

Even though the COP21 meeting in Paris concluded on a positive note, the implementation of mitigation and adaptation measures remains based on non-binding proposals and promises made by the countries who took part in COP21. In addition, the solutions discussed so far are based on the assumption and hope that new technologies will be developed that can help generate the needed abatement of Green House Gases (GHG) and that such new technology could be developed, sold and used based on “business as usual” in regard to protection of intellectual property rights (IPRs). This publication proposes instead an alternative way to halt climate warming. The author suggests that the treaty power of the WTO could be used to create the incentive system needed to transform “business as usual- IPR” to a “green oriented trade and development system” turning green high technology into a common resource that could give low-income developing countries access to green high technology goods and services which would enable them to contribute to the effort of stopping global warming at a global level. Finally, this publication proposes three green agreements within the WTO agreement framework that could generate the green investments and green production needed to successfully implement climate change mitigation and adaptation at global level and in the public interest.



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The FONDAZIONE  
ENI ENRICO MATTEI  
Series on

«Climate Change  
and Sustainable  
Development»

Greening the World Trade Organization | By Raymond Saner



By Raymond Saner

# Greening the World Trade Organization

2/2016



ENGLISH

The Fondazione Eni Enrico Mattei (FEEM) Series on  
«*Climate Change and Sustainable Development*»





## **Foreword**

Economic development is an essential component of the life of human societies: it is crucial to provide better living conditions to present to future generations. Poverty eradication, better nutrition, access to energy, health and education are objectives almost unanimously shared by all societies, but require economic development to be achieved. Resources in our planet are however finite, and living conditions do not depend only on economic development but also on the quality of the environment. Among the threats to economic development and quality of life in this planet, climate change is certainly the most important one. But other threats, from biodiversity losses to lack of water availability, often closely interrelated with climate change, cannot be neglected when assessing the future prospect of human life on earth. This series' goal is to provide a comprehensive and multidisciplinary approach to sustainable development and to analyze its economic, social and environmental components. FEEM's « Climate Change and Sustainable Development » Series aims indeed at disseminating research carried out and knowledge developed within FEEM's Climate Change and Sustainable Development program. Volumes will move from methodological tools (game theory, integrated assessment models, risk assessment tools, etc.) to economic and policy analysis of measures designed to control climate change, to offset its impacts and, more widely, to support and operationalize sustainable development.

## **Premessa**

*Lo sviluppo economico è una componente essenziale della vita delle nostre società: è infatti decisivo per fornire migliori condizioni di vita alle generazioni presenti e future. Ridurre la povertà, migliorare i livelli di nutrizione, fornire a tutti accesso all'energia, all'istruzione e ai servizi sanitari sono obiettivi unanimemente condivisi, ma che richiedono per essere raggiunti uno sviluppo economico diffuso e inclusivo. Le risorse del pianeta sono tuttavia limitate e le condizioni di vita non dipendono solo dallo sviluppo economico, ma anche dalla qualità dell'ambiente in cui viviamo. Il cambiamento climatico rappresenta oggi la più importante tra le minacce allo sviluppo economico e al miglioramento della qualità della vita sulla terra. Ma molte altre variabili, dalla perdita di biodiversità alla mancanza di risorse idriche, spesso dipendenti dal cambiamento climatico, vanno tenute in considerazione se si vuole capire quale possa essere il nostro futuro. L'obiettivo di questa collana è quello di fornire un approccio olistico e multidisciplinare allo sviluppo sostenibile, per poterlo analizzare in tutte le sue componenti: economiche, sociali, ambientali. La collana « Cambiamento Climatico e Sviluppo Sostenibile » è infatti uno degli strumenti con cui la Fondazione Eni Enrico Mattei vuole diffondere la ricerca e la conoscenza sviluppate dal suo programma "Climate Change and Sustainable Development". I volumi di questa collana spaziano quindi dagli strumenti metodologici necessari per valutare le dinamiche dello sviluppo sostenibile (dalla teoria dei giochi ai modelli integrati dell'economia mondiale) fino all'analisi delle migliori misure di policy concepite per controllare il cambiamento climatico, per limitarne i suoi effetti e più in generale per sostenere e concretizzare uno sviluppo economico sostenibile.*

The **Fondazione Eni Enrico Mattei (FEEM)** is a non-profit, nonpartisan research institution devoted to the study of sustainable development and global governance. FEEM's mission is to improve through research the rigour, credibility and quality of decision making in public and private spheres.

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*By Raymond Saner*

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*Key words: Climate Change, Public Goods, Global Public Goods, Green Technology, Green Goods and Services, TRIMS, TRIPS, WTO, UNFCCC, SSE, mutual supportiveness*

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## *Introduction: The interdependence of trade, development and climate*

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In view of the life endangering risks of climate change, researchers and scholars highly recommended that low carbon production, consumption and investment at national and global levels is urgently needed.<sup>1</sup>

Trade can have positive effects by improving resource allocation, promoting economic growth and increasing overall welfare but many environmental problems are related to the increased scale of global economic activity and global trade.

Concrete aspects of the complex relation between trade and environment were addressed at the 2012 Rio+20 United Nations Conference on Sustainable Development. A 10-year Framework of Programmes on sustainable consumption and production<sup>2</sup> was proposed as a major tool for accelerating the change of unsustainable patterns of consumption and production. The new approach should go beyond traditional measurements like Gross Domestic Product (GDP) and instead focus on broader measures of progress including social and environmental impacts ensuring sustainable development for all societies no matter what level of development.

Goals to reach global sustainable development have been outlined in the SDGs (Sustainable Development Goals) which were signed at the UN General Assembly on 25 September 2015. The SDGs are based on an integrated development approach consisting of three interconnected dimensions (economic, social and environmental). In order to achieve these goals, structural economic

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1 See Intergovernmental Panel on Climate Change, Geneva. IPCC (Intergovernmental Panel on Climate Change), (2007), *Climate Change 2007 – Impacts, Adaptation and Vulnerability*, New York: Cambridge University Press, 976 pp. See also IPCC's Assessment Reports and Technical Reports available from [http://www.ipcc.ch/publications\\_and\\_data/publications\\_and\\_data.shtml#1](http://www.ipcc.ch/publications_and_data/publications_and_data.shtml#1)

2 Rio+20 United Nations Conference on Sustainable Development (2012), "A 10-year framework of programmes on sustainable consumption and production patterns", [http://www.unep.org/rio20/portals/24180/Docs/a-conf.216-5\\_english.pdf](http://www.unep.org/rio20/portals/24180/Docs/a-conf.216-5_english.pdf)

transformation is needed in order to support the transition to a green economy. According to the Council of the European Union, this framework should “[c]onsist of a single set of clear goals, which are ambitious, evidence-based, achievable, action-oriented, limited in number and easy to communicate, with measurable targets and indicators which are both qualitative and quantitative and which should be reviewed and monitored to ensure transparency and accountability”.<sup>3</sup>

A set of clear and measurable guidelines can certainly be a major tool to change unsustainable patterns of consumption and production behaviour. For instance, low carbon investment can be achieved through incentives and sanctions which act as drivers and determinants influencing investors and investment flows towards low carbon investment. Low carbon investment can be achieved at national levels through green government policies, civil society pressures for sustainable growth and environmentally friendly business decisions by commercial actors.

The WTO through its goals, rules, institutions and forward-looking agenda, also provides an important means of advancing international environmental goals. The WTO’s founding agreement recognizes sustainable development as a central principle, and it is an objective running through all subjects in current Doha negotiations. The Agreement says WTO members recognize that “*their relations in the field of trade and economic endeavour should be conducted with a view to raising standards of living, ensuring full employment and a large and steadily growing volume of real income and effective demand, and expanding the production of and trade in goods and services, while allowing for the optimal use of the world’s resources in accordance with the objective of sustainable development, seeking both to protect and preserve the environment and to enhance the means for doing so in a manner consistent with their respective needs and concerns at different levels of economic development.*”<sup>4</sup>

Although the WTO agreements contain references to the environment as an essential component of sustainable development, those references are limited and the language is rather general and exhortatory in nature. It is worth mentioning that at the current stage, the WTO agreements do not offer a language to *specifically guide* WTO Members towards low-carbon production. WTO rules are neutral in regard to sustainable development in the sense that they refer to it as a desired objective but as mentioned above, the references are general. WTO rules just allow environment and trade to coexist but do not *specifically* promote sustainable development through a deeper integration of trade with environmental sustainability.

The Paris Agreement reached at the Twenty-First Conference of Parties to the UN Framework Convention on Climate Change (UNFCCC COP 21) in December 2015 in Paris calls for further cooperation between the trade and climate communities in order to build a more sustainable future. According to Govinsamy,

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3 Council of the European Union (2013), “The Overarching Post 2015 Agenda”, Council Conclusions, 25 June, [http://www.consilium.europa.eu/uedocs/cms\\_Data/docs/pressdata/EN/foraff/137606.pdf](http://www.consilium.europa.eu/uedocs/cms_Data/docs/pressdata/EN/foraff/137606.pdf)

4 WTO website, Legal texts, [https://www.wto.org/english/docs\\_e/legal\\_e/04-wto\\_e.htm](https://www.wto.org/english/docs_e/legal_e/04-wto_e.htm)

COP 21 “demonstrated that, if there is political will and good stewardship, outcomes to complex mult-issue negotiating processes can be secured.”<sup>5</sup> Paris is the first comprehensive climate agreement encompassing contributions from all the countries and emission mitigation efforts are now grounded in domestic action. Trade could be complementary with climate change mitigation. A supportive and open system can facilitate trade opportunities in areas that are relevant to addressing climate change such as clean energy. The interdependence of trade and climate change is best characterised as linkages as suggested below in Box 1.

Box 1.

**Main trade and climate change linkages**

- 1) *Climate change physically affects trade (in terms of patterns and volume);*
- 2) *Trade affects climate change, both directly and indirectly;*
- 3) *Climate change policies affect trade;*
- 4) *Trade policy is a mechanism to address climate change and promotion of low-carbon growth.*

Source: Teehankee, M., I. Jegou and R. J. Rodrigues (2012), “Multilateral Negotiations at the Intersection of Trade and Climate Change”, ICTSD Issue Paper no.2, page 7, <http://ictsd.org/downloads/2012/06/multilateral-negotiations-at-the-intersection-of-trade-and-climate-change.pdf>

Trade, investment and climate change are interdependent, as shown in the box above. Trade and investment policies affect climate change and vice-versa at the national and international level. The principle of mutual supportiveness and the concept of inter-ministerial coordination and consultation in trade policy making could be used to ensure coherent and complementary trade, investment and climate change policies to ensure that green investments will complement climate change mitigation and adaptation efforts.

However, developing countries perceive a number of risks related to trade and the green economy such as protectionist measures, price distorting subsidies, limited market access, imposition of technical standards, and conditional ties that could be used by developed economies to keep out exports of goods and services from developing countries.

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<sup>5</sup> Govindasamy, P. (2016), “Taking stock and working towards coherence: Perspectives of a trade-climate negotiator”, UNFCCC Biores, Volume 10, number 1, <http://www.ictsd.org/bridges-news/biores/news/taking-stock-and-working-towards-coherence-perspectives-of-a-trade-climate>

Box 2.

**Green economy, trade and perceived risks by developing countries**

- *Using environmental measures for trade protection;*
- *Gaining market access through the guise of environmental reasons;*
- *Facing production that is subsidized in the industrialized world without being able to impose corrective measures;*
- *Limiting the policy space that developing countries have to promote their own green economy sectors;*
- *Facing technical standards that developing country exporters cannot meet;*
- *Imposing new conditionality on developing countries for aid, loans, and debt rescheduling or debt relief.*

Source: Teehanke, M., I. Jegou and R. J. Rodrigues (2012), "Multilateral Negotiations at the Intersection of Trade and Climate Change", ICTSD Issue Paper no.2, page 137, <http://ictsd.org/downloads/2012/06/multilateral-negotiations-at-the-intersection-of-trade-and-climate-change.pdf>

What follows is a discussion of different conceptions of the environment as public good, global public good, common good or common resource and how the different conceptions can best be used to face the challenge and threat of climate change.

# 1. Environment as a Global Public Good

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## Definition of Public Goods, Global Public Goods and Common Goods

Economists and Social scientists have conceptualized the notions of Public Goods and Common Goods from different perspectives. The concept of Public Good evolved from a purely individualistic and market-oriented definition, to a concept which now includes the notion of society at global level. Natural scientists, however, prefer to treat the environment not so much as a good than a process and refer more to eco-systems than society. Therefore, the concept of Public Goods has to be understood as a metaphor, which stands for collectively shared interest or for common public concern. It is worth noting that a great amount of publications defining the concept of Global Public Goods has been produced between 1990s and 2000s, when the Millennium Development Goals were established.

## Public Goods and Common Goods as defined by economists

The most well known definition of Public Goods is the one developed by economists, particularly by Paul Samuelson. In 1954 Samuelson used jointness of consumption as an attribute to define private and public goods. Private consumption goods could be allocated to different consumers whereas public consumption goods “*all enjoy in common in the sense that each individual’s consumption of such a good leads to no subtractions<sup>6</sup> from any other individual’s consumption of that good.*”<sup>7</sup>

“Public Good” is hence defined in economics as a good that is both non-excludable and non-rivalrous, that is, individuals cannot be effectively excluded from use of a good and where use of a good by one individual does not reduce availability of the good to other individuals. Public Goods include many environmental resources such as water quality, open space, biodiversity, and a stable climate.

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<sup>6</sup> Subtractability refers to the degree to which one person's use of a resource diminishes others' use. See <http://www.onthecommons.org/technology-and-commons>

<sup>7</sup> Samuelson, P. (1954), “The Pure Theory of Public Expenditure”, *Review of Economics and Statistics*, Vol. 36, No. 4, Nov. 1954, p. 387, <http://www.econ.yale.edu/~nordhaus/homepage/PASandGPG.pdf>. In 1959, Richard Musgrave argued that a different attribute of goods is more important than jointness of supply: whether or not someone can be excluded from benefiting once the good is produced. See Musgrave, Richard (1959), *The Theory of Public Finance*. New York: McGraw-Hill.

However, spill overs of some economic activities generate environmental costs or externalities which the public has to absorb. Cornes and Sandler argue that public goods “can be thought of as special cases of externalities”.<sup>8</sup> An externality (environmental cost) arises when an individual or a firm takes an action but does not assume all the costs (negative externality)<sup>9</sup> or takes all the benefits of that action. A positive externality<sup>10</sup> occurs when the consumption or production of a good or service by one individual creates benefits for others for which the provider does not receive compensation. For example, an invention by a firm can create a technological spill over which not only benefits the firm but also enters into the society’s pool of technological knowledge and benefits the society as a whole.<sup>11</sup>

If a good is rivalrous but non-excludable, it is a “Common Good”. Common Goods which are made available because of an institutional arrangement are referred to as common-pool resources.<sup>12</sup> This is a type of good which consists of a natural or human-made resource system whose size or characteristics makes it difficult and costly to exclude other potential beneficiaries from obtaining benefits from its use. According to Ostrom, a common-pool resource is a good with “high exclusion costs and where one person’s consumption subtracts from the total”<sup>13</sup> The most relevant property rights for the use of common-pool resources are: the right to access, withdrawal, management, exclusion and alienation.<sup>14</sup>

The first attempt to analyze environmental resources from a common goods perspective was Hardin’s article “The Tragedy of the Commons” published in 1968. The article stated that commonly owned, freely accessible environmental resources will tend to be overexploited.<sup>15</sup> The Tragedy of the Commons occurs when users withdraw resources to secure short-term gains without regard for the long-term consequences (e.g. overfishing leading to a reduction of fish stocks). Common Goods get often used more than is desirable from the standpoint of society as a whole. Common Goods tend to be used excessively when individuals are not charged for their usage of a Common Good amounting to the equivalent of a

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8 Cornes, R. and T. Sandler (1996), *The Theory of Externalities, Public Goods and Club Goods*, 2nd ed. Cambridge: Cambridge University Press, p.6.

9 Rothschild, M. and J. E. Stiglitz (1976), “Equilibrium in Competitive Insurance Markets: An Essay on the Economics of Imperfect Information”, *Quarterly Journal of Economics*, 90(4), November, pp. 629–649, <http://www.uh.edu/~bsorensen/Rothschild&Stiglitz.pdf>

10 Varian, H.R. (2010), *Intermediate microeconomics: a modern approach*, New York, NY: W.W. Norton & Co.

11 Sankar, U. (2004), “Environmental Externalities”, Dissemination Paper, Madras School of Economics, <http://coe.mse.ac.in/dp/envt-ext-sankar.pdf>

12 Ostrom, E. (1990), *Governing the Commons: The Evolution of Institutions for Collective Action*, Cambridge, UK: Cambridge University Press.

13 Ostrom, E. (2003), “How types of goods and property rights jointly affect collective action”, *Journal of Theoretical Politics*, 15(3), London: Sage Publications, p. 249, [http://ostromworkshop.indiana.edu/reprints/R03\\_14.pdf](http://ostromworkshop.indiana.edu/reprints/R03_14.pdf)

14 Ibid.

15 Hardin, G. (1968), “The Tragedy of Commons”, *Science*, 162.

negative externality (cost to society). In defining individual property rights on the environment, either new markets can be created (e.g, on CO2 emissions), or in correcting existing markets, the price takes into account wasteful and unsustainable patterns of production and consumption generating negative externalities. When a good does not have a price attached to it, private market actors do not know whether a good is produced and consumed in the proper amounts. In such cases of negative externalities, a regulatory policy can potentially remedy such market failure.<sup>16</sup>

*Table 1. Notion of Public goods and Common Goods as defined by economists*

	Excludable	Non-excludable
Rivalrous	Private goods Example: food, clothing, cars, parking spaces	Common goods (Common-pool resources) Goods subject to congestion or depletion, yet accessible to all Example: fish stocks, timber, coal
Non-rivalrous	Network Club goods (mostly non-rivalrous consumption inside the club) Example: cinemas, private parks, satellite television	Public goods Example: free-to-air television, air, national defence, ozone layer

Source: Kaul, I., I. Grunberg and M. A. Stern (eds.) (1999), *Global public goods: international cooperation in the 21st century*, NY: Oxford University Press, Inc, p.5  
<http://web.undp.org/globalpublicgoods/TheBook/globalpublicgoods.pdf> and Wikipedia,  
[https://en.wikipedia.org/wiki/Common-pool\\_resource](https://en.wikipedia.org/wiki/Common-pool_resource)

### **Market failure, Free-rider and Prisoner’s dilemma**

Public Goods and Common Goods represent a “market failure”<sup>17</sup> when individual actors (free-riders) have little incentive to voluntarily provide public goods since they can simply enjoy the benefits of using non-rival and non-excludable public goods

<sup>16</sup> <http://www.econ.uiuc.edu/~seppala/econ102/lect10.pdf>

<sup>17</sup> Bator, F. M. (1958), “The Anatomy of Market Failure”, *Quarterly Journal of Economics*, 72(3) p. 351. See also Davis and Hulett (1977); and Malinvaud, Milleron and Sen (1998).

provided by others.

Unlike public goods, common pool resources face problems of congestion or overuse, because they are subtractable. A common-pool resource typically consists of a core resource (e.g. water or fish), which defines the stock variable, while providing a limited quantity of extractable fringe units, which defines the flow variable. While the core resource is to be protected or nurtured in order to allow for its continuous exploitation, the fringe units can be harvested or consumed.

While the patterns of behaviour described above are rational, from an individual point of view the result of a market failure is suboptimal from a collective perspective (local community, nation, etc.). Hence, efficient provision of such types of goods faces a set of challenges. One challenge is related to the fact that free-riding incentives are stronger when the number of people involved is larger. A second challenge is related to the nature of international coordination among nations with different interests.<sup>18</sup> The literature identifies two main problems affecting the provision of public goods known as “free riding” and the “prisoner’s dilemma”.

A free rider is “someone who enjoys the benefits of a (public) good without paying for it. Because it is difficult to preclude anyone from using a pure public good, those who benefit from the good have an incentive to avoid paying for it—that is, to be free riders.”<sup>19</sup> Hume first described this problem suggesting that joint work for the common good would fail due to an individual’s incentive to “free himself of the trouble and expense, and . . . lay the whole burden on others.”<sup>20</sup>

A situation where lack of information impedes collaboration is described in game theory as the Prisoner’s dilemma. It represents a “situation in which the independent pursuit of self-interest by two parties makes them both worse off.”<sup>21</sup> The role of the state is important for the supply of public goods and for the prevention of a “Prisoner’s Dilemma” situation. In the context of market failures and collective action problems, the state can improve conditions for cooperation by establishing new or clearer property rights, setting norms and standards or offering fiscal incentives, among other things.

### **Public goods and Common Goods as defined by social scientists**

The notion of public goods and common goods has been address by many scholars

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18 Kotchen, M. (2012), Public Goods, University of Yale, <http://environment.yale.edu/kotchen/pubs/pgchap.pdf> For a literature review the concept of public goods see Cornes and Sandler (1996), Cowen (1992), Sandler (2001).

19 Kaul et al. 1999, p.509

20 Hume, D. (1961) [1739], *A Treatise of Human Nature*, Garden City, NJ: Dolphin Books, p. 478.

21 Kaul et al. (1999), p.510. See also Hardin (1971); Brams (1973); Riker and Ordeshook (1973); Kimber (1981); Conybeare (1984); and Oye (1986).

from a social science perspective. Most of these contributions consider the role of the society and the common interest as critical elements to define public goods and common goods. They tend to be critical about market solutions and generally promote social arrangements, such as community based, approaches. Dupré defines it as “a good proper to, and attainable only by the community, yet individually shared by its members.”<sup>22</sup> Cahill defines the common good as “a solidaristic association of persons that is more than the good of individuals in the aggregate.”<sup>23</sup> Hollenbach describes the common good (singular) as “the good realized in the mutual relationships in and through which human beings achieve their well-being.”<sup>24</sup> Deneulin and Townsend argued that “that the extent to which a good is perceived as ‘public’ does not depend as much on its inherent characteristics as on prevailing social values within a given society about what should be provided by non-market mechanisms.”<sup>25</sup> Sekera defines public goods as “goods and services that are supplied through non-market, public production and that are: a. created through collective choice, b. paid for collectively, and c. supplied without charge (or below cost) to recipients.”<sup>26</sup>

These definitions clearly illustrate the social science approach to the notion of Public Goods and show how they differ from the ones of such economists supporting privatization and undermining a government’s ability to operate.<sup>27</sup> Stretton and Orchard show how the deficiencies in Samuelson’s definition have enabled critics of government to use it to attack government provision of goods and services. The authors stress that “[t]he amount and kind of public goods have to be determined by political choice...Those choices are not likely to be improved by the use or the common misuses of [current] public goods theory...”<sup>28</sup>

Wuyts questions the definition of Public Goods arguing that the extent to which a good is perceived as “public” depends on prevailing social values within a given society about what should be provided by non-market mechanisms (and not so much on its inherent characteristics).<sup>29</sup> Quilligan criticises the lack of human meaning in the way public goods and common goods are defined. This author suggests that while “[f]ormal categories may help clarify distinctions among private, public and common goods ... they do not convey the sense of human meaning, being and intersubjectivity

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22 Dupré, L. (1994), “The Common Good and the Open Society”, in Douglas, R. B. and D. Hollenbach, *Catholicism and Liberalism*, Cambridge: Cambridge University Press, p. 173.

23 Cahill, L. S. (2005), “Globalisation and the Common Good”, in Coleman, J. A. and W. F. Ryan, *Globalization and Catholic Social Thought: Present Crisis, Future Hope* Ottawa: St Paul University, p.9

24 Hollenbach, D. (2002), *The Common Good and Christian Ethics*, Cambridge: Cambridge University Press, p.81

25 Deneulin, S. and N. Townsend (2006), “Public Goods, Global Public Goods and the Common Good”, WeD Working Paper 18; Sept.

26 Sekera, J. (2014), “Re-thinking the Definition of “Public Goods””, *Real-World Economics Review Blog*, [https://rwer.wordpress.com/2014/07/09/re-thinking-the-definition-of-public-goods/#\\_ftnref19](https://rwer.wordpress.com/2014/07/09/re-thinking-the-definition-of-public-goods/#_ftnref19)

27 See [https://rwer.wordpress.com/2014/07/09/re-thinking-the-definition-of-public-goods/#\\_ftn14](https://rwer.wordpress.com/2014/07/09/re-thinking-the-definition-of-public-goods/#_ftn14)

28 Stretton, H. and L. Orchard (1994), *Public Goods; Public Enterprise, Public Choice: Theoretical Foundations of the Contemporary Attack on Government*.

29 Wuyts, M. (1992), “Deprivation and Public Need”, in Macintosh, M. and M. Wuyts, *Development Policy and Public*, Action Milton Keynes: Oxford University Press.

*that lie at the heart of any commons.*”<sup>30</sup>

Other authors such as Bürgermeier suggest that the notion of Common Good is not as clearly defined as it looks at a first glance. It refers to the idea of the general interest. In his view, “*the concept of economic globalization is merely an excuse – an attempt by society to strangle public debate on the need for new forms of social regulation. It reinforces a utilitarian view of the public good as the sum of individual actions, in which each individual knows best what is in his own interest.*”<sup>31</sup>. Resources such as forests and water can neither be classified along the distinction between private individual and public, collective or state ownership, nor between market, and non-market solution. As “*a social welfare function is the imperfect expression of the common good, it cannot exclusively be linked to a unique property right regime. Its link to a system of common ownership*” also remains possible.<sup>32</sup> It is in each individual’s interest to opt for a strategy to avoid overexploitation of common resources.

Wastage of resources results in a sub-optimal situation. The following two strategies for defining the concept of common good in response to this sub-optimal situation are well known.<sup>33</sup> One strategy attempts to remedy market failure by internalizing the effects of pollution into the economic calculus of market players (“polluter pays” principle) along the views suggested by the United Nations Environment Programme which states, “*whoever is responsible for damage to the environment should bear the costs associated with it.*”<sup>34</sup> The other strategy seeks to correct the lack of clearly defined rights of private ownership and assigns to environmental goods (flora, fauna or biodiverse genetic resources) the rights of private ownership that can be traded on newly created markets. As put by Libecap, property rights “*address the externality directly and link individual incentives with social objectives for environmental and natural resource use. Property rights allow for markets, and markets provide price signals on alternative uses, generating data on the costs and benefits of constraining emissions, fishing, and other forms of common-pool extraction and of providing environmental amenities and other potential public goods.*”<sup>35</sup>

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30 Quilligan, J. B. (2012), “Why Distinguish Common Goods From Public Goods?” in Bollier, D. & S. Helfrich (eds), *The Wealth of the Commons: A World Beyond Market & State*, <http://wealthofthecommons.org/essay/why-distinguish-common-goods-public-goods>

31 Bürgermeier, B. (1999), “Globalization versus Sustainable Development: A Question of the Common Good”, *International Journal of Sustainable Development*, Volume 2, Issue 4, <http://www.inderscienceonline.com/doi/abs/10.1504/IJSD.1999.004348>

32 Ibid.

33 Ibid.

34 UNEP (2006), “Training Manual on International Environmental Law”, Chapter 3.8, [http://www.unep.org/environmentalgovernance/Portals/8/documents/training\\_Manual.pdf](http://www.unep.org/environmentalgovernance/Portals/8/documents/training_Manual.pdf)[http://www.unep.org/environmentalgovernance/Portals/8/documents/training\\_Manual.pdf](http://www.unep.org/environmentalgovernance/Portals/8/documents/training_Manual.pdf)

35 Libecap, G. (2009), “The tragedy of the commons: property rights and markets as solutions to resource and environmental problems”, *Australian Journal of Agricultural and Resource Economics*, Volume 53, Issue 1, <http://onlinelibrary.wiley.com/doi/10.1111/j.1467-8489.2007.00425.x/full#fn12>

## Environment / Climate Change Mitigation as examples of a Global Public Good

Global public goods “*tend towards universality in the sense that they benefit all countries, population groups and generations*”.<sup>36</sup> That is, the benefits of a public good are strongly universal covering more than one group of countries, accruing to several (all), population groups and extending to both current and future generations (or at least meet the needs of current generations without compromising future generations).

Kaul et al. place the definition of global public good in a shaded area between Common Goods, Network Club goods and Public Goods (see table 1). According to Kaul et al., there are few “pure” private and “pure” public goods. Most goods possess mixed benefits; for example, consuming a nutritious meal is highly private but has public benefits because it adds to people’s good health, enhancing their ability to acquire skills and to work productively.<sup>37</sup> Impure public goods fall into two categories: goods that are non-rivalrous in consumption but are excludable club goods (see table 1); and goods that are mostly non-excludable but rivalrous in consumption are common pool resources.

A characteristic of global public goods is that they are generally underprovided, which implies that too little is being produced to be socially optimal. Environmental warming is a global threat that requires global remedial action. Climate change represents a tragedy of the global commons. Tackling this threat requires governance with a high degree of institutional diversity. Ostrom suggests a polycentric approach that would allow efforts to be made at multiple levels to create opportunities for learning and sharing.<sup>38</sup>

According to Grasso, climate change mitigation is a global public good because “*the emissions of greenhouse gases of each individual country contribute cumulatively to the increase of the overall concentration, and each country’s abatements entail higher cost than benefit, unless effective concerted collective actions take place*.”<sup>39</sup> The climate is the result of everyone’s behaviour: the emissions of all sources in all nations that cause the concentration of GHGs in the atmosphere. As described by Sandler, global warming is “*the quintessential global pure public good, because each country’s release of GHGs augments the world’s atmospheric stock in an additive fashion and each country’s cutback results in a greater cost than benefit for that country unless assurances can be given that a sufficient number*

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36 Kaul, I., I. Grunberg and M. A. Stern (Eds) (1999), *Global Public Goods: International Cooperation in the 21st Century*, Oxford: Oxford University Press, p.16,  
<http://web.undp.org/globalpublicgoods/TheBook/globalpublicgoods.pdf>

37 Kaul et al. (1999), p.4

38 Ostrom, E. (2010), “A Polycentric Approach for Coping with Climate Change”, Policy Research Working Paper 5095, Washington DC : World Bank.

39 Grasso, M. (2004), “Climate change: the global public good”, Dipartimento di Sociologia e Ricerca Sociale - Università degli Studi di Milano Bicocca,  
<http://econwpa.repec.org/eps/othr/papers/0405/0405010.pdf>

*of nations will act.*<sup>40</sup> Any independent singular action to address the climate change issue has almost trivial effects. The underlining implication is that there is a strong incentive for everyone to escape the burden of his/her provision quota, waiting for others to take initiative, unless a truly concerted effort is put in place.

International organizations such as the United Nations Development Programme (UNDP), the World Bank and the United Nations Industrial Development Organization (UNIDO) define the environment as a global public good. The book titled “Global Public Goods: International Cooperation in the 21st Century”, edited by Kaul et al. (and cited in this paper) was published by UNDP in 1999. The book breaks new ground by extrapolating the concept of “public goods” from the national level to the global level. A few years later, a seminar was organized by the World Bank with the aim to discuss the concepts underlying global public goods and the controversies surrounding them. Climate change was addressed as a “bad” global public good. According to the World Bank, “*Public goods are considered global when they have universal benefits, covering multiple groups of countries and all populations ... [Global Public Goods] are almost inevitably undersupplied. Because there is no exclusivity, private sector will not provide sufficient amount. ... For example, scientific and technological research, key to addressing many other global issues, is itself a global public good in many cases, yet is widely underfunded. At the same time there is overproduction of global public “bads,” such as communicable diseases, transnational drug smuggling, climate change, and human rights abuses.*”<sup>41</sup>

In 2001, the UN Secretary-General’s Road Map report on the implementation of the UN Millennium Declaration<sup>42</sup> included the “global natural commons” among the 10 global public goods that the international community should focus on:

1. Basic human dignity for all people, including universal access to basic education and health care.
2. Respect for national sovereignty.
3. Global public health, particularly communicable disease control.
4. Global security or, put differently, a global public domain free from crime and violence.
5. Global peace.
6. Communication and transportation systems harmonized across borders.
7. Institutional infrastructure harmonized across borders to foster such goals

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40 Sandler T. (1998), “Global and regional public goods: a prognosis for collective action”, *Fiscal Studies*, 19(3): 221-247, p. 225, [http://www.ifs.org.uk/fs/articles/sandler\\_aug98.pdf](http://www.ifs.org.uk/fs/articles/sandler_aug98.pdf)

41 World Bank website, <http://web.worldbank.org/WBSITE/EXTERNAL/EXTABOUTUS/0,,contentMDK:20627295~pagePK:51123644~piPK:329829~theSitePK:29708,00.html>

42 United Nations (2001), “Road Map towards the Implementation of the United Nations Millennium Declaration”, Report of the Secretary-General, 6 September, A/56/326. New York.

- as market efficiency, universal human rights, transparent and accountable governance, and harmonization of technical standards.
8. Concerted management of knowledge, including worldwide respect for intellectual property rights.
  9. Concerted management of the global natural commons to promote their sustainable use.
  10. Availability of international arenas for multilateral negotiations between states as well as between state and nonstate actors.

A couple of years later, UNIDO produced a report on Public Goods for Economic Development, recognizing that the provision of public goods is a key element for the quality of life and for environmental sustainability. According to this UNIDO report, “[s]everal categories of public goods identified in the public goods literature are closely related to five of the Millennium Development Goals: the environment, health, knowledge, security and governance ... (environment, health and security) are associated largely with benefits derived from reducing risks. ... The environment, knowledge and governance public goods are most closely related to the work of the United Nations Industrial Development Organization (UNIDO) ...”<sup>43</sup>

Other institutions such as the Catholic Church define climate change as common good rather than as public good. Pope Francis’s encyclical on ecology, *Laudato Si*, defines climate change as “a common good, belonging to all and meant for all”. According to the encyclical on ecology, “[a]t the global level, it is a complex system linked to many of the essential conditions for human life. A very solid scientific consensus indicates that we are presently witnessing a disturbing warming of the climatic system... Humanity is called to recognize the need for changes of lifestyle, production and consumption, in order to combat this warming or at least the human causes which produce or aggravate it.”<sup>44</sup>

These different forms of defining environment /climate change mitigation as global public good, public good and common good put in evidence the lack of a globally agreed definition by scholars and international organizations. The table below highlights the different definitions of environment / climate change mitigation developed by scholars and international organizations.

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43 UNIDO (2008), “Public Goods for Economic Development”, p.1, [https://www.unido.org/fileadmin/user\\_media/Publications/documents/Public%20goods%20for%20economic%20development\\_sale.pdf](https://www.unido.org/fileadmin/user_media/Publications/documents/Public%20goods%20for%20economic%20development_sale.pdf)

44 [http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco\\_20150524\\_enciclica-laudato-si.html](http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html)

*Table 2. Environment / Knowledge matrix*

	Public Good	Global Public Good	Common Good	Common resource
Environment	UNIDO 2008	Kaul et al. 1999; Grasso 2004; World Bank 2005; UN Secretary-General's Road Map report on the implementation of the UN Millennium Declaration 2001	Ostrom 1990; Pope Francis' encyclica 2015	Bürgenmeier 1999
Knowledge - Green technology	Ostrom 2003	Stiglitz 1999		

Source: author's own elaboration



## 2. *New thinking about the interface between trade, investment and climate change*

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New thinking is emerging in regards to the interface between trade, investment and climate change. Different international organizations (but also civil society organizations) are discussing different alternatives to strive towards green investment and a green economy. This section identifies some of the many initiatives and programmes put in place by different organizations that suggest focusing on green investment.<sup>45</sup> It is worth noting that in some cases, the narratives do not refer at all to the WTO rules or to the UNFCCC framework.

The **United Nations Conference on Trade and Development (UNCTAD)** has taken a lead in supporting developing countries' strategies related to investment agreements. It has developed a set of core principles<sup>46</sup> which are operationalized in the form of an Investment Policy Framework for Sustainable Development (IPFSD), translating these core principles into Guidelines for National Investment Policies and Options for provisions for the design and use of International Investment Agreements. This approach towards sustainable investment has a precedent in the World Investment Report of 2010.<sup>47</sup> That year, the report had a focus on low-carbon investment and suggested different actions that have direct or indirect relation with the TRIMS and TIRPS agreements.

Some of these references indicate that some of the actions proposed in WIR 2010 are trade-related investment measures focusing on green investment. As highlighted by the WIR 2010, these actions have also Intellectual Property Rights implications.

Conversely, it is worth mentioning that the UNCTAD report (2013) on "Global Value Chains and Development: Investment and value added trade in the global economy"<sup>48</sup> does not mention the TRIMS option a single time. Indeed, all seven references to the WTO made in the report are related to the OECD-WTO

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45 This is not an exhaustive list of initiatives and programmes

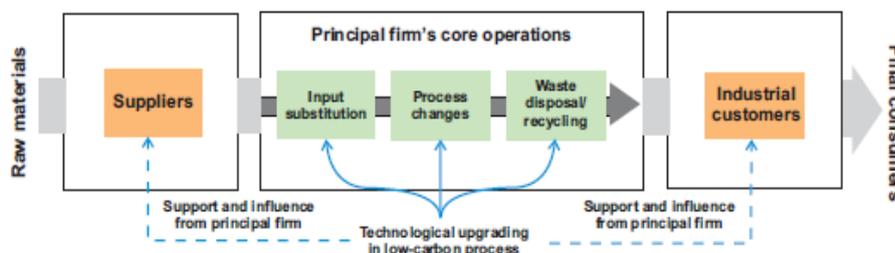
46 The Core Principles of investment policymaking of the Investment Policy Framework for Sustainable Development (IPFSD) are: 1. Investment for sustainable development; 2. Policy coherence; 3. Public governance and institutions; 4. Dynamic policymaking; 5. Balanced rights and obligations; 6. Right to regulate; 7. Openness to investment; 8. Investment protection and treatment; 9. Investment promotion and facilitation; 10. Corporate governance and responsibility; and 11. International cooperation. See <http://investmentpolicyhub.unctad.org/Views/Public/IndexIPFSD.aspx>

47 The first author of this policy brief was member of the think tank of WIR 2010 and drafted a concept note for the WIR 2010 issue.

