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**Patricia Iturregui**  
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# **HWWA Discussion Paper**

## **Liberalisation of Environmental Goods & Services and Climate change**

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HWWA Discussion Paper 335

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## **Liberalisation of Environmental Goods & Services and Climate Change**

### **ABSTRACT**

This paper attempts to show how WTO negotiations on liberalisation of environmental goods and services can have a negative or positive impact on the international climate change policy depending on the outcome of the Doha Mandate paragraph 31 debates. Certainly there has been no significant progress on the definition or classification of environmental goods and services given the wide spectrum of positions. However, the size of the environmental market is not little and a pragmatic approach for negotiations can be to reduce the issue by parts in problem areas being one of them air pollution and climate. In order to succeed in the task some conditions must be achieved, namely balancing interests from OECD and non OECD countries, identification of a list of key goods and services, tackling barriers to trade and avoiding “pollution transfer“

**Keywords:** WTO and UNFCCC, liberalization of environmental goods and services, air pollution and climate

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## **Introduction**

The relation between the World Trade Organization (WTO) and multilateral environmental agreements (MEAs) is controversial by nature. There is a need for environmental and trade authorities of countries to initiate a comprehensive analysis and action to ensure consistency of international decisions including the proposal that WTO policies must also be subject to strategic impact assessments. This work presents preliminary findings showing that there is an important influence on greenhouse gas (ghg) emissions and air pollution depending on the outcome of negotiations related to the liberalisation of environmental goods and services. The careful analysis within WTO of trade measures pursuant multilateral environmental agreements does not show a comparable effort on important environmental agreements such as the UNFCCC.

### **1. The need for a comprehensive analysis of the WTO and UNFCCC process**

The WTO's main purpose is the deregulation of domestic barriers to international trade of goods and services (externalisation of costs) while the multilateral environmental agreements are aiming at committing countries with policies and measures to control the negative impact of human activities (internalisation of these environmental costs). For the case of the UNFCCC, as far as trade causes a rise in greenhouse gases, it will possibly lead to a reduction in cross-border transport and trade in the long term,<sup>1</sup> whereas the WTO seeks to expand cross-border goods exchange.

This substantially different approach is currently circumvented by the constant reference in both types of international debates as "mutual supportiveness of trade and environment", language agreed in Agenda 21 (1992).

It has been said that conflicting interests and values at international level reflect similar conflicts at national level; however, the latter are taking place within a clearer governance system, whereas at the international level governance has up to now been largely missing (Santarius et al. 2005).

One illustration of this fact is that in the context of the 2001 Doha Mandate, the WTO Ministerial Conference has powers to clarify the relationship between world trade law and multilateral environmental law, without having to reach agreement with the UNEP or the inter-ministerial conferences that take place within the framework of environmental agreements (ibid.). However, in principle, international environmental law and trade law stand on an equal footing: neither one is subordinate to the other.

Although it is unclear, whether negotiations on the Doha Mandate (paragraph 31) will conclude soon, the Dispute Settlement (DS) Body of the WTO has the attribution to settle disputes between States at their request, including a dispute due to an environmental measure or policy coming from a multilateral environmental agreement,<sup>2</sup> although the DS Body members are not required to be experts in environmental law and policy. Sanctions authorised by this Body can have a direct consequence on a country's economy.

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<sup>1</sup> Mainly due to fossil fuel savings, although global markets in which capital and production moves freely across frontiers work precisely because of the differences between localities, nations and regions

<sup>2</sup> So far there has not been such a case but there is currently an ongoing case between the US and the EU related to biotech products (WT/DS291/1). The panel report was supposed to be released by June this year but has been delayed to December.

## Box 1

### Trade and environment (Doha Ministerial Declaration 2001)

§31. With a view to enhancing the mutual supportiveness of trade and environment, we agree to negotiations, without prejudging their outcome, on:

(i) the relationship between existing WTO rules and specific trade obligations set out in multilateral environmental agreements (MEAs). The negotiations shall be limited in scope to the applicability of such existing WTO rules as among parties to the MEA in question. The negotiations shall not prejudice the WTO rights of any Member that is not a party to the MEA in question;

(ii) procedures for regular information exchange between MEA Secretariats and the relevant WTO committees, and the criteria for the granting of observer status;

**(iii) the reduction or, as appropriate, elimination of tariff and non-tariff barriers to environmental goods and services.**

We note that fisheries subsidies form part of the negotiations provided for in paragraph 28.

§32. We instruct the Committee on Trade and Environment, in pursuing work on all items on its agenda within its current terms of reference, to give particular attention to:

(i) the effect of environmental measures on market access, especially in relation to developing countries, in particular the least-developed among them, and those situations in which the elimination or reduction of trade restrictions and distortions would benefit trade, the environment and development;

(ii) the relevant provisions of the Agreement on Trade-Related Aspects of Intellectual Property Rights; and

**(iii) labelling requirements for environmental purposes**

Work on these issues should include the identification of any need to clarify relevant WTO rules. The Committee shall report to the Fifth Session of the Ministerial Conference, and make recommendations, where appropriate, with respect to future action, including the desirability of negotiations. The outcome of this work as well as the negotiations carried out under paragraph 31(i) and (ii) shall be compatible with the open and non-discriminatory nature of the multilateral trading system, shall not add to or diminish the rights and obligations of members under existing WTO agreements, in particular the Agreement on the Application of Sanitary and Phytosanitary Measures, nor alter the balance of these rights and obligations, and will take into account the needs of developing and least-developed countries.

33. We recognise the importance of technical assistance and capacity building in the field of trade and environment to developing countries, in particular the least-developed among them. We also encourage that expertise and experience be shared with members wishing to perform environmental reviews at the national level. A report shall be prepared on these activities for the Fifth Session.

Within the mandate of the Committee on Trade and Environment there is no analysis of the environmental impacts of market access provisions or related WTO agreements. For this reason, it has been proposed that the WTO should undertake strategic impact assessments within the Trade Policy Review Mechanism and outside it (Santorius et al. 2005).

