technologies owned by the private sector;⁵⁴
- an IPR sharing arrangement for joint development of ESTs;⁵⁵
- the development of criteria on compulsory licensing for patented ESTs, joint technological or patent pools to disseminate technologies to developing countries at low cost, time-limited patents, the provision of fiscal incentives to technology owners to obtain differential pricing;⁵⁶
- looking at new approaches regarding IPRs and technology sharing facilitation (such as an approach similar to the WTO TRIPS and Public Health Declaration);⁵⁷
- expansion of the public domain for publicly funded technologies and exemptions for climate-friendly technologies.⁵⁸

⁵² Antigua and Barbuda on behalf of the Group of 77 and China, Proposal for a Technology Mechanism under the UNFCCC, FCCC/AWGLCA/2008/MISC.5.

⁵³ Ibid.

⁵⁴ India, during the technology workshop, at http://unfccc.int/meetings/adhoc_working_groups/lca/items/4423.php

⁵⁵ China, in FCCC/AWGLCA/2008/MISC.5

⁵⁶ See e.g. China, in FCCC/AWGLCA/2008/MISC.5; Pakistan and Bolivia, in FCCC/AWGLCA/2008/MISC.5/Add.2.

⁵⁷ Brazil, in FCCC/AWGLCA/2008/MISC.5

⁵⁸ Bolivia, in FCCC/AWGLCA/2008/MISC.5/Add.2

IV. CONCLUSIONS AND RECOMMENDATIONS

Developing countries have been consistent and clear in articulating the primacy and necessity of addressing and promoting their development options in both the trade and climate regimes (South Centre, 2008). In the trade regime, they have put forward clear positions in agriculture, NAMA, services, trade facilitation, and environmental goods and services on how the Doha negotiations can arrive at a development-oriented outcome. In the climate regime, developing countries have stressed that meeting development objectives would require, among others, a reflection of the principle of common but differentiated responsibility with respect to reductions in greenhouse gas emissions (including for developed countries to fully implement their commitments in this area) and the implementation of existing commitments on technology transfer to developing countries.

Developing countries have also continually stressed the need for development policy space, choices, and flexibilities, so as to ensure that international commitments and domestic policies are able to address in a flexible manner the unique set of development and environmental circumstances of each individual developing country. They have also stressed the need to improve supply-side productive capacity through financing support for the acquisition of technologies and the modernization of production in developing countries. In addition, they have called for technical assistance and capacity building, especially in terms of research and development, design and production, and infrastructure development to support a shift to cleaner, less carbon-intensive, and more equitable and sustainable production and consumption patterns in developing countries.

Because of multiple pressures on government policies from private sector interests and the imbalances of state capacity between developed and developing countries, equity becomes very critical as the principle for dealing with the competing and conflicting developments in the global trade and environment (including climate change) regimes.

In the UNFCCC negotiations, these issues of sustainable development and the challenges around implementing a sustainable low carbon, climate resilient development pathway is of heightened sensitivity. All the more so, since as recognized in the Paris Agreement and subsequent meetings of the Conference of the Parties, the responses to addressing climate change and in promoting the radical reduction of greenhouse gas emissions can also have adverse implications, or, at least mixed impacts on the progress towards economic and social development. Over the years, this challenge of addressing the possible adverse impacts of the implementation of response measures designed to address climate change has been quite a protracted discussion between developed and developing countries. The former group has been reluctant to give importance to the issues, while the latter group has been not always clear as to the end result of their quest, other than the desire for a forum and mechanism that is built into the UNFCCC process. Developed countries, while unenthusiastic in their acquiescence to the idea of a forum, have resisted the creation of a mechanism. However, in the last two to three years there has increasing recognition of the need to avoid unilateral trade measures, and, on the positive front the imperative to promote sustained economic diversification and transformation in developing countries. Since 2014 onwards, this push towards economic diversification (on the path of developing countries) and just transition for the workforce (generally seen to be a developed country agenda—to widen the scope and framing of response measures) has been occupying some of the space of the response measure discussions. The momentum hence has been on increasing

the focus on elaborating the technical work on economic diversification and transformation in the context of sustainable development and the post 2030 development agenda.

