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*TRADE LIBERALISATION IN ENVIRONMENTAL GOODS:
CONSIDERATIONS FOR INDIA*

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**TRADE LIBERALISATION IN ENVIRONMENTAL GOODS: CONSIDERATIONS
FOR INDIA**

DISCUSSION PAPER

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Introduction

Liberalisation of trade in environmental goods and services has become one of the highly debated set of issues, in the complex and rapidly developing trade and environment interface. During the fourth ministerial conference of the WTO held in Doha in 2001, the Members had agreed to negotiate on substantial aspects of trade-environment linkages including the one on environmental goods and services.

As per OECD's estimates the global market for environmental goods and services is approximately US\$550 billion. Although traditionally the market for environmental goods and services have been confined to developed countries, with increasingly stricter environmental standards and regulations the developing one's are catching up fast. In fact it has been found that the market in these countries is growing faster than that in the developed countries.

Estimates divulge that the environment industry is likely to grow at an average annual rate of growth of 5 per cent. However these estimates are based on OECD's definition for the industry and therefore the estimates are likely to vary substantially based on the way in which the industry is defined.

The Doha Ministerial Declaration had mandated negotiations on the reduction of trade barriers to environmental goods and services. However the Declaration does not further define either "environmental goods". Though there have been some earlier attempts in this direction by the OECD and others, but as it stands today there is no generally accepted definition.

Different countries have expressed different shades of opinion on the definitional aspects ranging from a narrower definition to broader ones. According to the narrower definition environmental goods are the ones whose use results in a beneficial environmental impact i.e. the capital goods or technologies which are required for 'end-of -the-pipe' pollution abatement.

The broader definition takes into account environmental characteristic of the goods themselves and/or their production process. That means the goods that have relatively less negative impact on the environment at the consumption/disposal stage or even in terms of being produced in an environmentally benign manner can be included in this category. Some experts have interpreted environmental goods as goods that had inherently beneficial environmental aspects such as biodegradability. This paves the way for inclusion of products like natural dyes; jute and coir products as well as sustainable harvested forest products should be included in the list of environmental goods.

This discussion paper focuses only on the issue of environmental goods and highlights issues of concern for India in the ongoing negotiations.

Doha Mandate

1. The Doha Ministerial Declaration recognizes the importance of the trade in environmental goods by including directions in two paragraphs. Paragraph 6 of the DMD reads:

“We strongly reaffirm our commitment to the objective of sustainable development, as stated in the Preamble to the Marrakesh Agreement. We are convinced that the aims of upholding and safeguarding an open and non-discriminatory multilateral trading system, and acting for the protection of the environment and the promotion of sustainable development can and must be mutually supportive...”

While in paragraph 31, it is provided that:

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

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

2. Thus, the call for trade liberalization in environmental goods in the DMD is guided by the principle that the protection of environment and the promotion of sustainable development can and must be mutually supportive. The ongoing negotiations should therefore

- (i) result in supporting Member countries in taking measures to improve their environment while aiding their development by way of production and promotion of trade of inherently environmentally friendly products;
- (ii) development of environmental goods industry; and
- (iii) adoption of environmentally friendly technologies,

...all in a cost effective way.

Issues for Sustainable Development

3. At this stage when modalities are being discussed in the WTO, it is important to bring on the table all the issues that should be addressed in the negotiations to meet the mandate objectives. A question that has to be answered is whether the traditional WTO mechanism of agreeing to tariff reduction, perhaps to zero level, and commitments on services is adequate to meet Ministerial Mandate.

4. For the development of an environmental industry and development in an environmentally friendly manner the main issues for developing countries are –

- (i) Availability of funds/ investment;
- (ii) Availability of technology;
- (iii) Building of capacity to utilize the technology
- (iv) Free trade i.e. tariff free;
- (v) and without non-tariff barriers;
- (vi) Enabling unrestricted provision of environment related services.

Negotiations thus far

5. Regarding the forum for discussions, it has been generally agreed that the negotiations for environmental goods will take place in the Negotiating Group on Market Access (NGMA) while

the negotiations for environmental services will take place in Council for Trade in Services Special Session (CTS SS). The Committee on Trade and Environment Special Session (CTE SS) is to work towards clarifying the concept of environmental goods, provided that no sequencing would be involved between that work and the actual market access negotiations in the NGMA. The CTE SS could also keep track of the work done in the Committee on Agriculture Special Session. Therefore there is a broad support for the idea that the CTE SS play a monitoring role.

6. The negotiations on environmental goods as part of the market access negotiations for non-agricultural goods is being carried out in accordance with the mandate under para 16 of Doha Ministerial Declaration. These negotiations, are to take fully into account the special needs and interests of developing and least developed countries, including through less than full reciprocity in reduction commitments, in accordance *inter alia* with the provisions of Article XXVIII *bis* of GATT 1994.

7. Some Members have suggested that CTE SS should discuss what type of products could be considered as environmental goods and that NGMA is not equipped to carry out this exercise.

Proposals made

8. In NGMA, some of the Members have expressed views that the negotiations should take place on a 'list approach' rather than follow the definitional route. Notwithstanding this, and recognizing that identification of environmental goods would involve a vast multilateral consultation exercise, it is important to have a common understanding amongst the participants about the type of products, which could be included. The main proposals made in WTO for inclusion of products in the category of environmental goods have been by New Zealand (and US) for APEC list, Japan for OECD list plus some other items and by Qatar.

9. The APEC list largely includes end-of-pipe environmental equipment; measuring and testing instruments; alternative power generating equipment; parts and components of both these categories of products. There are 108 products in the APEC list of which 57 items are monitoring and analysis equipment, 7 items are renewable energy equipment and rest 44 items are end of the pipe pollution control equipment.

10. OECD has developed three categories of Pollution Management Products, Cleaner Technologies and Products and Resource Management Products. The OECD list includes all the categories in APEC list and additionally includes chemicals used in pollution control processes and some other items.

11. Japan has also suggested a list of items (166 items) which includes all the items in OECD and APEC lists. In addition it lists goods manufactured using comparatively environment friendly technologies and consumer products (around 35) which consume less power like CFC free consumer products, energy efficient consumer appliances etc.

12. Qatar has proposed inclusion of low carbon, energy efficient technologies. Qatar has proposed for inclusion of Gas Turbines Combined Cycle Power Generation Plants, Chemical Gas to Liquid (GTL) Fuels and Natural Gas Fuel Cell Technologies.

13. Additionally, in the discussion in the WTO some developing countries have suggested inclusion of natural products and also products made using environmentally sustainable resources. Thus, the universe of proposals include:

- (i) APEC list
- (ii) items in OECD list which are not included in the APEC list
- (iii) Energy efficient consumer products and CFC free products included in the Japanese proposal

- (iv) Qatar's proposal of products using low carbon, energy efficient technologies
 - (v) Inherently environment friendly products
 - (vi) Products made using environment friendly processes (npr-PPM)
14. If we see the detailed break-up of above categories, they would include:
- (i) End of pipe pollution control equipment:
 - a) Air pollution control;
 - b) Water pollution control;
 - c) Solid waste management;
 - d) Remediation/clean-up of soil and water;
 - e) Noise/vibration abatement;
 - (ii) Renewable energy plants
 - (iii) Monitoring, analysis and assessment equipment
 - (iv) Heat/energy management equipment
 - (v) Recycling systems
 - (vi) Chemicals used in pollution control systems
 - (vii) Energy efficient or comparatively environment friendly consumer products
 - (viii) Inherently environment friendly products
 - (ix) Products made by environment friendly processes

