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BUSINESS PERCEPTIONS OF NON-TARIFF BARRIERS (NTBS) FACING TRADE IN SELECTED ENVIRONMENTAL GOODS AND ASSOCIATED SERVICES: SURVEY RESULTS

Finding of Ten Country Cases

OECD Trade and Environment Working Paper 2007-02 Part II

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ABSTRACT

Surveying 136 exporting firms from ten OECD and non-OECD countries, this study documents the incidence, and impact of, non-tariff measures that are perceived to act as barriers to trade in seven sectors of environmental goods and associated services. Although the DDA has a mandate to address *inter alia* such trade barriers, information shedding light on the specific problems that firms encounter in their export activities has been scarce.

Accounts by exporting firms in Austria, Brazil, Canada, Chile, France, Germany, India, Japan, Korea and the United States suggest that environmental goods indeed face a variety of obstacles when traded abroad. Firms participating in the survey mentioned relatively often problems associated with product testing and certification requirements, customs procedures, regulations on payment, problems with intellectual property protection, government procurement procedures and technical regulations and standards. Certain types of reported barriers appear to be more prevalent in certain markets. For example, customs procedures reportedly pose a problem predominantly in developing and transition economies and problems with intellectual property rights are associated especially with China. The non-tariff barriers reported by the firms appear to be generic and not specific to the environmental sector. The study shows that in many countries the environmental industry consists mostly of SMEs, for whom cost-raising barriers pose disproportionately greater problems due to their limited resources.

The survey helps to better understand the effects that NTBs have at the firm level, and what firms do when they encounter barriers of various types. It appears that the firms participating in this study mostly seek to devise ways of coping with the difficulties that they encounter, rather than seeking help from governments. Since these measures are ad hoc and do not address problems at their source, they cannot substitute for governments taking action. The study points out that many of the concerns voiced by firms in the environment sector can be addressed at the WTO but that more can be done also at the bilateral and regional levels.

Keywords: environmental goods and services, environmental technologies, environmental industries, trade liberalization, trade and environment, non-tariff barriers, WTO, DDA, Austria, Brazil, Canada, Chile, France, Germany, India, Japan, Korea, United States.

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(TLRI) of the OECD Trade and Agriculture Directorate under the direction of Dale Andrew (TPLS). It was discussed in the OECD JWPTE as well as the Trade Committee Working Party (TCWP), which have agreed to make these findings more widely available through declassification on its responsibility.

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BUSINESS PERCEPTIONS OF NON-TARIFF BARRIERS (NTBS)¹ ENCOUNTERED BY AUSTRIAN FIRMS WHEN EXPORTING ENVIRONMENTAL PRODUCTS²

- 1. This case study presents the survey results of Austrian companies exporting environmental goods carried out from January until March 2007.³ This survey was conducted in two stages:
 - An on-line pre-screening questionnaire was mailed to 90 Austrian companies exporting environmental goods. Follow-up calls were made to companies asking them to answer the pre-screening questions over the telephone. Over a three-week period in late February through early March 2007 further calls were made resulting in the completion of the questionnaire by a total of seven firms that satisfied the set criteria for being included in stage-two interviews. Two firms contacted reported that they did not export and one other firm reported that it encountered no barriers.
 - Interviews were conducted by telephone with the seven firms identified in stage one. The interviews focused on experiences with categories of non-tariff measure (NTMs) which these companies had rated in the pre-screening process on a 5-point scale as presenting either "major" or "prohibitive" trade obstacles.
- 2. The following overview includes data from the eight firms that answered the pre-screening questions and also indicated that at least one of the NTM areas surveyed posed a moderate or more serious obstacle to their export activities. Barriers rated to be minor were excluded from the analysis. The more detailed descriptions of perceived "major" or "prohibitive" obstacles pertain only to the set of seven respondents interviewed.

¹ A distinction is made between non-tariff measures (NTMs) and non-tariff barriers (NTBs). NTMs refer to government measures of a regulatory nature that may or may not have trade effects (and if they do, these effects may or may not be intentional or necessary for achieving the measure's principal objectives). The term is intended to be neutral by recognising that governments are free to set regulatory policies, e.g., to serve legitimate social, environmental and other regulatory goals. On the other hand, "NTBs"refer to specific NTMs that have or are perceived to have trade-restrictive effects. In the survey, the pre-screening questionnaire asked firms initially to indicate whether, and to what degree, any of 19 listed areas or categories of NTMs posed obstacles to their exports (i.e. could be considered to be NTBs). Such NTBs are thus specific measure, policy, conduct or procedural aspect thereof, identified by the firms themselves during interviews as a barrier to their exports.

² This study was carried out by Barbara Fliess of the OECD Trade and Agriculture Directorate.

³ The findings of this country study reflect the perceptions of Austrian firms. Their accuracy has not been verified and they are documented here without prejudice to the views of governments.

⁴ The companies approached were identified from two large Internet directories listing companies that specialise in the production and trading of environmental goods: umwelttechnik.at (www.umwelt-at/) and oekoweb.at (www.

Survey results

1. Company characteristics

3. With the exception of recycling systems, respondents to the pre-screening questionnaire export products covering all environmental sectors targeted by the study. Of the eight firms answering the questions of the pre-screening questionnaire, a majority operate in the sectors of renewable energy and waste water management. In the range of environmental technologies offered by the Austrian industry, renewable energy technologies occupy an outstanding role, accounting in 2003 for 50% of total sales and 45% of firms. This is followed by water treatment (14% of sales and 16% of firms), clean air technologies (12% of sales and 11% of firms) and solid and liquid waste management (13% of sales and 16% of firms).

Environmental sectors covered by responding firms

Environmental monitoring, analysis and assessment equipment	1	Air pollution control	1
Recycling systems	-	Waste water management	3
Renewable energy	5	Solid and hazardous waste management	2

4. The majority of participating firms are small and medium-sized enterprises. This profile is representative of this young and growing sector, which today comprises more than 300 firms employing around 20.000 employees and generating sales worth EUR 4 billion (not including services) that in recent years have been growing at an annual rate of 7-8%. Between 2000 and 2003, sales grew by an average 7.7% per year. The industry accounts for around 2% of Austria's GDP today.⁶

Staff employed by responding firms

< 10	10 – 50	50 to 250	250 to 1,000	1,000 to 10,000	> 10,000
1	2	3	1	1	-

2. Export markets and business performance

5. Geographical distribution of participating firms' major export markets exhibits the strong export orientation towards Europe also characteristic of the overall industry. This is shown in the next table, which provides a breakdown by reported major export market. Available statistics indicate that exports account for around 50% of total sales. Around 50% of exports go to EU-15, led by Germany. The next largest export markets are Central and Eastern Europe (10%), followed at a distance by China (2%) and Russia (1%). This explains why only a few firms participating in this survey report have major export

⁵ WIFO survey 2005, cited in Bundesminister für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft, *Umwelttechnologie – Innovationen aus Österreich (Environmental Technologies – Innovations from Austria*), Vienna, 2006, p. 14. (http://gpool.lfrz.at/gpoolexport/media/file/Umwelttechnologie.pdf)

⁶ Bundesminister für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft, *Umwelttechnologie – Innovationen aus Österreich (Environmental Technologies – Innovations from Austria*), Vienna, 2006 (http://gpool.lfrz.at/gpoolexport/media/file/Umwelttechnologie.pdf)

⁷ Lebensministerium, "Österreich verfasst Umwelttechnologie-Masterplan", 21 August 2006, http://www.ots.at/presseaussendung.php?schluessel=OTS 20060821 OTS0054&ch=panorama

markets elsewhere. Neither Africa nor Latin America or the Middle East is mentioned. Of the eight firms which answered this question:

- all export to EU markets and a majority also export to Central/Eastern Europe;
- 3 export to markets in Asia;
- 3 export to North America.

Major export markets of respondents

Firm	Asia	Americas	Africa	Middle East	Europe
# 1	South Korea, Australia	USA			Germany, Spain, Italy, UK, Belgium,
# 2	China				EU, including Eastern Europe (Hungary, Czech Republic, Slovak Republic, Poland)
# 3					EU, including Eastern Europe (esp. Hungary, Poland, Slovenia)
# 4					Poland, Romania, Slovenia, Croatia, Bosnia Germany, Greece
# 5					EU, Eastern Europe (e.g. Poland, Bulgaria, Russia, Ukraine)
# 6					Germany, Spain, Slovenia, Italy
# 7	Asia	North America			EU
# 8					EU (Germany, Benelux, Spain) Switzerland, Eastern Europe (from Poland to Bulgaria)
Total # of firms	3	2			8

6. That the majority of participating firms is strongly export-dependent (ratio of gross income to exports exceeding 40%) can be seen from the following table. This is explained by the relatively small home market.

Percentage of gross income received from exporting

0 – 20 %	21 – 40 %	41 – 60 %	61 – 80 %	81 – 100 %
1	1	1	1	4

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7. When rating their export performance over the last 3 years, almost all companies indicated it to be good or excellent.

Company rating of export performance over the last three years

Not so good	OK	Good	Excellent
-	1	4	3

3. Non-tariff barriers reported

8. From the responses to the questionnaire, for only a few NTM areas do one or two firms report obstacles to exporting that are judged prohibitive. Several others are judged as representing major obstacles to exporting. Sectors and NTM categories where either prohibitive or major obstacles were reported by firms are shown in the next table.

Sectors and NTM categories where obstacle was judged "major" or "prohibitive"

Sector	Category of NTM		
Environmental monitoring, analysis and assessment equipment	Customs procedures		
	Customs procedures		
	Technical regulations and standards		
	Testing and certification		
	Regulations on payment		
Renewable energy	High or discriminatory taxes or charges		
The state of the s	Adequacy of intellectual property protection		
	Government procurement		
	Other: (1) restrictions on movement of in-house personnel; (2) subsidies received by third-country competitors selling in same export market		
	Technical regulations and standards		
Air mollution control	Testing and certification		
Air pollution control	Regulations on payment		
	Adequacy of intellectual property protection		
	Customs procedures		
	Technical regulations and standards		
Waste water management	Testing and certification		
	Regulations on payment		
	Adequacy of intellectual property protection		
	Technical regulations and standards		
0.11.11.1	Testing and certification		
Solid and hazardous waste management	Regulations on payment		
	Adequacy of intellectual property protection		

9. A simple frequency count of respondents that rated reported barriers as either "major" or "prohibitive" trade obstacles helps differentiate between *relatively more frequently* identified NTM areas, on the one hand, and *occasionally* mentioned areas, on the other hand.

a) NTBs mentioned relatively often

10. Testing and certification represents the NTM area most frequently mentioned as causing either moderate or major problems. This is followed by product standards and technical regulations and adequate protection of intellectual property rights.

Trade barriers identified by many companies

Policy measures or areas	Moderate	Major	Prohibitive	Total
Testing and certification in destination country		4	2	6
Product standards and technical regulations of destination country	1	3		4
Adequacy of intellectual property protection		1	2	3

11. Testing and certification causes problems for surveyed Austrian firms wishing to sell their products in certain other EU member countries or in Ukraine or Russia. Product standards or technical regulations were reported to also cause problems in various developed and developing-country export markets. Concerning protection of intellectual property, incidences were reported with respect to China, Canada and the European Union.

Illustrations of specific reported barriers are:

- One Austrian firm exporting to Russia and Ukraine reported on a requirement to have certifiers from these countries visit the firm in order to certify products. The firm has to fund travel and other expenses for several days. The certifiers know little about certification; however, when this firm pays it obtains the certificate. Getting a certificate for a product type costs 20,000-30,000 EUR and is valid for two years. At times, this firm does not receive an invoice, or it receives an invoice for only a partial amount that it has paid.
- Photovoltaic modules for sale in *Italy* are required to undergo certification for the standard IEC 61215. This is a requirement only in Italy, not in the other EU markets. Certification cost 50,000 EUR and takes 6 months. When the firm brings new models on the market, it has to wait 6 months before it can sell the model in Italy. This is considered a very high (prohibitive) barrier.
- As far as inverters are concerned, in Korea only the importing firm can apply for and obtain the necessary national certification. For the Austrian producer, the necessity to have a middleman intervene complicates the process of certification. It requires communication between the foreign producer of inverters and the Korean importer because the importer would not able to answer certification-related questions concerning the product. Moreover, if a foreign producer has business dealings with several Korean partner firms/importers, his product has to undergo several times the same certification process. This is costly duplication.
- In one instance, involving *Canada*, a CD with copyrighted presentation by this biogas equipment maker was illegally acquired and part of the content was placed on the Internet. The firm protested and the material was eventually removed.

b) NTBs mentioned occasionally as "major" or "prohibitive"

12. Several NTM categories were perceived to create either "major" or "prohibitive" obstacles to exporting by very few respondents. These categories are shown in the following table. One firm also rated high or discriminatory taxes as a major problem for its exports.

Trade barriers	identified b	y a few	companies

Policy measures or areas	Moderate	Major	Prohibitive	Total
Customs procedures	4	2		6
Government procurement procedures in destination market		1	1	2
Regulations on payments		1	1	2
High or discriminatory taxes or charges in destination market	1	1		2
Other: restrictions on movement of technical personnel		2		2
Other: subsidies received by foreign companies competing in the same market		1		1

13. Two companies, one operating in the renewable energy sector and the other in the waste water and solid waste management sector, reported inadequate protection of intellectual property involving export of their products to Canada and Germany, and China, respectively. Government procurement procedures of certain EU members favouring domestic suppliers were described by two suppliers of renewable energy equipment. Reported problems with regulations on payment concerned Poland and China. China was also mentioned for supporting with subsidies the entry of Chinese competitors in some of the large EU markets traditionally serviced by Austrian suppliers.

Illustrations of specific reported barriers are:

- Russia's customs involves extremely cumbersome process and procedures. One time, officials requested registration of each of thousands of cables included in a switch cabinet shipped by this biogas equipment producer. Officials also request to see the production drawings. The firm reported that when officials do not like some aspect of the customs documents, they confiscate the shipment and if the problem is not fixed quickly will simply auction off the shipment.
- Concerning shipments of *free samples* to potential customers, customs in several Eastern European countries (*Bosnia, Serbia, Croatia and Serbia*) mandates that the value of the product be declared to exceed zero (in which case the customer has to pay import tax). According to the respondent, officials of these countries are suspicious of customs fraud.
- *Chinese authorities* did not allow the China-based subsidiary of this Austrian producer of heating boilers to apply for the certification of the boilers, nor make the payment for the certification. Instead, the Chinese authorities insisted that payment be made from abroad, by the Austrian firm.
- A complaint by an Austrian exporter concerned the reimbursement of the value-added tax by *Germany*. It takes half a year to have German authorities process the application for reimbursement, and then another half a year to receive payment. Also, every time the firm makes a request for reimbursement it is rejected initially and the firm has to always follow up on its request.