There are clear areas that will require further development under these sub themes of the response measures area. These have been flagged by the Ad hoc technical expert group on the impact of the implementation of response measures (TEG) of the UNFCCC⁵⁹ as including, inter alia:

- i. The identification and assessment of impacts and the planning and implementation of economic diversification strategies across and within the various groups of countries: SIDS, LDCs, Land-Locked developing countries, African States and the emerging economies;
- ii. The importance of international cooperation on economic diversification and transformation; and
- iii. Capacity building for economic diversification and transformation.

With regard to a just transition, which is also critically important to those countries more vulnerable to the adverse impacts of mitigation strategies, the just transition for their workforce is also of paramount interest. As with economic diversification, many developing countries will have to focus on identification of the sectors and groups in the economy that will be most challenged by global, regional and national mitigation policies; they will likewise have to pursue planning and implementation of just transition processes in tandem with mitigation policies and actions.

Overall, for developing countries, a focus on economic diversification linked with issues of just transition is a forward momentum. But great care must be taken to ensure that the issues of addressing the adverse social and economic consequences of response measures, which is both the starting point and the heart of the discussion, are not marginalized and eroded.

Analyzing, monitoring, tracking and assessing national impacts of responses measures must remain central to the discussion. Systems and processes must be created and supported to promote transparency, ex ante notification and ex post assessments of such measures, even as countries seek to promote economic diversification and just transition of the labour force.

In the context of the post 2030 sustainable development agenda, it is also imperative that addressing the consequence of the implementation of responses measures and promoting economic diversification and just transition hinge on the equitable and fair resolutions of the other issues discussed in this paper: the transfer and development of environmental sound technologies, IPR flexibilities, Special and Differential Treatment for countries and sectors with regard to climate change and the trade of newly or reconstituted sectors under economic diversification, and the full range of trade and environment negotiations in the multilateral trade systems.

Some recommendations on how to bring about regime coherence in pursuit of sustainable development are provided below:

⁵⁹ Meeting of the Ad hoc Technical Expert Group on the impact of the implementation of response measures, May 9-10, 2017, Bonn, Germany

A. Ensuring technology transfer for environmentally-sound technologies to developing countries

There are three distinct components of technology that can be transferred:

- physical assets, such as plants, machinery, and equipment;
- information, both technical and commercial, relating to process know-how, choice of technology, engineering design and plant construction, organization and operating methods, quality control, and market characteristics; and
- human skills, especially those possessed by specialized professionals and engineers. The acquisition and absorption of foreign technologies, and their further development, are complex processes that demand significant knowledge and efforts on the part of those that acquire them.⁶⁰

There are two channels of technology transfer, one is via private arrangement, and the other is government commitment. In terms of the former one, technology transfer is conducted by purchase, investment, or royalty agreements for cooperation. In terms of the latter, technology transfer is enforced by the government based on the international agreement.

The private sector should be prompted to participate in effective technology transfers of environmental goods to developing countries through commercial arrangements (such as trade, investment, joint ventures), especially those goods that are protected by intellectual property rights, either through norms that are created arising from WTO or UNFCCC negotiations, or through cost/benefit-sharing arrangements to lessen the cost of the transfer of the technology and to enable a sustainable uptake of the technology by the recipient countries.

With respect to intergovernmental arrangements to promote technology transfer within the WTO, and given the continuing difficulties in ensuring effective technology transfer from developed countries to developing countries under, for example, TRIPS Article 66.2, Article 4.5 of the UN Framework Convention on Climate Change, Article 16 of the UN Convention on Biological Diversity, and Chapter 34 of Agenda 21, the WTO can contribute towards this goal by establishing, as among the outcomes of the environmental goods negotiations under paragraph 31(iii) of the Doha Ministerial Declaration, a technology transfer mechanism with respect to environmental goods. Para 31(iii) of the Doha Ministerial Declaration calls for “the reduction or, as appropriate, elimination of tariff and non-tariff barriers (NTBs) to environmental goods and services.” A technology transfer mechanism is not directly part of the Doha mandate on environmental goods and services (EGS), other than that such technology transfer mechanism could be a way to reduce NTBs to environmental goods – but in this event you would need to take account of the other NTB proposals and the fact that mostly Asian countries do not want to address NTBs under the EGS mandate (the EU is a main proponent).

A technology transfer proposal could germinate in various places within the WTO:

1) Working Group on Trade and Technology Transfer

⁶⁰ K. Madhava Sarma, Technology Transfer Mechanism for Climate Change (2008).