48 [http://unctad.org/en/PublicationsLibrary/diae2013d1\\_en.pdf](http://unctad.org/en/PublicationsLibrary/diae2013d1_en.pdf)

database on global value chains but no reference is made to either “green” or “low-carbon” investment.

Figure 1. UNCTAD’s identification of Low-carbon processes leading to GHG emissions reductions along a typical value chain



Source: UNCTAD.

Note: The value chain depicted in this figure is "typical" for the manufacturing sector. Analogous activities in other value chain or network activities, e.g. in financial services or utilities, can also be depicted.

Source: UNCTAD (2010), “World Investment Report”, page 105, [http://unctad.org/en/Docs/wir2010\\_en.pdf](http://unctad.org/en/Docs/wir2010_en.pdf)

The **United Nations Environment Programme (UNEP)** has called for a “Global Green New Deal” (2009) and has published a document identifying national policies providing green stimulus for the Pittsburgh G20 Summit in 2009.<sup>49</sup> The recommendations made in regards to changes in domestic and international policy architectures (UNEP 2009; 2) are reproduced below:

*“The green investments contained in the global stimulus packages need to be supported by domestic and international policy architectures in order to ensure they contribute to a long-term transition to a green economy. Six domestic policy reforms are recommended:*

- Reduce perverse subsidies (for example on fossil fuels and non-sustainable agriculture);
- Create positive incentives and appropriate taxes to reward more sustainable practices;
- Improve land use and urban policy;
- Develop integrated management of freshwater resources;
- Introduce and improve environmental legislation and enforcement; and
- Implement systems for monitoring and accounting for the economic contributions made by green investments, such as environmental economic accounting.

*The Global Green New Deal policy brief also identified the international policy architecture requiring attention: trade, aid, carbon pricing, markets for ecosystem services, development and transfer of technology, and policy coordination. As part of reforms in these areas, further support should be offered for green investments in non-G20 countries to ensure we achieve a global green economic transition.”*

Furthermore, UNEP’s 2012 Annual Report lists only one reference to the

49 <http://www.unep.ch/etb/publications/Green%20Economy/G%2020%20policy%20brief%20FINAL.pdf>

WTO and about 5 or 6 to the UNFCCC.<sup>50</sup> Some relevant references for the issue of green investment included in this report include the following: “*UNEP’s climate finance programmes such as ACAD [African Carbon Asset Development] have made a real difference by building the skills and understanding of financial institutions on carbon finance, supporting entrepreneurs with seed capital and improving the access of end-users to clean energy technologies through practical micro-credit schemes. Together, they are helping to realize the abundant low-carbon investment opportunities in Africa.*” (p.32)

“*The Natural Capital Declaration (NCD), a finance-led initiative to integrate natural capital considerations into lending, investment and insurance decisions, was launched at Rio+20 and is signed up to by 40 CEOs of financial institutions. The NCD has four core commitments to: build an understanding of dependencies on natural capital; embed natural capital in financial products and services; report or disclose on the theme of natural capital; and account for natural capital in accounting frameworks. UNEP’s Finance Initiative is planning to develop a strategy to guide financial institutions to implement the four commitments.*” (p.65)

“*Enhanced understanding of the resource flows and their related environmental impacts along global value chains, as well as the potential for decoupling economic growth from environmental degradation Improved capacity of governments and public institutions to manage key resource challenges, and integrate resource efficiency in their policies Increased uptake in resource efficiency management practices and investments over product life-cycles and along supply chains. Better informed consumers favouring more resource-efficient and environmentally friendly products.*” (p.89)

“*Accelerating the transition to resource-efficient societies. Applying insights from scientific and macroeconomic analyses to identify investment opportunities for sustainable business models and enhancing the efficiency of resource intensive industries and supply chains in key target sectors.*” (p.89)

UNEP has developed businesses cases to support the transition towards a green economy. Some publications related to this issue are: “The Business Case for the Green Economy: Sustainable Return on Investment” and the “Principles for Responsible Investment and UN Global Compact Principles” developed by the UNEP Finance Initiative.

The **World Trade Organization (WTO)** addresses new challenges related to trade, climate change, and energy, among others. On 13 April 2012, the Director-General of the WTO, Pascal Lamy, announced the establishment of the Panel on Defining the Future of Trade.<sup>51</sup> The Panel was mandated to: “...*examine and analyse challenges to global trade opening in the 21st century*” against the background of profound transformations occurring in the world economy, looking “*at the drivers*

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50 [http://www.unep.org/gc/gc27/docs/UNEP\\_ANNUAL\\_REPORT\\_2012.pdf](http://www.unep.org/gc/gc27/docs/UNEP_ANNUAL_REPORT_2012.pdf)

51 The panel was set up by the WTO DG under his own responsibility and its report was a private contribution to internal discussions by WTO Members. According to some WTO Delegates, both the composition of the panel and its report were received with skepticism by quite a few Members and its recommendations have not even been discussed in any body of the WTO.

*of today's and tomorrow's trade, [...] at trade patterns and at that it means to open global trade in the 21st century, bearing in mind the role of trade in contributing to sustainable development, growth, jobs and poverty alleviation."*

Some of the report's most relevant ideas and recommendations include: *"Many areas of climate change policy potentially intersect with trade policy. In the past, international agreements on the environment, such as the Montreal Protocol, have managed both the environmental and trade aspects of cooperation without a clash. This should provide inspiration to governments as we risk encountering problems of incompatibility that could lead to a clash of regimes that would hurt climate change mitigation efforts and trade. This has not occurred yet, although it has been widely discussed and is a concern of many. One way we already see how this may happen is in the rash of contingent protection cases initiated at the WTO among several countries in relation to government support for renewable energy. In our view it is the primary responsibility of the environment negotiators to define what is necessary in order to ensure adequate mitigation actions, and then it is a shared responsibility of the trade and environment communities to ensure that measures do not undermine trade and pander to special interests."*<sup>52</sup>

The report addresses the issue of coherence of international economic rules, it states that trade and investment go hand-in-hand and that trade can support sustainable development. However, it states that "it is the primary responsibility of environment negotiators to define necessary mitigation actions, and a shared responsibility of the trade and environment communities to ensure compatibility between the two regimes". This statement seems like an abdication of WTO responsibility in promoting sustainable development and fighting climate change. Furthermore, the report does not contain a single reference to the UNFCCC.

Other international organizations have also started to work on these trade-investment-environment interdependence. The **United Nations Economic and Social Commission for Asia Pacific (UNESCAP)** published a document on "Promoting Climate-Smart Foreign Direct Investment"<sup>53</sup> which highlights the importance and determinants of climate-smart foreign direct investment.

A report by the **United Nations Development Group** highlights that consultations with stakeholders reveal that environmental damage and natural resource scarcity that threatens people's health and livelihoods. At the national level, people are calling for action on the environmental impacts that they can see and feel. According to this publication, *"Though effective for campaigning, the simplicity of the MDGs has also been characterized by some as their main weakness. They do not reflect the*

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52 WTO (2013), "The Future of Trade: The Challenges of Convergence", Report of the Panel on Defining the Future of Trade convened by WTO Director-General Pascal Lamy, [http://www.wto.org/english/thewto\\_e/dg\\_e/dft\\_panel\\_e/future\\_of\\_trade\\_report\\_e.pdf](http://www.wto.org/english/thewto_e/dg_e/dft_panel_e/future_of_trade_report_e.pdf), p. 37

53 <http://www.unescap.org/tid/publication/tipub2614-chap7.pdf>. The document offers an example of environmental provisions in BITs on page 173.

*full breadth of the Millennium Declaration, as the choice of MDGs omitted issues such as governance, peace and security, equality and unprecedented demographic change, and minimized the framing of environmental sustainability.*<sup>54</sup>

The **United Nations Division for Sustainable Development (United Nations Department of Economic and Social Affairs, UNDESA)** published in 2012 a report called “A guidebook to the Green Economy” dealing with history, definitions and a guide to recent publications in regard to Green Economy, Green Growth, and Low-Carbon Development.<sup>55</sup> However, it is worth noting that the while the publication contains some references to the UNFCCC, there is no single mentioning of the WTO. Furthermore, UNDESA’s annotated outline of the UN Global Sustainable Development Report 2013<sup>56</sup> is another example of an official document which does not make any reference to the link between trade and climate change, which shows shortcomings regarding link between sustainable development goals and the trade and environment frameworks.

The **World Bank** has recently presented its approach to climate finance and Public Private Partnerships.<sup>57</sup> The main passages related to CDM (Clean Development Mechanism) and green investment are reproduced below:

*“The core component of the green investment climate – Green Investment Policies and Incentives ... includes four main parts: (i) policies and legislation; (ii) financial and economic instruments; (iii) programs and institutions; and (iv) the regulatory environment.*

*As indicated, the CDM regulatory framework is limited in supporting new investments to reach its green growth potential. Successful growth in these investments requires a credible and efficient regulatory framework of enforceable contracts that will ensure that financially supported projects actually achieve their service obligations and environmental benefits. Thus, the third element of the Green Infrastructure Framework is a regulatory component integrated with the existing country regulatory framework. The main element of such a regulatory framework should be a reliable and efficient system for measuring, reporting and verifying (MRV) environmental benefits of the investment that will be supported with concessional or subsidized financing, particularly if the intention is to issue CERs for up-front financing.*

*... The need for some level of concessional financing or outright subsidy support is widely understood but the approach must be equitable, non-political and deliver a sufficient level of sup-*

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54 United Nations Development Group (2013), “Global Conservation Begins: Emerging views for a new development agenda”, <http://www.undp.org/content/dam/undp/library/MDG/english/global-conversation-begins-web.pdf>, p.3

55 UNDESA (2012), “A guidebook to the Green Economy”, [http://www.uncsd2012.org/content/documents/528Green%20Economy%20Guidebook\\_100912\\_FINAL.pdf](http://www.uncsd2012.org/content/documents/528Green%20Economy%20Guidebook_100912_FINAL.pdf)

56 UNDESA (2013), “Annotated outline of the UN Global Sustainable Development Report”, <http://sustainabledevelopment.un.org/content/documents/1737outline.pdf>

57 <http://www.worldbank.org/en/news/feature/2013/03/13/a-public-private-partnership-approach-to-climate-finance>

port. Current international programs have sought to address some of these constraints but lack elements in their framework to utilize public financing to their maximum effectiveness and to help host governments to play a responsible and legitimate role in resolving the financing dilemma of many green investments. The carbon market historically has not provided stable and predictable financing mechanism to support new investments in clean technologies. Moreover, CDM that operates within this market is not designed to handle structured finance requirements that many clean technology projects need in order to reach financial closure.” (pp. 9-11)

The World Bank also published a report on the State and Trends of the Carbon Market. According to the 2012 report, several domestic and regional low-carbon initiatives, including market mechanisms, gained increasing traction in both developed and developing economies in 2011 and early 2012. These initiatives were implemented in Australia (Clean Energy Act), California and Québec (cap-and trade regulation), Mexico and the Republic of Korea.<sup>58</sup>

Strategic collaborations around climate change issues and action are essential for the World Bank. Its president, Mr. Jim Yong Kim said recently: “To deliver bold solutions on climate change, we need to listen to and engage broader and more diverse audiences.”<sup>59</sup> **Connect4Climate (C4C)**<sup>60</sup> is a global partnership programme dedicated to climate change and supported by the bank, Italy's environment ministry and the Global Environment Facility (GEF)<sup>61</sup>. The programme operates as a coalition of more than 150 knowledge partners ranging from major UN agencies to academic institutions to media organizations and NGOs.

The **Organization for Economic Cooperation and Development (OECD)** published two reports in 2011 on “Harnessing Freedom of Investment for Green Growth” and on “Environmental concerns in international investment agreements: a survey”.<sup>62</sup> However, it is worth noting that none of these two OECD report relate to environmental concerns in international investment agreements nor do they make any reference at all to the WTO framework or the TRIMS Agreement. The same applies to the “OECD Guidelines for Multinational Enterprises: Reference instruments and initiatives relevant to the updated Guidelines” (2012).<sup>63</sup> Furthermore, the OECD Policy Framework for Investment includes “Responsible Business Conduct” as one of its policy areas but there is no mention to

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58 World Bank (2012), “State and Trends of the Carbon Market”, [http://siteresources.worldbank.org/INTCARBONFINANCE/Resources/Executive\\_Summary\\_S\\_andT\\_2012\\_FINAL\\_120528.pdf](http://siteresources.worldbank.org/INTCARBONFINANCE/Resources/Executive_Summary_S_andT_2012_FINAL_120528.pdf), p.11

59 <http://blogs.worldbank.org/climatechange/climate-change-lessons-cross-sector-collaboration>

60 [http://connect4climate.org/about\\_c4c/about-connect4climate](http://connect4climate.org/about_c4c/about-connect4climate)

61 <http://www.thegef.org/gef/>

62 OECD work on international investment law is available from <http://www.oecd.org/investment/internationalinvestmentagreements/oecdworkoninternationalinvestmentlaw.htm>

63 OECD (2012), “Guidelines for Multinational Enterprises: Reference instruments and initiatives relevant to the updated Guidelines”.<http://www.oecd.org/daf/inv/mne/ResourceDocumentWeb.pdf>

environment.<sup>64</sup>

The 2013 OECD Global Forum on Development<sup>65</sup> addressed, among other issues, the inter-linkages and trade-offs of the multi-dimensional nature of poverty reduction approaches. The issues of climate change, trade and investment were identified as multi-dimensional challenges to fight poverty. Some of the main references in regard to environmental challenges, climate and resource use included in the OECD Discussion Paper (2013)<sup>66</sup> are reproduced below:

*“While current poverty trends are broadly positive, for the environmental sector the news is almost entirely gloomy (Millennium Ecosystems Assessment, 2006; OECD, 2012). Of the nine planetary boundaries identified by the Stockholm Resilience Centre (Rockstrom et al., 2009) – the limits within which humanity can operate safely – three (climate change, biodiversity loss and the nitrogen concentration in the oceans) have already been breached and others are close to the edge. To avert catastrophe, current trends have to be reversed, and soon.”*

*“Climate change, in particular, has affected both the dynamics of global politics and the nature of global poverty. As the impacts of climate change on weather patterns and food security become clearer, it becomes more evident that a very large number of poor people will be increasingly vulnerable to its effects. These make life more uncertain for people already living extremely precarious lives.”*

*“A key global priority over the next twenty years will be to reduce the unsustainable use of natural resources including water, fossil fuels and forests that has characterised growth in the past. If this does not happen, there is a possibility that the benefits of growth will be put at risk by future environmental disasters or the cumulative effects of a slowly changing climate. Fossil fuels currently account for 80% of energy consumption – it’s clear the scale of the transformation needed is very large...”*

*“At a national level, this requires first of all changed institutional frameworks to agree, implement and monitor an integrated sustainable development agenda. Too often structural issues, competition between ministries, and incentive structures for key staff work against rather than for combining the two halves of this single problem.”*

*“Environmentally sustainable development will also require a changed incentives framework to encourage investments in new, more sustainable technologies and technology transfer, including through strict sustainability requirements for public investment programmes. It requires policies that incentivize a green growth that is more sustainable and results in the better valuation and management of the environment and natural resources. A priority for policy change should be to reduce fossil fuel subsidies, which would help to drive changes in energy use as well as freeing up resources for other things.”*

*“Achieving and sustaining prosperity globally so that poverty can be ended now, and the gains*

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64 <http://www.oecd.org/investment/toolkit/policyareas/>

65 <http://www.oecd.org/site/oecdgfd/agenda.htm>

66 OECD (2013), “The next Global Development Agenda: Ending Poverty, Promoting Sustainability”, Discussion Paper for Session 1 on “The poverty challenge - Global trends, uncertainties, and national policy frameworks”, <http://www.oecd.org/site/oecdgfd/Session%201%20-%20GFD%20Background%20Paper.pdf>

*maintained in the future, requires thinking about a range of transformations simultaneously. No single actor has all the solutions – governments, the private sector and civil society all have a responsibility to make this happen, and a post-2015 agenda must speak to all of their interests and concerns.”* (pp. 8-10)

Although this OECD Discussion paper focuses on environmental challenges, climate and resource use, there is no reference made to concrete solutions encouraging sustainable energy production or promoting green technologies and technology transfer. The paper contains only one reference to the idea of encouraging investments in “more sustainable technologies and technology transfer through strict sustainability requirements for public investment programmes.” Furthermore, the paper does not contain any reference at all to the UNFCCC and / or WTO frameworks.

The OECD has also developed a Policy Framework for Investment to mobilise private investment supporting economic growth and sustainable development.<sup>67</sup> This policy framework is a tool, providing a checklist of important policy issues for consideration by any government interested in creating an environment that is attractive to all investors and in enhancing the development benefits of investment to society, especially the poor. The Framework was adopted and declassified by the OECD Council, the governing board of the Organisation, and welcomed by Ministers at their annual OECD meeting in May 2006. It is worth noting that, although this investment framework focuses on sustainable development, it does not address relevant issues for climate change such as low-carbon investment. The Framework also contains references to the WTO but it does not provide any single reference to the UNFCCC.

Last but not least, the OECD has highlighted the importance of promoting trade in green goods and services. The box below identifies different initiatives aiming at promoting trade in green goods and services.

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67 OECD (2006) “Policy Framework for Investment”, <http://www.oecd.org/daf/inv/36671400.pdf>

Box 3.

**Initiatives to promote trade in green goods and services**

*UNEP, the International Centre for Trade and Sustainable Development and the International Trade Centre are currently identifying international trade opportunities that will promote green growth. They are analyzing how countries, especially developing countries, can respond to growing international demand for environmentally-friendly food, products and services*

*The International Organization for Standardization and several international NGOs, such as the marine Stewardship Council, Forest Stewardship Council, and the Fair Trade Labelling Organization, have made efforts to harmonize standards with the consent of the international community to avoid such schemes becoming barriers to international trade or risking green protectionism.*

*The European Commission has adopted new legislation to counter the trade in illegally harvested timber. In an effort to tackle the problem of illegal logging across the world in order to mitigate deforestation and climate change, it prohibits the placing of such timber on the European market. The new law affects both imported and domestically produced timber and timber products and the aim is to put in place due-diligence and other procedures to minimize the risk of illegal wood being traded (European Timber Regulation, 2013).*

*Unilever has been working closely with its large network of suppliers of raw materials to explore how to do business with smallholders in a way that it improves their livelihoods. To give one example, in 2011 Unilever's Magnum ice cream brand partnered with the Rainforest Alliance to work with farmers in key cocoa-producing countries such as Ghana, Ecuador and Côte d'Ivoire on sustainable agricultural practices. After just one year, over 10000 farmers has achieved Rainforest Alliance certification. Buyers benefit a guaranteed supply of higher quality beans, which helps the brand image, and local farmers benefit from better harvests and higher incomes (Unilever website, n.d.).*

Source: OECD (2013), "Putting Green Growth at the Heart of Development", OECD Green Growth Studies, [http://www.keepeek.com/Digital-Asset-Management/oecd/development/putting-green-growth-at-the-heart-of-development\\_9789264181144-en](http://www.keepeek.com/Digital-Asset-Management/oecd/development/putting-green-growth-at-the-heart-of-development_9789264181144-en), p. 139

The **International Institute for Sustainable Development (IISD)** works on climate change, energy, technology, and trade and investment, among other issues. The handbook on "Investment Treaties and Why They Matter to Sustainable

Development: Questions and answers”<sup>68</sup> focuses on international treaties that guarantee standards of treatment for foreign investors. According to this publication, “[t]oday, there are literally thousands of investment treaties between governments, and many more are signed every year. Historically, developed countries pushed the agreements in order to provide an extra measure of legal protection to their domestic investors who sought to invest in riskier foreign territories abroad. Developing countries, a number of which were long resistant to certain principles and concepts embodied in the agreements, then incorporated them into their strategies for attracting foreign investment and capital into their territories. Developments over the past two decades have shown these to be powerful instruments, which play a big part in defining the relationship between host states and foreign investors. However, in their current form, they do little to promote sustainable development.” The handbook discusses governance for sustainable development issues, addressing WTO aspects related to investment but making no reference at all to the UNFCCC framework.

Another publication by IISD focuses on “The Future of Sustainable Development: Rethinking sustainable development after Rio+20 and implications for UNEP”. It is a product of IISD’s “Environment and Governance Project” and addresses questions like: Why is sustainable development not “selling”? How might we re-envision the concept for the world of today? And, what does this imply for organizations like the United Nations Environment Programme (UNEP), whose mission both contributes to, and depends on, the realization of sustainable development?. Below are transcribed some of the ideas highlighted by this publication.

*“The incremental actions that have been agreed in repeated international meetings, even had they been quickly and fully implemented, fall far short of what is required to move the world onto a trajectory to sustainable development. The inadequacy of incremental progress is a fact in most areas of development, whether in terms of equity, social justice, climate change or biodiversity conservation. Rio+20 did not change any of this, but it nevertheless served a purpose: to underline the fact that we can no longer rely principally on an approach centred on global summits, universal agreements and independent commissions. In short, the notion that state-centric talk-fests will bring forth the leadership for meaningful change lies discredited.” (pp. 2-3)*

*“Whatever we call it (and recently we have tended to speak of a “green and inclusive economy”), sustainable development will never advance unless the economy serves as its motor. The challenge for the transition is to define in much more detail what kind of markets we consider to be sustainable and how to make the necessary changes politically possible.”*

*“If we assume that decoupling will happen, then the first suite of enabling policies is relatively well advanced, at least in its outline, and ready for implementation. We must reform and phase-out subsidies that lead to overconsumption of carbon-based fuels. We must use the purchasing power*

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68 Bernasconi-Osterwalder, N., A. Cosbey, L., Johnson. & D. Vis-dunbar (2012), “Investment Treaties and Why They Matter to Sustainable Development: Questions and answers”, International institute for sustainable development, available from <http://www.iisd.org/publications/pub.aspx?pno=1534>

*of the public sector to favour sustainably produced and delivered goods and services. And we must use taxation policy to encourage sustainable behaviour and discourage the unsustainable—for example, taxing “bads” like financial speculation, pollution or waste rather than “goods” like employment.”<sup>69</sup>*

It is worth mentioning that, although the publication focuses on the implications for UNEP of rethinking sustainable development after Rio+20, there is no mention made at all to UNEP’s current and future relation and work with WTO and / or UNFCCC.

The Fondazione Eni Enrico Mattei (**FEEM**), a nonprofit, nonpartisan research institution based in Milan, Venice and Viggiano focuses on the study of sustainable development and global governance. In 2012 FEEM consolidated its research activities around three research programmes namely 1. Climate Change and Sustainable Development; 2. Energy, Resources and Markets, and 3. Economy and Society. The starting point of FEEM research is the realization of the high level of complexity of the problems emerging in the global economy, and more particularly the need to foster awareness on the interaction between the firm and the environment, the economy and energy scenarios, corporate and cultural responsibility. (<http://www.feem.it/getpage.aspx?id=18&sez=Research>).

Carlo Carraro, Scientific Director of FMME and Professor of Environmental Economics and Econometrics at Ca’ Foscari University of Venice has recently co-authored an article in the journal *Science* on the future of the [Intergovernmental Panel on Climate Change: “The IPCC at a Crossroads: Opportunities for Reform”](#). The article focuses on new approaches to improving the process by which research on climate change is assessed with a focus on the social sciences. Other examples of FEEM scholarly publications are for instance Carraro et al (2015) on “The IPCC at a crossroads: Opportunities for reform”; or Bosetti et al (2014) on “Climate Change Mitigation, Technological Innovation and Adaptation. A New Perspective on Climate Policy” and Carraro et al (2015) on “Assessing Sustainable Development Goals”.

FEEM supports young researchers and holds regularly high level policy conferences around cutting edge research topics like “How to Jointly Address Economic Crisis, Climate Change and Growing Resource Scarcity through Sustainable Consumption Approaches”. The topic will be presented on 5 May 2016 featuring Eric Ponthieu, Head of Unit Section Agriculture, Rural Development and the Environment - European Economic and Social Committee (EESC). The abstract of his lecture states: “The continuing massive recourse to fossil fuel in both the

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69 Halle, M., Najam, A., Beaton, C. (2013), “The Future of Sustainable Development: Rethinking sustainable development after Rio+20 and implications for UNEP”, International institute for sustainable development, available from [http://www.iisd.org/pdf/2013/future\\_rethinking\\_sd.pdf](http://www.iisd.org/pdf/2013/future_rethinking_sd.pdf), p.78

energy and transport systems is hampering the development of a much needed low carbon economy in the EU. The main question has shifted from whether or not we have to de-carbonize our economy to how we can achieve this in a timeline that is compatible with climate change mitigation. Also, the finite character of many other natural resources (metals, minerals, productive land, etc.) is becoming increasingly tangible to governments and business. The upcoming "resource crunch" threatens economic vitality and social cohesion, at a time the EU economy still struggles with post-2008 financial crisis consequences. In this challenging context, sustainable consumption could be an alternative to the current GDP-based model. The lecturer proposes to address how developing sustainable consumption practices and policies could help to curb the continuous increase of resource demand, reducing therefore the climate impact, while combining it with a qualitative improvement of life and work conditions”

The **Global Carbon Project** is an initiative to assist the international science community to “*establish a common, mutually agreed knowledge base supporting policy debate and action to slow the rate of increase of greenhouse gases in the atmosphere.*”<sup>70</sup> Below are some relevant references made in the 2008 Report on “Carbon reductions and offsets”:

*“The recently established voluntary carbon market is gaining momentum as growth in the demand for CO2 reductions is outpacing the wider introduction of low-carbon technologies in transport, energy production and manufacturing.”*

*“While there are concerns related to the voluntary and unregulated nature of this market, new robust standards, reporting and verification, along with broad project implementation are raising confidence in the system. The impact of voluntary carbon offsets is increasing as the economic analysis of the carbon market gains wider acceptance and the support of more speculative investors.”*

*“The goals of using the voluntary carbon offsets are largely enhanced if the purchase of offsets is preceded by the implementation of measures to reduce or avoid emissions.”* (p.4)<sup>71</sup>

While this publication contains many references to UNFCCC framework ant to papers and reports prepared by the UNFCCC Secretariat, there is no reference to the WTO framework.

Last but not least, civil society organizations like **CUTS International** suggest that “[t]here is need for the WTO Secretariat to conduct joint studies and capacity building with organisations such as United Nations Framework Convention on Climate Change, Food and Agriculture Organisation to create better understanding on trade and trade-related issues in governing global public goods such as climate change, food security and how the poor

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70 <http://www.globalcarbonproject.org/about/index.htm>

71 Global Carbon Project (2008), “Carbon reductions and offsets”, in Coulter, L., JG Canadell, S Dhakal (ed.), *Earth System Science Partnership Report No. 5*, Canberra, [http://www.globalcarbonproject.org/global/pdf/GCP\\_C%20Offsets\\_Report%206.pdf](http://www.globalcarbonproject.org/global/pdf/GCP_C%20Offsets_Report%206.pdf)

countries can deal with them.”<sup>72</sup> The CUTS’ publication suggests that the WTO Secretariat needs to conduct joint studies and capacity building with organisations such as United Nations Framework Convention on Climate Change, Food and Agriculture Organisation to better understand trade-related issues in governing global public goods such as climate change and how the poor countries can deal with it. However, the document does not provide any concrete proposals pertaining to WTO disciplines like TRIMS, TRIPS, energy and environment.

The **Overseas Development Institute (ODI)** analyzed low-carbon investment opportunities for low income countries. Some of the main conclusions of ODI’s research in regards to low-carbon competitiveness are reproduced below.

*“[T]he changes in competitiveness patterns generated are likely to have implications for low carbon growth. For example:*

*(1) Increasing natural resource scarcity – particularly relating to energy, land and water, and partly driven by economic growth in the emerging economies – will result in (for example)*

- higher oil prices, reducing the competitiveness of energy-intensive industries in oil importing countries, which could enhance incentives for energy-efficiency measures in those countries;*
- increased competition for land and water, which could strengthen incentives for effective natural resource management and sustainable agricultural practices that improve land and labour productivity.*

*(2) Mitigation policies introduced at the global level or by trading partners, which may affect export opportunities or import prices faced by developing countries, could result in (for example)*

- new standards requiring carbon footprinting of production in some sectors, potentially reducing access to markets for relatively energy-intensive products or products which are not certified;*
- carbon taxation, which could lead to certain energy-intensive industries shifting to non-mitigating countries (often termed ‘carbon leakage’), generating a possible trade-off between competitiveness and low carbon growth;*
- increased climate finance to support the development of new green industries such as renewables (most likely from public funding sources in the short term, in the absence of well-functioning carbon markets).*

*(3) The impact of climate change – in the sense of planetary warming – will be significant for some sectors; for example:*

- It will reduce yields/productivity of certain agricultural crops, undermining competitiveness of those products.*
- It is reducing the efficacy of certain renewable energy sources, such as hydropower, in certain contexts, undermining the competitiveness of countries reliant on them.*
- It threatens the prospects for tourism development by increasing the incidence of extreme weather events and reducing water supplies.”*

*“... [T]he carbon market is currently foundering, with very low prices undermining returns and*

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72 [http://www.cuts-citee.org/pdf/Briefing\\_Paper13-Geneva\\_Consensus\\_for\\_Trade\\_Multilateralism.pdf](http://www.cuts-citee.org/pdf/Briefing_Paper13-Geneva_Consensus_for_Trade_Multilateralism.pdf)

*reducing the demand for carbon credits, so carbon finance for LICs through these mechanisms is currently not promising. Things may improve over time as international mitigation gathers pace, but in the short to medium term this looks more likely to happen through unilateral, perhaps regional, approaches rather than through an internationally coordinated climate change agreement and carbon market. ... Thus, efforts to develop the mechanisms in LICs to support access to carbon markets have not generated the hoped-for benefits and are unlikely to do so for a while. A switch in focus is required towards supporting other drivers of low carbon outcomes – such as the competitiveness drivers we discuss in this report. LICs are also more likely than MICs to benefit from public sources of climate finance, and can position themselves to better access these kinds of funds through a low carbon growth framing for their development strategy.”* (p.3)<sup>73</sup>

Although this publication contains a whole section on energy issues, only a few references are made to the WTO and UNFCCC frameworks, as well as to issues like technology transfer, directly linked to low-carbon competitiveness.

The **Center for International Environmental Law** published a report asking the question on whether world trade law is a barrier to saving our climate. Unlike other publications revised in this session, this work considers both the WTO and the UNFCCC frameworks when answering the question about world trade law and climate change. The main conclusions are transcribed below.

*“This paper has addressed questions regarding the consistency with WTO rules and jurisprudence of a number of measures that countries are taking or may take to address climate change. For example, the paper analyzes questions relating to labels and standards, fuel efficiency schemes, border carbon adjustments, and green subsidies. The paper has generally concluded that current WTO rules provide adequate flexibility to accommodate properly designed and implemented climate measures. Thus WTO rules should not be used as a justification for delaying action to address climate change either in national debates or international negotiations.”*

*“On the contrary, the international climate negotiations due to conclude in Copenhagen in late 2009 can help ensure greater coherence between trade law and climate actions. For example, the Copenhagen outcome can clarify that the measures described in this paper are vitally necessary to address climate change and thus help ensure that WTO rules will not impede national efforts to solve the climate crisis.”*

*“That said, it is important to note that this paper is not exhaustive: it does not pretend to address all the issues involved at the nexus of climate and trade policy. It considers the WTO compatibility of only certain climate measures. There are other climate measures, such as green procurement, that could have trade impacts and thus, will require analysis of their compatibility with existing WTO rules. Nor does the paper address the specialized area of intellectual property rules and*

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73 Ellis, Karen (2013), “Low carbon competitiveness: Analysing opportunities and threats for low-income countries, and the business case for low carbon investment”, ODI Working Paper 368, <http://www.odi.org.uk/sites/odi.org.uk/files/odi-assets/publications-opinion-files/8282.pdf>, pp. 1-2.

*their relation to the development and transfer of climate friendly technologies.”*

*“In addition, the WTO is not the only body of trade law that could impinge on climate change policies. For example, regional and bilateral Free Trade Agreements may also be relevant. Similarly, investment treaties may have an impact on the regulation of climate-related investments. Finally, the use of trade sanctions as part of an international enforcement or compliance regime has been mentioned only in passing and has not been comprehensively examined in this paper.”<sup>74</sup>*

The **International Centre for Trade and Sustainable Development (ICTSD)** promotes the initiative of a plurilateral Sustainable Energy Trade Agreement (SETA) that would eliminate the barriers to trade and investment in the new green technologies that are needed everywhere to spur sustainable growth.<sup>75</sup> SETA could bring together countries interested in addressing climate change and longer term energy security while maintaining open markets. Issues covered by this agreement would be addressed in two phases: a first phase would address clean energy supply goods and services, starting with solar, wind, small hydro and biomass and eventually extending to marine, geothermal, clean coal, and transport related biofuels; and a second phase could address the wider scope of energy efficiency products and standards, buildings and construction, transportation, and manufacturing. Such an agreement could be conceived within the WTO framework as a stand-alone plurilateral agreement similar to the Government Procurement Agreement (GPA) or, it could extend concessions on an MFN basis to all WTO Members, similar to the Information Technology Agreement (ITA), with such an extension conditional on the accession of a “critical mass” of members based on different trade, climate, or energy-related criteria. Alternatively, SETA could be conceived as a stand-alone plurilateral agreement outside of the WTO, open to other non-WTO Members (with the possibility of eventually incorporating such an agreement into the WTO framework at some point in the future).<sup>76</sup>

ICTSD’s proposal of a plurilateral agreement on sustainable energy is in line with the suggestions made by CSEND experts. Prof. Saner proposed to bundle three sectors which have so far been treated as separated negotiation for a tri-sector

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74 Bernasconi-Osterwalderand, N. and J. Norpoth. (2009), “Is world trade law a barrier to saving our climate? questions and answers”, CIEL, [http://ciel.org/Publications/ClimateTradeReport\\_foe-ciel\\_sep09.pdf](http://ciel.org/Publications/ClimateTradeReport_foe-ciel_sep09.pdf), pp.30-31

75 ICTSD (2011), “Fostering Low Carbon Growth: The Case for a Sustainable Energy Trade Agreement”, ICTSD Global Platform on Climate Change, Trade and Sustainable Energy, <http://ictsd.org/downloads/2011/12/fostering-lowcarbon-growth-the-case-for-a-sustainable-energy-trade-agreement1.pdf>

76 Others have proposed an agreement on the removal of energy and forestry subsidies and at the same time push for a greater commitment to the fight against climate change and global warming. See de Moor, A. (2001), “Towards a Grand Deal on Subsidies and Climate Change”, RIVM Netherlands Institute of Public Health and the Environment, <http://pblweb10.prolocation.net/sites/default/files/cms/publicaties/subsidiesclimchange.pdf>

plurilateral agreement namely a) energy (goods and services), b) environment (goods and services) and c) trade and development (Aid-for-Trade, Enhanced Integrated Framework, TRTAs).<sup>77</sup> On the other hand, the plurilateral approach to the negotiation of new agreements within the WTO has also been proposed by CSEND experts, suggesting that plurilateral agreements might constitute a solution to the impasse of WTO/DDA as well as a basis for future trade agreements within the WTO context.<sup>78</sup>

The **International Chamber of Commerce (ICC)** has established the ICC World Trade Agenda initiative highlighting different business priorities. One of them is to “*foster greener economic activities through trade*”.<sup>79</sup> The World Trade Agenda is a strong business-led initiative to bolster rules-based trade. The WTO lends its support to this initiative by engaging business to provide recommendations to advance global trade negotiations. CEOs, senior corporate executives, and representatives of business organizations joined WTO Director-General Pascal Lamy at the first World Trade Agenda policy conference in March 2012, where participants began defining elements of a world trade agenda, underscoring the private sector's desire to move global trade talks out of the Doha Development Agenda deadlock.

The **World Economic Forum** published the Green Investment Report (2013) on “The ways and means to unlock private finance for green growth”.<sup>80</sup> The Report does not contain a single reference to the WTO Agreements.