Issues Involved

15. Various studies have highlighted constraints in identifying a list of environmental goods. These include:
- (i) Multiple use in industrial sectors; One of the issues faced in identification of environmental goods is their multiple uses in industrial sectors. A number of these equipment have predominant industrial use. Inclusion of such products in the list of environmental goods may not bring proportionate benefits to sustainable development. One of the ways to resolve this problem has been to identify goods used in the environmental sector by identifying expositions to 6 digit ITC HS classification. Proposals by some of the Members have attempted identifying expositions however, further work needs to be done in this regard.
 - (ii) Difficulty in identifying a specific product in ITC HS classification at 6 digits. For clearly identifying in environmental products it would be necessary to create an ex - category at 6 digits, which is a very difficult task to be agreed at multilateral level.
 - (iii) The issue of 'like product' and npr-PPM - Some of the environmentally preferable products the processes or resources themselves do not lend the end products with any clear environmental friendly characteristics or quality, making it very difficult to distinguish between products made in such a way and those made traditionally. Selection of products based on production criterion (npr-PPMs) would lead to discrimination between like products and in turn violate Article III of GATT, which establishes the national-treatment rule. Therefore, for the purpose of these negotiations products differentiation merely on the basis of processes and production methods should not be done.
 - (iv) Degree of environment friendliness. The product coverage of environmental goods has been widely debated since the Doha Ministerial. Pollution can be controlled either by using end-of-pipe equipment to remove harmful effluents

after production or by employing cleaner technologies i.e. upstream changes in the production. While the encouragement to cleaner technologies is important, identifying environmental goods that exemplify certain processes that can be defined 'cleaner' seems to infeasible for the purpose of the present work as 'cleaner process' is a relative term, a product or technology, which is cleaner or resource efficient today, may be relatively dirty in a fairly short period as more advance technologies become available. Therefore for the purpose of trade liberalisation in this sector the negotiations could be confined to end-of-pipe pollution control equipment belonging to the broad categories mentioned in paragraph

- (v) Technologies equipment and processes which reduce energy consumption and waste generation benefit environment. These are part of normal industrial production systems. It is difficult to separately identify such goods at ITC HS classification as environmental goods.

16. Developed Countries, particularly US, EU and Japan are the largest producers, consumers and exporters of environmental goods and services. Developing countries are not importers of EGS. However, the EGS Sector in developing countries is growing as much faster rate than in the developed countries. This makes developing countries markets important. In India, the EGS market mainly consists of end of the pipe pollution control plants. These plants are being used in industries to comply with the regulatory requirements of pollution control boards. Service suppliers mainly consist of environmental service consultants, equipment manufacturers and contractors with one roll overlapping the other. A large number of joint ventures have taken place between international service suppliers and Indian companies. Another important component on EGS Sector is the municipal solid waste management systems and waste water management systems. Service suppliers in this case include both domestic companies and foreign service suppliers. India is a net importer of environmental goods. At 6 digits level, the total exports of India for 109 items under the APEC list are US\$ 610 million and total imports are US\$ 1.34 billion in the year 2001-02. This data does not indicate actual level of import and export because of presence of large number of expositions; however, it does reveal the proportion of exports and imports in the trade. There are a number of items in which India is a net exporter.

17. The applied and bound tariffs on environmental goods in developed countries are very low or zero. Tariffs and developing countries for environmental goods are almost similar to those for industrial goods. Therefore, these negotiations would lead to no substantial changes in the applied and bound tariffs in developed countries on environmental goods while bound tariffs in developing countries would be reduced substantially.

18. It is said that to bring balance in these negotiations, environment friendly goods should also be included in the list of environmental goods as developing countries have export advantage in these items. To find support from all concerned, however, the real challenge lies in identification of such goods wherein reduction or elimination of tariff and non-tariff barriers would benefit developing countries.

Issues for India

19. From Indian point of view, the criteria for inclusion of a particular product category or a product should be based on:

- (i) Use of the product/category in pollution control activities;
- (ii) Dynamic comparative advantage of India in that product/category which would be based on existing level of import and export, size of domestic market, efficiency level of domestic industry and prospects for future;
- (iii) The degree of use in environmental sector vis-à-vis other industrial sectors;

- (iv) Existing level of bound and applied rate of import tariff;
- (v) Policy direction of government

20. The categories of products mentioned above are discussed in light of the above approach from Indian perspective. A detailed analysis of each category and item is given in Annex. A summary of the analysis and conclusions based on the analysis are given below.

Summary of Analysis

21. Members have suggested in NGMA that the negotiations could begin with

- (a) agreeing on a definition of environmental goods and based on that negotiate a list,
- (b) Members could negotiate a list of environmental goods taking APEC list as a basis without first agreeing on a definition
- (c) Member should arrive at a broad understanding on what categories of items could be included in the list of environmental goods and based on that understanding a list could be negotiated.

...Practically (c) is the most feasible alternative. From Indian point of view, it would also allow us to object to categories being proposed by Japan or predominantly industrial products or products based on npr-PPM.

22. Among the categories proposed, end-of-pipe pollution control equipment are broadly considered to be the core of environmental goods which includes air pollution control, waste water management, solid waste management, clean up of soil and water and noise abatement. The APEC list has 38 items under these categories. In a number of items, expositions have been provided in the APEC list. Predominantly the items in APEC list are used for pollution control. However, there are some items like centrifugal pumps, boilers with auxiliary plants, heat exchangers and conveyers etc. which have large industrial uses. Such items may be excluded when item-wise negotiations take place.

23. The largest category in APEC list is of measuring and analysis equipment consisting of 57 items. These measuring equipment are used for pollution measurement; however their predominant use is in measurement of various indicators in laboratories and industrial plants. Indian imports of this category are significant as compared to exports. High technology measuring equipment are required by Indian industry as well as pollution control plants, however significant reduction in import tariffs could also allow low technology products to enter Indian market and affect domestic industry. It would be in the best interest of India if only high technology measuring and analysis equipment are included in the list of environmental goods. In the light of predominant other uses, there are difficulties in considering measuring and analysis equipment as environmental goods. Carving out expositions for high technology equipment in this category could address the problem of multiple use to an extent.

24. Renewable energy equipment are included in APEC, OECD and Japanese list (7 items). Environmental benefits suggest inclusion of this category as environmental goods. India is also a large exporter of photovoltaic cells. From environmental perspective inclusion of large hydraulic turbines could be objectionable.

25. Japan has proposed around 35 items in the category of Cleaner Technologies and Products. These items are not present in either OECD or APEC lists. These include energy efficient consumer products like air-conditioners, washing machines, TVs, etc. Energy efficiency and cleaner technology is a relative turn. Such products, though are more efficient, still consume large resources and cannot be considered as environmental goods. An energy efficient product or cleaner technology today could become obsolete soon and there would be different products and

technologies which would be more efficient and cleaner. Therefore, this category should not be considered as environmental goods for the purpose of these negotiations. We should in principle oppose inclusion of this category.

26. Japan has proposed 31 items which are present in OECD list but are not there in the APEC list. Most of these items are industrial equipment and their use in environmental sector is not clear. Indian imports are also substantial in these items. This category also has some equipment with fine expositions which could be considered as environmental goods. Wherever expositions are not there, it is difficult to understand the use in environmental sector. Only when environmental use is clear and specific and expositions are provided, they could be considered as environmental goods.

27. Qatar has proposed inclusion of efficient, lower-carbon and pollutant emitting fuels and technologies. Qatar has in its recent submission provided the details of the products it proposes to include in the list of environmental goods. These are LNG, Natural Gas, turbines based on natural gas and a number of chemical gas to liquid fuels such as diesel, naphtha, etc. Qatar's proposal raises issues with such large implications which perhaps are best left to the Kyoto Protocol.

28. Environment friendly products referred in literature (UNCTAD study 1995) and country proposals include:

- a) Organic products
- b) Eco-labeled or certified products made with environment friendly processes
- c) Non-timber forest products and products based on TK
- d) Products made with natural fibres such as jute and coir

29. Developing countries have inherent advantage in the production and trade of the environment friendly products. Therefore, the Indian perspective would be to include all environment friendly products in the list of environmental goods, provided such classification is not based on npr-PPM. All the countries except for European countries and Japan have opposed the inclusion of products made by environment friendly processes (npr-PPM). Organic products, certified timber products and fair trade products are distinguished based on npr-PPM and thus we should oppose their inclusion also in the list of environmental goods.