- In *Italy*, local power supply providers which are business partners of this firm and other producers of photovoltaic modules are themselves trading similar products, for example, by way of subsidiaries. These products receive preferential treatment in public procurement contracts.
- Sending in-house technical staff to supervise the construction of biogas plants is reported to be difficult or impossible. One firm reports that dispatching technicians to *Belgium* requires signing them up for health insurance, retirement insurance, in that country, which the firm views as onerous requirements that do not make any sense. In *Germany*, installing solar systems is considered to be construction services for which another Austrian firm, which builds solar systems, must hire German nationals.
- Since about one year *Chinese* firms are selling photovoltaic modules in major EU markets (Germany, Spain, Italy). Their modules are of lower quality than the modules manufactured in Europe. However, Chinese firms are offering the same 25-year warranty that EU firms offer to clients and sell their products at a much lower price. This is attributed to subsidies that the firms receive from the Chinese government. The price of a module is 3.50 EU per watt. The Chinese government pays Chinese firms 30-40 cents, or a subsidy of 10-20% per watt.

c) Occasionally encountered trade obstacles of less importance

- 14. Responses from the questionnaires made reference to obstacles of a *moderate* degree involving several NTM categories:
 - Two firms mentioned import surcharges or border taxes.
- 15. Cargo handling and port procedures or requirements, government monopoly practices, subsidies or tax benefits given to competing domestic firms in the export market, and informal payments, were mentioned by one respondent, respectively, as creating *moderate* obstacles to trade.
- 16. A relatively large number of NTM areas were described as representing either *minor* problems or *no problems*, or *not being applicable* to the situation of the respondent. This includes: pre-shipment control, import licensing, import quotas or prohibitions, restrictions on investment, restrictions on provision of after-sales services, price controls, and restrictions on foreign exchange.
- 17. In light of the small sample of Austrian firms interviewed for this study, this may not be a fully representative picture of the barriers that Austrian firms operating in this sector encounter. The pattern of reporting, which draws attention to problems associated with a few NTM categories, however is congruent with the sample's export orientation. This orientation favours the now enlarged market of the EU, where much progress has been made in removing or minimising non-tariff barriers to trade among members, especially in the goods sector. Still, from the description provided by the Austrian firms participating in this study, certain policies or practices appear to seriously handicap their business not only with non-EU economies but also with other markets of the EU.

4. Compendium of firm experiences

Firm # 1	
Environmental	Renewable energy
sector	
Areas where trade	e obstacles were reported
Prohibitive	

Major

Standards and technical regulations
Testing and certification

Details of company experience

Standards and technical regulations.

Italy (and EU more generally), United States, Korea: There are no EU-wide standards for inverters that enable solar energy to be fed into utilities' electricity grids. Although guidelines exist at EC level these are not mandatory for utilities and EU members are free to and do set their own standards. The firm cited Italy, but also Korea and the United States, as examples of countries setting their own national standards and conformity assessment requirements. That products which are accepted in one country are not automatically accepted in another export market obliges the firm to be able to meet different standards in its different export markets, which in turn requires costly adjustments to the production process. The respondent also regretted that self-certification by firms for the product, which was accepted in a market like the UK, was not accepted in other markets, such as Italy.

The firm named Belgium and the Netherlands as examples where countries had chosen to adopt regulations that had proven themselves through experience elsewhere.

Testing and certification

Italy (and EU more generally), United States, Korea: The respondent characterised certification requirements in these markets as involving significant costs for the firm internally and because independent testing bodies charge high fees.

Obtaining the UL certificate requires that the product be tested and approved by one of several US assessment bodies, either in the US or through their representations in Europe. In the case of Korea, the firm supplies inverters under a special Korean government programme set up to promote installation of smallscale solar energy systems. Under the programme the product has to be tested and certified by KIER. According to the Austrian exporter, the situation in Korea is more complicated than in the case of the United States. Whereas a foreign supplier can himself apply for UL certification, in Korea only the firm importing the product can apply for and obtain the necessary certification. For the Austrian producer, the necessity to have a middleman intervene complicates the process of certification. The Austrian producer has to establish and maintain good communication with the Korean importer because the importer would not able to answer certification-related questions concerning the product. Moreover, if a foreign producer has business dealings with several Korean partner firms/importers, his product has to undergo several times the same certification process. This is costly duplication.

Firm # 2	
Environmental	Renewable energy
sector	
	le obstacles were reported
Prohibitive	
Major	Customs procedures
	Testing and certification
	High or discriminatory taxes in destination market
	Government procurement
	Adequacy of intellectual property protection
D 11 0	Other: Services
Details of compa	ny experience
Customs procedures	Russia: Extremely cumbersome process and procedures. One time, officials requested registration of each of thousands of cables included in a switch cabinet. Officials also request to see the production drawings. The firm also reported that when officials dislike some aspect of the customs documents submitted, they confiscate the shipment and if the problem is not fixed quickly will simply auction off the shipment.
	This producer has dealt with this situation by insisting that the Russian customer himself take care of customs formalities and procedures.
Testing and certification.	Slovenia: Despite there being a common EC standard for ATEX, certification of biogas equipment undertaken in the country is far from efficient. The producer has to provide many papers, and the process of going through certification or approval is very cumbersome. The firm described the problem in more general terms as one where different authorities interpret the same regulatory requirements differently.
	The firm has dealt with this problem by stipulating in contracts that the customer purchasing the equipment is responsible for obtaining all necessary approvals or certificate in Slovenia.
High or discriminatory taxes in destination market	Germany: The process of obtaining reimbursement of the value-added tax is extremely difficult. According to the respondent, that it takes the firm half a year to have its applications for reimbursement processed, and then another half a year to receive payment. Moreover, each time the firm makes a request for reimbursement, the request is rejected initially and the firm has to follow up.
Government procurement	European markets: This small firm finds it difficult to accept that if a supplier participates in a public contract he has to accept, by signing, that he is liable for anything that can go wrong with the fulfilment of the contract. According to the firm, even legal experts think that this is not a proper way of doing business.

Adequacy of
intellectual
property
protection

Germany: Customers have not complied with contractual agreements providing that they do not use plans for a biogas plant (know-how). In this firm's view, a small firm has no chance to prevent this from happening or defend its rights.

Canada: In one instance, a CD with copyrighted presentation by the firm was illegally acquired and parts of the content were placed on the Internet. The firm protested and the material was eventually removed from the Internet.

Other: Services restrictions on movement of technical personnel

Sending technicians to supervise the construction of biogas plants contracted by clients abroad is in general difficult. The example cited by the respondent is Belgium, where technicians of this firm are required to subscribe to health insurance in Belgium, to Belgium's retirement insurance, etc. The firm considers these requirements onerous and not making sense.

Firm # 3 Environmental sector

Environmental assessment equipment, waste water management (especially civil engineering)

Areas where trade obstacles were reported

Major

Customs procedures

Details of company experience

Customs procedures

The firm reports having experienced difficulties with clearing goods through the customs of some of export markets, especially *Bosnia Herzegovina, Croatia and Serbia*. This does not happen with all shipments, but if it happens it is a major problem. If there is only the slightest mistake or omission in the firm's computer-generated customs declaration, the goods are not cleared. This can be weight or volume related data. As a result, the truck is held up at the border until the firm has revised the papers or supplied additional declarations.

Another problem relates to shipments of *free samples* to potential customers. Customs mandates that the value of the product be declared to exceed zero (in which case the customer has to pay import tax). According to the respondent, officials are suspicious of customs fraud.

In general, the firm is trying to solve any problems on its own, on a case-by-case basis.

Firm # 4	
Environmental	Renewable energy; Air pollution control
sector	
Areas where trad	le obstacles were reported
Prohibitive	Testing and certification
Major	Product standards and technical regulations in destination market
	Regulations on payment.
Details of compa	ny experience

Testing and certification

Russia, Ukraine (and Hungary five years ago): The firm reports that it is required to obtain certification of heating boilers in the export market, which does not recognise the strict standards (e.g. for low emission of pollutants, energy efficiency) which the products meet in the EU or in Switzerland, where they are also sold.

As a particular issue, the respondent singled out the requirement to have certifiers come from Russia or Ukraine to the firm in order to certify products. This means the firm has to fund travel and other expenses for several days. The individuals sent know little about certification; when the firm pays it obtains the certificate. Getting a certificate for a product type costs 20,000-30,000 EUR and is valid for two years. At times, this firm does not receive an invoice, or it receives an invoice for only a partial amount of what it actually has paid.

According to the respondent, certification in the countries where he has experience is solely a money question. If you pay, you obtain the necessary certificate.

This firm has decided to quit the Russian market.

Product standards and technical regulations of destination country

China: This firm had business relations with China and also had set up a subsidiary in China which was expected to import heating boilers from the mother firm in Austria. The Chinese authorities requested certification of the firm's quality management system in Austria and sent inspectors. According to the respondent, when Chinese inspectors visited the firm, they took great interest in the quality management of the firm, asking to see for example relevant handbooks but took no interest in the quality of the products themselves. It became evident from the conversations that these inspectors had toured Europe and visited many firms. The respondent believes that these inspectors wanted to learn about quality management (know-how) so they could apply this at home.

Regulations on payment

The China-based subsidiary of this firm was not allowed to apply for certification of heating boilers, nor to make the payment for certification. The Chinese authorities required that payment be made from abroad, by the firm in Austria.

The Austrian firm has quit the Chinese market.

Firm # 5	
Environmental	Renewable energy
sector	
Areas where trad	le obstacles were reported
Prohibitive	Testing and certification
Major	Public procurement
-	Other (subsidies enjoyed by foreign companies competing in the same market)

Testing and certification.

Italy: According to the firm, photovoltaic modules for sale in Italy are required to undergo certification for the standard IEC 61215, and this is a requirement only in Italy, not in the other EU markets. Certification costs 50,000 EUR and takes 6 months. When the firm brings new models on the market, it has to wait 6 months before it can sell the model in Italy. This is considered a very high (prohibitive) barrier.

Public procurement

Italy: Local power-supply providers which are the natural partners of this firm and other producers of photovoltaic modules, are themselves trading with similar products, for example via subsidiaries that they have created. Their products receive preferential treatment in public procurement.

The firm reported that this issue has been raised directly with the relevant government authorities in Italy.

Other (subsidies received by foreign companies competing in the same market)

China: Since about one year Chinese producers have entered and are selling photovoltaic modules in major EU markets (Germany, Spain, Italy). Their modules are of lower quality than the modules manufactured in Europe. However, Chinese firms have copied the 25-year warranty that EU firms offer to clients and sell their products at a considerably lower price that their European competitors, including this firm. This is in part because the Chinese government subsidies their exports. The price of a module is 3.50 EU per watt; of which the Chinese government pays its firms 30-40 cents, or a subsidy of 10-20%. The respondent knows about these subsidies through his contacts to Chinese producers during renewable energy fairs. This respondent expressed great concern about this development, comparing the development with the fate of the textiles and shoes industry in Austria and Europe.

Firm # 6 Environmental

Renewable energy

sector

Areas where trade obstacles were reported

Major

Testing and certification

Inadequate protection of intellectual property rights (and public procurement)

Other: Services

Details of company experience

Testing and certification

Southern Europe (e.g. Spain): While the firm's products are certified in Austria to meet international norms, the recognition of this certification is severely limited, especially in the South of Europe. For example, despite the existence of the common EU market, when the firm wishes to export for example to Spain, it has to submit its solar thermal systems for another round of redundant testing and certification in that country. In the case of Spain this apparently is because applicable EU directives mandating recognition have not been incorporated into national law. Certification includes testing materials (e.g. rubber) for durability and resistance to bathing and drinking water. Having to undergo the same process all over again in different markets is considered very burdensome as well as unnecessarily costly. In addition, foreign producers will not receive any subsidies that local authorities may give for installations of solar systems if they do not undergo certification in the country.

Protection of intellectual property (and public procurement)

EU: This respondent expressed his dissatisfaction with several IRP issues and stressed the importance of creating a European patent. Without patent protection the risk is that know-how will be copied. But the procedure to register a patent is cumbersome and long. The firm has to register patents and pay for each patent in every individual export market.

Germany and Austria: The respondent explained that when his firm participates in public procurement contracts, it runs the risk that the technical plans it has prepared for the bid will be copied. Specific problem countries mentioned were Germany as well as the firm's home market, Austria. Public authorities tend to purchase the lowest-priced products. When his firm submits a bid it has to supply technical drawings. As the respondent explained, often clients need a custom-made technical solution meeting their specific needs. The know-how becomes transparent through the bid documents, including drawings but it is not protected against copying. Hence any other firm can carry out the contract if it has access to the documents. This is, according to the firm an important copyright issue which the firm is trying to manage by, inter alia, hiring legal counsel.

Other: Services -Restrictions movement of technical personnel

Germany: German regulations define installation work as construction work, and builders of solar energy systems like this firm are classified as falling under subconstruction work. It means that Austrian nationals are not allowed to install the solar systems in Germany and the firm has to use German workers, which is bureaucratic and complex and cannot use its own staff. The firm attributes this restrictiveness to protectionism and the cartel-like behaviour of the German construction industry.

Firm	#	7
rum	#	/

Environmental sector

Waste water management; solid waste management.

Areas where trade obstacles were reported

Prohibitive

Regulations on payment

Details of company experience

Regulations on payment.

Poland: Two or three years ago, Poland made arrangements with the governments of several European coal-buying countries to trade coal for supplies of manufactured products from these countries. Because Austria was not included in the arrangement (reportedly because the Austrian government declined to participate), Austrian suppliers such as this firm found themselves in a position of disadvantage in respect to access to the Polish market, compared to competitors in Poland's other trading partners.

BUSINESS PERCEPTIONS OF NON-TARIFF BARRIERS (NTBS) ENCOUNTERED BY BRAZILIAN FIRMS WHEN EXPORTING ENVIRONMENTAL PRODUCTS⁸

1. Introduction

- 18. The environmental industry of Brazil is still at a relatively early stage of development and largely focusing on lower-technology equipments. The industry has a long tradition in certain areas, however, such as renewable energy (because of the intensive use of biomass for fuel in Brazil) and recycling equipments. Some companies exist for more than 30 years. Moreover, the sector is expanding due to growing demand for better environmental standards from both regulators and markets.
- 19. Presently, only a few Brazilian firms are exporting environmental goods, although there is a growing trend to export to neighbouring countries, especially Argentina and Chile. Most of the firms are small or medium-sized enterprises (SMEs) producing for the domestic market. Two factors help explain this home-country focus. First, local and regional markets demand equipment that ais less technology-intensive, as compared to the markets in OECD countries. Many of the SMEs produce equipments with low technology content. Brazilian firms do not generally have the technology to meet the environmental standards of major markets in OECD countries in sectors like waste water management or air pollution control, which limits their opportunities for exporting to large and sophisticated markets. Second, Brazilian environmental products are less expensive than more sophisticated foreign equipments and more adapted to local conditions (for example, resistance to high temperatures and rough floors), which can be a competitive advantage in the local and regional market.
- 20. The main export market for Brazilian firms in the environmental industry is the South American region. Demand for environmental standards is growing in this regional market, but the environmental industries of other South American countries are at an even more rudimentary level than the Brazilian industry, giving Brazilian firms a comparative advantage. Brazilian products have features that make them less expensive than products offered by European, US or Japanese competitors. Most of the sales stem from the initiative of buyers or agents, especially through the Internet, trade fairs and clients. Yet, Brazilian firms still tend to focus on commercial opportunities in the domestic market, which is much larger than that in the other South American countries. Interviewees felt that the Brazilian market had a growing unmet demand for environmental equipments. For example, one interviewee mentioned that less than half of the Brazilian municipalities have adequate treatment and disposal of solid waste, which meant considerable opportunities for growth in the coming years.
- 21. Most of the interviewees acknowledged the importance of OECD markets, but their technology needed to improve and those markets were much more competitive. As a result, few firms are able to export to OECD markets. Those that do export to OECD countries produce relatively low technology equipments (e.g. shredders for recycling) and have strong partnerships with firms in the destination market. Lower production costs in Brazil make some Brazilian products competitive, especially products that are intensive in labour and energy.

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⁸ This study was carried out by a research team (José Antonio Puppim de Oliveira, José Jorge A. Abdalla, Lia Valls Pereira, and André Souza) of the Brazilian School of Public and Business Administration (FGV).