As for the UNFCCC and the Kyoto Protocol, the Committee on Trade and Environment of the WTO, apparently has not regarded these environmental agreements as directly containing restrictions to trade. However, it has been stated that actions of countries implementing the UNFCCC could well

have trade implications (WTO 2003), especially measures mentioned in article 3.5 of the Convention that are allowed to be of unilateral nature, and Art. 4.2.a. related to policies and measures to cut greenhouse gas emissions. The Kyoto Protocol lists a wide range of potential areas for action, including energy efficiency, renewable energy sources, removal of market distortions, such as subsidies and transport.

Whether these policies and measures will affect or be perceived to affect competitiveness and prices of a wide range of products, particularly those manufactured by energy intensive processes, will produce the situation by which climate complying Parties will feel the right to introduce compensatory measures for its industries.

Other analyses have been achieved to determine whether emissions trading is consistent or not with WTO rules for non-Parties. However, most articles have held that licenses or permits are a form of governmental regulatory activity, and would not be equivalent to either a good or a service under WTO (Brack & Gay 2003).

## 2. The Doha Mandate and the liberalization of environmental goods and services

As seen in Box 1, § 31 (iii), the Doha declaration mandates the “reduction or, as appropriate, the elimination of tariff and non tariff barriers to environmental goods and services,” which immediately raises the question: what are environmental goods and services?

Usually an environmental good can be understood as equipment, material or technology used to address a particular environmental problem or as a product that is in itself “environmentally preferable” to other similar products because of its relatively benign impact on the environment.

Environmental services have a twofold meaning: (i) as services provided by ecosystems and (ii) as human activities to address particular environmental problems (Palmer 2001). However, within the WTO, environmental services are currently considered only within the concept of human-activity related services.

Whether or not ecosystem services can be considered as environmental services and potentially benefit from preferential treatment in trade is a question for the future.

In this direction a report of the Millennium Ecosystem Assessment (2003) has concluded that unless we take action to mitigate the decline in ecosystem services, the cost to society will be substantial.

The recommendations for promising interventions to improve ecosystem management include, among others, the **elimination of subsidies that promote excessive use of ecosystem services** (and, where possible, transfer of these subsidies to payments for non-marketed ecosystem services) and **greater use of economic instruments and market-based approaches in the management of ecosystem services**.

Currently, 60% of the 24 ecosystem services assessed are being degraded, including fresh water, capture fisheries, air and water purification, the regulation of regional and local climate, natural hazards, and pests. There is established but incomplete evidence that changes made in ecosystems are increasing the likelihood of non-linear changes with important consequences for human well-being. Examples could be disease emergence, abrupt alterations in water quality, creation of “dead zones” in coastal waters, collapse of fisheries, and shifts in regional climate.

While most ecosystem services are not traded in markets, there are three important exceptions: organic food industry (annual exports of USD 100 billion), eco-tourism industry (USD 25 billion in 2003) and the growing market in carbon emission reductions and sequestration services(USD 6 billion in 2005) (Mainka et al. 2005).

Physical accounting studies suggest that the North is a substantial and (at least for some material groups) increasing net importer of natural resources from the South, although the North-South trade



might account for only a small fraction of world trade from a monetary perspective (Giljum & Eisenmenger 2004).

Box 2 List of natural ecosystems (WWF)[1]	
<p><b>1. Terrestrial eco-regions</b></p> <ol style="list-style-type: none"> <li>1. Tropical and subtropical moist broadleaf forests</li> <li>2. Tropical and subtropical dry broadleaf forests</li> <li>3. Tropical and subtropical coniferous forests</li> <li>4. Temperate broadleaf and mixed forests</li> <li>5. Temperate coniferous forests</li> <li>6. Boreal forests/taiga</li> <li>7. Tropical and subtropical grasslands, savannas, and shrub lands</li> <li>8. Temperate grasslands, savannas, and shrub lands</li> <li>9. Flooded grasslands and savannas</li> <li>10. Mountain grasslands and shrub lands</li> <li>11. Tundra</li> <li>12. Mediterranean forests, woodlands, and shrub</li> <li>13. Deserts and xeric shrub lands</li> <li>14. Mangroves</li> </ol>	<p><b>2. Freshwater eco-regions</b></p> <ol style="list-style-type: none"> <li>15. Large rivers</li> <li>16. Large river headwaters</li> <li>17. Large river deltas</li> <li>18. Small rivers</li> <li>19. Large lakes</li> <li>20. Small lakes</li> </ol> <p><b>3. Marine eco-regions</b></p> <ol style="list-style-type: none"> <li>21. Polar</li> <li>22. Temperate shelves and seas</li> <li>23. Temperate upwelling</li> <li>24. Tropical upwelling</li> <li>25. Tropical coral</li> </ol>

## 2.1. Environmental goods and services in the WTO: a pending issue

The “environmental package” of the Doha Round was regarded as a late hour agreement in Qatar, reflecting a delicate balance between rule-making (e.g. fisheries subsidies) and market access such as trade liberalisation in environmental goods and services.<sup>3</sup>

After 4 years, debates are still going on and for the case of environmental goods and services they have been discussed separately although in the real world goods and services are often inseparable. Quantifying the various components of the environmental industry as a whole, it has been stated that environmental services constitute two-thirds of the industry, whereas environmental goods only amounted to one third (ibid.).

Around 40% of the whole market is related to water management (26% of the environmental services market is related to water distribution and purification, 14% for sewage water treatment). A percentage of 22.6 is related to waste management, 6% to consulting services and environmental engineering, 3.5% to remediation and the remaining 28% to various activities including air pollution (Abugatas Majluf 2005).

Developed countries account for 85% of environmental services market, and the US represents half of it. Within developed countries the market has declined and is saturated.

There is no universally adopted technical or legal definition or classification related to environmental services. The current classification within international organisations such as the WTO and the OECD is regarded as outdated by many members, including experts (UNCTAD 2003a).

In the World Trade Organisation, Members generally rely on a GATT classification based on the United Nations Provisional Central Product Classification (CPC).<sup>4</sup> It is called the Services Sector Classification List or ‘W/120’.<sup>5</sup>

<sup>3</sup> See report of the workshop on environmental goods held in February 2004 WTO JOB (O5) 21, [http://www.wto.org/english/tratop\\_e/envir\\_e/wksp\\_goods\\_oct04\\_e/wksp\\_goods\\_oct04\\_e.htm](http://www.wto.org/english/tratop_e/envir_e/wksp_goods_oct04_e/wksp_goods_oct04_e.htm)

<sup>4</sup> Services Sectoral Classification List, MTN.GNS/W/120, www.wto.org.