30. The most important issue in TK based products and non-timber forest products like bamboo, honey, beeswax, gum arabic, medicinal substances etc. are non-tariff barriers like registration requirements, approval of health authorities as tariffs are usually low. In principle, we could support inclusion of such products. We need to identify such non-tariff barriers (registration requirements, approval of health authorities, etc.) and use NGMA to address these NTBs. We should seek inputs from EP (CAP) division and D/o ISM & H on this issue.

31. India's export of jute products in the year 2001-02 was US\$150 million and of coir products US \$ 113 million. In major developed countries, applied tariffs are quite low for the raw materials; however, for made-ups and value added products they vary from 0-20%. Reduction in import tariffs for jute & coir products would be beneficial for India and we could seek their inclusion in the list of environmental goods.

32. India could propose jute and coir products, non-timber forest products and TK based products and clothes using natural dyes for inclusion in the list of environmental goods.

33. The environmental regulations including packaging and recycling directives in developed countries, particularly European countries do have inbuilt discrimination against environment friendly and bio-degradable products from the developing countries and favour local recycling and waste disposal systems. In the context of environment friendly goods, we should propose that

such regulations should also be discussed in WTO so as to promote greater use of environment friendly products from developing countries.

Issues for Consideration

34. As may be seen from above, the approach in the WTO is basically to limiting the exercise to tariff reduction (perhaps to zero duty) on a set of products eventually identified as environmental goods and establishing a liberal services regime. The matter for deliberation is

- (i) Whether reduction and elimination of market access barriers to goods and services in themselves would lead to more investment in the environmental sector and enhance the capacity of developing countries to adopt better environmental practices or some more affirmative action is required in this direction?
- (ii) Should there be a relationship between a country's requirements in the environmental sector including capacities with the market access commitments that it could undertake?
- (iii) Does the WTO have any role to play other than in trade liberalisation?
- (iv) Is greater coherence between different international organisations required, atleast in the area of technology transfer and funding commitments?
- (v) Should India make a submission on all the issues relating to the development of the environmental sector i.e. other than just trade in environmental goods and services? If yes, what issues should it raise?

ANNEX

A. END-OF-PIPE POLLUTION CONTROL EQUIPMENT (APEC LIST)

1. AIR POLLUTION CONTROL (APC) EQUIPMENT:

- Air Pollution Control equipment are used in pollution control.
- There are seven products (mentioned below) at 6-digit level belonging to APC in the APEC list. In three cases expositions have been given.
- Though all seven products mentioned do have multiple uses but apart from auxiliary plant for boilers (840410), condensers (840420) and fans and blowers (HS 841459) all others are to a large extent used for environmental purposes.
- In case of auxiliary plant for boilers (840410), Indian imports are insignificant but in case of fans and blowers (HS 841459) India imports significant quantities. In case of industrial mufflers (840999) and environmental protection cloth (842199), the expositions given are very fine and available trade data does not reflect actual trade in the items, which is likely to be very low.

HS Code	Commodity	Exposition	Indian Tariffs		2001/02		Comments by TERI
			Bound	Applied	Imports	Exports ¹	
840410	AUXLRY PLNT USD WTH BOILRS OF 8402/8403		40	25	1.46	1.3	These are not end-of-the-pipe pollution control equipment. But used in boilers for more efficient combustion and enhancing energy efficiency. However, super heaters are used for superheating steam, which has nothing to do with either energy efficiency or environmental protection.
840420	CONDENSERS FOR STEAM/OTHR VPR POWR UNITS		25	25	1.65	0.57	These are not exclusively used in pollution control. These are primarily used in industrial operations.
840510	PRDCR/WTR GAS GNRTRS,ACETLE N GAS GNRTRS	Include only those with purifiers.	25	25	1.37	0.82	These are not exclusively used in pollution control. The

¹ US\$ millions

	& SMLR WTR PRCS GNRTRS,W/N WTH THEIR PURIFRS							gases produced by these equipments are used in industrial operation like welding and heating
840999	PARTS OF OTHER ENGINES(DSL/S MI DSL) OTHER THAN PARTS FOR AIRCRAFT ENGINES	Industrial mufflers	40	25	76.89	63.23		Used for air pollution control.
841459	OTHER FANS		40	25	9.96	1.55		These are not used for pollution control, but are used for air circulation.
842139	OTHR FLTRNG/PURFY NG MCHNRY & APRTS FR GAS		40	25	15.56	0.85		Environmental protection filtering apparatus are primarily used for air pollution control. However air purifiers/cleaners have overlapping uses in pollution control as well as industrial operations.
842199	OTHR PARTS OF FLTRNG/PURFY NG MCHNRY	Environment al protection cloth	40	25	28.82	5.2		Environmental protection cloth is used for filtration, which is useful for environmental purposes. However it can be used in other industrial processes e.g. filtration and separation as well.

2. REMEDICATION AND CLEANUP:

- Equipment used in remediation and clean up activities do benefit environment.
- Three products are mentioned under this category, all with expositions. All of these are used for environmental purposes and India's trade in these items is also insignificant. The only point to be noted is that booms and socks of corn cobs (HS 230210) is an agricultural product which is different from all other 107 products in the list.

230210	BRAN SHARPS & OTHR RESIDUES OF MAIZE(CORN)	Booms or socks consisting of ground corn cobs contained in a textile covering		25	0.01	0.21		Their use in pollution control is not clear (agricultural product).
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890710	INFLATABLE RAFTS	Inflatable oil spill recovery barges	40	25	0.04	0.17	These are used for spilled oil recovery.
890790	OTHER FLOATING STRUCTURES	Pollution protection booms	40	25	0.05	0.51	These are used for pollution control.

3. WASTE WATER MANAGEMENT:

- Waste water treatment plants and equipment are used for pollution control.
- 18 categories of equipment with expositions in 13 are included in the APEC list under this category. Apart from belt conveyors (HS 842833), all other products have significant uses in pollution control activities, though pumps have use in industrial sectors also.
- From trade point of view Indian imports seem significant in trash compactors (HS 847989), bio-film medium (392690), rotating biological contactor (392690) and ozone production system (HS 854389). But these figures do not reveal true picture, as the expositions are very fine. The actual imports in these categories would be very small, though the trade figures are not available for these expositions.
- Continuous action elevators and conveyors (842833) are used in waste water management plants but is predominantly used in other industrial activities. The actual import of this item is negligible.

HS Code	Commodity	Exposition	Indian Tariffs		2001/02		Comments by TERI
			Bound	Applied	Imports	Exports	
392690	OTHER ARTICLES OF PLASTICS	Bio-film medium that consists of woven fabric sheets that facilitate the growth of bio-organisms.		25	64.46	61.55	These are used in wastewater treatment but can also be used in bio-tech industry for other industrial purposes.
392690	OTHER ARTICLES OF PLASTICS	Rotating biological contactor consisting of stacks of large (HDPE) plates that facilitate the growth of bio-organisms.		25	64.46	-	These are used in wastewater treatment but can also be used in bio-tech industry for other industrial purposes.
460120	MATS MATTINGS	Erosion control		25	0.09	1.37	They are used in soil conservation and

	& SCRNEENS OF VEG MATERLS	matting (biodegrad able)					slope stabilisation.
460120		Ecological y safe ground covers (biodegrad able)		25			They are used in soil conservation and slope stabilisation.
560314	MAN-MADE FILMNT WGHNG >150G/SQM	Fabric of polyethylen e/ polypropyl ene/ nylon for filtering wastewater.	40	25	1.43	1.16	These are used as component in filter press and separators, for dewatering the sludge and separation of substances. Therefore they are used for waste water treatment but do have other industrial uses as well.
591190	OTHR TXTL PRDCTS & ARTCLS FOR TECHNCL USE	Environme ntal protection cloth	40	25	7.94	0.64	Can be used for waste water filtration but has other uses as well
841360	OTHER ROTARY POSITIVE DISPLACE MENT PUMPS	Submersi- ble mixer pump to circulate water in wastewater treatment process; sewage pumps, screw type	25	25	3.85	0.63	Submersible mixer pumps are used for circulating water in the processes mentioned but they can be used in other processes as well.
841370	OTHERS CENTRIFU GAL PUMPS	Centrifugal pumps lined to prevent corrosion; centrifugal sewage pumps	25	25	11.08	42.76	These pumps are used in waste water treatment plants but they have multiple uses.
842121	FLTRNG & PURIFYING MCHNRY & APPRTS FR WTR		25	25	5.32	3.63	Not exclusively used in pollution control. They are used in water treatment (industrial e.g. boiler feed water as well as potable water).