On the other hand, the current **United States President Barack Obama** has recently made public his proposals to reduce greenhouse gas emissions. Below are transcribed some of his words reflected by the media. “*The question now is whether we will have the courage to act before it is too late... ...As a president, as a father and as an American, I am here to say, we need to act... ...I refuse to condemn your generation and future generations to a planet that's beyond fixing.*”<sup>81</sup> Mr. Obama recommitted his country to meeting the target he set in 2009 of reducing greenhouse gas emissions by 17

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77 Saner, R. (2011), “International governance options to strengthen WTO and UNFCCC”, CSEND Policy Brief No.3, available from [http://www.diplomacydialogue.org/component/docman/doc\\_download/109-20110611-international-governance-options-to-strengthen-wto-and-unfcccpdf](http://www.diplomacydialogue.org/component/docman/doc_download/109-20110611-international-governance-options-to-strengthen-wto-and-unfcccpdf)

78 CSEND (2012), “Plurilateral Agreements: Key to solving impasse of WTO/Doha Round and basis for future trade agreements within the WTO context”, CSEND Policy Brief No.7, available from [http://www.csend.org/site-1.5/images/files/CSEND\\_Policy\\_Brief\\_Nr\\_7\\_Plurilaterals\\_April\\_2012\\_1.pdf](http://www.csend.org/site-1.5/images/files/CSEND_Policy_Brief_Nr_7_Plurilaterals_April_2012_1.pdf)

79 <http://www.iccwbo.org/global-influence/world-trade-agenda/>

80 World Economic Forum (2013), “The Green Investment Report: The ways and means to unlock private finance for green growth”, [http://www3.weforum.org/docs/WEF\\_GreenInvestment\\_Report\\_2013.pdf](http://www3.weforum.org/docs/WEF_GreenInvestment_Report_2013.pdf)

81 <http://mobile.nytimes.com/2013/06/26/us/politics/obama-plan-to-cut-greenhouse-gases.html?from=homepage>

percent below 2005 levels by 2020. According to **The New York Times**, *“Thanks to the recession, improved energy efficiency and a shift from coal to natural gas, carbon dioxide emissions have fallen by about 11 percent since 2005. But that trend line is flattening, and the policy steps outlined in the president’s plan are clearly timely. The most important of these is a proposal to use government’s authority under the Clean Air Act to regulate emissions from existing coal- and gas-fired power plants, which account for about 40 percent of the country’s carbon pollution. This will require substantial investments in efficiency and renewable sources by industry and the states, and it must be carefully tailored to withstand possible legal challenges from both.”*<sup>82</sup>

At the international level, Mr. Obama proposed to do more to prevent deforestation, and to pursue agreements with China and others to phase out refrigerants known as hydrofluorocarbons. It is important to highlight that the Climate Action Plan makes reference to both the UNFCCC and the WTO. In regards to negotiating global free trade in Environmental Goods and Services, the proposal reads as follows: *“The U.S. will work with trading partners to launch negotiations at the World Trade Organization towards global free trade in environmental goods, including clean energy technologies such as solar, wind, hydro and geothermal. The U.S. will build on the consensus it recently forged among the 21 Asia-Pacific Economic Cooperation (APEC) economies in this area. In 2011, APEC economies agreed to reduce tariffs to 5 percent or less by 2015 on a negotiated list of 54 environmental goods. The 20 APEC list will serve as a foundation for a global agreement in the WTO, with participating countries expanding the scope by adding products of interest. Over the next year, we will work towards securing participation of countries which account for 90 percent of global trade in environmental goods, representing roughly \$481 billion in annual environmental goods trade. We will also work in the Trade in Services Agreement negotiations towards achieving free trade in environmental services.”*<sup>83</sup>

The **former United States Vice President Al Gore** has supported the idea of a carbon tax. In his blog, the Former Vice President reproduced an editorial published by the Financial Times. Some of the main references are reproduced below.

*“Yet a carbon tax, which has all those characteristics, is struggling to find support from the US administration or in Congress. It deserves much wider enthusiasm.”*

*“One of the few uncontroversial conclusions of economics is that it is better to tax “bads” than “goods”. Wages and profits are desirable objectives, and governments have no good excuse for obstructing them. They are taxed largely for reasons of convenience, at the cost of disincentives to wage-earning and profit making that are a drag on the economy.”*

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82 The New York Times (2013), “At Last, an Action Plan on Climate”, Editorial, <http://www.nytimes.com/2013/06/26/opinion/at-last-an-action-plan-on-climate.html?pagewanted=print>

83 The official document containing Obama’s proposal is available from <http://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf>. The document focuses on: cutting carbon pollution in America, preparing the United States for the impacts of climate change, and lead international efforts to address climate change.pp.19-20.

*"Energy consumption, on the other hand, is not an objective for anyone. Indeed, the negative externalities of energy use, including local pollution and greenhouse gas emissions, mean that, other things being equal, an economy that burns less fuel is better off."*

*"That insight lies behind support from across the political spectrum for a tax linked to the carbon content of fossil fuels, generating revenue that could be recycled through cuts in other taxes. Four leading Democrats in Congress this month proposed such a tax, and asked for suggestions for how it could be implemented. On the Republican side, a carbon tax has been backed by several prominent figures, most notably Greg Mankiw of Harvard, a former economic adviser to George W. Bush and Mitt Romney."*

*"Carbon taxes have their drawbacks, it is true, but their problems are mostly fixable. They are regressive, but that could be offset by changes to other taxes. They can create difficulties for energy-intensive sectors, but those could be eased with targeted reliefs." <sup>84</sup>*

It is worth mentioning that the implementation of a carbon tax would directly affect WTO rules and disciplines. The editorial by the Financial Times does not make any reference at all to them.

The **Global Leadership for Climate Action (GLCA)** is a high-level task force of world leaders committed to addressing climate change through international negotiations. A joint initiative of the United Nations Foundation and the Club of Madrid, GLCA consists of former heads of state and government as well as leaders in business, government, and civil society from more than 20 countries. GLCA released a paper in 2009 focusing on climate change adaptation and highlighting its links to development and poverty alleviation, with emphasis on action at the local level. Three of the main recommendations are listed below:

*"We recommend that the Secretary-General of the United Nations establish an independent high-level task force to define a new vision for global sustainable development based on a low-carbon economy and to address the ability of global public policy and global governance to deal concurrently with the crises the world has witnessed in recent years."*

*"In the longer term, we recommend that a climate fund (or funding mechanism) be established in the context of a new and comprehensive climate agreement to support developing countries' actions related to mitigation and adaptation. It should include both public and private resources, starting at US\$10 billion and growing to \$50 billion per year. It should have an innovative structure and governance that is transparent and inclusive. In addition to ODA, it should consist of innovative and predictable sources of finance, including auction revenues from greenhouse gas markets and global market-based levies—for example, on international air travel and maritime freight transportation."*

*"To improve coordination and reduce duplication of effort, UN agencies should seek to 'deliver as one' at the country level, as recommended by the UN High-Level Panel on System-Wide*

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84 [http://blog.algore.com/2013/03/time\\_has\\_come\\_for\\_a\\_carbon\\_tax.html](http://blog.algore.com/2013/03/time_has_come_for_a_carbon_tax.html)

Coherence.”<sup>85</sup>

Although the GLCA paper addresses the issue of facilitating an international agreement on climate change, the publication does not include any reference at all in regards to the WTO framework, TRIPS, TRIMS and technology transfer.

The academic field has also proposed different initiatives to fight climate change. **Dieter Helm**, professor of energy policy at the University of Oxford suggests that given the failure of UN climate talks, a carbon consumption tax would be the most effective way of lowering emissions. Below are transcribed some of his thoughts.

*“The main reason emissions have been going up is the rise of coal — in China, in particular. Coal is now the source of 30 percent of the world’s energy, up from about 25 percent in the mid-1990s. Europe’s initiatives have had no effect on China’s policies or the global coal burn. Indeed, the initiatives have probably made the situation worse. As the price of energy has increased using current renewables, energy-intensive industries are being driven offshore, only for their products to be imported back into the European Union.”*

*“By the standards of the Kyoto accord, Europe looks good. But those standards measure each country’s production — not consumption — of carbon. This has created counterproductive incentives. If steel plants are closed in Britain and replaced by steel imports from China, Britain counts that as a success. Between 1990 and 2005, Britain’s carbon production fell by about 15 percent — but its carbon consumption rose by 19 percent, when imports were counted. The rest of Europe has been deindustrializing too, and this has also encouraged energy-intensive production to move overseas.”*

*“Contrast this with the United States, which declined to ratify the Kyoto agreement because China and other developing countries were not required to do much. America has only the crudest energy policy. And yet its carbon emissions have been falling sharply. Why? Because the United States is switching from coal to gas. At the same time, Europe is moving from gas, which is expensive there, to much more polluting coal — especially in Germany, which is phasing out its nuclear plants following the Fukushima disaster in Japan.”*

*“Europe’s “answer” to global warming is wind farms and other current renewables. But the numbers won’t ever add up. It just isn’t possible to reduce carbon emissions much with small-scale disaggregated wind turbines. There isn’t enough land for biofuels, even if corn-based ethanol were a good idea (a questionable proposition). Current renewable-energy sources cannot bridge the gap if we are to move away from carbon-intensive energy production. So we will need new technologies while in the meantime slowing the coal juggernaut.”*

*“There are three sensible ways to do this: tax carbon consumption (including imports); accelerate the switch from coal to gas; and support and finance new technologies rather than pouring so*

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85 Global Leadership for Climate Action (2009), “Facilitating an International Agreement on Climate Change: Adaptation to Climate Change”, [http://www.unfoundation.org/assets/pdf/adaptation\\_to\\_climate\\_change.pdf](http://www.unfoundation.org/assets/pdf/adaptation_to_climate_change.pdf), pp.7-9

*much money into wind and biofuels.*<sup>86</sup>

The implementation of the policy suggestions recommendations made by Prof. Helm would directly impact WTO rules and disciplines. The intention of such carbon tax would be to ensure competitiveness of producers from countries with high carbon taxes and enforced CC rules in contrast to producers from countries with lax or no CO<sub>2</sub> emission controls who could undercut their competition with lower prices (free of carbon tax ). India has reacted strongly to such carbon tax proposals and threatened to take countries that would use such carbon taxes to the WTO dispute settlement forum.

Another trade policy option could be the use of domestic and export subsidies to provide competitive advantage to local companies or the use of various forms of environmental standards. These environmental standards could have both positive and negative effects on CO<sub>2</sub> emissions depending whether they are used by WTO member countries as means to protect local companies from foreign competitors or whether they are intended to increase the level of carbon reduction at global, that is, non-discriminatory levels without causing harm (loss of competitive advantage) to other economic actors. Subsidization could on the other hand lead to imposition of countervailing duties by other countries and subsequently to a long drawn out litigation through the WTO dispute settlement process.

Firm location decisions might be influenced by carbon leakage considerations. Production could be considered less costly in a country where emissions are unabated versus a country where emissions are reduced through carbon constraining policies. Such policies in turn can lead to higher production costs and loss of competitiveness, hence could lead to off shoring and loss of jobs and investment.

Trade experts are worried that if governments cannot come to an agreement on rights and obligations within a climate change regime (UNFCCC), then the chances increase dramatically of countries with carbon reduction policies using trade measures to counter perceived unfair price advantages by firms from countries with low carbon reduction policies. Such trade based CC measures would be contested especially by large emerging countries like India and China who would bring the WTO litigation system into a battleground inflicting damages to both sides of the litigation divide and, most importantly and by so doing inflicting potentially irreversible damage to the common good of environmental sustainability.<sup>87</sup>

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86 <http://www.guardian.co.uk/environment/2012/nov/08/kyoto-climate-change-carbon-tax> and <http://www.nytimes.com/2012/11/12/opinion/on-climate-change-the-us-is-doing-better-than-europe.html>  
87 Saner, R. (2011), "International governance options to strengthen WTO and UNFCCC", <http://www.diplomacydialogue.org/publications/environmental-diplomacy/101-international-governance-options-to-strengthen-wto-and-unfccc>

The different initiatives listed in this section show that there is a new thinking emerging which suggests the need to bring back to the multilateral discussions issues like investment and competition as well as the need to rethink treaty-régime approaches involving trade, investment and climate change. In conclusion, the references presented above are different appeals to reconsider TRIMS in the form of a pro-green / Low carbon enhancing FDI. In other words, majority of suggested solutions to climate warming would affect, or better, would need to include rules and disciplines of the WTO.



### 3. Sustainable Production and Consumption through Green TRIPS, Green TRIMS and Green Three-Sector Plurilateral Agreements

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Climate warming and the resulting climate instability is the by-product of many years of greenhouse gas emissions led into the atmosphere by, among others, people who drive cars and by manufacturing companies that are using polluting technologies. Production of Global Public Good to preserve Common Resources depends on the institutions and organizations that help (or hinder) the synthesis of inputs required to produce the Global Public Good. Many institutions are not conducive to the production of Global Public Goods which, according to UNDP, *“requires a process "multi"-multicounty/level/actor/sector. Yet policymaking at present is often fragmented and compartmentalized along national borders or along economic sector and actor lines.”*<sup>88</sup>

To limit global average temperature below 2 degrees above pre-industrial levels means that the world needs to consume and produce goods and services in a more efficient and green manner. Hence, a holistic and integrated approach is needed to make consumption and production sustainable.

Action against climate warming should be considered in the broader context of efforts to achieve the 2030 Sustainable Development Goals. According to a statement by the New Climate Economy supporting a strong climate agreement means that, *“[a]round US\$90 trillion will need to be invested globally in cities, land use and energy infrastructure between now and 2030 to meet global growth and development objectives. ... As of November 2015, 40 national and 23 subnational governments have adopted or are about to implement carbon pricing. Around 450 major companies worldwide report already using an internal carbon price to guide investment decisions.”*<sup>89</sup>

The Paris Agreement (COP 21)<sup>90</sup> defines adaptation as a multi-level global challenge, from local to international and recognizes adaptation as a central

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88 UNDP (2002), “Providing Global Public Goods: Managing Globalization 25 Questions & Answers”, <http://web.undp.org/globalpublicgoods/globalization/pdfs/ques-ans.pdf>

89 The New Climate Economy (2015), Statement in support of a strong climate agreement from members of the Global Commission on the Economy and Climate, <http://newclimateeconomy.net/content/statement-support-strong-climate-agreement-members-global-commission-economy-and-climate>

90 UNFCCC (2015), <https://unfccc.int/resource/docs/2015/cop21/eng/109.pdf>

element to combat climate change in the long term. As highlighted by Carraro, the Paris agreement “1) recognizes the need for adaptation of developing countries and the consequent efforts to meet them, along with the need to strengthen international cooperation in favour of the most vulnerable countries; 2) encourages all countries to implement measures and adaptation plans, both nationally and cooperatively, and to communicate and update them periodically as part of their national contributions; and 3) commits developed countries to implementing measures of technological cooperation and transfer of technology in favour of developing countries in order to help them cope with the by now inevitable impacts of climate change.”<sup>91</sup> However, a comment by the NGO “Social Watch” states, “the Paris Agreement is not balanced because the text changed towards shifting the burden to developing countries in terms of emission cuts and finance”. The comment continues by citing another NGO called “LDC Watch” stating that since the opening of negotiations a “coalition of ambition” led by the United States “agreed to keep temperature rise to well below 2 degrees and “pursue efforts” to 1.5 degrees which is a meaningless media gimmick, as their emission cuts targets, which are only voluntary submissions, points to a 3 degrees pathway.”<sup>92</sup> What appears clear is that LDCs need access to clean energy in order to be able to implement the adaptation efforts agreed at COP 21.

Furthermore, the Paris Agreement also refers to Sustainable Development Goal (SDG) 13 (Climate Action) as one of the SDGs that are of critical importance to protect the planet from degradation. But SDG 12 is equally relevant for the purpose of fighting climate warming. SDG 12 of the 2030 Agenda for Sustainable Development aims to ensure sustainable consumption and production patterns.<sup>93</sup>

There is no “natural demand” for green technology. There are laudable initiatives by exemplary enterprises and individuals to reduce climate warming however only governments can create demand for green technology by passing laws requiring companies to reduce their carbon emissions and consumers to generate less GHG by adopting less wasteful consumption behaviours. Demand can be created by passing national and international laws requesting companies and countries to reduce CO2 emissions. Sustainable production has to be supported by mechanisms such as Green TRIMS, Green TRIPS and Green Trilateral proposed in this paper.

### **Green TRIPS (Trade-Related Aspects of Intellectual Property Rights)**

The WTO’s Agreement on Trade-Related Aspects of Intellectual Property Rights

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91 Carraro, C. (2016), “The Paris Agreement: key points and future prospects”, Carlo Carraro’s Blog, International Center of Climate Governance, <http://www.carlocarraro.org/en/topics/climate-policy/paris-agreement-key-points-and-future-prospects/>

92 Social Watch blog, “COP21: A nail in the coffin for justice for Least Developed Countries, says LDC Watch”, 11 December 2015, <http://www.socialwatch.org/node/17114>

93 UN (2015), <https://sustainabledevelopment.un.org/post2015/transformingourworld>

(TRIPS), negotiated in the Uruguay Round, introduced intellectual property rules into the multilateral trading system for the first time. The areas covered by the TRIPS Agreement are:

- Copyright and related rights
- Trademarks, including service marks
- Geographical indications
- Industrial designs
- Patents
- Layout-designs (topographies) of integrated circuits
- Undisclosed information, including trade secrets<sup>94</sup>

The extent of protection and enforcement of these rights varied widely around the world; and as intellectual property became more important in trade, these differences became a source of tension in international economic relations. The trade rules for intellectual property rights are intended to establish minimum levels of protection that each government should give to the intellectual property of fellow WTO members. Governments are allowed to reduce any short term costs through various exceptions, for example to respond to public health crises. In case of trade disputes over intellectual property rights, the WTO's dispute settlement system can be called upon to enforce TRIPS rules.

Least developed countries (LDCs) were allowed an initial 10-year transition period (1995-2005) when the TRIPS Agreement was agreed in 1995. This transition period exempts them from applying the minimum standards established by the TRIPS Agreement. WTO members granted a second extension in 2005 for a period of seven and a half years, until 1st July 2013. In November 2012, the LDCs tabled another extension of the transition period proposing the exemption from TRIPS obligations until they cease to be an LDC. This proposal was discussed at the TRIPS Council meeting on 5 March 2013.<sup>95</sup>

For both developing and developed countries, technology and technology transfer are key elements to deal with climate change and national competitiveness. There is a need to increase trade in cleaner technologies in order to spread them worldwide. Trade is very important for technology transfer and the role of the WTO is critical in regard to the access of technology (respect of IP). Technology transfer across borders requires application of IP rules while, at the same time, facing market failure and environmental threats of climate warming, requires flexible interpretation of TRIPS.

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94 [http://www.wto.org/english/thewto\\_e/whatis\\_e/tif\\_e/agrm7\\_e.htm](http://www.wto.org/english/thewto_e/whatis_e/tif_e/agrm7_e.htm)

95 Priyadarshi, S. and T. Rahman, (2013) "Build up to Ninth WTO Ministerial Conference: Issues of Interest to LDCs", Commonwealth Trade Hot Topics, Issue 98, <http://www.thecommonwealth.org/files/243366/FileName/TradeHotTopics92FINAL.pdf>, p.3.

In sum, trade in technology is important for four reasons: 1) a lot of progress in technology is needed to combat climate change at global level, having an open system helps diffusion of technology; 2) separate abatement costs and who pays the costs; 3) threat of trade sanctions under Montreal Protocol; and 4) trade measures to correct or carbon leakage. Technology transfer involves the processes of sharing knowledge and adapting technology to meeting local conditions to support climate change adaptation and mitigation efforts. The tables below identify the most relevant technologies for climate change adaptation and mitigation.

*Table 3. Technologies for Adaptation*

<b>MAJOR AREAS</b>	<b>TECHNOLOGIES AND PROCESSES</b>
<b>Extreme weather, climate and sea-level events</b>	Climate models and systems for monitoring and early warning Climate-proofing infrastructure
<b>Coastal zone management</b>	To protect: tidal barriers, dune and wetland restoration, and afforestation To retreat: establishing set-back zones and creating upland buffers To accommodate: improved drainage technologies and early warning and evacuation systems
<b>Water resource management</b>	Desalination techniques Reservoirs and levees for flood management Advanced recycling and efficient technologies in industrial cooling.
<b>Agriculture</b>	New varieties of crops Advanced irrigation systems Efficient wind breaks Advanced erosion control techniques
<b>Public health</b>	Advanced urban planning to reduce heat island effects Improved public transport Disease vector control, and vaccination

Source: UNDESA (2008), "Climate Change: Technology Development and Technology Transfer", Background paper, [http://sustainabledevelopment.un.org/content/documents/1465back\\_paper.pdf](http://sustainabledevelopment.un.org/content/documents/1465back_paper.pdf), p. 13

Table 4. Technologies for Mitigation

	Near-term	Mid-term	Long-term
<b>ENERGY SUPPLY</b>			
<b>Fossil fuels</b>	IGCC <sup>1</sup> commercialization Solid oxide fuel cells Cleaner coal plants	Hydrogen (H <sub>2</sub> ) co-production from coal/biomass	
<b>Hydrogen</b>	Integrated stationary fuel cell systems Demonstration H <sub>2</sub> production from renewable sources	Low cost H <sub>2</sub> storage and delivery. H <sub>2</sub> from renewable sources. Renewable H <sub>2</sub> -powered fuel cell vehicles	H <sub>2</sub> and electric economy
<b>Renewable energy</b>	Lower cost wind power Demonstration cellulosic ethanol Photovoltaic (PV) clad buildings. Cost-competitive solar PV First-generation bio-refinery	Low-wind speed turbines Advanced bio-refineries Cellulosic biofuels Community-scale solar systems Water photolysis Energy storage options	Widespread renewable energy utilisation Genetically engineered biomass Biologically inspired energy and fuels
<b>Nuclear fission &amp; fusion</b>	Advanced reactor and fuel cycle technology	Generation IV nuclear plants. Fusion plant demonstration	Advanced concepts for waste reduction. Fusion power plants
<b>END USE AND INFRASTRUCTURE</b>			
<b>Transportation</b>	Hybrid and plug-in hybrid electric vehicles Alternative and flex-fuel vehicles Improved energy storage Power electronics	Fuel cell vehicles and H <sub>2</sub> fuels Efficient and clean heavy trucks Cellulosic ethanol vehicles Intelligent transport systems Low-emissions aircrafts	Zero-emission vehicle systems Optimized multi-modal inter-city and freight transport Engineered urban designs and regional planning
<b>Buildings</b>	High-performance integrated homes High-efficiency appliances Insulation control windows	"Smart" buildings. Solid-state lighting. Ultra efficient HVACR <sup>2</sup> Neural-net building controls	Energy managed communities Low-powered sensors with wireless communications
<b>Industry</b>	High-efficiency boilers Greater waste heat utilisation Bio-based feedstocks	Superconducting electric motors. Efficient thermoelectric systems	High-efficiency all-electric manufacturing. Widespread use of bio-feedstocks
<b>Electric grid and infrastructure</b>	Distributed generation. Smart metering and controls for peak shaving. Long-distance direct current (DC) transmission	Neural-net grid systems Energy storage for load levelling	Superconducting transmission and equipment Wireless transmission
<b>CO<sub>2</sub> CAPTURE, STORAGE AND SEQUESTRATION</b>			
<b>CO<sub>2</sub> capture</b>	Post-combustion capture Oxy-fuel combustion Oxygen separation techniques	Novel capture technologies Biomass coupled with CO <sub>2</sub> capture and storage (CCS)	Novel in-situ CO <sub>2</sub> conversion technologies
<b>Geological sequestration</b>	Reservoir characterization Enhanced hydrocarbon recovery. CO <sub>2</sub> injection for coal-bed methane production	Mineralization of solid carbonates Well sealing techniques demonstrated	Sufficient effective CO <sub>2</sub> storage capacity
<b>Terrestrial sequestration</b>	Reforestation Soil conservation	Sequestration decision support tools. Bio-based and recycled products	Biological sequestration Carbon and CO <sub>2</sub> based products and materials
<b>Marine sequestration</b>	Effective dilution of directly injected CO <sub>2</sub>	Carbonate dissolution/alkaline addition	Safe long-term marine storage
<b>EMISSION REDUCTION OF OTHER GHGs</b>			
<b>Methane from energy production and waste</b>	Bioreactor land-fill technology New drilling techniques for recovery of coal-bed methane	Advanced land-fill gas utilization. Ventilation-air methane technologies	Integrated waste management systems
<b>Methane and N<sub>2</sub>O from agriculture</b>	Anaerobic digesters for heat and electricity production	Utilisation of soil microbial processes	Zero-emission agriculture
<b>High global warming potential gases</b>	Advanced refrigeration technologies. Advanced aluminium smelting processes	Alternative refrigeration fluids	Solid-state refrigeration and air conditioning systems
<b>N<sub>2</sub>O from combustion</b>	Catalytic reduction of N <sub>2</sub> O in nitric oxide plants	Catalysts that reduce N <sub>2</sub> O to elemental nitrogen in diesel engines	Advanced vehicles and non-carbon based fuels

Source: UNDESA (2008), "Climate Change: Technology Development and Technology Transfer", Background paper, [http://sustainabledevelopment.un.org/content/documents/1465back\\_paper.pdf](http://sustainabledevelopment.un.org/content/documents/1465back_paper.pdf), p. 12

Recent analyses show that environment regulations impact competitiveness: but it still remains uncertain. The impact on competitiveness is an empirical question. Also the investment decisions issue is very important to combat climate change.<sup>96</sup>

As mentioned in a UNDESA, UNEP and UNCTAD report (2012; 11-13), “[t]he support given by industrial countries to green industries, including for R&D, though essential for the transition to the green economy, also raise some concerns... Furthermore, while there are rules in this area, there is a divergence of opinion among the three authors about what WTO rules say, which reflects a broader policy debate. Although we could wait for clarity from the WTO dispute settlement process, this would not give policy makers certainty about what they can and cannot do.”<sup>97</sup> The UNDES, UNEP and UNCTAD report also warns about the risks of misuse of the green economy concept: “[c]oncerns have been raised by developing countries’ delegations that the “green economy” concept may be misused or taken out of context, and that the promotion of the “green economy” concept may give rise of unhelpful or negative developments, and these must be avoided... In 1994, some international environment NGOs proposed to amend GATT rules to enable WTO Members to use trade-related environmental measures (TREM) to enable import restrictions based on PPMs, and advocated TREMs to promote internalizing the environmental costs of traded goods and setting a “fair price” for a traded product. (Raghavan, 1994a). In contrast, the Third World Network argued 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. (TWN, 1994). The paper described several examples of how these concepts would be difficult or impossible to be implemented and how they would unfairly be biased against the developing countries. 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).”<sup>98</sup>

Some suggest that deep decarbonization in developing countries can be accelerated by large global markets for low-carbon technologies. According to the Institute for Sustainable Development and International Relations “[d]eep decarbonization in developing countries is limited by the rate at which efficient and low-carbon technologies are adopted. Because of the relatively high capital cost of many of these technologies, developing country DDPs generally assume later adoption, and lower penetration rates, than in industrialized countries. In the meantime, they are building durable infrastructure that locks in

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96 Notes, TAIT Second Conference “Climate change, trade and competitiveness: Issues for the WTO”, 16 to 18 June, 2010.

97 UN-DESA, UNEP, UNCTAD (2012), “The Transition to a Green Economy: Benefits, Challenges and Risks from a Sustainable Development Perspective”, Report by a Panel of Experts to Second Preparatory Committee Meeting for United Nations Conference on Sustainable Development, [http://www.unep.org/greeneconomy/Portals/88/documents/research\\_products/UN-DESA,%20UNCTAD%20Transition%20GE.pdf](http://www.unep.org/greeneconomy/Portals/88/documents/research_products/UN-DESA,%20UNCTAD%20Transition%20GE.pdf)

98 Ibid, p.72-73

*fossil fuel consumption. A potential solution to reducing cumulative emissions from developing countries is for high income countries to take the lead in developing, deploying, and buying down the cost of low-carbon technologies, so that they become affordable earlier in developing countries relative to the cost of conventional technologies. Where initial markets for these technologies are in developing countries, for example concentrating solar power in South Africa, high-income countries can assist in local technology development and manufacturing. This can accelerate uptake, stimulate economic development, expand markets and promote international trade in low-carbon technologies, while avoiding a situation in which developing countries become net importers of low-carbon technologies.”<sup>99</sup>*

This approach, however, is based on good intentions and in “business as usual” logic. New approaches are needed to make green technologies leading to decarbonisation of the economy available for developing and least developed countries. The concept of “non-economic loss and damage (NELD)” has emerged in the UNFCCC negotiations. NELD refers to “*the negative impacts of climate change that are difficult to measure or quantify. The value of NELD cannot easily be expressed in monetary terms, which has left them mostly neglected in climate-risk and cost estimates.*”<sup>100</sup> NELD are vital to those affected but they are often unnoticed. As suggested by the German Development Institute, a common set of assessment rules need to be established at the international level in order to ensure a fair and transparent handling of NELD.

Article 4.5 of the 1992 UNFCCC founding document provides that technology development and transfer is a tool to enable climate action. Specifically, paragraph (h) calls parties to “[p]romote and cooperate in the full, open and prompt exchange of relevant scientific, technological, technical, socio-economic and legal information related to the climate system and climate change, and to the economic and social consequences of various response strategies;”<sup>101</sup>

In 2010 at COP 16, a Technology Mechanism (TM) was established to enhance climate technology development and transfer. However, the performance of this instrument has proved to be ineffective because “*technology development and transfer can prove difficult to harness in practice due to a range of challenges, including access, finance, institutional, and innovation constraints.*”<sup>102</sup> COP 21 decided that A new “technology framework” will be developed by UNFCCC’s subsidiary bodies to provide “overarching guidance” on the TM’s work in the new climate regime. This new framework should facilitate the updating of technology needs assessments and the enhanced implementation of their results; the provision of enhanced financial

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99 Institute for Sustainable Development and International Relations (2015), Pathways to deep decarbonization, Deep Decarbonization Pathways Project, Executive Summary, [http://deepdecarbonization.org/wp-content/uploads/2015/06/DDPP\\_EXESUM.pdf](http://deepdecarbonization.org/wp-content/uploads/2015/06/DDPP_EXESUM.pdf), p.10

100 German Development Institute (2016), Non-economic Loss and Damage: Addressing the Forgotten Side of Climate Change Impacts, Briefing Paper 3, <http://www.die-gdi.de/en/briefing-paper/article/non-economic-loss-and-damage-addressing-the-forgotten-side-of-climate-change-impacts/>

101 UNFCCC (1992), [https://unfccc.int/files/essential\\_background/background\\_publications\\_htmlpdf/application/pdf/conveng.pdf](https://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf)

102 Jegou, I., S. Hawkins and K. Botwright (2016), “What role for trade and investment in the new climate regime?”, ICTSD, Biores, Volume 10, Number 1, <http://www.ictsd.org/bridges-news/biores/news/what-role-for-trade-and-investment-in-the-new-climate-regime>

and technical support in this context; the assessment of technologies that are ready for transfer; and the enhancement of enabling environments for and the addressing of barriers to the development and transfer of socially and environmentally sound technologies.<sup>103</sup> This attempt by UNFCCC to provide for technology transfer to developing and least developed countries is an important step but it is not sufficient in light of the urgency and limited time to reduce carbon emissions. A “business as usual” approach, even if including some of the above-mentioned new efforts will not be sufficient.

Private sector participation is crucial for developing new technologies to foster the transition to a greener economy while increasing competitiveness. At the same time, a good number of governments support their private sector through: subsidies to non-carbon energy sources; tariff and non-tariff barriers; removing investment barriers; supporting technical and absorptive capacity; creating incentives for clean technologies; strengthening IPRs; and financing clean energies. One important aspect in promoting green investment is funding. Financing is crucial in order to achieve technology transfer. Also the notion of “product and processing methods” (PPMs) is very relevant to deal with carbon footprint. The challenge for the PPMs is how to approach PPMs without violating the principle of non-discrimination.

In addition, technology development is often a mix of public and private research. For instance, government of industrialized countries subsidizes basic research, even applied research at university laboratories which later on get afforded (licensed?) to private sector enterprises through Public Private Partnership research agreements. Often times the considerable investment in preliminary basic research leading to applied technology products is not factored into IPs and hence makes claims for IP by secondary users such as TNCs.

The Clean Development Mechanism (CDM) is a tool designed to support the implementation of climate protection projects. The CDM has contributed to promote technology transfer by financing emission reduction projects using technologies currently not available in the developing (host) countries. Box 4 below highlights the impact of the CDM on technology transfer and investment.

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103 Ibid.

Box 4.

**Impact of the Clean Development Mechanism on Technology Transfer and Investment**

*One of the novel features of the UN Kyoto Protocol regime that went into force in February 2005 was the inclusion of three so-called “Kyoto mechanisms”, which give countries some flexibility in where, when and how they achieve the necessary greenhouse gas emission reductions. Under the Clean Development Mechanism (CDM), developed countries may acquire fungible credits for greenhouse gas emission reductions that result from the implementation of climate protection projects in developing (host) countries, with a view to assisting (i) developing countries in achieving sustainable development and contributing to the ultimate objective of the Convention and (ii) developed countries in achieving compliance with their emission limitation and reduction commitments under the Protocol.*

*As of early April 2010, over 2100 project activities and programs had been registered as CDM projects, and nearly 400 million tons of certified carbon dioxide equivalent emissions reductions (CERs) have been issued since the first CDM project was registered in November 2004. Analysis of the experience to date suggests that the CDM has stimulated additional low-carbon investment and technology transfer:*

*Technology transfer: Although the CDM does not have an explicit technology transfer mandate, it may contribute to technology transfer by financing emission reduction projects using technologies currently not available in the host countries. A study commissioned by the UN Climate Convention secretariat (Seres & Haites, 2008), which analyzed the claims of technology transfer made by project participants in the project design documents, found that:*

- Roughly 36% of the projects accounting for 59% of the annual emission reductions claim to involve technology transfer.*
- Technology transfer is more common for larger projects and projects with foreign participants. The technology originates mostly from Japan, Germany, the USA, France, and Great Britain. For most project types, project developers appear to have a choice among a number of domestic and/or foreign technology suppliers.*
- Technology transfer is very heterogeneous across project types and usually involves both knowledge and equipment.*
- The rate of technology transfer is significantly higher than average for some host countries (including Bolivia, Ecuador, Guatemala, Honduras, Indonesia, Kenya, Malaysia, Mexico, Pakistan, South Africa, Sri Lanka, Thailand and Vietnam) and significantly lower than average for Brazil, China, and India.*

- As the number of projects increases, technology transfer occurs beyond the individual projects. This is observed for several project types in China and Brazil.

*Investment: The most common form of CDM transaction initially was forward contracts to purchase CERs from emission reduction projects, which limits the risk to the buyer (Arquit Niederberger & Saner, 2005). Many of these projects were implemented unilaterally and financed without any foreign investment. As the carbon market has matured, CER trades on the secondary market have come to dwarf the primary market, but these spot, futures and options transactions do not directly give rise to emission reductions (Capoor & Ambrosi, 2009). With respect to primary CER generation, two basic modes have been identified (Arquit Niederberger & Saner, 2005):*

- *CER trade model: For CER forward purchases, transactions are governed by low-cost greenhouse gas emission reduction and sink potentials, in addition to traditional factors of comparative advantages in production and trade. The relationship between international trade flows and potential CDM flows warrants further study.*

- *CDM investment model: Direct production of CERs through FDI (or other forms of equity investment) in CDM projects. Some data on the total investment into CDM projects is becoming available (e.g., refer to the investment analysis in the CDM Pipeline <http://cdmpipeline.org>), but information on the drivers, financial structure and transaction type of private sector CDM deals is generally confidential, but would help CDM host country policymakers and project developers to respond better to CDM demand (via targeted incentives, awareness-raising, capacity building and project identification) and thereby attract CDM investment or enhance their ability to export CERs in support of low-carbon development (Arquit Niederberger & Saner, 2005).*

Source: Arquit A., Gage, J. And Saner, R. (2012), "Levers to Enhance TNC Contributions to Low-Carbon Development – Drivers, Determinants and Policy Implications", Background papers/Special studies, <http://www.uncsd2012.org/content/documents/Levers%20to%20Enhance%20TNC%20Contributions%20to%20Low%20Carbon%20Development.pdf>, p. 4

Technology is embedded in many different global economic negotiations. A multilateral compromise on intellectual property rights is difficult to accomplish due to tensions between countries whose competitive advantage derived principally from control over knowledge goods and those whose development trajectories and aspirations demand sustainable access to these goods.<sup>104</sup>

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104 ICTSD (2013), "ICTSD Profile", <http://ictsd.org/downloads/2013/05/pursuing-sustainability-in-the-global-economy.pdf>, p.13

Brazil has called for a Doha Declaration on Climate Change, applying the same logic to the global public good of climate mitigation as was applied in the area of medicines to human health, namely taking full advantage of the flexibility within TRIPS (WTO Agreement on Trade-related Aspects of Intellectual Property Rights) to grant compulsory licenses to critical climate-friendly technologies, and the Group of 77 and China has also called for compulsory licensing under the UNFCCC negotiations. On the other end of the spectrum, universities and public-private partnerships are beginning to voluntarily adopt alternative licensing solutions, such as including humanitarian or open licensing clauses within their licensing agreements. And the list of ideas goes on. The US-CHINA Clean Energy Forum has advanced the idea of establishing a joint intellectual property protection program, with insurance jointly written by US and Chinese entities (for example by the US Overseas Private Investment Corporation and by People's Insurance Company of China), to lend credibility to IPR protection regimes.

One alternative to solving this tension could be a Green TRIPS approach which could revisit the TRIPS agreement and to explore ways how to apply similar exceptions as are available for LDCs in the field of health. Faced with the full brunt climate change like floods, drought and deforestation exceptions could be considered to allow LDCs to get access to technology from developed countries in regard to carbon reducing machines through the clause of "compulsory licensing". Such use of the "compulsory licensing" option could be a leverage for LDCs in their UNFCCC's adaptation negotiations and hence TRIPS could be broadened to include TRIPS++ to safeguard against climate change.