<sup>5</sup> Classification of ‘environmental services’ is one of 12 service sectors: (1) Business; (2) Communication; (3) Construction and Engineering; (4) Distribution; (5) Education; (6) Environmental; (7) Financial; (8) Health; (9) Tourism and Travel; (10) Recreation, Cultural and Sporting; (11) Transport; and (12) Other.

### Box 3 GATT/CPC classification of environmental services

- 1) Sewage services;
- 2) Refuse disposal services;
- 3) Sanitation and similar services;
- 4) Other environmental services<sup>6</sup>

This classification covers so-called ‘end-of-pipe’ environmental services and does not properly recognise services designed to prevent or reduce environmental harm. The WTO Secretariat has pointed out that modern environmental services that do not fit within the specific environmental service sub-sectors could be covered by the final sub-sector – “other environmental services”.

It is important to distinguish between environmental infrastructure services, mainly related to water and waste management that tends to be a natural monopoly, and professional environmental services, comprising most of activities related to CPC 94.

In the WTO, many Members have supported a proposal by the European Union to revise and expand the classification of ‘environmental services’ [WTO, WT/CTE/GEN/11]. Based on the OECD’s work in classifying ‘environmental services’, the EU has proposed classifying environmental services to include seven ‘core’ categories of ‘pure’ environmental services and seven ‘cluster’/categories of “environmentally-related” services that are covered under other sectors in the GATT/CPC classification list.[WTO, S/CSS/W/38].

The EU’s seven ‘core’ categories of ‘pure’ environmental services are:

- 6A. Water for human use & wastewater management
- 6B. Solid/hazardous waste management
- 6C. **Protection of ambient air and climate**
- 6D. Remediation and cleanup of soil & water
- 6E. Noise & vibration abatement
- 6F. Protection of biodiversity and landscape
- 6G. Other environmental & ancillary services

The EU’s seven ‘cluster’ categories of “environmentally-related” services covered under the remaining 11 GATT/CPC service sectors are those that contain an environmental component.<sup>7</sup>

Colombia, supporting the EC proposal (S/CSS/W/121) as a useful basis for amending the classification of environmental services, has observed that imports of environmental services into developing countries can lead to increased foreign investment, technology transfer, wider coverage and improved environmental and sanitary conditions. However, negotiations to liberalise the environmental sector must, if maintained, take account of each member’s development level . In order to facilitate trade in environmental services, Colombia identified a need for commitments on market access concerning the movement of individuals. Colombia has proposed to add in the EU classification of environmental services:

1. the implementation and auditing of environmental management systems
2. the evaluation and mitigation of environmental impact
3. advice in the design and implementation of clean technologies. [WTO Colombia S/CSS/W/121]

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<sup>6</sup> “Other environmental services” is presumed to include the remaining CPC categories:

- a) cleaning of exhaust gases;
- b) noise abatement services;
- c) nature and landscape protection services; and d) other environmental protection services not included elsewhere. World Trade Organisation, Council for Trade in Services, *Environmental Services – Background Note*, 6 July 1998, S/C/W/46, para.6 (“WTO (1998)”).

<sup>7</sup> Business services, R&D, consulting, contracting & engineering , construction, distribution, transport and others.

However, the EU proposal includes the incorporation of services for purification and water distribution for human consumption and this has proved to be highly controversial and has not been accepted by developed countries and even less by developing countries. Switzerland has also submitted a similar proposal without considering water for human consumption.

The lack of agreement on water issues can be linked to the critical analysis of the privatisation process in the last years in both developed and developing countries. Rejection to water privatisation took place in Argentina (2002) Bolivia (2000) Brazil (1999 and 2002) and others. The World Bank has become also critical of the process. (World Bank 2004) For the case of developed countries the requests have been focused on issues as price (higher than general inflation) and the need for a democratic and targeted evaluation, due to the lack of improvement on indicators such as reliability of supply and environmentally friendly production among others. (Hill 2005)

Another problem with the W/120, and CPC classification is the lack of clarity as to what **energy services** are and whether they can be found, or are included in, i.e. three subcategories are given, namely “services incidental to mining”, “services incidental to energy distribution” and “pipeline transportation of fuels.” (UNCTAD 2003). As seen, there is no separate section on energy services.

Finally, all existing lists, both for environmental goods and services express the competitive advantages of industrialised countries and the import potential of developing countries, so there is the need to balance the interest of developing countries for the liberalisation. (Borregaard et al. 2002)

A further problem associated with the classification of environmental services is their relationship with **environmental goods**. Many suppliers of environmental services integrate their services with environmental goods, such as the manufacturing, installation and maintenance of pollution control equipment.<sup>8</sup> Accordingly, it could be difficult to distinguish between environmental goods and environmental services. It is possible that the goods and services confusion in the environment industry will complicate the application of the General Agreement on Trade and Services- GATS and, if it cannot be addressed through the sector classification, it might be left for Members to resolve on a case-by-case basis.

Within the WTO there is no clear agreement among Members on definition and coverage of environmental goods. There are 2 lists of environmental goods (APEC and OECD) and Member countries of WTO have different proposals. US proposes a list of goods based in the APEC approach plus an additional 46 products, most of which fall into the renewable energy or natural resource protection categories, containing import and tariff data for all goods identified. EC proposes guiding principles for the list should be three: national environmental priorities, international environmental priorities (including multilateral environmental agreements and Millennium Development Goals) and categories of interest to all WTO Members including developing countries, Qatar has proposed a list of efficient, low-carbon and pollutant-emitting fuels & technologies to facilitate the fulfilment of the Climate Change Convention, based on “environmental friendliness” of products and processes. Additionally an important contribution from UNCTAD has been the issue of environmentally preferable products, that will be regarded as “less environmental harm” according to the following criteria: use of natural resources and energy, amount and hazardousness of waste generated by the product along its life cycle, impact on human and animal health and preservation of the environment.

