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CAPACITY BUILDING TASK FORCE
ON TRADE ENVIRONMENT AND
DEVELOPMENT

Advance unedited draft for discussion

Environmental Goods: Identifying Items of Export Interest to Developing Countries

CBTF Briefing Note, prepared by the UNCTAD secretariat*

Summary: The present note provides an update of statistical data presented in the 2003 UNCTAD publication: *Environmental Goods: Trade Statistics of Developing Countries* (TD/B/COMM.1/EM.21/CRP.1). Various groups of prospective environmental goods, and recent trade flow and tariff protection data for each group are presented. Special focus is given to examining the trade patterns of developing countries and identifying environmental goods of export interest to developing countries.

* This study was prepared by Mr. Robert Hamwey. The views expressed in this draft paper are those of the author and do not necessarily represent the position of UNCTAD or its members.

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I. THE DOHA MANDATE AND THE ENVIRONMENT

1. The World Trade Organization (WTO) Ministerial Declaration, adopted in Doha in November 2001, includes issues in the area of trade-environment policy development. Recalling the Marrakesh Ministerial Declaration of 1994, in Doha WTO members emphasized that trade liberalization and environmental protection can and must be mutually supportive. They agreed to work, and to launch negotiations on several trade-environment issues ranging from the relationship between WTO and MEA rules to trade liberalization in environmental goods and services. Furthermore, they agreed to make positive efforts designed to ensure that developing countries secure a share in the growth of world trade commensurate with the needs of their economic development, including through enhanced market access for their exports, and that negotiations shall take fully into account the special needs and interests of developing and least developed countries, including through less than full reciprocity in reduction commitments.

2. As an integral part of the Doha Round, negotiations continue on “the reduction or, as appropriate, elimination of tariff and non-tariff barriers to environmental goods and services” without defining environmental goods (WTO, 2001). Negotiations on environmental goods are being conducted by the Negotiating Group on Non-Agricultural Market Access (NAMA), with Special Sessions of the Committee on Trade and Environment (CTE SS) playing the role of clarifying concepts and identifying a set of environmental goods for the NAMA negotiations. So far, WTO members have not agreed on either a definition of environmental goods or, in the absence of a definition, criteria for or an agreed list of such goods.

3. As figure 2 illustrates, the environmental goods (EGs) that have so far been tabled at the CTE SS are, in general, of limited export interest to developing countries, although these countries may derive environmental benefits from imports of well-defined EGs. To achieve a certain balance in the EGs negotiations from a trade perspective, this paper examines the structure and dynamics of trade flows in environmental goods and seeks to identify EGs of export and sustainable development interest to developing countries. It is hoped that the information contained in this paper will be useful for developing country WTO members in developing national lists of EGs or in pursuing other approaches.

II. CRITERIA FOR ENVIRONMENTAL GOODS

4. Owing largely to the disperse and diffuse nature of environmental goods, to varied perceptions of how one defines ‘environment’, and limited understanding of the full range of environmental impact human activity has on environmental resources, an internationally recognized definition of ‘environmental goods’ has never been established. In the absence of such a definition, the UNCTAD secretariat has identified two broad classes of environmental goods in order to identify potential environmental goods that may be considered in the context of WTO negotiations and to analyze global trade patterns in these goods. Specifically, as presented in Figure 1, these two classes of EGs are:

- **Type A EGs**, which include all chemicals and manufactured goods used directly in the provision of environmental services.
- **Type B EGs**, which include all industrial and consumer goods not primarily used for environmental purposes but whose production, end-use and/or disposal have positive environmental characteristics relative to similar substitute goods.

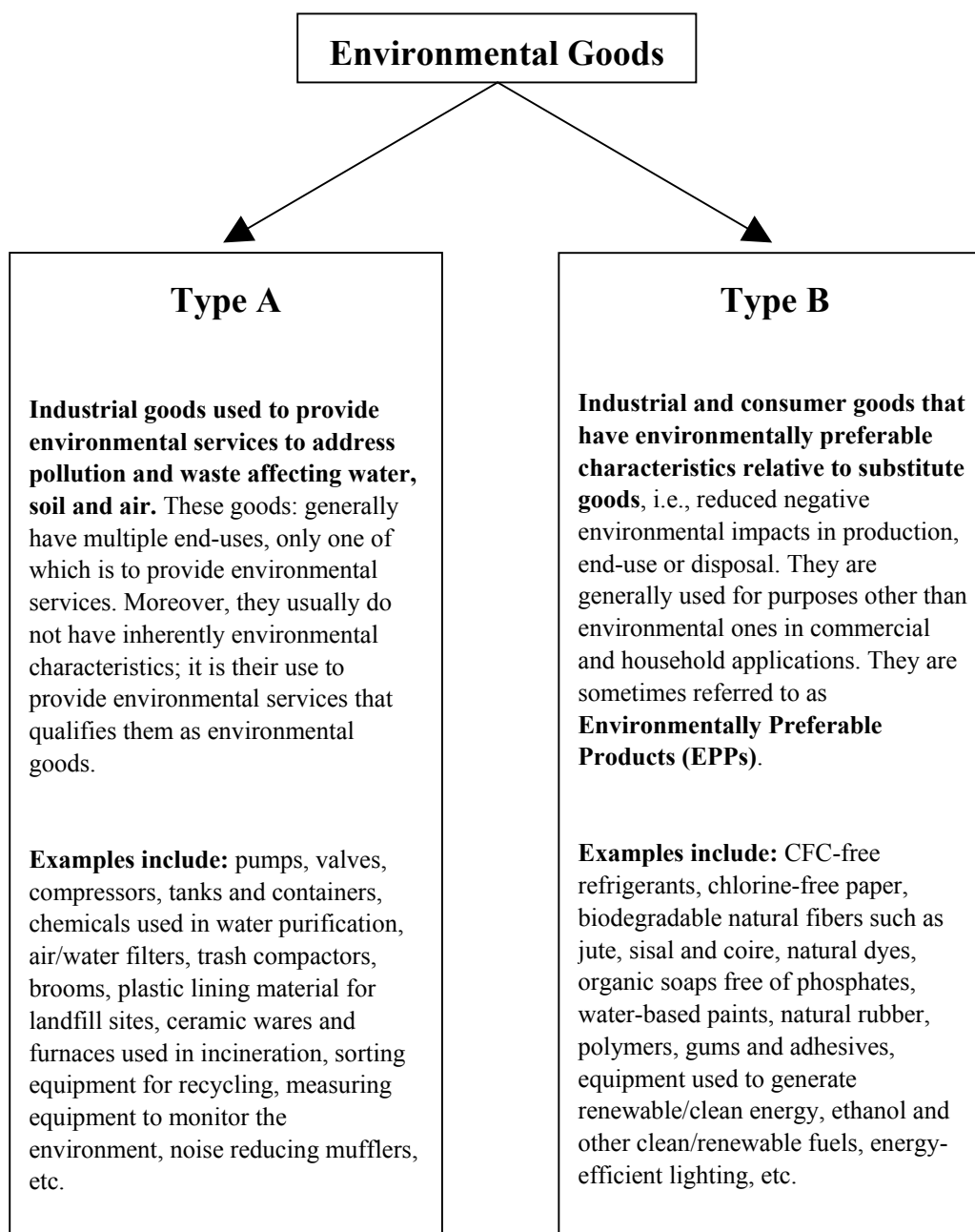


Figure 1: Classes of environmental goods

5. Type A EGs include raw and manufactured industrial goods used to provide an environmental service such as wastewater treatment, solid waste management, air pollution control, etc. These goods include a wide variety of industrial products, such as valves, pumps and compressors, that can be specifically employed for environmental (but also non-environmental) purposes. Type B EGs include both industrial and consumer goods whose production, end-use and/or disposal have reduced negative, or potentially positive, environmental impacts relative a substitute good providing similar function and utility. They may include items such as chlorine-free paper, energy-efficient office machines, clean production and energy technologies, natural fiber clothing, packaging or floor covering materials. Such goods, sometimes referred to as environmentally preferable products (EPPs), have inherent environmentally superior qualities compared to substitute goods (UNCTAD, 1995).

6. It is important to note that with the exclusion of clean production and energy technologies (capital equipment), whose components may have multiple non-environmental end-uses, Type B EGs always produce environmental benefits whenever they complete a normal product cycle. Type B EGs are fundamentally different from Type A EGs because they are not used for environmental purposes, but rather they are consumed by industry and consumers, producing a positive, or reduced negative environmental impact relative to identical use of a substitute good whenever they are consumed. Renewable energy equipment could be in either category A or B. For example equipment used in renewable energy plants would fall under A whereas a consumer good could fall under B.

A. Environmental goods lists discussed and proposed at the CTE

7. To date, products included in lists of environmental goods introduced in the CTESS have been mostly limited to Type A environmental goods used to provide environmental services (pollution prevention, reduction, control and monitoring). In addition, some of the proposed goods represent Type B environmental goods including energy-efficient and renewable heat/power generation technologies; and a variety of energy-efficient consumer goods. These lists, which have been prepared by the OECD, APEC (WTO, 2002) and by individual members including Japan (Japan, 2002), the Republic of Korea (Korea, 2005), Qatar (Qatar, 2003) and Taiwan Province of China (Taiwan, 2004), thus comprise mostly capital equipment and their manufactured components, chemicals used for environmental services, and in addition, on the Japan list, some energy-efficient consumer electronic products, and on the Qatar list, natural gas highly purified petroleum fuels. The Korea and Taiwan Province of China lists of environmental goods are very similar to the APEC list.

8. The **OECD** classifies the environmental sector as the set of “firms producing goods and services capable of *measuring, preventing, limiting or correcting environmental damage such as pollution of water, air soil as well as waste and noise-related problems*” (OECD, 1996). Based on this definition, the OECD categorized environmental management functions, and defined a corresponding list of 164 goods providing these functions. This list was later adopted by OECD Member States as a basis to collect, compare and consolidate consistent economic data on the sector (OECD, 1999). As a preliminary effort subject to revision, the OECD emphasizes that its list of environmental goods is non-exhaustive and illustrative rather than definitive (OECD, 2001). The OECD list contains those goods needed to support environmental services including air pollution management, sewage and water treatment services, waste disposal services, noise reduction, cleaning and maintenance of public property, and sanitation services, as well as other environment-related services such as eco-tourism and services to enhance resource-efficiency in industrial and natural resource based production activities. Separately from the OECD effort, in order to advance voluntary liberalization of environmental goods by its Member States, in 1998 APEC list of 109 environmental goods was assembled and published a (APEC, 2001).

9. The OECD list includes goods spanning 132 6-digit Harmonized Commodity Description and Coding System (HS) codes. Of these, 25 are minerals and chemicals used in water and waste treatment, and in renewable energy systems, and 97 are manufactures that serve as components of the systems and infrastructure used to provide environmental services. Also included in the OECD list are some Type B EGs in the form of environmentally sound technologies (ESTs) or *clean technologies* such as cleaner/resource efficient production and power generation systems. The APEC list of environmental goods spans 104 HS codes, and in contrast to the OECD list, it excludes minerals and chemicals,

while including a more extensive set of goods needed for environmental monitoring and assessment. The two lists have 54 goods in common at the HS 6-digit level.

10. As shown in Figure 2, the OECD and APEC lists of environmental goods comprise mostly Type A EGs, and are of considerable export interest to developed countries, the main producers of listed goods, while developing countries are net importers. The figure also shows that while the OECD and APEC lists do include some Type B EGs, these are predominantly clean/resource efficient production and energy technologies. They include only a few industrial/consumer EPPs such as fluorescent lamps, water based paints and recycled paper.

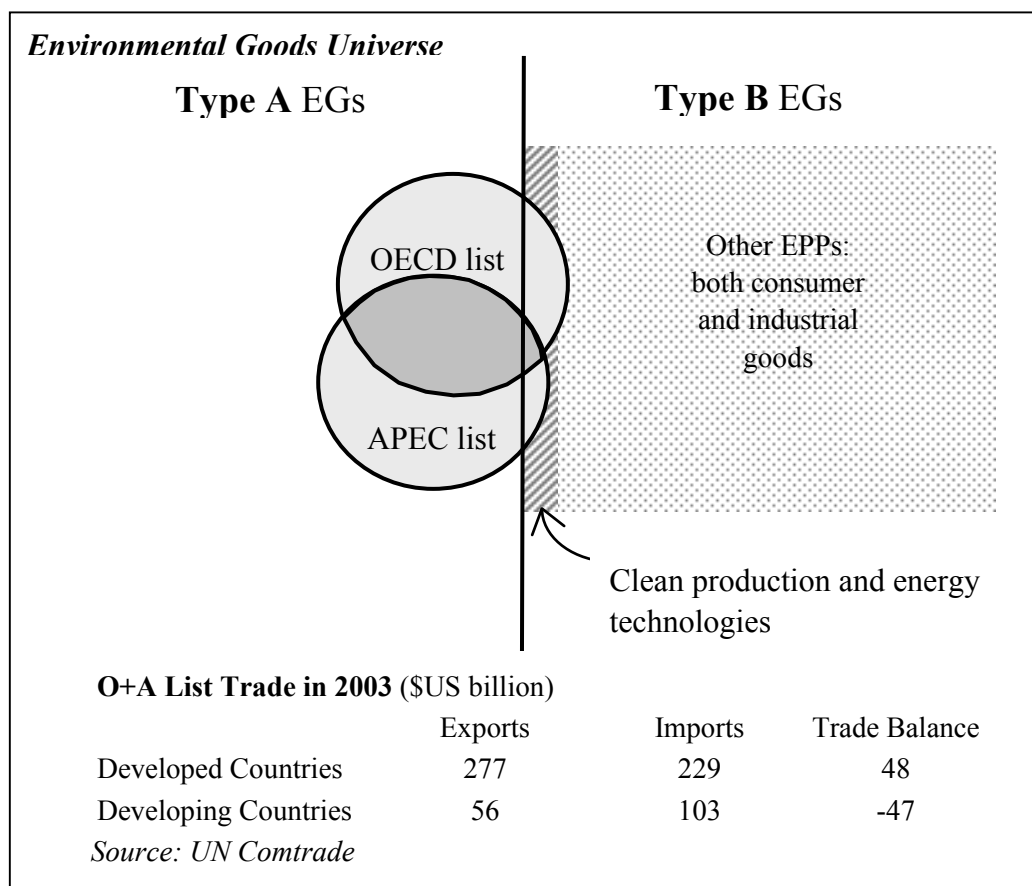


Figure 2. Mapping of the OECD and APEC lists of environmental goods. Type A EGs dominate both lists which define goods that share a common set of environmental functions. In 2003, developed countries were net exporters of the combined OECD and APEC lists of goods (O+A-list) and developing countries net importers.

B. Increasing CTE discussion of Type B environmental goods

11. Recently, developing countries have begun the process of preparing their own lists of environmental goods. Some developing countries, and some developed countries including the European Union and Switzerland, have identified Type B environmental goods or Environmentally preferable products (EPPs) as candidates for tariff reduction in world markets in current WTO negotiations. In addition to energy-efficient and renewable energy technologies, such goods include many raw and processed natural resource based commodities consumed as food, health and cosmetic products, clothing, furniture, home products and building materials, many of which are of considerable export interest to developing countries. For example, Kenya (Kenya, 2003) has identified coffee by-products,

water hyacinth and natural pest control products as prospective environmental goods of potential export interest. Because EPPs primarily comprise consumer goods and industrial inputs needed for their production, the rationale for their classification as environmental goods differ from those previously proposed based on their use in the provision of environmental services.

12. The UNCTAD secretariat has defined EPPs as the set of goods possessing inherent environmentally superior qualities compared to substitute goods used in identical applications (UNCTAD, 1995). These qualities may be evident in at least one stage of the product lifecycle; i.e., during an EPP's production, end-use or disposal. As mentioned above, based on similar criteria, the OECD and APEC lists include several clean production and energy technology EPPs which generate reduced levels of pollution relative to conventional alternatives during the product's use. But in addition to these capital goods, UNCTAD has identified a wide-range of consumption goods whose end-use and disposal have reduced environmental impacts relative to the use and disposal of conventional alternatives. These latter goods, supplied to industrial and consumer markets, could be included in a negotiated WTO list of environmental goods further to proposal and adoption by members.

C. Considerations affecting agreed WTO criteria for environmental goods

13. Certainly, WTO agreement on a list of environmental goods or criteria for their designation is a politico-economic process. Given this reality, which are the factors that bear on WTO criteria that may be used to designate products as EGs? How are these factors classified according to politico-economic and technical/operational motivations and constraints?

Politico-economic considerations:

14. *Mutually supportive trade, environment and development policies...* The EC has expressed the view that environmental goods be defined within the WTO context to contribute to the fulfillment of internationally agreed environmental priorities, such as those described in multilateral environmental agreements (MEAs), the Millennium Development Goals (MDGs) and the WSSD Plan of Implementation. They could provide useful guidance on the environmental objectives that are relevant for the identification of environmental goods (EC, 2005). The EU has also stated its position that environmental goods must at the very least include two categories of EGs: a) goods used in pollution control and resource management, and b) goods that have a high environmental performance or low environmental impact. Essentially, these two categories are, respectively, the Type A and Type B EGs classified in this paper.

15. *Equity and balanced benefits for all WTO members...* Developing countries want to secure an appropriate share of export gains from trade liberalization of EGs. They are cognizant of their substantial negative trade balance in the Type A EGs that have been discussed to date in the WTO. Some developed countries, most recently New Zealand (New Zealand, 2005) and the European Communities (EC, 2005), have emphasized the need for achieving "balance" in the EG negotiations.

16. *High adjustment costs in developing countries...* Three major impacts of trade liberalisation in environmental goods can be expected to affect developing countries. First they will experience a loss of tariff revenue. Goods on the O+A list alone accounted for over 6 per cent of developing country imports in 2003. Broad based tariff reduction could thus result in significant loss of tariff revenue. Second, unintended, broad based tariff reduction of

dual-use EGs would expose key national industries to increase international competition and may result in substantial import surges. Third, there is also the risk that a too broad liberalization of EGs jeopardizes infant national environmental industries. These concerns and "legitimate defensive interests" may be positively addressed by a development list approach to EG liberalization proposed by China (China, 2004), a two list approach proposed by the US (USA, 2003), or variants of these.

17. China proposed an approach to liberalization based on two lists: a common list of environmental goods would include goods of export interest to both developed and developing countries for which consensus can be achieved; and a development list providing safeguards through special and differential treatment to developing countries on selected common list goods. Developing countries would not be required to eliminate or reduce tariffs on goods they place on the development list.

18. The US proposes an approach based on the elaboration of two lists, a core and complementary list. All countries would be required to reduce tariffs and non-tariff barriers over a specified time period for all items comprising the core list, but only for a limited percentage of goods on the complementary list, which may be reduced for developing countries relative to developed countries. Under the US proposal, the core list would include all items for which there is consensus that they are environmental goods, whereas the complementary list would contain goods for which there is a high degree of acknowledgement that included goods represent EGs, but consensus cannot be achieved.

19. In principal, both the China and US approaches could allow developing countries to maintain current levels of tariff protection on specific goods produced by national industries and thereby reduce the adjustment impacts resulting from an all inclusive singular negotiated list prohibiting opt-outs.

20. ***PPM-based environmental goods...*** Several members, including Australia, Ecuador, Japan, Korea and Thailand are on record as being set against designating PPM-based EGs. Australia has even proposed that the CTESS take an early decision on not using PPMs in negotiations. However, some members, including the EU and Switzerland, have suggested that the subject of PPM-related EG criteria could benefit from additional discussion, focusing on the consideration of specific products. Reflecting this situation, the EGs identified of export interest to developing countries in this paper are not including those based on non-product-related processes and production methods.