842129	OTHR FLTRNG/P URFYNG MCHNRY & APPRTS FR LQD		40	25	18.2	0.9	Not exclusively used in pollution control. They are used in industrial filtration and separation of liquids.
842833	OTHR CONTINUO US ACTION ELEVATRS & CONVEYR SFOR GOODS/MA TERIALS BELT TYPE	Belt-type above ground conveyor used to transfer solids or slurries between plants	25	25	0.53	0.18	Not exclusively used in pollution control. It's an industrial equipment used for conveying materials.
843680	OTHER MACHINER Y OF HD 8436	Hot water weed killing system	25	25	0.54	0.14	No, not used in pollution control. It's primarily used in agricultural, horticultural, forestry for destroying unwanted plants.
847982	MXNG,KNE ADNG,CRU SHNG,GRN DNG,SCRE NG, SIFTNG,HO MOGENSN G,EMULSIF YNG/STIRR NG MCHNS	Agitator for wastewater treatment	40	25	8	2.12	They are used as stirring machines (aerators) in wastewater treatment but so have many industrial applications as well
847989	OTHR MCHN &MCHNCL APPLNCS OF HDG 8479	Trash compactors	40	25	79.68	38.45	Used for solid waste disposal.
854389	OTHER	Ozone production system		15	36.33	2.3	Ozone can be used in wastewater and potable water treatment but not used exclusively for pollution control

4. **HEAT/ENERGY MANAGEMENT:**

- There is only one-item 'heat exchange units' mentioned under this category. Heat exchange units have multiple use and are predominantly used for purposes other than

pollution control. No exposition is given. From trade point of view India's imports significant quantities though exports are also almost equal.

HS Code	Commodity	Exposition	Indian Tariffs		2001/02		Comments by TERI
			Bound	Applied	Imports	Exports	
841950	HEAT EXCHANGE UNIT		40	25	8.09	6.62	Not used in pollution control, used in heat exchange/cooling applications in industry

5. **NOISE AND VIBRATION ABATEMENT:**

- Only one item industrial muffler has been mentioned which has been already covered in Air pollution control category.

6. **POTABLE WATER TREATMENT:**

- Two items mentioned under this category seem to have been misplaced category wise. The first item belongs to renewable energy and second to solid waste management category.

841381	OTHER PUMPS	Wind turbine pumps	25	25	2.38	32.49	
847990	PARTS OF MACHINES OF HDG 8479	Parts of trash compactors	25	25	61.57	40.05	

7. **SOLID/ HAZARDOUS WASTE:**

- Solid/hazardous waste equipment are used for pollution control.
- 11 items with expositions have been mentioned in this category. Most of the items are predominantly used in the environmental sector.
- Waste incinerators and parts are included as a category which are used for solid waste disposal. There is a growing opinion among environmentalists that incineration of solid waste is environmentally harmful and is against the Kyoto Protocol and should not be considered as environmental good.
- Paper shredders (847290) and Electromagnets (850590) are predominantly used for purposes other than environmental. For these categories, the trade data at expositions is not available. Actual import in India of these categories would be small.
- One of the items in this category is 'machines of a kind for use in screening and washing coal'. This process reduces ash content and impurities in coal leading to reduction in

pollution. This item is an industrial item used in coal processing in coal mines and power plants. The actual import is negligible. Probably, it is a domestically produced item in India.

HS Code	Commodity	Exposition	Indian Tariffs		2001/02		Comments by TERI
			Bound	Applied	Imports	Exports	
841780	OTHR FURNACES & OVENS	Waste incinerators	25	25	4.69	0.68	It can be used for waste incineration.
841790	PARTS OF NON ELECTRIC FURNACES OVENS ETC	Parts of waste incinerators	25	25	4.44	1.02	It can be used in waste incinerators.
846291	HYDRAULIC PRESSES	Shredders/balers for metals; hydraulic	25	25	6.12	2.81	No, not used in pollution control. These are used in metal finishing operations.
847290	OTHR OFFICE MACHINES	Paper shredders		25	24.07	4.59	No, not used in pollution control. They have multiple commercial uses.
847410	SRTNG, SCREENING, SEPARATING & WASHING MCHNS	Machines of a kind for use in screening and washing coal	25	25	4.55	0.56	No, not used in pollution control. Screening and washing of coal is an industrial process.
847989	OTHR MCHN & MCHNCL APPLNCS OF HDG 8479	Radioactive waste press	40	25	79.68	38.45	
851410	RESISTANCE HEATED FURNACES & OVENS	Waste incinerators or other waste treatment apparatus	25	25	0.38	0.16	Can be used for biomedical waste treatment as well for other industrial applications
851420	INDUCTIVE/ELECTRIC FURNACES & OVENS	Waste incinerators or other waste treatment	25	25	0.98	0.88	Can be used for biomedical waste treatment as well for other industrial applications

		apparatus					applications
851430	OTHER FURNACES & OVENS	Waste incinerators or other waste treatment apparatus	25	25	1.41	0.99	Can be used for biomedical waste treatment as well for other industrial applications
851490	PARTS OF ARTCLS IN HDNG 8514	Parts of Waste incinerators	25	25	4.29	0.88	Can be used for biomedical waste treatment as well for other industrial applications
850590	ELECTRO MGNTS; CHUCKS, C LAMPS & SMLR DEVICES	Electro magnets	25	25	6.71	5.12	No, not a pollution control equipment, can be used in solid waste segregation (e.g coal and iron mining)

8. **OTHER RECYCLING SYSTEM:**

- Recycling systems have been proposed as environmental goods because they help in conservation of resources.
- Four items with expositions in three have been mentioned in the APEC list. All others apart from 'bottle drying and cleaning machinery' (842220) are to a large extent used for environmental purposes. But Indian imports in (842220) are not very significant; moreover Indian exports are almost equal to imports. In developed countries, there is greater emphasis on recycling of packaging material, bottles and containers. In that context, probably this item is proposed for inclusion in the list of environmental goods. In the Indian context, it is generally not perceived to be environmental good rather an industrial equipment used in soft drink manufacturing plants.

HS Code	Commodity	Exposition	Indian Tariffs		2001/02		Comments by TERI
			Bound	Applied	Imports	Exports	
842220	MCHNRY FR CLNG/DRY NG BOTLS/OT HR CNTNRS		40	25	0.83	0.81	No, not used in pollution control
847410	SRTNG, SC RENING, SE PARATING & WASHING MCHNS	Waste foundry sand reclamation equipment	25	25	4.55	0.56	No, not used in pollution control, used for resource recovery

847432	MCHNS FR MXNG MNRL SUBSTNCS WTH BITUMEN	Asphalt recycle equipment	25	25	12.14	0.07	No, not used in pollution control. Used in recovery of material in road construction work.
847982	MXNG, KNEADNG, CRUSHNG, GRNDNG, SCRENG, SIFTNG, HOMOGEN SNG, EMULSIFY NG/STIRRN G MCHNS	Other than kneading machinery	40	25	8	2.12	No exclusively used in pollution control and have many industrial uses.