2. Methodology

- 22. The environmental sector of Brazil is not well consolidated and organised. There is no strong business association for firms in the sector and companies are dispersed over different trade unions, such as for machinery and electrical equipment. As a result, information about the environmental industry, the number of companies and what they produce is difficult to obtain. The research team looked for information on the Internet site of the Ministry of Commerce and Industry (www.exportadoresbrasileiros.gov.br), which lists the exporting firms of products in certain HS codes. Using the codes indicated by the OECD research proposal, the team identified several companies that had exported or were interested to export environmental goods matching those codes. The team also collected information about suppliers of environmental goods from the departments of environmental affairs of the Federation of Industries of the states of São Paulo (FIESP) and Rio de Janeiro (FIRJAN). Finally, the members of the team participated in the International Industrial Environmental Fair in São Paulo (FIMAI) in November 2006, where they identified a few exporting companies.
- 23. The study was carried out between October and December 2006. Twenty firms exporting environmental products were surveyed by phone, Internet or personally using the pre-screening questionnaire. Of those 20 firms, the team contacted 10 companies for interviews. The interviewees were staff responsible for foreign sales. All firm interviews were made personally using the interview instructions provided by the OECD. Besides the interviewees from the ten firms, the interviewers conducted semi-structured open-ended interviews with five Brazilian specialists in the areas of environment or trade and interviewed industry specialists during the 2006 International Industrial Environmental Fair in São Paulo in November 2006. As shown in the following Table, the 20 respondents come from all sectors covered by the OECD project.

Environmental sectors covered by responding companies *

Environmental monitoring, analysis and assessment equipment	2	Air pollution control	6
Recycling systems	2	Waste water management	10
Renewable energy	2	Solid and hazardous waste management	7

^{*} The sum is more than the number of firms (20), as some firms work in more than one sector.

3. Survey results

24. The following information reflects data from the survey questionnaires which the 20 companies completed.⁹

Company characteristics

25. The majority of the exporters are SMEs. The largest firm has 500 employees (see table below). Eighteen are wholly Brazilian-owned firms. One company is a subsidiary of an Italian group and another has a joint venture with German partners, which provides the firm access to technology and distribution facilities in Europe. Some firms acquired technologies from Japan and the European Union (EU) and have links with companies abroad. For example, one Brazilian firm has a contract with a Japanese firm transferring technology to build its waste water treatment plants. Another firm specializing in the area of solid waste treatment has a permanent contact with German private consultants to obtain technology for small incinerators.

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⁹ The findings of this country study reflect the perceptions of Brazilian firms. Their accuracy has not been verified and they are documented here without prejudice to the views of governments.

Number of employees

< 10	10 – 50	50 - 250	250 - 1,000	1,000 - 10,000	> 10,000
3	9	7	1	-	-

26. When considering the percentage of Gross Income received from exporting, company responses mostly fall in the 0-20% range, which shows that the majority of the companies surveyed are largely oriented towards the domestic market. Only two respondents have a higher ratio.

Percentage of Gross Income received from exporting

0 – 20 %	21 – 40 %	41 – 60 %	61 – 80 %	81 – 100 %
16	2	2	-	

Although surveyed exporters focused on the domestic market, their global business has been increasing as exports in the environmental sector are growing in general. The majority are exporting to South and Central America, especially to countries of the Common Market of the South (MERCOSUL¹⁰). Three of them are exporting to Africa and two are exporting to the European Union, notably Germany. Most of the companies surveyed do not have a strong diversification of export markets. As shown in the following Table, only four companies have exported to more than five countries.

Geographical focus of exports

Firm	Asia	Americas	Africa	Middle East	Europe
# 1		Argentina, Chile			EU (mainly
					Germany)
# 2		Argentina, Colombia, Paraguay			
# 3		Argentina, Chile, Venezuela			
# 4		Argentina, Chile, Colombia, Venezuela			
# 5		Argentina, Chile, Paraguay, Uruguay			
# 6		Chile, Uruguay			Germany
# 7		Argentina			
# 8		Argentina, Paraguay			
# 9		Argentina, Uruguay, Chile, Venezuela, Peru			
# 10		Argentina, Uruguay, Paraguay, Bolivia			
#11		Chile, Colombia, Uruguay, Ecuador			
#12		Ecuador			
#13		Uruguay			

¹⁰ Mercosul (or Mercosur in Spanish). Full members are Argentina, Brazil, Paraguay, Uruguay and Venezuela. Chile and Bolivia participate as associate members.

#14		Argentina, Chile	Angola		
#15		Argentina, Chile	Angola		
#16		Argentina			
#17		Argentina, Chile, Ecuador, Paraguay, Venezuela, Colombia, Nicaragua	Angola		
#18		Argentina, Chile, Ecuador, Bolivia, Venezuela, Mexico, Guatemala			
#19		Argentina, Chile			
#20		Argentina, Chile, Ecuador, Paraguay, Bolivia, El Salvador, Guatemala, Dominican Republic			
Total # of firms	0	20	3	0	2

28. Thirteen of the 20 companies surveyed indicated that their export performance over the last 3 years was either "ok" or "good", as shown in the next Table. Only one company rated its export performance as "excellent." Six companies rated their performance "not so good", mostly because they are not export-oriented (their marketing efforts focus on Brazil). The company with excellent export performance is highly export-oriented (exports account for more than 40% of its revenues) and the only one with significant exports to OECD countries (EU). It has a partnership with a German company that distributes the equipment in the European Union. According to the interviewees, the export opportunities for environmental equipments are growing as many countries have adopted more stringent environmental legislation and enforcement procedures, especially in Mercosul countries.

Company rating of business performance in terms of its exports over the last three years

Not so good	OK	Good	Excellent
6	5	8	1

4. NTBs reported by exporters

29. Brazilian firms in the environmental industry do not perceive their exports to encounter many major non-tariff obstacles. While all firms participating in the survey reported one or several minor or moderate NTBs, only four respondents pointed to "major" barriers and no firm identified a "prohibitive" barrier. This can be explained by the characteristics of the major export markets for Brazilian environmental goods. Most of the firms export to South American countries, which have trade agreements with Brazil and do not have stringent environmental regulations in comparison to OECD countries. Areas where firms reported to encounter at least one "major" barrier are depicted in the next Table. Mayor

¹¹ Hence the companies themselves would not necessarily be exposed to cross-border trade difficulties regarding NTBs. Another explanation of why only a few companies signaled the presence of major NTBs is that many firms use agents or partners to intermediate their transactions, who handle most of the exporting and importing procedures.

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barriers to exporting were encountered in four sectors: (1) environmental monitoring, analysis and assessment, (2) waste water management, (3) air pollution control and (4) solid, hazardous waste management. For the latter two sectors, barriers reported cover a substantial number of NTM areas.

Areas where Brazilian exporters reported one or more "major" NTBs

Category of NTM where barriers were reported	# of responses*	Sectors	Export markets
Pre-shipment control of quality, quantity or prices of goods	3m, 2M	Monitoring equipment, renewable energy, Air pollution control, solid hazardous waste management	Argentina, Chile, Venezuela, Mexico, Bolivia, Guatemala, Ecuador, Paraguay, Uruguay, Germany
Import licensing	2m, 1M	Renewable energy, Air pollution control	Argentina, Chile, Venezuela, Peru, Uruguay, Angola
Customs procedures	2m, 2M	Recycling system, Air pollution control, waste water management, solid hazardous waste management	Argentina, Chile, Venezuela, Ecuador, Paraguay, Colombia, Nicaragua, Angola
Import surcharges or border taxes	1m, 1M	Air pollution control, solid hazardous waste management	Argentina, Chile, Venezuela, Mexico, Bolivia, Guatemala, Ecuador
Cargo handling and port procedures or requirements	4m	Recycling system, renewable energy, Air pollution control	Argentina, Chile, Venezuela, Mexico, Bolivia, Guatemala, Ecuador, Peru, Uruguay, Angola
Testing and certification in destination country	2M	solid hazardous waste management	Chile, Uruguay
Restrictions on after-sale services	1m, 1M	Recycling system, solid hazardous waste management	Argentina, Chile, Uruguay, Angola
Price controls or administered pricing in destination market	1M	Air pollution control, solid hazardous waste management	Chile
Informal "additional payments" required to effect import of your product	1m, 1M	Waste water management, solid hazardous waste management	Paraguay, Uruguay, Brazil

Note: * m= moderate trade obstacle for company, M= Major trade obstacle for company

30. Some NTBs were mentioned by more companies than others in the survey. The table below lists the barriers mentioned as moderate or major by at least 3 firms (out of 20 questionnaires received). The barriers most often identified relate to "pre-shipment control of quality, quantity or prices of goods" (5 responses), followed by "customs procedures" (4 responses). Three respondents reported having encountered problems related to "import licensing".

Trade barriers	identified by	a significant	t minority o	of companies

Policy measures or areas	Moderate	Major	Total
Pre-shipment control of quality, quantity or prices of goods	3	2	5
Customs procedures	2	2	4
Import licensing	2	1	3

- 31. Examples of more commonly mentioned trade barriers are:
 - Pre-shipment control of quality, quantity or prices of goods: Paperwork for shipment. The barrier most often mentioned by firms related to the pre-shipment paperwork and procedures. Because the majority of the firms are small and do not export much, they lack personnel and expertise to complete the paperwork needed to export. For example, companies have difficulties identifying the pertinent exporting codes for their equipments and to identify the relevant forms to submit. One company mentioned that a shipment to Chile was held up by more than a week because the exporting/importing code was incorrect. Many firms hire agents to do the paperwork and handle relevant export and import procedures.
 - Import licensing: Certificate of origin. Three companies mentioned that they had problems to get the certificate attesting to the destination country that the product was actually made in Brazil. This is used to administer import quotas or guarantee certain privileges in bilateral or multilateral trade agreements (lower import tariff, for example). The purpose is to avoid that goods are produced in one country and then exported via a third country in order to benefit from certain trade agreements (quotas, for example). This certificate can be issued by the main Federation of Industries, but the process can be long and involves paperwork. Firms complained that the process of getting a certificate can be sometimes unnecessarily complicated and time consuming.
- 32. Other barriers were mentioned by a smaller number of firms, only one or two of which rated them as representing a major obstacle to exporting. These barriers are shown in the next Table.

Trade barriers identified by few respondents

Policy measures or areas	Moderate	Major	Total
Testing and certification in destination country		2	2
Informal "additional payments" required to effect import of your product	1	1	2
Import surcharges or border taxes	1	1	2
Restrictions on after-sale services	1	1	2
Price controls or administered pricing in destination market		1	1

33. Examples include:

- Informal payments. Payment of informal "additional payments" were mentioned as a major or moderate obstacle by two few firms. These are payments made to authorities or a salesperson of the client in the destination country, or payments to Brazilian authorities to release the export in the Brazilian port. For example, during a long strike of customs officials in Brazil a company had to pay inspectors to release its products to be embarked in order to meet contract deadlines. The firm made the payment through a middleman.
- Testing and certification in destination country: Testing equipment. One company producing equipment for recycling refrigerant gases that contribute to the greenhouse effect (HFCs) had the opportunity to export to the United States, but the high costs of testing and licensing the equipment (over 20,000 US dollars for two years) were prohibitive, given the scale of its exports. The company gave up exporting to the US market.

Final Remarks

- 34. In the view of the majority of exporters, the main NTBs are the result of procedures applied by the Brazilian authorities in the home market. Some respondents expressed concern about slow procedures in Brazilian ports. Some companies that export large equipments (such as incinerators or waste shredders) mentioned difficulties to store the equipment both in the Brazilian and foreign ports. Sometimes the storage cost is significant. Bureaucracy is another problem mentioned by firms. Paper filling and even determining the right export code (HS and Brazilian 8 digit code) can delay product shipment or create costs with intermediaries. Interestingly, many companies complained about the barriers created by the Brazilian authorities to import parts needed to produce their equipment, creating production problems and increasing the cost of final equipment.
- 35. The study could not detect any measures taken by Brazil or importing countries to eliminate or reduce NTBs specifically for environmental goods. However, there are some measures in the environmental and trade areas, respectively, that help to reduce barriers. For example, Mercosul has discussed for many years the harmonization of environmental standards and procedures. This facilitates the common acceptance of each member's standards and technologies of the equipment and may explain why most of the exports of the surveyed firms go to Mercosul countries. Regarding foreign exchange, Brazilian authorities have eased procedures for sending and receiving foreign exchange in the last ten years. Finally, the interest of the OECD countries in the Brazilian biomass programs (especially sugarcane alcohol) has generated several agreements of cooperation, especially with Germany and Japan, which can ease the entrance of Brazilian technology for renewable energy in those countries in the future.
- 36. Governments and industry associations have taken certain measures to help exporting firms (for all products) to anticipate, understand or overcome NTBs in other countries. The National Institute of Metrology (INMETRO), the focal point for technical barriers for trade in Brazil, has a hotline for exporters. INMETRO clarifies questions and can consult focal points in other countries about technical barriers. The major state federations of industries also help firms to understand and overcome NTBs via their departments of international affairs.
- 37. Measures to prevent terrorism were mentioned as a barrier to trade. One company described that it had to import from Canada a product (powder) used in its waste water treatment equipment. In the past, the product would come by ship via the United States (and by truck from Canada to the U.S.), but now the product is controlled because of terrorism and cannot easily enter the United States. Due to the logistics of

the transportation company, the product has now to leave Canada by ship, go to Belgium and then to Brazil.

38. Brazilian firms envisage possibilities of exporting to OECD countries, but the main obstacles are related to technology. The high environmental standards of OECD countries are perceived as creating a technical barrier to trade for the Brazilian industry. For example, specialists said that Brazilian firms in the areas of waste water management and air pollution control are years behind having the technology needed to meet EU environmental standards. Some have the technology know-how but cannot produce at competitive costs in Brazil. Another obstacle to starting to export are the costs of certification and testing, which are prohibitive for some companies operating on a small scale.

BUSINESS PERCEPTIONS OF NON-TARIFF BARRIERS (NTBS) ENCOUNTERED BY CANADIAN FIRMS WHEN EXPORTING ENVIRONMENTAL PRODUCTS¹²

- 39. This study presents the results of a survey of Canadian companies exporting environmental goods carried out in October and November 2006.¹³ Six Canadian companies were interviewed that export environmental goods in the following sectors: Monitoring and analysis instruments (4 companies), wastewater treatment (1), and Remediation and cleanup (1).
- 40. The individual respondents are executives within these companies who are responsible for export sales and/or shipping logistics.¹⁴

Key Findings

1. Non-tariff barriers reported

- 41. Respondents reported experiencing major or prohibitive non-tariff barriers to trade (NTBs) in the following categories:
 - Technical regulations and standards (3 respondents)
 - Regulations on payment (3)
 - Customs procedures (2)
 - Intellectual property protection (2)
 - Import surcharges or border taxes (1)
 - Restrictions on after-sale services (1)
 - Government procurement (1)
- 42. None of the Canadian respondent to the survey reported "major" or "prohibitive" trade obstacles for the following categories of NTMs: Pre-shipment controls; Import licensing; Import quota or prohibitions; State trading monopoly; Cargo handling and port regulations; Investment regulation; Price controls; High or discriminatory taxes or charges; and Subsidies or tax benefits for domestic competitors.
- 43. One respondent suspected that in many cases his company's shipping agents handled NTB issues, with eventual costs being paid by the importing customers. As it appeared that much of the front-line work

¹² This case study was carried out by Jim Hight of *Environmental Business International*, Arcata, California, United States.

¹³ The findings of this country study reflect the perceptions of Canadian firms. Their accuracy has not been verified and they are documented here without prejudice to the views of governments.