The proposal to apply compulsory licensing to climate mitigation and adaptation is new and most likely will not be supported by mainstream economists. Still, related statements have been made by respectable international institutions. For instance, there is consensus among World Bank and Intergovernmental Panel on Climate Change and other researchers on the necessity to develop, deploy and disseminate more efficient technologies to developing countries.<sup>105</sup>

Compulsory licensing is allowed based on Article 31b of the WTO TRIPS Agreement in case of "national emergencies", "other circumstances of extreme urgency" or "public non-commercial use" (or "government use") or "anti-competitive practices".<sup>106</sup> Climate warming could also be called a global emergency necessitating the application of compulsory licensing. Such an approach would make it possible that green technologies which are needed to fight climate change are made available for developing countries who cannot afford paying for

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105 Ibid

106 According to the WTO, the TRIPS Agreement "allows compulsory licensing as part of the agreement's overall attempt to strike a balance between promoting access to existing drugs and promoting research and development into new drugs. But the term "compulsory licensing" does not appear in the TRIPS Agreement. Instead, the phrase "other use without authorization of the right holder" appears in the title of Article 31. Compulsory licensing is only part of this since "other use" includes use by governments for their own purposes." See WTO website, [https://www.wto.org/english/tratop\\_e/trips\\_e/factsheet\\_pharm02\\_e.htm](https://www.wto.org/english/tratop_e/trips_e/factsheet_pharm02_e.htm)

IP/patented green technology held by companies from countries such as Germany, China, United States, etc.

Knowledge, a Global Public Good, is critical to develop clean technologies and green technology-related knowledge is critical to fight climate change. Knowledge needs to be made available to all countries through mechanisms such as green TRIPS and green TRIMS in order to ensure sustainable consumption patterns by all the countries in the world. Producing all or part of green technologies (solar panels, windmills) in developing countries would help these countries develop competence to manage green technology and would give developing countries the possibility to better understand the market pricing dynamics rather than keep them passive-captive buyers of green technology.

An alternative strategy would be “green licensing” which has been suggested as a mechanism to transfer green technology to developing countries in order to make it possible for these resource poor-countries use green technology in order to fight climate change. Joint development of green technology by firms from developed and developing countries needs to be promoted. According to Caprotti, an international licensing mechanism focused on green tech and clean tech has to be established in order to “*[e]nable companies and governments in the developing world to use established technologies for a fee, while protecting innovator firms. This already happens in the case of various technologies, from engine components to airliners. However, if the common good and the issue of climate change are to be kept in mind, the licensing of green tech needs to include a fee mechanism. This will enable economies at different stages of development—such as the US, China, and Bangladesh—to afford to use the same licensed technologies to promote sustainability and cleaner production. Ideally, this fee mechanism should account for the fact that several green technologies—from wind turbines to solar film—are manufactured in developing countries, taking advantage of low labour costs and incentives*”.<sup>107</sup>

However, licensing of green technologies as suggested by Caprotti is a “business as usual” concept which is inadequate in view of the global environmental crisis faced by developed and developing countries. What is needed is a licensing mechanism that goes further than suggested by Caprotti to ensure immediate availability of existing green technology to immediately start emission abating production and consumption behaviour.

Poor developing countries cannot afford to pay licenses for green technology. Even if cheap loans are made available by green technology producers to poor developing countries to allow them to buy their green high tech, this could be interpreted as a form of subsidizing exports of green technology if the green technology seller has and continues to benefit from production subsidies from his own government.

Climate change-friendly policies such as labeling and subsidies might be judged inconsistent with WTO rules, even if adopted in order to address externalities and distortions. This is due, according to Mavroidis and de Melo (2015), “*to the bizarre manner in which the WTO Appellate Body, the highest court in the*

WTO infrastructure, has understood non-discrimination in the context of the Technical Barriers to Trade (TBT) Agreement, and the inertia/lack of foresight by trade delegates who did not extend the carve-out for ‘green subsidies’ that had been agreed in 1995 beyond 2000.”<sup>108</sup> The authors suggest a reinsertion of the clause of “non-actionable”.

According to Mattoo and Subramanian (2013), under WTO rules “economy-wide subsidies for clean energy would be permissible because they are not specific to an industry. However, any form of export subsidies including those involving clean energy and/or green technologies is prohibited (Pauwelyn 2009). Domestic subsidies for specific industries for the development and production of green products are not prohibited but actionable<sup>109</sup> by partner countries if the latter believe that their domestic production or exports are adversely affected (Green 2006).”<sup>110</sup> This could lead to a situation where developing countries will try to develop green technology in their country and face unfairly cheapened green technology from foreign competitors whose cheaper prices are the result of having benefitted from government subsidies.

In conclusion, a green approach to TRIPS could provide a framework to support technology transfer into developing and least developed countries in order to promote the development of low carbon production to fight climate warming. There has been case law citing the TRIPS Agreement and further analysis of this jurisprudence is needed to support the development of an effective, greener IPR regime to stop climate warming.

### **Green TRIMS (Trade-Related Investment Measures)**

Prior to the Uruguay Round negotiations, the linkage between trade and investment received little attention in the framework of the GATT. In the late 1980s, before the creation of the WTO, there was an increase in foreign direct investment worldwide. Countries receiving foreign investment imposed numerous restrictions on investments to protect and foster domestic industries, and to prevent the outflow of foreign exchange reserves. Examples of these policies include local content requirements and trade balancing rules.

The TRIMs Agreement was negotiated during the Uruguay Round and applies only to measures that affect trade in goods and basically was intended to

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108 Mavroidis, P. and J. de Melo (2015), “Climate change policies and the WTO: Greening the GATT, revisited” in Barrett, S., C. Carraro and J. de Melo (eds.), *Towards a Workable and Effective Climate Regime*, CEPR Press, FERDI and VoxEU, pp. 225-238, <http://www.voxeu.org/sites/default/files/image/FromMay2014/Climate%20change%20book%20for%20web.pdf>

109 According to the WTO, “[m]ost subsidies, such as production subsidies, fall in the “actionable” category. Actionable subsidies are not prohibited. However, they are subject to challenge, either through multilateral dispute settlement or through countervailing action, in the event that they cause adverse effects to the interests of another Member.” See

[https://www.wto.org/english/tratop\\_e/scm\\_e/subs\\_e.htm#fntext2](https://www.wto.org/english/tratop_e/scm_e/subs_e.htm#fntext2)

110 Mattoo, A. and A. Subramanian (2013), Four Changes to Trade Rules to Facilitate Climate Change Action, Op-ed in *VoxEU.org*, May 4,

<https://www.piie.com/publications/opeds/print.cfm?ResearchId=2391&doc=pub>

phase out previous local content requirements. Recognizing that certain investment measures designed by host countries can have trade-restrictive and distorting effects, it states that no Member shall apply a measure that is prohibited by the provisions of GATT Article III (national treatment) or Article XI (quantitative restrictions). The Annex of the Agreement contains an Illustrative list of examples of measures labelled as inconsistent including local content or trade balancing requirements. In addition, the TRIMS contains “[t]ransitional arrangements allowing Members to maintain notified TRIMs for a limited time following the entry into force of the WTO (two years in the case of developed country Members, five years for developing country Members, and seven years for least-developed country Members).”<sup>111</sup> The Agreement also “[e]stablishes a Committee on TRIMs which will, among other things, monitor the implementation of these commitments. The agreement also provides for consideration, at a later date, of whether it should be complemented with provisions on investment and competition policy more broadly.”<sup>112</sup>

The Agreement annexes a list of TRIMs which are inconsistent with the obligation of national treatment provided for in paragraph 4 of Article III of GATT 1994 and the obligation of general elimination of quantitative restrictions provided for in paragraph 1 of Article XI of GATT 1994. The illustrative list is reproduced in Box 5 below.

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111 WTO website, [http://www.wto.org/english/tratop\\_e/invest\\_e/invest\\_e.htm](http://www.wto.org/english/tratop_e/invest_e/invest_e.htm)

112 WTO website, [http://www.wto.org/english/docs\\_e/legal\\_e/ursum\\_e.htm#eAgreement](http://www.wto.org/english/docs_e/legal_e/ursum_e.htm#eAgreement)

Box 5.

**TRIMS Annex Illustrative List of measures**

1. *TRIMs that are inconsistent with the obligation of national treatment provided for in paragraph 4 of Article III of GATT 1994 include those which are mandatory or enforceable under domestic law or under administrative rulings, or compliance with which is necessary to obtain an advantage, and which require:*
  - (a) *the purchase or use by an enterprise of products of domestic origin or from any domestic source, whether specified in terms of particular products, in terms of volume or value of products, or in terms of a proportion of volume or value of its local production; or*
  - (b) *that an enterprise's purchases or use of imported products be limited to an amount related to the volume or value of local products that it exports.*
2. *TRIMs that are inconsistent with the obligation of general elimination of quantitative restrictions provided for in paragraph 1 of Article XI of GATT 1994 include those which are mandatory or enforceable under domestic law or under administrative rulings, or compliance with which is necessary to obtain an advantage, and which restrict:*
  - (a) *the importation by an enterprise of products used in or related to its local production, generally or to an amount related to the volume or value of local production that it exports;*
  - (b) *the importation by an enterprise of products used in or related to its local production by restricting its access to foreign exchange to an amount related to the foreign exchange inflows attributable to the enterprise; or*
  - (c) *the exportation or sale for export by an enterprise of products, whether specified in terms of particular products, in terms of volume or value of products, or in terms of a proportion of volume or value of its local production.*

Source: Agreement on Trade-Related Investment Measures,  
[https://www.wto.org/english/docs\\_e/legal\\_e/18-trims\\_e.htm](https://www.wto.org/english/docs_e/legal_e/18-trims_e.htm)

The TRIMS articles are very relevant for green investment. As mentioned above, the adoption of the TRIMS Agreement implied the end of import substitution policies. After the Uruguay Round, the trade-related investment measure were phased out and countries were given transition periods to adjust their internal policies. As pointed out by a UNDESA, UNEP and UNCTAD report (2011; 48-49), “[m]any “new generation” IIAs, and the WTO TRIMS Agreement, also prohibit the use of so-called performance requirements. These are conditions of establishing an investment, or conditions for preferential treatment that are linked to the use of domestic resources, to export performance, to technology transfer, and so on. The key question here is whether these sorts of policies are effective or ineffective at fostering economic development (in the present case we are concerned specifically about green development). If effective—and while there is no consensus,

*there is evidence that at least some sorts of performance requirements have worked—then these prohibitions are another way that investment law can constitute an obstacle to achieving a green economy... Investment law is a valuable governing influence, allowing for greater investor certainty and potentially fostering more robust flows of investment to developing countries. But certain aspects of many of the agreements in force today may be problematic from the green economy perspective.”<sup>113</sup>*

The debate about TRIMS is an unfinished business since some countries are indirectly applying TRIMS measures. The practice (WTO DSM) shows that some TRIMS are still in practice.<sup>114</sup> Hence, the author suggests that TRIMS could be re-considered for the purpose of low-carbon investment and green economy. Box 6 below identifies the WTO impermissibility of local content requirements implemented in the renewable energy sector.

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113 UNDESA, UNEP and UNCTAD (2011), Report by a Panel of Experts on “The Transition to a Green Economy: Benefits, Challenges and Risks from a Sustainable Development Perspective”, [http://www.unep.org/greeneconomy/Portals/88/documents/research\\_products/UN-DESA,%20UNCTAD%20Transition%20GE.pdf](http://www.unep.org/greeneconomy/Portals/88/documents/research_products/UN-DESA,%20UNCTAD%20Transition%20GE.pdf)

114 For a comprehensive analysis of the use of local content requirements in renewable energy policies see Kuntze, JC. and T. Moerenhout (2013), “Local Content Requirements And The Renewable Energy Industry - A Good Match?”, ICTSD, [http://unctad.org/meetings/en/Contribution/DITC\\_TED\\_13062013\\_Study\\_ICTSD.pdf](http://unctad.org/meetings/en/Contribution/DITC_TED_13062013_Study_ICTSD.pdf), pp. 21-31

Box 6.

**WTO impermissibility of local content requirements**

*Overall, support schemes for RE development that contain LCRs likely violate various different WTO provisions. They are inconsistent with the national treatment principle in GATT Article III: 4 – and potentially GATT Article III: 5 – as they promise to advantage the RE producers that source locally manufactured or assembled products over others that do not. They might equally violate Articles 2.1 and 2.2 of the TRIMs Agreement, as this agreement explicitly prohibits trade-related investment measures that require “the purchase or use of products of domestic origin or from any domestic source” in order to obtain an advantage. For the SCM Agreement, the principal question is whether a support scheme qualifies as a “subsidy” under its specific requirements. If it does, the scheme would constitute a prohibited subsidy under Article 3.1(b) SCM Agreement as long as it was found to be “contingent (...) upon the use of domestic over imported goods.” GATT Article XX would likely not be available to justify support schemes with LCRs.*

*Contrary to support schemes with LCRs, procurement tenders containing LCRs would hardly be disciplined by WTO law. Public procurement is only subject to GATT Article III:8(a), which would most likely not apply to support schemes for renewable electricity (with LCRs), and the GPA, which relies on a positive list approach and therefore only binds the entities that were explicitly included into its scope of application by their host states.*

Source: Kuntze, J.C. and T. Moerenhout (2013), p. 40.

There is a need for building productive capacity of low carbon production on a long term basis. However, countries impose unilaterally countervailing and anti-dumping duties, in response to other countries' policies on the grounds that they distort trade. In the case of promotion of renewable energy, numerous domestic incentives are used by governments. Following Bahar, Egeland and Steenblik (2012), many OECD countries have established national targets for renewable energy and are providing additional incentives to help boost the rate of penetration of renewable energy in their economies. In some jurisdictions, it is required to meet certain minimum levels of domestic content as a condition to have access to government support schemes. In addition, many domestic incentives are both increasing the supply of renewable energy and facilitating trade in associated technologies and renewable fuels.<sup>115</sup>

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115 Bahar, H., J. Egeland, and R. Steenblik (2012), “Domestic Incentive Measures for renewable Energy with Possible Trade Implications”, OECD Trade and Investment Papers, COM/TAD/ENV/JWPTE(2011)46/FINAL, [http://search.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=COM/TAD/ENV/JWPTE\(2011\)46/FINAL&docLanguage=En](http://search.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=COM/TAD/ENV/JWPTE(2011)46/FINAL&docLanguage=En)

As mentioned in section 3 of UNCTAD’s World Investment Report 2010, the report focused on low-carbon investment and suggested different actions that have direct or indirect relation with the TRIMS and TRIPS agreements. The table below highlights some of the references made by the report and identifies its link to TRIMS and/or TRIPS agreements.

*Table 5. World Investment Report 2010 - Example of references to low-carbon investment and their relation to TRIMS/TRIPS*

World Investment Report (WIR) 2010 text excerpts	Author’s Proposition
<p>Drivers (push factors) such as home-country policies, public opinion and shareholders’ muscle are increasingly weighing on TNCs’ decisions to invest in low-carbon activities abroad. Developing countries are confronted with two major challenges in responding to climate change and moving towards a low carbon economy: first, mobilization of the necessary finance and investment; and second, generation and dissemination of the relevant technology.</p>	<p>Green TRIPS needed</p>
<p>Creating an enabling policy framework. This includes the provision of adequate investment promotion, protection and legal security. Other supporting policies include the provision of incentives and regional integration agreements to overcome constraints of market size for low-carbon foreign investment. The emergence of new areas of low-carbon foreign investment – e.g. the production of renewable energy and associated products and technologies, fuel-efficient or alternative-fuel modes of transport and new building materials – is likely to require specific policies to complement the “traditional” elements of the policy framework. Foreign investment into new low-carbon industries may not be competitive in the start-up phase and may therefore need government support, such as feed-in tariffs for renewable energy or public procurement. In addition, such market-creation mechanisms are likely to require revisions to the regulatory framework, including the establishment of emission standards or reporting requirements. There is a need for capacity development in developing countries to enable them to deal with these complex tasks.</p>	<p>TRIMS needed</p>

<p>In specific segments of industries and value chains, where the absorptive capacities of domestic companies are high but low-carbon technology and know-how are lacking, governments can target specific foreign investors in order to acquire the necessary know-how. P.xxxi</p>	<p>Green TRIPS needed</p>
<p>Creating a conducive framework for cross border flows of technology. The key elements of a favorable environment for cross-border flows of low-carbon technology include availability of the requisite skills, appropriate infrastructure (e.g. some countries are setting up low-carbon special economic zones), measures to define and create markets in low-carbon products, targeted incentives (e.g. to invest in the necessary R&amp;D or technology adaption) and a strengthened legal system. How these issues play out varies between economies; for instance, some developing countries have the resources to bolster education and training in the necessary skills. Another issue for cross-border technology flows into host countries is intellectual property (IP) rights protection. Foreign investors in some sectors consider strong protection and enforcement a precondition for technology dissemination, but the actual effects differ from country to country. Concerns have been expressed by developing countries that an IP regime should not only support IP protection and enforcement, but also guarantee greater access to appropriate technologies.</p>	<p>Green TRIMS / TRIPS needed</p>
<p>Effective industrial and competition policies are key to tackling the negative effects of low-carbon foreign investment, such as crowding out and attendant dependency on foreign low-carbon technology suppliers. Industrial policies can help affected domestic companies to improve and upgrade; an effective competition policy framework can control the emergence of monopolies and prevent the abuse of dominant market positions.</p>	<p>Green TRIPS needed</p>
<p>Attention needs to be given to the dual edged nature of IIAs. On the one hand, by committing internationally to a stable and predictable investment policy environment and providing investment protection, IIAs can contribute to increasing a country's attractiveness for low-carbon foreign investment. On the other hand, IIAs can possibly constrain the host country's regulatory powers with respect to measures aiming to facilitate a transition to a</p>	<p>Green TRIMS needed</p>

low-carbon economy.	
<p>Policymakers may also wish to consider complementary, broader approaches. A multilateral declaration, clarifying that IIA parties are not prevented from adopting climate change-related measures enacted in good faith, could help enhance coherence between the IIA and the climate change regimes.</p> <p>The potential relocation of carbon-intensive production from highly regulated places to countries with less stringent or no regulation on emissions has raised concerns. There are fears that this “carbon leakage” – due to free riding – impedes global emission reduction efforts, and that such relocations of production may result in a loss of investment-related benefits (e.g. tax revenues and employment) in the home country. A debate has begun on whether to introduce border adjustment measures (e.g. tariffs) to deal with the issue of carbon leakage. There are technical difficulties when it comes to assessing the carbon intensity of individual imported goods, and there are doubts as to whether different types of border adjustment policies would be consistent with World Trade Organization (WTO) rules. In addition, caution is warranted for countries to guard against possible protectionism affecting efficiency-seeking and export-oriented outward investment under the pretext of such carbon-related policy measures.</p>	Green TRIMS needed
<p>Some home countries also encourage their firms to export (low-carbon) technologies and products or to expand overseas through export credits, export sales guarantees and investment guarantees, thereby building on capabilities developed at home and benefiting from economies of scale. In addition, some developed countries have developed technical cooperation programs with developing countries in order to promote low-carbon development and create additional export and investment opportunities for their firms in areas such as rural electrification through renewable energy. In developing home countries (and some developed ones) low-carbon development strategies,</p>	Green Tri-sectoral needed

<p>policies and regulations might also support their TNCs' outward foreign investment to obtain assets in low carbon know-how (section C.2; section D for a more detailed treatment). Costs of production also relate to carbon leakage (section D.6), as TNCs try to optimize their exposure to carbon taxes.</p>	
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Source: UNCTAD (2010), "World Investment Report", p.116  
[http://unctad.org/en/Docs/wir2010\\_en.pdf](http://unctad.org/en/Docs/wir2010_en.pdf)

A Green TRIMS constitutes an option to renegotiate and re-activate the Trade Related Investment Measures agreement (TRIMS) which came into force in 1995 as part of the Uruguay Round negotiations. TRIMS did not define prohibited FDIs but included a list of local content requirements, trade balancing requirements and export restrictions. WTO member countries were given 90 days to notify WTO of any existing non-conforming measures. There were a total 43 notification by 24 developing countries. After some request for extension of the transition period, all developing countries abolished their notified TRIMS and by 2007, the TRIMS agreement became extinct. A Green Trims+ could become a policy instrument for all WTO members, be they developing or developed.

However, since TRIMS was experienced as a useful mechanism allowing developing countries to temporarily protect their own industries in select sectors until they were ready to drop these measures, it could be envisaged that a second generation TRIMS agreement could be negotiated which would allow developing countries time to protect infant industry in the sector of carbon reduction technology and hence could make it easier for them to commit to CO2 reduction targets. Assessing such a re-use and negotiations of TRIMS+ could be guided by UNCTAD whose research on FDI and developing country mandate would make it the appropriate International Organization to lead such an effort.

In conclusion, a green approach to TRIMS could provide a framework to support the implementation at the national level in developing countries of measures fostering low carbon investment (focusing on the measures listed in the Annex of the Agreement, i.e. local content requirements). There has been case law citing the TRIMS Agreement and further analysis of this jurisprudence is needed to support the development of an effective green investment regime to stop climate warming.

Applying Green TRIMS could help developing countries learn how to apply and use green technology for climate change adaptation and mitigation. One of the common measures currently prohibited by the WTO TRIMS Agreement is "local content requirements"<sup>116</sup>, that is, a specific law or regulation committing foreign investors to purchase or procure locally a minimum threshold of goods and

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116 WTO website, [https://www.wto.org/english/tratop\\_e/invest\\_e/invest\\_info\\_e.htm](https://www.wto.org/english/tratop_e/invest_e/invest_info_e.htm)

services.<sup>117</sup> A reintroduction of TRIMS to support transfer of under a new Green TRIMS Agreement would ensure that green technology is produced fully or partially in the importing developing countries either in commercial partnership with developed country patent holders or alone through their own abilities to innovate and create their own green technologies.

### **WTO Dispute Settlement cases pertaining to environment (TRIPS and TRIMS)**

WTO Dispute Settlement cases already exist and have been adjudicated. The WTO Dispute Settlement Mechanism has dealt with cases pertaining to environment. There were three main environmental disputes under the WTO.<sup>118</sup> In the case “European Communities – Measures affecting asbestos and asbestos-containing products” of 2001, both the Panel and the Appellate Body rejected Canada's challenge to France import ban on asbestos and asbestos-containing products, reinforcing the view that the WTO Agreements support members' ability to protect human health and safety at the level of protection they deem appropriate.<sup>119</sup> Following the summary of the key Panel /Appellate Body findings are reproduced below:

*“TBT Annex 1.1 (technical regulation): The Appellate Body, having rejected the Panel's approach of separating the measure into the ban and the exceptions, reversed the Panel and concluded that the ban as an "integrated whole" was a "technical regulation" as defined in Annex 1.1 and thus covered by the TBT Agreement, as (i) the products subject to the ban were identifiable (i.e. any products containing asbestos); (ii) the measure was a whole laid down product characteristics; and (iii) compliance with the measure was mandatory. However, the Appellate Body did not complete the legal analysis of Canada's TBT claims as it did not have an "adequate basis" upon which to examine them.”*

*“GATT Art. III:4 (national treatment - domestic laws and regulations): As the Appellate Body found the Panel's likeness analysis between asbestos and PCG fibres and between cement-based products containing asbestos and those containing PCG fibres insufficient, it reversed the Panel's findings that the products at issue were like and that the measure was inconsistent with Art. III:4. (The Appellate Body emphasized a competitive relationship between products as an important factor in determining likeness in the context of Art. III:4 (c.f. separate concurring opinion by one Appellate Body Member.) Then, having completed the like product analysis, the Appellate Body concluded that Canada had failed to demonstrate the likeness between either set of products, and, thus, to prove that the measure was inconsistent with Art. III:4.”*

*“GATT Art. XX(b) (general exceptions - necessary to protect human life or health): Having agreed with the Panel that the measure "protects human life or health" and that "no reasonably*

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117 WTI Advisors (2013), “Local Content Requirements & the Green Economy”, UNCTAD’s Ad hoc Expert Group Meeting on Domestic Requirements and Support Measures in Green Sectors: Economic and Environmental Effectiveness and Implications for Trade,  
[http://unctad.org/meetings/en/Contribution/DITC\\_TED\\_13062013\\_Study\\_WTI.pdf](http://unctad.org/meetings/en/Contribution/DITC_TED_13062013_Study_WTI.pdf)

118 See Annex 1 for list of environmental disputes under WTO and GATT.

119 [http://www.wto.org/english/tratop\\_e/envir\\_e/edis09\\_e.htm](http://www.wto.org/english/tratop_e/envir_e/edis09_e.htm)

available alternative measure" existed, the Appellate Body upheld the Panel's finding that the ban was justified as an exception under Art. XX(b). The Panel also found that the measure satisfied the conditions of the Art. XX chapeau, as the measure neither led to arbitrary or unjustifiable discrimination, nor constituted a disguised restriction on international trade."<sup>120</sup>

The "shrimp-turtle" case of 2001, "United States – Import Prohibition of Certain Shrimp and Shrimp Products" recognized that under WTO rules governments have every right to protect human, animal or plant life and health and to take measures to conserve exhaustible resources. The WTO does not have to "allow" them this right. Initially, the US lost the case because it applied its import measures in a discriminatory manner; it then revised its measures to introduce flexibilities in favour of developing countries. The Appellate Body subsequently concluded that the US ban was consistent with WTO rules. The ruling also said WTO panels may accept "amicus briefs" (friends of the court submissions) from NGOs or other interested parties.<sup>121</sup> The summary of the key Panel /Appellate Body findings are reproduced below:

*"GATT Art. XI (prohibition on quantitative restrictions): The Panel found that the US prohibition, based on Section 609, on imported shrimp and shrimp products violated Art. XI. The United States apparently conceded the measure's violation of Art. XI because it did not put forward any defending arguments in this regard."*

*"GATT Art. XX(g) (general exceptions - exhaustible natural resources): The Appellate Body held that although the US import ban was related to the conservation of exhaustible natural resources and, thus, covered by Art. XX(g) exception, it could not be justified under Art. XX because the ban constituted "arbitrary and unjustifiable" discrimination under the chapeau of Art. XX. In reaching this conclusion, the Appellate Body reasoned, inter alia, that in its application the measure was "unjustifiably" discriminatory because of its intended and actual coercive effect on the specific policy decisions made by foreign governments that were Members of the WTO. The measure also constituted "arbitrary" discrimination because of the rigidity and inflexibility in its application, and the lack of transparency and procedural fairness in the administration of trade regulations."*

*"While ultimately reaching the same finding on Art. XX as the Panel, the Appellate Body, however, reversed the Panel's legal interpretation of Art. XX with respect to the proper sequence of steps in analysing Art. XX. The proper sequence of steps is to first assess whether a measure can be provisionally justified as one of the categories under paras. (a)-(j), and, then, to further appraise the same measure under the Art. XX chapeau."<sup>122</sup>*

The "United States – Standards for Reformulated and Conventional Gasoline" of 1996 affirmed that the US had every right to adopt the highest possible standard to protect its air quality so long as it did not discriminate against foreign imports. The US lost the case because it discriminated – its requirement on domestic producers was less stringent than that imposed on imported gasoline (in

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120 WTO (2012), "WTO Dispute Settlement: One-Page Case Summaries 1995 – 2011", [http://www.wto.org/english/res\\_e/booksp\\_e/dispu\\_summary95\\_11\\_e.pdf](http://www.wto.org/english/res_e/booksp_e/dispu_summary95_11_e.pdf), p. 54

121 [http://www.wto.org/english/tratop\\_e/envir\\_e/edis08\\_e.htm](http://www.wto.org/english/tratop_e/envir_e/edis08_e.htm)

122 WTO (2012), "WTO Dispute Settlement: One-Page Case Summaries 1995 – 2011", [http://www.wto.org/english/res\\_e/booksp\\_e/dispu\\_summary95\\_11\\_e.pdf](http://www.wto.org/english/res_e/booksp_e/dispu_summary95_11_e.pdf), p. 27

this case from Venezuela and Brazil).<sup>123</sup> The Appellate Body in US — Gasoline emphasized the importance of the Preamble of the WTO Agreement in the context of environmental issues: “[i]ndeed, in the preamble to the WTO Agreement and in the Decision on Trade and Environment, there is specific acknowledgement to be found about the importance of coordinating policies on trade and the environment. WTO Members have a large measure of autonomy to determine their own policies on the environment (including its relationship with trade), their environmental objectives and the environmental legislation they enact and implement. So far as concerns the WTO, that autonomy is circumscribed only by the need to respect the requirements of the General Agreement and the other covered agreements.”<sup>124</sup> The summary of the key Panel /Appellate Body findings are reproduced below:

“GATT Art. III:4 (national treatment - domestic laws and regulations): The Panel found that the measure treated imported gasoline "less favourably" than domestic gasoline in violation of Art. III:4, as imported gasoline effectively experienced less favourable sales conditions than those afforded to domestic gasoline. In particular, under the regulation, importers had to adapt to an average standard, i.e. "statutory baseline", that had no connection to the particular gasoline imported, while refiners of domestic gasoline had only to meet a standard linked to their own product in 1990, i.e. individual refinery baseline.”

“GATT Art. XX(g) (general exceptions - exhaustible natural resources): In respect of the US defence under Art. XX(g), the Appellate Body modified the Panel's reasoning and found that the measure was "related to" (i.e. "primarily aimed at") the "conservation of exhaustible natural resources" and thus fell within the scope of Art. XX(g). However, the measure was still not justified by Art. XX because the discriminatory aspect of the measure constituted "unjustifiable discrimination" and a "disguised restriction on international trade" under the chapeau of Art. XX.”<sup>125</sup>

In regards to TRIMS and TRIPS, so far, there were 41 cases citing the TRIMS agreement in the request for consultations while there were 34 cases citing TRIPS. In both cases, developed and developing countries were involved either as complainant or as a respondent. Annex 2 and 3 show a list of cases involving TRIMS and TRIPS. It is also important to highlight that there was no case yet dealing with environmental services.

The great majority of the cases involved Article 2 (National Treatment and Quantitative Restrictions) of TRIMS. Article 3 (Exceptions) has not been cited in any dispute related to TRIMS. On the other hand, 7 cases cited Article 5 of TRIMS (Notification and Transitional Arrangements). The table below identifies the cases according to paragraphs of the TRIMS articles.

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123 [http://www.wto.org/english/tratop\\_e/envir\\_e/edis07\\_e.htm](http://www.wto.org/english/tratop_e/envir_e/edis07_e.htm)

124 Appellate Body Report, US — Gasoline, p. 30

125 WTO (2012), “WTO Dispute Settlement: One-Page Case Summaries 1995 – 2011”, [http://www.wto.org/english/res\\_e/booksp\\_e/dispu\\_summary95\\_11\\_e.pdf](http://www.wto.org/english/res_e/booksp_e/dispu_summary95_11_e.pdf), p. 7

Table 6. Breakdown of cases by article of TRIMS

Article 2	27 cases: DS27, DS51, DS52, DS54, DS55, DS59, DS64, DS65, DS74, DS81, DS102, DS105, DS139, DS142, DS146, DS175, DS224, DS276, DS340, DS342, DS358, DS359, DS438, DS444, DS445, DS446, DS476
Article 2.1	20 cases: DS142, DS175, DS195, DS275, DS334, DS339, DS340, DS342, DS358, DS359, DS412, DS426, DS443, DS452, DS456, DS459, DS462, DS463, DS472, DS497
Article 2.2	10 cases: DS175, DS195, DS339, DS443, DS452, DS459, DS462, DS463, DS472, DS497
Article 5	4 cases: DS27, DS74, DS102, DS105
Article 5.2	1 case: DS195
Article 5.4	1 case: DS55
Article 5.5	1 case: DS195
Article 6	1 case: DS446
Article 6.1	1 case: DS445
Article Annex	1 case: DS497
Annex 1	3 cases: DS334, DS358, DS359

Source: WTO website,  
[https://www.wto.org/english/tratop\\_e/dispu\\_e/dispu\\_agreements\\_index\\_e.htm?id=A25](https://www.wto.org/english/tratop_e/dispu_e/dispu_agreements_index_e.htm?id=A25)

Finally, there are other disputes involving sectors which are very relevant for fighting climate change such as environmental charge, solar energy, solar panels, and wind power equipment. Box 7 lists these cases.

Box 7.

**WTO cases related to biodiesels, environmental charge, solar energy, solar panels, and wind power equipment**

*Biodiesels: 4 cases*

*DS443: European Union and a Member State — Certain Measures Concerning the Importation of Biodiesels (Complainant: Argentina), 17 August 2012*

*DS459: European Union — Certain Measures on the Importation and Marketing of Biodiesel and Measures Supporting the Biodiesel Industry (Complainant: Argentina), 15 May 2013*

*DS473: European Union — Anti-Dumping Measures on Biodiesel from Argentina (Complainant: Argentina), 19 December 2013*

*DS480: European Union — Anti-Dumping Measures on Biodiesel from Indonesia (Complainant: Indonesia), 10 June 2014*

*Environmental Charge: 1 case*

*DS421: Moldova, Republic of — Measures Affecting the Importation and Internal Sale of Goods (Environmental Charge) (Complainant: Ukraine), 17 February 2011*

*Solar Energy: 1 case*

*DS456: India — Certain Measures Relating to Solar Cells and Solar Modules (Complainant: United States), 6 February 2013*

*Solar Panels: 1 case*

*DS437: United States — Countervailing Duty Measures on Certain Products from China (Complainant: China), 25 May 2012*

*Wind Power Equipment: 2 cases*

*DS419: China — Measures concerning wind power equipment (Complainant: United States), 22 December 2010*

*DS437: United States — Countervailing Duty Measures on Certain Products from China (Complainant: China), 25 May 2012*

Source: WTO Index of disputes issues,

[https://www.wto.org/english/tratop\\_e/dispu\\_e/dispu\\_subjects\\_index\\_e.htm#selected\\_subject](https://www.wto.org/english/tratop_e/dispu_e/dispu_subjects_index_e.htm#selected_subject)

The products have been covered by WTO jurisprudence is a mere coincidence. The issue at stake was not the product's environmental nature but rather the fact that, in trying to promote them, governments used commercial measures that upset the level playing field for exports that should exist without discrimination against foreign trading partners.

The cases reviewed in this section indicate that extremely relevant sectors for fighting climate change such as renewable energy, solar energy, solar panels and wind power equipment have been covered by the WTO jurisprudence. The jurisprudence also addressed the question on whether different energy “like products” should be treated equally. Box 8 below describes the notion of “likeness” of energy products in the WTO context.

Box 8.

**Are different energy products “like products” to be treated equally?**

*The classic GATT statement on the factors to consider in deciding whether two products are “like products” – and should therefore be treated equally — is found in a GATT working party report of 1970. That report states in respect of “like or similar products”: “[t]he interpretation of the term should be examined on a case-by-case basis. This would allow a fair assessment in each case of the different elements that constitute a ‘similar’ product. Some criteria were suggested for determining, on a case-by-case basis, whether a product is ‘similar’: the product’s end-uses in a given market; consumers’ tastes and habits, which change from country to country; the product’s properties, nature and quality” (Working Party Report on Border Tax Adjustments, adopted on 2 December 1970, BISD 18S/97, para. 18).*

*It should be noted also that the term “like product” is found in several WTO provisions but may not have the same meaning in each of these provisions. As the Appellate Body noted: “The concept of ‘likeness’ is a relative one that evokes the image of an accordion. The accordion of ‘likeness’ stretches and squeezes in different places as different provisions of the WTO Agreement are applied” (Japan – Alcoholic Beverages, WT/DS8/AB/R, adopted on 1 November 1996, para. 114. See also para. 66 below). The issue of likeness under Art. III (national treatment) is further addressed below (para. 66).*

*The most notorious GATT dispute that addressed this question of “likeness” under the MFN principle involved coffee (Panel Report on Spain – Tariff Treatment of Unroasted Coffee, adopted on 11 June 1981, BISD 28S/102). In that case, Spain had split its single tariff line for coffee into five tariff lines for different types of coffee, dutiable at two different rates. The effect of the change was apparently to lead to comparatively higher duties on stronger coffee beans. Brazil, which considered itself to have been adversely affected by this reclassification, brought a case against Spain. The panel ruled that unroasted coffee is unroasted coffee, i.e. that it was not possible to distinguish between types of unroasted coffees for tariff purposes. Factors such as differences in taste and aroma resulting from the geographical origin of the coffee, cultivation*

methods and processing of the beans as well as genetic factors, were not considered to be sufficient to make the products “not like”. Spain was thus obliged to impose the same duty on (stronger) Brazilian coffee and (weaker) coffee from other countries.

It is generally accepted, however, that the method of tariff classification can be used as one of the elements to determine whether products are “like”. It would thus seem fair to state that given their different tariff classification, as well as different “properties, nature and quality”, electricity is not “like” natural gas nor is nuclear energy “like” coal (notwithstanding their similar enduses). It would, therefore, seem possible for ECT Contracting Parties to treat, say, electricity from the EC differently than natural gas from Kazakhstan.

A problem could arise, however, in case an ECT Contracting Party were to impose different custom duties for different types of electricity depending, for example, on how the electricity has been generated (e.g., by nuclear power or renewable sources). There, not only the end-use (and, most probably, tariff classification) but also the physical characteristics of the two products would be identical. It would be impossible to physically distinguish the two. They would, therefore, stand a serious chance of being considered to be “like”. If so, any differential treatment would be a violation of the MFN-principle. We will explain below that such violation may be justified under Article XX of GATT for reasons of health or environmental protection.

Source: Energy Charter Secretariat (2001), “WTO Rules Applying under the Energy Charter Treaty”, [http://www.encharter.org/fileadmin/user\\_upload/document/WTO\\_Rules\\_applying\\_to\\_the\\_ECT\\_-\\_2002\\_-\\_ENG.pdf](http://www.encharter.org/fileadmin/user_upload/document/WTO_Rules_applying_to_the_ECT_-_2002_-_ENG.pdf), p.21.