While defining environmental goods for analytical or statistical purposes is a matter of fact, defining environmental goods for the purposes of trade is a matter of policy (Vikhlyayev 2003). Distinguishing between *liked* products, it matters whether one likes –or does not like- a particular product, and given the differences in negotiating perspectives, it is difficult to arrive to shared criteria.

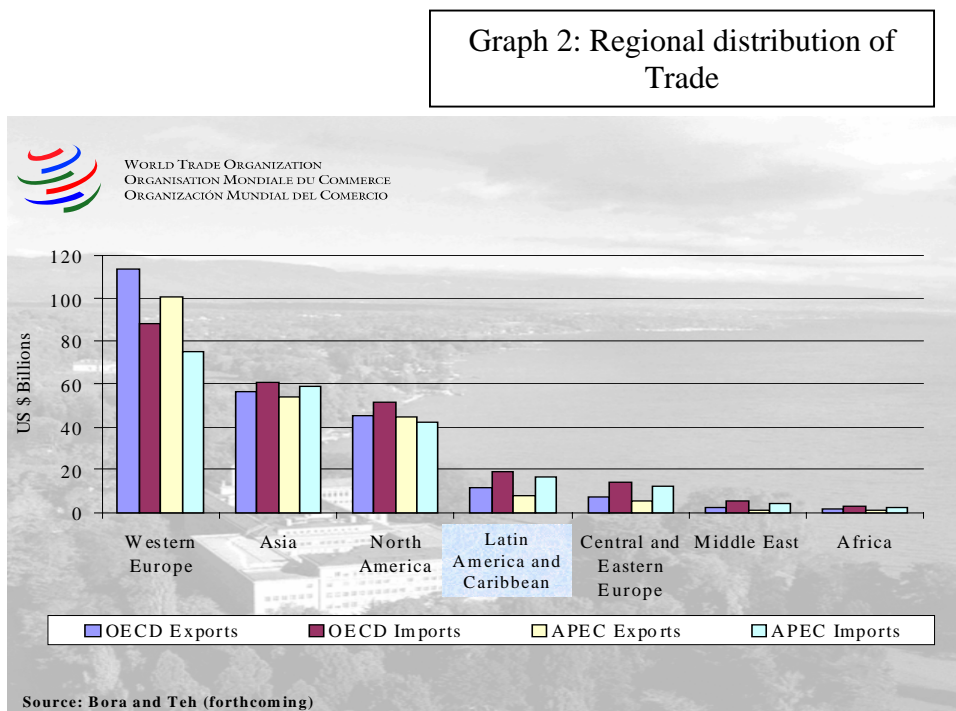
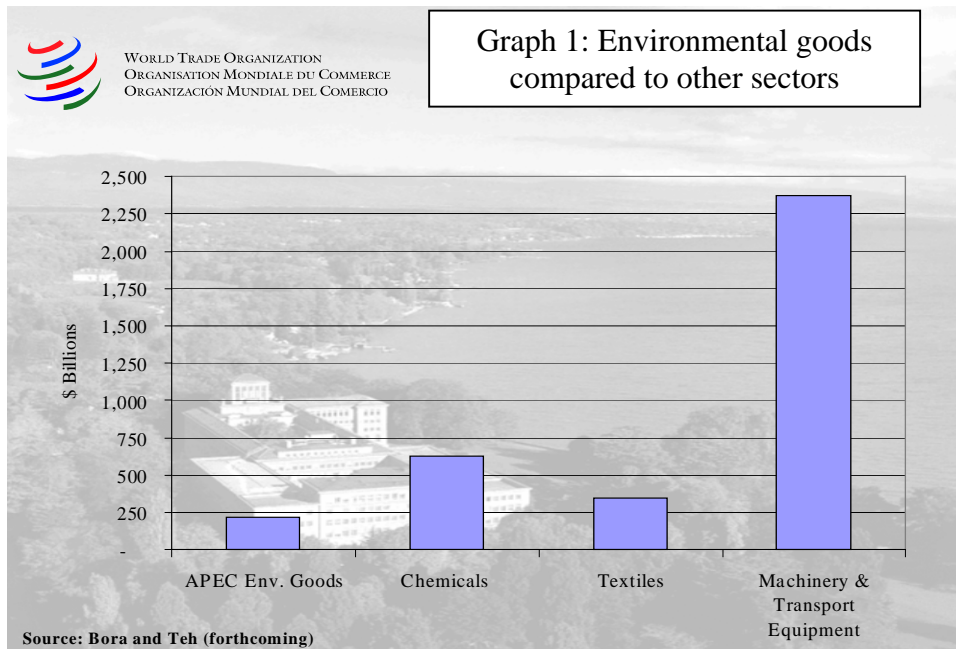
Whatever the criteria would be, the operational part will make countries face problems such as confirmation systems for customs, administrative costs and the identification of environmental goods among similar products. This is a particular concern for developing countries.