Commercial and operational considerations:

21. ***Limitations in the HS nomenclature for the classification of environmental goods...*** The Harmonized System used to classify internationally traded goods does not, in most cases, identify environmental goods at the 6-digit level. Multiple products classified under a common 6-digit code, of which only one, or a subset, are considered as environmental goods, may thus pose an administrative difficulty for tariff liberalization for some countries applying tariffs at the 6-digit level. However, many WTO members no longer consider this to be an impediment, and there is broad agreement that members' own HS schedules extending beyond the HS 6-digit level could be effectively used to identify EG imports and provide them with preferential treatment under any eventual WTO agreement on environmental goods. Furthermore, in the longer term, it will be possible to establish new HS product classifications to facilitate EG trade liberalisation for goods for specific goods that may require them. In a recent CTE session, WCO explained the way in which the Harmonized System operates and informed member that it was entirely feasible to elaborate new HS codes

to facilitate EG trade liberalisation, however, the WCO process needed to do such would take several years.

22. ***Many environmental goods have multiple end-uses, only one of which may be environmental...*** Nearly all Type A EGs are intermediate products – such as chemicals, filters, pumps, valves, turbines, chemicals, meters, lasers, spectrometers, etc – that have multiple end-uses. Type A EGs therefore include a wide range of multiple-use products for which there are various non-environmental end-uses. On the other hand, a few Type A EGs are not affected by multiple-use, for example, silencers and exhaust pipes for motor vehicles provide the benefit of noise reduction whenever they are used. Multiple-use may be an important issue for countries which are interested in providing preferential treatment to goods when they are used for environmental purposes, but do not favor providing such treatment to the same goods when used for non-environmental purposes. The problem is that tariff revenues may be foregone without environmental benefits.

23. Many countries, including Australia, the Republic of Korea and New Zealand have expressed their view that multiple-use poses particular problems that can be addressed only by limiting preference receiving EGs to designated EGs whose end-use will be environmental. Taiwan has proposed that direct-use criteria be employed to demonstrate that designated EGs are limited to those directly used in environmental applications. Doubts however remain as to how these approaches might work in practice.

24. In a recent CTE proposal, India proposes to overcome the issue of multiple-use by pursuing a project approach to trade liberalization in environmental goods (India, 2005). Under this approach, EGs for specific environmental objectives as part of an industrial or public works project would be approved by a designated national authority as qualifying for preferential tariff treatment for the duration of the project when agreed environmental criteria are met by the project. One of the benefits of such a project-based approach is that it would provide a mechanism to tie environmental goods and services together, as enshrined in the language of Para. 31(iii) of the Doha Declaration.

25. ***The problem of relativism for many environmental goods...*** Just as Type A EGs are affected by multiple-use, designations of Type B EGs are not free of problems. First, it is difficult to make a complete lifecycle assessment (LCA) for many products and for a wide range of consumer EPPs and the various ways in which they may be used and disposed off. For example, some studies indicate that while apparel made from natural fibres (e.g., cotton) may have superior production and disposal characteristics relative to similar apparel made from synthetics (e.g., polyester), the use of natural fibre clothing may be associated with higher energy requirements for cleaning, drying and ironing that can partly or completely offset the relative environmental benefits associated with the apparel's production and disposal. This makes a clear and unambiguous designation of consumer EPPs difficult. Moreover, reliable LCAs are not existent for many EPPs.

26. Another aspect of relativism affecting Type B EGs concerns changing technology frontiers. For example, although certain energy technologies may be viewed as a clean, or cleanest available technology today, technological progress may lead to the development of future cleaner technologies in the future. For example, although natural gas-fired combined-cycle power plants are widely recognized as providing the cleanest form of fossil-fuel based electricity today, the superior environmental performance of these technologies may soon be eclipsed by fuel cells. Recognizing the relativism of environmental goods, New Zealand has recently proposed that a 'living list' approach be followed in designating environmental

goods (New Zealand, 2005). Through regular updates, goods would move on-to and off-of the list as the status of commercially available technologies evolve.

27. *Agricultural environmental goods...* Already within the CTESS, some members have recognized that if agricultural products, organic produce for example, are designated as environmental goods, then the WTO Committee on Agriculture (CoA) would need to be involved in negotiating modalities for the reduction of tariff and non-tariff barriers affecting their trade. However, to date no formal link has been made between the Doha mandate under Para. 31 (iii) and the CoA. At the same time, nothing in the Doha Ministerial Declaration would prevent this if Members so wished.

28. *A mechanism for technology transfer...* It is expected that a reduction of tariffs applied to environmental goods by developing countries would provide them with improved access to state-of-the-art pollution management as well as clean and resource efficient production and energy technologies. However, a number of developing countries have recognized that increased imports of such technologies may not allow them to capture sustainable development gains unless they are accompanied by appropriate capacity building. For many developing countries, identifying accompanying mechanisms to build requisite capacities to adapt technology inflows to national conditions and ensure human skill development for their beneficial operation, maintenance and eventual commercialization in developing countries, remains desirable within the WTO context. India's recent submission on an environmental project approach to EG negotiations (India, 2005) tries to address this key concern (as well as to link trade in environmental goods and services).

29. *Linking environmental goods and services...* The WTO negotiations have primarily focused on EGs, and issues of environmental services have not received much attention although quite a number of EGs (notably type A EGs) only become EGs through their use in the delivery of environmental services (for more detail see the recent Indian submission - India, 2005).

III. TRENDS IN TRADE IN ENVIRONMENTAL GOODS

A. Principal limitations and methods

29. Definitional issues aside, there are inherent difficulties in measuring trade in environmental goods. As mentioned above, many Type A EGs have multiple end-uses, only one of which may be environmental, and any selection of Type B EGs will be subject to scrutiny due to lack of an agreed substitute good that defines a baseline from which positive or lowered environmental impacts are measured; lack of complete and well-established life-cycle assessments (LCAs) for Type B EGs and their baselines; and problems of baseline relativism over time. Moreover, inaccuracies may arise from incompleteness in reported trade data and limitations in the Harmonized System nomenclature for the classification of environmental goods. Analyses of trade flows for environmental goods are thus confronted by fundamental uncertainties. For this reason, the analyses of trade statistics presented here serve only to broadly trace, rather than accurately measure, trade in environmental goods.

B. EGs selected for analysis

34. As mentioned above, **UNCTAD** has identified two types of environmental goods (Type A and Type B EGs) for analytical purposes:

- **Type A EGs**, which include all chemicals and manufactured goods used directly in the provision of environmental services.

- **Type B EGs**, which include all industrial and consumer goods not primarily used for environmental purposes but whose production, end-use and/or disposal have positive environmental characteristics relative to similar substitute goods.

30. Moreover, in order to analyse environmental good trade flows, these two broad sets of EGs have been further decomposed into 10 homogeneous groups of EGs:

Type A EGs have been subdivided into 2 groups:

- An **O+A list** comprised of the group of all EGs included on the OECD and APEC lists while avoiding double-counting of goods appearing on both lists.
- An **Oth-TypeA-EGs list** comprised of several goods used to provide environmental services which have not been captured by the OECD and APEC lists. This list contains, for example, plastic gloves and protective eyewear which are used in environmental clean-up and remediation activities.

Type B EGs that have been subdivided into 8 groups:

- A **CT list** comprised of clean technologies used for power generation. This list includes energy efficient natural gas based power generation and renewable energy technologies and their components.
- A **CT-fuel list** including fuels for CT, and some conventional (i.e., fuel-switching), power generation technology applications. This list includes natural gas, propane and butane, as well as ethanol and a range of agricultural feedstocks – bagasse and oilseeds – used respectively to produce ethanol and biodiesel fuels.
- An **EPP-core** list comprised of consumer and industrial non-durable and semi-durable EPP goods. Goods on the EPP list have been selected based on environmentally superior end-use and disposal characteristics only (i.e., not based on PPMs). This list includes a wide variety of goods including natural fibres for industrial uses and in the form of textiles; natural rubber; natural vegetable derivatives, colorings and dyes.
- An **EPP-RCY** list comprised of recoverable materials that are reintegrated into the production cycle. This list includes scrap and waste paper, wood, plastics, rubber and various scrap metals.
- An **EPP-WOOD** list comprised of wood and wood-based products including building supplies and furniture.
- An **EPP-WSA** list comprised of apparel manufactured from natural wool and silk fibres.
- An **EPP-CM** list comprised of raw cotton materials and cotton textiles.
- An **EPP-CA** list comprised of apparel manufactured from natural cotton fibres.

With the exception of the O+A and CT lists which share some common goods, the above lists contain unique products not present in the other lists. A detailed listing of all goods included in each of the above list is provided in Annex 1.

31. It must be emphasized that **these lists are for analytical and illustrative purposes only**. They contain goods which could potentially be considered as environmental goods based on their classifications as Type A or Type B EGs. Rationale for their classification as environmental goods and associated issues are outlined in Table 1.

UNCTAD EG Group	Rationale for classification of goods as EGs	Associated issues and problems
O+A	Most are used to provide environmental services, some are clean technologies.	Multiple use
Oth-TypA-EGs	Used to provide environmental services.	Multiple use
CT	Technologies providing cleaner forms of power generation, including reduced air pollution and greenhouse gas emissions.	Relativism, lack of HS codes for integrated systems, multiple use for components
CT-fuel	Reduced air pollution and greenhouse gas emissions. Biofuels further conserve finite fossil fuel resources.	Relativism
EPP-core	Lowered negative impact on ecosystems relative to substitute goods during end-use and/or disposal phases of their lifecycle.	Need to establish agreed LCAs for these goods and their substitutes. Relativism
EPP-RCY	Prevention of negative impact on ecosystems due to recycled waste streams.	Environmental impacts of recycling process may offset benefits of recycling.
EPP-WOOD	Products provide long-term carbon storage which can result in net sequestration of carbon, the principal greenhouse gas, from the atmosphere.	Benefits assume sustainable forestry practices.
EPP-WSA EPP-CA	Relative to apparel made from synthetic fibres, these goods have lower negative environmental impacts during end-use and/or disposal phases of their lifecycle.	Relativism and the need to establish agreed LCAs for these goods and their baseline substitutes.
EPP-CM	Used to manufacture cotton apparel and other household goods (EPP-CA goods) which are environmentally preferable products.	Cotton production may have high environmental impacts, potentially offsetting positive end-use and disposal benefits of cotton products.

Table 1. Rationale for UNCTAD EG group classifications and associated issues and problems.

32. For each of the UNCTAD EG groups, and individual products they include, trade flows and tariff structures between countries, and between and within sub-regions, regions and country groups were calculated for the years 1996 through 2003. Country groups used in this study included developed countries, developing countries, countries with economies in transition, and least developed countries, following the 2004 UNCTAD Handbook of Statistics country classifications (UNCTAD, 2004). Moreover, country group trade flows reported in this study as ‘with world’ are gross exports/imports, and not net exports/imports, of the country groups. For instance, reported exports and imports ‘with world’ of any country group are the simple sum of exports and imports of all component countries, comprised of both extra-regional and intra-regional trade.

C. Environmental good trade patterns and levels of tariff protection

33. In this study, environmental goods trade patterns and levels of tariff protection were derived using nationally reported data on trade in goods that is readily available for most countries. For each of the eight sets of environmental goods outlined above, trade flows magnitudes were derived using national trade flow data reported to the United Nations using the 1996 6-digit HS system. Trade flow data were derived from the United Nations’ Comtrade database (Comtrade, 2003). In addition, national tariff data were compiled from the TRAINS component of the World Bank/UNCTAD World Integrated Trade Solution (WITS)

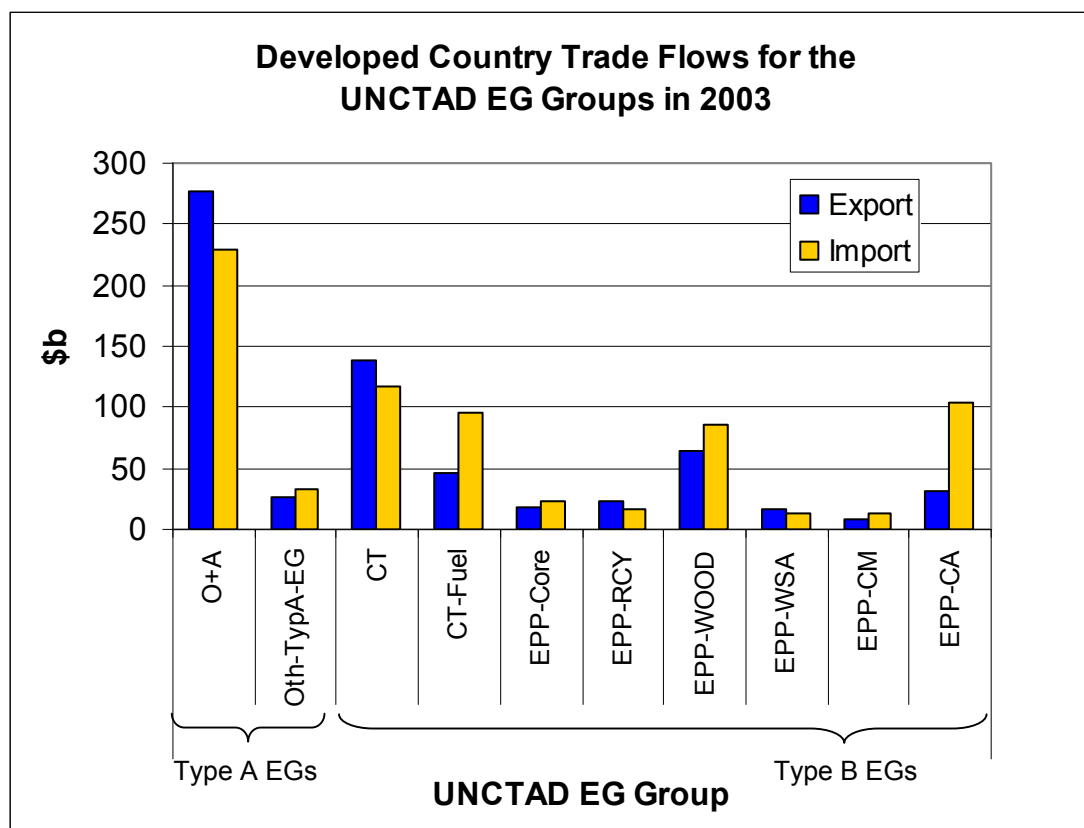
application (World Bank, 2001) in order to assess the magnitude and significance of protection influencing current trade patterns. Taken together, these data provide an indication of potential trade gains and losses for individual, and groups of, countries under EG trade liberalisation for each of the 10 lists of goods examined in this study.

Overall trade and tariff picture for the UNCTAD EG groups:

34. A general feature of trade in EGs is that developed countries possess a significant trade surplus, and developing countries a large trade deficit in Type A EGs. For the Type B EG groups, trade performance varies for developed and developing countries, with a tendency for developing countries to show a modest trade surplus for several Type B EG groups, specifically for CT-Fuels, EPP-Core, EPP-Wood, EPP-WSA and EPP-CA goods, while developed countries exhibit a modest trade deficit most Type B EG groups, except for EPP-RCY and EPP-CM goods where they have a small trade surplus. These features are evident in Figures 3 and 4.

35. But when trade liberalisation is being considered for environmental goods, it is equally significant to examine the coverage and extent of tariff protection affecting trade in these goods. Tariff protection on both Type A and Type B EGs is surprisingly low. Much lower than would be inferred from the protracted negotiations of the CTESS. For developed countries, as shown in Figure 5, trade-weighted average applied tariff rates range from nuisance levels of less than 1 per cent ad-valorem for Type A EGs, to a high ranging from 8 to 10 per cent for EPP-WSA and EPP-CA class goods (i.e., wool, silk and cotton clothing). Developing country rates fall consistently between about 5 and 15 per cent for the bulk of EG groups as illustrated in Figure 6, and climb to between 15 and 25 per cent for EPP-Core, EPP-CM, EPP-WSA and EPP-CA goods.

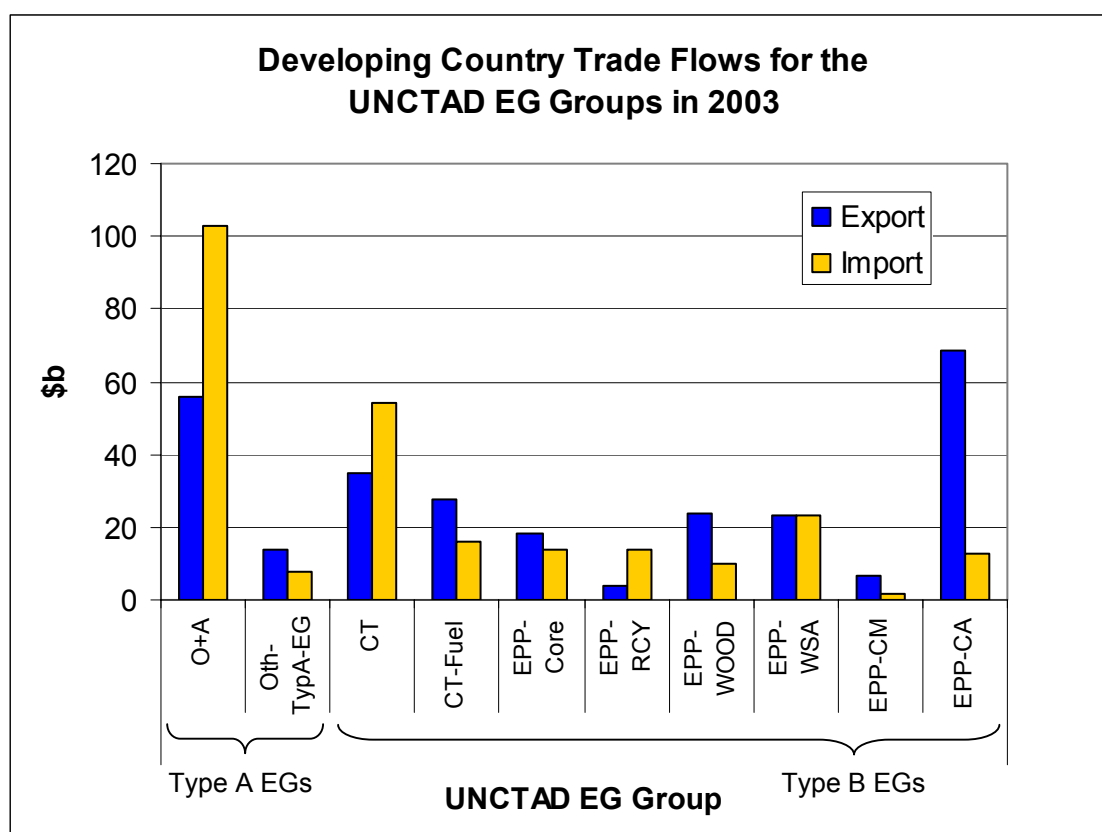
36. Figures 7 and 8 show that average bound tariff rates on EGs are significantly higher than average applied rates, reaching as high as 12 per cent for developed countries, and for developing countries, ranging mainly between 15 and 35 per cent with lower bindings for EPP-RCY and EPP-WOOD goods and extremely high bindings of nearly 60 per cent for agricultural goods used to produce biofuels. In both developed and developing countries these high bound rates are used as a safeguard to protect domestic industries from instability in the presence of domestic price- and production-distorting import surges. It is these bound rates that are expected to be subject to a phased reduction under a future WTO agreement on environmental goods, eventually falling to levels that will begin to impact on applied rates.