A recent WTO jurisprudence specifically addressed the use of local requirements (TRIMS) to promote clean energy. In March 2016, a WTO panel ruled on the United States dispute (DS456) against India concerning domestic content requirements in the context of the Jawaharlal Nehru National Solar Mission (JNNSM) energy scheme. JNNSM was launched in 2010 with the objective of “deploying 20,000 MW of grid connected solar power by 2022 aimed at reducing the cost of solar power generation in the country through (i) long term policy; (ii) large scale deployment goals; (iii) aggressive R&D; and (iv) domestic production of critical raw materials, components and products, as a result to achieve grid tariff parity by 2022.”<sup>126</sup> The scheme aimed to create an enabling policy framework to achieve this objective and make India a global leader in solar energy.

The JNNSM is being implemented in several successive “Phases,” which are further divided into “Batches.” As reported by ICTSD, between 2010 and 2014, solar power developers were required to use certain types of solar cells and modules manufactured in India for power generation projects in order to ultimately sell that

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126 <http://www.mnre.gov.in/solar-mission/jnnsmission/introduction-2/>

electricity to government agencies under a long-term agreement at a guaranteed rate.<sup>127</sup>

The USA complained that these domestic content requirements violate India's national treatment obligations under the General Agreement on Tariffs and Trade (GATT) 1994 and the Agreement on Trade-Related Investment Measures (TRIMs Agreement).

The WTO panel found that the domestic content requirements imposed by India are trade-related investment measures that violate the national treatment obligations under the TRIMs Agreement and the GATT 1994. The panel also found that the discrimination relating to solar cells and modules under the domestic content requirements cannot be exempted by the GATT Article III:8(a) derogation for government procurement because solar cells and modules discriminated against were not in a "competitive relationship" with the electricity bought by the Indian government from power developers. The panel emphasized that the legitimacy of the policy objectives pursued through the National Solar Mission is not under dispute and the panel's analysis was on the WTO-legality of the domestic content requirements. Finally, the panel indicated that it will take into account India's policy objectives and the wider factual context as long as they are legally relevant.<sup>128</sup>

In response to the ruling, the United States Trade Representative, Michael Froman, mentioned that *"United States strongly supports the rapid deployment of solar energy around the world – including in India ... But discriminatory policies in the clean energy space in fact undermine our efforts to promote clean energy by requiring the use of more expensive and less efficient equipment, raising the cost of generating clean energy and making it more difficult for clean energy sources to be competitive."*<sup>129</sup>

United States and India have 60 days to appeal the panel's finding. The Appellate Body, according to the WTO rules, can review aspects of law but generally will not interfere with the findings of the panel.

Seen from the perspective of a globally shared sustainable development strategy, efficiency (price) and welfare creation (profits) should not be the sole criteria for trade and development in view of COP21 and the SDGs. Countries should be given the possibility to learn how to manufacture parts or all of (green) technology and learn how to break technology dependence on a few leading alternative technology producing countries. Climate change requires urgent and equitable efforts not "business as usual" nor the emergence of new technology oligopolies. IP holders of green high technology should be provided with a return on their investment but not be allowed to withhold sharing of crucial climate change technology nor should they be allowed to request prices that developing countries cannot pay.

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127 ICTSD (2016), "WTO Decision on Local Content Requirements Will Not Affect India Solar Ambitions, Officials Say", Bridges, Volume 20, Number 8", <http://www.ictsd.org/bridges-news/bridges/news/wto-decision-on-local-content-requirements-will-not-affect-india-solar>

128 Ibid.  
129 <https://ustr.gov/about-us/policy-offices/press-office/press-releases/2016/february/united-states-prevails-wto-dispute>

In conclusion, WTO Dispute Settlement cases already exist and have been adjudicated. More can be done proactively in order to explore legal arguments to support a green approach to TRIMS and TRIPS that would help developing and least developed countries foster low carbon investment and production to fight climate warming. In practice, even though there have been a number of cases involving measures derived from Multilateral Environmental Agreements (MEAs), the reference to some of the MEA measures has been criticized either by panels or the Appellate Body. It should be stressed that what was criticized was not the measures themselves but rather the manner in which they were applied by the respective governments. In that sense, the ability of WTO Members to implement measures derived from MEAs has been fully preserved.

### **Green Three-sector Plurilaterals**

A Green three-sector Plurilateral Agreement is a comprehensive solution to fight climate warming and to reduce poverty. This solution would consist of negotiated trade-offs across three domains of the WTO framework agreement, namely:

- 1) Environment: green goods and services relevant for fighting climate change (making “green” commitments in GATT and GATS related to environment and climate change).
- 2) Energy: green goods and services relevant for supporting green energy (making “green” commitments in GATT and GATS related to green energy).
- 3) Trade and Development: making green commitments through Preferential Trade Agreements (PTAs) giving market access for green technology producers in developing countries to markets in developed and emerging countries; trade facilitation and capacity building to help Low-Income Developing Countries (LI-DCs) and Least Developed Countries (LDCs) to grow economically and reduce poverty within green growth parameters.

### **Environment Goods and Services**

Low income developing countries (LI-DCs) and least developed countries could be given the right to discriminate between high carbon energy products versus low carbon energy products. Another solution could be to provide compulsory licensing for LI-DCs and LDCs to develop green technologies using environmental services and energy services (drilling, equipment, crude oil processing equipment, etc.) to generate more environmental-friendly energy sources.

China<sup>130</sup> for instance called for a “common-list” including goods of export interesting to both developed and developing countries and a “development list” which would include those goods from the common list eligible for lesser reduction

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130 WTO document TN/TE/W/42

commitments. China and India<sup>131</sup> called for addressing the development dimension for a “triple-win” outcome through: (a) Mechanisms to ensure the development and transfer of environmentally sound technology (EST); (b) A financial mechanism to ensure access to and development of EST, investments in environmental projects and capacity development for production of environmental goods; and (c) Special and Differential Treatment for developing and least-developed member countries.

Some elements of this plurilateral solution have direct links to the green approach to TRIMS and TRIPS proposed earlier in this policy paper. In particular, for example the submission by Argentina on “The Doha Round and Climate Change”<sup>132</sup> to the Committee on Trade and Environment in Special Session has many references directly linked to green TRIMS and green TRIPS. The table below highlights some of these references and identifies its link to TRIMS and/or TRIPS agreements.

*Table 7. Submission by Argentina to the Committee on Trade and Environment – Special Session. Example of references to green TRIMS/TRIPS*

Submission by Argentina “The Doha Round and Climate Change”	Author’s Proposition
Climate change is one of the most pressing challenges faced by man. The WTO negotiations to eliminate barriers to trade in environmental goods and services should therefore be aimed primarily at facilitating access to goods and services that are used in climate change mitigation and adaptation projects. This would help to reduce the costs of projects relating to action against climate change, which might help to stabilize greenhouse gas concentrations at a level that would prevent anthropogenic interference with the climate system. (p.1)	Green TRIPS needed
The adoption of an integrated approach would be an opportunity for the results of the Doha Round to complement and support the objectives of the UN Framework Convention on Climate Change, thereby encouraging the implementation of projects that use climate and energy friendly goods and technologies. (p.2)	Green Tri-sectoral needed
The link between trade liberalization and CDM projects is outlined in the World Bank report entitled "International Trade and Climate Change: Economic, Legal, and	Green TRIPS needed

131 WTO document TN/TE/W/79

132 WTO document TN/TE/W/74

Institutional Perspectives", which states that "it may be desirable from a climate change mitigation perspective for WTO negotiators to grant priority for products, technologies, and services imported for projects under the Clean Development Mechanism (CDM)". (pp.2-3)	
it would help to reduce the costs of setting up CDM projects and promote the transfer of technologies (e.g. those linked to renewable energy) to developing countries, thus facilitating the development of such countries' domestic capacity in the sector; (p.3)	Green TRIPS / TRIPS needed
It is also considered necessary to develop effective technology transfer mechanisms within the WTO and to ensure special and differential treatment for developing countries in the implementation of the integrated approach. These issues merit special attention and will therefore be addressed in a follow-up communication. (p.3)	Green TRIPS needed

Source: WTO document TN/TE/W/74

On the other hand, the deployment of technologies for mitigation of greenhouse-gases (GHGs) depends on a wide range of services (including those that are imported) such as business services, telecommunications services, and construction and related engineering services. Examples of products and technologies connected with the provision of climate change include energy-efficiency programs which often utilize new electronic controls, energy-efficient boilers and HVAC equipment. As identified by Steenblik and Geloso Grosso (2011), projects in most developing countries require that a great deal of technologically sophisticated equipment must be imported while many construction materials are procured locally. This is the case of turbines for power projects, centrifugal blowers for methane capture projects, electricity sub-meters for energy-efficiency projects and electronic control equipment for many types of projects.<sup>133</sup>

Environment goods and services are interconnected and have been insufficiently addressed by the WTO member countries. The Paragraph 31 (iii) of the Doha Ministerial declaration calls for "the reduction or as appropriate elimination of tariff and non-tariff barriers to environmental goods and services." However, no deadlines were set and no multilaterally accepted consensus was reached on what constitutes "environmental goods and services".

133 Steenblik, R. and M. Geloso Grosso (2011), "Trade in Services Related to Climate Change: An Exploratory Analysis", OECD Trade and Environment Working Papers, 2011/03, <http://dx.doi.org/10.1787/5kgc5wtd9rzw-en>, p.39.

Trade in environmental services is closely linked with trade in environmental goods, since the provision of those services often relies on the use of related environmental goods. The thrust of the discussions has been primarily on trade in goods, or what is referred to as the “List” approach. The List Approach focuses solely on trade in goods and the lists of goods proposed have predominantly been goods with multiple non-environmental uses. In regards to services related to climate change, mode 1 has been identified as a supply option which parallels the innovation that is taking place in identifying specific tasks that can be separated from the ones previously assumed to be inseparable.

### **Energy goods and services**

Energy is the second component of the proposed tri-sectoral green plurilateral solution to fight climate warming. The production, distribution and use of conventional energy types such as fossil fuels, has a direct negative impact on climate change. Likewise, the production of renewable energy is a critical component to fight climate warming by reducing greenhouse gas emissions. According to the former WTO Director-General, Pascal Lamy, “[w]e must reconcile the fact that the world will need more energy with the incontrovertible knowledge that current patterns of energy use are harming the planet. Greater energy efficiency and clean energy will play a central role in moving the world onto a more secure and sustainable energy path.”<sup>134</sup>

While the relationship between trade and environment and sustainable development is strongly bound to energy, the multilateral rules on energy are highly fragmented and largely incoherent. Examples of energy-specific agreements and institutions addressing energy issues are: the OECD; the International Energy Agency (IEA); the Energy Charter Treaty; the Organization of the Petroleum Exporting Countries; and the European Union and North American Free Trade Agreement (NAFTA), at the regional level. Energy is also addressed by a number of MEAs, including the UNFCCC and its Kyoto Protocol. Climate change mitigation measures catalyze energy efficiency and motivate energy sustainability policies. Recognizing this situation, the climate regime avoided the approach adopted by a number of earlier MEAs which require parties to those agreements to use trade restrictive rules against non-parties to the agreements.<sup>135</sup>

Energy is central for fighting climate warming and for fostering sustainable development. Governments realize this and put in place incentives to stimulate the production of energy from clean sources. The WTO framework contains rules essential for the regulation of energy trade relations, such as rules on import/export

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134 Speech to the Workshop on the Role of Intergovernmental Agreements in Energy Policy held in Geneva on 29 April 2013 at the WTO, [http://www.wto.org/english/news\\_e/sppl\\_e/sppl279\\_e.htm](http://www.wto.org/english/news_e/sppl_e/sppl279_e.htm)

135 Cottier T., et. al. (2010), “Energy in WTO law and policy”, [http://www.wto.org/english/res\\_e/publications\\_e/wtr10\\_forum\\_e/wtr10\\_7may10\\_e.pdf](http://www.wto.org/english/res_e/publications_e/wtr10_forum_e/wtr10_7may10_e.pdf)

restrictions, transit, subsidies, and technical regulations.<sup>136</sup> Within the context of WTO, distinction is made between energy as goods (GATT) and energy services (GATS). Energy goods include petroleum, natural gas, coal, nuclear energy, renewable energy, and primary and secondary electricity sectors under GATT. While energy services include: transportation and distribution of energy goods under GATS.

A “gentleman’s agreement” existed among the major trading countries not to discuss petroleum issues in the GATT. This was due to the strategic nature of petroleum trade and the importance of security concerns in respect of petroleum products. Also security considerations greatly influenced trade policy in the energy sector; for example, the United States decided to leave its tariff on crude petroleum unbound in its tariff schedule.<sup>137</sup>

Natural resources such as water, agricultural products, timber, ores, coal, oil, and natural gas are the basis for producing energy. However, no WTO rules apply to the members’ decision on whether or not to produce these natural resources. Most WTO members consider that the exploitation of natural resources is reserved permanently and exclusively to the nations’ internal sovereignty and remains outside the scope of the WTO Agreements. Primary and downstream energy products of WTO members, show low applied tariffs, but bound rates remain high, or even completely unbound, in some important sectors.<sup>138</sup>

Subsidies are extensively granted to the energy sector around the world; both the fossil fuel sector and the renewable and alternative energy sectors have benefited from them. The amount of subsidies for renewable energy is growing as a response to energy security concerns and climate change (mainly in the United States and the European Union). Potential areas of conflict with WTO rules are related to the Agreement on Subsidies and Countervailing Measures (ASCM)<sup>139</sup>, if renewable energy subsidies are contingent upon export- or import-substitution or they cause adverse effects. Another conflicting area is the absence of a GATT Article XX provision in the ASCM for the use of certain trade-distortive subsidies for environmental purposes may be justified.<sup>140</sup>

In regard to energy services, a few WTO members undertook limited commitments in three energy-related sectors: services incidental to mining, services incidental to energy distribution, and pipeline transportation of fuels. It is worth

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136 The Energy Charter Treaty (ECT) is the only inter-regional multilateral treaty covering energy and based on the WTO rules. The ECT applies those rules specifically to energy trade and also among Energy Charter Treaty states which are outside the WTO (important energy producers such as Kazakhstan, Azerbaijan, Algeria, Libya, Iran, Iraq and Sudan, are in the process of acceding the WTO). See [http://www.wto.org/english/tratop\\_e/envir\\_e/wksp\\_envir\\_apr13\\_e/wksp\\_envir\\_apr13\\_e.htm](http://www.wto.org/english/tratop_e/envir_e/wksp_envir_apr13_e/wksp_envir_apr13_e.htm)

137 UNCTAD (2003), “Energy and Environmental Services: Negotiating Objectives and Development Priorities”, New York and Geneva, [http://unctad.org/en/Docs/ditctncd20033\\_en.pdf](http://unctad.org/en/Docs/ditctncd20033_en.pdf), p.4

138 Crosby, D. (2010) “Background to WTO Rules and Production/Trade Restrictions in the Field of Energy” in J. Pauwelyn (Ed.), *Global Challenges at the Intersection of Trade, Energy and the Environment*, Chapter 5, Centre for Trade and Economic Integration, Graduate Institute of International and Development Studies, Geneva, <http://www.cepr.org/press/CTEI-CEPR.pdf>, pp. 83-84

139 [http://www.wto.org/english/docs\\_e/legal\\_e/24-scm\\_01\\_e.htm](http://www.wto.org/english/docs_e/legal_e/24-scm_01_e.htm)

140 Cottier T., et. al. (2010), op. Cit., p.11

noting that energy-related activities which are not exclusive to the energy industry are covered by other services sectors, such as transport, distribution, construction, consulting, and engineering. One exemption to most-favored nation (MFN) treatment (i.e. non-discrimination) has been made in pipeline transportation of fuels.<sup>141</sup>

Overall, access to energy varies dramatically between countries and regions. Three groups can be identified in terms of energy: producers, users and transmitters of energy. The negotiation of defensive and offensive interests of countries varies according to these groupings. There are countries having energy reserves but lacking the means to extract and use them. On the other hand there are some developing and least developed countries that depend on energy imports. For developing and least developed countries, access to clean energy technology and developing application know-how of green technology is crucial to support mitigation efforts in order to stop climate warming.

### **Trade AND Development**

The third component of the Green Three-Sector Plurilateral Approach consists of the following. Rich countries with green technology could stimulate production and utilization of green technologies in LI-DCs and LDCs by offering preferential trade concessions allowing producers of green technology products and services of LI-DCs and LDCs to sell their products and services tariff free into developed country markets. As pointed out by the OECD, green growth in developing countries requires learning on how to generate value in international markets from environmental or natural resource assets.<sup>142</sup> The solution of a green plurilateral agreement could be a complementary solution to those proposed earlier in this article, namely the green TRIMS and the green TRIPS. In order to encourage the necessary low carbon investment and production in LDCs, a green approach to TRIMS and TRIPS is needed. This approach would target developing countries in general, in order to facilitate their access to green technologies.

Trade facilitation could support developing countries' transition into a green economy. However, continuous efforts to facilitate international trade in goods and services need to be further encouraged in order to foster international markets for green goods and services and to remove tariff and non-tariff barriers on green goods and services.<sup>143</sup>

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141 [http://www.wto.org/english/tratop\\_e/serv\\_e/energy\\_e/energy\\_e.htm](http://www.wto.org/english/tratop_e/serv_e/energy_e/energy_e.htm)

142 OECD (2013), "Putting Green Growth at the Heart of Development", OECD Green Growth Studies, [http://www.keepeek.com/Digital-Asset-Management/oecd/development/putting-green-growth-at-the-heart-of-development\\_9789264181144-en](http://www.keepeek.com/Digital-Asset-Management/oecd/development/putting-green-growth-at-the-heart-of-development_9789264181144-en), p. 136

143 For an analysis of non-tariff barriers in the renewable energy sector see UNCTAD (2009), "World Trade Law and Renewable Energy: The Case of Non-Tariff Barriers", [http://unctad.org/en/Docs/ditcted20085\\_en.pdf](http://unctad.org/en/Docs/ditcted20085_en.pdf)

Three existing WTO committees need to find ways to build cross-domain bridges namely the committee on environment goods and services, the committee on energy goods and services and the committee on trade and development. A quick overview of minutes of the meetings of these three committees indicates that the main issues discussed within the Committee on Trade and Environment is the elimination of tariffs and non-tariff barriers on environmental goods and services, the main issues discussed in the Committee on Energy goods and services pertains to elimination of tariffs and non-tariff-barriers on energy goods and services while the main issues discussed by the Committee on Trade and Development are technical assistance, monitoring mechanism, preferential rules of origin in Agriculture and non-agricultural market access (NAMA) for LDCs, and revision of special and differentiated treatment provisions.

WTO members have not been able to make much progress within each of the three sectors (environment, energy and trade & development). There is an attempt to negotiate plurilateral agreements outside the WTO context for parts of the three domain areas. The Trade in Services (TISA) negotiation contains some aspects of energy and environment services and the Environmental Goods Agreement (EGA) focuses on tariff reductions for energy goods. Both plurilaterals – TISA and EGA have been initiated by developed countries, are limited in numbers of WTO member countries (TISA-23, EGA-14 in 2015) and, lamentably, have not explored cross-sector concessions which would be beneficial for all parties concerned whether developed or developing. LI-DCs and especially LDCs have to face multiple challenges ranging from poverty, political instability, lack of supply of exportable products and services to climate change<sup>144</sup> and lack adequate and continuous access to energy, water, and food and development aid. And as a consequence, their need for energy ends up with more cutting of woods which in turn leading to more deforestation, drought and, overall, climate warming.

To reach a Green Three-Sector Plurilateral Agreement, WTO member countries need to negotiate new commitments based on GATT and GATS green environmental goods and services, green energy goods and services, preferential trade agreements, trade facilitation and capacity building. Such a green plurilateral solution could be reached once a critical mass of WTO members will have signed up to the Green Plurilateral Agreement which could be further multilateralized within the rules of the Most Favored National (MFN) rule of the WTO.

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144 Policy options for low income countries covering energy, development and environmental concerns need to be repositioned in a less ideological frame see e.g. options for Bolivia at: <http://www.globalsubsidies.org/en/subsidywatch/commentary/bolivia-s-energy-sector-intervention-a-missed-opportunity-economic-devel>

#### 4. *A cross treaty régime link between WTO and UNFCCC based on mutual supportiveness and embeddedness in a new socio-economic context*

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##### **Principle of Mutual supportiveness**

Attempting to achieve low carbon investment at international levels through regulatory measures (capping of CO<sub>2</sub> emissions and of other greenhouse gas emission) is the aim of multilateral agreements and conventions such as the Multilateral Environmental Agreements (MEAs). On the other hand, the multilateral and plurilateral trade agreements favour progressive liberalization of markets and de-emphasize regulatory measures by national governments. The tension between the MEAs and the trade agreements (WTO, RTAs, FTAs, BITs) hinders the goal of achieving low carbon investment and low carbon economic activities. The principle of mutual supportiveness suggests that each international regime should take into account the scope and legal ramification of other agreements.

The principle of mutual supportiveness is not a new proposal. The 2006 Report of the International Law Commission (ILC) on “Fragmentation of International Law: Difficulties arising from the Diversification and Expansion of International Law”<sup>145</sup> referred to mutual supportiveness only in two instances. However, the principle has emerged as a means to deal with the phenomenon of “fragmentation” of international law through mutual supportiveness developed in the context of the relationship between trade agreements and multilateral environment agreements.<sup>146</sup> Following Mbengue & Boisson de Chazournes (2011), Article 31.1 (General rule of interpretation) of the Vienna Convention on the Law of Treaties focuses on the “internal context” (rules and principles that parties to a treaty are bound to implement in light of a given treaty regime) of treaties and constitutes a pathway for mutual supportiveness.

Mutual supportiveness has its origin in a document adopted by the 1992 UN Conference on Environment and Development which outlines that “[t]he international economy should provide a supportive international climate for achieving

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145 [http://untreaty.un.org/ilc/documentation/english/a\\_cn4\\_1682.pdf](http://untreaty.un.org/ilc/documentation/english/a_cn4_1682.pdf)

146 M. Mbengue & L. Boisson de Chazournes (2011), “A ‘Footnote as a Principle’. Mutual Supportiveness and Its Relevance in an Era of Fragmentation”, *Liber Amicorum Rüdiger Wolfrum*, Springer, 2011.

environment and development goals by . . . making trade and environment mutually supportive.<sup>147</sup> This document calls the states to “promote and support policies, domestic and international, that make economic growth and environmental protection mutually supportive”.<sup>148</sup>

References to mutual supportiveness can be found in the text of different international agreements and other legal instruments. As suggested by Pavoni (2010)<sup>149</sup>, although they have the character of political statements, they should not be dismissed as for their normative significance. According to this author (2010; 1), “mutual supportiveness seems to be characterized by two remarkable legal dimensions. The first is its interpretative dimension, which serves the purpose of disqualifying solutions to tensions between competing regimes involving the application of conflict rules. The second is the law-making dimension of mutual supportiveness which comes into play when efforts at reconciling competing rules have unsuccessfully been exhausted. This dimension implies a duty to pursue good faith negotiations aimed at the conclusion of law-making instruments, including treaty amendments, which clarify the relationship between the competing regimes at hand.”<sup>150</sup>

Mutual supportiveness has also been applied at the regional level by an Arbitral Tribunal established under the NAFTA investment chapter.<sup>151</sup> As pointed out by Pavoni (2010; 662) the case “concerned a Canadian ban on the export of polychlorinated biphenyl (PCB) wastes allegedly enacted pursuant to various international environmental standards and rules. Thus, the case squarely involved competing economic, environmental, and health concerns. The Tribunal engaged in an extensive review of the pertinent environmental regimes, which demonstrated that MS was chief among the principles governing the interface of trade, investment, and environmental obligations. MS dictated that ‘environmental protection and economic development can and should be mutually supportive’.... Most importantly, the Tribunal was guided by MS in devising a harmonious and consistent interpretive balance of the competing obligations at stake, which it found in the requirement to adopt the ‘least- investment restrictive environmental measure’ reasonably available to states.”<sup>152</sup>

In addition, the 2008 FTA between Canada and the European Free Trade Association (EFTA) recognizes in its preamble “the need for mutually supportive trade and environment policies in order to achieve the objective of sustainable development”. Furthermore, Article 117.12 of the 2004 Central America-Dominican Republic-United States Free Trade Agreement (CAFTA) also makes specific reference to the principle of mutual supportiveness, establishing that “... the Parties shall continue to seek means to enhance the mutual supportiveness of multilateral environmental agreements to

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147 Agenda 21, paragraph 2.3(b), available at: [www.un.org/esa/dsd/agenda21/res\\_agenda21\\_00.shtml](http://www.un.org/esa/dsd/agenda21/res_agenda21_00.shtml)

148 Ibid, paragraph. 2.9(d).

149 Pavoni (2010), “Mutual Supportiveness as a Principle of Interpretation and Law-Making: A Watershed for the ‘WTO-and-Competing Regimes’ Debate?”, *The European Journal of International Law*, Vol. 21 no. 3, <http://www.ejil.org/pdfs/21/3/2072.pdf>

150 Ibid, p.1

151 Chapter 11 of the North American Free Trade Agreement, 17 Dec. 1992, 32 ILM (1993) 289 and 605.

152 SD Myers, *supra* note 56, at para. 221; see also paras 195, 255, and 298. The Tribunal found that Canada had not fulfilled that requirement.

which they are all party and trade agreements to which they are all party.”<sup>153</sup>

Mutual supportiveness is included in some legal international instruments as a principle. Sustainable development is featured in the first sentence of the preamble to the Marrakech Agreement (1994)<sup>154</sup>, setting the tone for this founding agreement of the WTO: “Recognizing that their [Members’] relations in the field of trade and economic endeavour should be conducted with a view to raising standards of living, ensuring full employment and a large and steadily growing volume of real income and effective demand, and expanding the production of and trade in goods and services, while allowing for the optimal use of the world’s resources in accordance with the objective of sustainable development, seeking both to protect and preserve the environment and to enhance the means for doing so in a manner consistent with their respective needs and concerns at different levels of economic development”.

(Underlining added by the author)

The WTO 1994 Decision on Trade and Environment<sup>155</sup> mentions that: “Considering that there should not be, nor need be, any policy contradiction between upholding and safeguarding an open, non-discriminatory and equitable multilateral trading system on the one hand, and acting for the protection of the environment, and the promotion of sustainable development on the other...”

The Doha Declaration<sup>156</sup> in 2001 in its paragraph 6 states: “It is the potential impact of economic growth and poverty alleviation that makes trade a powerful ally of sustainable development. The multilateral trading system is an important tool to carry forward international efforts aimed at achieving this goal. The purpose of trade liberalisation and the WTO’s key principle of non-discrimination is a more efficient allocation of resources, which should be positive for the environment.” (Underlining added by the author)

In addition, paragraph 31(i) addresses the institutional linkages between the WTO and other MEAs and calls for more examination of the relationship between the MEAs and the WTO, with “a view toward enhancing mutual supportiveness...” (Underlining added by the author). And last but not least, paragraph 51 of the Doha Declaration refers to the Committee on Trade and Development and the Committee on Trade and Environment as the forum to identify and debate development issues related to sustainable development.

One challenge facing the mutual supportiveness approach is to assess which of the goals stated in different regimes is more important and urgent for sustainable development (e.g. climate change). Following Lydgate (2012), “[w]hile “mutual supportiveness” suggests that sustainable development’s environmental and social goals are a side effect of trade liberalisation, “balancing” involves weighing these different goals, and prompts the difficult question of which are most important, and who is empowered to decide.”<sup>157</sup>

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153 Mbengue & Boisson de Chazournes (2011), op. cit.

154 [http://www.wto.org/english/docs\\_e/legal\\_e/04-wto\\_e.htm](http://www.wto.org/english/docs_e/legal_e/04-wto_e.htm)

155 [http://www.wto.org/english/tratop\\_e/envir\\_e/issu5\\_e.htm](http://www.wto.org/english/tratop_e/envir_e/issu5_e.htm)

156 [http://www.wto.org/english/thewto\\_e/minist\\_e/min01\\_e/mindecl\\_e.htm](http://www.wto.org/english/thewto_e/minist_e/min01_e/mindecl_e.htm)

157 Lydgate (2012), “Sustainable development in the WTO: from mutual supportiveness to balancing”, World Trade Review; October, Vol. 11 Issue 4, p. 1.

Pascal Lamy, former Director General of the WTO has also called for mutual supportiveness of different elements of the global governance structure. The ideas presented below are part of Mr. Lamy's speech delivered at the Graduate Institute of International Studies in Geneva on 2006. *"Sustainable development should be the cornerstone of our approach to globalization and to the global governance architecture that we create. If I have come to this forum, it is to deliver a message: the WTO stands ready to do its part... First, WTO Members are entitled to determine the level of protection for the environment, health, morality if they wish, even if such national standards are above existing international standards. Second, in WTO, exceptions referring to such non-trade concerns are not to be interpreted narrowly; exceptions should be interpreted according to their ordinary meaning of the non-trade policy invoked. In this context our Appellate Body has insisted that exceptions cannot be interpreted and applied so narrowly that they have no relevant or effective application. There must always be a balance between WTO market access obligations and the rights of government to favour policies other than trade."*<sup>158</sup>

Finally, the current WTO Director General, Roberto Carvalho de Azevêdo has also highlighted the importance of the intersection between climate change, energy access and security. In his view, *"If Members choose not to discuss and negotiate disciplines about them - and this is an entirely legitimate choice - these issues will be inevitably brought to the dispute settlement system. Some already have. We very frequently hear that new rules are the solution to new challenges. It may be so in some cases, but in several others the disciplines already in place regulate a new technical, ethical, or social reality aptly. Think of the decision by the Appellate Body in the US Shrimp-Turtle dispute to consider the expression "exhaustible natural resources" in paragraph (g) of Article XX of the GATT 1994 as encompassing sea turtles. It is hard to argue that negotiators of the conservational exception text had turtles in mind, or other environmental considerations present in today's world back in 1947. The legal text proved to be flexible enough in this and in many other situations. I am not arguing for passivity with regard to negotiating new rules, but rather pointing out that Members will not always decide to opt for new rules as opposed to innovative approaches to old ones. In any event, it is up for Members to decide what topics they want to talk about. The Director-General does not set the agenda, but rather has the important function of facilitating the discussions among the Members. That said, one cannot ignore that some new subjects are not going away anytime soon and it will be only natural if Members decide to negotiate rules about their relationship with trade. These subjects are hard-wired in deep-rooted trends, such as consumption patterns, demography, technological limitations, and opportunities. Climate change is one such issue. Finance and energy are other obvious examples."*<sup>159</sup>

Adequate domestic policies are critical to create mutual supportiveness; current WTO Director General, Pascal Lamy, has stated the need for the WTO to support these domestic policies (Lydgate 2012). These domestic policies to address

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158 Pascal Lamy, "The WTO in the Archipelago of Global Governance," Speech at the Institute of International Studies, Geneva, 14 March 2006, [http://www.wto.org/english/news\\_e/spp1\\_e/spp120\\_e/htm](http://www.wto.org/english/news_e/spp1_e/spp120_e/htm).

159 <http://ictsd.org/publications/latest-pubs/dg2013/roberto-azevedo/>

the new challenges like climate change are interconnected and need to be tackled from a multi-disciplinary perspective (cross-sectors). Governments, at the national level, need inputs from different ministries (involving different subjects) in order to develop efficient negotiating strategies. For instance, negotiations at WTO and UNFCCC are both at an impasse putting international cooperation in key sectors of world development at risk. International governance options are urgently needed to strengthen multilateral negotiations at the WTO and UNFCCC to avoid full deadlock and possible major trade and environmental conflicts.<sup>160</sup>

### **New Socio-Economic Context**

Attempting to combat climate warming and aiming to achieve the Sustainable Development Goals means “thinking out of the box” is an absolute requirement. Aspiring to achieve the COP21 goals, the SDG goals and trade and economic growth on the basis of “business as usual” is simply an absurd undertaking. The SDGs document states “[c]limate change is a global challenge that does not respect national borders. Emissions anywhere affect people everywhere. It is an issue that requires solutions that need to be coordinated at the international level”<sup>161</sup>. Making reference to the above cited document, Porterfield & Gallagher (2015) state “[t]rade and investment policy should not be an exception”<sup>162</sup>. Adding to the above observations the call by the SDGs to achieve sustainable social and economic development, a new approach is needed that goes beyond “business as usual”.

Recurring crises linked to finance, food, energy and climate change have fuelled collective and solidaristic forms of coping, producing and provisioning food and energy at affordable prices. A prominent feature of SSE is the possibility to craft new ways of producing and distributing food and other goods and services that are fairer for producers, healthier – and sometimes cheaper – for consumers, better for the planet and beneficial in terms of social or community cohesion.

The UN Inter-Agency Task Force on Social and Solidarity Economy<sup>163</sup> considers that SSE holds considerable promise for addressing the economic, social and environmental objectives and integrated approaches inherent in the concept of sustainable development as defined by the SDG agenda. SSE has the potential to support the transition from informal economy to decent work; green the economy

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160 For “out of the box thinking” solutions see Saner, R. (2011) “International governance options to strengthen WTO and UNFCCC”, CSEND Policy Brief, available from [http://www.diplomacydialogue.org/component/docman/doc\\_download/109-20110611-international-governance-options-to-strengthen-wto-and-unfcccpdf](http://www.diplomacydialogue.org/component/docman/doc_download/109-20110611-international-governance-options-to-strengthen-wto-and-unfcccpdf)

161 United Nations Sustainable Development Goals. <http://www.un.org/sustainabledevelopment/climate-change-2/>

162 Porterfield, Matthew; Gallagher, Kevin (2015), TTIP and Climate Change: low economic benefits, real climate risk, Investment Treaty News, International Institute for Sustainable Development (IISD), 1 December, 2015.

163 See <http://www.unrisd.org/tfsse>

and society; promote local economic development; develop sustainable cities and human settlements; empower women's well-being; ensure food security; promote universal health coverage; and provide transformative finance.<sup>164</sup> Furthermore, as suggested by the UN Inter-Agency Task Force, SSE organizations “such as forestry cooperatives and community forestry groups can play an important role in the sustainable management of natural resources, particularly in contexts where they constitute common-pool resources.”<sup>165</sup> SEE refers to “forms of economic activity that prioritise social and often environmental objectives, and involve producers, workers, consumers and citizens acting collectively and in solidarity.”<sup>166</sup> SSE includes different of actors such as cooperatives, mutual association, social enterprises, NGOs, new forms of profit-making social enterprises and social entrepreneurs, new forms of profit-making social enterprises and social entrepreneurship.

The international community has to sail towards new destinations promising inclusive, equitable, participatory and transparent solutions to trade and development. As stated by Mark Halle (2015) “[t]he multilateral trading system has been a faithful servant of the present economic paradigm – promoting neo-liberal economics based on the Washington consensus. If that model is a problem for the Global Goals, the trading system as currently conceived and organized is also a problem. We cannot have, on the one hand, SDGs that call for a global transformation and a new economic paradigm and, on the other, a trading system that slavishly serves the older, failed paradigm. We need a new analysis: the governance of global trade as if implementing the SDGs really mattered.”<sup>167</sup> Building on Mark Halle’s witty and sardonic bon mot, what is needed is to make clear to the global community at large and to all its citizens that implementing the SDGs actually really matters!

The triple WTO green agreements coupled with binding INDCs of developing countries would be an application of the SEE principles at global macro-level in the interest of stopping climate change to prevent environmental catastrophes at global level. Green technology producers and users could thereby form a coalition of parties engaging jointly combating climate warming, climate change and poverty reduction in developing and developed countries. In addition, SSE principles could contribute to green production of goods and services and to more sustainable consumption patterns in both developing and developed

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164 UNRISD (2014), Social and Solidarity Economy and the Challenge of Sustainable Development, [http://www.unrisd.org/unrisd/website/document.nsf/\(httpPublications\)/4FB6A60F1DBA5995C1257D1C003DAA2A?OpenDocument](http://www.unrisd.org/unrisd/website/document.nsf/(httpPublications)/4FB6A60F1DBA5995C1257D1C003DAA2A?OpenDocument)

165 UN Inter-Agency Task Force on Social and Solidarity Economy (2014), Social and Solidarity Economy and the Challenge of Sustainable Development, [http://unsse.org/wp-content/uploads/2014/08/Position-Paper\\_TFSSE\\_Eng1.pdf](http://unsse.org/wp-content/uploads/2014/08/Position-Paper_TFSSE_Eng1.pdf), p.3

166 Utting, Peter (2015), Social and Solidarity Economy: Beyond the Fringe, [http://www.unrisd.org/80256B3C005BCCF9/\(httpPublications\)/89748F9EB30DE128C1257E0E004889D4?OpenDocument](http://www.unrisd.org/80256B3C005BCCF9/(httpPublications)/89748F9EB30DE128C1257E0E004889D4?OpenDocument)

167 Halle, M. (2015), “Formulate trade policy as if the SDGs really matter” in ITC, “Trade and Sustainable Development Goals, Internation”, International Trade Forum, Issue 4, [http://www.tradeforum.org/uploadedFiles/Common/Content/TradeForum/Trade\\_Forum\\_4\\_2015\\_20160210.pdf](http://www.tradeforum.org/uploadedFiles/Common/Content/TradeForum/Trade_Forum_4_2015_20160210.pdf), p. 19

countries. The proposed cross-treaty agreements, based on SSE principles, would put people and environment in the centre of attention, would support co-production of knowledge, goods and services on the basis of cooperation among actors and sectors from developed and developing countries for the good of stopping climate warming.