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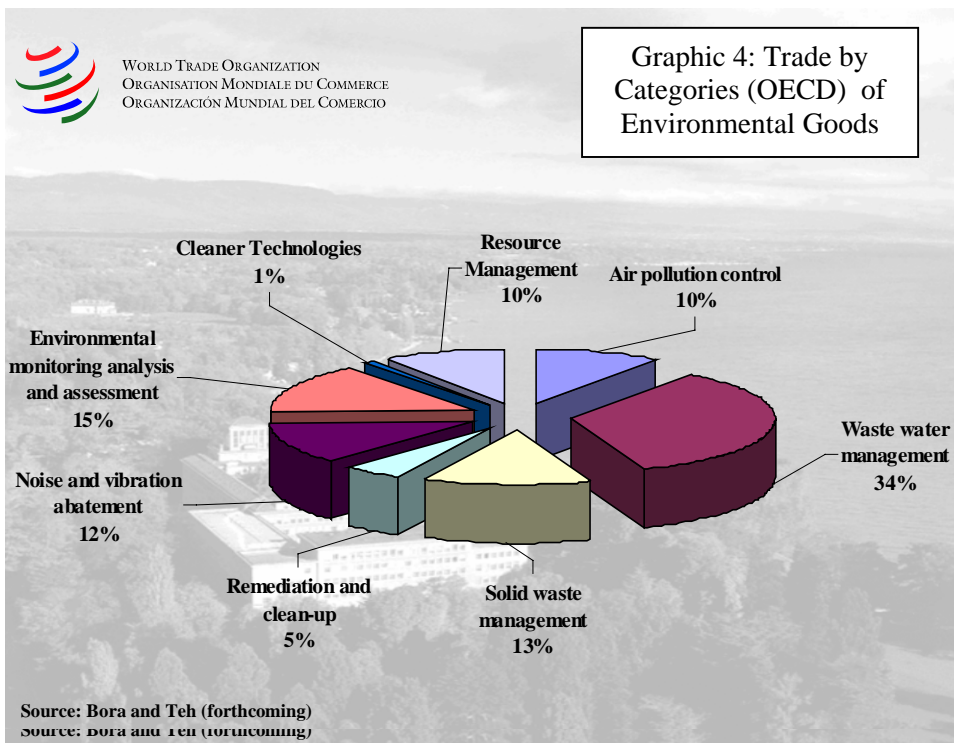
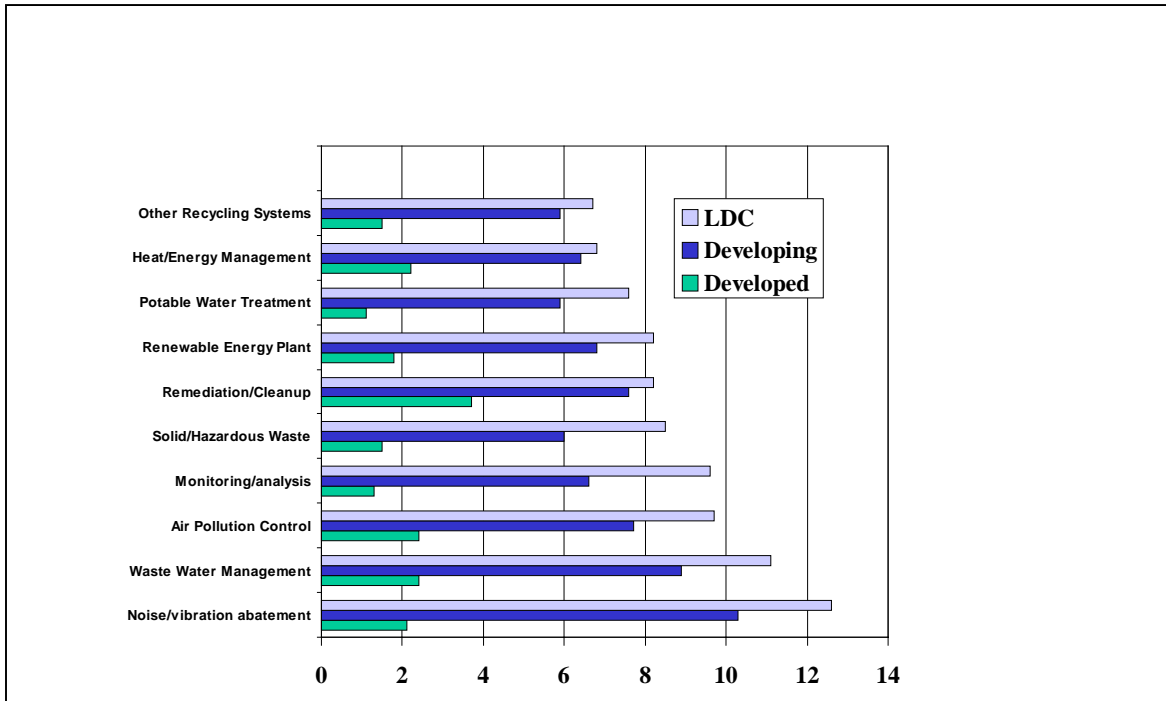
<sup>8</sup> Ecosystems and human well-being – Synthesis (2003)

## 2.2. Size of the environmental market.-

According to WTO data, total exports of environmental goods, were about USD 238.4 billion in 2002 and it is considered a large expanding market. (WTO 2005) In relative terms, it is not as big as the steel or agriculture markets, but roughly the same size as the pharmaceuticals and information technology markets. (UNCTAD 2003 b)



Graph 3: Average Applied Tariffs by Category



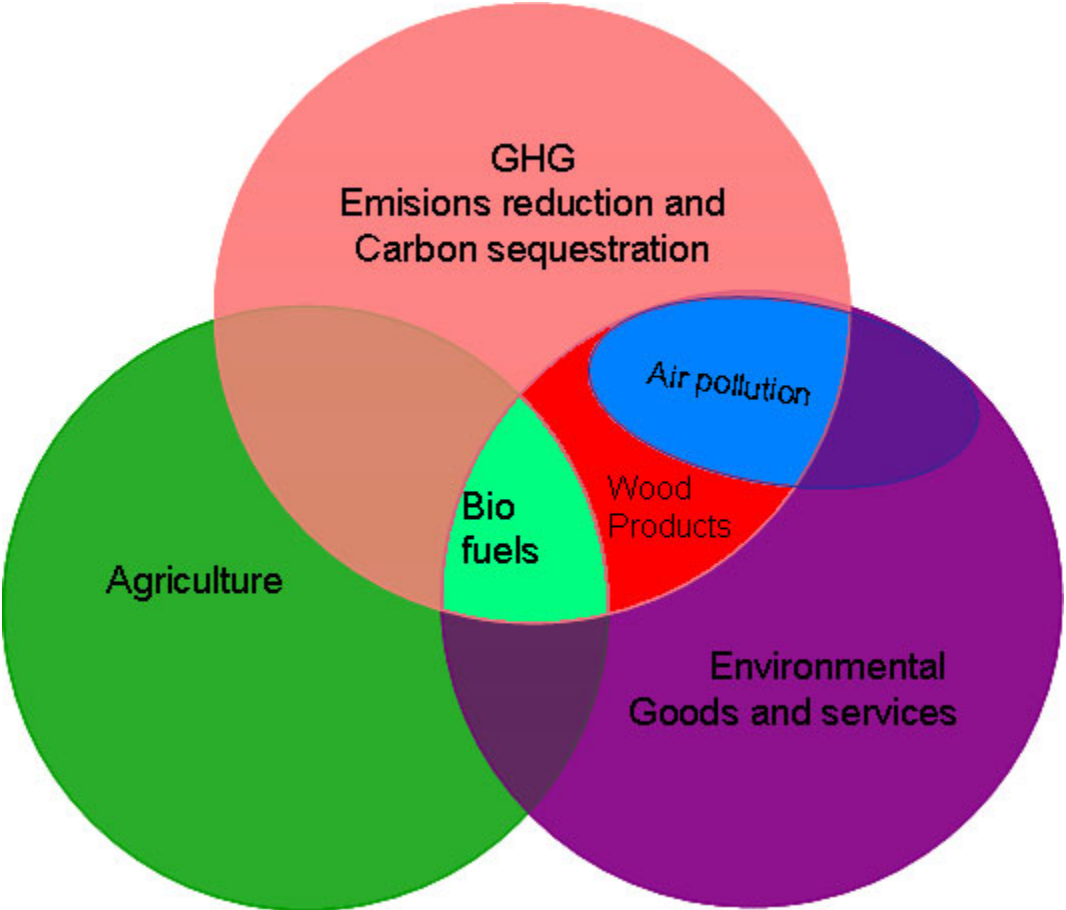
**3. Pragmatic approach for negotiations: air pollution and climate as a problem area.-**