9. MONITORING AND ANALYSIS:

- Monitoring and analysis equipment have been proposed as a separate category in APEC list. There are 57 items under this heading in the list with expositions in few. Some of these equipment are very important for monitoring environmental conditions. However, the laboratory equipment used for environmental purposes are not materially different from that used for any other kind of testing and measuring work in any analytical laboratory. Considering these aspects, complete systems, specifically designed and made for environmental monitoring use/ purposes could be considered for inclusion. However individual equipment; parts and consumables may not be considered as environmental goods. But the problem would be that such complete systems cannot be identified at 6 digits ITC HS classification.
- Indian duties in case of some items mentioned in the list is already to the tune of 10% or 15% and in some of the cases Indian imports of these items is not significant.
- 3 items with description 'Bricks used in furnaces for industrial incineration are included in this category. These items should be considered in 'Solid Waste Treatment' category and these also raise concerns considering the views of environmentalists on incineration of solid wastes. Indian exports for these items are more than imports.
- This category also includes 'vacuum pumps' 'compressors, distilling and rectification plants' 'machines for liquefying gases' 'other centrifuges and centrifugal dryers'. These items seen misplaced in this category. These may have use in some types of pollution control plants but have predominant industrial uses. Indian exports of these items are larger than Indian imports.
- This category constitutes more than 50% of all the items in the APEC list in terms of numbers as well as in terms of import value.

690210	GOODS CONTNG BY WT SINGLY/TOGETHR >50% OF THE ELMNTS MAGNSM,CALSIU M/CHROMIUM EXPRSSDAS MAGNSM OXIDE,CALSIM OXIDE/CHROMIM OXIDE	Industrial incineration	25	25	3.95	14.24	It can be used in solid waste treatment but as well in industrial furnaces.
690220	REFRATORY BRCKS BLOCKS ETC CONTNG BY WT> 50% OF ALUMINA,SILICA/O F MIXTURE OF THESE	Industrial incineration	25	25	5.17	2.18	It can be used in solid waste treatment but as well in industrial furnaces.
690290	OTHR REFRACTROY BRICKS,BLOCKS, TILES ETC	Industrial incineration	25	25	1.63	7.81	It can be used in solid waste treatment but as well in industrial furnaces
690310	OTHR REFRATORY CERAMIC GOODS CONTNG BY WT >50% OF GRAPHITE/OTHR FORMS OF CARBON/OF A MXTRS OF THESE PRODUCTS	Laboratory refractory equipment	40	25	0.81	0.31	These items are used in laboratory equipment which are not exclusively used for pollution control.
690320	GOODS CONTNG BY WT>50% OF ALUMINA (ALUMINIUM OXIDE)/OF A MXTR/COMPOUN D OF ALUMINA & OF SILICA(SILICON DI-OXIDE)	Laboratory refractory equipment	40	25	0.78	3.04	These items are used in laboratory equipment, which are not exclusively used for pollution control.
690390	OTHER REFRACTORY CERAMIC GOODS	Laboratory refractory equipment	40	25	5.05	5.22	These items are used in laboratory equipment, which are not exclusively used for pollution control.
690919	OTHR CERMC WARES FR LABRTRY ETC	Laboratory equipment	40	25	0.16	0.81	These items are used in laboratory equipment, which are not exclusively used for

								pollution control.
701710	LAB GLSES ETC OF FUSD QUARTZ OR OTHR FUSD		40	25	0.06	0.08		These items are used in laboratory equipment, which are not exclusively used for pollution control.
701720	LBRTRY HYGNC/PHRMCTC L GLSSWARE OF OTHR GLSS HVNG A LNR COEFCNT OF EXPNSN NT EXDNG5x10 - 6/KLVN WTHN TMP BTWN 0 & 300 DGR. C		40	25	0.07	0.29		These items are used in laboratory equipment, which are not exclusively used for pollution control.
701790	OTHR LBRTRY/HYGNC/P HRMCTCL GLSSWARE		40	25	3.88	3.86		These items are used as laboratory equipment, which are not exclusively used for pollution control.
841410	VACUUM PUMPS		25	25	0.68	4.13		These have multiple industrial applications Not used for pollution control.
841480	OTHER PUMPS,COMPRES SORS ETC		40	25	2.24	31.46		These have multiple industrial applications Not used for pollution control.
841940	DISTILLING/RECTI FYING PLANT		40	25	2.33	1.95		These have multiple industrial applications Not used for pollution control.
841960	MACHINERY FOR LIQUEFYING AIR/OTHR GASES		25	25	0.39	2.92		These have multiple industrial applications Not used for pollution control.
842119	OTHR CENTRIFUGES,IN CL CENTRIFUGAL DRYERS		40	25	1.35	6.66		Not exclusively used in pollution monitoring
842191	PRTS OF CENTRIFUGES,IN CL CNTRFGL DRYRS	Centrifuges, Accessories & Parts; except clothes dryers and clothes dryer furniture	40	25	0.76	2.94		Not exclusively used in pollution monitoring

901540	PHOTOGRMTRCL SURVYING INSTRMNTS & APPLNCS		40	25	0.21	0.14	Not a pollution monitoring equipment, used for surveying work
901580	OTHR INSTRMNTS & APPLNCS OF HDG 9015		40	25	1.41	14.94	Not a pollution monitoring equipment, used for surveying work
901590	PRTS & ACCESSORES OF SURVEYING, PHTOGRMCL, HYD ROGRPHIC INSTRUMNTS ETC EXCL CMPASSES	Photogramm etric instruments; parts and accessories for articles of subheading 9015.40	40	25	1.85	2.78	Not a pollution monitoring equipment, used for surveying work
902229	APPRTS BSD ON USE OF ALPHA, BTA/GMA RADTNS FR OTHR USES INCL RDOGRPHY & RDO THRPHY APPRTS		40	25	0.7	1.3	Can be used for radioactivity monitoring
902290	OTHR APPRTS INCL PRS & ACCSSRS OF HDG 9022	Parts and accessories for goods of subheading 9 022.29	40	25	11.67	17.96	Can be used for radioactivity monitoring
902511	THERMOMETERS, LIQUID- FILLED, FOR DIRECT RDNG		40	25	0.65	0.66	Can be used for temperature monitoring in any industrial applications
902519	OTHR THRMOMTRS NT COMBND WTH OTHR INSTRMNT		40	25	0.2	1.86	Can be used for temperature monitoring in any industrial applications
902580	OTHER INSTRUMENTS OF HEADNG 9025		40	25	0.06	2.16	Not exclusively used for pollution monitoring
902590	PARTS & ACCSSRS OF INSTRUMENTS OF HDG 9025		40	25	0.71	1.7	Not exclusively used for pollution monitoring
902610	INSTRUMENTS & APPARATUS FOR MEASURING OR CHECKING THE FLOW OR LEVEL OF LIQUIDS		40	10	3.46	12.84	Not exclusively used for pollution monitoring
902620	INSTRMNTS & APRTS FR MSRNG/CHKNG PRESSURE		40	10	1.21	8.73	Not exclusively used for pollution monitoring

902680	OTHER INSTRUMENTS OR APPARATUS OF HDG9026		25	10	0.64	9.13	Not exclusively used for pollution monitoring,
902690	PRTS&ACCSRS OF INSRMNTS/APPRTS OF HDG9026		40	10	0.74	13.4	Not exclusively used for pollution monitoring
902710	GAS OR SMOKE ANALYSIS APPARATUS		25	25	0.91	10.25	Primarily used in monitoring gases. Can be used in analysing pollutant levels.
902720	CHROMATOGRAPHS & ELECTROPHORESIS INSTRMNT		25	10	0.15	19.07	No, not a pollution monitoring equipment. Devices used in analytical estimations
902730	SPECTROMETERS ,SPECTROPHOTOMETERS & SPECTOGRAPHS USING OPTICAL RADIATION		25	10	0.32	22.94	Not a pollution control equipment. Devices used in analytical estimations
902740	EXPOSURE METERS		40	25		0.11	Are used for pollution monitoring
902750	OTHR INSTRMNTS & APRTS USING OPTCL RADTNS		25	10	0.24	5.75	Not a pollution monitoring equipment, Devices used in analytical estimations
902780	OTHR INSTRUMENTS & APPARATUS OF HDG 9027		25	10	0.23	45.8	Not exclusively used for pollution monitoring
902790	MICROTOMES;PARTS & ACCESSORS OF HDG 9027		25	25	0.68	25.79	Not exclusively used for pollution monitoring
902810	GAS METERS		40	25	0.06	0.48	Not exclusively used for pollution monitoring
902820	LIQUID METERS		40	25	0.01	0.35	Not exclusively used for pollution monitoring
902830	ELECTRICITY METERS		40	25	6.01	15.5	Not used at all in pollution monitoring
902890	PARTS AND ACCESSORIES OF GAS LQD OR ELECTRICTY SUPPLY OR PRODUCTION METERS		40	25	0.8	5.36	Not exclusively used for pollution monitoring
903010	INSTRUMENT AND APPARATUS FOR MEASURING OR DETECTING		40	25	1.29	1.09	Not exclusively used for pollution monitoring