Year	2003			
Reporter	Developed Countries (U-DdC)			
Partner	World			
Trade Value (\$ '000)			% of Total Exports	% of Total Imports
Product Group	Export	Import		
O+A	276,969,359	229,077,867	5.8	4.4
Oth-TypA-EG	26,175,932	32,365,115	0.5	0.6
CT	138,662,163	116,922,693	2.9	2.3
CT-Fuel	46,219,001	95,849,419	1.0	1.8
EPP-Core	18,147,072	22,835,827	0.4	0.4
EPP-RCY	22,438,573	16,247,623	0.5	0.3
EPP-WOOD	63,759,038	84,977,208	1.3	1.6
EPP-WSA	17,269,970	12,940,736	0.4	0.2
EPP-CM	7,542,657	13,610,226	0.2	0.3
EPP-CA	32,078,744	103,588,525	0.7	2.0
TOTAL	4,776,688,210	5,184,842,483		

Figure 3: Developed country trade flows in EGs by EG Group in 2003 (trade with World).

Note: Total import and export figures refer to good trade only; services trade is not included in the data and analysis reported here. TOTAL refers to total goods trade.



Year	2003			
Reporter	Developing Countries (U-DgC)			
Partner	World			
Trade Value (\$ '000)			% of Total Exports	% of Total Imports
Product Group	Export	Import		
O+A	55,771,083	102,891,441	2.8	5.4
Oth-TypA-EG	14,096,133	7,678,188	0.7	0.4
CT	34,675,867	54,256,999	1.8	2.8
CT-Fuel	27,440,243	16,146,841	1.4	0.8
EPP-Core	18,155,670	13,673,190	0.9	0.7
EPP-RCY	4,016,834	13,754,133	0.2	0.7
EPP-WOOD	23,712,104	10,177,020	1.2	0.5
EPP-CM	23,282,797	23,289,243	1.2	1.2
EPP-WSA	6,504,056	1,706,029	0.3	0.1
EPP-CA	68,824,702	12,703,914	3.5	0.7
TOTAL	1,973,406,313	1,906,025,900		

Figure 4: Developing country trade flows in EGs by EG Group in 2003 (trade with World).

Note: Total import and export figures refer to good trade only; services trade is not included in the data and analysis reported here. TOTAL refers to total goods trade.

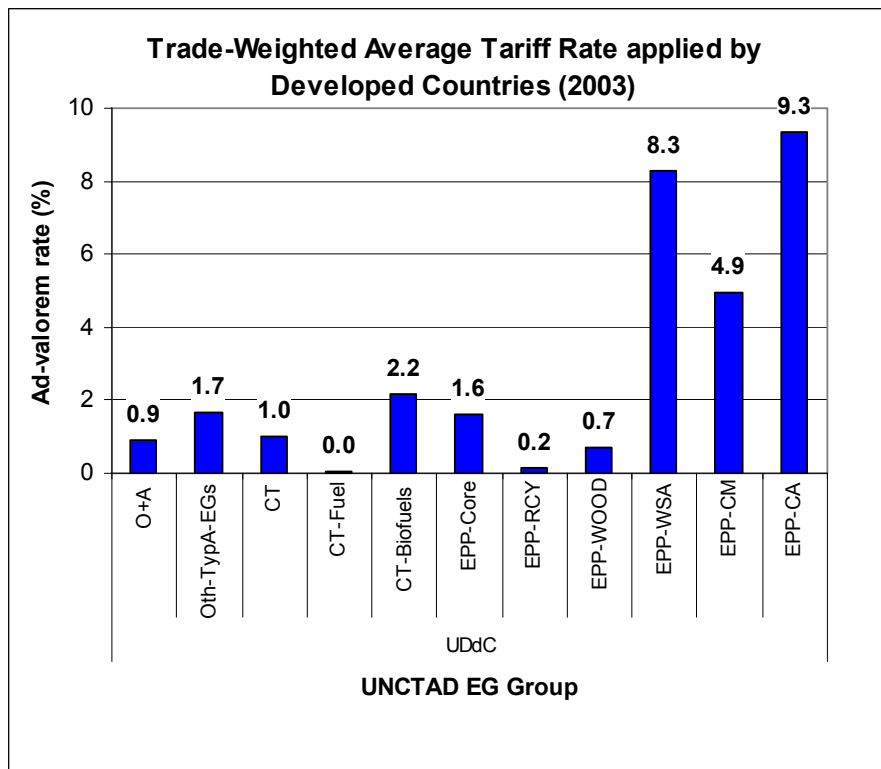


Figure 5: Tariff rates applied by developed countries on EGs in 2003 (partner is World). Tariffs for the CT-Fuels group have been broken down to show the rate applied to natural gas fuels (CT-Fuels) and biogas fuels (CT-Biofuels).

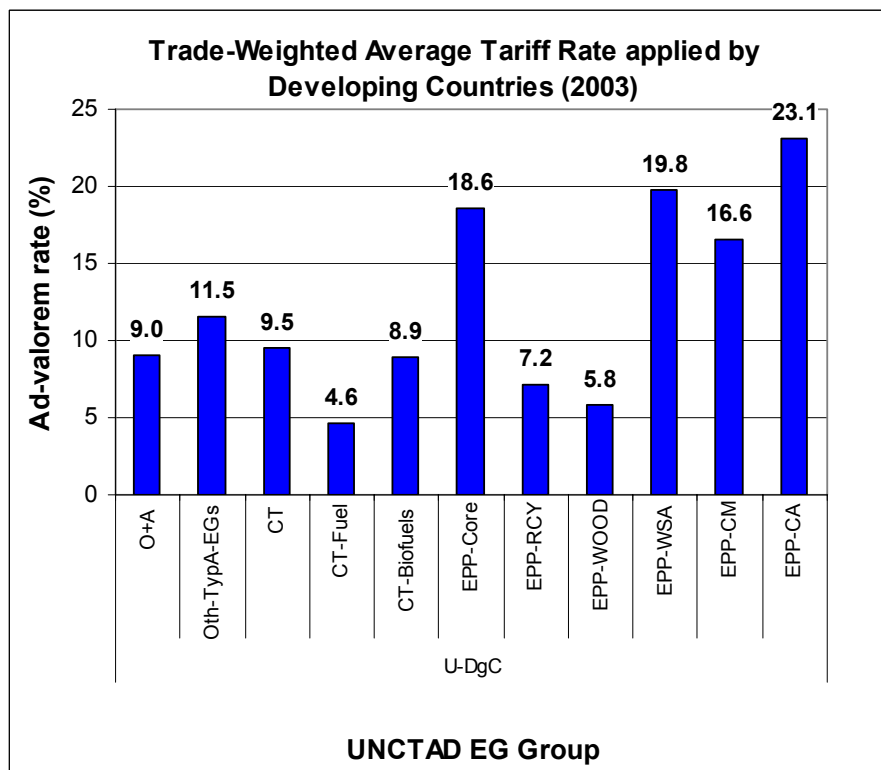


Figure 6: Tariff rates applied by developing countries on EGs in 2003 (partner is World). Tariffs for the CT-Fuels group have been broken down to show the rate applied to natural gas fuels (CT-Fuels) and biogas fuels (CT-Biofuels).

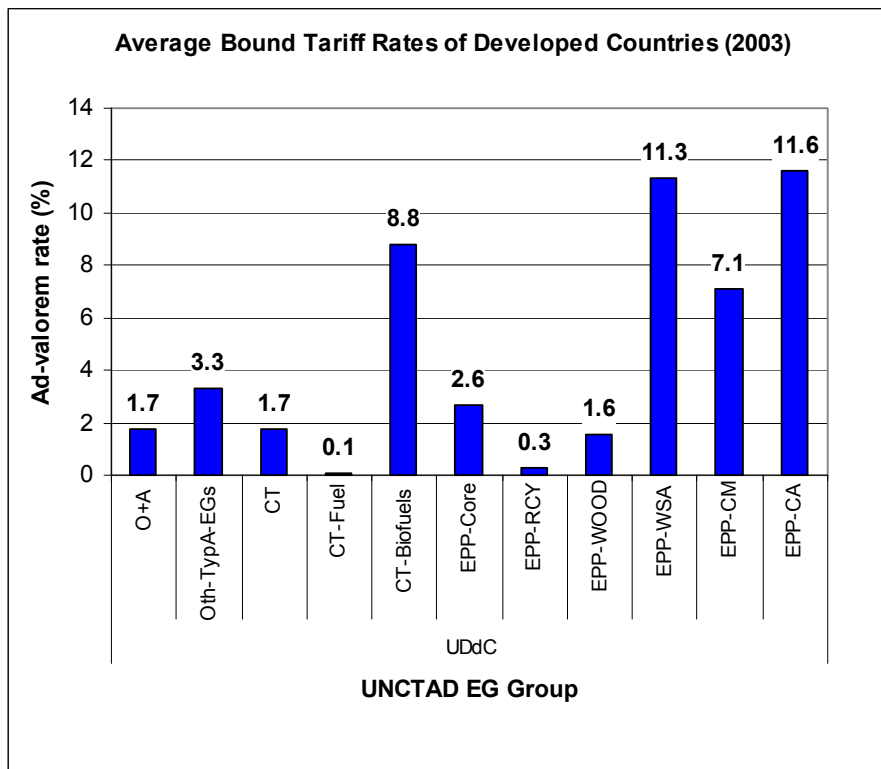


Figure 7: Average bound tariff rates of developed countries on EGs in 2003 (partner is World). Bindings for the CT-Fuels group have been broken down to show the bound rate on natural gas fuels (CT-Fuels) and biogas fuels (CT-Biofuels).

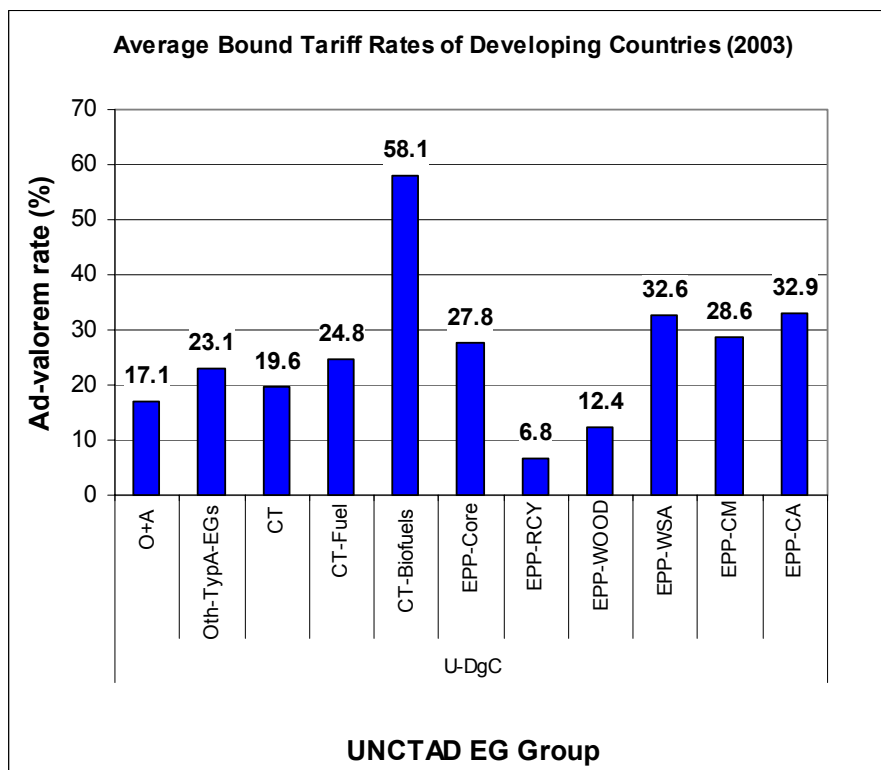


Figure 8: Average bound tariff rates of developing countries on EGs in 2003 (partner is World). Bindings for the CT-Fuels group have been broken down to show the bound rate on natural gas fuels (CT-Fuels) and biogas fuels (CT-Biofuels).

Trade patterns for Type-A EGs

O+A goods

37. Trade flows for developed and developing countries for the set of goods on the combined OECD or APEC lists (O+A list) from 1997 through 2003 are presented in Figure 9. **Data indicate the size of the global export market for the O+A list is about 336 \$b.** Trade data show an overall negative, although improving, balance of trade for developing countries' trade in these goods with the rest of the world. For the aggregate set of all goods (at the 6 digit HS level) on the O+A list, developed countries were net exporters, and developing countries net importers, of environmental goods. However, as shown in Figure 9, **developing country O+A exports doubled from 28 \$b to 56 \$b between 1997 and 2003**, pointing to a **dynamic export nature of these goods for developing countries** (elaborated on later). Over the same period, the ratio of developing country O+A exports to imports rose from 0.41 to 0.54, while there was a corresponding decline in this figure for developed countries from 1.34 to 1.21.

38. The regional breakdown of O+A trade shows significant disparities in trade between developed and developing regions. Figure 10 clearly shows the **dominant role played by developed countries in global trade for the O+A goods. They account for over 80 per cent of world exports and nearly 70 per cent of world imports.** Data in Figure 10 also indicate that among developing countries, trade in O+A goods is most significant for countries in Asia, which accounts for over 60 per cent of all developing country trade in O+A goods. In 2003, as shown in Figures 3 and 4, O+A exports represented 5.8 per cent of total exports by developed countries but only 2.8 per cent of developing countries' total exports. In the same year, however, O+A goods accounted for over 5.4 per cent of developing country imports. For developing countries, these figures suggests that, despite the fact that both the OECD and APEC lists contain a wide range of manufactured goods, trade liberalization of environmental goods based on these lists would affect a relatively small portion of developing countries' current imports, and an even smaller portion of their current exports.

39. When data are analyzed to uncover **intra- and inter-regional O+A trade patterns**, the importance of intra-regional exports for developing countries is revealed. For example, although the bulk of trade for each developing country region and for countries with economies in transition are with developed countries, the second most important destination for a region's exports, and origin of a region's imports, are its own intra-regional markets. This feature is apparent from the graphs in Figure11, which shows that although intra-regional South-South trade in the Asian and Latin American regions are relatively high, inter-regional South-South trade remains small. In addition, Figure 11 also indicates considerable intra-regional trade for countries with economies in transition.

40. Finally, as mentioned above, tariffs applied by developing countries are significant for O+A goods. At over 9 per cent ad-valorem, **the trade weighted average applied tariff rate on O+A goods in developing countries roughly 10 times the developed country rate.** Lowering the tariff rate applied by developing countries on O+A imports from other developing countries may encourage increased South-South trade, however, concomitant lowering of the rate applied to O+A imports from developed countries may also encourage increased imports from developed countries, potentially offsetting any increased South-South trade.

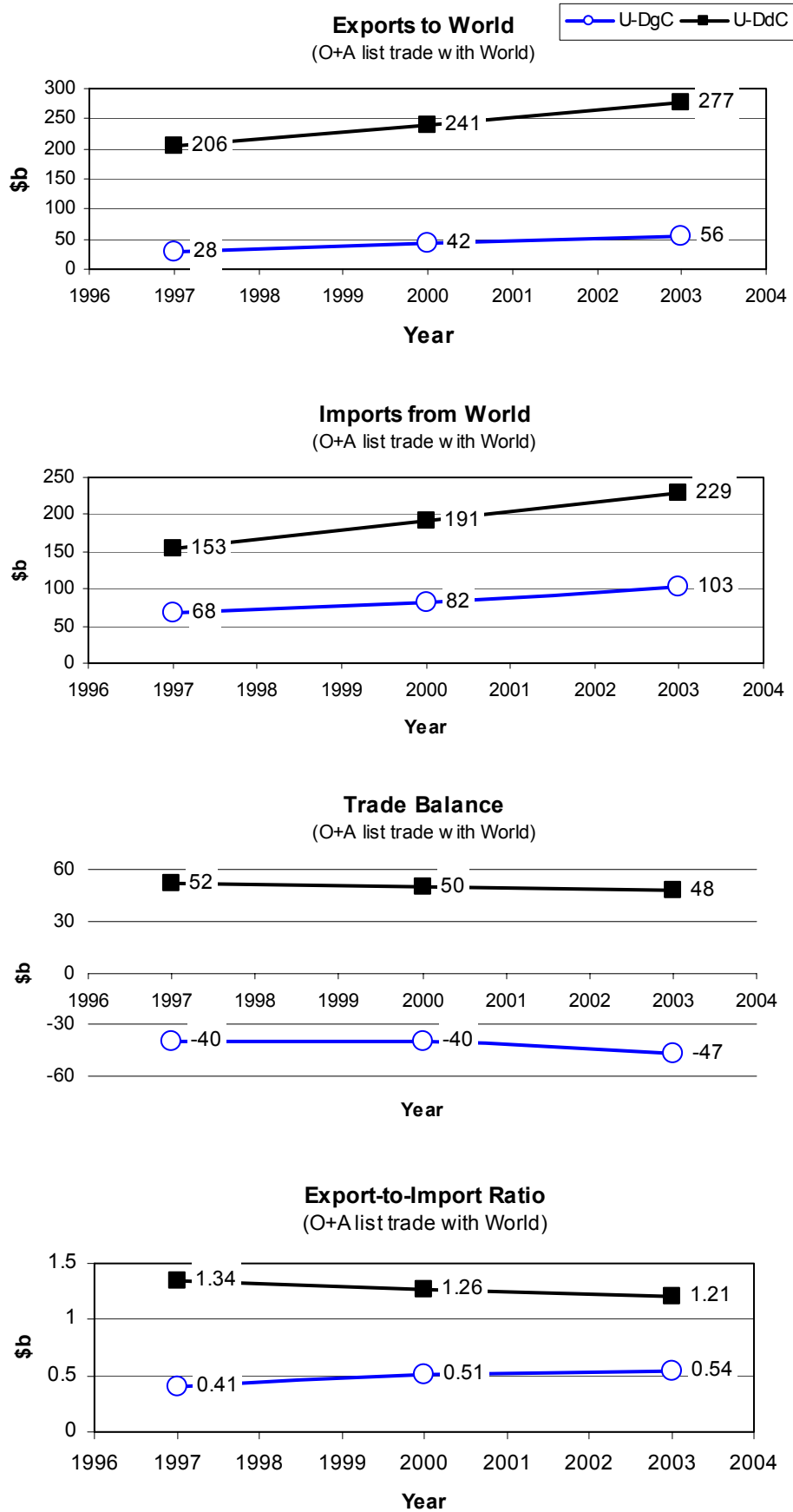
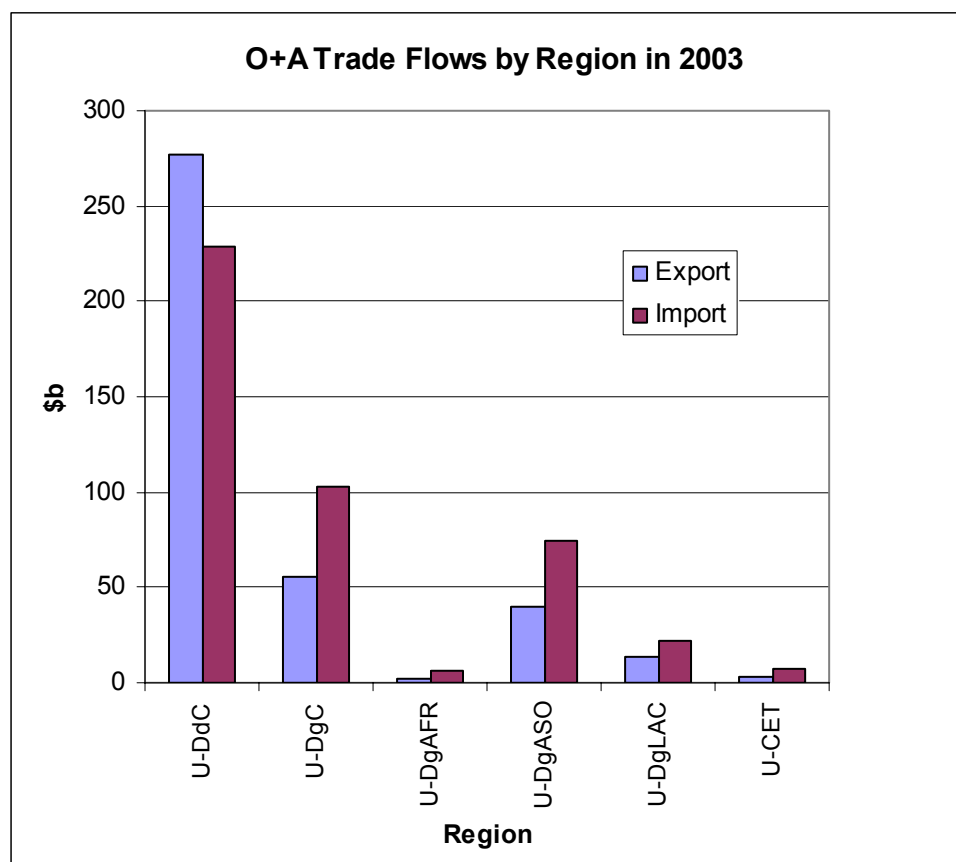


Figure 9: O+A trade time-series. Total exports, imports, trade balance, and export-to-import ratio for environmental goods on the O+A list for developed and developing countries. [U-DdC=Developed Countries (filled squares), U-DgC = Developing Countries (unfilled circles): as classified by the UNCTAD Handbook of Statistic, 2004].