¹⁴ Company names are not disclosed—a practice that granted respondents confidence to speak freely. Subject companies' products are not identified beyond the broad sectors noted above because some of them are among the only Canadian suppliers of the relevant goods, and to be more specific about their product types would compromise their confidentiality.

of overcoming the NTBs facing specific shipments is being handled by shipping agents or brokers, an attempt was made to contact two such companies mentioned by the respondents; however, company personnel did not respond.¹⁵

44. The export markets where respondents report encountering NTBs rated as major or prohibitive are shown in the following Table.

Category of NTMs	Export market
Technical regulations and standards/testing and certification	US, EU, Japan
Regulations on payment, incl. foreign exchange restrictions	Venezuela, Rwanda, India, Eastern Europe, Middle East
Customs procedures	Kazakhstan, Russia, Rwanda
Adequacy of intellectual property protection	China, Chinese Taipei
Import surcharges or border taxes	Rwanda
Restrictions on after-sales services	US
Government procurement procedures	Eastern Europe

2. Company characteristics

45. The six companies interviewed were all small and medium sized enterprises with less than 250 employees.

Number of employees

< 10	10 – 50	50 to 250	250 to 1,000	1,000 to 10,000	> 10,000
-	4	2	-	-	-

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¹⁵ Expertise in clearing customs and handling other NTB issues has value in the export business, and brokers and shippers with such expertise may be reluctant to share it, even confidentially. Nonetheless, these companies would be ideal respondents for continuing research; and if their clients (the exporters) asked them to speak with researchers, their participation would be more likely

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Geographical focus of major export markets

Firm	Asia	Americas	Africa	Middle East	Europe
# 1	China	United States, Mexico, several countries in South and Central America			Germany
# 2	Japan	United States, Venezuela, Guatemala	Equatorial Guinea		UK, Russia, Kazakhstan, Greenland
# 3		United States			
# 4	China	Chile, Cuba, Mexico, Peru, United States, Venezuela	Rwanda, Tanzania		
# 5	China, India, Korea, New Zealand	United States, Mexico, Colombia, Brazil, Argentina, Chile	South Africa		Denmark, France, Germany, Italy, Netherlands, UK, Sweden
# 6	Japan, Australia, Chinese Taipei	United States			

Percentage of gross income received from exporting

0-20 %	21 – 40 %	41 – 60 %	61 – 80 %	81 – 100 %
1	2	2	1	-

Company rating of business performance in terms of its exports over the last three years

Not so good	OK	Good	Excellent
-	3	3	-

3. Compendium of firm experiences

Details of companies' experiences

Technical Regulations and Standards

(Three respondents ranked this category of NTMs as major or prohibitive in the following countries and regions) United States: An exporter of monitoring and analysis instruments reported that it was required to obtain UL certification for exports destined for the U.S. even though the Canadian CSA standards it had already met was virtually identical. Additionally, the exporter must pay yearly maintenance fees for U.S. and Canadian certification.

European Union: The exporter of monitoring and analysis instruments mentioned above has made small sales to European customers and has not yet obtained certifications such as Germany's TUV. To export in larger volumes, the company must accomplish this at an estimated cost of \$200,000 to \$400,000 and an expected time span of one year. The respondent said that his company is evaluating whether the potential sales in Europe are large enough to justify financing these costs. He acknowledged that European companies making the same class of equipment require the same European certifications, and that European companies seeking to export to the Canadian market must meet Canadian CSA standards.

Another Canadian exporter of monitoring and analysis instruments reported that its products must pass multiple certifications to be imported into Europe, including the ATEX directive for use in hazardous environments. The respondent believes that his company's products should be exempt under ATEX requirements because, among other reasons, they don't have ignition sources. Nonetheless, large potential customers in Europe require ATEX. The respondent estimated initial costs would be \$25,000 plus yearly costs of \$20,000 for three years, declining to \$5,000 annually thereafter. Cost for complying with the Waste Electrical and Electronic Equipment directive would be \$7,000 to \$10,000 per product plus yearly maintenance costs. The respondent reported that his company's European representatives estimate the annual sales potential of its products in Europe at \$100,000, and that his company is weighing whether these certifications are worth the costs.

Japan: An exporter of remediation and cleanup equipment reported that the Japanese Ministry of Environment has made participation in demonstration programs mandatory for new remediation technology to be accepted within Japan. The cost to the exporter would be \$800,000 to \$1 million, of which the MOE would reimburse \$300,000. The respondent argues that certification and proof of efficacy from Canada and other developed countries should be sufficient. His company is seeking a Japanese client large enough to share the costs.

Regulations on Payment, including foreign exchange restrictions

(Three respondents cited this category of NTMs as major or prohibitive in the following countries) *Venezuela*: A Canadian exporter of monitoring and analysis instruments reported that foreign exchange restrictions constitute a major obstacle to trade with Venezuela. A university-sponsored research project related to offshore oil exploration was delayed and ultimately cancelled because of this obstacle, resulting in loss of a \$60 000 sale and \$5 000 in staff time.

Rwanda: An exporter of wastewater treatment equipment reported that Rwandan banks are not recognized by Canadian banks. The respondent said that a contract has been delayed six weeks while it seeks a U.S. or European bank to certify the contract documents and guarantee payment.

India, Eastern Europe and Middle East: An exporter of monitoring and analysis instruments reported that India and countries in the Middle East and Eastern Europe often require that imports be paid for through letters of credit. The respondent believes that this requirement is triggered when governments are the purchasers or when importing firms are supplying the government. The time and cost associated with setting up letters of credit between banks has caused this exporter to forego potential sales in these markets, India most often.

Customs Procedures

(Two respondents cited this category of NTMs as major or prohibitive in the following countries) Kazakhstan and Russia: An exporter of monitoring and analysis instruments reported that it is often difficult to obtain needed permits and licenses, resulting in serious project delays for clients that need to deploy the equipment. In one case, equipment needed to measure ice thickness for an oil exploration project in Kazakhstan was delayed in customs for several weeks — long enough for seasonal changes to force a one-year delay in the project. Imports of equipment to Russia are routinely delayed, causing similarly amplified delays for Russian oil exploration projects, according to this respondent.

Rwanda: An exporter of wastewater treatment equipment reported that burdensome delays and costs are common when exporting equipment for sewage plants to Rwanda. Rules and regulations are not available and change frequently. All goods must pass through the Magerwa facility in Kigali, where importers must unload, reload and pay a 4.5% surcharge. There is a low level of automation, but the real problem, in this respondent's view, is lack of experience and expertise in managing the customs process. No informal payments are required.

Intellectual Property Protection

(Two respondents ranked this item as a major or prohibitive NTB in the following countries) *China*: An exporter of monitoring and analysis instruments reported that it has thus far declined to export to China because of reports from other firms about intellectual property theft.

Chinese Taipei: An exporter of remediation and cleanup equipment reported that it believes its trading partners in Chinese Taipei stole intellectual property associated with one of its most important products. While it is still bidding on projects in Taipei, it fears that cheaper imitations of its products will soon emerge and compete unfairly for a potentially large market.

Import Surcharges or Border Taxes (One respondent ranked this category of NTMs as major or prohibitive in Rwanda).

Rwanda: As noted above, Rwanda surcharges 4.5% of shipment value. The exporter of wastewater treatment equipment estimates that surcharge costs for three shipments to Rwanda were between \$45 000 and \$60 000 in total.

Government Procurement (One respondent ranked this category of NTMs as major or prohibitive in Eastern Europe)

Eastern Europe: An exporter of remediation and cleanup equipment reported that a United Nations-sponsored project to identify non-combustion cleanup technologies for use in Eastern Europe has onerous conditions for participation. It presents an opportunity for the respondent's company, but has extremely long timelines and complex bureaucratic requirements that make it difficult for a small to medium sized enterprise to participate.

BUSINESS PERCEPTIONS OF NON-TARIFF BARRIERS (NTBS) ENCOUNTERED BY CHILEAN FIRMS WHEN EXPORTING ENVIRONMENTAL PRODUCTS¹⁶

I. Introduction

- 46. The environmental market in Chile has been growing at a fast rate over recent decades (Leal, 2003). A key driving force behind the market growth was environmental regulation, starting in the early 1990s with the introduction of environmental framework legislation and the System of Environmental Impact Assessment (SEIA), as well as regulations on air pollution in the capital, Santiago. Increasing international competition, and the need to comply with international standards and commitments, has also put pressure on the Chilean industry to take up the environmental challenge and apply environmental technologies and management (Dufey, Claro and Borregaard, 2006). Nevertheless, Chilean environmental market still remains relatively small in terms of its contribution to the country's overall economic growth. According to OCDE/CEPAL (2005), it represents approximately 1.25% of GDP, placing Chile at the medium lower level of OECD countries.
- 47. Based on the OECD classification of environmental goods and services (EG&S), which excludes cleaner fuels such as natural gas, Chile exported USD 438 million worth of environmental goods in 2001, representing about 2.4% of total Chilean exports, and imported USD 995 million, representing about 6.1% of total imports (Dufey *et al.*, 2006). Although Chile accounted for less than 1% of world exports of environmental goods in 2000, it is the 15th largest developing country exporter of such goods (Dufey, 2003).
- 48. The Chilean environmental goods industry is mostly represented by the waste water management and air pollution control sectors (Leal, 2003; Dufey *et al.*, 2006) Local production of environmental goods remains modest, although it is steadily growing in response to increasing demand within Chile. Most of the national market is still supplied by imports, and water and wastewater equipment makes up the bulk of Chile's environmental goods imports. Most engineering and construction in the water services industry is done locally but much of the equipment is imported. Demand for air pollution control technology, which is still concentrated on end-of-pipe solutions, is largely met by local production (Dufey *et al.*, 2006).
- 49. Concerning exports of environmental goods and services, methanol accounted for 85% of total exports in 2001, wastewater management goods for 6.6%, air pollution control goods for 1.4%, and others for 7%.¹⁷ In the wastewater management field, the principal goods exported tend to be much the same as those imported: water handling systems and equipment, screens and strainers, and aeration systems. This is because many imported products are re-exported to other Latin American countries. Air-pollution-related exports tend to follow a similar pattern, and the main products are catalytic converters (filtering or purifying machinery or their parts) and air-handling equipment (air or gas compressors and compressors used in refrigerating equipment and their parts) (Dufey *et al.*, 2006). Most exports go to Latin American countries and the US (Claro and Ruz, 2005).

¹⁶ Edmundo Claro from RIDES in Santiago, Chile, carried out this case study.

¹⁷ These estimates were calculated using the OECD classification of EG&S (Dufey et al., 2006).

Although tariff and non-tariff barriers related specifically to Chile's environmental goods exports have never been evaluated as such, it seems while tariffs have generally decreased substantially over time, non-tariff measures have increased significantly (Borregaard, Dufey and Guzman, 2003). The existence of subsidies and other forms of support, especially in industrialized countries, results in unfair competition for Chilean exports in some cases. While the environmental market in Chile is highly competitive and unregulated with few support measures due to its limited resources, developed countries commonly offer a wide range of grants and low-interest loans for the promotion of cleaner technology (OECD, 1998). Tied aid can also pose important barriers to Chilean exports. Other barriers might involve qualification and certification requirements in Latin American and other markets. In order to get more clarity on these issues, this work aims at contributing to the understanding of non-tariff barriers confronted by Chilean exporters of environmental goods.

II. Methodology

- 51. This case study presents the survey results of Chilean firms exporting environmental goods. ¹⁹ The survey was carried out in November-December 2006 in the following way:
 - Based on the provided scope of environmental goods for this study, as well as export products registered in the database of Prochile, ²⁰ 23 exporting firms were identified.
 - Firms whose share of exports was larger than 1% of total environmental goods exports (49 firms and 81% of total exports), were identified as interview suspects, of which 10 firms responded to the survey questionnaires. Face-to-face interviews were carried out with 5 firms who had indicated "major" or "prohibitive" trade obstacles.

III. Key findings of the survey

1. Company characteristics

Environmental sectors covered by responding companies

Environmental monitoring, analysis and assessment equipment	0	Air pollution control	3
Recycling systems	0	Waste water management	7
Renewable energy	0	Solid and hazardous waste management	0

10 exporters who have responded to the survey appear to be operating in two sectors: waste water management and air pollution control.

¹⁸ One example concerns grants of up to 50% for production of wastewater treatment equipment by companies in southern Italy, the result of which can set very low prices and thus shut Chilean companies out of the market. Another involves loans at low annual rates given to local companies by the Government of Catalonia for producing equipment. The equipment was accepted as collateral (Dufey et al., 2006).

¹⁹ The findings of this country study reflect the perceptions of Chilean firms. Their accuracy has not been verified and they are documented here without prejudice to the views of governments.

²⁰ Prochile is the export promotion agency of the government based at the Ministry of Foreign Affairs. The export database of Chilean products can be accessed at: http://www.prochile.cl/servicios/estadisticas/exportacion.php.

Number of employees

< 50	50 to 250	250 to 1,000	1,000 to 10,000	> 10,000
3	4	3	-	-

Although some of the responding companies are subsidiaries of international groups, none of them are of large environmental groups.

Percentage of Gross Income received from exporting

0-20 %	21 – 40 %	41 – 60 %	61 – 80 %	81 – 100 %
3	4	2	1	

When considering the percentage of Gross Income received from exporting, more than 50% of respondents fall in the category of less than 40%.

Exports markets

Firm	Asia and Oceania	North America	South and Central America	Africa	Middle East	Europe
# 1	Australia	USA	Venezuela, Peru, Argentina			UK
# 2		USA				
# 3		USA				
# 4			Peru, Bolivia, Venezuela			
# 5	Australia	USA	Colombia, Brasil, Peru	South Africa		
# 6	China		Peru			
# 7		Mexico, USA	Peru, Ecuador, Panama	Africa		
# 8			Colombia, Peru, Ecuador, Bolivia			
# 9		Mexico USA	Peru, Argentina, Central America			
# 10		North America				UK
Total # of firms	3	6	7	2	0	2

Geographical coverage of major export markets involves 5 regions, with a particular focus on South and North America. Within these regions, Peru stands out with 7 observations and the United States with 6.

- 52. Out of 10 exporters who have provided this geographical focus information:
 - 7 export to Central and South America,
 - 6 to North America

- 3 to Asia and Oceania,
- 2 to Africa, and
- 1 to Europe.

Company rating of business performance in terms of its exports over the last three years

Not so good	OK	Good	Excellent
2	2	4	2

53. When rating their business performance in terms of exports over the last 3 years, the majority of respondents reported that it is satisfactory. Only 2 firms indicated that their performance was not so good.

2. NTBs reported by exporters

54. The survey outcomes reveal that Chilean environmental firms do not appear to perceive that they face many major NTBs. While most of respondents reported that they have encountered one or several moderate NTBs, only five respondents identified major NTBs and no firm identified a prohibitive barrier. In terms of simple frequency analysis of specific NTB categories reported as creating moderate or major trade obstacles, three different groups of NTBs emerge.

NTBs most commonly mentioned

55. "Customs procedures" emerged as the most frequently mentioned category of NTB. Five respondents reported it as trade barriers: two considered it as a major barrier and three as a moderate one. "Import surcharges or border taxes" is another category of NTBs that was commonly mentioned by responding firms as posing either moderate or major trade obstacles. "Testing and certification in destination country/ Testing and certification in destination country" has also been reported as presenting major barriers.

Trade barriers most commonly mentioned

NTB category	Moderate	Major	Prohibitive	Total
Customs procedures	3	2	0	5
Import surcharges or border taxes	1	2	0	3
Product standards and technical regulations of destination country/Testing and certification in destination country	3	1	0	4

56. Problems concerning these NTBs categories include long and complex customs procedures, high taxes on simple products, and difficulties in finding a certification company. These NTBs were reported in such export markets as Argentina, Bolivia, Brazil, Colombia, Ecuador, Mexico, Panama, Peru and Venezuela, United States, South Africa and Australia.