## *Conclusion*

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The solutions presented and developed in this publication are an example of “thinking outside of the box” and of getting beyond “business as usual” with the intention of outlining ways to get maximum cooperation amongst the countries of this planet to combat climate change no matter what level of development they have been able to reach.

The needed linkages of the components of the green three-sector plurilateral greement (e.g. energy, environment and development) should be negotiated by bringing together the three concerned WTO committees namely the ones on Environment (goods and services), Energy (goods and services) and Trade and Development (market access, capacity building).

Climate mitigation and adaptation activities could turn out to be inadvertently a form of skewed market dynamics due to fact that the market could be taken by a group of leading green technology countries who have used subsidies of all sorts (industry subsidy, consumer subsidy) to help their innovative technology companies gain a competitive position in the world market of green technology making it difficult for new comers to gain market entry thereby increasing the risk of rent seeking by the dominant technology holders who might also refuse to access to their technology (licensing). Such possible market failure could be countered through an agreement on green TRIPS, green TRIMS and Green Three-Sector Plurilateral Agreement.

Overall, a greening of the WTO framework is needed to reduce barriers to the global trade of environmental goods and services and concomitantly make access to green technology possible and affordable for developing countries who have to cope with the negative consequences of climate change as do developed countries but the developing countries and particularly the Least Developed Countries are severely hampered by their scarce financial resources and lack of access to green technology.

On the other hand, in the public interest, giving developing countries concessions through Green TRIPS, Green TRIMs and Green tri-sector Plurilateral should be linked to requesting developing countries to make INDC commitments to make COP 21 become an implemented reality as fast as possible for the good of all countries and all citizens of planet earth.

## References

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- Bahar, H., J. Egeland and R. Steenblik (2012), “Domestic Incentive Measures for renewable Energy with Possible Trade Implications”, *OECD Trade and Investment Papers*, COM/TAD/ENV/JWPTE(2011)46/FINAL, [http://search.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=COM/TAD/ENV/JWPTE\(2011\)46/FINAL&docLanguage=En](http://search.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=COM/TAD/ENV/JWPTE(2011)46/FINAL&docLanguage=En)
- Bator, F. M. (1958), "The Anatomy of Market Failure", *Quarterly Journal of Economics*, 72(3)
- Bosetti, V., Carraro, C., Massetti, E, Tavoni, M. (2014) “Climate Change Mitigation, Technological Innovation and Adaptation. A New Perspective on Climate Policy”; E. Elgar Publ, Cheltham, UK
- Burgenmeier, B. (1999), “Globalization versus Sustainable Development: A Question of the Common Good”, *International Journal of Sustainable Development*, Volume 2, Issue 4, <http://www.inderscienceonline.com/doi/abs/10.1504/IJSD.1999.004348>
- Cahill, L. S. (2005), 'Globalisation and the Common Good', in Coleman, J. A. and Ryan, W. F. *Globalization and Catholic Social Thought: Present Crisis*, Future Hope Ottawa: St Paul University.
- Caprotti, F. (2009), “Why we need 'Green Licensing'”, article in a special issue of SEED Magazine on the issue of Green IP and the ownership of greentech, August 2009, [http://seedmagazine.com/content/article/intellectual\\_property\\_who\\_owns\\_green\\_tech/P1/](http://seedmagazine.com/content/article/intellectual_property_who_owns_green_tech/P1/)
- Carraro, C. (2016), “The Paris Agreement: key points and future prospects”, Carlo Carraro´s Blog, *International Center of Climate Governance*, <http://www.carlocarraro.org/en/topics/climate-policy/paris-agreement-key-points-and-future-prospects/>
- Carraro, C; Edenhofer, O; Flachsland, Ch; Kostad, Ch; Stavins, R; Stowe, R (2015) “The IPCC at a crossroads: Opportunities for reform”; *Science* 02 Oct 2015:Vol. 350, Issue 6256, pp. 34-35
- Carraro, C., Campagnolo, L., Eboli, F. and L. Farnia (2015), “Assessing Sustainable Development Goals”, paper prepared for the SDSN Conference on “Implementing the Sustainable Development Goals (SDGs): Getting Started“, New York, 23-24 September 2015.

- Center of International Environmental Law (2009), “World Bank discusses Trade and Climate Change”, Blog Post, <http://www.ciel.org/world-bank-discusses-trade-climate-change-and/>
- Cornes, R. and T. Sandler (1996), *The Theory of Externalities, Public Goods and Club Goods*, 2nd ed. Cambridge: Cambridge University Press
- Cottier T., et. al. (2010), “Energy in WTO law and policy”, [http://www.wto.org/english/res\\_e/publications\\_e/wtr10\\_forum\\_e/wtr10\\_7may10\\_e.pdf](http://www.wto.org/english/res_e/publications_e/wtr10_forum_e/wtr10_7may10_e.pdf)
- Council of the European Union (2013), “The Overarching Post 2015 Agenda”, *Council Conclusions*, 25 June, [http://www.consilium.europa.eu/uedocs/cms\\_Data/docs/pressdata/EN/foraff/137606.pdf](http://www.consilium.europa.eu/uedocs/cms_Data/docs/pressdata/EN/foraff/137606.pdf)
- Crosby, D. (2010) “Background to WTO Rules and Production/Trade Restrictions in the Field of Energy” in J. Pauwelyn (Ed.), *Global Challenges at the Intersection of Trade, Energy and the Environment*, Chapter 5, Centre for Trade and Economic Integration, Graduate Institute of International and Development Studies, Geneva, <http://www.cepr.org/press/CTEI-CEPR.pdf>
- CSEND (2012), “Plurilateral Agreements: Key to solving impasse of WTO/Doha Round and basis for future trade agreements within the WTO context”, Policy Brief No. 7 (<http://www.csend.org/csend-policy-briefs/item/310-csend-policy-briefs>)
- D’Adda, G, Capraro, V; Tavoni, M. (2015), The not so Gentle Push: Behavioral Spillovers and Policy Instruments; *FEEM Working Paper No. 108*
- Deneulin, S. and T., Nicholas (2006), “Public Goods, Global Public Goods and the Common Good”, WeD Working Paper 18; Sept.
- Dupré, L. (1994), “The Common Good and the Open Society”, in Douglas, R. B. and Hollenbach, D, *Catholicism and Liberalism*, Cambridge: Cambridge University Press.
- Grasso, M. (2004), “Climate change: the global public good”, Dipartimento di Sociologia e Ricerca Sociale - Università degli Studi di Milano Bicocca, <http://econwpa.repec.org/eps/othr/papers/0405/0405010.pdf>
- Halle, M. (2015), “Formulate trade policy as if the SDGs really matter” in ITC, “Trade and Sustainable Development Goals, Internation”, International Trade Forum, Issue 4, [http://www.tradeforum.org/uploadedFiles/Common/Content/TradeForum/Trade\\_Forum\\_4\\_2015\\_20160210.pdf](http://www.tradeforum.org/uploadedFiles/Common/Content/TradeForum/Trade_Forum_4_2015_20160210.pdf)
- Hardin, G. (1968), “The Tragedy of Commons”, *Science*.
- Hollenbach, D. (2002), *The Common Good and Christian Ethics*. Cambridge: Cambridge University Press.

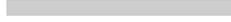
- Hume, D. (1961) [1739], *A Treatise of Human Nature*. Garden City, NJ: Dolphin Books.
- ICTSD (2016), “WTO Decision on Local Content Requirements Will Not Affect India Solar Ambitions, Officials Say”, *Bridges*, Volume 20, Number 8”,  
<http://www.ictsd.org/bridges-news/bridges/news/wto-decision-on-local-content-requirements-will-not-affect-india-solar>
- ICTSD (2013), “ICTSD Profile”, <http://ictsd.org/downloads/2013/05/pursuing-sustainability-in-the-global-economy.pdf>
- Institute for Sustainable Development and International Relations (2015), *Pathways to deep decarbonization*, Deep Decarbonization Pathways Project, Executive Summary,  
[http://deepdecarbonization.org/wp-content/uploads/2015/06/DDPP\\_EXESUM.pdf](http://deepdecarbonization.org/wp-content/uploads/2015/06/DDPP_EXESUM.pdf)
- Intergovernmental Panel on Climate Change, Geneva. IPCC (Intergovernmental Panel on Climate Change), 2007: *Climate Change 2007 – Impacts, Adaptation and Vulnerability*. New York: Cambridge University Press, 976 pp. See also IPCC’s Assessment Reports and Technical Reports available from  
[http://www.ipcc.ch/publications\\_and\\_data/publications\\_and\\_data.shtml#1](http://www.ipcc.ch/publications_and_data/publications_and_data.shtml#1)
- Kaul, I., I. Grunberg and M. A. Stern (eds.) (1999), *Global public goods: international cooperation in the 21st century*. NY: Oxford University Press, Inc,  
<http://web.undp.org/globalpublicgoods/TheBook/globalpublicgoods.pdf>
- Kotchen, M. (2012), “Public Goods, University of Yale”,  
<http://environment.yale.edu/kotchen/pubs/pgchap.pdf>
- Kuntze, J.C. and T. Moerenhout, (2013), “Local Content Requirements And The Renewable Energy Industry - A Good Match?”, ICTSD,  
[http://unctad.org/meetings/en/Contribution/DITC\\_TED\\_13062013\\_Study\\_ICTSD.pdf](http://unctad.org/meetings/en/Contribution/DITC_TED_13062013_Study_ICTSD.pdf)
- Libecap, G. (2009), “The tragedy of the commons: property rights and markets as solutions to resource and environmental problems”, *Australian Journal of Agricultural and Resource Economics*, Volume 53, Issue 1,  
<http://onlinelibrary.wiley.com/doi/10.1111/j.1467-8489.2007.00425.x/full#fn12>
- OECD (2013), “Putting Green Growth at the Heart of Development”, *OECD Green Growth Studies*, [http://www.keepeek.com/Digital-Asset-Management/oecd/development/putting-green-growth-at-the-heart-of-development\\_9789264181144-en](http://www.keepeek.com/Digital-Asset-Management/oecd/development/putting-green-growth-at-the-heart-of-development_9789264181144-en)
- Mattoo, A. and S. (2013), *Four Changes to Trade Rules to Facilitate Climate Change Action*, Op-ed in *VoxEU.org*, May 4,  
<https://www.piie.com/publications/opeds/print.cfm?ResearchId=2391&doc=pub>
- Ostrom, E. (2010), “A Polycentric Approach for Coping with Climate Change”, Policy Research Working Paper 5095, Washington DC : World Bank

- Ostrom, E. (2003), "How types of goods and property rights jointly affect collective action", *Journal of Theoretical Politics*, 15(3), London: Sage Publications, [http://ostromworkshop.indiana.edu/reprints/R03\\_14.pdf](http://ostromworkshop.indiana.edu/reprints/R03_14.pdf)
- Ostrom, E. (1990), *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge, UK: Cambridge University Press
- Priyadarshi, S. and T. Rahman, (2013), "Build up to Ninth WTO Ministerial Conference: Issues of Interest to LDCs", *Commonwealth Trade Hot Topics*, Issue 98, <http://www.thecommonwealth.org/files/243366/FileName/TradeHotTopics92FINAL.pdf>
- Quilligan, J. B. (2012), "Why Distinguish Common Goods From Public Goods?" in Bollier, David & Helfrich, Silke (eds), *The Wealth of the Commons: A World Beyond Market & State*, <http://wealthofthecommons.org/essay/why-distinguish-common-goods-public-goods>
- Rio+20 United Nations Conference on Sustainable Development (2012), "A 10-year framework of programmes on sustainable consumption and production patterns", [http://www.unep.org/rio20/portals/24180/Docs/a-conf.216-5\\_english.pdf](http://www.unep.org/rio20/portals/24180/Docs/a-conf.216-5_english.pdf)
- Rothschild, M. and J. E. Stiglitz (1976), "Equilibrium in Competitive Insurance Markets: An Essay on the Economics of Imperfect Information", *Quarterly Journal of Economics*, 90(4), November, pp. 629–649, <http://www.uh.edu/~bsorense/Rothschild&Stiglitz.pdf>
- Sachs, J. (2015), "How to Forge a Grand Bargain on Energy", *Wall Street Journal*, 31 December, <http://graphics.wsj.com/image-grid/what-to-expect-in-2016/1668/jeffrey-d-sachs-on-how-to-forge-a-grand-bargain-on-energy>
- Samuelson, P. (1954), "The Pure Theory of Public Expenditure", *Review of Economics and Statistics*, Vol. 36, No. 4, Nov. 1954, <http://www.econ.yale.edu/~nordhaus/homepage/PASandGPG.pdf>
- Sandler T. (1998). Global and regional public goods: a prognosis for collective action. *Fiscal Studies*, 19(3): 221-247, [http://www.ifs.org.uk/fs/articles/sandler\\_aug98.pdf](http://www.ifs.org.uk/fs/articles/sandler_aug98.pdf)
- Sankar, U. (2004), "Environmental Externalities", Dissemination Paper, Madras School of Economics, <http://coe.mse.ac.in/dp/envt-ext-sankar.pdf>
- Sekera, June (2014), "Re-thinking the Definition of "Public Goods", *Real-World Economics Review Blog*, [https://rwer.wordpress.com/2014/07/09/re-thinking-the-definition-of-public-goods/#\\_ftnref19](https://rwer.wordpress.com/2014/07/09/re-thinking-the-definition-of-public-goods/#_ftnref19)
- Stiglitz, J. (1999), "Knowledge as a Global Public Good." In Kaul, I., I. Grunberg and M. A. Stern (eds.) *Global public goods: international cooperation in the 21st century*. NY: Oxford University Press, Inc, <http://web.undp.org/globalpublicgoods/TheBook/globalpublicgoods.pdf>

- Stretton, Hugh and Orchard, Lionel (1994), *Public Goods; Public Enterprise, Public Choice: Theoretical Foundations of the Contemporary Attack on Government*.
- Steenblik, R. and M. Geloso Grosso (2011), “Trade in Services Related to Climate Change: An Exploratory Analysis”, *OECD Trade and Environment Working Papers*, 2011/03, <http://dx.doi.org/10.1787/5kgc5wtd9rzw-en>
- The New Climate Economy (2015), Statement in support of a strong climate agreement from members of the Global Commission on the Economy and Climate, <http://newclimateeconomy.net/content/statement-support-strong-climate-agreement-members-global-commission-economy-and-climate>
- UNCTAD (2009), “World Trade Law and Renewable Energy: The Case of Non-Tariff Barriers”, [http://unctad.org/en/Docs/ditcted20085\\_en.pdf](http://unctad.org/en/Docs/ditcted20085_en.pdf)
- UNCTAD (2003), “Energy and Environmental Services: Negotiating Objectives and Development Priorities”, New York and Geneva, [http://unctad.org/en/Docs/ditctnkd20033\\_en.pdf](http://unctad.org/en/Docs/ditctnkd20033_en.pdf)
- UN-DESA, UNEP, UNCTAD (2012), “The Transition to a Green Economy: Benefits, Challenges and Risks from a Sustainable Development Perspective”, Report by a Panel of Experts to Second Preparatory Committee Meeting for United Nations Conference on Sustainable Development, [http://www.unep.org/greeneconomy/Portals/88/documents/research\\_products/UN-DESA,%20UNCTAD%20Transition%20GE.pdf](http://www.unep.org/greeneconomy/Portals/88/documents/research_products/UN-DESA,%20UNCTAD%20Transition%20GE.pdf)
- UNDESA, UNEP and UNCTAD (2011), Report by a Panel of Experts on “The Transition to a Green Economy: Benefits, Challenges and Risks from a Sustainable Development Perspective”, [http://www.unep.org/greeneconomy/Portals/88/documents/research\\_products/UN-DESA,%20UNCTAD%20Transition%20GE.pdf](http://www.unep.org/greeneconomy/Portals/88/documents/research_products/UN-DESA,%20UNCTAD%20Transition%20GE.pdf)
- UNDP (2002), Providing Global Public Goods: Managing Globalization 25 Questions & Answers, <http://web.undp.org/globalpublicgoods/globalization/pdfs/ques-ans.pdf>
- UNEP (2006), “Training Manual on International Environmental Law”, Chapter 3.8, [http://www.unep.org/environmentalgovernance/Portals/8/documents/training\\_Manual.pdf](http://www.unep.org/environmentalgovernance/Portals/8/documents/training_Manual.pdf)[http://www.unep.org/environmentalgovernance/Portals/8/documents/training\\_Manual.pdf](http://www.unep.org/environmentalgovernance/Portals/8/documents/training_Manual.pdf)
- UN Inter-Agency Task Force on Social and Solidarity Economy (2014), “Social and Solidarity Economy and the Challenge of Sustainable Development”, [http://unsse.org/wp-content/uploads/2014/08/Position-Paper\\_TFSSE\\_Eng1.pdf](http://unsse.org/wp-content/uploads/2014/08/Position-Paper_TFSSE_Eng1.pdf)
- United Nations (2001), “Road Map towards the Implementation of the United Nations Millennium Declaration”, Report of the Secretary-General. 6 September. A/56/326. New York

- UNIDO (2008), “Public Goods for Economic Development”,  
[https://www.unido.org/fileadmin/user\\_media/Publications/documents/Public%20goods%20for%20economic%20development\\_sale.pdf](https://www.unido.org/fileadmin/user_media/Publications/documents/Public%20goods%20for%20economic%20development_sale.pdf)
- UNRISD (2014), “Social and Solidarity Economy and the Challenge of Sustainable Development”,  
[http://www.unrisd.org/unrisd/website/document.nsf/\(httpPublications\)/4FB6A60F1D BA5995C1257D1C003DAA2A?OpenDocument](http://www.unrisd.org/unrisd/website/document.nsf/(httpPublications)/4FB6A60F1D BA5995C1257D1C003DAA2A?OpenDocument)
- Utting, P. (2015), *Social and Solidarity Economy: Beyond the Fringe*,  
[http://www.unrisd.org/80256B3C005BCCF9/\(httpPublications\)/89748F9EB30DE128 C1257E0E004889D4?OpenDocument](http://www.unrisd.org/80256B3C005BCCF9/(httpPublications)/89748F9EB30DE128 C1257E0E004889D4?OpenDocument)
- Varian, H.R. (2010), *Intermediate microeconomics: a modern approach*. New York, NY: W.W. Norton & Co.
- World Bank (2010), *World Development Report*,  
<http://siteresources.worldbank.org/INTWDR2010/Resources/5287678-1226014527953/WDR10-Full-Text.pdf>
- WTI Advisors (2013), *Local Content Requirements & the Green Economy*, UNCTAD’s Ad hoc Expert Group Meeting on Domestic Requirements and Support Measures in Green Sectors: Economic and Environmental Effectiveness and Implications for Trade,  
[http://unctad.org/meetings/en/Contribution/DITC\\_TED\\_13062013\\_Study\\_WTI.pdf](http://unctad.org/meetings/en/Contribution/DITC_TED_13062013_Study_WTI.pdf)
- WTO Public Forum (2012), Session 29 organized by CSEND on “Plurilateralism Against Multilateralism? A Multi Stakeholder Perspective”, Geneva,  
[http://www.wto.org/english/forums\\_e/public\\_forum12\\_e/programme\\_e.htm](http://www.wto.org/english/forums_e/public_forum12_e/programme_e.htm).
- Wuyts, M. (1992), “Deprivation and Public Need”, in Macintosh, M. and M. Wuyts, *Development Policy and Public Action*. Milton Keynes: Oxford University Press.

## *Annexes*



## Annex 1. Environmental Disputes under the WTO and GATT168

### Under the WTO

- > European Communities – Measures affecting asbestos and asbestos-containing products. WTO case No. 135. Ruling adopted on 5 April 2001. Case brought by Canada.
- > United States – Import Prohibition of Certain Shrimp and Shrimp Products, the “shrimp-turtle” case. WTO case Nos. 58 and 61. Ruling adopted on 6 November 1998. Case brought by India, Malaysia, Pakistan and Thailand. Recourse to Article 21.5 of the DSU. Ruling adopted on 21 November 2001. Case brought by Malaysia.
- > United States – Standards for Reformulated and Conventional Gasoline, WTO case Nos. 2 and 4. Ruling adopted on 20 May 1996. Case brought by Venezuela and Brazil.

### Under GATT

- > United States – Taxes on Automobiles, ruling not adopted, circulated on 11 October 1994. Case brought by EU.
- > United States – Restrictions on Imports of Tuna, “son of tuna-dolphin”, ruling not adopted, circulated on 16 June 1994. Case brought by EU.
- > United States – Restrictions on Imports of Tuna, the “tuna-dolphin” case, ruling not adopted, circulated on 3 September 1991. Case brought by Mexico, etc.
- > Thailand – Restrictions on the Importation of and Internal Taxes on Cigarettes, ruling adopted on 7 November 1990. Case brought by US.
- > Canada – Measures Affecting Exports of Unprocessed Herring and Salmon, ruling adopted on 22 March 1988. Case brought by US.
- > United States – Prohibition of Imports of Tuna and Tuna Products from Canada, ruling adopted on 22 February 1982. Case brought by Canada.

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168 WTO website, [http://www.wto.org/english/tratop\\_e/envir\\_e/edis00\\_e.htm](http://www.wto.org/english/tratop_e/envir_e/edis00_e.htm)

Annex 2. List of cases citing the TRIMS agreement in the request for consultations<sup>169</sup>

DS497	Brazil – Certain Measures Concerning Taxation and Charges (Complainant: Japan)	Consultations requested: 2 July 2015  Current status: Panel composed
DS476	European Union – Certain Measures Relating to the Energy Sector (Complainant: Russian Federation)	Consultations requested: 30 April 2014  Current status: Panel established, but not yet composed
DS472	Brazil – Certain Measures Concerning Taxation and Charges (Complainant: European Union)	Consultations requested: 19 December 2013  Current status: Panel composed
DS463	Russian Federation – Recycling Fee on Motor Vehicles(Complainant: Japan)	Consultations requested: 24 July 2013  Current status: In consultations
DS462	Russian Federation – Recycling Fee on Motor Vehicles(Complainant: European Union)	Consultations requested: 9 July 2013  Current status: Panel established, but not yet composed
DS459	European Union – Certain Measures on the Importation and Marketing of Biodiesel and Measures Supporting the Biodiesel Industry (Complainant: Argentina)	Consultations requested: 15 May 2013  Current status: In consultations
DS456	India – Certain Measures Relating to Solar Cells and Solar Modules (Complainant: United States)	Consultations requested: 6 February 2013  Current status: Panel report circulated
DS452	European Union and Certain Member States – Certain Measures Affecting the Renewable Energy Generation	Consultations requested: 5 November 2012

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<sup>169</sup> WTO website,  
[http://www.wto.org/english/tratop\\_e/dispu\\_e/dispu\\_agreements\\_index\\_e.htm?id=A25#selected\\_agreement](http://www.wto.org/english/tratop_e/dispu_e/dispu_agreements_index_e.htm?id=A25#selected_agreement)

	Sector (Complainant: China)	Current status: In consultations
DS446	Argentina – Measures Affecting the Importation of Goods (Complainant: Mexico)	Consultations requested: 24 August 2012  Current status: In consultations
DS445	Argentina – Measures Affecting the Importation of Goods (Complainant: Japan)	Consultations requested: 21 August 2012  Current status: Report(s) adopted, with recommendation to bring measure(s) into conformity
DS444	Argentina – Measures Affecting the Importation of Goods (Complainant: United States)	Consultations requested: 21 August 2012  Current status: Report(s) adopted, with recommendation to bring measure(s) into conformity
DS443	European Union and a Member State – Certain Measures Concerning the Importation of Biodiesels(Complainant: Argentina)	Consultations requested: 17 August 2012  Current status: In consultations
DS438	Argentina – Measures Affecting the Importation of Goods (Complainant: European Union)	Consultations requested: 25 May 2012  Current status: Report(s) adopted, with recommendation to bring measure(s) into conformity
DS426	Canada – Measures Relating to the Feed-in Tariff Program (Complainant: European Union)	Consultations requested: 11 August 2011  Current status: Implementation notified by respondent
DS412	Canada – Certain Measures Affecting the Renewable Energy Generation Sector (Complainant: Japan)	Consultations requested: 13 September 2010  Current status: Implementation notified by respondent
DS359	China – Certain Measures Granting Refunds, Reductions	Consultations requested:

	or Exemptions from Taxes and Other Payments (Complainant: Mexico)	26 February 2007  Current status: Settled or terminated (withdrawn, mutually agreed solution)
DS358	China – Certain Measures Granting Refunds, Reductions or Exemptions from Taxes and Other Payments (Complainant: United States)	Consultations requested: 2 February 2007  Current status: Settled or terminated (withdrawn, mutually agreed solution)
DS342	China – Measures Affecting Imports of Automobile Parts (Complainant: Canada)	Consultations requested: 13 April 2006  Current status: Implementation notified by respondent
DS340	China – Measures Affecting Imports of Automobile Parts (Complainant: United States)	Consultations requested: 30 March 2006  Current status: Implementation notified by respondent
DS339	China – Measures Affecting Imports of Automobile Parts (Complainant: European Communities)	Consultations requested: 30 March 2006  Current status: Implementation notified by respondent
DS334	Turkey – Measures Affecting the Importation of Rice(Complainant: United States)	Consultations requested: 2 November 2005  Current status: Implementation notified by respondent
DS276	Canada – Measures Relating to Exports of Wheat and Treatment of Imported Grain (Complainant: United States)	Consultations requested: 17 December 2002  Current status: Implementation notified by respondent
DS275	Venezuela, Bolivarian Republic of – Import Licensing Measures on Certain Agricultural Products(Complainant: United States)	Consultations requested: 7 November 2002  Current status: In consultations
DS224	United States – US Patents Code (Complainant: Brazil)	Consultations requested: 31 January 2001

		Current status: In consultations
DS195	Philippines – Measures Affecting Trade and Investment in the Motor Vehicle Sector (Complainant: United States)	Consultations requested: 23 May 2000  Current status: Panel established, but not yet composed
DS175	India – Measures Affecting Trade and Investment in the Motor Vehicle Sector (Complainant: United States)	Consultations requested: 2 June 1999  Current status: Implementation notified by respondent
DS146	India – Measures Affecting the Automotive Sector (Complainant: European Communities)	Consultations requested: 6 October 1998  Current status: Implementation notified by respondent
DS142	Canada – Certain Measures Affecting the Automotive Industry (Complainant: European Communities)	Consultations requested: 17 August 1998  Current status: Implementation notified by respondent
DS139	Canada – Certain Measures Affecting the Automotive Industry (Complainant: Japan)	Consultations requested: 3 July 1998  Current status: Implementation notified by respondent
DS105	European Communities – Regime for the Importation, Sale and Distribution of Bananas (Complainant: Panama)	Consultations requested: 24 October 1997  Current status: Settled or terminated (withdrawn, mutually agreed solution)
DS102	Philippines – Measures Affecting Pork and Poultry (Complainant: United States)	Consultations requested: 7 October 1997  Current status: Settled or terminated (withdrawn, mutually agreed solution)
DS81	Brazil – Measures Affecting Trade and Investment in the Automotive Sector (Complainant: European Communities)	Consultations requested: 7 May 1997  Current status: In consultations
DS74	Philippines – Measures Affecting Pork and Poultry (Complainant: United States)	Consultations requested: 1 April 1997

		Current status: Settled or terminated (withdrawn, mutually agreed solution)
DS65	Brazil – Certain Measures Affecting Trade and Investment in the Automotive Sector (Complainant: United States)	Consultations requested: 10 January 1997  Current status: In consultations
DS64	Indonesia – Certain Measures Affecting the Automobile Industry (Complainant: Japan)	Consultations requested: 29 November 1996  Current status: Implementation notified by respondent
DS59	Indonesia – Certain Measures Affecting the Automobile Industry (Complainant: United States)	Consultations requested: 8 October 1996  Current status: Implementation notified by respondent
DS55	Indonesia – Certain Measures Affecting the Automobile Industry (Complainant: Japan)	Consultations requested: 4 October 1996  Current status: Implementation notified by respondent
DS54	Indonesia – Certain Measures Affecting the Automobile Industry (Complainant: European Communities)	Consultations requested: 3 October 1996  Current status: Implementation notified by respondent
DS52	Brazil – Certain Measures Affecting Trade and Investment in the Automotive Sector (Complainant: United States)	Consultations requested: 9 August 1996  Current status: In consultations
DS51	Brazil – Certain Automotive Investment Measures (Complainant: Japan)	Consultations requested: 30 July 1996  Current status: In consultations
DS27	European Communities – Regime for the Importation, Sale and Distribution of Bananas (Complainants: Ecuador; Guatemala; Honduras; Mexico; United States)	Consultations requested: 5 February 1996  Current status: Settled or terminated (withdrawn, mutually agreed solution)



Annex 3. List of cases citing the TRIPS agreement in the request for consultations<sup>170</sup>

DS467	Australia – Certain Measures Concerning Trademarks, Geographical Indications and Other Plain Packaging Requirements Applicable to Tobacco Products and Packaging (Complainant: Indonesia)	Consultations requested: 20 September 2013 Current status: Panel composed
DS458	Australia – Certain Measures Concerning Trademarks, Geographical Indications and Other Plain Packaging Requirements Applicable to Tobacco Products and Packaging (Complainant: Cuba)	Consultations requested: 3 May 2013 Current status: Panel composed
DS441	Australia – Certain Measures Concerning Trademarks, Geographical Indications and Other Plain Packaging Requirements Applicable to Tobacco Products and Packaging (Complainant: Dominican Republic)	Consultations requested: 18 July 2012 Current status: Panel composed
DS435	Australia – Certain Measures Concerning Trademarks, Geographical Indications and Other Plain Packaging Requirements Applicable to Tobacco Products and Packaging (Complainant: Honduras)	Consultations requested: 4 April 2012 Current status: Panel composed
DS434	Australia – Certain Measures Concerning Trademarks and Other Plain Packaging Requirements Applicable to Tobacco Products and Packaging (Complainant: Ukraine)	Consultations requested: 13 March 2012 Current status: Panel composed
DS409	European Union and a Member State – Seizure of Generic Drugs in Transit (Complainant: Brazil)	Consultations requested: 12 May 2010 Current status: In consultations
DS408	European Union and a Member State – Seizure of Generic Drugs in Transit (Complainant: India)	Consultations requested: 11 May 2010 Current status: In consultations
DS372	China – Measures Affecting Financial Information Services and Foreign Financial Information Suppliers (Complainant: European Communities)	Consultations requested: 3 March 2008 Current status: Settled or terminated (withdrawn, mutually agreed solution)
DS362	China – Measures Affecting the Protection and Enforcement of Intellectual Property Rights (Complainant: United States)	Consultations requested: 10 April 2007 Current status:

<sup>170</sup> WTO website, [http://www.wto.org/english/tratop\\_e/dispu\\_e/dispu\\_agreements\\_index\\_e.htm?id=A26#selected\\_agreement](http://www.wto.org/english/tratop_e/dispu_e/dispu_agreements_index_e.htm?id=A26#selected_agreement)

		Implementation notified by respondent
DS290	European Communities – Protection of Trademarks and Geographical Indications for Agricultural Products and Foodstuffs (Complainant: Australia)	Consultations requested: 17 April 2003  Current status: Implementation notified by respondent
DS224	United States – US Patents Code (Complainant: Brazil)	Consultations requested: 31 January 2001  Current status: In consultations
DS199	Brazil – Measures Affecting Patent Protection(Complainant: United States)	Consultations requested: 30 May 2000  Current status: Settled or terminated (withdrawn, mutually agreed solution)
DS196	Argentina – Certain Measures on the Protection of Patents and Test Data (Complainant: United States)	Consultations requested: 30 May 2000  Current status: Settled or terminated (withdrawn, mutually agreed solution)
DS186	United States – Section 337 of the Tariff Act of 1930 and Amendments thereto (Complainant: European Communities)	Consultations requested: 12 January 2000  Current status: In consultations
DS176	United States – Section 211 Omnibus Appropriations Act of 1998 (Complainant: European Communities)	Consultations requested: 8 July 1999  Current status: Report(s) adopted, with recommendation to bring measure(s) into conformity
DS174	European Communities – Protection of Trademarks and Geographical Indications for Agricultural Products and Foodstuffs (Complainant: United States)	Consultations requested: 1 June 1999  Current status: Implementation notified by respondent
DS171	Argentina – Patent Protection for Pharmaceuticals and Test Data Protection for Agricultural Chemicals (Complainant: United States)	Consultations requested: 6 May 1999  Current status: Settled or terminated (withdrawn, mutually agreed solution)
DS170	Canada – Term of Patent Protection (Complainant: United States)	Consultations requested: 6 May 1999

		Current status: Implementation notified by respondent
DS160	United States – Section 110(5) of US Copyright Act(Complainant: European Communities)	Consultations requested: 26 January 1999  Current status: Authorization to retaliate requested (including 22.6 arbitration)
DS153	European Communities – Patent Protection for Pharmaceutical and Agricultural Chemical Products(Complainant: Canada)	Consultations requested: 2 December 1998  Current status: In consultations
DS125	Greece – Enforcement of Intellectual Property Rights for Motion Pictures and Television Programs (Complainant: United States)	Consultations requested: 4 May 1998  Current status: Settled or terminated (withdrawn, mutually agreed solution)
DS124	European Communities – Enforcement of Intellectual Property Rights for Motion Pictures and Television Programs (Complainant: United States)	Consultations requested: 30 April 1998  Current status: Settled or terminated (withdrawn, mutually agreed solution)
DS115	European Communities – Measures Affecting the Grant of Copyright and Neighbouring Rights (Complainant: United States)	Consultations requested: 6 January 1998  Current status: Settled or terminated (withdrawn, mutually agreed solution)
DS114	Canada – Patent Protection of Pharmaceutical Products(Complainant: European Communities)	Consultations requested: 19 December 1997  Current status: Implementation notified by respondent
DS86	Sweden – Measures Affecting the Enforcement of Intellectual Property Rights (Complainant: United States)	Consultations requested: 28 May 1997  Current status: Settled or terminated (withdrawn, mutually agreed solution)
DS83	Denmark – Measures Affecting the Enforcement of Intellectual Property Rights (Complainant: United States)	Consultations requested: 14 May 1997  Current status: Settled or terminated (withdrawn, mutually agreed solution)

DS82	Ireland — Measures Affecting the Grant of Copyright and Neighbouring Rights (Complainant: United States)	Consultations requested: 14 May 1997  Current status: Settled or terminated (withdrawn, mutually agreed solution)
DS79	India — Patent Protection for Pharmaceutical and Agricultural Chemical Products (Complainant: European Communities)	Consultations requested: 28 April 1997  Current status: Implementation notified by respondent
DS59	Indonesia — Certain Measures Affecting the Automobile Industry (Complainant: United States)	Consultations requested: 8 October 1996  Current status: Implementation notified by respondent
DS50	India — Patent Protection for Pharmaceutical and Agricultural Chemical Products (Complainant: United States)	Consultations requested: 2 July 1996  Current status: Implementation notified by respondent
DS42	Japan — Measures concerning Sound Recordings (Complainant: European Communities)	Consultations requested: 28 May 1996  Current status: Settled or terminated (withdrawn, mutually agreed solution)
DS37	Portugal — Patent Protection under the Industrial Property Act (Complainant: United States)	Consultations requested: 30 April 1996  Current status: Settled or terminated (withdrawn, mutually agreed solution)
DS36	Pakistan — Patent Protection for Pharmaceutical and Agricultural Chemical Products (Complainant: United States)	Consultations requested: 30 April 1996  Current status: Settled or terminated (withdrawn, mutually agreed solution)
DS28	Japan — Measures Concerning Sound Recordings (Complainant: United States)	Consultations requested: 9 February 1996  Current status: Settled or terminated (withdrawn, mutually agreed solution)

Annex 4. GATS Commitments in Environmental Services<sup>171</sup>

Members	06.A.	06.B.	06.C.	06.D.	Total
Albania	X	X	X	X	4
Armenia	X	X	X	X	4
Australia	X	X	X		3
Austria	X	X	X	X	4
Bulgaria	X	X	X	X	4
Cambodia	X	X	X	X	4
Canada	X	X	X	X	4
Cape Verde	X	X	X	X	4
Central African Rep.				X	1
China	X	X	X	X	4
Colombia				X	1
Croatia	X	X	X	X	4
Czech Republic	X	X	X		3
Ecuador	X	X	X	X	4
El Salvador				X	1
Estonia	X			X	2
European Community	X	X	X	X	4
Finland		X		X	2
FYR Macedonia	X	X	X	X	4
Gambia	X		X		2
Georgia	X	X	X	X	4
Guinea	X		X		2
Hungary		X	X		2
Iceland	X	X	X	X	4
Israel	X	X	X	X	4
Japan	X	X	X	X	4
Jordan			X	X	2
Korea RP	X	X		X	3
Kuwait	X	X	X		3
Kyrgyz Republic	X	X	X	X	4
Latvia	X	X	X	X	4
Lesotho	X	X	X	X	4
Liechtenstein	X	X	X	X	4
Lithuania	X	X	X	X	4
Moldova	X	X	X	X	4
Morocco	X	X	X	X	4
Nepal	X	X	X		3
Norway	X	X	X	X	4
Oman	X	X	X	X	4
Panama				X	1
Poland				X	1

<sup>171</sup> WTO Services Database, <http://tsdb.wto.org/>

Qatar	X	X	X	X	4
Romania				X	1
Rwanda			X		1
Saudi Arabia	X	X	X	X	4
Sierra Leone	X	X	X	X	4
Slovak Republic	X	X	X		3
Slovenia	X	X	X	X	4
South Africa	X	X	X	X	4
Sweden	X	X	X	X	4
Switzerland	X	X	X	X	4
Chinese Taipei	X	X	X	X	4
Thailand	X	X	X	X	4
Tonga	X	X	X	X	4
Turkey	X	X	X		3
Ukraine	X	X	X	X	4
United Arab Emirates	X	X	X	X	4
USA	X	X	X	X	4
Viet Nam	X	X	X	X	4
Total	49	48	50	49	

Legend: 06.A. Sewage Services; 06.B. Refuse Disposal Services; 06.C. Sanitation and Similar Services; 06.D. Other

Annex 5. Lists of Environmental Goods: WTO172, APEC and OECD173

153 items list proposed by a group of WTO Members

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
<b>1. AIR POLLUTION CONTROL</b>					
209	Condensers for steam or other vapour power units.	840420		Used to cool gas streams to temperatures which allow the removal of contaminants, e.g. volatile organic compounds (VOC) like benzene.	Canada, Japan, New Zealand, United States
210	Parts for auxiliary plant for boilers, condensers for steam, vapour power unit.	840490		These parts are used in the repair and maintenance of the equipment classified under item 208 above. This secondary equipment is also used to support waste heat recovery processes, such as boilers mentioned above, in waste treatment, or renewable energy resource recovery applications.	United States
211	Producer gas or water gas generators, with or without their purifiers; acetylene gas generators and similar water process gas generators, with or without their purifiers.	840510	Include only those with purifiers	Purifiers remove contaminants (such as cyanide or sulphur compounds) produced in the manufacture of gases.	Canada, Korea, New Zealand, United States
235	Vacuum pumps.	841410	Industrial hoods for transportation or extraction of air pollutants such as	Air handling equipment. Used in a number of environmental applications, e.g. flue gas desulphurisation (the process by which	Canada, Japan, New Zealand, United

172 WTO (2007), "Non-Paper by Canada, the European Communities, Japan, Korea, New Zealand, Norway, the Separate Customs Territory of Taiwan, Penghu, Kinmen and Matsu, Switzerland, and the United States of America", Committee on Trade and Environment Special Session, Document JOB(07)/54, Geneva, 27 April.