Year **2003**
 EG Group **O+A**
 Partner **World**
 Trade Value (\$ '000)

Reporter	Export	Import	% World Exports	% World Imports
U-DdC	276,969,359	229,077,867	83	68
U-DgC	55,771,083	102,891,441	17	30
U-DgAFR	2,329,656	6,205,263	1	2
U-DgASO	39,516,373	74,479,359	12	22
U-DgLAC	13,925,054	22,206,820	4	7
U-CET	2,957,103	7,351,977	1	2
World	335,697,545	339,321,285		

Figure 10: Regional and sub-regional breakdown of O+A trade flows in 2003 (with World)

[All country classifications and groups are as classified by the UNCTAD Handbook of Statistics, 2004: U-DdC = Developed Countries, U-DgC = Developing Countries, U-DgAFR = Developing Africa, U-DgASO = Developing Asia and Oceania, U-DgLAC = Developing Latin America and the Caribbean, U-CET = Countries with Economies in Transition in Eastern Europe and Central Asia].

Note: Data for DgC are the sum of data for regions U-DgAFR, U-DgASO and U-DgLAC.

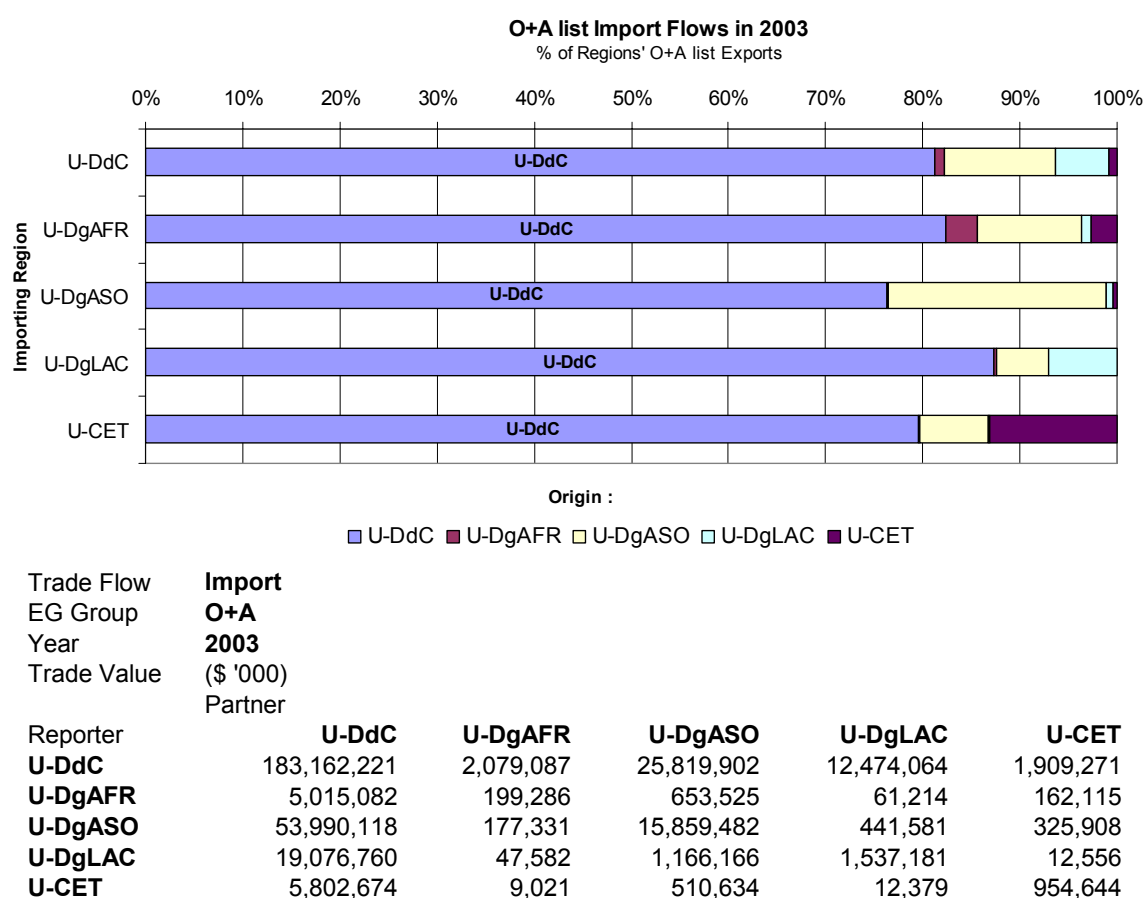
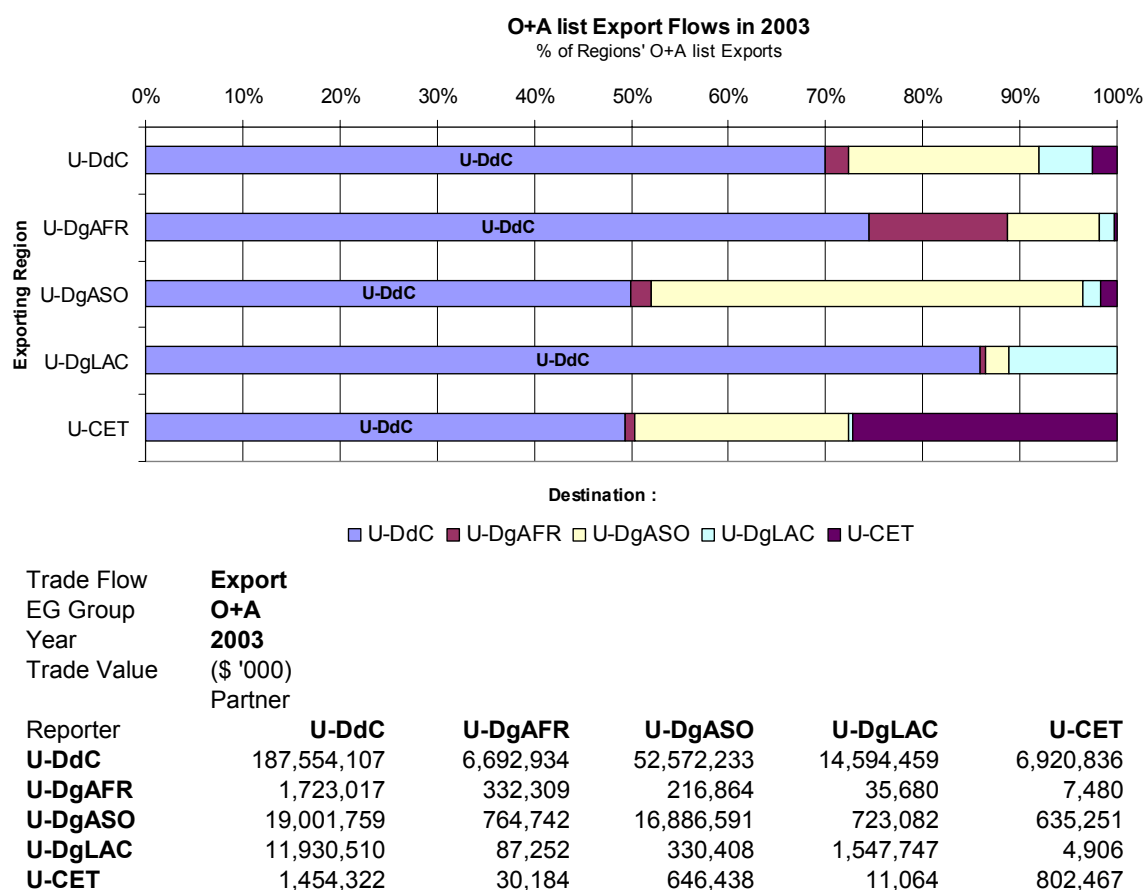


Figure 11: Intra- and inter-regional trade flows for environmental goods on the O+A list in 2003.

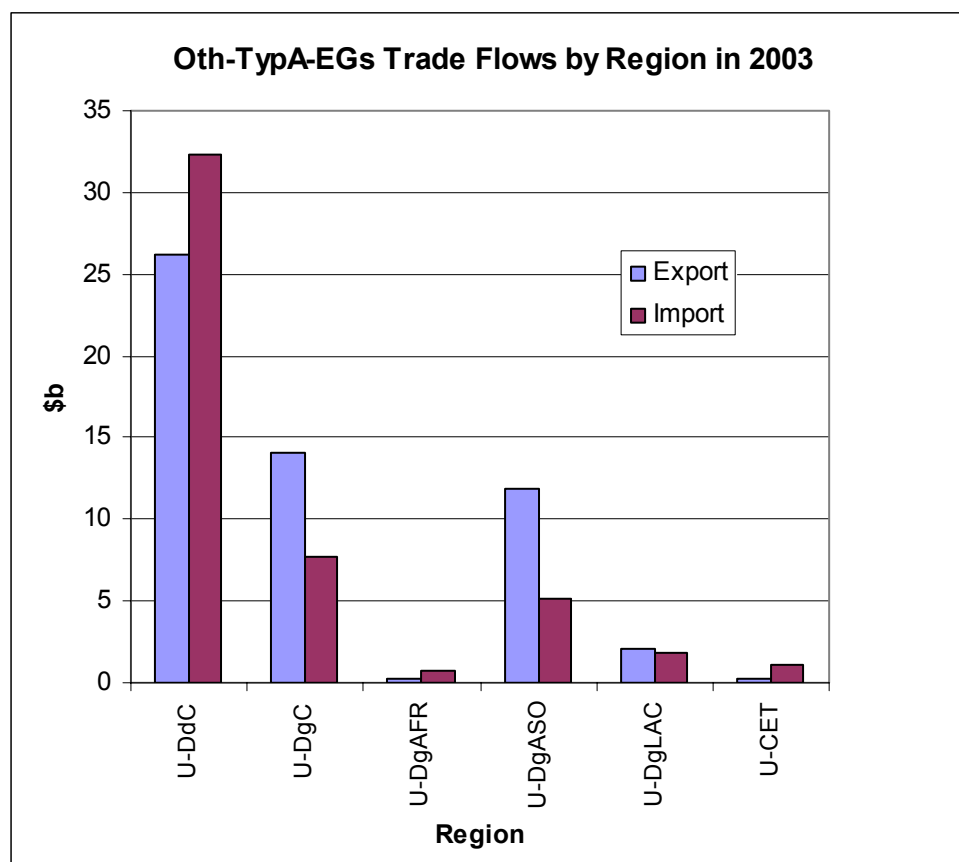
Other Type A EGs goods

41. Absent from both the OECD and APEC lists are a number of goods that may be used in supplying environmental services. UNCTAD has preliminarily identified several goods that may be used in the provision of environmental services not included in the OECD list of EGs (such items undoubtedly also have other uses). These goods have been included in the **Oth-TypeA-EGs** group of environmental goods examined in this study.

An identification of other Type A EGs for environmental services comprising the OECD classification of environmental activities
Wastewater management
→ porcelain and ceramic bathroom; kitchen & other sanitary fixtures; domestic kitchen waste disposers
Solid waste management
→ plastic sacks and bags for waste; lifting, handling, loading or unloading machinery nes; trucks nes; garbage trucks; earth moving/road making equipment for dumps and landfill sites.
Remediation and cleanup
→ domestic vacuum cleaners; broom handles and parts; tarpaulins; waterproof footwear; plastic gloves; safety goggles; breathing apparatus; protective clothing; sawdust, wood waste or scrap to absorb spills.
Water supply
→ hydrogen peroxide and ultra-violet lamps used in water purification.
Recycled materials
→ electro-magnetic lifting heads; continuous action goods conveyor or elevator belt type; continuous action elevators or conveyors for goods nes; lifting, handling, loading or unloading machinery nes; parts of sorting, screening, separating or washing machines.
Sustainable agriculture and fisheries and Sustainable forestry
→ a wide range of garden and hand tools, including shovels, rakes, scythes, hoes, shears, snades forks saws axes and drills

Table 2. An identification of other Type A EGs. This table lists several Type A environmental goods used in the provision of environmental services included within the OECD classification of environmental activities, but not included in either the OECD or APEC list.

42. Trade flows for Oth-TypA-EGs, presented in Figure 12, show that as a group, developing countries possess a trade surplus for these goods, and developed countries a moderate trade deficit. Developing countries command a 35 per cent share of the world export market for Oth-TypA-EGs. Exports are particularly strong for developing countries in Asia, although the list contains individual goods of export interest to all developing country regions. Average trade weighted applied tariffs on Oth-TypA-EGs goods are slightly higher than for O+A goods, registering at 1.7 and 11.5 per cent ad-valorem for developed and developing countries respectively in 2003.



Year
EG Group
Partner
Trade Value (\$ '000)

2003
Oth-TypA-EG
World

Reporter	Export	Import	% World Exports	% World Imports
U-DdC	26,175,932	32,365,115	65	79
U-DgC	14,096,133	7,678,188	35	19
U-DgAFR	245,752	673,819	1	2
U-DgASO	11,813,374	5,108,940	29	12
U-DgLAC	2,037,007	1,895,430	5	5
U-CET	301,547	1,075,000	1	3
World	40,573,612	41,118,303		

Figure 12: Regional and sub-regional breakdown of Oth-TypA-EGs trade flows in 2003 (with World)

[All country classifications and groups are as classified by the UNCTAD Handbook of Statistics, 2004: U-DdC = Developed Countries, U-DgC = Developing Countries, U-DgAFR = Developing Africa, U-DgASO = Developing Asia and Oceania, U-DgLAC = Developing Latin America and the Caribbean, U-CET = Countries with Economies in Transition in Eastern Europe and Central Asia].

Note: Data for DgC are the sum of data for regions U-DgAFR, U-DgASO and U-DgLAC.

Trade patterns for Type-B EGs

CT and CT-Fuel goods

43. As with O+A goods, the regional breakdown of CT trade shows in Figure 13 shows the dominant role played by developed countries in global trade for the CT goods. They account for about 80 per cent of world exports and nearly 70 per cent of world imports. Data in Figure 13 also indicate that developing countries in Asia are the most important developing country exporters and importers of CT goods, accounting for over 70 per cent of all developing country trade in CT goods.

44. While CT exports from developing countries remain significantly below export levels, as with O+A exports, developing countries have substantially increased their exports of CT goods in recent years, although their trade balance has not improved due to proportionate increases in CT imports. Figure 14 shows that developing country exports of CT goods has doubled between 1997 and 2003 from 17 \$b to almost 35 \$b pointing to a dynamic export nature of these goods for developing countries.

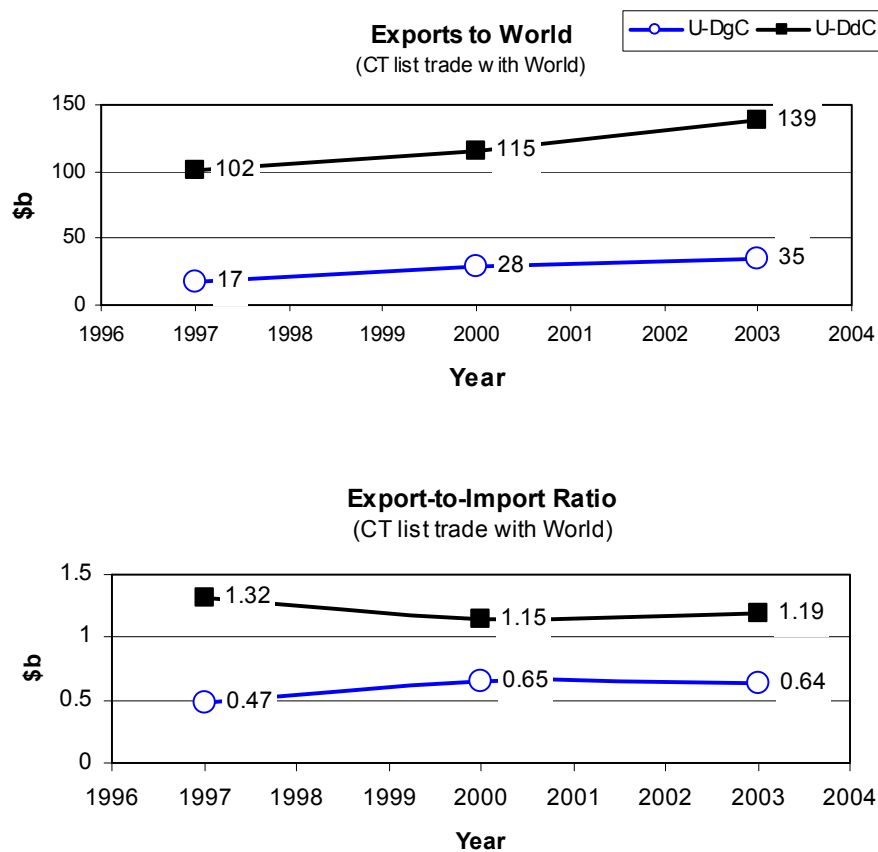
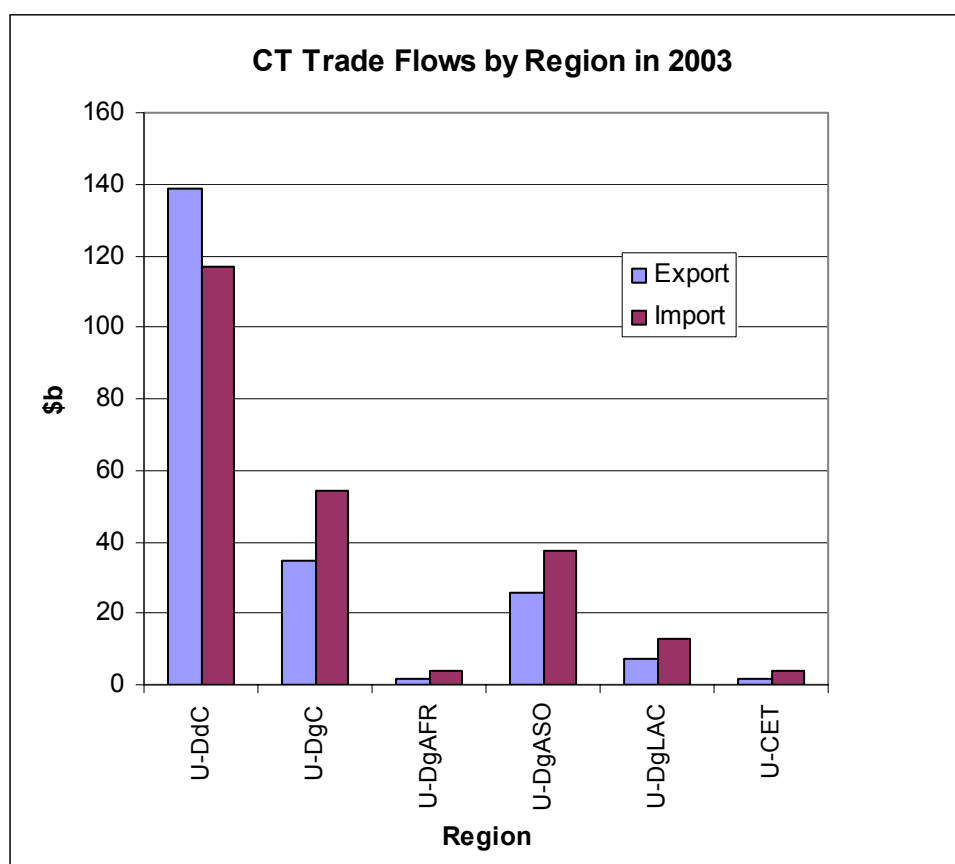


Figure 14: CT trade time-series. Total exports and trade balance for environmental goods on the CT list for developed and developing countries. [U-DdC=Developed Countries (filled squares), U-DgC = Developing Countries (unfilled circles): as classified by the UNCTAD Handbook of Statistic, 2004].