	IONISING RADIATION							
903020	CTHOD-RAY OSCLSPCS & CTHOD-RAY OSCLOGRPHS		40	25	0.07	3.19	Not used at all in pollution monitoring	
903031	MULTIMETERS		40	25	0.44	1.57	Not used at all in pollution monitoring	
903039	OTHR INSTRUMENT & APPARATUS FR MSRNG/CHKNGVL TGE,CURNT,RSST NC/PWR,WTHOUT RCRDNG DEVC		40	25	13.68	12.58	Not used at all in pollution monitoring	
903083	INSTRMNTS & APRTS WTH A RCRDNG DEVICE		40	25	0.03	1.8	Not used at all in pollution monitoring	
903089	OTHER INSTRUMENTS & APPARATUS		40	25	0.21	11.96	Not used at all in pollution monitoring	
903090	PARTS AND ACCESSORIES OF HDG 9030		40	25	2.55	8.52	Not used at all in pollution monitoring	
903110	MACHINES FOR BALANCING MECHANICAL PARTS		40	25	0.28	0.92	Classification is not clear	
903120	TEST BENCHES		40	25	0.19	2.57	Classification is not clear	
903130	PROFILE PROJECTORS		40	25	0	1.12	Classification is not clear	
903180	OTHR MSRNG&CHCKNG INSTRMNTS,APPL NCS&MCHNS		40	25	2.12	63.2	Classification is not clear	
903190	PARTS AND ACCESSORIES OF INSTRMNTS OF 9031		40	25	1.44	25.1	Classification is not clear	
903210	THERMOSTATS		40	25	0.35	4.38	Not exclusively used for pollution monitoring	
903220	MANOSTATS		40	25	0.01	0.13	Not exclusively used for pollution monitoring	
903281	HYDRAULIC/PNEUMATIC INSTRUMENTS & APPARATUS		40	25	0.95	0.86	Classification not clear	
903289	OTHR ATMTC RGLTNG/CNTRLNG INSTRMNTS&APRTS		40	25	8.04	39.28	Classification not clear	

903290	PARTS AND ACCESSORIES OF INSTRMNTS OF 9032		40	25	1.45	21.31	Classification not clear
903300	PRTS & ACCESSORIES FR MACHINES,APPLI ANCES,INSTRUMENTS/APPARATUS OF CHAPTER 90,NES		40	25	13.06	61.52	Classification not clear

B. RENEWABLE ENERGY PLANT:

- Seven items with expositions in two have been included in the APEC list under this category.
- It's an important sector for India. India is a net exporter for this category.
- India imports hydraulic turbines with power less than 1.0 MW. For higher capacities, Indian imports are negligible. Large Hydraulic turbines may have adverse environmental implications.
- India is a net exporter of photo voltaic cells. Wafers of silicon are imported in the country, assembled and panels are re-exported.

HS Code	Commodity	Exposition	Indian Tariffs		2001/02		Comments by TERI
			Bound	Applied	Imports	Exports	
841011	HYDRAULIC TURBINES & WATER WHEELS OF A POWER NOT EXCEEDING 1000 KW		25	25	9.07	0.32	Used for renewable power generation
841012	HYDRAULIC TURBINES AND WATER WHEELS OF A POWER>1000 KW BUT NOT EXCDNG 10000 KW		25	25	0.25	0.43	Used for renewable power generation.
841013	HYDRAULIC TURBINES AND WATER WHEELS OF A POWER>		25	25		0.01	Used for renewable power generation.

	10000 KW						
841090	PARTS OF HYDRIC TURBINES INCL REGULATORS		25	25	1.42	1.35	Used for renewable power generation.
841919	OTHER INSTANTANEOUS/TORG WATER HEATERS, NON-ELECTRIC	Solar water heaters	40	25	0.71	0.22	Used for renewable power generation.
850231	OTHER GENERATING SETS; WIND POWERED		25	25	4.57	1.39	Used for renewable power generation.
854140	PHOTOSENSITIVE SEMICONDUCTOR DEVICES, INCL PHOTOVOLTAIC CELLS WITH ASSEMBLED IN MODULES/MADE UP INTO PANELS; LIGHT EMITTING DIODES	Solar cell		15	16.94	37.69	Used for renewable power generation.

C. ENVIRONMENT FRIENDLY PRODUCTS

- UNCTAD in its study on environmentally preferable products in 1995 identified the following category of products:
 - (i) Organic products
 - (ii) Certified timber products
 - (iii) Non-timber forest products
 - (iv) Products based on Traditional Knowledge
 - (v) Fair trade products
- In addition, India has proposed inclusion of products made from natural fibres such as jute and coir. There is also a proposal to include handloom products and products made using natural dyes.
- India is opposed to inclusion of products made by environment friendly processes, without their having any bearing on the characteristic of end products (npr-PPM).

- Developing countries have inherent advantage in inclusion of environment friendly products. Therefore, the Indian perspective would be to include all environment friendly products in the list of environmental goods, provided such classification is not based on npr-PPM.
- Organic products by definition focus on the way cultivation takes place rather than the characteristics of end products, though end products should also be free from pesticides and harmful chemicals. So inclusion of organic products would involve npr-PPM principle and would be against the concept of 'like product' in Article III of GATT.
- Certified timber products are wood products wherein the wood has been taken from sustainably managed forests. Such wood is a like product to a wood taken from other forests and would be a discrimination based on npr-PPM.
- Non-timber forest products include bamboo, rattan, honey, beeswax, royal jelly, gum arabic, medicinal substances some essential oils of forest trees and plants (camphor, eucalyptus, etc.), bio-pesticides (pyrethrum), indigo, tannins, etc. In principle, India could support inclusion of such products. These products generally have low import tariffs in all the countries. There is a need to identify products of export advantage to India in this category which attracts import duties in other countries. Non-tariff barriers are more seen to be applied against such products. There is a need to identify such non-tariff barriers (like registration requirement, approval of health authorities, etc.).
- Products based on TK do not generally attract high import duties but are subjected to non-tariff barriers for registration requirements, approval of health authorities, etc. In principle, India could support inclusion of such products. There is also a need to undertake an exercise to identify products under this category that are facing NTBs in other countries and to take them up for resolution.
- Fairtrade products carry certification that their production benefits local communities and environment in some manner. This would again involve discrimination based on npr-PPM and would not be acceptable to India.
- India's export of jute and jute products in the year 2001-02 was US\$150 million. In major developed countries, applied tariffs are quite low for the raw materials; however, for made-ups and value added products they vary from 0-20%. Jute products also qualify for GSP.
- India's exports of coir and coir products in year 2001-02 were US\$113 million. Raw material and yarn are duty free in major countries while value added products attract higher duties up to 15% in these countries. Reduction in import tariffs for jute & coir products would be beneficial for India and we should seek their inclusion in the list of environmental goods.
- India's export of bamboo and rattan products is almost negligible.
- India's export of cotton handlooms was US\$ 433 million in 2001-02. India is the largest exporter in the world of handloom furnishing materials. Tariffs on handloom products are same as other textile products and garments. If cotton handlooms are included in the list environmental goods, it would help in increasing Indian exports to developed countries. However, one important issue to be examined is whether handloom cloth is 'like product' to the millmade cloth.