173 WTO (2002), "List of environmental goods – paragraph 31 (iii)", Note by the Secretariat, Document TN/TE/W/18, Geneva, 20 November.

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
			exhaust gas or dust.	sulphur is removed from combustion exhaust gas).	States
237	Compressors of a kind used in refrigerating equipment	841430	Compressors used in air handling equipment.	Air handling equipment. Transport or extraction of polluted air, corrosive gases or dust.	Japan, New Zealand
238	Air compressors mounted on a wheeled chassis for towing.	841440	Air compressors used in the transportation or extraction of polluted air, corrosive gases or dust.	Air handling equipment. Transport or extraction of polluted air, corrosive gases or dust.	Japan, Korea, New Zealand
239	Fans other than table, floor, wall, window, ceiling or roof fans, with a self-contained electric motor of an output not exceeding 125 W.	841459	<i>Optional ex-out of fans for the transport or extraction of polluted air and corrosive gases or dust.</i>	Air handling equipment. Transport or extraction of polluted air, corrosive gases or dust. Transport or extraction of polluted air and corrosive gases or dust.	Canada, European Communities, Japan, Korea, New Zealand, United States
240	Air Pumps, air/oth. gas compressors and fans (excl. of 8414.10-8414.59); ventilating/recycling hoods incorp. a fan, whether or not fitted with filters (excl. of 8414.60).	841480	Industrial hoods; aerators; blowers; and diffusers.	Air handling equipment. Transport or extraction of polluted air, corrosive gases or dust.	Japan, Canada, Chinese Taipei, New Zealand, United States, European Communities, Korea
241	Air or vacuum pumps, air or other gas compressors and fans; ventilating or recycling hoods incorporating a fan,	841490	Parts for 841410x, 841430, 841440, and 841480x. <i>Optional ex-out may include: 841459x.</i>	Air handling equipment. Transport or extraction of polluted air, corrosive gases or dust. Transport or extraction of polluted air and corrosive gases or dust.	Canada, Japan, European Communities, New Zealand

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
	whether or not fitted with filters: Parts.				
251	Machinery for liquefying air or other gases.	841960		For separation and removal of pollutants through condensation.	Canada, Chinese Taipei, Korea, Japan, New Zealand, United States
252	Machinery, plant or laboratory equipment, whether or not electrically heated (excluding furnaces, ovens and other equipment of heading 85.14), for the treatment of materials by a process involving a change of temperature such as heating, cooking, roasting, distilling, rectifying, sterilising, pasteurising, steaming, drying, evaporating, vaporising, condensing or cooling, other than machinery or plant of a kind used for domestic purposes; instantaneous or storage water heaters, non-electric.	841989	Evaporators and dryers, for water and waste water treatment. Condensers and cooling towers. Biogas reactors; digestion tanks and biogas refinement equipment.	For processing water and waste water and the separation and removal of pollutants through condensation. Includes fluidised bed systems (bubbling, circulating, etc.) and biomass boilers. Can also help anaerobic digestion of organic matter.	Canada, European Communities, Japan, New Zealand
259	Filtering or purifying machinery and apparatus for gas (other than intake air filters for internal combustion engines).	842139	<i>Optional ex-out may include: Catalytic converters / Gas separation equipment / Pneumatic fluid power filters rated at 550 kPa or greater / Industrial gas cleaning equipment / Electrostatic filters (precipitators).</i>	Physical, mechanical, chemical or electrostatic filters and purifiers for the removal of COV, solid or liquid particles in gases, etc.	Canada, European Communities Chinese Taipei, Japan, Korea, United States
399	Instruments for measuring or checking the flow, level, pressure or other variables of liquids or gases.	902610	Air quality monitors; and dust emissions monitors.	Monitors to measure air pollution; basis for possible correcting measures (notably in view of health effects).	European Communities
<b>2. MANAGEMENT OF SOLID AND HAZARDOUS WASTE AND RECYCLING SYSTEMS</b>					

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
68	Other plates, sheets, film, foil and strip, of polymers of ethylene, non-cellular and not reinforced, laminated, supported or similarly combined with other materials: Plates, sheets, film, foil and strip of plastics, not self-adhesive, non-cellular, not reinforced or laminated etc., of polymers of ethylene.	392010	HDPE or flexible membrane landfill liners and/or covers for methane collection; Plastic and polyethylene geomembranes for soil protection, water tightness, anti-erosion of soil..	Used to line landfills to prevent leachate (water run-off) from contaminating groundwater resources. Also used to cover landfills and prevent methane from escaping into atmosphere. These membrane systems are also used for the reinforcement and protection of soil, including under oil refineries, gas stations etc.	United States, European Communities
193	Aluminium casks, drums, cans, boxes and similar containers (including rigid or collapsible tubular containers), for any material (other than compressed or liquefied gas), of a capacity not exceeding 300 l, whether or not lined or heat-insulated, but not fitted with mechanical or thermal equipment.	761290	Waste containers, including those for municipal or dangerous waste.	Containers of any material, of any form, for liquid or solid waste, including for municipal or dangerous waste.	European Communities
200	Steam or other vapour generating boilers (other than central heating hot water boilers capable also of producing low pressure steam); super-heated water boilers: and part of the boilers of 840211 - 840220	840219	Biomass boilers.	Boilers for the production of heat and power on the basis of (renewable) biomass fuels.	European Communities
206	Steam or other vapour generating boilers (other than central heating hot water boilers capable also of producing low pressure steam); super-heated water boilers.	840290	Parts for 840219x.	Parts for the biomass boilers described above.	European Communities
208	Auxiliary plant for use with boilers of heading 84.02 or 84.03 (for example, economisers, super-heaters, soot removers, gas recoverers); condensers for steam or other vapour power units.	840410	Auxiliary plant for use with 840219x.	Components of industrial air pollution control plant which minimise the release of pollutants into the atmosphere. This equipment is also used to support waste heat recovery processes in waste treatment, or renewable energy resource recovery applications.	Canada, European Communities, Japan, Korea, New Zealand, United States
244	Other industrial or laboratory furnaces and ovens, including incinerators, non-electric	841780	<i>Optional ex-outs may include: waste incinerators; heat or catalytic incinerators.</i>	These products are used to destroy solid and hazardous wastes. Catalytic incinerators are designed for the destruction of pollutants (such as VOC) by heating polluted air and oxidation of organic components.	Canada, Chinese Taipei, New Zealand, Korea, Japan, United States

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
245	Industrial or laboratory furnaces and ovens, including incinerators, non-electric: Parts.	841790	<i>Optional ex-outs may include: parts for 841780x.</i>	These parts can help maintain and repair products that are used to destroy solid and hazardous wastes. Similarly, the parts for catalytic incinerators can help maintain and repair items that can assist in the destruction of pollutants (such as VOC) by heating polluted air and oxidation of organic components.	Canada, Chinese Taipei, European Communities, Japan, Korea, New Zealand, United States
249	Distilling or rectifying plant.	841940	<i>Optional ex-outs may include: desalination systems; biogas refinement equipment; and solvent recycling plants.</i>	Desalination plants remove salt from water and are particularly important in conditions of water scarcity. Proper disposal of by-products is also required. - Biogas refinement equipment "upgrades" biogas resulting from organic matter to give it the same properties as natural gas. Allows the recovery and reuse of solvents, e.g. solvents used in the printing, painting or dry cleaning industries.	Canada, Chinese Taipei, European Communities, Japan, New Zealand, United States
263	Machinery for cleaning or drying bottles or other containers.	842220		Used to clean and dry bottles so that they can be recycled and re-used.	Canada, European Communities, Japan, Korea, United States
264	Machinery for cleaning or drying bottles or other containers: Parts.	842290	Parts for 842220.	Parts are used to assemble and maintain the above equipment.	European Communities
271	Tamping machines and road rollers.	842940	Self-propelled sanitary landfill compactors.	Used in solid waste treatment or recycling.	United States
277	Hydraulic presses for working metal.	846291	Shredders/balers/compactors for waste metals; hydraulic.	Assists in compacting and compressing metals, including for recycling.	Japan, Korea, United States, European Communities

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
279	Splitting, slicing or paring machines.	846596	Splitting, slicing or paring machines (specifically portable recyclers (grinders/shredders) portable (wood and waste recycling machinery)).	Used for recycling wood and other waste.	United States
280	Other machine tools not elsewhere specified or included	846599	Other parts of splitting, slicing or paring machines (specifically tree delimber/ debarker/ chipper machinery (portable recyclers (grinders/ shredders))	Assists in recycling as with item 279.	United States
281	Parts and accessories suit. for use solely/princ. with the machines of 84.62/84.63.	846694	Parts for 846291x.	See above for item 277.	European Communities
285	Crushing or grinding machines.	847420		Used for solid waste treatment or recycling.	Chinese Taipei
290	Mixing, kneading, crushing, grinding, screening, sifting, homogenising, emulsifying or stirring machines not elsewhere specified in Chapter 84.	847982	Waste sorting, screening, crushing, grinding, shredding, washing and compacting devices. Agitator for wastewater treatment; flash mixer and flocculator.	Used to prepare waste for recycling; mixing of wastewater during treatment; preparing organic waste for composting; (composting can minimise the amount of waste going to landfill as well as recovering the valuable nutrient and energy content of the waste).	Chinese Taipei, European Communities, Japan, Korea, New Zealand, United States
291	Machines and mechanical appliances having individual functions, not specified or included elsewhere in this Chapter: Other.	847989		Machines and appliances designed for a wide range of areas of environmental management including waste, waste water, drinking water production and soil remediation. In-vessel composting systems can handle large amounts of waste and speed up decomposition. Trash compactors reduce the volume of solid waste, allowing more efficient transport and disposal.	Canada, Chinese Taipei, European Communities, Japan, New Zealand, United States

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
292	Parts of the mach. and mech. appls. of 84.79	847990	Parts for 847982x and 847989x.	See the environmental benefit under entry 291.	Canada, European Communities, New Zealand, Japan, United States
315	Other, including parts	850590	Electromagnet; parts of magnetic separator; magnetic pulley; suspended magnet and magnet drum.	Used to remove metal content from waste for recycling.	Canada, Chinese Taipei, Japan, New Zealand, United States
322	Resistance heated furnaces and ovens.	851410	<i>Optional ex-outs may include: waste incinerators and heat or catalytic incinerators.</i>	These products are used to destroy solid and hazardous wastes. Catalytic incinerators are designed for the destruction of pollutants (such as VOC) by heating polluted air and oxidation of organic components.	Canada, Chinese Taipei, Japan, New Zealand, United States
323	Furnaces and ovens; functioning by induction or dielectric loss.	851420	<i>Optional ex-outs may include: waste incinerators and heat or catalytic incinerators.</i>	These products are used to destroy solid and hazardous wastes. Catalytic incinerators are designed for the destruction of pollutants (such as VOC) by heating polluted air and oxidation of organic components.	New Zealand, Japan, Canada, Korea, Chinese Taipei, United States

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
324	Other furnaces and ovens.	851430	<i>Optional ex-outs may include: waste incinerators and heat or catalytic incinerators.</i>	Catalytic incinerators are designed for the destruction of pollutants (such as VOC) by heating polluted air and oxidation of organic components.	Canada, Chinese Taipei, European Communities, Japan, New Zealand, United States
325	Parts of industrial or laboratory electric furnaces and ovens; other laboratory induction or dielectric heating equipment.	851490	<i>Optional ex outs include: Parts for 851410x, 851430x and 851430x.</i>	Parts for the equipment listed will facilitate the destruction of pollutants (such as VOC) by heating polluted air and oxidation of organic components.	Canada, Chinese Taipei, Japan, Korea, New Zealand, United States
<b>3. CLEAN UP OR REMEDIATION OF SOIL AND WATER</b>					
255	Centrifuges, including centrifugal dryers, other than cream separators and clothes-dryers.	842119	Oil Skimmer.	Equipment used to remove oil floating on water and is commonly used for oil spill remediations	Canada, Japan, New Zealand, United States, Korea, European Communities
260	Parts of centrifuges, including centrifugal dryers.	842191	Parts for 842119x.	Used for the maintenance and repair of equipment that removes oil floating on water and is commonly used for oil spill remediation.	Canada, EC, Japan, Korea, New Zealand, United States
327	Electric space heating apparatus and electric soil heating apparatus; other.	851629	Electric soil heating apparatus.	Use heat to disinfect or remove organic compounds (e.g. pesticides, hydrocarbons) from soil, and to dry contaminated soil prior to treatment processes.	Japan, Korea, New Zealand
383	Other floating structures (for example, rafts, tanks, coffer-dams, landing-stages, buoys and beacons): Other	890790	Pollution protection booms, oil absorbent booms, oil containment booms.	Floating barriers to oil can prevent an oil slick from reaching sensitive locations or spreading out further. Oil absorbents soak up and remove the oil.	Canada, Chinese Taipei, European Communities, Japan, Korea, New Zealand,

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
	(other than inflatable rafts).				United States
<b>4. RENEWABLE ENERGY PLANT</b>					
173	Towers and lattice masts.	730820	Wind turbine tower.	Used to elevate and support a wind turbine for the generation of renewable energy.	United States, European Communities
192	Aluminium reservoirs, tanks, vats and similar containers, for any material (other than compressed or liquefied gas), of a capacity exceeding 300 l, whether or not lined or heat-insulated, but not fitted with mechanical or thermal equipment: tanks etc, over 300 litres capacity, aluminium.	761100	<i>Optional ex-outs may include: Tanks or vats for anaerobic digesters for biomass gasification; cisterns, vats and reservoirs for waste and potable water; and solar pre-heating storage tank.</i>	Tanks, vats and containers for the production of biogas, waste water management, drinking water production and solar thermal energy purposes.	United States, European Communities
212	Steam and other vapour turbines (other than turbines for marine propulsion): Of an output exceeding 40 MW.	840681	<i>Optional ex-outs may include stationary steam turbines over 40 MW; Low temperature/ low pressure steam turbines for geothermal heat pump systems; and steam turbines for co-generation.</i>	Turbines designed for the production of geothermal energy (renewable energy) and co-generation ((CHP) which allows for a more effective use of energy than conventional generation).	United States, European Communities
213	Steam turbines and other vapour turbines (other than for marine propulsion) of an output not exceeding 40 MW.	840682	<i>Optional ex-outs may include stationary steam turbines not over 40 MW; other vapour turbines; low temperature/ low pressure steam turbines for geothermal heat pump systems; and steam turbines for co-generation.</i>	Steam turbines are used to drive electrical generators to derive electrical power from environmental energy recovery operations. Note that these have an output capacity "not exceeding 40 MW".	United States, European Communities
214	Parts for steam and other vapour turbines.	840690	<i>Optional ex-outs may include parts suitable for use with stationary steam turbines over 40MW; stationary steam turbines not over 40 MW, other vapour turbines; parts for 840681x and 840682x.</i>	Parts used for repair and maintenance of energy recovery turbines listed in items 212 and 213 above.	United States
218	Hydraulic turbines and water wheels of a power not exceeding 1,000 kW .	841011		Hydroelectric power generation produces no greenhouse gas emissions.	Canada, European Communities, Japan, Korea, New Zealand, United States

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
221	Hydraulic turbines, water wheels, and regulators ; parts, including regulators.	841090	Parts for 841011.	Hydroelectric power generation produces no greenhouse gas emissions.	Canada, European Communities, Japan, Korea, New Zealand, United States
222	Other gas turbines of a power not exceeding 5,000 kW.	841181		Gas turbines for electrical power generation from recovered landfill gas, coal mine vent gas, or biogas (clean energy system). Note that these turbines do "not exceed 5,000 kW".	United States
224	Other gas turbines of a power exceeding 5,000 kW.	841182		Gas turbines for electrical power generation from recovered landfill gas, coal mine vent gas, or biogas (clean energy system). Note that these turbines do "exceed 5,000 kW".	United States
247	Instantaneous or storage water heaters, non-electric (other than instantaneous gas water heaters).	841919	Solar water heaters.	Uses solar thermal energy to heat water, producing no pollution. Use of solar water heating displaces the burning of other, pollution-creating fuels.	Canada, European Communities, Japan, New Zealand, United States
253	Parts of machinery, plant and equipment of heading No 84.19	841990	<i>Optional ex-outs may include: Parts for 8419.19 ex, including for solar boiler/water heater; insulation, temperature sensor for solar boiler/water heater; Differential temperature controller for solar boiler/water heater; Evacuated glass tubes for solar boiler/water heater; Heat pipes for solar boiler/water heater. Parts of 841940x, 841950x, 841960, 841989x</i>	Parts used in the maintenance and repair of solar water heaters (etc). which use solar thermal energy to heat water, producing no pollution. Use of solar water heating displaces the burning of other, pollution-creating fuels.	Canada, Japan

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
300	Gears and gearing, other than toothed wheels, chain sprockets and other transmission elements presented separately; ball or roller screws; gear boxes and other speed changers, including torque converters.	848340	Gearboxes for wind turbines.	Gearboxes transform the (relatively slow) rotation of the blades of wind turbines into the speed required to produce (renewable) electricity	United States, European Communities
301	Clutches and shaft couplings (including universal joints).	848360	Clutches and shaft couplings imported for use with wind turbines to produce electricity.	Used for initial assembly, repair, and maintenance of wind energy systems	United States
305	AC generators (alternators), of an output not exceeding 75 kVA	850161		Used in conjunction with boiler and turbines (also listed here) to generate electricity in renewable energy plants. Must use these turbines and generators in combination to produce electricity from renewable fuels (e.g., biomass). Size is "not exceeding 75 kVA".	United States
306	AC generators (alternator), of an output exceeding 75 kVA but not exceeding 375 kVA	850162		Used in conjunction with boiler and turbines (also listed under items 212 and 213) to generate electricity in renewable energy plants. Must use these turbines and generators in combination to produce electricity from renewable fuels (e.g., biomass). Size is "exceeding 75 kVA but not exceeding 375 kVA"	United States
307	AC generators (alternator), of an output exceeding 375 kVA but not exceeding 750 kVA	850163		Used in conjunction with boiler and turbines (also listed here under items 212 and 213) to generate electricity in renewable energy plants. Must use these turbines and generators in combination to produce electricity from renewable fuels (e.g., biomass). Size is "exceeding 375 kVA but not exceeding 750 kVA."	United States
308	AC generators (alternator), of an output exceeding 750 kVA	850164		Used in conjunction with boiler and turbines (also listed under items 212 and 213) to generate electricity in renewable energy plants. Must use these turbines and generators in combination to produce electricity from renewable fuels (e.g., biomass). Size is "exceeding 750 kVA."	United States
310	Other electric generating sets: Wind-powered.	850231		Electricity generation from a renewable resource (wind).	Canada, European Communities, Japan, New Zealand, Switzerland, United States

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
311	Electric generating sets and rotary convertors: other	850239	<i>Optional ex-outs may include: combined heat and power systems using biomass and/or biogas; Portable solar power generation equipment; solar power electric generating sets; Small hydro powered generating plant; Wave power generating plant; and Gas turbine sets for biomass plants.</i>	Combined heat and power systems produce usable power (usually electricity) and heat at the same time. Micro combined heat and power systems are very efficient for domestic use, particularly in places where reticulated natural gas and hot water central heating are the norm. 'Distributed generation' also minimises transmission losses through national grids, reducing the need to increase centralised generating capacity and transmission networks.	New Zealand, European Communities, United States
313	Parts suitable for use solely or principally with the machines of heading 85.01 or 85.02.	850300	Parts for 850231 and optional ex-out may include : 850239x.	Parts of the generators and generating sets listed under item 310 (for renewable energy systems). Relevant parts include for instance nacelles and blades for wind turbines.	European Communities, Switzerland, United States
314	Static converters	850440	Inverters for use with machines of 850239 and 854140 to produce electricity.	Converts solar energy into electricity and can be used to convert DC current from the photovoltaic/solar cells into conventional AC electricity which can run many household and office products such as, kitchen appliances, microwaves, TV's, radios, computers and so on.	European Communities, United States
344	Photosensitive semiconductor devices, including photovoltaic cells whether or not assembled in modules or made up into panels; light emitting diodes.	854140	Photovoltaic cells, modules and panels.	Solar photovoltaic cells generate electricity in an environmentally benign manner (with no emissions, noise or heat generated). They are particularly suited to electricity generation in locations remote from an electricity grid.	Canada, European Communities, Japan, New Zealand, United States
384	Optical fibres and optical fibre bundles; optical fibre cables other than those of heading 85.44; sheets and plates of polarising material; lenses (including contact lenses), prisms, mirrors and other optical elements, of any material, unmounted, other than such elements of glass not optically worked: Other: Lenses prisms mirrors optical element not optically worked.	900190	Solar concentrator systems.	Used to concentrate and intensify solar power in a solar energy system.	United States

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
385	Lenses, prisms, mirrors and other optical elements, of any material, mounted, being parts of or fittings for instruments or apparatus, other than such elements of glass not optically worked: Other: Prism, mirrors, mounted and parts and accessories, not elsewhere specified or included	900290	Solar concentrator systems.	Used to concentrate and intensify solar power in a solar energy system.	United States
435	Automatic regulating or controlling instruments, other	903289	<i>Optional ex-outs may include: Heliostats, temperature sensor for solar boiler/water heater; Differential temperature controller for solar boiler/water heater.</i>	These include other automatic voltage and current regulators which have renewable energy applications as well as other process control instruments and apparatus for temperature, pressure, flow and level, and humidity applications.	Canada, Japan, Korea, New Zealand, United States
456	Boards, panels, consoles, desks, cabinets and other bases, equipped with 2 or more app. of 85.35/85.36, for electrical control..., for a voltage not exceeding 1000V	853710	Photovoltaic system controller.	Device to control the functioning of the PV system.	European Communities
457	Electric accumulators, including separators thereof, whether or not rect. (incl. square), lead-acid (exclusive of 8507.10)	850720	Deep discharge (solar) battery.	Provides for energy storage in off-grid PV systems. Are designed to be discharged down to 50per cent or more without damage so that they can supply power over a long period of time.	European Communities
475	Compression-type refrigerating, freezing equipment whose condensers are heat exchangers; Refrigerating, freezing equipment not elsewhere specified in 84.18; heat pumps and Air-conditioning machines incorporating a refrigerating unit and a valve for reversal of the cooling/heat cycle (reversible heat pumps)	841861; 841869 and 841581	Geothermal heat pump system.	Such systems transfer ("pump") the heat available in land and water masses to either heat or cool buildings.	European Communities
<b>5. HEAT AND ENERGY MANAGEMENT</b>					

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
154	Glass fibres (including glass wool) and articles thereof (for example, yarn, woven fabrics): Mats	701931	Mats for soundproofing and thermal insulation of buildings.	These mats help save energy and reduce noise levels in buildings.	European Communities
250	Heat exchange units, whether or not electrically heated	841950	<i>Optional ex-out may include heat exchangers for use in renewable energy system.</i>	Some heat exchangers are specifically designed for use in relation to renewable energy sources such as geothermal energy .	Canada, European Communities, Japan, United States
412	Gas meters -including calibrating meters thereof	902810		Meters are necessary to measure and regulate use and hence enable more efficient use of the resource. In particular, these gas meters are generally designed for use with natural gas and propane, but may include those designed for other gases such as helium.	Canada, European Communities, Japan, New Zealand, United States
413	Liquid meters including calibrating meters thereof	902820	<i>Optional ex-out may include: Water consumption meters.</i>	These liquid meters include those designed to measure potable water consumption to allocate costs, assist the financial management of water systems, and encourage conservation of a scarce resource.	Canada, European Communities, Japan, New Zealand, United States
414	Electricity meters	902830		These products include those designed to measure electricity flow in residential, commercial, and industrial consumption of electricity.	Canada, Japan, New Zealand, United States

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
415	Parts and accessories for articles of subheading 9028:	902890	<i>Optional ex-out may include: Parts for 902810, 902820[x], 902830.</i>	These are parts and accessories for the gas, liquid, and electricity meters classified in 9028 and described above.	Japan, Korea, New Zealand, United States, Canada, European Communities
<b>6. WASTE WATER MANAGEMENT AND POTABLE WATER TREATMENT</b>					
116	Non wovens, whether or not impregnated, coated, covered or laminated: Of man-made filaments: Weighing more than 150 g/m2.	560314	Landfill drainage mats, Fabric of polyethylene, polypropylene, or nylon for filtering wastewater, Filter cloth (PE, PP, Nylon) Filter bag (sleeve).	Used to ensure efficient leachate or gas landfill drainage.	Chinese Taipei, European Communities, United States
146	Ceramic sinks, wash basins, wash basin pedestals, baths, bidets, water closet pans, flushing cisterns, urinals and similar sanitary fixtures: Of porcelain or china.	691010	Waterless urinal, composting toilet.	Waterless urinals and composting toilets minimise water use. Composting toilets also provide self contained sewage treatment on site, with no need for sewers and treatment plants. These items also do not pollute ground or surface water or soil (unlike septic tanks or pit latrines) and produce safe, useful compost.	New Zealand
165	Tubes, pipes and hollow profiles, of cast iron:	730300	Cast iron pipes, gutters and manholes for waste and potable water applications.	These items facilitate the delivery of safe drinking water and sanitation.	European Communities
167	Tubes, pipes and hollow profiles, seamless, of iron (other than cast iron) or steel: Other than Line pipe of a kind used for oil or gas pipelines.	730431 to 730490	Iron or steel pipes, gutters and manholes for waste and potable water applications.	These items facilitate the delivery of safe drinking water and sanitation.	European Communities
170	Other tubes, pipes and hollow profiles (for example, open seam or welded, riveted or similarly closed), of iron or steel: Other:	730630 to 730690	Iron or steel pipes gutters and manholes for waste and potable water applications.	These items facilitate the delivery of safe drinking water and sanitation	European Communities
174	Reservoirs, tanks, vats and similar containers for any material (other than compressed or liquefied gas), of iron or steel, of a capacity exceeding 300 l, whether or not lined or heat-insulated, but not fitted with mechanical or	730900	<i>Optional ex-outs may include: Tanks or vats for anaerobic digesters for biomass gasification; Solar pre-heating storage tank; Waste containers including those for municipal or hazardous waste; Cisterns, vats and reservoirs for safe storage of</i>	Containers of any material, of any form, for liquid or solid waste, including for municipal or dangerous waste. The containers can be of assistance in the conversion of waste to gas, which can be used to generate energy.	Canada, European Communities, Korea, United States

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
	thermal equipment; Tanks etc, over 300 litres capacity, iron or steel; Reservoirs, tanks, vats and similar containers, capacity >300L, iron or steel (ex liq/compr gas type); Reservoirs, tanks, vats and similar containers, of iron or steel, > 300 litres		<i>drinking water; Septic tanks, vats and reservoirs for wastewater treatment.</i>		
175	Tanks, casks, drums, cans, boxes and similar containers, for any material (other than compressed or liquefied gas), of iron or steel, of a capacity not exceeding 300 l, whether or not lined or heat-insulated, but not fitted with mechanical or thermal equipment: Of a capacity of 50 l or more: Composting systems of organic matter.	731010	Waste containers including those for municipal or hazardous waste. Waste silos.	For handling and storage of wastewater/sewage during treatment. Containers of any material, of any form, for liquid or solid waste, including for municipal or dangerous waste.	Canada, European Communities, Korea, New Zealand
177	Tanks, casks, drums, cans, boxes and similar containers, for any material (other than compressed or liquefied gas), of iron or steel, of a capacity not exceeding 300 l, whether or not lined or heat-insulated, but not fitted with mechanical or thermal equipment: Of a capacity of less than 50 l: Other (excluding containers fitted with mechanical or thermal equipment, and cans); Other cans which are to be closed by soldering or crimping, capacity less 50L	731029	Waste containers, whether or not combined with a compactor.	Containers of any material, of any form, for liquid or solid waste, including for municipal or dangerous waste.	Canada, European Communities, Korea
185	Sanitary ware and parts thereof, of iron or steel: Exclusive of 732410 - 732429.	732490	Water saving shower. Water closet pans and flushing cisterns/urinals including dry closets.	Water conserving showers (provided with a specific water-efficiency shower head) and dry closets (operating on the basis of composting) are designed to conserve water.	European Communities
186	Other cast articles of iron or steel; of non-malleable cast iron	732510	Sewage, water etc systems.	These items facilitate the delivery of safe drinking water and sanitation	Japan, Canada, Korea, European Communities

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
188	Other articles of iron or steel: Other.	732690	Perforated buckets and similar articles of sheet used to filter water at the entrance to drains.	These items facilitate the delivery of safe drinking water and sanitation, which are key MDG priorities	European Communities
229	Hand pumps, other than those of subheading 8413.11 or 8413.19	841320		For handling and transport of wastewater or slurries during treatment.	Canada, Japan, Korea, New Zealand
230	Other reciprocating positive displacement pumps	841350	<i>Optional ex-out may include: Pumps for sewage and wastewater treatment.</i>	For handling and transport of wastewater or slurries during treatment.	Canada, Japan, Korea, New Zealand, United States
231	Other rotary positive displacement pumps	841360	Submersible mixer pump; screw type; flow volume not less than 3m <sup>3</sup> /min.	For handling and transport of wastewater or slurries during treatment.	Japan, New Zealand, United States, Chinese Taipei, Canada, Korea
232	Other centrifugal pumps	841370	Centrifugal pumps (RFPP, PVDF, Ti, Viton, Seal) lined to prevent corrosion; motor output power not less than 0.4kw.	For handling and transport of wastewater or slurries during treatment.	Canada, Chinese Taipei, Japan, Korea, New Zealand, United States
233	Pumps for liquids, whether or not fitted with a measuring device; other pumps	841381	<i>Optional ex-outs may include: pumps integrated with wind turbines; solar pumping system.</i>	Water handling equipment. Pumps are integral components of water treatment plants.	Canada, European Communities, Japan, Korea, New Zealand, United States
248	Dryers, other:	841939	Sludge driers.	Device used in waste water management, which requires sludge to be treated	European Communities

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
256.	Filtering or purifying machinery and apparatus for liquids: for filtering or purifying water	842121		Used to filter and purify water for a variety of environmental, industrial and scientific applications, including water treatment plants and wastewater treatment facilities.	Canada, Chinese Taipei, European Communities, Japan, Korea, United States
257	Filtering or purifying machinery and apparatus for liquids: other.	842129		Used to remove contaminants from wastewater, by chemical recovery, oil/water separation, screening or straining.	Canada, European Communities, Korea, Japan, New Zealand, United States
261	Centrifuges, including centrifugal dryers; filtering or purifying machinery and apparatus, for liquids or gases: Parts (other than of centrifuges and centrifugal dryers):Filtering or purifying machinery and apparatus for water and parts thereof	842199	Parts for 842121 and 842129.	Including sludge belt filter presses and belt thickeners.	Canada, Chinese Taipei, European Communities, Japan, Korea, United States
270	Other continuous-action elevators and conveyors, for goods or materials: Other, belt type.	842833	<i>Optional ex-out may include troughed belt (cleat type) conveyor, length above 4m, transfer capacity not less than 20m<sup>3</sup>/hr.</i>	For transport of waste around the treatment plant.	Japan, Korea, New Zealand, Chinese Taipei, United States
294	Pressure-reducing valves	848110		For handling and transport of wastewater or slurries during treatment .	Japan, New Zealand, Canada
295	Taps, cocks, valves and similar appliances for pipes, boiler shells, tanks, vats or the like, including pressure-reducing valves and thermostatically controlled valves (other than parts).	848110 to 848180	<i>Optional ex-out may include: Taps, cocks and valves for water and wastewater.</i>	These items facilitate the delivery of safe drinking water and sanitation, which are key MDG priorities.	European Communities
296	Check (non-return) valves	848130		For handling and transport of wastewater or slurries during treatment.	Canada, Japan, New Zealand
297	Safety or relief valves	848140		For handling and transport of wastewater or slurries during treatment.	Canada, Japan, New Zealand

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
298	Other appliances for pipes, boiler shells, tanks, vats or the like	848180		For handling and transport of wastewater or slurries during treatment for those applied to wastewater facilities.	Japan, New Zealand, Canada
299	Taps, cocks, valves and similar appliances for pipes, boiler shells, tanks, vats or the like, including pressure-reducing valves and thermostatically controlled valves: Parts:..	848190		For effective management, control, handling and transport of water.	Canada
346	Other electrical machines and apparatus having individual functions, not elsewhere specified in chapter 85.	854389	Ozone production system; Ultraviolet water disinfection/treatment systems.	UV light is extremely effective in killing and eliminating bacteria, yeasts, viruses, moulds and other harmful organisms. UV systems can be used in conjunction with sediment and carbon filters to create pure drinking water. Water disinfection Ozone (O3) can be used as an alternative to chlorine for water disinfection.	Chinese Taipei, European Communities, Japan, Korea, New Zealand, United States
347	Parts of the machines and apparatus of 85.43	854390	Parts for 854389x.	Water disinfection.	European Communities
<b>7. ENVIRONMENTALLY PREFERABLE PRODUCTS, BASED ON END USE OR DISPOSAL CHARACTERISTICS</b>					
104	Jute and other textile bast fibres (excluding flax, true hemp and ramie), raw or processed but not spun; tow and waste of these fibres (including yarn waste and garmetted stock)..	530310		The natural fiber composition differentiates jute from alternative synthetic materials due to its biodegradability and sustainable sources. Jute fibers are used for packaging and woven fabric.	Switzerland
106	Sisal other textile fibres of the genus <i>Agave</i> raw	530410		The natural fibre composition differentiates sisal from alternative synthetic materials due to its biodegradability and sustainable sources. Sisal fibres also used in recycled paper.	United States, Switzerland

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
107	Sisal and other textile fibres of the genus Agave, processed but not spun; tow and waste of these fibres (including yarn waste and garnetted stock).	530490		The natural fibre composition differentiates sisal from alternative synthetic materials due to its biodegradability and sustainable sources. Sisal fibres also used in recycled paper.	United States, Switzerland
117	Twine, cordage, ropes and cables, whether or not plaited or braided and whether or not impregnated, coated, covered or sheathed with rubber or plastics: Of jute or other textile bast fibres of heading 53.03.	560710		More biodegradable than synthetic fibre alternatives and made from a renewable resource.	New Zealand, United States, Switzerland
118	Twine, cordage, ropes and cables whether or not plaited or braided and whether or not impregnated, coated, covered or sheathed with rubber or plastics: Of sisal or other textile fibres of the genus Agave: Binder or baler twine	560721		More biodegradable than synthetic fibre alternatives and made from a renewable resource.	New Zealand, United States
126	Sacks and bags, of a kind used for the packing of goods: Of jute or of other textile bast fibres of heading 53.03.	630510		More biodegradable than synthetic fibre alternatives and made from a renewable resource.	New Zealand, United States, Switzerland
<b>8. CLEANER OR MORE RESOURCE EFFICIENT TECHNOLOGIES AND PRODUCTS</b>					
183	Cooking appliances and plate warmers: For gas fuel or for both gas and other fuels.	732111	Solar stoves.	Uses solar thermal energy for cooking, thereby producing no air pollution. The use of solar stoves is replacing heating with firewood or other non-renewable energy sources (e.g. oil, gas) and allows for preservation of firewood (especially important in arid areas) and is suitable for off-grid usage.	Switzerland