45. As shown in Figure 15, the situation for CT-Fuels goods is entirely different than for CT goods. For CT-Fuels, developed countries command only 50 per cent of the world export market and run a trade deficit. Developing countries and countries with economies in transition, on the other hand, supply substantial portions of the world export market at 30 and 20 per cent respectively, and both groups of countries enjoy a sizable trade surplus in CT-Fuel goods, mainly due to their exports of natural gas and related products.



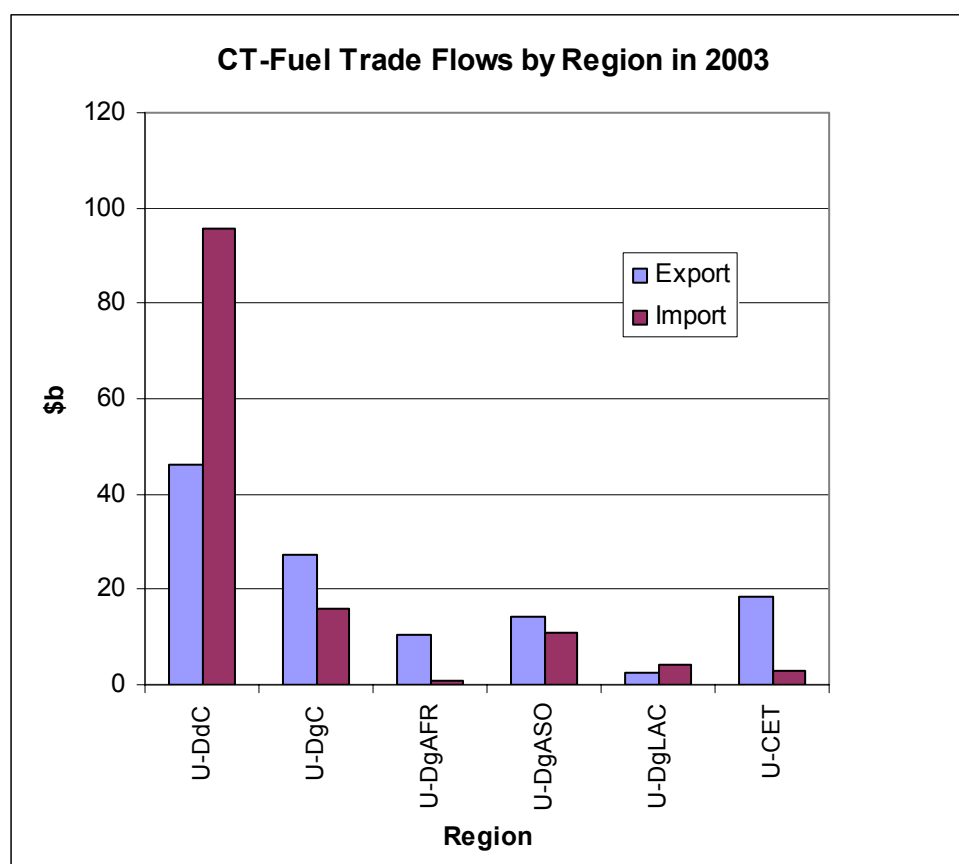
Year **2003**
 EG Group **CT**
 Partner **World**
 Trade Value (\$ '000)

Reporter	Export	Import	% World Exports	% World Imports
U-DdC	138,662,163	116,922,693	79	67
U-DgC	34,675,867	54,256,999	20	31
U-DgAFR	1,588,225	4,087,912	1	2
U-DgASO	25,926,643	37,535,084	15	21
U-DgLAC	7,161,000	12,634,003	4	7
U-CET	1,597,562	3,875,519	1	2
World	174,935,592	175,055,211		

Figure 13: Regional and sub-regional breakdown of CT trade flows in 2003 (with World)

[All country classifications and groups are as classified by the UNCTAD Handbook of Statistics, 2004: U-DdC = Developed Countries, U-DgC = Developing Countries, U-DgAFR = Developing Africa, U-DgASO = Developing Asia and Oceania, U-DgLAC = Developing Latin America and the Caribbean, U-CET = Countries with Economies in Transition in Eastern Europe and Central Asia].

Note: Data for DgC are the sum of data for regions U-DgAFR, U-DgASO and U-DgLAC.



Year
EG Group
Partner
Trade Value (\$ '000)

2003
CT-Fuel
World

Reporter	Export	Import	% World Exports	% World Imports
U-DdC	46,219,001	95,849,419	50	104
U-DgC	27,440,243	16,146,841	30	18
U-DgAFR	10,495,023	728,404	11	1
U-DgASO	14,286,732	11,027,268	16	12
U-DgLAC	2,658,489	4,391,169	3	5
U-CET	18,343,698	2,773,505	20	3
World	92,002,942	114,769,765		

Figure 15: Regional and sub-regional breakdown of CT-Fuel trade flows in 2003 (with World)

[All country classifications and groups are as classified by the UNCTAD Handbook of Statistics, 2004: U-DdC = Developed Countries, U-DgC = Developing Countries, U-DgAFR = Developing Africa, U-DgASO = Developing Asia and Oceania, U-DgLAC = Developing Latin America and the Caribbean, U-CET = Countries with Economies in Transition in Eastern Europe and Central Asia].

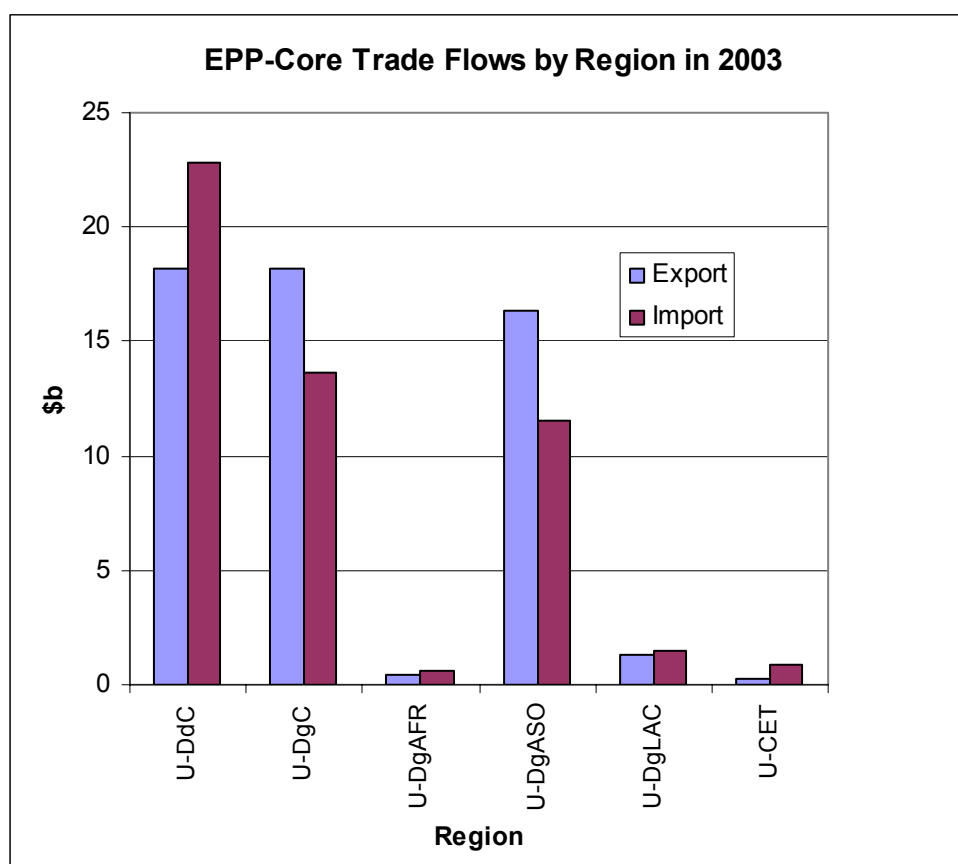
Note: Data for DgC are the sum of data for regions U-DgAFR, U-DgASO and U-DgLAC.

Goods on the EPP lists

46. Data compiled for regional trade of a wide range of other Type B EG groups (see Figures 16 through 21) indicate a significant trade surplus for developing countries as a group for the EPP-Core, EPP-WOOD, EPP-WSA and EPP-CA EG goods. However, they have a run a rather large trade deficit for EPP-RCY. EG goods and just break even on EPP-CM group of goods. These features generally hold for the regional groups of developing countries (U-DgAFR, U-DgASO and U-DgLAC), although there are regional differences in the relative size of the trade surplus or deficit for each set of goods.

47. Some of these observations are expected, for example, developing countries do not yet have advanced industries and infrastructure for the collection and processing of recycled goods, but many import them from developed countries as a cheap source of raw materials. Other findings are surprising, for instance, although West Africa is a major world producer of cotton, Africa as a whole is a net importer of cotton materials. However, as cautioned above (paragraph 36), regional country group trade flows ‘with world’ examined here are gross exports/imports that do not discount intra-regional trade, so the high cotton imports of African countries may have an intra-regional rather than an extra-regional origin, and a more detailed investigation would be needed to determine this.

48. Trade flow analyses also indicate that developing countries are principal world exporters for EPP-Core, EPP-WSA, EPP-CM and EPP-CA goods. As noted above (see Figures 6 and 7) these product groups are subject to particularly high tariff rates in both developed and developing country import markets; rates that are significantly higher than for other EG groups examined here.



Year
EG Group
Partner
Trade Value (\$ '000)

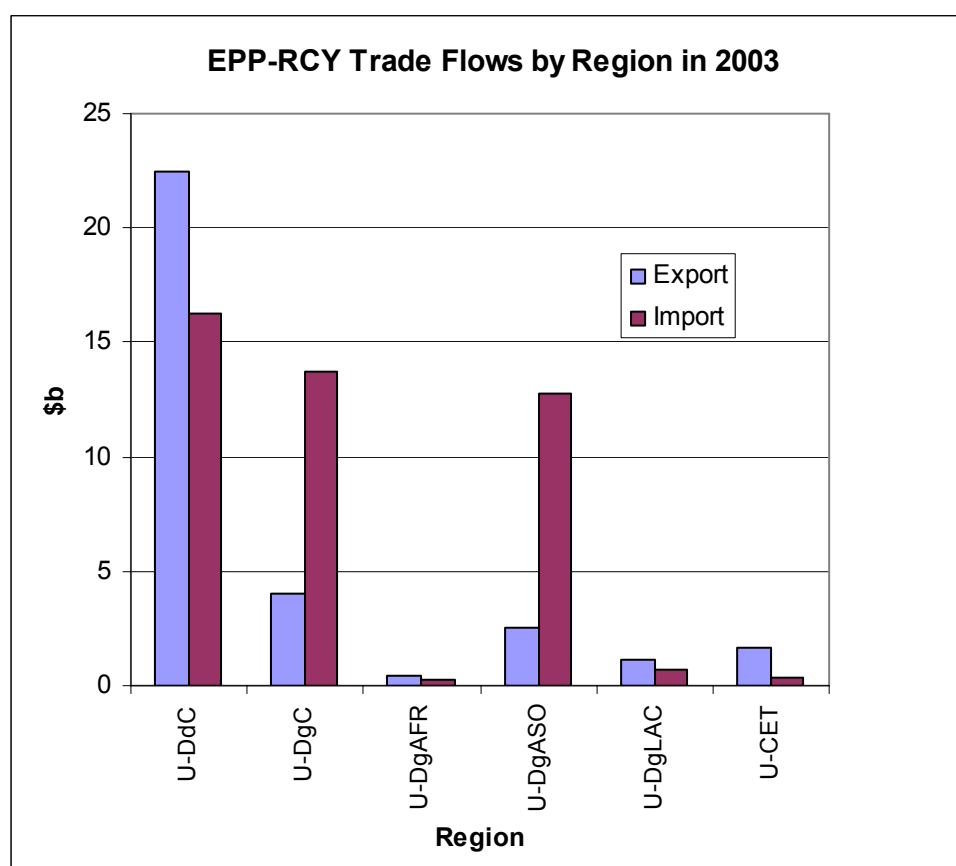
2003
EPP-Core
World

Reporter	Export	Import	% World Exports	% World Imports
U-DdC	18,147,072	22,835,827	50	61
U-DgC	18,155,670	13,673,190	50	37
U-DgAFR	458,741	617,813	1	2
U-DgASO	16,375,059	11,536,494	45	31
U-DgLAC	1,321,870	1,518,883	4	4
U-CET	280,157	848,278	1	2
World	36,582,899	37,357,295		

Figure 16: Regional and sub-regional breakdown of EPP-Core trade flows in 2003 (with World)

[All country classifications and groups are as classified by the UNCTAD Handbook of Statistics, 2004: U-DdC = Developed Countries, U-DgC = Developing Countries, U-DgAFR = Developing Africa, U-DgASO = Developing Asia and Oceania, U-DgLAC = Developing Latin America and the Caribbean, U-CET = Countries with Economies in Transition in Eastern Europe and Central Asia].

Note: Data for DgC are the sum of data for regions U-DgAFR, U-DgASO and U-DgLAC.



Year
EG Group
Partner
Trade Value (\$ '000)

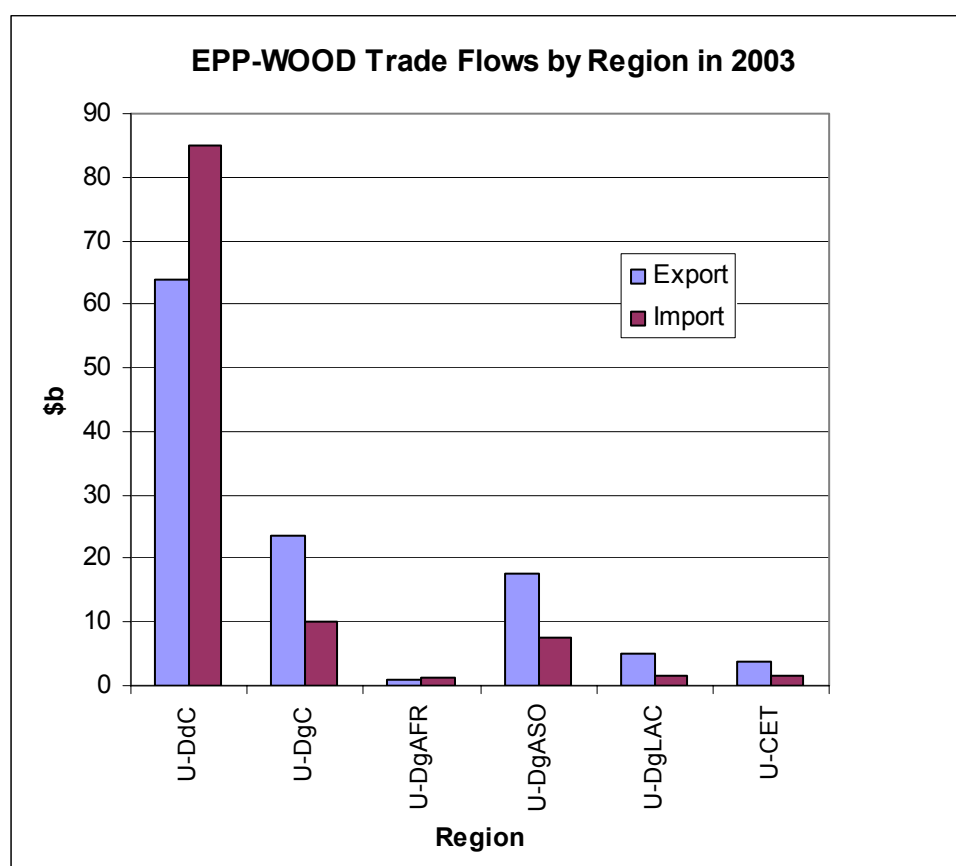
2003
EPP-RCY
World

Reporter	Export	Import	% World Exports	% World Imports
U-DdC	22,438,573	16,247,623	80	54
U-DgC	4,016,834	13,754,133	14	45
U-DgAFR	408,193	288,345	1	1
U-DgASO	2,510,875	12,776,172	9	42
U-DgLAC	1,097,767	689,616	4	2
U-CET	1,642,546	328,885	6	1
World	28,097,954	30,330,641		

Figure 17: Regional and sub-regional breakdown of EPP-RCY trade flows in 2003 (with World)

[All country classifications and groups are as classified by the UNCTAD Handbook of Statistics, 2004: U-DdC = Developed Countries, U-DgC = Developing Countries, U-DgAFR = Developing Africa, U-DgASO = Developing Asia and Oceania, U-DgLAC = Developing Latin America and the Caribbean, U-CET = Countries with Economies in Transition in Eastern Europe and Central Asia].

Note: Data for DgC are the sum of data for regions U-DgAFR, U-DgASO and U-DgLAC.