Illustrations include:

- Customs procedures: an exporter in the waste water management sector reported that clearing customs in Peru takes longer than other export markets due to a complex procedure involving documentation, appraisal of goods, various questionings, etc. While clearing customs in other export markets normally can be done within a day, it took 5 days in Peru.
- Import surcharges or border taxes: an exporter in the waste water management sector reported that customs in Argentina charged a client high taxes on a free sample of a product (several times higher than the value of the product). The client refused to pay the tax and the sample was retained by customs until the exporting firm paid the tax.
- Product standards and technical regulations of destination country/Testing and certification in destination country: an exporter in the air pollution sector reported that compression tests were required in South Africa in order to control gas escapes, but finding a suitable certification company was very difficult due to the unique character of the export product.

NTBs reported by the significant minority of exporters

57. Despite the small number of respondents, still a significant minority of exporters reported problems in the following areas: 1) Adequacy of intellectual property protection"; 2) Regulations on payments; and 3) Unfair competition from European exporters (other).

Trade barriers reported by the significant minority of exporters

NTB category	Moderate	Major	Prohibitive	Total
Adequacy of intellectual property protection	0	1	0	1
Other: disloyal competition from European exporters	0	1	0	1
Regulations on payments	0	1	0	1

Illustrations include:

- Regulations on payments: an exporter in the waste water management sector reported that
 Peruvian customs requested customs fees to be paid in Soles instead of in US dollars. Since there
 are extra delays and costs associated with exchanging US dollars to Soles, as well as uncertainty
 involved with the exchange rate, this caused many problems to the exporter. Peruvian customs
 often increase invoice prices in order to recover the loss caused by the exchange rate.
- Adequacy of intellectual property protection: an exporter of "green" fishmeal processing equipment reported that there were three incidents of the product copied in Peru due to high tariffs (120%) during the 1990s. This prompted the firm to open an assembling plant in this export market.
- Unfair competition from European exporters,: according to one exporter of air pollution control equipment, competing with European exporters is very difficult since European exporters with the help of European governmental financial support offer Latin American importers long-term soft credits to buy their equipment

IV. Compendium of firms' experiences

Environmental sector	Waste water management
Product	Steel drums (HS 7310101000)
Areas where trac	le obstacles were reported
Prohibitive	•
Major	Import surcharges or border taxes
Details of compa	ny experience
Import surcharges or border taxes.	Argentina: A free sample of a product was sent to a client in Argentina and the client was charged an extra sample tax. The client paid it for the first time, but as there are two more similar cases emerged, the firm is studying what to do; either to accept to cover the sample costs or to stop sending samples. Although this has not prevented the exporter from selling the product in Argentina, it has [caused delays in selling] and has made commercial relations with Argentinean clients more difficult.

Firm # 2	
Environmental sector	Waste water management
Product	Metallic tanks (HS 7309001000)
Areas where trac	le obstacles were reported
Prohibitive	
Major	Customs procedures Regulations on payment
Details of compa	ny experience
Customs procedure	<i>Peru</i> : Clearing customs in Peru takes longer than other export markets due to complex procedures involving documentation, appraisal of goods, various questionings, etc. While clearing customs in other export markets (e.g. Chile) normally can be done within one day, it took 5 days in Peru.
	The Peruvian client refused to pay for the products due to the delay. This has involved negotiations with the client and kicked off an arbitration process.
Regulations on payment.	<i>Peru</i> : Peruvian customs wanted to have the customs fee paid in Soles rather than in US dollars, posing a lot of trouble in the selling of the product. This is added to an habitual practice by Peruvian customs in which they sometimes increase invoice prices in order to get hold of the difference.

Firm # 3	
Environmental sector	Waste water management
Product	Water well screens (HS 8421219900)
Areas where trade	e obstacles were reported
Prohibitive	•
Major	Customs procedures General
Details of compar	ny experience
Customs procedure.	Bolivia and Ecuador: In Ecuador, the shipment was retained for a long period of time due to the failure of issuing the certificate of origin. In Bolivia, clients sometimes ask exporters to manipulate invoice prices in order to avoid high tariffs (25%) applied to the products. In some cases, exporters were not able to sell the products if they refuse to do so.
General	<i>Brazil</i> : The firm started its operations in 1957 in Argentina, opened its commercial branch in Chile in 1988 and opened its new production plant there in 1990. Since then it has been exporting its products to the South American market from Chile. As the Brazilian market presented various major NTBs to exports both from Chile and Argentina, the firm opened a commercial office and an industrial plant in Brazil. In other words, the Brazilian plant was opened in order to elude NTBs.
Firm # 4	
Environmental sector	Air pollution control
Product	Green" fishmeal processing equipments (HS 8419899000)
Areas where trade	e obstacles were reported
Prohibitive	
Major	Adequacy of intellectual property protection Other: disloyal competition from European exporters
Details of compar	ny experience
Adequacy of intellectual property protection	Peru: In 1990 the exporter began to export "green" fishmeal processing equipments to Peru. Due to high tariffs (120%) of the export market during the 1990s and weak enforcement patent systems both in Chile and Peru, three incidents of the product copied in the export market have been reported. Although the copied products were unable to penetrate the market, the risk of losing business due to increasing copy products in the export market was high. This prompted the exporter to open an assembling plant in the export market (Peru). the costs associated to loosing businesses were high
Other: Unfair competition from European exporters	Latin America: Based on governmental financial supports, European exporters offer Latin American importers long-term soft credits to buy their equipment in a manner that makes competition from Chilean exporters very difficult.

Firm # 5	
Environmental sector	Air pollution control
Product	Acid Fog Control and Abatement System (HS 8421399000)
Areas where trade	e obstacles were reported
Prohibitive	
Major	Product standards and technical regulations of destination country/Testing and certification in destination country
Details of compar	ny experience
Product standards and technical regulations of destination country/Testing and certification in destination country	South Africa: The exporter produces Acid Fog Control and Abatement Systems, which are protected by intellectual property rights. Thus, no other company produces this product. The firm exports it mainly to Brazil and South Africa. When South African customs required compression tests for these products in order to control for escaping gas, the exporter had a hard time finding an accredited certification company since these products are unique and no other company produces these products.

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BUSINESS PERCEPTIONS OF NON-TARIFF BARRIERS (NTBS) ENCOUNTERED BY FRENCH FIRMS WHEN EXPORTING ENVIRONMENTAL PRODUCTS AND ASSOCIATED SERVICES²¹

- This case study presents the survey results of French companies exporting environmental goods 58. and associated services carried out in October 2006.²² This survey was conducted in two stages:
 - An on-line pre-screening questionnaire was mailed to 250 companies exporting environmental goods and services²³. 11 questionnaires were returned completed and additional information was collected from 3 other firms through follow-up telephone calls.²⁴
 - Telephone interviews were made with 9 questionnaire respondents. Interviews focused on nontariff measures (NTMs) areas that companies in the pre-screening process had rated on a 5-point scale as presenting "major" or "prohibitive" trade obstacles. Analysis in the separate summary report on this project covers only barriers that respondents rated "major" or "prohibitive"; the analysis presented here shows also data from the pre-screening process for barriers rated "moderate".

Key Findings

1. Products and service categories

59. Respondents to the pre-screening questionnaire export products and associated services covering all environmental sectors targeted by the study. The sectors of waste water management and solid and hazardous waste management are particularly well represented.

Environmental sectors covered by responding companies

Environmental monitoring, analysis and assessment equipment	3	Air pollution control	3	
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This case study was carried out by Dominique Drouet of RECHERCHE DEVELOPPEMENT INTERNATIONAL, Paris, France.

²² The findings of this country study reflect the perceptions of French firms. Their accuracy has not been verified and they are documented here without prejudice to the views of governments.

²³ The data base of exporting firms used for the survey included: 70 members of "Club ADEME Internationnal" (a professional organisation of French environmental technology and service exporters) and about 180 companies identified as contacts of PEXE (Plan export des éco-entreprises, French "Eco-industrie Export Plan"). This sample of companies can be considered as well focused: it includes only companies operating on the international environmental market or potentially interested in exporting on this market

²⁴ The low response rate can be attributed to two factors: a general reason coming from difficulties encountered by busy international executives to find enough time to respond to any type of survey; the design of the questionnaire which emphasises product categories in its first section (several engineering and service operation companies answered that they felt that the survey was designed for hardware exporters only).

Recycling systems	4	Waste water management	6
Renewable energy	5	Solid and hazardous waste management	8

2. Company characteristics

60. Three responding companies are subsidiaries of large environmental groups. Other companies are SMEs with staff ranging from 6 to 850 employees.

Staff employed by responding companies

< 10	10 - 50	50 to 250	250 to 1,000	1,000 to 10,000	> 10,000
1	7	2	2	-	1

3. Export markets and business performance

- 61. Geographical focus of major export markets includes 5 continents. Out of 11 companies which provided this geographical focus information:
 - 9 export to Asia (China being mentioned by 8 companies),
 - 7 to Africa (4 of them specify North Africa),
 - 7 to Europe (EU or Eastern Europe),
 - 4 to the Middle East,
 - 4 to North and/or South America.
- 62. As shown below, 6 companies export to 3 or more continents.

Export markets per countries or regions

Firm	Asia	Americas	Africa	Middle East	Europe
# 1	China, Korea, India		North Africa		Russia
# 2			North Africa	+	+
# 3	China, Vietnam				
# 4			North Africa		UK, Eastern Europe
# 5	China		North Africa		+
# 6	China				
# 7	Malaysia, Thailand, Indonesia	Argentina, Chile, Brazil			
# 8	China	+	+	Saudi Arabia	
# 9	+	+	+	+	+
# 10	+	+	+	+	+

Total # of firms	8	4	7	4	6
exporting					

63. When considering percentage of gross income received from exporting, companies fall mostly in the 0-20%, 21-40% and 41-60% categories. Only one respondent indicates a percentage over 60%.

Percentage of Gross Income received from exporting

0 – 20 %	21 – 40 %	41 – 60 %	61 – 80 %	81 – 100 %
4	3	5	1	

When rating their business performance in terms of exports over the last 3 years, most companies indicated it to be satisfactory. Only one company indicated that its performance was not so good.

Company rating of business performance in terms of its exports over the last three years

Not so good	OK	Good	Excellent
1	5	4	

4. Non-tariff barriers reported

65. Based on the number of times specific NTM categories were identified as creating moderate to prohibitive trade obstacles²⁵, four different groups of NTBs emerge.

a) NTBs nearly always mentioned

66. "Regulations on payments" emerged as the NTM area most frequently mentioned as causing significant (either "major" or "prohibitive") trade obstacles. It was mentioned nine times. For five companies, the specific issue of restrictive foreign exchange allocation to importers represents a moderate or major problem.

Trade barriers identified by a majority of companies

Policy measures or areas	Moderate	Major	Prohibitive	Total
Regulations on payment	1	6	3	10
Restrictive foreign exchange allocations to importers	1	4		5

67. With regard to these issues, the geographical zones mentioned by respondents include Asia (China, India, etc.) and South America (Brazil).

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²⁵ In a few cases, after the telephone interview, corrections were made (i.e. change of NTM category marked by the respondent) to initial responses to the on-line survey. As a result, figures contained in the summary tables in this section do not always match frequency counts of data included in the pre-screening questionnaire. Summary tables in this section also include data directly collected through telephone interviews from 3 companies who did not answer to the on-line questionnaire.

Typical illustrations include:

- Lebanon: an environmental monitoring truck was delivered in Lebanon but has never been put into operation. This is a typical problem when equipment is financed by international organisations: such equipment is often not used or used only after a long period of time. The exporting company suffers from long delays before receiving its payment when the equipment is finally in operation.
- *Brazil*: example of a 7 000 Euros contract for software for the operation of waste water management plants. The local client must obtain a written clearing notification of local tax authorities before the client's bank can pay the supplier. As a consequence there are delays and administrative complications (red tape).
- China and India: a classical problem in China and India concerns pre-payment of goods. The contract stipulates pre-payment of goods. Delivery is made only after payment is received by the exporting company. In China and India, payment is quite often made long after the contract was signed. As a consequence, the exporting company must store the equipment while waiting for the payment and bears the cost of this storage.

b) NTBs mentioned by many respondents

68. In terms of frequency of response, three other NTM categories form a second cluster: "Government procurement procedures", "Intellectual property protection" and informal "additional payments" required to effect import of products. Around 50% of respondents identify these as representing either moderate, major or prohibitive trade obstacles.

Trade barriers identified by many companies

Policy measures or areas	Moderate	Major	Prohibitive	Total
Government procurement procedures in destination market	1	3	2	6
Adequacy of intellectual property protection	2	2	1	5
Informal "additional payments" required to effect import of your product	3	2		5

69. With regard to "Government procurement procedures", export markets in North Africa and in the Middle East, as well as China and India were mentioned several times. The most frequently reported specific problems are a non-transparent decisions making process, arbitrary enforcement of requirements, lack of independent appeals procedures, and timeliness of information.

Typical illustrations include:

- Lack of independent appeals procedures in the Middle East: Including in a contract a clause requiring international arbitrage is not possible. Only local courts can be mentioned. Most of the time it is hopeless to try to sue a client or a local partner in a local court.
- "Feudal culture": a contract proposed by the client included a clause which made it possible for the client to terminate the contract at his own convenience. This was unacceptable to the company, which refused to sign. But this is reported to be typical of Middle East practice.

70. The export market mentioned most often in respect to "adequacy of intellectual property protection", is China. Problems mentioned as illustrations include pirating of software and construction design ideas being "stolen". Incidences of piracy were reported for Vietnam, Korea, Spain and the Czech Republic. Considering pirating practices, some companies hope that new protection devices on software, such as "self destruction systems", will provide better protection in the future.

Typical illustrations include:

- Company software interfaces copied by competitors in Spain and in the Czech Republic.
- 71. Export markets or regions mentioned for informal "additional payments" include China, the Middle East and North Africa. Estimates given indicate that when illegal payments are requested these range from 5 to 15% of sales.

c) NTBs mentioned by a minority of respondents

72. A third group of NTBs is reported by a smaller number but still a significant minority of firms. This concerns the following policy measures or areas: "Subsidises or tax benefits given to competing domestic firms in destination country"; "High or discriminatory taxes or charges in destination market"; "Restrictions on investments"; "Testing and certification in destination country"; "Products standards and technical regulation of destination country"; "Cargo handling and port procedures"; and "Customs procedures".

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Trade barriers	, ,			

Policy measures or areas	Moderate	Major	Prohibitive	Total
Customs procedures	1	2		3
Cargo handling and port procedures or requirements	2	1		3
Product standards and technical regulations of destination country	2	1	1	4
Testing and certification in destination country	1	1	1	3
Restrictions on investment	0	3		3
High or discriminatory taxes or charges in destination market	2	1	1	4
Subsidies or tax benefits given to competing domestic firms in destination country	2		1	3

73. The following areas appear to cause problems primarily for companies that export goods and not services: "Cargo handling and port procedures"; "Customs procedures", "Products standards and technical regulation of destination country", "Testing and certification in destination country". That "Product standards and technical regulations" are not mentioned more often may have to do with the fact that many of the companies surveyed are service providers.

Typical illustrations include:

• In *Iran*, equipment was blocked for 6 months at the border. This created a problem in terms of contractual warranty because the client lost these 6 months as warranty period. As a consequence,

the warranty had to be re-negotiated with the client. Storage conditions at the border were also detrimental to product quality.