Current Doha negotiations for environmental goods and services are slow and a step forward is not envisaged soon, given the variety of positions and proposals.

An alternative approach to the negotiations is to reduce the vast complexity of the matter and redefine the subject of the negotiations in terms of problem areas. The suggestion has been to take first 3 problem areas: water and sanitation, air pollution and biodiversity loss (Vikhlyaev 2003)If air pollution is prioritised, due to its strong links with greenhouse gas emissions, the problem area should be air pollution and climate. The better way to address the issue is under a comprehensive negotiating approach applicable to both goods and services. The main reason is that opening up the air pollution control services sector while maintaining high tariffs and non-tariff barriers on goods such as air pollution control equipment may not result in meaningful market access.

The subject of air pollution and climate within paragraph 31 of the Doha Mandate will imply a cross-cutting negotiation as observed in the following graph, not only limited to the current outdated lists, including biofuels, wood products and air pollution control.

**Graph 5:  
Environmental Goods & Services and Climate Change**



For these negotiations at least the following conditions must be achieved:

- a. balancing interests from OECD and developing countries
- b. identification of a list of key technologies and services
- c. tackling barriers to trade specific goods and services related to air pollution and climate
- d. avoiding “pollution transfer”

**a. Balancing interests**

§ 16 of the Doha Ministerial Declaration provided the mandate for the negotiations on market access for non-agricultural products which requires:

- Reduction or elimination of tariff-peaks, tariff-escalation as well as non-tariff barriers with emphasis on products of export interest to developing countries
- Take fully into account the special needs and interests of developing and least-developed country participants including less than full reciprocity in reduction commitments,
- Take fully into account the principle of special and differential treatment for developing and least-developed countries

For the case of biofuels, some developing countries have a strong interest to promote true market access for their biofuels and wood products. Ethanol costs estimates for Europe are USD 0.53 to USD 0.93 per gasoline equivalent-litre, in the USD 0.43 to \$0.53, while in Brazil costs are as low as USD 0.34. (IEA 2004)

The European Union has passed an important Directive on the promotion of the use of biofuels or other renewable fuels for transport (2003/30/EC 8 May 2003), in order to replace diesel or petrol (gasoline). The objectives, as stated in Article 1 are contributing to the compliance with climate change commitments, environmentally friendly security and the promotion of renewable energy sources

The short-term national targets as contained in the directive shall be of 2% of all petrol (gasoline) and diesel for transport purposes for 31 December 2005 and 5.75% for 31 December 2010.

These biofuels are clearly an environmental good and from the trade perspective the question is whether the use of the required biofuels will come exclusively from the European market or if there will be a need for import from developing countries’ markets. The directive is silent on this issue. However, the report to the Commission due by December 2006 must contain a life-cycle perspective on bio fuels.<sup>9</sup> This provision could be regarded difficult by developing countries if we consider that within WTO negotiations they strongly oppose to accept process and production method (ppms) provisions, related to life cycle analysis of goods.

Due to this Directive, production of biofuels has increased by 26% in the year 2003. Even on the background of this trend however, a survey estimated that Europe will be producing only 11 million tonnes oil equivalent (Mtoe) of biofuels by 2010, well short of the 18 Mtoe target suggested in the 1997 European Commission white paper on renewable energy. (Biofuels Barometer 2004) Regarding these estimations as provisional, the report also considered important the direct addition of ethanol in petrol as the production of ETBE was limited to the production of isobutylene supplied by the petroleum industry.

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<sup>9</sup> Article 4.2. of the directive establishes that by 31 December 2006 at the latest, and every two years, the Commission shall draw up a progress evaluation report for the Council and the European Parliament.

## b. Identification of a list of key technologies and services.-

A list of key technologies for the reduction of greenhouse gases (Table 1)<sup>10</sup> is important to make them identifiable and tradable as goods within the harmonised system (HS numbers). However, this list does not consider air pollution technologies as such, normally related to reducing particulate matter (PM), ozone, sulphur dioxide, volatile organic compounds and other local pollutants.