- The issue of ‘like product’ has been deliberated by Appellate Body in various cases including Japan-Alcoholic Beverages case and EC Asbestos case. Appellate Body has said that:
- “.....the interpretation of the term [‘like products’] should be examined on a case by case basis. This would allow a fair assessment in each case of the different elements that constitute a ‘similar’ product. Some criteria were suggested for determining, on a case by case basis, whether a product is ‘similar’: the product’s end-uses in a given market; consumers’ tastes and habits, which change from country to country; the product’s properties, nature and quality”.
- The Appellate Body in Japan – Alcoholic Beverages case reaffirmed that panels must use their best judgement when determining whether, products are in fact like products and this would always inevitably involve a degree of discretionary judgement. The Appellate Body also confirmed that, when making an assessment, no single approach would be appropriate to every single case. The circumstances peculiar to each case must be taken into account.
- Based on the above interpretation of the term ‘like product’, it could be seen that detailed analysis would have to be undertaken in this case to determine whether handloom products are like products to the mill made cloth.
- Textiles and clothing made by using natural dyes offer potential to India and other developing countries. Indian exports of garments using natural dyes are increasing; however they still are very small. There may not be much opposition to this proposal from other quarters; however, the potential benefit may not be large.
- Some countries have also raised the issue that recycled paper could also be included in the list of environmental goods. This again raises the issue of ‘like product’. India is not a large exporter of this item.
- It could be seen that by excluding the products based on the criteria of ‘like product’, the products which could be included in the list of environmental goods would include:
 - (i) jute and jute products;
 - (ii) coir and coir products;
 - (iii) non timber forest products;
 - (iv) cloths made using natural dyes;
 - (v) products based on TK.

D. PROPOSAL OF QATAR FOR INCLUSION OF EFFICIENT, LOWER-CARBON AND POLLUTANT-EMITTING FUELS AND TECHNOLOGIES

Qatar has proposed for inclusion of the efficient, lower-carbon and pollutant-emitting fuel and technologies in the list of environmental goods on the grounds of lower emission of green house gases (GHGs) and commitment to UNFCC and Kyoto Protocol. Qatar has proposed for inclusion of following categories:

- (i) Gas Turbines Combined Cycle Power Generation
- (ii) Chemical Gas to Liquid (GTL) Fuels
- (iii) Natural Gas Fuel Cell Technologies

Qatar has mentioned that combined cycle gas turbine plants work with renewable energy systems like solar energy and reduce GHGs. It has also mentioned that Kyoto Protocol

promotes use of natural gas and therefore natural gas based goods and technologies should be promoted.

Responding to Qatar’s proposal, some of the developed countries mentioned that the proposal does not clearly identify the products at ITC HS classification which would be included in the list of environmental goods. They sought greater clarity from Qatar on this issue.

Qatar has in its recent submission provided the details of the products it proposes to include in the list of environmental goods. These are LNG, Natural Gas, turbines based on natural gas and a number of chemical gas to liquid fuels such as diesel, naphtha, etc. Qatar’s proposal raises issues with such large implications which perhaps are best left to the Kyoto Protocol.

E. ANALYSIS OF LIST PROPOSED BY JAPAN

There are 166 items categories at 6-digit level with expositions in a few in the Japanese list. The list, on the pattern of OECD list has been divided under three broader headings namely, Pollution Management, Cleaner Technology and Products and Resource Management. Most of these items have been taken either from the APEC or OECD lists. However there are many items (around 35), which are not there in either of the APEC or OECD lists. An analysis of items belonging to the following two categories, in the list suggested by Japan is given below:

1) Items, which are not there in APEC, list but are in the OECD list

2) Items, which are not there either in APEC or OECD lists.

(i) *Items, which are not there in APEC, list but are in OECD list*

- There are 31 items under this category including one chemical (lime stone flux) and 30 equipment including two related to renewable energy.
- Large import value items for India under this category are limestone flux, compressors used in refrigerating equipment and parts, heat treatment equipment, valves, pumps for liquids, parts of water heaters, hand pumps and electrical filaments of lamps. There are very few items in this category which could be considered as being used for pollution control or environmental purpose. The items which could be considered as environmental goods could include brooms and brushes, silencers and exhaust pipes, mechanical floor sweepers, other brushes, waste heat boilers, solar electric generator, solar panel and ultra violet lamps. Other items in this category do not seem to have uses in environmental sector.
- In case of renewable energy equipment, Indian exports are more than imports.
- This category is actually not a separate category but residual item proposed by Japan which are present in OECD list but are not included in the APEC list.

HS code	Description	Expositions	2000-01 (US\$ millions)		Bound duties (India)	Applied Tariffs (India)
			Exports	Imports		
2521.00	Limestone flux; limestone and other calcareous stone, of a kind used for the manufacture of lime or cement		2.2	22.29	40	25

7019.90	Glass fibres other than slivers, rovings, yarn, chopped strands, webs, mats, thin sheets, mattresses, boards and similar nonwoven products	Separators, Precipitators	24.12	4.66	40	25
8414.30	Compressors of a kind used in refrigerating equipment		1.22	26.39	40	25
8414.40	Air compressors mounted on a wheeled chassis for towing		27.14	6.1	25	25
8414.90	Parts of HS headings 8414		13.9	46.18	40	25
8419.89	Machinery, plant or laboratory equipment, whether or not electrically heated (excluding furnaces, ovens and other equipment of heading 85.14), for the treatment of materials by a process involving a change of temperature such as heating, cooking, roasting, distilling, rectifying, sterilising, pasteurising, steaming, drying, evaporating, vaporising, condensing or cooling, other than machinery or plant of a kind used for domestic purposes; instantaneous or storage water heaters, non-electric.	Machinery for treatment of materials by change of temperature	9.92	13.01	40	25
8424.90	Parts of Mechanical appliances for projecting, dispersing or spraying liquids or powders; fire extinguishers, whether or not charged; spray guns and similar machines and similar jet projecting machines.		2.17	5.69	25	25
7325.10	Other cast articles of iron or steel ;Of non-malleable cast iron		28.74	0.12		25
8413.20	Hand pumps, other than those of subheading No. 8413.11 or 8413.19		5.81	0.61	40	25
8413.50	Other reciprocating positive displacement pumps		0.43	3.23	25	25
8481.10	Pressure-reducing valves		2.42	4.3	40	25
8481.30	Check valves		1.21	2.73	40	25
8481.40	Safety or relief valves		1.27	5.96	25	25
8481.80	Other valves		53.3	82.45	40	25
9031.49	Other Measuring and Checking instruments, appliances and machines, not specified or included elsewhere in this chapter			5.01		25
6810.99	Articles of cement, of concrete or of artificial stone, whether or not reinforced; Other		1.47	0.16	40	25
8464.90	Machine-tools for working stone, ceramics, concrete, asbestos-cement or like mineral materials or for cold working glass; Other	Machine-tools for cold working glass		3.68		25

8516.29	Electric space heating apparatus and electric soil heating apparatus ;Other	Electric space heating and soil heating apparatus	0.31	1.03		25
8705.90	Special purpose motor vehicles, other than those principally designed for the transport of persons or goods (for example, breakdown lorries, crane lorries, fire fighting vehicles, concrete-mixer lorries, road sweeper lorries, spraying lorries, mobile work	Refuse disposal vehicle		5.88	40	25
9013.20	Lasers, other than laser diodes		0.23	2.22	40	25
9603.10	Brooms and brushes, consisting of twigs or other vegetable materials bound together, with or without handles		1.57	0.24		25
9603.50	Other brushes constituting parts of machines, appliances or vehicles		0.21	0.85		25
9603.90	Brooms, brushes (including brushes constituting parts of machines, appliances or vehicles), hand-operated mechanical floor sweepers, not motorised, mops and feather dusters; prepared knots and tufts for broom or brush making; paint pads and rollers; squee	Mechanical floor sweepers	0.37	0.49		25
8708.92	Silencers and exhaust pipes		0.26	0.43	40	25
8413.81	Pumps for liquids, whether or not fitted with a measuring device; other pumps	Heat Pumps	1.6	28.98		25
8419.19	Instantaneous or storage water heaters, non-electric ;other	Burner; fuel other than oil or gas	0.22	1.5	25	25
8419.19	Instantaneous or storage water heaters, non-electric ;other	Waste heat boilers	0.22	1.5	25	25
8541.40	Photosensitive semiconductor devices, including photovoltaic cells whether or not assembled in modules or made up into panels; light emitting diodes	Solar electric generators	37.69	12.06	40	
8541.40	Photosensitive semiconductor devices, including photovoltaic cells whether or not assembled in modules or made up into panels; light emitting diodes	Solar panel	37.69	12.06	40	
8419.90	Parts of HS headings 8419	Heat exchange units ;Parts	8.82	20.86	35	25
8539.31	Electric filament or discharge lamps, including sealed beam lamp units and ultra-violet or infra-red lamps; arc-lamps; Fluorescent, hot cathode		2.26	15.13	40	25