- In *Mexico*, *Egypt and Algeria*, difficulties were encountered in clearing environmental monitoring equipment through customs because a tag on the equipment stated that it was a radioactive source. This problem is being encountered about once every five or six deliveries.
- In the *Middle East*, some contracts require products to be certified based on US EPA standards. Such certification is costly because products have to be shipped to the United States in order to be tested. While providing a guarantee to the client, it introduces a market bias, unfavourable to European exporters.
- In *Thailand*, there is a lack of control of public authorities on environmental standards for hospital waste treatment. This situation favours local enterprises offering inadequate solutions in terms of environmental performance and prevents foreign firms from selling their more reliable equipment.

Illustration of "Subsidies or tax benefits given to competing domestic firms"

• For *Algeria*, one respondent claimed that local firms benefited from a 15% discount on their bidding price before being compared with prices offered by international companies.

d) NTBs mentioned by few respondents

74. All other categories of NTMs are mentioned only by one or two respondents. "Import quota or prohibition" and "pre-shipment inspection" is not mentioned at all.

Trade barriers identified by few respondents

Policy measures or areas Moderate		Major	Prohibitive	Total
Import licensing			1	1
Import surcharges or border taxes		2		2
State-trading monopoly or state monopoly control of imports		1		1
Restrictions on after-sale services		2		2
Price controls or administered pricing in destination market	2			2
Other (local public service monopoly)		1		1

- 75. Although these barriers are mentioned less frequently, the interviews conducted reveal that some of these issues can be very important for specific types of environmental products and/or for specific markets. For example:
 - State trading monopoly (or family monopoly): in several *Middle East* countries, there is no state monopoly on waste management services per se, but rather a monopoly given to a person who "controls" the sector and shares benefits among his family members.
 - Most often, in a majority of countries in *Western Europe, Eastern Europe, Asia, Africa*, as well as *America*, public local suppliers (such as municipal enterprises) have a local monopoly on the

provision of urban water and waste-water management services. Operation of these services is not open to competition. This prevents private firms, as well as international companies, from entering these markets.

5. Compendium of firm experiences

rm # 1	
vironmental ctor	Environmental monitoring, analysis and assessment equipment, Air pollution control.
eas where trade	obstacles were reported
ohibitive	
ajor	Regulations on payment.
	Cargo handling and port procedures or requirements.
-4-31C	

Details of company experience

Regulations on payment.

Lebanon: an environmental monitoring truck was delivered in Lebanon but has never been put into operation. This is a typical problem when equipment is financed by international organisations; such equipment is often not used or used only after a long period of time. The exporting company suffers from long delays before receiving its payment when the equipment is finally in operation.

The solution for the exporting company is, when possible, to include a payment deadline in the contract.

China and India: a classical problem in China and India concerns pre-payment of goods. The contract stipulates pre-payment of goods. Delivery is made only after payment is received by the exporting company. Quite often in China and India, payment is made long after the contract was signed. As a consequence, the exporting company must store the equipment while waiting for the payment and bears the cost of this storage.

Another problem is also encountered when the exporting company uses a local agent. The client often demands a security deposit from the local agent. Most of the time, banks do not want to provide insurance for these payments because local agents are small structures. As a consequence, the exporting company must directly provide this insurance because any other solution is too complex to implement.

A possible solution to this problem is "factoring". A bank buys the invoice and pays the company without any delay. This solution only works when the final client is a large company (it does not work if the client is a small structure because banks do not want to take risks with small structures).

Cargo handling and port procedures or requirements.

In *Mexico*, *Egypt and Algeria*, difficulties were encountered in clearing monitoring equipment through customs because a tag on the equipment stated that it was a radioactive source. This problem is encountered about once every five or six deliveries.

Cargo-handling costs are included in the services provided by transportation companies. They are not an obstacle per se.

Specialised companies manage port procedures: if they are illegal payments they are not visible for the exporting company.

Firm # 2			
Environmental sector	Environmental monitoring, Analysis and assessment equipment, Air pollution control.		
Areas where trad	le obstacles were reported		
Prohibitive	Testing and certification in destination country. Adequacy of intellectual property protection.		
Major	Customs procedures. Standards and technical regulations Testing and certification Restrictions on investment. Restrictions on after-sale services. Regulations on payment. Government procurement procedures in destination market.		
Details of compa	ny experience		
Adequacy of intellectual property protection.	Company software interfaces were copied by competitors in Spain and in the Czech Republic. Up until now, the company does not export to Asia. It is considering whether or not it should try to enter these markets, because it has heard about severe problems resulting from frequent pirating practices of software products.		
Customs procedure.	In <i>Iran</i> , equipment was blocked for 6 months at the border. This created a problem in terms of contractual warranty because the client lost these 6 months as warranty period. As a consequence, the warranty had to be re-negotiated with the client. Storage conditions at the border were detrimental to product quality.		
Standards and technical regulations	In the <i>Middle East</i> , some contracts require products to be certified according to US EPA standard. Such certification is costly as products have to be shipped to the United States in order to be tested. This provides a guarantee to the client but introduces a market bias, unfavourable to European exporters. Up until now such requirements do not apply to software but this may happen in the future. A solution would be for the EU to develop a similar testing and certification procedure.		
Testing and certification	In order to enter the <i>Saudi-Arabian</i> market, equipments have to be certified prior to leaving the exporting country. Such certification is provided by specialized companies at a very high cost (3 000€ to 4 000€ for an individual sale which may amount to 100 000€). A Swedish auditing company has to travel to France to certify the equipment.		
Restrictions on after-sale services.	The experience described does not relate to an administrative-type obstacle but the situation of the local labour market: it is difficult to find trained personnel is several countries in order to provide maintenance services for software. (Such problem was encountered in <i>North Africa, Poland and Bulgaria</i> ; on the other hand no such problem was encountered in <i>Iran</i>).		

Government procurement procedures in destination market.

Lack of publication of tenders: in North Africa calls for tenders are published in local newspapers. There is a need to spend one day per week getting information on new calls for tenders that are published locally.

Non-transparent decision-making process: in *Turkey*, this firm was ranked first in technical and financial terms in a call for tenders. It finally lost because authorities claimed that its equipment did not comply with ISO standards, which the firm denies.

Arbitrary enforcement of requirements or procedures: the requirements of ISO certification are obstacles for companies which developed an internal quality procedure which is different from the ISO system.

Lack of independent appeals procedures: such procedures do not lead to positive results. They prove to be long and uncertain. It is also a problem to sue a future client. As an example, in one case the client was afraid of this procedure so the company finally won the market. But afterwards the client created a lot of problems during contract implementation.

Firm # 3	
Environmental	Recycling systems, Waste water management., Solid and hazardous waste
sector	management (Legal and contractual advice)
Areas where trad	le obstacles were reported
Prohibitive	Occupational licensing.
	Government procurement procedures in destination market.
Major	Restrictions on investment.
	Restrictive foreign exchange allocations to importers.
	Regulations on payment.
	Informal "additional payments" required to effect import of your product.
Details of compa	ny experience
Occupational	Ching: long dalays when getting a license. In Ching it takes a minimum of one

Occupational licensing

China: long delays when getting a licence. In China it takes a minimum of one year to get a first licence and then two to three years to get a second licence. Also, the period of licence validity is too short; the licence must be renewed on an annual basis. The justice department puts pressure on candidate firms during the renewal procedure. As an example, it suggests that gifts should be made to an organisation or it requires directors of the candidate firm should become members of a particular club. The general feeling is that the foreign company is tolerated rather than accepted.

Licences for lawyers are only valid for a given city. The company obtained a licence in Beijing in 1992 and a second licence in Shanghai in 2003.

Government procurement	There are no publications of tenders in China.
procedures in destination market.	<i>Timeliness of information about tender requirements</i> : most of the time, information is only available at the last minute. The company is making efforts in order to be identified by the authorities prior to the publication of the calls for tenders.
	<i>Use of local labour</i> : foreign law firms with offices in China have to train Chinese professionals who turn out to be future competitors.
	Non transparent decisions making process: it is very difficult to know the reasons behind choices made.
	Appeals procedures do not offer any possibility in China when compared with the French system (in France a judge can stop the contract signature during the legal procedure).
Restrictions on investments	In China there are fewer and fewer restrictions.
Regulations on payments	Arrangements involving counter-purchase of goods happen with China.
Informal additional payments	In China, informal additional payments amount to 5 to 10 %.
Unethical practices of local firms	A Chinese lawyer can be both a lawyer for a given firm and for a competing firm.
Firm # 4	
Environmental sector	Recycling systems, Waste water management (Design and Engineering)
Areas where trade	obstacles were reported
Prohibitive	
Major	Regulations on payment.
Details of compan	y experience
Regulations on payment	The client's bank directly transfers payment to the bank of the exporting company according to conditions specified in the contract. This provides a security for the exporting company but involves a costly time-consuming procedure which is a problem for a small firm.
Firm # 5	
Environmental sector	Solid and hazardous waste management (Engineering)
	obstacles were reported
Prohibitive	Product standards and technical regulations of destination country. Regulations on payment. Subsidies or tax benefits given to competing domestic firms in destination country.

Major	Government procurement Adequacy of intellectual property protection
Details of compan	<u>, , , , , , , , , , , , , , , , , , , </u>
Product standards and technical regulations of destination	One of the key obstacles to development of technology and service exports is the lack of adequate standards in importing countries. Quite often, local legislations are not severe enough in terms of environmental protection when compared with EU legislation.
country	As an example, in Eastern Europe toxic waste treatment standards have been strengthened recently. As a result, the company now has a market in these countries. Prior to this change, there was no market.
Regulations on payment	There is a need to have insurance against exchange risk.
paymeni	One possible solution is to negotiate contracts in Euros, except for local subcontracting which is priced in the local currency. This solution minimizes the exchange risk. As an example, a currency such as the Dinar fluctuates between 80 to 100 Dinars per Euro.
Subsidies or tax benefits given to competing domestic firms in destination country	Algeria: local firms benefited from a 15% discount on their bidding price before being compared with prices offered by international companies. Most of the time, this is not a major problem for this French company because it is positioned in a technically complex market with limited local competition. Nevertheless a biased situation appears when a joint venture between an Algerian and a foreign company competes with a purely foreign offer.
	In Eastern Europe local firms are shown preference, even if this does not show up in written rules and therefore is difficult to prove.
Government procurement procedures in destination market	Quite often, a typical obstacle for a foreign environmental service firm is the quasi requirement to have a local office in order to be considered as a potential supplier.
Adequacy of intellectual property protection	In China there is a high risk for exported know-how. The company tries to limit this risk through patent protection and through a careful drafting of contracts.
Firm # 6	
Environmental sector	Recycling systems, Renewable energy, Air pollution control, Waste water management, Solid and hazardous waste management (Design of Sustainable Buildings (residential, commercial))
Areas where trade	obstacles were reported
Prohibitive	
Major	Restrictive foreign exchange allocations to importers. Regulations on payment. Adequacy of intellectual property protection.

wo main problems in China: to be paid and to bring back local currency to rance. It is difficult to be paid because the contract is not worth much in legal rms, even when going to court. irect transfer to France of local currency is impossible. French companies must see the service of import/export companies and this is a complex process. uilding design ideas proposed by foreign firms are "stolen" by local firms. Local rms then directly implement the design without cooperating with the foreign rm.
se the service of import/export companies and this is a complex process. uilding design ideas proposed by foreign firms are "stolen" by local firms. Local rms then directly implement the design without cooperating with the foreign
rms then directly implement the design without cooperating with the foreign
Vaste water management (Software for operating plants)
stacles were reported
egulations on payment.
nport surcharges or border taxes.
xperience
elays before payment in Brazil: example of a 7 000€ software for the operation
f a waste water management contract. The local client must obtain a written earing notification of local tax authorities before the client's bank can pay the upplier. As a consequence there are delays and complications (red tape). his a common practice in many emerging countries to make import procedures ore complicated in order to protect their local firms.
Chile software imports bear a 30% import tax. There is a need to have a local rm established in order not to pay this tax. For software it is difficult or even appossible to detect dumping practices, there is no standard to compare software rices.
nvironmental maniforing analysis and assessment againment Denoveble
nvironmental monitoring, analysis and assessment equipment, Renewable nergy, Waste water management, Solid and hazardous waste management liverse services)
stacles were reported
,
estrictive foreign exchange allocations to importers. egulations on payment. igh or discriminatory taxes or charges in destination market. dequacy of intellectual property protection. overnment procurement procedures in destination market.

Details of compar	ny experience		
High or discriminatory taxes or charges in destination market.	<i>India</i> : a first example relates to water purification equipment which was stuck for one year at Calcutta's customs, because excessive customs rights were claimed. This piece of equipment was supposed to reach a neighbouring state, but this state never bothered to facilitate the customs clearance process.		
	A second example is that of software exported to India. Customs rights were too high, so the firm refused to pay. Since re-importing software to France is forbidden, it was necessary to destroy the software package at the border. This resulted in very high costs. Following this experience the firm does not declare software any more (when attached to hardware) in order to avoid such problems.		
Government procurement procedures in	Lack of independent appeals procedures in India and China: it is impossible to appeal because local firms are in too much of a strong position.		
destination market.	In India legislation in relation to government procurement changes quite often and administrative procedures are very long.		
Adequacy of intellectual property protection.	Pirating of software in Vietnam, Korea and China. New protection devices of software such as "self destruction systems" will provide better protection.		
Firm # 9			
Environmental sector	Solid and hazardous waste management services		
	e obstacles were reported		
Prohibitive Major	State-trading monopoly or state monopoly control of imports. Restrictions on investment. Government procurement procedures in destination market. Cargo handling and port procedures or requirements. Restrictions on after-sale services. Restrictive foreign exchange allocations to importers. Regulations on payment. Customs procedures. Import surcharges or border taxes.		

Details of company experience In several Middle East countries, there is no state monopoly on waste State-trading monopoly or state management services per se, but rather a monopoly given to a person who "controls" the sector and shares benefits among his family members. monopoly control of imports. Restrictions on Local governments in the Middle East and in Africa are not used to contracting waste management services to private operators. The French firm invests in investment. creating joint ventures with local partners. Most of the time legislation prevents the firm from being the majority shareholder in these partnerships. Local partners bring their knowledge of the local environment (legislation, contacts, etc.). Administrative procedures are very slow and it takes a long time to get a business running. Unstable legislation is another problem (example of the United Arab Emirates). Government Call for tenders: when a call for tender is not written with the assistance of a procurement consultant, it is hopeless to make a proposal. procedures in Use of local labour: at least 20% of local personnel is required for local joint destination ventures. This share tends to grow. The firm hires more local personnel than market required by service operation due to legislative requirements. Non-transparent decision making process: this is the rule. The person in charge of the waste management sector decides what he wants without justifying his decision. Lack of independent appeals procedures: Including a clause requiring international arbitrage in a contract is not possible. Only local courts can be mentioned. Most of the time it is hopeless to try to sue a client or a local partner in a local court. "Feudal culture": a contract proposed by the client included a clause which made it possible for the client to terminate the contract at his own convenience. This was unacceptable and the company refused to sign. But this is typical of Middle East practice. Other examples: a competitor did not include the required bank guaranty. His proposal should not have been considered but, at the end of the day, he finally won the contract (because he was simply "well positioned" to start with). Data based on waste quantities are very poor: all the risk related to inadequate estimates of quantities of waste is born by the contracting firm. This is not a balanced situation with contracting authorities.

Additional contractual problems: if a contract says you need 15 trucks for a given mission and if, because quantities were incorrectly estimated, it turns out that you need only 12 trucks, the contracting authorities still impose the use of 15 trucks.