During 2016, WTO Members discussed a submission made earlier by India, Pakistan and the Philippines entitled "Facilitating Access to Information on Appropriate Technology Sourcing - A Step to Increase Flows of Technology to Developing Countries". The proponents recommended the establishment of a dedicated WTO webpage on technology transfer which would serve as a one-stop-shop on technology-related issues (WT/WGTTT/18 of 23 November 2016). However, during 2017, this discussion did not continue.

2) Special and Differential Treatment negotiations under paragraph 47 of the Doha Ministerial Declaration

In 2017, the G-90 (Africa, Caribbean, Pacific (ACP) Group, African Group and LDC Groups combined) submitted a new proposal on Special and Differential Treatment with the aim of obtaining an outcome under paragraph 47 of the Doha Ministerial Declaration (JOB/DEV/47 of 5 July 2017) in which they made several proposals including seven technology transfer proposals.

In summary, the G-90 proposes the following measures:

- Clarifying that the incentives mandated by Article 66.2 TRIPS shall allow effective access, on fair, reasonable, and non-discriminatory terms, to technologies owned or controlled by enterprises and institutions in the territories of developed country members, in a manner that enables LDCs to absorb, adapt and improve on the received technologies.
- Obliging developed countries to adopt measures that enable enterprises and institutions in the territories of developing countries and LDCs to have access, upon demand and on fair, reasonable, and non-discriminatory terms, to technologies owned or under the control of developed country members and to technologies developed with public funding.
- Establishment of Publicly Owned Technology Inventory by developed countries. Developed country Members shall promptly make available information concerning technologies patented or funded for at least 50 per cent, either directly or indirectly, by the government or any public body within their territory.
- The Working Group on Trade and Transfer of Technology (ToT) to examine restrictive practices adopted by multinational enterprises in the area of ToT and how to prevent such practices.
- Developed countries shall take into account the objectives and principles of the TRIPS Agreement, in particular, as contained in Articles 7 and 8 respectively as well as the objective of sustainable development contained in the preamble of the Agreement establishing the WTO (Marrakesh Agreement).

The mechanism should be comprehensive in coverage so as to be able to address all stages of the technology development cycle (including research and development, demonstration, deployment, diffusion, and endogenous innovation). It should be designed in such a way that it ensures developed country compliance. The transfer modalities must be focused on direct, concrete, and on-the-ground approaches that will actually result in technology transfer taking place. It should also ensure the technology transferred under its modalities would be appropriate and adapted to, or may be adapted to, the unique environmental and developmental conditions of the recipient country. The mechanism should

also be able to encourage and promote further innovation and development of the transferred technology in the recipient country⁶¹.

It is pertinent to note here that the decision which adopted the Paris Agreement also laid down a roadmap on this issue (without mentioning IPRs). See for example, UN document FCCC/CP/2015/L.9/Rev.1 of 12 December 2015, TECHNOLOGY DEVELOPMENT AND TRANSFER – paras. 66 to 71 (see below). Ultimately, the United Nations (UN, including the UNFCCC) might seem to be the place to discuss the aforementioned TTM. These issues are likely to be on the upcoming UN Conference on SDG-7 that will take place in 2018.

The Paris Agreement on TECHNOLOGY DEVELOPMENT AND TRANSFER

66. *Takes note of* the interim report of the Technology Executive Committee on guidance on enhanced implementation of the results of technology needs assessments as referred to in document FCCC/SB/2015/INF.3;
67. *Decides* to strengthen the Technology Mechanism and requests the Technology Executive Committee and the Climate Technology Centre and Network, in supporting the implementation of the Agreement, to undertake further work relating to, inter alia:
- (a) Technology research, development and demonstration;
 - (b) The development and enhancement of endogenous capacities and technologies;
68. *Requests* the Subsidiary Body for Scientific and Technological Advice to initiate, at its forty-fourth session (May 2016), the elaboration of the technology framework established under Article 10, paragraph 4, of the Agreement and to report on its findings to the Conference of the Parties, with a view to the Conference of the Parties making a recommendation on the framework to the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement for consideration and adoption at its first session, taking into consideration that the framework should facilitate, inter alia:
- (a) The undertaking and updating of technology needs assessments, as well as the *enhanced* implementation of their results, particularly technology action plans and project ideas, through the preparation of bankable projects;
 - (b) The provision of enhanced financial and technical support for the implementation of the results of the technology needs assessments;
 - (c) The assessment of technologies that are ready for transfer;
 - (d) The enhancement of enabling environments for and the addressing of barriers to the development and transfer of socially and environmentally sound technologies;
69. *Decides* that the Technology Executive Committee and the Climate Technology Centre and Network shall report to the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement, through the subsidiary bodies, on their activities to support the implementation of the Agreement;
70. *Also decides* to undertake a periodic assessment of the effectiveness of and the adequacy of the support provided to the Technology Mechanism in supporting the implementation of the Agreement on matters relating to technology development and transfer;
71. *Requests* the Subsidiary Body for Implementation to initiate, at its forty-fourth session, the elaboration of the scope of and modalities for the periodic assessment referred to in paragraph 70 above, taking into account the review of the Climate Technology Centre and Network as referred to in decision 2/CP.17, annex VII, paragraph 20 and the modalities for the global stocktake referred to in Article 14 of the Agreement, for consideration and adoption by the Conference of the Parties at its twenty-fifth session (November 2019);