	Energy -supply	Energy demand – households + services	Energy demand industry	Transport	Agriculture	Waste
<b>Energy efficiency</b>	<ul style="list-style-type: none"> <li>- Advanced macro CHP</li> <li>- micro CHP</li> <li>- Coal bed methane</li> <li>- Ultra high efficiency combined cycle gas turbines</li> <li>- High efficient clean coal technology</li> </ul>	<ul style="list-style-type: none"> <li>- Building fabric</li> <li>- Integrated building design</li> <li>- Controls &amp; building energy management systems</li> <li>- Heating &amp; cooling &amp; ventilation equipment</li> <li>- Energy efficiency equipment - office and domestic equipment</li> <li>- lighting</li> </ul>	<ul style="list-style-type: none"> <li>- alternative equipment</li> <li>- combustion technologies</li> <li>- low temperature processing materials</li> <li>- process control</li> <li>- Separation technologies</li> <li>- Waste heat recovery</li> </ul>	<ul style="list-style-type: none"> <li>- Improvement internal combustion engine ( diesel &amp; gasoline )</li> <li>- Hybrid vehicles</li> <li>- Aeronautic technology</li> <li>- Traffic management systems</li> </ul>	<ul style="list-style-type: none"> <li>- Diet composition for reduced enteric fermentation</li> </ul>	<ul style="list-style-type: none"> <li>- Waste treatment technologies</li> <li>- Recycling/ recovery (including eco-design)</li> </ul>
<b>Low carbon technologies – Renewables</b>	Including <ul style="list-style-type: none"> <li>- Direct solar (Photovoltaic, Solar thermal power stations)</li> <li>- Wind onshore/offshore</li> <li>- Biomass – electricity generation</li> <li>- Geothermal</li> <li>- Tidal,</li> <li>- wave,</li> <li>- Small hydro</li> </ul>	<ul style="list-style-type: none"> <li>- Biomass – local heat generation</li> <li>- Passive solar systems</li> </ul>	<ul style="list-style-type: none"> <li>- Biomass- process heat</li> </ul>	<ul style="list-style-type: none"> <li>- Bio-fuels – transport</li> </ul>	<ul style="list-style-type: none"> <li>- Production of biomass</li> </ul>	<ul style="list-style-type: none"> <li>- Capture of bio-gas</li> </ul>

<b>Low carbon technologies – CO2 sequestration</b>	<ul style="list-style-type: none"> <li>- CO2 capture and storage (various options)</li> </ul>				<ul style="list-style-type: none"> <li>- Biological carbon sequestration</li> </ul>	
<b>Hydrogen &amp; fuel cells</b>	<ul style="list-style-type: none"> <li>- Production of hydrogen from renewable energy sources (including options such as photo-electrolysis), fossil fuels with CO2 sequestration</li> <li>- Fuel cells – base load power</li> <li>- Hydrogen storage</li> <li>- Hydrogen infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>- Fuel cells – domestic CHP</li> </ul>	<ul style="list-style-type: none"> <li>- Fuel cells – industrial</li> </ul>	<ul style="list-style-type: none"> <li>- Hydrogen internal combustion engine</li> <li>- Fuel cells– transport</li> <li>- Hydrogen storage</li> <li>- Hydrogen infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>- Production of biomass for hydrogen productions</li> </ul>	

<sup>10</sup> Environmental Technologies Action Plan - Discussion Paper Report from the Climate Change issue group as a contribution to the Environmental Technologies Action Plan (July 2003)



### c. Tackling barriers.-

The main barriers for the dissemination of environmental friendly technologies are:

- Energy pricing structure
- External costs
- Infrastructure
- Finance availability

In the case of renewable energies, the main barrier is subsidies. The Kyoto Protocol is aiming at reducing 5% of greenhouse gases as compared to 1990 levels in the industrialised countries, while for the decades to come, IPCC reports have identified the need for at least a 60% reduction. Only with a significant enhancement of renewable energy use and other actions, the perspectives for a successful climate change global policy can be realistic. Some renewable energy sources, such as hydro, wind, and some forms of biomass, have reached or are reaching the stage of competitiveness with conventional energy sources; however, existing subsidies to nuclear, coal and other fossil fuels is the most important barrier against achievement of this goal.

For this reason, the Bonn Conference on Renewable Energy (2004) adopted a recommendation for the WTO that reads as follows:

*The WTO rules should promote renewables: This refers to international trade in renewable energy as instruments for sustainable development – for example, bioenergy/biofuels, renewable energy technologies, and trade in green certificates among those electricity markets where significant targets have been set to expand the use of renewables. Governments, the WTO, and regional organisations like NAFTA, EU, and ASEAN should proceed rapidly to reduce trade barriers for renewable energy technologies as well as electricity and fuels from renewable sources. However, recognising that a key motivation for developing and industrialised countries to expand the use of renewable energy technologies is to reduce their import dependence (primarily fossil fuels), the removal of barriers to renewable energy should be accompanied by concrete measures for rapid technology transfer so as to reduce dependence on foreign technology. **Negotiations on a multilateral energy subsidisation agreement could also help to level the playing field.***

The proposal to negotiate such an agreement within the WTO and not within the UNFCCC has the advantage that nuclear energy and coal should not be subsidised if the priority for renewable energy will be the first one, at least under a transitional basis. The origin of these ideas can be found in the German Advisory Council on Global Change, which proposes the above-mentioned future WTO agreement to be negotiated by 2008, involving developing countries within an emissions reduction regime by 2020.

This recommendation supports the proposal from the European Community for a list of environmental goods to be the object of a liberalisation process.

The significant enhancement of renewable energies in developing countries could be the most important source for its own GHG emissions control in the future. The evolving environmental policies also require import of renewable energy equipment and services, as well as air pollution control equipment.

Additionally, as seen in the graph related to tariffs, there are still relatively high import rates in developing countries for renewable energy plants of 7 and 8% on average and heat/energy management, with tariffs of 7% which are closely related to the problem area of air pollution and climate.

#### **d. Avoiding “pollution transfer”**

This issue might fit into the WTO agenda, known as exports of domestically prohibited goods (DPG).<sup>11</sup> The issue covers products which are exported even though their sale and use are banned or severely restricted domestically on the grounds that they are hazardous to the environment, to life or health. This is of particular concern to many developing and least developed countries, which often lack the capacity or resources to deal with such products.

Should used vehicles that not comply with domestic environmental regulations be allowed for export? Will power plants with outdated technologies be comprised in this category? Transport-related greenhouse gas emissions are the second-fastest growing world wide and is the least flexible to change due to its dependence on fossil fuels and current travel lifestyles. Substantial greenhouse emissions reductions will be feasible by reducing transport intensities such as more use of public transport modes, re-organisation of local markets, regionalisation of production and use of new logistics systems for freight travel (IPCC 2000). Are used vehicles influencing a private car transport style in developing countries? Most transport policies in big developing cities are aiming to a modal change for public transport and costly bank loans are involving changes in this direction.