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
184	Stoves, ranges, grates, cookers (including those with subsidiary boilers for central heating), barbecues, braziers, gas-rings, plate warmers and similar non-electric domestic appliances, and parts thereof, of iron or steel: Parts.	732190	As applicable to solar stoves.	Parts are used in the maintenance and repair of solar stoves (see item 183 for the environmental benefits).	Switzerland
316	Other primary cells and primary batteries	850680	Fuel cells.	Fuel cells use hydrogen or hydrogen-containing fuels such as methane to produce an electric current, through an electrochemical process rather than combustion. Fuel cells are clean, quiet, and highly efficient sources of electricity.	Canada, Japan, New Zealand, Switzerland
318	Electro-mechanical domestic appliances, with self-contained electric motor: Other.	850980	Garbage degraders with electrical heating systems; or using bacterial decomposing processes or hot-air drying processes.	These items are used to break down food and other garbage from households and the food industry. Such products help <i>inter alia</i> to reduce land fill volumes.	Japan
<b>9. NATURAL RISK MANAGEMENT</b>					
389	Photogrammetrical surveying instruments and appliances	901540		Photogrammetry is an aerial remote sensing technique which forms the baseline of many Geographic Information Systems (GIS) and Land Information Systems (LIS), which are important for monitoring and managing natural risks such as floods, earthquakes.	Canada, Japan, New Zealand, United States
390	Other surveying, hydrographic, oceanographic, hydrological, meteorological or geophysical instruments and appliances, excluding compasses, not elsewhere specified in 90.15	901580		Includes instrument and appliances necessary for measuring the ozone layer and to monitor, measure and assist planning for natural risks such as earthquakes, cyclones, tsunamis etc.	Canada, European Communities, Japan, New Zealand, United States
391	Parts and accessories of the instruments and appliances of 90.15	901590	Parts for 901530, 901540 and 901580.	Parts used in maintenance and repair of the items 389, 390 and 388 with the attendant environmental benefits.	Canada, Japan, New Zealand, United States, European Communities

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
<b>10. NATURAL RESOURCES PROTECTION</b>					
121	Made-up fishing nets of man-made textile materials.	560811	Specifically made-up fishing nets that incorporate turtle excluder devices.	Use of Turtle Excluder Devices (TEDs) reduces turtle mortality by 90-100 per cent.	United States
122	Knotted netting of twine, cordage or rope; made up fishing nets and other made up nets, of textile materials; Other than made-up fishing nets of manmade textile materials: Knot net of twine made-up fish net textile materials not elsewhere specified or included.	560890	Made-up fishing nets that incorporate turtle excluder devices.	Use of Turtle Excluder Devices (TEDs) reduces turtle mortality by 90-100 per cent.	United States
440	Fish-hooks, whether or not snelled.	950720	Circle hooks.	These rounded, "circle-shaped" hooks reduce sea turtle mortality 60-90 per cent over conventional "J-shaped" hooks.	United States
<b>11. NOISE AND VIBRATION ABATEMENT</b>					
88	Agglomerated cork (with or without a binding substance) and articles of agglomerated cork: Panels, boards, tiles, blocks and similar articles of agglomerated cork	450410	Cork underlay in sheets and rolls.	Assists in the reduction of noise levels in buildings.	European Communities, Switzerland
216	Parts suitable for use solely or principally with the engines of heading No. 84.07 or 84.08: Other: Suitable for use solely or principally with spark-ignition internal combustion piston engines.	840991	Industrial mufflers.	Industrial mufflers are used for reducing engine noise.	Chinese Taipei, European Communities, Korea, Japan, United States
217	Parts suitable for use solely or principally with the engines of heading No. 84.07 or 84.08: Other.	840999	Industrial mufflers.	Industrial mufflers are used for reducing engine noise.	European Communities, Japan, Korea, United States
425	Machines for balancing mechanical parts.	903110		Environmental applications of these machines include balancing of parts and equipment to minimise noise and vibration.	Canada, Japan, New Zealand, United States

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
<b>12. ENVIRONMENTAL MONITORING, ANALYSIS AND ASSESSMENT EQUIPMENT</b>					
388	Levels: Hydrological, oceanographic, meteorological instruments and appliances. Exclusive of 90.31	901530		Includes levels used for environmental purposes such as measuring the ozone layer, elements of climate change etc.	European Communities
400	Instruments and apparatus for measuring or checking the flow or level of liquid	902610		Meters, which check and record the level and/or flow of liquids or gases, are routinely used during complex auditing and testing to ensure the efficient operation of environmental systems such as water and wastewater treatment plants, air pollution control systems, and hydroelectric facilities.	Canada, Japan, Korea, New Zealand, United States
401	Instruments and apparatus for measuring or checking pressure	902620		Manometers (devices that measure pressure) are used in power plants, water delivery systems, and other applications such as monitoring indoor air. There are two principal types: digital manometers and tube manometers, both of which have important environmental applications.	Canada, Japan, Korea, New Zealand, United States
402	Other instruments and apparatus	902680		These instruments include heat meters that are used to monitor and measure the distribution of heat from geothermal or biomass district heating systems.	Japan, Korea, New Zealand, United States, Canada
403	Parts and accessories for articles of subheading 9026	902690		These are parts for the instruments and devices in 9026.10, 9026.20, and 9026.80.	Canada, Japan, Korea, New Zealand, United States
405	Gas or smoke analysis apparatus	902710		Gas analyzers are designed to continuously monitor single or multiple gas components, and such an instrument is used to analyze air emissions from automobiles.	Canada, Chinese Taipei, Japan, United States, New Zealand, European Communities
406	Chromatographs and electrophoresis instruments	902720		Gas and liquid chromatographs use an analytical method where a physical separation of the sample components occurs prior to detection. These instruments can be use to monitor and analyze air pollution emissions, ambient air quality, water quality, etc.	Japan, Korea, New Zealand, United States, Canada, Chinese Taipei

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
				Electrophoresis instruments can be used to monitor and analyze materials such as particulates emitted from incinerators or from diesel exhaust.	
407	Spectrometers, spectrophotometers and spectrographs using optical radiations (UV, visible, IR)	902730		Spectrometers are used in a wide range of environmental applications, including to identify and characterise unknown chemicals and in environmental applications to detect toxins and identify trace contaminants. They are also used for qualitative and quantitative analysis <i>inter alia</i> in quality control departments, environmental control, water management, food processing, agriculture and weather monitoring.	Canada, Chinese Taipei, Japan, New Zealand, United States
408	Exposure meters	902740		Exposure meters are used, <i>inter alia</i> , to control light sources and for measurements in agriculture, horticulture, and other natural resources applications.	Canada, Japan, Korea, New Zealand, United States
409	Other instruments and apparatus using optical radiations (UV, visible, IR)	902750		These instruments can be used for chemical, thermal, or optical analysis of samples, including water quality photometers which are used to determine the concentration of a solution from its color intensity.	Canada, Japan, Korea, New Zealand, United States

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
410	Instruments and apparatus for physical or chemical analysis not elsewhere specified in 90.27.	902780	<i>Optional ex-out may include: For analysing noise, air, water and hydrocarbons and heavy metals in soil..</i>	These instruments include: magnetic resonance instruments which are used in biologic and geologic analysis; and mass spectrometers which are used to identify elements and compounds.	Canada, Chinese Taipei, European Communities, Japan, Korea, New Zealand, United States
411	Microtomes; parts and accessories of instruments and appliances of 90.27.	902790	<i>Optional ex-outs may include: Parts for 902710 and 902780x.</i>	These instruments include microtomes which are devices that prepare slices of samples for analysis. Also included here are parts of the instruments classified in 9027 and described above.	Canada European Communities, Japan, Korea, New Zealand, United States
418	Instruments and apparatus for measuring or detecting ionising radiations.	903010		These items are used for the purpose of detecting the presence of ionizing radiation and may, for instance, include Geiger counters that are useful in performing surveys for radioactivity contamination.	Canada, Japan, Korea, New Zealand, United States
419	Cathode-ray oscilloscopes and cathode-ray oscillographs.	903020		Oscilloscopes are used to translate an electronic signal into a pattern on a screen. These instruments are used for testing and calibrating laboratory equipment.	Canada, Japan, New Zealand, United States
420	Multimeters.	903031		These products measure electrical flow, including current, resistance, voltage, frequency, temperature and in this way are used to identify electronic and electrical problems in equipment.	Canada, Japan, Korea, New Zealand, United States

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
421	Other instruments and apparatus, for measuring or checking voltage, current, resistance or power, without a recording device.	903039	<i>Optional ex-outs may include: Volt meters, Am meters, Circuit testers, Resistance meters, Galvano meters</i>	These instruments include single function meters. An ammeter measures current, a voltmeter measures voltage, and an ohmmeter measures resistance. These instruments are also used to find problems in equipment.	Canada, Japan, Korea, New Zealand, United States
422	Other instruments and apparatus for measuring or checking electrical quantities, with a recording device.	903083		These instruments are similar to those above, but include componentry that is a recording device - these add a further technical element to the process of identifying electrical problems in equipment.	Canada, Japan, Korea, New Zealand, United States
423	Other instruments and apparatus for measuring or checking electrical quantities.	903089		These instruments are similar to those above, and are used to identify electrical faults.	Canada, Japan, New Zealand, United States
424	Parts and accessories of Heading 90.30.	903090	<i>Optional ex-out may include: Parts and accessories for nominated articles of subheading 903010.</i>	See above goods of subheading 9030.	Canada, European Communities, Japan, Korea, New Zealand, United States
426	Test benches.	903120		Test benches are used to test designs and equipment, such as components or subsystems of a solar power plant.	Canada, Japan, New Zealand, United States

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
427	Profile projectors.	903130		Profile projectors are used for critical tasks in engineering such as measuring and inspecting high precision, complex parts in many applications and industries.	Canada, Japan, Korea, New Zealand, United States
428	Other measuring and checking instruments, appliances and machines, not specified or included elsewhere in this chapter: ..Other optical instruments, appliances and machines elsewhere specified for measuring or checking.	903149		Equipment used in the measurement, recording, analysis and assessment of environmental samples or environmental impact.	Canada, Korea, Japan, New Zealand
429	Other instruments, appliances and machines.	903180	<i>Optional ex-out may include: Vibrometers, hand vibration meters</i>	These products include <i>inter alia</i> , items such as vibrometers (that measure vibrations and assess structural and other effects of such vibrations) and electron microscopes for laboratory and testing applications.	European Communities, Japan, New Zealand, United States, Canada
430	Parts and accessories of the instruments and appliances and machines of 90.31.	903190	<i>Optional ex-out may include: Parts for 903180x.</i>	These are parts for the equipment classified in 9031 and described above.	European Communities, Canada, Korea, New Zealand, United States, Japan
432	Thermostats.	903210		Products include thermostats that control the efficiency of air conditioning, refrigeration or heating systems.	Canada, Japan, New Zealand, United States
433	Manostats.	903220		Manostats measure and monitor pressure and are used for controlling pumps and chemical feed equipment in applications such as	Canada, Japan, Korea, New Zealand,

ENTRY	HS CODE DESCRIPTION	HS (2002)	EX-OUT / ADDITIONAL PRODUCT SPECIFICATION	REMARKS / ENVIRONMENTAL BENEFIT	MEMBER
				wastewater treatment.	United States
434	Hydraulic and pneumatic instruments and apparatus.	903281		These include control-related instruments and apparatus which have many environmental applications such as water treatment, wastewater treatment, air pollution control as well as efficient process controls for many industrial applications.	Canada, Japan, Korea, New Zealand, United States
436	-Parts and accessories for nominated articles of subheading 9032.	903290		These are the parts for the automatic regulating and control instruments classified in 9032 and described.	Canada, Japan, New Zealand, United States, Korea
	Parts and accessories (not specified or included elsewhere in this Chapter) for machines, appliances, instruments or apparatus of Chapter 90.	903300		These are the parts and accessories for the products described above.	Canada, European Communities, Japan, Korea, New Zealand, United States

Proposed Coverage of Environmental Goods for EVSL (APEC)

	Env. Activity	HTS No.		HS 6-Digit Description	Additional Product Specification
1	R/C	2302.10	ex	Bran, sharps and other residues, whether or not in the form of pellets, derived from the sifting, milling or other working of corn	Booms or socks consisting of ground corn cobs contained in a textile covering
2	WWM	3926.90	ex	Other articles of plastics and articles of other materials of headings 3901 to 3914; other	Bio-film medium that consists of woven fabric sheets that facilitate the growth of bio-organisms.
3	WWM	3926.90	ex	Other articles of plastics and articles of other materials of headings 3901 to 3914; other	Rotating biological contactor consisting of stacks of large (HDPE) plates that facilitate the growth of bio-organisms.
4	WWM	4601.20	ex	Mats, matting, and screens of vegetable materials	Erosion control matting (biodegradable)
5	WWM	4601.20	ex	Mats, matting, and screens of vegetable materials	Ecologically safe ground covers (biodegradable)
6	WWM	5603.14	ex	Non-wovens, whether or not impregnated, coated, covered or laminated: of manmade filaments; weighing more than 150 g/m <sup>2</sup>	Fabric of polyethylene/polypropylene/nylon for filtering wastewater.
7	WWM	5911.90	ex	Textile products and articles, for technical uses, specified in note 7 to this chapter; other	Environmental protection cloth
8	M/A	6902.10	ex	Refractory bricks, blocks, tiles and similar refractory ceramic constructional goods, other than those of siliceous fossil meals or similar siliceous earths; containing by weight, singly or together, more than 50% of the elements Mg, Ca or Cr, expressed as MgO, CaO or Cr <sub>2</sub> O <sub>3</sub>	Industrial incineration
9	M/A	6902.20	ex	Refractory bricks, blocks, tiles and similar refractory ceramic constructional goods, other than those of siliceous fossil meals or similar siliceous earths; containing by weight more than 50% of alumina (Al <sub>2</sub> O <sub>3</sub> ), of silica (SiO <sub>2</sub> ) or of a mixture or compound of these products	Industrial incineration

	Env. Activity	HTS No.		HS 6-Digit Description	Additional Product Specification
10	M/A	6902.90	ex	Refractory bricks, blocks, tiles and similar refractory ceramic constructional goods, other than those of siliceous fossil meals or similar siliceous earths; other	Industrial incineration
11	M/A	6903.10	ex	Other refractory ceramic goods (for example, retorts, crucibles, muffles, nozzles, plugs, supports, cupels, tubes, pipes, sheaths and rods), other than those of siliceous fossil meal or of similar siliceous earths; containing by weight more than 50% of graphite or other carbon or of a mixture of these products	Laboratory refractory equipment
12	M/A	6903.20	ex	Other refractory ceramic goods (for example, retorts, crucibles, muffles, nozzles, plugs, supports, cupels, tubes, pipes, sheaths and rods), other than those of siliceous fossil meal or of similar siliceous earths; containing by weight more than 50% of alumina (Al <sub>2</sub> O <sub>3</sub> ) or of a mixture or compound of alumina and silica (SiO <sub>2</sub> )	Laboratory refractory equipment
13	M/A	6903.90	ex	Other refractory ceramic goods (for example, retorts, crucibles, muffles, nozzles, plugs, supports, cupels, tubes, pipes, sheaths and rods), other than those of siliceous fossil meal or of similar siliceous earths; other	Laboratory refractory equipment
14	M/A	6909.19	ex	Ceramic wares for laboratory, chemical or other technical uses; other	Laboratory equipment
15	M/A	7017.10		Laboratory, hygienic or pharmaceutical glassware, whether or not graduated or calibrated; of fused quartz or other fused silica	
16	M/A	7017.20		Laboratory, hygienic or pharmaceutical glassware, whether or not graduated or calibrated; of other glass having a linear coefficient of expansion not exceeding 5 X 10 <sup>-6</sup> per Kelvin within a temperature range of 0 C - 300 C	

	Env. Activity	HTS No.		HS 6-Digit Description	Additional Product Specification
17	M/A	7017.90		Laboratory, hygienic or pharmaceutical glassware, whether or not graduated or calibrated; other	
18	APC	8404.10		Auxiliary plant for use with boilers of heading No. 8402 or 8403 (for example, economizers, super-heaters, soot removers, gas recoverers)	
19	APC	8404.20		Condensers for steam or other vapour power units	
20	APC	8405.10	ex	Producer gas or water gas generators, with or without their purifier; acetylene gas generators and similar water process gas generator, with or without their purifiers	Include only those with purifiers.
21	N/V	8409.91	ex	Parts suitable for use solely or principally with the engines of heading No. 8407 or 8408; suitable for use solely or principally with spark-ignition internal combustion piston engines.	Industrial mufflers
22	APC	8409.99	ex	Parts suitable for use solely or principally with the engines of heading No. 8407 or 8408; other	Industrial mufflers
23	REP	8410.11		Hydraulic turbines and water wheels of a power not exceeding 1,000 kW	
24	REP	8410.12		Hydraulic turbines and water wheels of a power exceeding 1,000 kW but not exceeding 10,000 kW	
25	REP	8410.13		Hydraulic turbines and water wheels of a power exceeding 10,000 kW	
26	REP	8410.90		Hydraulic turbines and water wheels; parts, including regulators	
27	WWM	8413.60	ex	Pumps for liquids, whether or not fitted with a measuring device; other rotary positive displacement pumps	Submersible mixer pump to circulate water in wastewater treatment process; sewage pumps, screw type

	Env. Activity	HTS No.		HS 6-Digit Description	Additional Product Specification
28	WWM	8413.70	ex	Pumps for liquids, whether or not fitted with a measuring device; other centrifugal pumps	Centrifugal pumps lined to prevent corrosion; centrifugal sewage pumps
29	PWT	8413.81	ex	Pumps for liquids, whether or not fitted with a measuring device; other pumps	Wind turbine pump
30	M/A	8414.10		Vacuum pumps	
31	APC	8414.59		Fans (and blowers) other than table, floor, window, ceiling or roof fans with a self contained electric motor of an output not exceeding 125W	
32	M/A	8414.80		Air or vacuum pumps, air or other gas compressors and fans; ventilating or recycling hoods incorporating a fan, whether or not fitted with filters; other	
33	S/H	8417.80	ex	Industrial or laboratory furnaces and ovens, including incinerators, non-electric; other than bakery ovens and furnaces for treatment of ores	Waste Incinerators
34	S/H	8417.90	ex	Parts of Industrial or Laboratory Furnaces and Ovens, Including Incinerators, Non-electric	Parts of waste incinerators
35	REP	8419.19	ex	Other instantaneous or storage water heaters, non-electric	Solar Water Heaters
36	M/A	8419.40		Distilling or rectifying plant	
37	H/E	8419.50		Heat exchange units	
38	M/A	8419.60		Machinery for liquefying air or other gases	
39	M/A	8421.19		Centrifuges, including centrifugal dryers, other than cream separators and clothes-dryers	
40	WWM	8421.21		Filtering or purifying machinery and apparatus for liquids: for filtering or purifying water	
41	WWM	8421.29		Filtering or Purifying Machinery and Apparatus For Liquids; other	

	Env. Activity	HTS No.		HS 6-Digit Description	Additional Product Specification
42	APC	8421.39		Filtering or Purifying Machinery and Apparatus For Gases; other	
43	M/A	8421.91	ex	Parts of Centrifuges, Including Centrifugal Dryers	Centrifuges, Accessories & Parts; except clothes dryers and clothes dryer furniture
44	APC	8421.99		Parts of filtering or purifying machinery and apparatus for liquids or gases	
45	ORS	8422.20		Machinery for cleaning or drying bottles or other containers	
46	WWM	8428.33	ex	Other continuous-action elevators and conveyors, for goods or materials; other, belt type	Belt-type above ground conveyor used to transfer solids or slurries between plants
47	WWM	8436.80	ex	Other agricultural, horticultural, forestry, poultry-keeping or bee-keeping machinery	Hot water weed killing system
48	S/H	8462.91	ex	Machine tools for working metal, other than punching or notching and combined punching and shearing; hydraulic presses	Shredders/balers for metals; hydraulic
49	S/H	8472.90	ex	Other office machines	Paper shredders
50	S/H	8474.10	ex	Sorting, screening, separating or washing machines	Machines of a kind for use in screening and washing coal
51	ORS	8474.10	ex	Sorting, screening, separating or washing machines	Waste foundry sand reclamation equipment
52	ORS	8474.32	ex	Machines for mixing mineral substances with bitumen	Asphalt recycle equipment
53	WWM	8479.82	ex	Mixing, kneading, crushing, grinding, screening, sifting, homogenizing emulsifying or stirring machines	Agitator for wastewater treatment
54	ORS	8479.82	ex	Mixing, kneading, crushing, grinding, screening, sifting, homogenizing emulsifying or stirring machines	Other than kneading machinery
55	S/H	8479.89	ex	Machines and mechanical appliances having individual functions, not elsewhere specified or included in this chapter, other	Radioactive waste press

	Env. Activity	HTS No.		HS 6-Digit Description	Additional Product Specification
56	WWM	8479.89	ex	Machines and mechanical appliances having individual functions, not elsewhere specified or included in this chapter, other	Trash compactors
57	PWT	8479.90	ex	Parts of Machines and mechanical appliances having individual functions, not elsewhere specified or included in this chapter, other	Parts of trash compactors
58	REP	8502.31		Generating sets, electric, wind-powered	
59	S/H	8505.90	ex	Electro-magnets; other, including parts	Electromagnet
60	S/H	8514.10	ex	Industrial or Laboratory Furnaces and Ovens; electric, resistance heated	Waste incinerators or other waste treatment apparatus
61	S/H	8514.20	ex	Industrial or Laboratory Furnaces and Ovens; electric, induction or dielectric	Waste incinerators or other waste treatment apparatus
62	S/H	8514.30	ex	Industrial or Laboratory Furnaces and Ovens, electric, other	Waste incinerators or other waste treatment apparatus
63	S/H	8514.90	ex	Parts of industrial or laboratory electric furnaces and ovens or other laboratory induction or dielectric heating equipment	Parts of Waste incinerators
64	REP	8541.40	ex	Photosensitive semiconductor devices, including photovoltaic cells whether or not assembled in modules or made up into panels; light emitting diodes	Solar cells
65	WWM	8543.89	ex	Electrical machines and apparatus, having individual functions, not specified or included elsewhere in this chapter; other	Ozone production system
66	R/C	8907.10	ex	Inflatable rafts	Inflatable oil spill recovery barges
67	R/C	8907.90	ex	Other floating structures	Pollution protection booms
68	M/A	9015.40		Photogrammetrical surveying instruments and appliances	

	Env. Activity	HTS No.		HS 6-Digit Description	Additional Product Specification
69	M/A	9015.80		Other surveying, hydrographic, oceanographic, hydrological, meteorological or geophysical instruments and appliances, excluding compasses	
70	M/A	9015.90	ex	Parts and accessories of surveying, hydrological, meteorological, or geophysical instruments and appliances, excluding compasses	Photogrammetric instruments; parts and accessories for articles of subheading 9015.40
71	M/A	9022.29		Apparatus based on the use of X-rays or of alpha, beta or gamma radiations for other than medical, surgical, dental or veterinary uses	
72	M/A	9022.90	ex	Apparatus based on the use of X-rays or of alpha, beta or gamma radiations for other than medical, surgical, dental or veterinary uses	Parts and accessories for goods of subheading 9022.29
73	M/A	9025.11		Thermometers and pyrometers, not combined with other instruments: liquid-filled, for direct reading	
74	M/A	9025.19		Thermometers and pyrometers, not combined with other instruments: other than liquid-filled, for direct reading	
75	M/A	9025.80		Hydrometers and similar floating instruments, thermometers pyrometers, barometers, hygrometers, and psychrometers, recording or not, and any combination of these instruments	
76	M/A	9025.90		Parts and Accessories for Hydrometers and similar floating instruments, thermometers pyrometers, barometers, hygrometers, and psychrometers, recording or not, and any combination of these instruments	
77	M/A	9026.10		Instruments and apparatus for measuring or checking the flow or level of liquid	
78	M/A	9026.20		Instruments and apparatus for measuring or checking pressure	
79	M/A	9026.80		Other instruments and apparatus	

	Env. Activity	HTS No.		HS 6-Digit Description	Additional Product Specification
80	M/A	9026.90		Parts and accessories for articles of subheading 9026	
81	M/A	9027.10		Gas or smoke analysis apparatus	
82	M/A	9027.20		Chromatographs and electrophoresis instruments	
83	M/A	9027.30		Spectrometers, Spectrophotometers and Spectrographs Using Optical Radiations (Ultraviolet, Visible, Infrared)	
84	M/A	9027.40		Exposure Meters	
85	M/A	9027.50		Other instruments and apparatus using optical radiations (UV, visible, IR)	
86	M/A	9027.80		Other instruments and apparatus for physical or chemical analysis	
87	M/A	9027.90		Microtomes; parts and accessories	
88	M/A	9028.10		Gas Meters	
89	M/A	9028.20		Liquid Meters	
90	M/A	9028.30		Electricity Meters	
91	M/A	9028.90		Parts and accessories for articles of subheading 9028	
92	M/A	9030.10		Instruments and apparatus for measuring or detecting ionising radiations	
93	M/A	9030.20		Cathode-ray Oscilloscopes and Cathode-ray Oscillographs	
94	M/A	9030.31		Multimeters	
95	M/A	9030.39		Other instruments and apparatus, for measuring or checking voltage, current, resistance or power, without a recording device	
96	M/A	9030.83		Other instruments and apparatus for measuring or checking electrical quantities, with a recording device	

	Env. Activity	HTS No.		HS 6-Digit Description	Additional Product Specification
97	M/A	9030.89		Other Instruments and Apparatus for Measuring or Checking Electrical Quantities	
98	M/A	9030.90	ex	Parts and accessories (for nominated articles of subheading 9030)	
99	M/A	9031.10		Machines for Balancing Mechanical Parts	
100	M/A	9031.20		Test Benches	
101	M/A	9031.30		Profile Projectors	
102	M/A	9031.80		Other Measuring or Checking Instruments, Appliances and Machines, not elsewhere specified in this chapter	
103	M/A	9031.90	ex	Parts and accessories (for nominated articles of subheading 9031)	
104	M/A	9032.10		Thermostats	
105	M/A	9032.20		Manostats	
106	M/A	9032.81		Hydraulic and Pneumatic Instruments and Apparatus	
107	M/A	9032.89		Automatic Regulating or Controlling Instruments, other	
108	M/A	9032.90		Parts and accessories	
109	M/A	9033.00		Parts and Accessories (Not Specified or Included Elsewhere in this Chapter) for Machines, Appliances, Instruments or Apparatus of Ch. 90	

APC = Air Pollution Control // ORS = Other Recycling Systems // S/H = Solid/Hazardous Waste // H/E = Heat/Energy Management // PWT = Potable Water Treatment // WWM = Waste Water Management // M/A= Monitoring/Analysis // R/C = Remediation/cleanup // N/V = Noise/vibration abatement // REP= Renewable Energy Plant

## OECD's Illustrative Categories of Environmental Goods

Description	HS Code
<b>A. POLLUTION MANAGEMENT</b>	
<b>1. Air pollution control</b>	
<i>1.1 Air-handling equipment</i>	
Vacuum pumps	
Compressors of a kind used in refrigerating equipment	841410
Air compressors mounted on a wheeled chassis for towing	841430
Other air or gas compressors or hoods	841440
Parts for air or gas compressors, fans or hoods	841480
	841490
<i>1.2 Catalytic converters</i>	
Filtering or purifying machinery and apparatus for gases	
Parts for filtering or purifying machinery	842139
	842199
<i>1.3 Chemical recovery systems</i>	
Limestone flux	
Slaked (hydrated) lime	252100
Magnesium hydroxide and peroxide	252220
Activated earths	281610
Filtering or purifying machinery and apparatus for gases* Parts for filtering or purifying machinery*	842139
	842199
<i>1.4 Dust collectors</i>	
Filtering or purifying machinery and apparatus for gases* Parts for filtering or purifying machinery*	842139
	842199
<i>1.5 Separators/precipitators</i>	
Other glass fibre products	
Machinery for liquefying air or other gases	701990
Other machinery for treatment of materials by change of temperature	841960
Filtering or purifying machinery and apparatus for gases*	841989
Parts for filtering or purifying machinery*	842139
	842199
<i>1.6 Incinerators, scrubbers</i>	
Other furnaces, ovens, incinerators, non-electric	
Filtering or purifying machinery and apparatus for gases*	841780
Parts for filtering or purifying machinery* Industrial or laboratory electric resistance furnaces Industrial or laboratory induction or dielectric furnaces Other industrial or laboratory electric furnaces and ovens Parts, industrial or laboratory electric furnaces	842139
	842199
	851410
	851420
<i>1.7 Odour control equipment</i>	
Parts for sprayers for powders or liquids	851430
	851490
	842490

Description	HS Code
<b>2. Wastewater management</b>	
<i>2.1 Aeration systems</i>	
Compressors of a kind used in refrigerating equipment*	841430
Air compressors mounted on a wheeled chassis for towing*	841440
Other air or gas compressors or hoods*	841480
Parts for air or gas compressors, fans or hoods*	841490
<i>2.2 Chemical recovery systems</i>	
Limestone flux*	252100
Slaked (hydrated) lime*	252220
Chlorine	280110
Anhydrous ammonia	281410
Sodium hydroxide solid.	281511
Sodium hydroxide in aqueous solution	281512
Magnesium hydroxide and peroxide*	281610
Activated earths*	281830
Aluminium hydroxide	282010
Manganese dioxide	282090
Manganese oxides (other)	282410
Lead monoxide	283210
Sodium sulphites	283220
Other sulphites	283510
Phosphinates and phosphonates	283521
Phosphates of triammonium	283822
Phosphates of monosodium or disodium	283523
Phosphates of trisodium	283524
Phosphates of potassium	283525
Calcium hydrogenorthophosphate	283526
Other phosphates of calcium	283529
Other phosphates (excl. polyphosphates)	380210
Activated carbon	842121
Water filtering or purifying machinery and apparatus	842129
Other machinery for purifying liquids	842199
Parts for filtering or purifying machinery*	
<i>2.3 Biological recovery systems</i>	
<i>2.4 Gravity sedimentation systems</i>	
Flocculating agents	
<i>2.5 Oil/water separation systems</i>	
Other centrifuges	842119
Parts of centrifuges	842191
Water filtering or purifying machinery and apparatus* Other machinery for purifying liquids*	842121
Parts for filtering or purifying machinery*	842129
	842199
<i>2.6 Screens/strainers</i>	
Other articles of plastic	392690
Water filtering or purifying machinery and apparatus* Other machinery for purifying liquids*	842121 .
	842129

Description	HS Code
Parts for filtering or purifying machinery*	842199
<i>2.7 Sewage treatment</i>	
Flocculating agents	580190
Woven pile & chenille fabrics of other textile materials	730900
Tanks, vats, etc. > 300l	731010
Tanks, drums, etc. >50 l < 300 l	731021
Cans < 50 l, closed by soldering or crimping	731029
Other cans < 50l	841000
Hydraulic turbines	841011
	841012
	841013
Parts for hydraulic turbines	841090
Incinerators, non-elec*	841780
Weighing machines capacity <30 kg	842381
Weighing machines capacity >30 kg <500 kg	842382
Weighing machines	842389
Parts for sprayers for powders or liquids* Industrial/lab	842490
electric resistance furnaces* Industrial/lab induction,	851410
dielectric furnaces* Industrial/lab electric furnaces &	851420
ovens, nes* Parts, incl & lab elec furnaces*	851430
<i>2.8 Water pollution control, wastewater reuse equipment</i>	851490
<i>2.9 Water handling goods and equipment</i>	
Articles of cast iron	
Root control equipment	
Positive displacement pumps, hand operated	732510
Other reciprocating positive displacement pumps	
Other rotary positive displacement pumps	841320
Other centrifugal pumps	841350
Other pumps	841360
Valves, pressure reducing	841370
Valves, check	841381
Valves, safety	848110
Other taps, cocks, valves, etc.	848130
Instruments for measuring the flow or level of liquids	848140
Instruments for measuring or checking pressure	848180
<b>3. Solid waste management</b>	902610
	902620
<i>3.1 Hazardous waste storage and treatment equipment</i>	
Other articles of cement, concrete	
Other articles of lead	
Other electric space heating and soil heating apparatus	681099
Lasers	780600
Vitrification equipment*	851629
	901320

Description	HS Code
<p><i>3.2 Waste collection equipment</i> Household &amp; toilet articles of plastic</p>	392490
<p>Brooms, hand Brushes as parts of machines, appliances Mechanical floor sweepers Trash bin liners (plastic)</p>	960310 960350 980390
<p><i>3.3 Waste disposal equipment</i> Compactors Refuse disposal vehicles Polypropylene sheeting, etc.</p>	392020
<p><i>3.4 Waste handling equipment</i></p>	
<p><i>3.5 Waste separation equipment</i> Magnetic separators</p>	
<p><i>3.6 Recycling equipment</i> Magnetic separators* Machinery to clean, dry bottles, etc. Other mixing or kneading machines for earth, stone, sand, etc. Other machines for mixing/grinding, etc. Other machines, nes, having individual functions Tire-shredding machinery</p>	842220 847439 847982 847989
<p><i>3.7 Incineration equipment</i> Other furnaces, ovens, incinerators, non-electric* Parts of furnaces, non-electric Industrial or laboratory electric resistance furnaces* Industrial or laboratory induction or dielectric furnaces* Other industrial or laboratory electric furnaces and ovens* Parts, industrial or laboratory electric furnaces*</p>	841780 841790 851410 851420 851430 851490
<p><b>4. Remediation and cleanup</b></p>	
<p><i>4.1 Absorbents</i></p>	
<p><i>4.2 Cleanup</i> Other electric space heating and soil heating apparatus* Lasers* Vitrification equipment*</p>	851629 901320
<p><i>4.3 Water treatment equipment</i> Surface active chemicals (not finished detergents) Oil spillage cleanup equipment Other electrical machines and apparatus with one function</p>	
<p><b>5. Noise and vibration abatement</b></p>	
<p><i>5.1 Mufflers/silencers</i></p>	854389

Description	HS Code
Parts for spark-ignition internal combustion piston engines Parts for diesel or semi-diesel engines Silencers and exhaust pipes, motor vehicles	840991 840999 870892
5.2 Noise deadening material	
5.3 Vibration control systems	
5.4 Highway barriers	
<b>6. Environmental monitoring, analysis and assessment</b>	
6.1 Measuring and monitoring equipment Thermometers, pyrometers, liquid-filled Other thermometers, pyrometers Hydrometers, barometers, hygrometers, etc.	902511 902519
Other instruments for measuring liquids or gases	902580
Parts of instruments for measuring, checking liquids or gases	902680
Instruments for analysing gas or smoke	902690
Chromatographs, etc.	902710
Spectrometers, etc.	902720
Exposure meters	902730
Other instruments using optical radiation	902740
Other instruments for physical or chemical analysis	902750
Parts for instruments, incl. microtomes	902780
Ionising radiation measuring & detecting instruments	902790
Other optical instruments	903010
Other measuring or checking instruments	903149
Manostats	903180
Hydraulic/pneumatic automatic regulate, control instruments	903220
Other automatic regulate, control instruments	903281
Auto emissions testers	903289
Noise measuring equipment	
6.2 Sampling systems	
6.3 Process and control equipment	
Thermostats	
Electrical process control equipment	
On-board monitoring/control	903210
6.4 Data acquisition equipment	
6.5 Other instruments/machines	
<b>B. CLEANER TECHNOLOGIES AND PRODUCTS</b>	
<b>1. Cleaner/resource efficient technologies and processes</b>	
Electrochemical apparatus / plant	
Extended cooking (pulp)	
Oxygen delignification	

Description	HS Code
Ultrasonic cleaning Fluidised bed combustion	
<b>2. Cleaner/resource efficient products</b>	
CFC substitutes Hydrogen peroxide Peat replacements (e.g. bark) Water-based adhesives Paints and varnishes, in aqueous medium, acrylic or vinyl Other paints and varnishes, in aqueous medium Double-hulled oil tankers Low-noise compressors	280110     320910 320990
<b>C. RESOURCES MANAGEMENT GROUP</b>	
<b>1. Indoor air pollution control</b>	
<b>2. Water supply</b>	
<i>2.1 Potable water treatment</i>	
<i>2.2 Water purification systems</i>	
Chlorine*	
<i>2.3 Potable water supply and distribution</i>	
Water, incl.	280110
natural or artificial mineral water	
Distilled and	
conductivity water	220100
Ion exchangers (polymer)	285100 391400
<b>3. Recycled materials</b>	
<i>3.1 Recycled paper</i>	
<i>3.2 Other recycled products</i>	
<b>4. Renewable energy plant</b>	
<i>4.1 Solar</i>	
Instantaneous gas water heaters	
Other instantaneous or storage water heaters, non-electric	
Photosensitive semiconductor devices, incl. solar cells	841911 841919
<i>4.2 Wind</i>	
Windmills	854140
Wind	
turbines	
<i>4.3 Tidal</i>	
<i>4.4 Geothermal</i>	

Descriptio	HS Code
4.5 Other	
Methanol	290511
Ethanol	220710
Hydroelectric plant	
<b>5. Heat/energy savings and management</b>	
Catalysts	381500
Multiple walled insulating units of glass	700800
Other glass fibre products*	701990
Heat exchange units	841950
Parts for heat exchange equipment	841990
Heat pumps	
District heating plant	
Waste heat boilers	
Burners: fuel other than oil or gas	
Fluorescent lamps, hot cathode	853931
Electric cars	
Fuel cells	
Gas supply, production and calibrating metres	902810
Liquid supply, production and calibrating metres	902820
Thermostats*	903210
<b>6. Sustainable agriculture and fisheries</b>	
<b>7. Sustainable forestry</b>	
<b>8. Natural risk management</b>	
Satellite imaging	
Seismic instruments	
<b>9. Eco-tourism</b>	
<b>10. Other</b>	

\* Indicates that the HS code appears previously in the table.

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