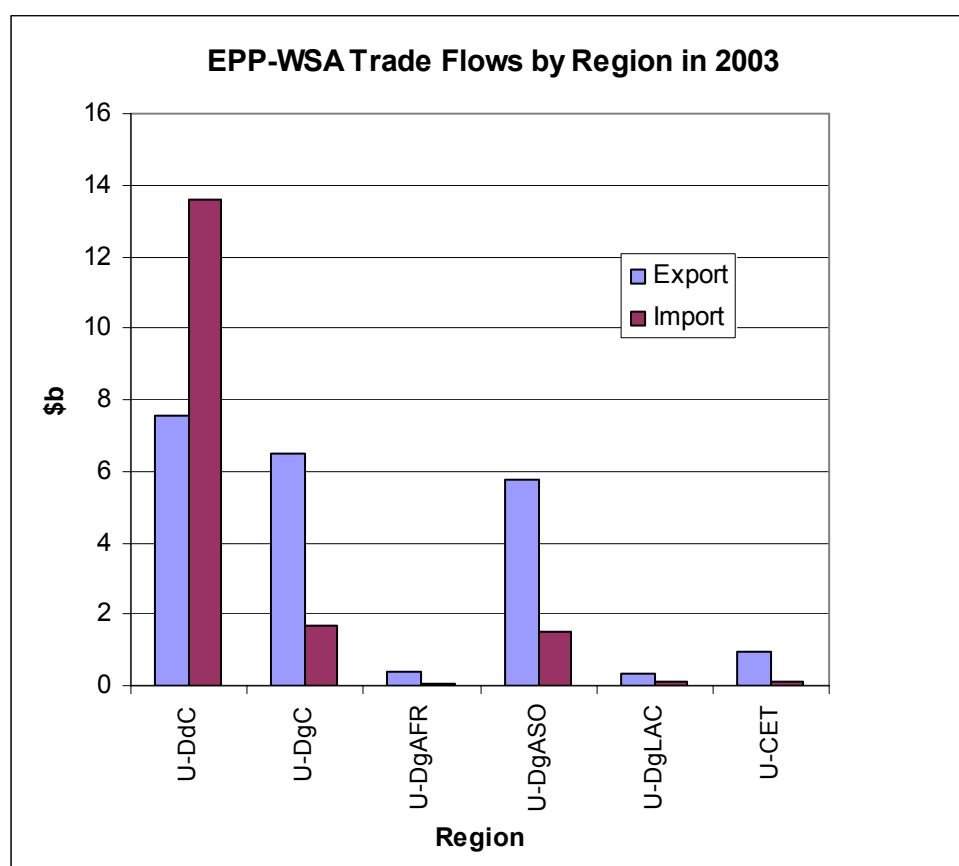


Year	2003			
EG Group	EPP-WOOD			
Partner	World			
Trade Value (\$ '000)				
Reporter	Export	Import	% World Exports	% World Imports
U-DdC	63,759,038	84,977,208	70	88
U-DgC	23,712,104	10,177,020	26	11
U-DgAFR	799,022	1,109,403	1	1
U-DgASO	17,744,980	7,451,456	19	8
U-DgLAC	5,168,102	1,616,160	6	2
U-CET	3,727,629	1,524,400	4	2
World	91,198,771	96,678,628		

Figure 18: Regional and sub-regional breakdown of EPP-WOOD trade flows in 2003 (with World)

[All country classifications and groups are as classified by the UNCTAD Handbook of Statistics, 2004: U-DdC = Developed Countries, U-DgC = Developing Countries, U-DgAFR = Developing Africa, U-DgASO = Developing Asia and Oceania, U-DgLAC = Developing Latin America and the Caribbean, U-CET = Countries with Economies in Transition in Eastern Europe and Central Asia].

Note: Data for DgC are the sum of data for regions U-DgAFR, U-DgASO and U-DgLAC.



Year
EG Group
Partner
Trade Value (\$ '000)

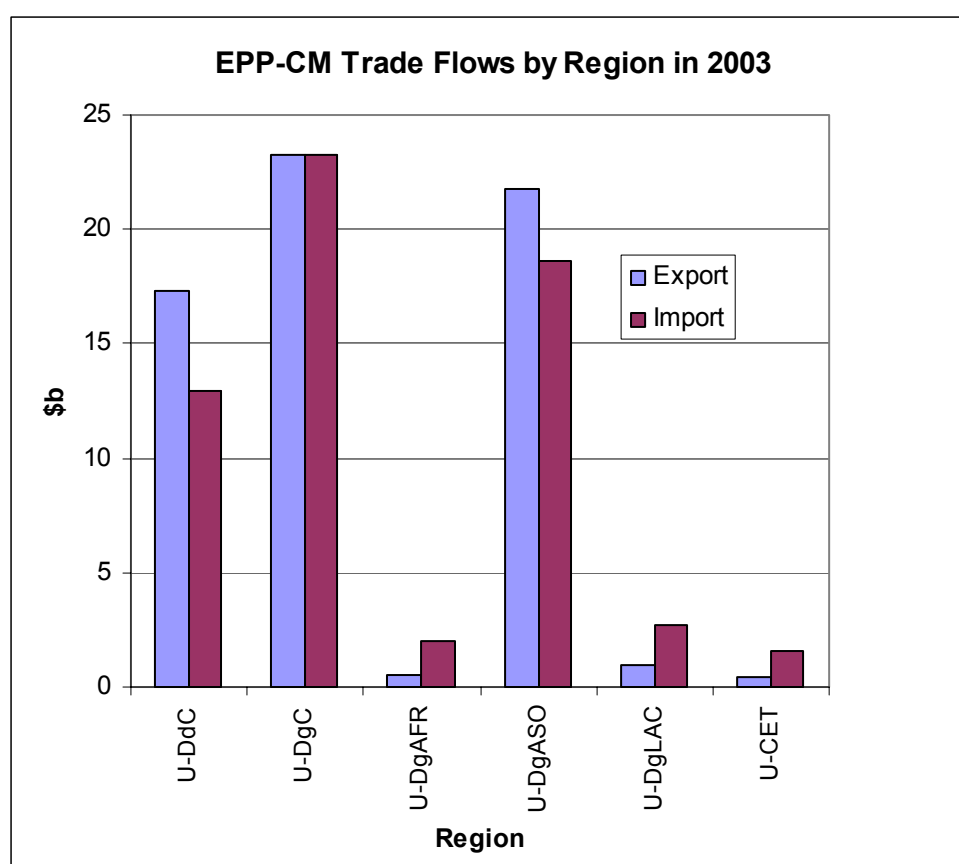
2003
EPP-WSA
World

Reporter	Export	Import	% World Exports	% World Imports
U-DdC	7,542,657	13,610,226	50	88
U-DgC	6,504,056	1,706,029	43	11
U-DgAFR	375,513	40,256	3	0
U-DgASO	5,788,914	1,535,621	39	10
U-DgLAC	339,630	130,152	2	1
U-CET	942,417	132,276	6	1
World	14,989,130	15,448,531		

Figure 19: Regional and sub-regional breakdown of EPP-WSA trade flows in 2003 (with World)

[All country classifications and groups are as classified by the UNCTAD Handbook of Statistics, 2004: U-DdC = Developed Countries, U-DgC = Developing Countries, U-DgAFR = Developing Africa, U-DgASO = Developing Asia and Oceania, U-DgLAC = Developing Latin America and the Caribbean, U-CET = Countries with Economies in Transition in Eastern Europe and Central Asia].

Note: Data for DgC are the sum of data for regions U-DgAFR, U-DgASO and U-DgLAC.



Year
EG Group
Partner
Trade Value (\$ '000)

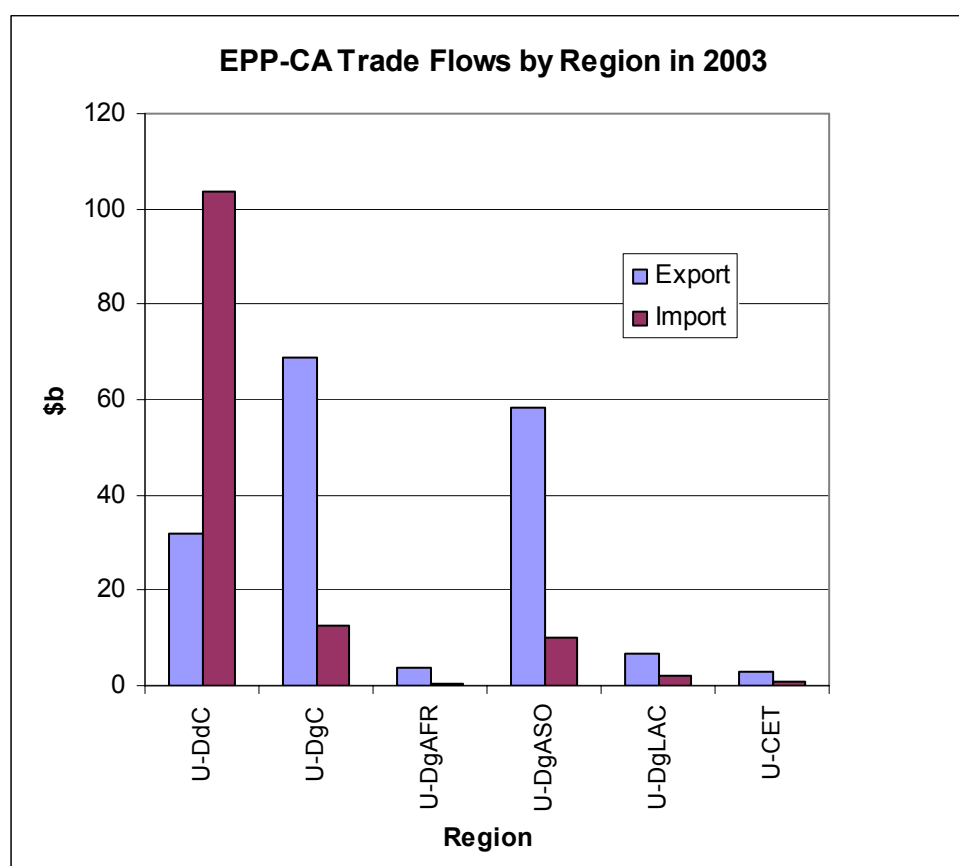
2003
EPP-CM
World

Reporter	Export	Import	% World Exports	% World Imports
U-DdC	17,269,970	12,940,736	42	34
U-DgC	23,282,797	23,289,243	57	62
U-DgAFR	503,902	1,973,145	1	5
U-DgASO	21,799,770	18,608,157	53	49
U-DgLAC	979,125	2,707,942	2	7
U-CET	472,689	1,555,317	1	4
World	41,025,456	37,785,296		

Figure 20: Regional and sub-regional breakdown of EPP-CM trade flows in 2003 (with World)

[All country classifications and groups are as classified by the UNCTAD Handbook of Statistics, 2004: U-DdC = Developed Countries, U-DgC = Developing Countries, U-DgAFR = Developing Africa, U-DgASO = Developing Asia and Oceania, U-DgLAC = Developing Latin America and the Caribbean, U-CET = Countries with Economies in Transition in Eastern Europe and Central Asia].

Note: Data for DgC are the sum of data for regions U-DgAFR, U-DgASO and U-DgLAC.



Year
EG Group
Partner
Trade Value (\$ '000)

2003
EPP-CA
World

Reporter	Export	Import	% World Exports	% World Imports
U-DdC	32,078,744	103,588,525	31	88
U-DgC	68,824,702	12,703,914	66	11
U-DgAFR	3,785,343	481,151	4	0
U-DgASO	58,437,945	9,949,985	56	8
U-DgLAC	6,601,413	2,272,778	6	2
U-CET	2,884,733	838,812	3	1
World	103,788,178	117,131,251		

Figure 21: Regional and sub-regional breakdown of EPP-CA trade flows in 2003 (with World)

[All country classifications and groups are as classified by the UNCTAD Handbook of Statistics, 2004: U-DdC = Developed Countries, U-DgC = Developing Countries, U-DgAFR = Developing Africa, U-DgASO = Developing Asia and Oceania, U-DgLAC = Developing Latin America and the Caribbean, U-CET = Countries with Economies in Transition in Eastern Europe and Central Asia].

Note: Data for DgC are the sum of data for regions U-DgAFR, U-DgASO and U-DgLAC.

IV. TOP EG EXPORTERS AND EXPORTS AND DYNAMISM OF EG EXPORTS OF DEVELOPING COUNTRIES

49. The above analyses have attempted to capture general trade patterns of groups of countries for a varied set of environmental goods groups. However, they do not capture the specific trade features of individual countries and specific environmental goods. Certainly, individual developing countries will each have better or poorer trade performance than developing countries as a group, or than their respective region, for a given EG group. Moreover, individual developing countries may have important exports or imports of a particular good or goods within an EG group that can not be discerned from the aggregate data. In order to uncover some of the specific trade strengths of individual developing countries, it is thus important to examine which developing countries are the principal exporters for the various EG groups and which products are among their most significant and dynamic exports.

A) Top developing country exporters of environmental goods

50. Table 3 presents the ranking of the top 10 developing country exporters for each EG group in absolute terms in 2003. China ranks as the number one developing country exporter for all EG groups except CT-Fuel and EPP-RCY. Other countries such as Brazil, India, Indonesia, the Republic of Korea, Malaysia, Mexico, South Africa and Thailand also figure in the top 10 ranking for many of the EG groups. However, this is not unexpected since these countries are also among the top 10 developing country exporters of all goods when measured in absolute terms. In order to discern which developing countries are among the top EG exporters in relative terms it is necessary to normalize each country's EG exports by its total exports of all goods.

51. Table 4 presents the ranking of the top 10 developing country exporters for each of the EG groups in relative terms (as a share of the country's total goods exports). Under such a 'normalized' ranking scheme, any developing country may appear on the top 10 exporter list based solely on its specialization in exports of EGs and regardless of its economic size. Thus, many small developing countries appear in the rankings of Table 4. Importantly, quite a number of least developed countries (LDCs) appear in the top 10 rankings, and for 3 of the 10 EG groups an LDC is the top ranking exporter. LDCs among the top rankings include Bangladesh, Cambodia, Gambia, Madagascar, Maldives, Nepal, Niger, Rwanda, Sudan and Togo. Also noteworthy is the presence of many developing countries with smaller economies such as Belize, Bolivia, Dominica, Grenada, Guyana, Honduras, Lebanon, Nicaragua, and Sri Lanka figure among the top 10 rankings. As can be seen later, however, not all of their exported EGs are very dynamic.

B) Top environmental goods exports of developing countries

52. The top 10 exports from selected EG groups (O+A, CT, CT-Fuel, EPP-Core) by developing countries, developing regions, countries with economies in transition and developed countries are presented in Table 5 and Tables 7 through 11. Table 6 shows developing countries' top 10 trade balances for these same EG groups. All tables are based on 2003 trade data.

53. What is immediately apparent from these tables is that developing countries are active in the export of many capital goods and basic manufactures in the O+A and CT lists. In fact, chemical products scarcely figure in the top 10 developing country O+A exports or in the regional export rankings, rather they show a bias towards industrial manufactures. The rankings also show that developing countries as a group and regionally are significant exporters of natural gas and of many EPP-Core products such as wool carpets, yarns and textiles, natural rubber, cork as well as vegetable parts, vegetable derivatives, and basketry manufactures.

C) Dynamism in environmental goods exports of developing countries

54. The survey of environmental goods trade presented above indicates that developing countries are currently running substantial trade deficits in Type A O+A and Type B CT environmental goods, but that their exports of these goods are rising substantially. At the same time, for Type B environmental goods on the CT-Fuel and most of the EPP lists, data indicate sizable trade surpluses for developing countries.

55. One of the most significant developments in developing countries' trade performance has been their substantial progress in enhancing export diversification over the past two decades. The export concentration index for developing countries as a group fell sharply from nearly 0.6 in 1980 to around 0.2 in 2003, and their share of higher value added exports – comprised of manufactures employing medium- to high-level skill and technology inputs – increased from 20 to nearly 50 per cent. This has been related to an overall increase in the proportion of manufactures in developing country exports, which has climbed continuously from only 20 per cent in 1980 to 75 per cent in 2003. Manufactures, including electronics, computers and office equipment, telecommunications, automobiles, clothing and machinery now account for 8 of the top 10 exports from developing countries; the other 2 top exports are crude oil and petroleum products.

56. When trade expansion is examined, data show the annual average growth in the value of world merchandise exports in the last two decades has exceeded 8 per cent. However, there have been considerable differences in the export growth rates from one product group to another, with some growing more than twice as fast as aggregate growth in world trade, most advancing at a rate comparable to growth in world trade, and other sectors exhibiting flat or declining exports.

57. These facts suggest that when evaluating which EGs might be attractive candidates for trade liberalisation, developing countries should examine not only their current principal exports and trade balances, but trends in both export and market growth rates for potential environmental goods as well. In Table 12, a ranking of the most dynamic EG groups in developing country exports to the world is presented. EG groups for which exports have grown the most [least] between the 6-year period 1997 to 2003 rank highest [lowest]. The table also provides data for the corresponding percentage change in the size of the share of aggregate developing country exports in each group relative to total developing country goods exports. The table shows that EG groups where exports have grown the most are Type A O+A, Oth-TypA-EGs and Type B CT, CT-Fuel and EPP-CA. For each of these product groups exports have increased more rapidly than developing countries' total export growth rate (to World) of 9.8 per cent from 1997 to 2003 and the share of each group's exports in total exports of all goods has increased. On the other hand, with the exception of EPP-CA, all of the Type B EPP groups have experienced export growth rates smaller than developing countries' total export growth rate, and the share of each group's exports in total exports of

all goods has declined. It must be pointed out, however, that dual use products are far more prevalent in the Type A O+A and Oth-TypA-EGs, which exaggerates the dynamics of their exports.

58. Dynamic rankings of developing countries' EG group exports to developed and developing countries are presented in Tables 13 and 14 respectively. They indicate that the environmental goods trade pattern of developing countries with developed and developing countries are very different.

59. Overall annual export (to developed countries) growth for the combined set of all EG groups is 11.8 per cent, a value considerably higher than the corresponding rate of 7.7 per cent for EG exports to developing countries. While the share of EG exports in total developing country exports to developed countries has also increased by 8.7 per cent from 1997 to 2003, this figure has grown the most for the O+A EG group (+27.9 per cent) and contracted the most for the EPP-WSA group (-27.5 per cent). The fastest growing annual export rate with developed countries is for O+A listed goods, followed by goods in the Oth-TypA-EGs, CT, CT-Fuel and EPP-CA EG groups. As with developing countries' environmental goods exports to World, exports from the EPP-Core, EPP-WOOD, EPP-CM and EPP-WSA EG groups exhibit subdued growth levels less than the total export (to developed countries) growth rate of 10.3 per cent.

60. The export performance of developing countries in environmental goods trade with other developing countries remains lackluster. Overall annual export (to developing countries) growth for the combined set of all EG groups is only 7.7 per cent, a value considerably lower than the annual export (to developing countries) growth rate for all goods of 9.5 per cent. Moreover, only the CT and CT-Fuel EG groups have experienced annual growth exceeding this 9.5 per cent rate. And only for these two sets of goods has the share of exports to developing countries increased between 1997 and 2003.

61. The export performance of developed countries in environmental goods trade with developing countries is presented in Table 15. Their overall annual export (to developing countries) growth for the combined set of all EG groups is 3.7 per cent, a value much lower than the respective rate for developing country exports but higher than the annual export (to developing countries) growth rate for all goods of 3.4 per cent. As with developing country exports, the CT-Fuel EG group has experienced a high annual growth, yet the most dynamic EG group export to developing countries is the EPP-RCY group growing at 13.3 per cent annually.

V. SUMMARY AND FINDINGS

62. The analysis in this note provides an update and extends the coverage of statistical data on trade of EGs presented in the 2003 UNCTAD publication: *Environmental Goods: Trade Statistics of Developing Countries* (TD/B/COMM.1/EM.21/CRP.1). Whereas the 2003 paper supplemented the OECD and APEC lists of EGs by a core list of EPPs, the analysis in this paper extends to various other groups of EPPs (recoverable materials, wood and wood-based products, apparel manufactured from natural wool and silk fibres, raw cotton materials and cotton textiles, and apparel manufactured from natural cotton fibres). Also included in the analysis of this paper are clean technologies and components for renewable energy, clean fuels and renewable energy, and a list of Type A EGs, which have not been captured by the OECD and APEC lists.