Firm # 10	
Description	Environmental Consulting and Studies.
Environmental sector	Renewable energy, Air pollution control, Waste water management, Solid and hazardous waste management (consulting and studies)
Areas where trad	le obstacles were reported
Prohibitive	
Major	Informal "additional payments" required to effect import of your product.
Details of compa	ny experience
Informal "additional payments"	Such payments are demanded when seeking to access certain markets and range from 5 to 15%.
payments	Between 1980 and 2000, the frequency of these payments decreased. Since about 10 years they are on the rise again.
Other comment	On the whole, NTBs affecting consulting firms are more limited than for hardware companies.
1 anonymous res	ponse
Environmental sector	Renewable energy (feasibility studies and engineering)
Areas where trad	le obstacles were reported
Prohibitive	Regulations on payment. Government procurement procedures in destination market.
Details of compa	Comment of a firm exporting hospital wastes treatment equipment
Details of compar	
	In Thailand there is a lack of control of public authorities on environmental standard for hospital waste treatment. This situation favours local enterprises offering inadequate solutions in terms of environmental performance and prevents foreign firms from selling their more reliable equipment.
Comment of Details of compa	f a large group exporting water, waste water and solid wastes management services
Details of compar	<u> </u>
	Most often, in a majority of countries in Western Europe, Eastern Europe, Asia, Africa as well as America, public local suppliers (such as municipal enterprises) have a local monopoly on the provision of urban water and waste water management services. Operation of these services is not open to competition. This prevents private firms, as well as international companies from entering these markets.

BUSINESS PERCEPTIONS OF NON-TARIFF BARRIERS (NTBS) ENCOUNTERED BY GERMAN FIRMS WHEN EXPORTING ENVIRONMENTAL PRODUCTS²⁶

- 76. This case study presents the survey results of German companies exporting environmental goods carried out in January and February 2007.²⁷ This survey was conducted in two stages:
 - 1. An on-line pre-screening questionnaire was mailed to 100 companies exporting environmental goods. A total of 13 firms completed the questionnaire and indicated that at least one NTM area represented at least a moderate obstacle to their exports.²⁸
 - 2. Telephone interviews were conducted with 9 of the 13 firms identified in stage one, to obtain more specific information about their experiences with barriers which they rated "major" or "prohibitive".²⁹
- 77. The following overview presents data for all 13 firms. This will be followed by a more detailed description of major or prohibitive trade barriers obtained during telephone interviews with the 9 firms.

Survey Results

1. Company characteristics

78. Respondents to the pre-screening questionnaire export products and associated services in six of the seven environmental sectors covered by the study. The sectors of waste water management and solid and hazardous waste management are particularly well represented.

Environmental sectors covered by responding firms*

Environmental monitoring, analysis and assessment equipment	2	Air pollution control	4	
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²⁶ This study was carried out by Barbara Fliess of the OECD Trade and Agriculture Directorate.

²⁷ The findings of this country study reflect the perceptions of German firms. Their accuracy has not been verified and they are documented here without prejudice to the views of governments.

²⁸ Companies contacted were identified from the following sources: company listing in the catalogue of trade fair *Inter Solar 2006*. taking place in Freiburg, Germany in June 2006; company directory www.solarserver.de/branche/isolarthermie.html; and environmental technology companies directory www.umfis.de (all environmental product sectors). After e-mailing 100 firms, 7 questionnaires were returned completed. Calls were made to firms asking them to answer the pre-screening questions over the telephone, until a total of ten firms had responded that satisfied the criteria for stage-two interviews. The criteria were that the firm reported satisfactory export performance and rated at least one NTM area as presenting a either "major" or "prohibitive" barrier to exporting. Besides the 13 firms identified in stage one, three firms (one operating in waste water management, the other two in solid waste management/recycling) indicated they were exporting but not encountering any barriers. Eight other firms reported that they are selling only locally. A few firms were not interested in taking part in the survey.

²⁹ One of the 13 firms met the criteria for the interview but declined to answer questions, a second firm meeting the interview criteria did not provide contact details and two firms that had completed the questionnaire reported only moderate and not major barriers.

Recycling systems	3	Waste water management	3
Renewable energy	6	Solid and hazardous waste management	1

^{*} Some companies operate in more than one sector.

79. The majority of participating firms are small and medium-sized enterprises (SMEs). The largest firm operates in the waste water management sector and has approximately 2500 employees worldwide. This distribution reflects rather well the profile of the German environmental technology industry, which is estimated to employ 1.5 million people in predominantly small and medium-sized firms contributing around 6% of GDP.

Staff employed by responding firms

< 10	10 – 50	50 to 250	250 to 1,000	1,000 to 10,000	> 10,000
1	5	4	3	1	-

2. Export markets and business performance

- 80. Globally, Germany is one of the leading exporters of environmental technology, along with the United States and Japan. It accounts for around 20% of world exports in this sector. ³⁰ A prominent characteristic of the sample of participating firms is that their major export markets are predominantly in Europe. Of the 13 companies completing the survey questionnaire:
 - all 13 export to countries in the European region (including Eastern Europe and/or Russia),
 - 5 export to Asia
 - 3 export to North America
 - 2 export to Africa
 - 1 exports to Latin America and the Middle East, respectively.
- 81. A break down identifying major individual export markets is shown in the following table. By far the dominant regional export market for the firms surveyed is Europe. Interviews made it clear that this also includes Central and Eastern Europe besides the larger and mature markets of the EU, where economic restructuring and accession to the EU has created strong demand for environmental improvements and modernisation of infrastructure. For many of the firms, economies in other regions of the world are currently not important export destinations.

Major export markets of respondents

Firm	Asia	Americas	Africa	Middle East	Europe
# 1					Austria, Switzerland, Italy, France, Estonia
# 2					Switzerland, Netherlands, Italy, Croatia

³⁰ See http://www.umweltbeschaeftigt.de/studie/studie/index.html

# 3	China				Russia, France, Italy, Poland
# 4	Thailand, Chinese Taipei, Singapore				EU (especially Austria)
# 5			Ghana		France, Ireland
# 6					Western Europe, Eastern Europe
# 7	Asia	USA			Western Europe, Eastern Europe
# 8					Italy, UK, Spain, Sweden, France
# 9	Asia except Japan, Australia	Americas except USA, Canada	Africa	Middle East	Europe
# 10	Korea, Australia	USA			Spain, Italy, UK, France, Greece
# 11					Spain, Greece, Italy
#12					Southern and Western Europe (Benelux, France, Spain, Italy)
#13					EU (especially France, Austria, Spain), Switzerland, Poland
Total # of firms	5	3	2	1	13

82. When considering the percentage of gross income received from exporting, firms fall mostly in the 0-20% and 21-40% categories. Higher ratios were reported by two respondents.

Percentage of Gross Income received from exporting

0 – 20 %	21 – 40 %	41 – 60 %	61 – 80 %	81 – 100 %
4	6	1	1	-

83. One firm did not answer the question about gross income accounted for by exports. All other German firms rated their recent export performance as being satisfactory.

Company rating of business performance in terms of its exports over the last three years

Not so good	OK	Good	Excellent
-	7	5	1

3. Non-tariff barriers reported

84. While the small sample of firms is not necessarily representative of the experience of the industry, the rate of participation in the survey was very low. Hardly any of the participating firms rated an NTM area as presenting a "prohibitive" barrier to their export activity and only a minority of firms described what they felt were "major" barriers. Often, when an NTM area was perceived as creating problems for a firm, it was described as a "modest" obstacle.

Sectors and NTM categories where obstacle is judged "major" or "prohibitive"

Sector	Category of NTM
	Cargo handling and port regulations
	Technical regulations and standards
	Testing and certification
Renewable energy	Regulations on payment
Kenewable energy	Investment regulations
	Adequacy of intellectual property protection
	Other: Restrictions on movement of technical personnel
	Import quota or prohibition
	Customs procedures
Air nothition control	Regulations on payment
Air pollution control	Restrictions on after-sales services
	Technical regulations and standards
	Adequacy of intellectual property protection
	Customs procedures
Waste water management	Import surcharges or border taxes
	Testing and certification

85. A frequency count of specific NTM categories judged by the firms as creating either moderate, major or prohibitive trade obstacles was used to identify three groups of perceived NTBs: a) NTBs mentioned by a majority of firms, b) NTBs mentioned by an important minority of firms, and c) NTBs mentioned by a few firms.

a) NTBs mentioned by a majority of firms

- 86. As shown in the Table below, "customs procedures", "product standards" and "testing and certification" were reported by relatively many firms as representing moderate, major or prohibitive trade obstacles.
- 87. Although a majority of respondents also mentioned "informal additional payments" they were not rated a major or prohibitive obstacle to exports. Hence this item is excluded from the Table and was not addressed in the follow-up interviews.

Trade barriers identified by a	a maiority of firms
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Policy measures or areas	Moderate	Major	Prohibitive	Total
Customs procedures	4	4		8
Testing and certification	3	4	1	8
Technical regulations and standards	3	3		6

88. Firms reported encountering major problems with customs procedures of Switzerland (2 firms), in Eastern Europe as well as in Central Asia and Asia. Technical regulations and standards were reported to represent major obstacles when exporting to Russia (mentioned by 2 firms); France, Spain, Canada and United States were also cited. Firms operating in the renewable energy and water and waste water management sectors reported what they perceived as being significant barriers resulting from testing and certification requirements that hampered access to the markets of certain EU members (notably France, mentioned by 3 firms, and Poland), the United States (mentioned by 2 firms), Canada and Russia.

Reported problems include:

- Citing Eastern Europe/Central Asia and Asia as regions where this problem is relatively widespread, a producer of water treatment equipment reported that customs officials apply procedures in an arbitrary manner. They do not follow the official regulations concerning customs fees and charges and in the view of the respondent are waiting to receive bribes.
- A producer of pollution control equipment uses carnets³¹ but sometimes encounters major problems with getting through customs working tools and materials that staff on installation missions abroad take with them. *Croatia and Egypt* are the two most recent cases where customs officials did not let the tools enter the country with a carnet. The firm had to sell the tools to its clients against invoice and later buy them back.
- Reporting on their respective experiences with *Swiss* customs officials, two firms complained about Swiss officials having no tolerance for small mistakes in customs declarations and for generally being inflexible and un-cooperative as far as paperwork needed to clear Swiss customs is concerned. The procedures are viewed as excessively burdensome.
- A firm considering whether to export for the first time air filter systems to *Russia* expressed frustration with a lack of transparency of approval requirements for its products, which the firm has difficulties finding out. It has received varying information from authorities who should know. What certificates are needed and what approval would cost cannot be calculated before actually going through the process. The firm thinks that certification could increase by 50% the price of equipment normally selling for around 4000 EUR.
- When exporting to France or Poland, a German maker of solar and other renewable energy
 equipment has to obtain certification in these markets, in spite of the EU single market. A second
 German firm reported that its equipment has the Solar Keymark but if sold in France has to
 obtain another French certificate (CSTB certificate). In addition, the French client of this firm

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³¹ A carnet is an international Custms document that a traveller may use to import certain goods temporarily, such as professional tools, into a country without having to engage in the Customs formalities usually required for the importation of goods, and without having to pay duty or value-added taxes on the goods.

himself has to obtain system certification. All this is very costly. In addition, requirements in France change constantly. Other markets with national requirements cited by this firm are *Spain* and *Portugal*.

• Exporting photovoltaic inverters to the *United States* requires obtaining UL certification. This is a concern to a German producer who complains that certification takes a long time and includes requirements that the producer considers very costly and excessive. For example, each component must be certified separately.

b) NTBs mentioned by an important minority of firms

89. "Adequate protection of intellectual property" and "regulations on payment" are two other NTM areas that slightly more than a third of firms completing the questionnaire mentioned were posing moderate or major obstacles (see next Table).

Trade	barriers	identified	by	about	a	third	of	firms

Policy measures or areas	Moderate	Major	Prohibitive	Total
Adequacy of intellectual property protection	3	2		5
Regulations on payment	2	2		4

90. With respect to major barriers arising from regulations on payments, respondents cited China and Bangladesh. China in particular was cited also for certain IPR issues, although the experiences described indicate that in Europe, too, patents are not always respected by competitors. As a respondent from a firm producing drainage systems explained, copying was easier for environmental products manufactured in series than for custom-made systems or equipments.

Illustrations include:

- In *Bangladesh*, the customer has to secure bank guarantee even if the amount of the contract is only 1000 US\$. This is costly (bank fees), especially for small orders. According to the firm, the reason for this requirement is that the government wants to control foreign exchange.
- Following a *Chinese* order for a single exhaust air scrubber, a team of six Chinese officials visited the firm for inspection. They asked to see and learn about the manufacturing process, quality management etc and related manuals. The staff of this German firm found their behaviour unusual and believes that they visited to learn about the firm's know-how and then copy what they had seen. The firm does not think it was harmed because its staff was vigilant. The Chinese bought and paid for the exhaust air scrubber, but the firm has not received further orders. (Note that a similar experience is reported by a firm participating in the Austria survey)

c) NTBs mentioned by a few firms

91. A third group of perceived NTBs pertains to problems reported by only one or two firms. As shown in the next Table, the NTM areas at issue are "restrictions on after-sales services", "cargo handling and port procedures", "subsidies or tax benefits given to competing domestic or foreign firms in destination country", "import surcharges or border taxes", and "pre-shipment control". One firm reported an import prohibition of Iran against filters.

92. One (anonymous) producer of solar thermal systems mentioned in the questionnaire the inability to get a work permit for installation chiefs (*Leitmonteure*) in France as a major obstacle when new to a market, because installation crews needed to be trained on site. The comment further supports the concern raised by another firm in respect to regulation rendering it difficult for suppliers to provide after-sales services abroad.

Trade barriers identified by a few firms

Policy measures or areas	Moderate	Major	Prohibitive	Total
Restrictions on after-sales services		2		2
Subsidies or tax benefits given to competing domestic firms in destination country	1	1		2
Import surcharges or border taxes	1	1		2
Import prohibition			1	1
Restrictions on after-sales services		1		1
Other: Restrictions on movement of technical personnel		1		1

93. Examples of reported experiences are:

- An exporter of equipment for air pollution control took issue with the complex paperwork his firm has to complete before it can send technicians to service equipment it has sold to clients in *Switzerland*. EU 1 and EU 2 category nationals are permitted to enter the country to provide such services, but it took this firm eight weeks to get all the necessary papers. This is excessively long and unnecessarily cumbersome.
- South Korea mentioned for imposing high import taxes (in addition to tariffs) for certain environmental goods, such as equipment used for water treatment, which raise the sales price of the products in Korea.
- 94. Pre-shipment inspection and import licensing were areas reported by the 13 firms that completed the pre-screening questionnaire as creating obstacles that were minor or did not exist or were not applicable. Some of the other NTM areas were rated occasionally as posing a moderate barrier.
- 95. For the barriers rated major or prohibitive, more detailed information about the nature of the problems encountered was collected through the follow-up interviews. Such information and accounts of how firms deal with barriers that they encounter is presented in the next section.

4. Compendium of firm experiences

Firm # 1				
Environmental sector	Equipment for air emission control			
Areas where trade obstacles were reported				

Major

Customs procedures

Restrictions on after-sales service

Subsidies and tax advantages received by domestic firms in export market

Protection of intellectual property

Details of company experience

Customs procedures.

Germany: This firm started to import glass fibre mats from China used for production of their air pollution control equipment. It tried to import these directly from Chinese suppliers but this did not work. A key difficulty was the long time it took to clear the imports through German customs. The Chinese customers insisted on being paid earlier.

The firm no longer imports directly but now purchase these goods from an importer.

Croatia and Egypt: Although it uses carnets (which is an international Customs document that a traveller may use temporarily to import certain goods, such as professional tools, into a country without having to engage in the Customs formalities usually required for the importation of goods, and without having to pay duty or value-added taxes on the goods) this firm reports having sometimes major problems getting working tools and materials through customs that its technicians use in installation work. Two recent cases cited are Croatia and Egypt, where customs officials did not let the tools pass.