⁶¹ These are useful design principles but as always the devil is in the details. Outstanding issues need to be sorted such as who should undertake which obligations in more concrete terms, and where should this be negotiated?

B. IPR flexibilities for environmental goods

Intellectual property rights (IPRs) are considered to be major factors in the debate related to technology transfer, particularly in cases where technology is patented. In this context, IPRs influence the international policy environment needed to facilitate development, transfer and diffusion of ESTs in developing countries and LDCs. However, international co-operation on technology transfer has been largely limited to voluntary actions.

At present the global frontier in technology invention and innovation is dominated by the developed world. The vast majority of patents and scientific journals are concentrated in developed countries, with very little or no activity in most developing countries. Core technologies are mainly imported from developed countries.

As a key pillar of international protection for IPRs, the TRIPS Agreement adopts a market-based approach to transfer of technology. That is, it depends on market mechanisms like licensing and foreign direct investment (FDI), on the presumption that such mechanisms would allow embedded technologies to be transferred automatically⁶².

While attempting to ensure minimum standards of protection of the interests of IP right holders, the preamble of the TRIPS Agreement recognizes "... the underlying public policy objectives of national systems for the protection of intellectual property, including developmental and technological objectives". TRIPS Art. 7 states that the transfer and dissemination of technology is a fundamental objective of the global IPR system, such that IPR protection and enforcement "should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations."

TRIPS Art. 8.1 also states clearly that in formulating their laws and regulations, WTO Members may take measures necessary to promote the public interest in sectors of vital importance for their socio-economic and technological development, if those measures are consistent with the provisions of the TRIPS Agreement. Moreover, TRIPS Art. 8.2 specifically states that "... appropriate measures ... may be needed to prevent the abuse of intellectual property rights by right holders or the resort to practices which unreasonably restrain trade or adversely affect the international transfer of technology" if those measures are consistent with the provisions of the TRIPS Agreement.

TRIPS Art. 66.2 explicitly obligates developed countries to offer positive incentives to their firms and institutions to transfer technologies to least developed countries "in order to enable them to create a sound and viable technological base."

These provisions amplify the policy recognition in the Preamble of the TRIPS Agreement that developmental and technological objectives should underlie public policy objectives of national systems of IP protection. But, in themselves, these TRIPS provisions do not provide an automatic route for technology transfer and dissemination through licensing

⁶² In so far as IPRs are held by IP holders that follow market-based approaches.

and market mechanisms. In fact, most of the provisions of TRIPS offer little direct assurance that there will be a rise in international technology transfer to developing countries.

While acknowledging the need for a balance between rights and obligations, the TRIPS Agreement itself gives no guidance on how to achieve this balance and has considerably reduced the policy space available to States to address this while focusing on forms of IP protection that has been most useful for innovators in the developed countries. Moreover, developed countries have been seeking to limit the flexibilities that are still available to States under TRIPS through the adoption of TRIPS Plus standards and stronger IPR enforcement in various forums such as the World Intellectual Property Organization, the World Customs Organization, and through bilateral trade agreements. The fundamental assumption of the TRIPS regime is that adequate standards of IP protection will encourage innovation of knowledge, and the transfer and dissemination of the same through licensing and market mechanisms. Indeed, this assumption prevails even in the case of public policy exceptions contained in the TRIPS Agreement where the same are limited by requirements of consistency with the other provisions of the Agreement and other limiting conditions to the policy options available under specific Articles of the Agreement.