63. The point of departure for the study was that if EGs were confined to those currently on the table of negotiations in the CTE SS, developing countries would incur a trade deficit of almost US\$ 50 billion, if trade in those EGs were liberalized. This paper therefore has attempted to identify EGs of export interest to developing countries with a view to achieving more balance as regards the trade impact of EG trade liberalization (no attempt has been made to analyze the developmental, social and environmental effects of liberalization of EG trade, neither based on the OECD and APEC lists, nor any other groups of EGs covered in this paper). This study has also not touched upon conceptual approaches towards EGS trade liberalization and should therefore not be used to advance a particular approach.

64. The study highlights that developing countries have an important export surplus with developed countries in a number of groups of EGs, in particular EPPs, including manufactured apparel from natural cotton fibres, apparel manufactured from natural wool and silk fibres, wood and wood-based products, clean fuels and renewable energy, other Type A EGs, and the core list of EPPs. These groups of EGs account for 8 per cent of developing country exports, compared to only 2.8 per cent for those EGs on the OECD and APEC list. For all groups of EGs identified in this study (and excluding EGs on the OECD and APEC lists) developing countries would have an export surplus of US\$ 67 billion in 2003, well above the import surplus based on the OECD and APEC listed EGs of US\$ 47.

65. As the figures above are based on a static analysis of the trade effect, the paper has also reviewed the dynamics of trade flows for the various groups of EGs covered in this study. The highest annual export rates of developing countries for the period from 1997 to 2003 have been observed for clean technologies and components for renewable energy, the O+A listed goods, followed by clean fuels and renewable energy, and Oth-TypeA-EGs. It however needs to be qualified that the O+A list and Oth-TypeA-EGs appear to contain a high number of dual use goods, which distorts export growth of those EGs. By way of illustration, among the five top export items of developing countries on the O+A list, there are no less than four “nes” items, i.e. not elsewhere specify: plastic articles, nes; other machines and apparatus, other; taps, cocks, valves and similar appliances, nes; and machines and mechanical appliances, nes.

Year : 2003

EG Group	Rank	Reporter	Exports (\$ million)	EG Group	Rank	Reporter	Exports (\$ million)
O+A	1	China	13,135	EPP-RCY	1	China, Hong Kong SAR	867
	2	Mexico	8,923		2	Mexico	779
	3	China, Hong Kong SAR	7,078		3	Rep. of Korea	318
	4	Rep. of Korea	5,334		4	Singapore	301
	5	Singapore	4,569		5	China	233
	6	Malaysia	3,217		6	South Africa	181
	7	Brazil	2,402		7	Thailand	172
	8	South Africa	1,905		8	Philippines	121
	9	Thailand	1,888		9	Indonesia	106
	10	Turkey	1,314		10	Venezuela	97
Oth-TypA-EGs	1	China	5,946	EPP-WOOD	1	China	6,925
	2	Mexico	1,405		2	Indonesia	3,899
	3	Malaysia	1,381		3	Malaysia	3,319
	4	China, Hong Kong SAR	1,221		4	Brazil	2,357
	5	Thailand	1,045		5	Thailand	1,319
	6	Rep. of Korea	715		6	Chile	1,202
	7	Singapore	360		7	China, Hong Kong SAR	1,120
	8	Turkey	334		8	Mexico	944
	9	Indonesia	294		9	South Africa	498
	10	Brazil	256		10	Turkey	248
CT	1	China	10,187	EPP-WSA	1	China	2,495
	2	Mexico	5,924		2	China, Hong Kong SAR	1,392
	3	China, Hong Kong SAR	5,676		3	Bangladesh	359
	4	Rep. of Korea	2,742		4	India	342
	5	Singapore	2,030		5	Rep. of Korea	226
	6	Thailand	1,472		6	Turkey	220
	7	South Africa	1,462		7	Mexico	198
	8	Malaysia	1,376		8	Jordan	177
	9	Brazil	874		9	Indonesia	148
	10	Turkey	823		10	Morocco	116
CT-Fuel	1	Algeria	10,035	EPP-CM	1	China	7,503
	2	Indonesia	6,490		2	China, Hong Kong SAR	5,878
	3	Malaysia	3,691		3	Pakistan	2,287
	4	Brunei Darussalam	1,595		4	India	2,126
	5	Oman	1,249		5	Turkey	1,140
	6	Trinidad and Tobago	1,051		6	Rep. of Korea	1,099
	7	Argentina	840		7	Indonesia	582
	8	Bolivia	392		8	Brazil	535
	9	Iran	365		9	Thailand	369
	10	Nigeria	358		10	Syria	275
EPP-Core	1	China	4,732	EPP-CA	1	China	18,559
	2	Thailand	3,011		2	China, Hong Kong SAR	10,238
	3	Indonesia	1,658		3	Turkey	7,956
	4	China, Hong Kong SAR	1,621		4	India	5,371
	5	India	1,402		5	Mexico	4,602
	6	Malaysia	1,077		6	Pakistan	3,693
	7	Rep. of Korea	626		7	Bangladesh	1,940
	8	Iran	574		8	Indonesia	1,639
	9	Singapore	460		9	Thailand	1,555
	10	Mexico	405		10	Morocco	1,345

Table 3: Top developing country exporters of environmental goods by EG group in absolute terms in 2003. Measured as country exports of each EG group to World.

Year : 2003

EG Group	Rank	Reporter	Normalised Exports	EG Group	Rank	Reporter	Normalised Exports
O+A	1	Trinidad and Tobago	0.151	EPP-RCY	1	Niger	0.035
	2	South Africa	0.060		2	Lebanon	0.020
	3	Mexico	0.054		3	Gambia	0.016
	4	Grenada	0.042		4	Panama	0.013
	5	Guyana	0.038		5	Rwanda	0.012
	6	El Salvador	0.035		6	El Salvador	0.009
	7	Barbados	0.035		7	Honduras	0.008
	8	Brazil	0.033		8	Morocco	0.007
	9	Singapore	0.032		9	Tunisia	0.007
	10	China, Hong Kong SAR	0.031		10	Samoa	0.006
Oth-TypA-EGs	1	Sri Lanka	0.027	EPP-WOOD	1	Gabon	0.071
	2	Grenada	0.022		2	Indonesia	0.064
	3	Honduras	0.021		3	Chile	0.060
	4	Nicaragua	0.020		4	Honduras	0.049
	5	Togo	0.015		5	Guyana	0.047
	6	China	0.014		6	Central African Rep.	0.037
	7	Malaysia	0.013		7	Fiji	0.037
	8	Thailand	0.013		8	Paraguay	0.036
	9	El Salvador	0.013		9	Brazil	0.032
	10	Guatemala	0.012		10	Malaysia	0.032
CT	1	South Africa	0.046	EPP-WSA	1	Madagascar	0.079
	2	Lebanon	0.043		2	Bangladesh	0.075
	3	Grenada	0.040		3	Belize	0.066
	4	Mexico	0.036		4	Jordan	0.057
	5	China, Hong Kong SAR	0.025		5	Nepal	0.051
	6	Belize	0.024		6	Mongolia	0.030
	7	China	0.023		7	Mauritius	0.030
	8	Thailand	0.018		8	China, Macao SAR	0.019
	9	Turkey	0.017		9	Tunisia	0.015
	10	Rep. of Korea	0.014		10	Morocco	0.013
CT-Fuel	1	Algeria	0.408	EPP-CM	1	Pakistan	0.180
	2	Bolivia	0.237		2	Uganda	0.154
	3	Trinidad and Tobago	0.201		3	Togo	0.142
	4	Oman	0.110		4	Gambia	0.115
	5	Indonesia	0.106		5	Niger	0.054
	6	Malaysia	0.035		6	Paraguay	0.053
	7	Argentina	0.028		7	Syria	0.048
	8	Uruguay	0.024		8	United Rep. of Tanzania	0.046
	9	Nigeria	0.015		9	Sudan	0.043
	10	Sudan	0.013		10	China, Macao SAR	0.042
EPP-Core	1	Nepal	0.093	EPP-CA	1	Mauritius	0.436
	2	Uruguay	0.088		2	China, Macao SAR	0.423
	3	Bangladesh	0.063		3	Bangladesh	0.405
	4	Thailand	0.037		4	Maldives	0.308
	5	Dominica	0.035		5	Pakistan	0.291
	6	China, Macao SAR	0.029		6	Cambodia	0.256
	7	Indonesia	0.027		7	Nepal	0.238
	8	Madagascar	0.023		8	Sri Lanka	0.203
	9	India	0.022		9	Madagascar	0.183
	10	Pakistan	0.022		10	Tunisia	0.179

Table 4: Top developing country exporters of environmental goods by EG group in relative terms in 2003. Measured as country exports of each EG group to World normalized by total country goods exports.

Year	2003		
Partner	World		
Reporter	Developing Countries (U-DgC)		
EG Group	HS96	Export (\$ million)	
O+A	392690	5,281	Plastic articles nes
	854389	3,314	Other machines and apparatus, other
	848180	3,084	Taps, cocks, valves and similar appliances, nes
	847989	2,987	Machines and mechanical appliances nes
	854140	2,482	Photosensitive/photovoltaic/LED semiconductor devices
	840999	2,354	Parts for diesel and semi-diesel engines
	840991	2,143	Parts for spark-ignition engines except aircraft
	841430	1,994	Compressors for refrigerating equipment
	842139	1,831	Filtering or purifying machinery for gases nes
	290511	1,292	Methyl alcohol
Oth-TypA-EG	850910	2,060	Domestic vacuum cleaners
	392321	1,718	Sacks & bags (including cones) of polymers of ethylene
	401519	1,427	Gloves other than surgical, of rubber
	850810	1,235	Drills, hand-held, with self-contained electric motor
	850880	1,230	Tools, hand-held, with electric motor, not drills/saws
	392329	970	Plastic sacks, bags, cone except of ethylene polymers
	392620	823	Plastic apparel and clothing accessories
	691090	571	Ceramic bathroom kitchen sanitary items not porcelain
	850820	550	Saws, hand-held, with self-contained electric motor
	630533	453	Sacks&bags,f/pckg polyet
CT	850440	6,716	Static converters, nes
	848180	3,084	Taps, cocks, valves and similar appliances, nes
	854140	2,482	Photosensitive/photovoltaic/LED semiconductor devices
	850490	2,261	Parts of electrical transformers and inductors
	850300	2,230	Parts for electric motors and generators
	850431	2,214	Transformers electric, power capacity < 1 KVA, nes
	842139	1,831	Filtering or purifying machinery for gases nes
	848190	1,416	Parts of taps, cocks, valves or similar appliances
	850131	1,047	DC motors, DC generators, of an output < 750 watts
	840890	696	Engines, diesel except motor vehicle/marine
CT-Fuels	271111	17,712	Natural gas, liquefied
	271112	2,243	Propane, liquefied
	271113	2,025	Butanes, liquefied
	220710	462	Undenatured ethyl alcohol > 80% by volume
	120600	180	Sunflower seeds
	271114	147	Ethylene, propylene, butylene, butadiene, liquefied
	230320	45	Beet-pulp, bagasse & other waste of sugar manufacture
	120300	18	Copra
	120400	10	Linseed
	120500	8	Rape or colza seeds
EPP-Core	850780	2,616	Electric accumulators, nes
	400122	2,381	Technically specified natural rubber (TSNR)
	400121	1,376	Natural rubber in smoked sheets
	400129	1,214	Natural rubber in other forms
	570110	1,168	Carpets of wool or fine animal hair, knotted
	500720	834	Woven fabric >85% silk (except noil silk)
	460210	832	Basketwork, wickerwork products of vegetable material
	400110	694	Natural rubber latex, including prevulcanised
	510710	560	Yarn of combed wool, >85% wool, not retail
	121190	463	Plants & parts, pharmacy, perfume, insecticide use nes

Table 5: Top EG exports of developing countries by EG group in 2003. Only the top 10 exports from selected EG groups are reported here. Exports are to World.

Year 2003
Partner World
Reporter Developing Countries (U-DgC)

EG Group	Trade Balance		
	HS96	(\$ million)	
CT	850440	1,154	Static converters, nes
	850431	416	Transformers electric, power capacity < 1 KVA, nes
	850131	392	DC motors, DC generators, of an output < 750 watts
	842139	372	Filtering or purifying machinery for gases nes
	851610	235	Electric instant, storage and immersion water heaters
	841919	160	Instantaneous/storage water heaters, not electric nes
	732219	98	Radiators and parts thereof, iron or steel except cast
	851150	57	Generators and alternators
	850220	43	Generating sets, with spark ignition engines
	732290	22	Non-electric heaters (with fan), parts, of iron/steel
CT-Fuels	271111	12,313	Natural gas, liquefied
	220710	233	Undenatured ethyl alcohol > 80% by volume
	271114	126	Ethylene, propylene, butylene, butadiene, liquefied
	120730	2	Castor oil seeds
	120400	2	Linseed
	120300	-8	Copra
	230320	-16	Beet-pulp, bagasse & other waste of sugar manufacture
	120600	-102	Sunflower seeds
	120500	-521	Rape or colza seeds
	271112	-580	Propane, liquefied
EPP-Core	400122	1,216	Technically specified natural rubber (TSNR)
	570110	1,120	Carpets of wool or fine animal hair, knotted
	400129	875	Natural rubber in other forms
	460210	756	Basketwork, wickerwork products of vegetable material
	400121	667	Natural rubber in smoked sheets
	500720	464	Woven fabric >85% silk (except noil silk)
	121190	228	Plants & parts, pharmacy, perfume, insecticide use nes
	460120	219	Mats, matting and screens, vegetable plaiting material
	570231	167	Carpets of wool or hair, woven pile, not made up, nes
	570310	159	Carpets of wool or fine animal hair, tufted
O+A	392490	856	Plastic household, toilet articles not table, kitchen
	732510	522	Cast articles, of non-malleable cast iron nes
	847290	426	Office machines, nes
	851629	411	Electric space heating nes and soil heating apparatus
	842139	372	Filtering or purifying machinery for gases nes
	853931	323	Fluorescent lamps, hot cathode
	220710	233	Undenatured ethyl alcohol > 80% by volume
	460120	219	Mats, matting and screens, vegetable plaiting material
	841919	160	Instantaneous/storage water heaters, not electric nes
	902519	102	Thermometers, except liquid filled
Oth-TypA-EG	850910	1,571	Domestic vacuum cleaners
	401519	1,255	Gloves other than surgical, of rubber
	392321	1,217	Sacks & bags (including cones) of polymers of ethylene
	850810	846	Drills, hand-held, with self-contained electric motor
	850880	830	Tools, hand-held, with electric motor, not drills/saws
	392620	554	Plastic apparel and clothing accessories
	691090	463	Ceramic bathroom kitchen sanitary items not porcelain
	850820	457	Saws, hand-held, with self-contained electric motor
	630533	354	Sacks&bags,f/pckg polyet
	392329	280	Plastic sacks, bags, cone except of ethylene polymers

Table 6: Top EG trade balances of developing countries by EG group in 2003. Only the top 10 trade balances from selected EG groups are reported here. Trade is with World.

Year	2003		
Partner	World		
Reporter	Africa (U-DgAFR)		
EG Group	HS96	Export (\$ million)	
O+A	842139	1,151	Filtering or purifying machinery for gases nes
	392690	75	Plastic articles nes
	840999	75	Parts for diesel and semi-diesel engines
	841490	62	Parts of vacuum pumps, compressors,fans,blowers,hoods
	847989	60	Machines and mechanical appliances nes
	220710	57	Undenatured ethyl alcohol > 80% by volume
	840991	52	Parts for spark-ignition engines except aircraft
	870892	46	Mufflers and exhaust pipes for motor vehicles
	890790	37	Buoys, beacons, coffer-dams, pontoons, floats nes
	848180	34	Taps, cocks, valves and similar appliances, nes
Oth-TypA-EG	847490	86	Parts for mineral sort, screen, mix, etc machines
	870892	46	Mufflers and exhaust pipes for motor vehicles
	691010	26	Porcelain bathroom, kitchen & other sanitary fixtures
	392321	24	Sacks & bags (including cones) of polymers of ethylene
	392329	21	Plastic sacks, bags, cone except of ethylene polymers
	842959	9	Earth moving/road making equipment, self-propelled nes
	691090	9	Ceramic bathroom kitchen sanitary items not porcelain
	902000	8	Breathing appliances and gas masks
	630533	7	Sacks&bags,f/pckg polyet
	842890	7	Lifting, handling, loading or unloading machinery nes
CT	842139	1,151	Filtering or purifying machinery for gases nes
	848180	34	Taps, cocks, valves and similar appliances, nes
	851150	32	Generators and alternators
	854140	31	Photosensitive/photovoltaic/LED semiconductor devices
	841391	24	Parts of pumps for liquids
	848310	23	Transmission shafts and cranks, cam and crank shafts
	841381	19	Pumps nes
	850490	18	Parts of electrical transformers and inductors
	850432	15	Transformers electric, power capacity 1-16 KVA, nes
	841370	15	Centrifugal pumps nes
CT-Fuels	271111	4,240	Natural gas, liquefied
	271112	1,444	Propane, liquefied
	271113	999	Butanes, liquefied
	271114	70	Ethylene, propylene, butylene, butadiene, liquefied
	220710	57	Undenatured ethyl alcohol > 80% by volume
	120600	2	Sunflower seeds
	120730	0	Castor oil seeds
	120500	0	Rape or colza seeds
	230320	0	Beet-pulp, bagasse & other waste of sugar manufacture
	120400	0	Linseed
EPP-Core	510529	72	Wool tops & other combed wool, except combed fragments
	510111	69	Greasy shorn wool, not carded or combed
	121190	43	Plants & parts, pharmacy, perfume, insecticide use nes
	130120	36	Gum arabic
	450310	27	Corks and stoppers, natural cork
	530410	20	Sisal and Agave, raw
	570110	14	Carpets of wool or fine animal hair, knotted
	320910	13	Acrylic & vinyl polymer based paint, varnish, in water
	450110	12	Natural cork, raw or simply prepared
	510130	11	Carbonized wool, not carded or combed

Table 7: Top EG exports of developing countries in Africa by EG group in 2003. Only the top 10 exports from selected EG groups are reported here. Exports are to World.

Year 2003
Partner World
Reporter Asia and Oceania (U-DgASO)

EG Group	HS96	Export (\$ million)	
O+A	392690	4,489	Plastic articles nes
	847989	2,554	Machines and mechanical appliances nes
	854389	2,404	Other machines and apparatus, other
	854140	2,385	Photosensitive/photovoltaic/LED semiconductor devices
	848180	2,032	Taps, cocks, valves and similar appliances, nes
	841430	1,312	Compressors for refrigerating equipment
	392490	1,225	Plastic household, toilet articles not table, kitchen
	840999	1,188	Parts for diesel and semi-diesel engines
	847990	1,154	Parts of machines and mechanical appliances nes
	847290	1,097	Office machines, nes
Oth-TypA-EG	850910	1,764	Domestic vacuum cleaners
	392321	1,580	Sacks & bags (including cones) of polymers of ethylene
	401519	1,394	Gloves other than surgical, of rubber
	850810	1,033	Drills, hand-held, with self-contained electric motor
	850880	917	Tools, hand-held, with electric motor, not drills/saws
	392329	884	Plastic sacks, bags, cone except of ethylene polymers
	392620	807	Plastic apparel and clothing accessories
	850820	419	Saws, hand-held, with self-contained electric motor
	630533	388	Sacks&bags,f/pckg polyet
	691010	334	Porcelain bathroom, kitchen & other sanitary fixtures
CT	850440	5,896	Static converters, nes
	854140	2,385	Photosensitive/photovoltaic/LED semiconductor devices
	850490	2,144	Parts of electrical transformers and inductors
	850431	2,087	Transformers electric, power capacity < 1 KVA, nes
	848180	2,032	Taps, cocks, valves and similar appliances, nes
	850300	1,615	Parts for electric motors and generators
	848190	1,245	Parts of taps, cocks, valves or similar appliances
	850131	585	DC motors, DC generators, of an output < 750 watts
	841391	497	Parts of pumps for liquids
	900190	438	Prisms, mirrors and optical elements nes, unmounted
CT-Fuels	271111	12,514	Natural gas, liquefied
	271113	731	Butanes, liquefied
	271112	535	Propane, liquefied
	220710	159	Undenatured ethyl alcohol > 80% by volume
	271114	64	Ethylene, propylene, butylene, butadiene, liquefied
	120600	51	Sunflower seeds
	230320	34	Beet-pulp, bagasse & other waste of sugar manufacture
	120300	18	Copra
	120400	9	Linseed
	120500	7	Rape or colza seeds
EPP-Core	850780	2,408	Electric accumulators, nes
	400122	2,355	Technically specified natural rubber (TSNR)
	400121	1,376	Natural rubber in smoked sheets
	400129	1,209	Natural rubber in other forms
	570110	1,152	Carpets of wool or fine animal hair, knotted
	500720	834	Woven fabric >85% silk (except noil silk)
	460210	820	Basketwork, wickerwork products of vegetable material
	400110	679	Natural rubber latex, including prevulcanised
	510710	547	Yarn of combed wool, >85% wool, not retail
	121190	351	Plants & parts, pharmacy, perfume, insecticide use nes

Table 8: Top EG exports of developing countries in Asia and Oceania by EG group in 2003.
 Only the top 10 exports from selected EG groups are reported here. Exports are to World.