(ii) *Items, which are not there either in APEC or OECD lists.*

- There are seven items under the heading Pollution Management. None of them are end-of the pipe pollution Control equipment. Vacuum cleaners and refrigerators are consumer items while weighing machinery has nothing to do with pollution control. The two items mentioned under solid waste management are actually industrial goods.
- From trade point of view Indian imports are not significant except in case of machines for glass manufacturing (847529). For rest of the items in this category, the expositions given are very fine and the trade data mentioned in the table does not reflect the actual imports and the import figures for the expositions would be very small. In trade terms barring a few items Indian imports are more than exports. However very fine expositions have been given and the trade data do not reflect correct situation.
- Under the heading of Cleaner Technologies and Products there are 24 items, all with expositions. Recycled paper could be a case of npr-PPM. Most of the other products are consumer items and they are cleaner as compared to others, which is a relative term. What's cleaner today may not be called so tomorrow.
- Four products have been included under the heading Resource Management. While fuel cells and water heating machines are industrial equipment, the other two are not actually recycling systems per se, as has been claimed.

HS	Description	Exposition	2001-02 (US\$ millions)		Bound Tariff	Applie d Tariffs
			Export	Import		
1. Pollution Management						
<i>1.1 Air Pollution Control</i>						
8509.10	Vacuum cleaners	Jet-turn type cleaner	0.29	0.62	40	25
<i>1.2 Waste Water Management</i>						
8423.81	Weighing Machinery having a maximum weighing capacity not exceeding 30 kg		0.85	0.69	40	25
8423.82	Weighing Machinery having a maximum weighing capacity exceeding 30 kg but not exceeding 5000 kg		0.15	0.09	40	25
8423.89	Other Weighing Machinery		0.36	0.71	40	25
<i>1.3 Solid Waste Management</i>						
8475.29	Machines for manufacturing or hot working glass or grassware :Other		0.23	3.54		25
8480.50	Moulds for glass		0.08	0.34	25	25
<i>1.4 Remediation/cleanup</i>						

8418	Refrigerators, freezers and other refrigerating or freezing equipment, electric or other; heat pumps other than air conditioning machines of heading No. 84.15.	Ion refrigerators able to dispose of germs	19.86	60.28	25	25
2. Cleaner Technology and products						
48	PAPER AND PAPERBOARD; ARTICLES OF PAPER PULP, OF PAPER OR OF PAPERBOARD	Recycled paper	193.56	437.03	40	25
8415	Air conditioning machines, comprising a motor-driven fan and elements for changing the temperature and humidity, including those machines in which the humidity cannot be separately regulated.	Inverter type air conditioner	13.46	50.92	40	25
8415.90	Parts of Air conditioning machines	Temperature controller			40	25
8418	Refrigerators, freezers and other refrigerating or freezing equipment, electric or other; heat pumps other than air conditioning machines of heading No. 84.15.	Non flon refrigerator	19.86	60.28	25	25
8418	Refrigerators, freezers and other refrigerating or freezing equipment, electric or other; heat pumps other than air conditioning machines of heading No. 84.15	Inverter type air conditioner	19.86	60.28	25	25
8422.11	Dish washing machines; machinery for cleaning or drying bottles or other containers; machinery for filling, closing, sealing or labelling bottles, cans, boxes, bags or other containers; machinery for capsuling bottles, jars, tubes and similar containers; Householdtype	Ultrasonic dish washing machine	0.58	0.18		30
8422.11	Dish washing machines; machinery for cleaning or drying bottles or other containers; machinery for filling, closing, sealing or labelling bottles, cans, boxes, bags or other containers; machinery for capsuling bottles, jars, tubes and similar containers; Householdtype	Dish washing machine capable of saving detergents	0.58	0.18		30

8422.11	Dish washing machines; machinery for cleaning or drying bottles or other containers; machinery for filling, closing, sealing or labelling bottles, cans, boxes, bags or other containers; machinery for capsuling bottles, jars, tubes and similar containers; Householdtype	Dish washing machine capable of saving water	0.58	0.18		30
8450	Household or laundry-type washing machines, including machines which both wash and dry	Ultrasonic washing machines	0.58	0.18		25
8450	Household or laundry-type washing machines, including machines which both wash and dry	Washing machine capable of saving detergents	7.44	10.58		25
8450	Household or laundry-type washing machines, including machines which both wash and dry	Washing machine capable of saving water	7.44	10.58		25
8471.70	Storage units	DVD-ROM	7.44	10.58		Free
8509.80	Electro-mechanical domestic appliances, with self-contained electric motor.	Gabbage degrader	0.66	0.42	40	25
8516.50	Microwave ovens	Resource efficient type	0.03	5.05	40	25
8516.60	Other ovens ; cookers, cooking plates, boiling rings, grillers and roasters	IH electric cooker	1.00	1.08	40	25
8516.79	Electric instantaneous or storage water heaters and immersion heaters; electric space heating apparatus and soil heating apparatus; electro-thermic hair-dressing apparatus (for example, hair dryers, hair curlers, curling tong heaters) and hand dryers; electric smoothing irons; other electro-thermic appliances of a kind used for domestic purposes; electric heating resistors, other than those of heading 85.45;Other	IH rice cookers	1.36	1.10	40	25
8528.30	Video projectors	LCD Type	2.2	12.98		25
8526.91	Radar apparatus, radio navigational aid apparatus and radio remote control apparatus; Radio navigational aid apparatus:	Car navigation system capable of receiving traffic jam information	0.63	4.28		25

8528.12	Reception apparatus for television, whether or not incorporating radio-broadcast receivers or sound or video recording or reproducing apparatus ;Color	PDP Type	21.68	4.74		25
8528.12	Reception apparatus for television, whether or not incorporating radio-broadcast receivers or sound or video recording or reproducing apparatus ;Color	LCD Type	21.68	4.74		25
8703.22	Motor cars and other motor vehicles principally designed for the transport of persons (other than those of heading No. 87.02), including station wagons and racing cars; Of a cylinder capacity exceeding 1,000 cc but not exceeding 1,500 cc	Hybrid Car	2.85	0.98		105
8703.90	Motor cars and other motor vehicles principally designed for the transport of persons (other than those of heading No. 87.02), including station wagons and racing cars; Other	Cars designed for defusing nuisance	17.40	1.38		105
8901.20	Tankers		0.02	12.59		25
9013.80	Flat panel displays devices (including LCD, Electro Luminescence, Plasma, Vacuum Fluorescence and other technologies) for products falling within this agreement, and parts thereof.	Double-hulled oil tankers	0.01	2.96	40	25
3. Resource Management						
8506.80	Primary cells and primary batteries ;Other	Fuel Cells		12.02		25
8516.10	Liquid pumps	Water heating machine using heating pumps	8.75	0.33	40	25
<i>3.1 Other Recycling System</i>			2.96	14.64		
6309.00	Worn clothing and other worn articles		2.02	22.45		30
6310	Used or new rags, scrap twine, cordage, rope and cables and worn out articles of twine, cordage, rope or cables, of textile materials.					25