The fact that little technology transfer has been taking place under TRIPS, despite TRIPS Arts. 7, 8.1, 8.2, and 66.2, suggests that unless there is a new approach with respect to the role of IPRs vis-à-vis technology transfer, IPRs directly or indirectly provide a “freezing” effect on effective transfers of climate-related ESTs from developed to developing countries.

To address the problems relating to IPRs in relation to the effective transfer of technology relating to environmental goods to developing countries, leading towards the development in these countries of their endogenous technological base for the production of their own non-agricultural environmental goods, an agreement could be negotiated, either at the WTO or in the UNFCCC, in which developed and developing countries would be encouraged to:

- Ensure that intellectual property rights and agreements, including the TRIPS Agreement, shall not be interpreted or implemented in a manner that limits or prevents any WTO Member from taking any measures to address environmental problems;
- Cooperate to establish global pools for environmental goods and technologies to promote effective global environmental action;
- Creation and enhancement by developed countries, as well as other countries who deem themselves to be in a position to do so, of appropriate incentives, fiscal or otherwise, to stimulate the transfer of environmentally sound technology by companies from developed countries to developing countries;
- Respect and refrain from challenging the use by developing country Members of the full flexibilities contained in the Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement, including compulsory licensing and patent revocation, in particular in cases of refusals to license;
- Ensure that the process of providing compulsory licenses with respect to environmentally sound technologies under the TRIPS Agreement is made less cumbersome for developing countries;
- Adopt and enforce measures to provide differential royalty pricing between firms from developed and developing countries with respect to IPR-protected

environmental goods and services, with firms in developing countries being offered fair and most favourable royalty prices;

- Review and amend all existing relevant national intellectual property rights regulations in order to remove the barriers and constraints affecting the transfer, absorption, and innovation of technology relating to environmental goods and the provision of environmental services in developing countries;
- Promote, through effective national regulations and bilateral, regional, plurilateral or multilateral arrangements, innovative intellectual property rights sharing arrangements for joint development of environmental goods and services among firms in developed and developing countries;
- Limit or reduce the minimum period of patent protection on environmental goods, including through appropriate amendment of TRIPS Article 33;
- Prohibit ‘ever greening’ of patents with respect to environmental goods (i.e. prohibiting extensions of the effective period of patent protection through the patenting of incremental changes to a previously patented product);
- Developed country Members shall, in the case of privately owned environmental technologies and services, in compliance with and under the specific circumstances recognized by the relevant international conventions adhered to by States, undertake measures to prevent the abuse of intellectual property rights, including rules with respect to their acquisition through compulsory licensing, with the provision of equitable and adequate compensation;
- Developed country Members shall purchase patents and licences of privately-owned environmental technologies and services on commercial terms for their transfer to developing countries on non-commercial terms as part of development cooperation for sustainable development, taking into account the need to protect intellectual property rights.

C. Reflecting Special and Differential Treatment

The WTO’s Environmental Goods (EG) negotiations seem to be moribund, as they have gone plurilateral. First, in APEC on a list of 54 HS codes (with a lot of ex-outs) and now in plurilateral format (like the Information Technology Agreement (ITA)). Given the US trade policy uncertainty, North American Free Trade Agreement (NAFTA) renegotiations, sensitivities with many products (solar panels, bicycles and bicycle parts, etc.), it is very unlikely that EG negotiations will be wound up by the 11th WTO Ministerial Conference (MC11, 2017). An outcome might be possible by MC12, if participating Members think that there is a critical mass among the participating Members – since a plurilateral EG agreement outcome would still apply to imports from all WTO Members. For this reason, China has been pushing for a clause that would trigger or not trigger liberalization depending on achieving ‘critical mass’, in order to prevent ‘free riders’. In the context of Less-than-full-reciprocity (LTFR), such clause should actually be resisted.

The principle of special and differential treatment, including less than full reciprocity in reduction commitments for developing countries and least-developed countries, is a fundamental part of the negotiating mandate for market access in environmental goods under

paragraph 31(iii) of the Doha Ministerial Declaration (DMD).⁶³ Many developing countries have raised proposals in this regard.⁶⁴

This means essentially that developing countries, including least-developed countries, must have greater flexibility and policy space with respect to their tariff commitments in relation to environmental goods as compared to those of developed countries upon the conclusion of the negotiations. This also means that both the quantum and scale of tariff reductions to be undertaken by developing countries must be less as compared to those to be undertaken by developed countries. This is because such policy space in relation to tariff commitments – e.g. the retention of as much space as possible between the bound and applied tariff rates – for developing countries is essential for them to be able to use trade policy in a manner that would be appropriate to their needs and circumstances.