Year 2003
Partner World
Reporter Latin America and Caribbean (U-DgLAC)

EG Group	HS96	Export (\$ million)	
O+A	840991	1,386	Parts for spark-ignition engines except aircraft
	840999	1,092	Parts for diesel and semi-diesel engines
	848180	1,018	Taps, cocks, valves and similar appliances, nes
	290511	990	Methyl alcohol
	854389	903	Electrical machines and
	392690	716	Plastic articles nes
	841430	681	Compressors for refrigerating equipment
	281410	531	Anhydrous ammonia
	841480	422	Air or gas compressors, hoods
	842139	421	Filtering or purifying machinery for gases nes
Oth-TypA-EG	691090	344	Ceramic bathroom kitchen sanitary items not porcelain
	850880	312	Tools, hand-held, with electric motor, not drills/saws
	850910	294	Domestic vacuum cleaners
	850810	201	Drills, hand-held, with self-contained electric motor
	850820	131	Saws, hand-held, with self-contained electric motor
	392321	114	Sacks & bags (including cones) of polymers of ethylene
	870892	83	Mufflers and exhaust pipes for motor vehicles
	691010	74	Porcelain bathroom, kitchen & other sanitary fixtures
	392329	64	Plastic sacks, bags, cone except of ethylene polymers
	630533	59	Sacks&bags,f/pckg polyet
CT	848180	1,018	Taps, cocks, valves and similar appliances, nes
	850440	806	Static converters, nes
	850300	608	Parts for electric motors and generators
	850131	460	DC motors, DC generators, of an output < 750 watts
	842139	421	Filtering or purifying machinery for gases nes
	848310	395	Transmission shafts and cranks, cam and crank shafts
	851150	317	Generators and alternators
	840890	315	Engines, diesel except motor vehicle/marine
	841199	311	Parts of gas turbine engines except turbo-jet/prop
	841919	200	Instantaneous/storage water heaters, not electric nes
CT-Fuels	271111	958	Natural gas, liquefied
	271113	295	Butanes, liquefied
	271112	263	Propane, liquefied
	220710	246	Undenatured ethyl alcohol > 80% by volume
	120600	128	Sunflower seeds
	271114	13	Ethylene, propylene, butylene, butadiene, liquefied
	230320	11	Beet-pulp, bagasse & other waste of sugar manufacture
	120730	2	Castor oil seeds
	120400	1	Linseed
	120500	1	Rape or colza seeds
EPP-Core	510529	255	Wool tops & other combed wool, except combed fragments
	850780	206	Electric accumulators, nes
	230890	125	Vegetable wastes and residues nes for animal feed
	121190	68	Plants & parts, pharmacy, perfume, insecticide use nes
	511211	61	Woven fabric, >85% combed wool or fine hair, <300 g/m2
	510111	58	Greasy shorn wool, not carded or combed
	320300	49	Colouring matter of vegetable or animal origin
	130219	40	Vegetable saps and extracts nes
	500400	30	Silk yarn (except from waste) not retail
	152110	28	Vegetable waxes except triglycerides

Table 9: Top EG exports of developing countries in Latin America and Caribbean by EG group in 2003. Only the top 10 exports from selected EG groups are reported here. Exports are to World.

Year 2003
Partner World
Reporter Countries with economies in transition (U-CET)

EG Group	HS96	Export (\$ million)	
O+A	281410	394	Anhydrous ammonia
	290511	253	Methyl alcohol
	848180	223	Taps, cocks, valves and similar appliances, nes
	840999	142	Parts for diesel and semi-diesel engines
	841490	133	Parts of vacuum pumps, compressors, fans, blowers, hoods
	841950	83	Heat exchange units, non-domestic, non-electric
	392690	63	Plastic articles nes
	841370	58	Centrifugal pumps nes
	847989	57	Machines and mechanical appliances nes
	851490	53	Parts of industrial/etc electric furnaces/ovens nes
Oth-TypA-EG	691010	83	Porcelain bathroom, kitchen & other sanitary fixtures
	847490	22	Parts for mineral sort, screen, mix, etc machines
	392321	21	Sacks & bags (including cones) of polymers of ethylene
	842890	20	Lifting, handling, loading or unloading machinery nes
	691090	17	Ceramic bathroom kitchen sanitary items not porcelain
	842959	15	Earth moving/road making equipment, self-propelled nes
	850590	12	Electro-magnets nes and parts of magnetic devices
	630533	12	Sacks&bags,f/pckg polyet
	392329	10	Plastic sacks, bags, cone except of ethylene polymers
	640192	9	Waterproof footwear(Wellington) no toe cap, over ankle
CT	848180	223	Taps, cocks, valves and similar appliances, nes
	850423	92	Liquid dielectric transformers > 10,000 KVA
	841950	83	Heat exchange units, non-domestic, non-electric
	850300	68	Parts for electric motors and generators
	840681	60	Turbines nes, of o <40mw
	841199	59	Parts of gas turbine engines except turbo-jet/prop
	840690	59	Parts of steam and vapour turbines
	850440	58	Static converters, nes
	841370	58	Centrifugal pumps nes
	841391	51	Parts of pumps for liquids
CT-Fuels	120600	241	Sunflower seeds
	271112	226	Propane, liquefied
	271113	123	Butanes, liquefied
	120500	12	Rape or colza seeds
	271114	8	Ethylene, propylene, butylene, butadiene, liquefied
	230320	7	Beet-pulp, bagasse & other waste of sugar manufacture
	220710	6	Undenatured ethyl alcohol > 80% by volume
	271111	3	Natural gas, liquefied
	120400	2	Linseed
	120300	0	Copra
EPP-Core	510710	43	Yarn of combed wool, >85% wool, not retail
	121190	42	Plants & parts, pharmacy, perfume, insecticide use nes
	511219	18	Woven fabric, >85% combed wool or fine hair, >300 g/m2
	510121	15	Degreased shorn wool, not carded, combed or carbonized
	510111	15	Greasy shorn wool, not carded or combed
	510529	13	Wool tops & other combed wool, except combed fragments
	511119	11	Woven fabric, >85% carded wool or fine hair, >300 g/m2
	320910	10	Acrylic & vinyl polymer based paint, varnish, in water
	570231	8	Carpets of wool or hair, woven pile, not made up, nes
	500400	8	Silk yarn (except from waste) not retail

Table 10: Top EG exports of countries with economies in transition by EG group in 2003. Only the top 10 exports from selected EG groups are reported here. Exports are to World.

Year 2003
 Partner World
 Reporter Developed Countries (U-DdC)

EG Group	HS96	Export (\$ million)	
O+A	847989	21,152	Machines and mechanical appliances nes
	392690	16,706	Plastic articles nes
	840991	14,875	Parts for spark-ignition engines except aircraft
	848180	13,547	Taps, cocks, valves and similar appliances, nes
	840999	11,872	Parts for diesel and semi-diesel engines
	847990	9,056	Parts of machines and mechanical appliances nes
	854389	8,013	Other machines and apparatus, other
	854140	6,536	Photosensitive/photovoltaic/LED semiconductor devices
	841480	6,303	Air or gas compressors, hoods
	841490	5,525	Parts of vacuum pumps, compressors, fans, blowers, hoods
Oth-TypA-EG	842890	3,732	Lifting, handling, loading or unloading machinery nes
	870892	2,975	Mufflers and exhaust pipes for motor vehicles
	847490	2,242	Parts for mineral sort, screen, mix, etc machines
	392321	2,132	Sacks & bags (including cones) of polymers of ethylene
	850880	1,847	Tools, hand-held, with electric motor, not drills/saws
	842839	1,845	Continuous action elevators or conveyors for goods nes
	842959	1,735	Earth moving/road making equipment, self-propelled nes
	850810	1,616	Drills, hand-held, with self-contained electric motor
	850910	1,516	Domestic vacuum cleaners
	392329	1,400	Plastic sacks, bags, cone except of ethylene polymers
CT	848180	13,547	Taps, cocks, valves and similar appliances, nes
	841199	9,782	Parts of gas turbine engines except turbo-jet/prop
	850440	8,529	Static converters, nes
	854140	6,536	Photosensitive/photovoltaic/LED semiconductor devices
	850300	5,831	Parts for electric motors and generators
	841391	5,669	Parts of pumps for liquids
	842199	4,436	Parts for filter/purifying machines for liquid/gas
	841370	4,308	Centrifugal pumps nes
	842139	4,293	Filtering or purifying machinery for gases nes
	848190	4,251	Parts of taps, cocks, valves or similar appliances
CT-Fuels	271112	3,717	Propane, liquefied
	271113	2,128	Butanes, liquefied
	120500	2,058	Rape or colza seeds
	271111	1,993	Natural gas, liquefied
	271114	867	Ethylene, propylene, butylene, butadiene, liquefied
	220710	532	Undenatured ethyl alcohol > 80% by volume
	120600	513	Sunflower seeds
	120400	300	Linseed
	230320	196	Beet-pulp, bagasse & other waste of sugar manufacture
	120300	5	Copra
EPP-Core	850780	3,118	Electric accumulators, nes
	510111	1,386	Greasy shorn wool, not carded or combed
	320910	1,272	Acrylic & vinyl polymer based paint, varnish, in water
	511211	972	Woven fabric, >85% combed wool or fine hair, <300 g/m2
	510529	870	Wool tops & other combed wool, except combed fragments
	511219	754	Woven fabric, >85% combed wool or fine hair, >300 g/m2
	510710	731	Yarn of combed wool, >85% wool, not retail
	450310	712	Corks and stoppers, natural cork
	510121	601	Degreased shorn wool, not carded, combed or carbonized
	500720	501	Woven fabric >85% silk (except noil silk)

Table 11: Top EG exports of developed countries by EG group in 2003. Only the top 10 exports from selected EG groups are reported here. Exports are to World.

Reporter = U-DgC			Partner = World			
Rank	EG Group	Annual growth rate of DgC exports (%)	Share of Total DgC Exports to World (%)	1997	2003	Increment (%)
1	CT	12.7	0.015	0.018	16.5	
2	O+A	12.3	0.025	0.028	14.4	
3	CT-Fuel	11.8	0.012	0.014	11.4	
4	Oth-TypA-EGs	11.4	0.007	0.007	9.0	
5	EPP-CA	10.3	0.034	0.035	2.5	
6	EPP-Core	8.7	0.022	0.020	-6.1	
7	EPP-RCY	7.0	0.002	0.002	-14.3	
8	EPP-CM	6.9	0.014	0.012	-14.8	
9	EPP-WOOD	6.4	0.015	0.012	-17.2	
10	EPP-WSA	2.8	0.005	0.003	-32.7	
All EG Groups		10.0	0.150	0.152	0.7	
Total Goods Exports to World		9.8				
Value of All EG Group Exports to World in 2003 (\$b) =			299			

Table 12: Dynamism of developing countries' EG group exports to the world. The calculated annual export growth rate is the compound annual growth rate (CAGR).

Reporter = U-DgC			Partner = U-DdC			
Rank	EG Group	Annual growth rate of DgC exports (%)	Share of Total DgC Exports to U-DdC (%)	1997	2003	Increment (%)
1	O+A	14.9	0.024	0.030	27.9	
2	Oth-TypA-EGs	14.7	0.008	0.010	26.9	
3	CT	14.2	0.014	0.018	23.4	
4	CT-Fuel	12.6	0.015	0.017	13.2	
5	EPP-CA	12.3	0.046	0.051	11.7	
6	EPP-WOOD	9.7	0.017	0.016	-3.1	
7	EPP-Core	9.5	0.025	0.024	-4.2	
8	EPP-CM	4.8	0.005	0.004	-26.4	
9	EPP-RCY	4.7	0.002	0.001	-26.6	
10	EPP-WSA	4.5	0.007	0.005	-27.5	
All EG Groups		11.8	0.163	0.177	8.7	
Total Goods Exports to U-DdC		10.3				
Value of All EG Group Exports to U-DdC in 2003 (\$b) =			191			

Table 13: Dynamism of developing countries' EG group exports to developed countries. The calculated annual export growth rate is the compound annual growth rate (CAGR).

Reporter = U-DgC			Partner = U-DgC		
Rank	EG Group	Annual growth rate of DgC exports (%)	Share of Total DgC Exports to U-DgC (%)		Increment (%)
			1997	2003	
1	CT-Fuel	11.4	0.008	0.009	10.6
2	CT	10.8	0.017	0.018	7.0
3	O+A	9.3	0.027	0.027	-1.5
4	EPP-RCY	8.9	0.003	0.003	-3.2
5	EPP-Core	8.1	0.018	0.016	-7.6
6	EPP-CM	8.1	0.025	0.023	-7.7
7	EPP-CA	4.8	0.020	0.015	-23.2
8	Oth-TypA-EGs	4.8	0.005	0.004	-23.4
9	EPP-WOOD	1.7	0.011	0.007	-35.8
10	EPP-WSA	-2.8	0.003	0.001	-51.3
All EG Groups		7.7	0.136	0.124	-9.4
Total Goods Exports to U-DgC		9.5			
Value of All EG Group Exports to U-DgC in 2003 (\$b) =			97		

Table 14: Dynamism of developing countries' EG group exports to developing countries. The calculated annual export growth rate is the compound annual growth rate (CAGR).

Reporter = U-DdC			Partner = U-DgC		
Rank	EG Group	Annual growth rate of DgC exports (%)	Share of Total DgC Exports to U-DgC (%)		Increment (%)
			1997	2003	
1	EPP-RCY	13.3	0.005	0.009	73.5
2	CT-Fuel	8.2	0.002	0.002	31.5
3	EPP-CM	6.7	0.007	0.009	21.0
4	O+A	3.7	0.075	0.076	1.8
5	CT	3.6	0.042	0.043	1.3
6	EPP-Core	2.3	0.006	0.006	-6.2
7	EPP-WOOD	1.5	0.004	0.004	-10.1
8	Oth-TypA-EGs	-1.1	0.007	0.005	-23.3
9	EPP-CA	-3.0	0.005	0.003	-31.8
10	EPP-WSA	-5.4	0.001	0.001	-41.1
All EG Groups		3.7	0.154	0.158	2.2
Total Goods Exports to U-DgC		3.4			
Value of All EG Group Exports to U-DgC in 2003 (\$b) =			153		

Table 15: Dynamism of developed countries' EG group exports to developing countries. The calculated annual export growth rate is the compound annual growth rate (CAGR).

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ANNEX: Composition of EG group lists examined in this note by HS-96 6-digit HS code

O+A

220100, 220710, 230210, 252100, 252220, 280110, 281410, 281511, 281512, 281610, 281830, 282010, 282090, 282410, 283210, 283220, 283510, 283521, 283523, 283524, 283525, 283526, 283529, 283822, 285100, 290511, 320910, 320990, 380210, 381500, 391400, 392020, 392490, 392690, 460120, 560314, 580190, 591190, 681099, 690210, 690220, 690290, 690310, 690320, 690390, 690919, 700800, 701710, 701720, 701790, 701990, 730900, 731010, 731021, 731029, 732510, 780600, 840410, 840420, 840510, 840991, 840999, 841000, 841011, 841012, 841013, 841090, 841320, 841350, 841360, 841370, 841381, 841410, 841430, 841440, 841459, 841480, 841490, 841780, 841790, 841911, 841919, 841940, 841950, 841960, 841989, 841990, 842119, 842121, 842129, 842139, 842191, 842199, 842220, 842381, 842382, 842389, 842490, 842833, 843680, 846291, 847290, 847410, 847410, 847432, 847439, 847982, 847989, 847990, 848110, 848130, 848140, 848180, 850231, 850590, 851410, 851420, 851430, 851490, 851629, 853931, 854140, 854389, 870892, 890710, 890790, 901320, 901540, 901580, 901590, 902229, 902290, 902511, 902519, 902580, 902590, 902610, 902620, 902680, 902690, 902710, 902720, 902730, 902740, 902750, 902780, 902790, 902810, 902820, 902830, 902890, 903010, 903020, 903031, 903039, 903083, 903089, 903090, 903110, 903120, 903130, 903149, 903180, 903190, 903210, 903220, 903281, 903289, 903290, 903300, 960310, 960350, 980390

Oth-TypA-EG

284700, 392321, 392329, 392620, 401519, 440130, 441700, 611610, 630533, 630611, 630612, 630619, 640110, 640191, 640192, 640199, 691010, 691090, 820110, 820110, 820120, 820130, 820140, 820150, 820160, 820190, 820210, 842820, 842832, 842833, 842839, 842890, 842959, 847490, 850530, 850590, 850810, 850820, 850880, 850890, 850910, 850930, 853949, 870490, 870892, 900490, 902000

CT

392510, 731010, 731100, 732211, 732219, 732290, 761100, 761300, 830249, 840211, 840212, 840219, 840220, 840290, 840310, 840390, 840410, 840420, 840490, 840681, 840682, 840690, 840890, 841011, 841012, 841013, 841090, 841181, 841182, 841199, 841350, 841360, 841370, 841381, 841391, 841620, 841630, 841869, 841911, 841919, 841950, 841990, 842129, 842139, 842199, 847960, 848110, 848130, 848140, 848180, 848190, 848310, 848360, 848410, 848490, 850131, 850132, 850133, 850134, 850161, 850162, 850163, 850164, 850211, 850212, 850213, 850220, 850231, 850239, 850240, 850300, 850421, 850422, 850423, 850431, 850432, 850433, 850434, 850440, 850490, 851150, 851610, 851621, 854140, 900190, 900290

CT-Fuels

120300, 120400, 120500, 120600, 120730, 220710, 230320, 271111, 271112, 271113, 271114, 271121

EPP-Core

050900, 121110, 121120, 121190, 130110, 130120, 130190, 130219, 140190, 140310, 140390, 140410, 150510, 150590, 152110, 152190, 230690, 230890, 310100, 320190, 320300, 320910, 321000, 400110, 400121, 400122, 400129, 400280, 450110, 450200, 450310, 450390, 460120, 460191, 460210, 480610, 500200, 500400, 500600, 500710, 500720, 500790, 510111, 510119,

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EPP-RCY

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EPP-WOOD

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EPP-WSA

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EPP-CM

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EPP-CA

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