Trade on used vehicles seems to be not small, US exported one third as many used automobiles as new automobiles in 1999. Japan, another major exporter of used cars, was estimated to have shipped abroad a record USD 1 billion in used vehicles in 2003.<sup>12</sup> Prohibitions and quotas within the non tariff measures is the issue within WTO and environmental concerns are part of regulatory sovereignty, however some free trade agreements are dealing with the issue of refurbished goods. In the case of the Central American Free Trade Agreement (CAFTA) the list of refurbished goods includes nuclear reactors.

Avoiding “pollution transfer” is particularly relevant for the negotiations on the liberalisation of environmental goods and services related to air pollution and climate. The question is whether developing countries will be able to absorb climate friendly technologies at the quick pace needed within the situation by which OECD countries are or will be phasing out energy-inefficient technologies (from used vehicles to industrial facilities) to developing countries, due to the lack of environmental legislation or climate-specific commitments.

Additional to the UNFCCC and Kyoto Protocol process, there are other important agreements are binding industrialised countries to phase out technologies related to air pollution. The Long Range Transboundary Air Pollution Convention (LRTAP 1979) framework has evolved significantly with the adoption of eight protocols<sup>13</sup>, establishing more detailed commitments in relation to specific gases and substances to avoid transboundary air pollution.

As modelled by Arjan Lejour (2000), trade as such does not affect the volume of GHG emissions, except for technology spillovers. However, trade liberalisation significantly affects the carbon leakage when implementing environmental policies in Annex-I regions to non-Annex I regions. The solutions for the carbon leakage problem are twofold: First, technology transfer regarding more energy-efficient technologies. In that case energy-intensive production technologies will still shift to regions without environmental legislation. Secondly, the (re-)introduction of import tariffs on energy-intensive products by Annex-1 countries.

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<sup>11</sup> The issue was brought up by Nigeria in 1982 demanding that countries should not allow domestically prohibited goods for free export to other countries. In 1994, it was included as item 7 of the Committee on Trade and Environment

<sup>12</sup> [www.oecdobserver.org/news/fullstory.php/aid/1505/Used\\_goods\\_trade.html](http://www.oecdobserver.org/news/fullstory.php/aid/1505/Used_goods_trade.html)

<sup>13</sup> 1984 Monitoring and evaluation Protocol, 1985 Sulphur Protocol, 1988 N0x Protocol, 1991 Volatile Organic Compounds Protocol, 1994 Sulphur Protocol, 1998 Aarhus Protocol on Heavy Metals, 1998 Aarhus Protocol on Persistent Organic Pollutants, 1999 Gothenburg Protocol to abate acidification, eutrophication and ground-level ozone.

#### **4. Final Comments**

Currently there are no evident conflicts between WTO rules and the UNFCCC objectives, however, WTO has a centralised governance system while for the global environmental objectives there are several.

Within the WTO, the process of negotiations for environmental goods and services is showing small progress and it is important to reduce the vast complexity of the matter and redefine the subject of the negotiations in terms of problem areas, one of which could be air pollution and climate. If climate concerns are not adequately introduced, these trade provisions can adversely impact in the world emissions.

For this purpose, it is important to balance the interest of countries, promote a list of key technologies expressed in goods and services, taking into account the need for a new classification of environmental services, including a new classification on energy services and finally, negotiate a multilateral energy subsidisation agreement

Within the UNFCCC process, there is an implicit agreement that technologically prescriptive provisions for greenhouse emission reductions is not the Convention's approach, given the specific targets for emissions included in Annex B of the Kyoto Protocol. On the other hand, the WTO indeed can be technologically prescriptive, given the nature of international trade of goods and services, which are duly individualised if considered specifically important.

The question is, whether the “technologically driven” initiative for Climate Development between US and Australia (non Kyoto Parties) with India, China , Korea and Japan will have a role to play within the WTO or the UNFCCC.

**Box 4: Ecosystem services supporting human wellbeing<sup>14</sup>**

<b>Provisioning</b>	<b>Regulating</b>	<b>Cultural</b>
<p>Goods produced or provided by ecosystems</p> <ul style="list-style-type: none"> <li>• Food</li> <li>• Fresh water</li> <li>• Fuel wood</li> <li>• Fibre</li> <li>• Biochemicals</li> <li>• Genetic resources</li> </ul>	<p>Benefits obtained from regulation of ecosystem processes</p> <ul style="list-style-type: none"> <li>• Climate regulation</li> <li>• Disease regulation</li> <li>• Flood regulation</li> <li>• detoxification</li> </ul>	<p>Non material benefits obtained from ecosystems</p> <ul style="list-style-type: none"> <li>• Spiritual</li> <li>• Recreational</li> <li>• Aesthetic</li> <li>• Inspirational</li> <li>• Educational</li> <li>• Communal</li> <li>• Symbolic</li> </ul>
<p style="text-align: center;"><b>Supporting</b></p> <p style="text-align: center;">Services necessary for production of other ecosystem services</p> <ul style="list-style-type: none"> <li>• Soil formation</li> <li>• Nutrient cycling</li> <li>• Primary production</li> </ul>		

<sup>14</sup> Millennium Ecosystem Assessment, 2005

**Box 5: APEC and OECD list of environmental goods**

<b>A. Pollution Management</b>
1. Air pollution control
2. Wastewater management
3. Solid management
4. Remediation and cleanup
5. Noise and vibration abatement
6. Environmental monitoring, analysis and assessment
<b>B. Cleaner Technologies and Products</b>
1. Cleaner/resource efficient technologies and processes
2. Cleaner/resource efficient products
<b>C. Resources Management Group</b>
1. Indoor air pollution control
2. Water supply
3. Recycled materials
4. Renewable energy plant
5. Heat/energy savings and management
6. Sustainable agriculture and fisheries
7. Sustainable forestry
8. Natural risk management
9. Eco-tourism
10. Other

1. Air pollution control
2. Heat/energy management
3. Monitoring/analysis
4. Noise/vibration abatement
5. Other recycling systems
6. Potable water treatment
7. Remediation/cleanup
8. Solid/ hazardous waste
9. Waste water management
10. Renewable energy plants

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