Viewed in this light, proposals from some developed country Members⁶⁵ for the elimination by developing countries of their tariffs on environmental goods, along with tariff elimination by developed countries, would not constitute a reflection of the principle of special and differential treatment and of less than full reciprocity. The argument that the tariff elimination would benefit developing countries as they can import the products cheaply runs into the same type of criticism regarding proposals for import liberalization in food products. Just as most developing countries promote local food production and thus are against large cuts to their food tariffs, they are against tariff elimination on environmental goods as they wish to preserve policy space to be able produce these goods and their infant industries would need protection at least initially.

Providing for such special and differential treatment in the WTO context would be fully consistent with the approach vis-à-vis developing countries that is envisioned in terms of the application of the principle of common but differentiated responsibilities (CBDR) in the UNFCCC context.

D. Explicit prohibition of trade protectionism on environmental grounds

There are very useful existing multilaterally-agreed texts that speak against trade protectionism on environmental grounds. These include, for example, Principle 12 of the 1992 Rio Declaration on Environment and Development, and Chapter 2, paragraph 2.22 of Agenda 21⁶⁶.

⁶³ See Doha Ministerial Declaration, paras. 16 and 50; July 2004 Framework Package, WT/L/579, Annex B, paras. 2, 4, 8, 9, 14, and 17; Hong Kong Ministerial Declaration, paras. 14 and 15.

⁶⁴ See e.g. Argentina and Brazil, TN/TE/W/76; NAMA-11, JOB(06)/194, para. 14; Cuba, TN/TE/W/73; Argentina, TN/TE/W/74, para. 11; Brazil, TN/TE/W/59, para. 6; Cuba, TN/TE/W/69; China, TN/TE/W/42; India, TN/TE/W/51.

⁶⁵ Such as the proposal to eliminate tariffs on such identified “environmental goods” – i.e. zero tariff - contained in JOB(09)/132 put forward in October 2009 by Canada, the European Union, Japan, Korea, New Zealand, Norway, Separate Customs Territory of Taiwan, Penghu, Kinmen and Matsu, Switzerland, and the United States, and in TN/TE/W/65 submitted by Canada, European Communities, New Zealand, Norway, Singapore, Switzerland, and the United States.

⁶⁶ The current trend in this area is that ‘national security’ is being used more often as ground for justifying trade protectionism, e.g., in the case of Russia or Saudi Arabia/UAE/Egypt vs Qatar. Climate change has been branded as a ‘national security’ issue in the policy agenda of many countries.

From the perspective of developing countries, trade measures⁶⁷ are not necessarily the best nor the most appropriate means for addressing environmental concerns. Developing countries often restrict the import of second hand vehicles, e.g. through customs valuation methods. Some countries ban imports of certain type (age) of vehicles (e.g. Singapore). Rather, there is great concern that the use of trade measures by developed countries ostensibly to address environmental concerns (such as climate change) may in fact have the effect of restricting the market access of developing country products in developed countries and of enhancing the competitive edge that developed countries have in global trade.⁶⁸ Developed countries would be more likely to do this through the use of SPS/TBT measures rather than outright import prohibitions, higher duties or different customs valuation methods. This would damage the trade and development prospects of developing countries and therefore result in the non-achievement of the objective of sustainable development.

These concerns have been reflected by developing countries in discussions in the WTO as well as in, for example, the UNFCCC. Since then, various developing country groups have worked together to put forward specific texts for inclusion in the negotiating texts of the climate negotiations opposing trade protectionism on the grounds of climate change.

To address these concerns, textual language could be agreed upon, either in the WTO or in the UNFCCC, for example, to prohibit unilateral trade measures on environmental grounds that would have an adverse impact on, or discriminates against, the trade of developing countries. This could be done under the mandate of para 31(i).

E. Ensuring fairer treatment for developing country subsidies

The billions of dollars of subsidies that some developed countries have been providing to their industries for the research and development (R&D) of environmental goods create a distinct competitive advantage for developed countries in relation to the production of such goods vis-à-vis developing countries that lack the financial resources to match these developed countries' subsidies. Given this unfair imbalance in subsidies, developing countries and their firms would be in an even worse competitive situation if they have to lower or, worse, eliminate their tariffs on environmental goods as a result of the paragraph 31(iii) negotiations.

Developing countries have been unable to compete with regard to R&D grants because of their lack of funds, and are also constrained due to the WTO rules from using many other types of subsidies that were used by developed countries when they were in their development phase. An even bigger imbalance is that agricultural subsidies are exempted from the strict rules of the subsidies agreement, and much more lenient treatment is provided to this sector, allowing developed countries to continue to maintain hundreds of billions of dollars of agricultural subsidies each year.

⁶⁷ These trade measures include, but are not limited to, tariff liberalization for certain goods, standard setting, border adjustment measures (such as the imposition of carbon content-based duties on imports or tax rebates on exports), and sectoral approaches (e.g. establishing emissions caps for specific industrial sectors using sector-based rules or standards).

⁶⁸ This would include, for example, the 2009 Waxman-Markey bill in the US House of Representatives, and its corresponding various 2009 US Senate versions.

For developing countries, subsidies and other incentives are particularly important, since many new industries and practices have to be fostered. Such subsidies should of course be well designed and implemented properly to ensure they meet sustainable development goals. Incentives (subsidies, access to credit, tax breaks, etc.) should be provided to producers and consumers in developing countries to promote good production processes and products (renewable energy, sustainable agriculture, no-emissions cars).

But a potential barrier for developing countries is the Agreement on Subsidies and Countervailing Measures (SCM Agreement), which has considerably reduced the policy space of developing countries on the types of subsidies they are able to provide. It is not so clear to many developing countries what kinds of subsidies are permitted and what are prohibited and “actionable”. It appears that many types of subsidies used by developed countries during their development phase now cannot be used by developing countries in the industrial sector.

In the 2001 WTO Ministerial Decision on Implementation-Related Issues and Concerns, WTO Members had taken note of the proposal of developing countries to “treat measures implemented by developing countries with a view to achieving legitimate development goals, such as regional growth, technology research and development funding, product diversification and development and implementation of environmentally sound methods of production as non-actionable subsidies.”⁶⁹ This proposal would be addressed as an integral part of the Doha negotiations.⁷⁰

Additionally, in that same decision, WTO Members agreed that “[d]uring the course of the negotiations, Members are urged to exercise due restraint with respect to challenging such measures.”⁷¹ As the Doha negotiations are still proceeding, the “due restraint” clause is therefore still in place and should be reiterated.⁷²

F. Peace Clause in relation to trade-related environmental measures of developing countries

Given the importance of supporting the shift by developing countries on to a sustainable development pathway, developing countries may need trade measures to render their environmental policies more effective. These may include, but are not limited to, subsidies as defined under the WTO Agreement on Subsidies and Countervailing Measures. Because of the special needs and circumstances of developing and least-developed countries, especially in the context of their relatively greater vulnerability to the adverse effects of climate change and environmental pollution, greater flexibility should be provided to developing and least-developed countries with respect to the use of such measures.

⁶⁹ See WTO Decision on Implementation-Related Issues and Concerns, WT/MIN(01)/17, paras. 10.2 and 13.














⁷⁰ WTO Decision on Implementation-Related Issues and Concerns, WT/MIN(01)/17, paras. 10.2 and 13 in relation to WTO Doha Ministerial Declaration, WT/MIN(01)/DEC/1, para. 12.
















⁷¹ WTO Decision on Implementation-Related Issues and Concerns, WT/MIN(01)/17, paras. 10.2

⁷² However, notwithstanding this “due restraint” clause that would be directly applicable, on 22 December 2010, the United States initiated dispute settlement proceedings (later on joined by the European Union and Japan in January 2011) against China concerning certain measures providing grants, funds, or awards to enterprises manufacturing wind power equipment (including the overall unit, and parts thereof) in China, arguing that these appeared to be violative of the SCM Agreement. See WT/DS419/1.

In this regard, establishing a period of due restraint among Members with respect to the use by developing and least-developed countries of such measures would be a useful way of supporting their continued shift to a sustainable development pathway.

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ANNEX 1: UNFCCC PROVISIONS RELEVANT TO RESPONSE MEASURES

PREAMBLE

Recognizing that States should enact effective environmental legislation, that environmental standards, management objectives and priorities should reflect the environmental and developmental context to which they apply, and that standards applied by some countries may be inappropriate and of unwarranted economic and social cost to other countries, in particular developing countries,

Recognizing the special difficulties of those countries, especially developing countries, whose economies are particularly dependent on fossil fuel production, use and exportation, as a consequence of action taken on limiting greenhouse gas emissions,

Affirming that responses to climate change should be coordinated with social and economic development in an integrated manner with a view to avoiding adverse impacts on the latter, taking into full account the legitimate priority needs of developing countries for the achievement of sustained economic growth and the eradication of poverty,

Recognizing that all countries, especially developing countries, need access to resources required to achieve sustainable social and economic development and that, in order for developing countries to progress towards that goal, their energy consumption will need to grow taking into account the possibilities for achieving greater energy efficiency and for controlling greenhouse gas emissions in general, including through the application of new technologies on terms which make such an application economically and socially beneficial,

ARTICLE 3 **PRINCIPLES**

In their actions to achieve the objective of the Convention and to implement its provisions, the Parties shall be guided, inter alia, by the following:

1. The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof.
2. The specific needs and special circumstances of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change, and of those Parties, especially developing country Parties, that would have to bear a disproportionate or abnormal burden under the Convention, should be given full consideration.
3. The Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost. To achieve this, such policies and measures should take into account different socio-economic contexts, be comprehensive, cover all relevant sources, sinks and reservoirs of greenhouse gases and adaptation, and comprise all economic sectors. Efforts to address climate change may be carried out cooperatively by interested Parties.
4. The Parties have a right to, and should, promote sustainable development. Policies and measures to protect the climate system against human-induced change should be appropriate for the specific conditions of each Party and should be integrated with national development programmes, taking into account that economic development is essential for adopting measures to address climate change.

5. The Parties should cooperate to promote a supportive and open international economic system that would lead to sustainable economic growth and development in all Parties, particularly developing country Parties, thus enabling them better to address the problems of climate change. Measures taken to combat climate change, including unilateral ones, should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade.

ARTICLE 4 **COMMITMENTS**

8. In the implementation of the commitments in this Article, the Parties shall give full consideration to what actions are necessary under the Convention, including actions related to funding, insurance and the transfer of technology, to meet the specific needs and concerns of developing country Parties arising from the adverse effects of climate change and/or the impact of the implementation of response measures, especially on:

- (a) Small island countries;
- (b) Countries with low-lying coastal areas;
- (c) Countries with arid and semi-arid areas, forested areas and areas liable to forest decay;
- (d) Countries with areas prone to natural disasters;
- (e) Countries with areas liable to drought and desertification;
- (f) Countries with areas of high urban atmospheric pollution;
- (g) Countries with areas with fragile ecosystems, including mountainous ecosystems;
- (h) Countries whose economies are highly dependent on income generated from the production, processing and export, and/or on consumption of fossil fuels and associated energy-intensive products; and
- (i) Land-locked and transit countries.

Further, the Conference of the Parties may take actions, as appropriate, with respect to this paragraph.

9. The Parties shall take full account of the specific needs and special situations of the least developed countries in their actions with regard to funding and transfer of technology.

10. The Parties shall, in accordance with Article 10, take into consideration in the implementation of the commitments of the Convention the situation of Parties, particularly developing country Parties, with economies that are vulnerable to the adverse effects of the implementation of measures to respond to climate change. This applies notably to Parties with economies that are highly dependent on income generated from the production, processing and export, and/or consumption of fossil fuels and associated energy-intensive products and/or the use of fossil fuels for which such Parties have serious difficulties in switching to alternatives.

ARTICLE 10 **SUBSIDIARY BODY FOR IMPLEMENTATION**

1. A subsidiary body for implementation is hereby established to assist the Conference of the Parties in the assessment and review of the effective implementation of the Convention. This body shall be open to participation by all Parties and comprise government representatives who are experts on matters related to climate change. It shall report regularly to the Conference of the Parties on all aspects of its work.

2. Under the guidance of the Conference of the Parties, this body shall:

- (a) Consider the information communicated in accordance with Article 12, paragraph 1, to assess the overall aggregated effect of the steps taken by the Parties in the light of the latest scientific assessments concerning climate change;
- (b) Consider the information communicated in accordance with Article 12, paragraph 2, in order to assist the Conference of the Parties in carrying out the reviews required by Article 4, paragraph 2(d); and
- (c) Assist the Conference of the Parties, as appropriate, in the preparation and implementation of its decisions.

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ISSN 1819-6926