The firm had to sell the tools to its clients against invoice and later buy them back.

Switzerland: Previously, the firm could declare several orders placed on a single shipping palette using one single customs declaration. Now it has to do more paperwork, which slows the process. In one instance, the firm placed two orders on a palette and had to use "Blatt 34" (form 34), two bills of delivery, etc, which caused a delay in delivery of two weeks.

Restrictions on after-sales service.

Switzerland: The respondent took issue with the complex paperwork his firm has to complete before it can send technicians to service pollution control equipment it has sold to clients in Switzerland. Under Swiss regulation nationals falling in the EU 1 and EU 2 categories can enter the country to provide such services. However, in the case of the German nationals employed by this firm it took 8 weeks to get all the papers necessary. According to the firm this is much too long and unnecessarily cumbersome.

Protection of intellectual property

China: Chinese clients showed interest in the firm's equipment and ordered a single exhaust air scrubber, valued at 50,000 EUR. Subsequent to the order six Chinese visited the firm for inspection. They asked to see the manufacturing process, quality management etc and related manuals. The respondent thinks they visited to learn about and then to copy firms' production technology and industrial know-how. All lacked practical training (e.g. as locksmith) and were theorists, which the respondent explained is useful for copying tasks. Moreover, this was not the only firm which the Chinese were visiting during their trip. While the client bought and paid for the exhaust air scrubber, the firm has not received further orders.

Firm # 2	
Environmental	Water and waste water management.
sector	
Areas where trade	obstacles were reported
Major	Standards and technical regulations/testing and certification
J	Customs procedures
	Payments regulations
D . N . 4	Import surcharges/taxes
Details of company	
Standards and technical regulations/testing and certification.	Russia, United States, Canada: Water treatment equipment (both for households and for industry) requires applying for and obtaining certificates attesting equipment meets national hygiene standards. This has to be done in the destination market. At times, the firm is required to change the composition of materials of the equipment in order to meet the standard. This can be very costly (EUR 5,000 – 3,000, including the certification).
Customs procedures	In Eastern Europe/Central Asia and in Asia, for all types of water treatment equipment the experience of this firm has been that customs officials do not follow the official regulations. They apply procedures with respect to customs charges arbitrarily and some seek to obtain bribes.
Regulations on payment	Bangladesh: The customer has to secure a bank guarantee even if the amount of the contract is small (e.g. USD 1,000). This is costly (bank fees), especially for small orders. According to the firm, the purpose of this requirement is for the government to be able to control foreign exchange.
Import surcharges/taxes	South Korea was mentioned for imposing high import taxes (in addition to tariffs) for certain environmental goods including equipment used for water treatment. The firm cited as an example a sale of dosing pumps three years ago to a Korean client. The company delivered the equipment on a cost and freight (CFR) basis, and the client paid the import tariff and an additional tax amounting to 25%. The respondent could not provide further details about this tax but pointed out that the client mentioned this tax in subsequent conversations with the supplier. The firm considered this a major obstacle because it affects negatively the sales price of its products in Korea.
	For firms, one way to deal with this problem is to look for possibilities to classify products differently.
Firm # 3	
Environmental sector	Air pollution control
	obstacles were reported
Major	Customs procedures.
1.100,01	Standards and technical regulations

Customs procedures

Switzerland: Customs clearance of firm's air filters and related equipment is reported to experience difficulties that are attributed to zealous application of customs procedures by Swiss officials. If the paperwork is not perfect, a shipment can be delayed for 8 days, even if it is urgent. Customs officials were described to be suspicious and inflexible. The firm cited one instance officials compared and studied invoices of different shipments of similar but not identical products, i.e. standard ware and custom-made equipment, and took issue with the differences in the prices shown across invoices. Pricing depends on the fabrication process (standard or custom-made) and it took a long discussion for these officials to finally accept the invoice which the firm had submitted.

Product standards and technical regulations.

This firm is considering whether to export, for the first time, air filter systems to *Russia*. A major concern is the lack of transparency of approval requirements for these products, which are extremely difficult to find out. The firm reports having received different information from different enquiry points in Germany who should know, and is disoriented. What certificates are needed and what approval would cost cannot be calculated before actually going through the process. The firm thinks that this may increase by 50 percent the price of equipment normally selling for around EUR 4,000.

Firm # 4

Environmental sector

Renewable energy

Areas where trade obstacles were reported

Prohibitive

Product standards and technical regulations/testing and certification of destination country.

Details of company experience

Product standards and technical regulations of destination country

France and Poland: According to the firm, selling in these markets requires at times that its product, which is solar and other renewable energy equipment, undergoes certification in these countries, despite the single EU market. In France, at times the Keymark Certificate is judged sufficient by the firm's clients but at other times, clients require more, for example when potential clients interested in the equipment want to bid for a public procurement contract and the tender stipulates that certification to another specific standard is carried out by a specified body. The firm voiced also some concerns in regard to the Keymark Certificate. It pointed out that it takes about one year to obtain the certificate and in one case cost around EUR 10,000. This the firm argues is prohibitively costly when entering a new market for the first time, because entry typically involves getting a few small contracts. It would take three years of satisfactory sales in the market to recoup the costs involved in getting product certification.

Firm # 5	
Environmental	Recycling systems, Air pollution control
sector	
Areas where tra	de obstacles were reported
Major	Regulations on payment.
	Adequacy of intellectual property protection.

Details of company experience

Regulations on payment.

China: This firm experienced delays in final payments due from Chinese clients. The Chinese appear to have a different understanding about when final payment should be made. The German firm expects to receive 30% when ordering, 30% upon delivery, and a final payment of 40% when the system has been put into operation. The Chinese think that final payment is due only after system has been in operation for a certain time, for example 1 month. The disagreements concern only the final payment.

When the firm does not receive prompt final payment, it tries initially to raise the matter directly with the client. The firm has not had a situation where a client has not paid at all. The respondent also mentioned a specific case dragging out for more than 2 years, but admitted here that this delay was in part caused by his firm having made certain mistakes. He mentioned that it is useful to have a person in the country who has good contacts to work things out.

Adequacy of intellectual property protection.

China: The firm discovered that its products (filter systems for smoke control) had been copied. It also mentioned the case of a Chinese license holder who without permission copied the name and logo of this firm and used this on business cards at fair visits.

The firm has an office (representative) in China, who has intervened, including in court in China.

Firm # 6

Environmental sector

Renewable energy (thermal collectors)

Areas where trade obstacles were reported

Major

Regulations on payment

Technical regulations and standards

Details of company experience

Regulations on payment.

Especially in *Southern European countries like Spain*, different practices of payment prevail, for example a supplier has to finance himself 2-3 months worth of production of equipment that clients have ordered. The firm acknowledges that this reflects the local business culture and government regulation is not the immediate issue, but describes this as a real problem for doing business in these countries.

Technical regulations and standards

France: According to this firm a foreign firm has no chance to enter this market. Although the equipment has Solar Keymark certification, France is requiring that a separate national certificate (CSTB certificate) be obtained in France. In addition, the client of this firm has to obtain system certification himself in France. Moreover, there are constant changes in these requirements. According to the firm, all these requirements are due to two large French producers who sit on the relevant bodies in France and want to protect the domestic market. The firm also mentioned that a similar situation exists in Spain and Portugal.

Firm # 7	
Environmental	Environmental monitoring, analysis and assessment equipment, Air pollutio
sector	control, Waste water management
	e obstacles were reported
Prohibitive	Import prohibition
Details of compar	ny experience
Import quotas or prohibitions.	Iran: This producer has been interested in exporting to Iran but has heard that Ira prohibits the importation of the particular product – filter bags for control of a dust/pollution in the industrial sector – and requires these to be produced locally. The firm has received this information from another firm it knows and which had business relations with clients in Iran for products that Iran cannot itsel produce.
Firm # 8	
Environmental	Renewable energy
sector	
	e obstacles were reported
Major	Testing and certification in destination country
Details of compar	ny experience
Testing and certification of destination country	United States: This firm has to obtain UL certification when exportin photovoltaic inverters to the United States. This takes a long time and include requirements that this firm considers very costly and also excessive because, for example, each component must be certified separately.
Firm # 9	
Environmental sector	Waste water management
Areas where trade	e obstacles were reported
Prohibitive	
Major	Customs procedures
Details of compar	ny experience
Customs procedures	This firm reported growing problems with Swiss customs clearance procedure. Swiss authorities have become very inflexible recently. Completion of shippin declaration and any other necessary papers must be impeccable and there is n room for small mistakes or omissions, or for submitting data later, otherwise yo will not get the stamp of the customs office on your papers. Officers also may no like how you have formulated text in the preliminary export declaration. In

recent experience of this firm, it took two hours of back and forth to prepare what is supposed to be a 'simplified declaration' procedure. Also, with the recent

computerisation of the process, the shipping agent now carries along a computer printout. It happened to this firm that the computer printout was taken by the German side of the border and there was no second printout left for the Swiss customs, and also no stamp.

BUSINESS PERCEPTION ON NON-TARIFF BARRIERS (NTBS) FACED BY INDIAN FIRMS EXPORTING ENVIRONMENTAL GOODS AND ASSOCIATED SERVICES³²

- 96. The environmental industry in India is rapidly growing at some 15 per cent a year, and emerging in the global market. The industry covers a wide spectrum of products and has been catering to a variety of industrial sectors, at home and abroad.
- 97. This study presents the detailed analysis of business perceptions reflected in responses provided by 34 firms to a survey questionnaire and follow-up interviews in February through March 2007.³³ The report consists of three parts.
- 98. Section I provides the profile, based on the survey responses, of the firms that participated in this study. Section II discusses the NTBs which respondents identified as major obstacles to their exporting. Concluding observations and a compendium of more detailed accounts of major barriers facing the participating firms are presented in Sections III and IV, respectively.

I. Profile of surveyed firms

1. Products and Services Exported

99. The surveyed firms deal with a wide range of products and operate across six sectors (shown in Table 1).

Table 1: Sectors represented by study

	I	III	IV	V	VI	VII
Number of firms	12	2	11	10	9	6

Note: I = Environmental monitoring, analysis and assessment equipment; III = Recycling systems; IV = Renewable energy; V = Air pollution control; VI = Waste water management; VII = solid and hazardous waste management.

100. As can be seen in Table 2, the geographical focus of the firms' export markets are largely on the Middle East followed by Asia, Africa and Europe. Annex II provides a more detailed description of the major export markets of these firms.

³² This study was carried out by J. George of the Delhi School of Economics.

³³ The findings of this country study reflect the perceptions of Indian firms. Their accuracy has not been verified and they are documented here without prejudice to the views of governments.

101. Certain firms report that they are exporting exclusively to the American and European markets. With the exception of six firms, all surveyed firms are exporting to more than one foreign market. All in all, their export markets are spread around the world.

Table 2: Geographical Focus of Exports

	Asia	North America	Africa	Middle East	Europe
# of firms	13	6	11	21	10

Note: A total of 6 firms mentioned only 1 foreign market/region.

2. Firm Characteristics

102. The characteristics of surveyed firms can be analyzed by the following three categories.

a) Size of Work Force

Table 3: Number of employees

< 10	11 – 50	51 to 250	251 to 1,000	1,001 to 10,000	> 10,000
4	13	11	5	-	1

- 103. 13 out of the 34 respondents report that they employ 11-50 individuals, while 11 firms 11-50 employees. 4 firms report less than 10 employees. All together, these firms account for 71% of all respondents, indicating that the majority of respondents are small and medium size enterprises (SMEs). It is worth noting that firms exporting to only one foreign market typically have few employees. One firm with about 12,000 employees is the only firm that reports exporting to both public and private sectors.
- 104. All firms are in their evolutionary phases. Firms with few employees tend to be a service provider or an export agency, while firms with more than 50 employees tend to be manufacturers and exporters.

b) Export Performance

105. According to the survey results on export performance, it appears that for the majority of surveyed firms, exports account for an important or even very important share of their income.

Table 4: Percentage of gross income from exports

0-20%	21-40%	41-60%	61-80%	81-100%
13	5	8	4	4

- 106. Firms with low numbers of employees and a single export market in particular have a high export to income ratio. Three out of eight firms report focusing on an export market in the North America while two others export to the Middle East.
- c.) Performance during past three years
- 107. Based on the survey results, 12 firms each rate their export performance during the last three years as "excellent" and "good", and 9 firms as "good" (Table 5). The satisfactory performance in the vast majority of cases may be indicative of the export opportunities in the environmental sector.

Table 5: Reported export performance over the last three years

Excellent	Good	OK	Not so Good
12	12	9	1

108. One respondent describing their performance as "not so good" reports a very high dependence of earnings on exports with a export market focus on North America.

II. Respondents' perceptions about NTBs

- 109. The questionnaire surveyed firms for their experiences with barriers covering 19 pre-defined NTM areas. Participants were asked to indicate whether they had experienced barriers and rate the severity of the barriers on a 5 point scale running from "no/not relevant" to "prohibitive". The results are shown in Table 6.
- 110. None of the participants reported barriers as being "prohibitive". This should not be taken as proof though that the Indian export business in the environmental sector is running smoothly since several firms reported major barriers. Besides, it should be taken into account that the high tolerance level in India as well as the exporters' willingness to explore and learn in the sector could have influenced their perceptions of severity of trade barriers.
- 111. Another observation is that there is no trade barrier reported in three NTM areas, namely restrictive foreign exchange allocations to importers, subsidies or tax benefits given to competing domestic firms in destination country, and adequate protection of intellectual property rights.
- 112. The absence of reported barriers in some NTM categories may be indicative of a successful handling of NTBs by so-called Clearing and Forwarding Agencies (CFAs). All interviewed exporting firms are in some manner dependent on CFAs, which can be very informal. These arrangements are made to ease the clearing and forwarding processes and to facilitate processes in the importing countries.
- 113. In comparing responses of all scales (minor to major) for the *non-tariff border measures* applicable to imported goods (items 1 to 5 in Table 6) with those for as the *domestic regulation generally* applicable to domestic and imported goods (items 6 to 15), neither group stands out.
- 114. However, "customs procedures" stands out as the area of concern widely shared by respondents, showing a large number of responses both in all scales and those reported "major" barriers. The range of product sectors reported to face obstacles related to customs procedures is diverse. This is followed at some distance by another border measure, namely cargo handling and port procedures and requirements.

115. The pervasive nature of procedures to incite 'rent seeking' must be underscored. The commentary of 'speed money' doing the trick of overcoming this barrier, undoubtedly, is the ground reality. As a corroborative indicator serve the designations of "informal 'additional payments'" as a barrier, shown in the Table. While this is a major barrier for only one firm, 9 other firms report it to represent a minor or moderate obstacle to exporting. One can presume that in commercial transactions across borders, the tie-up with CFAs is expected to resolve this transaction cost obstacle.

Table 6: Reported trade barriers

			Rated degree of	obstacle	
	NTM category	minor	moderate	Major	# responses
1	Import quota or prohibitions	2	-	-	2
2	Customs procedures	8	12	5	25
3	Import surcharges or border taxes	3	-	-	3
4	State-trading monopoly or state monopoly control of imports	1	-	-	1
5	Cargo handling and port procedures or requirements	5	5	3	13
6	Product standards and technical regulations of destination country	2	4	3	9
7	Testing and certification in destination country	1	1	1	3
8	Restrictions on investment	1	-	-	1
9	Restrictions on after-sale services	2	-	1	3
10	Price controls or administered pricing in destination market	-	1	1	2
11	Regulations on payment	3	-	-	3
12	High or discriminatory taxes or charges in destination market	-	1	2	3
13	Subsidies or tax benefits given to competing domestic firms in destination country	-	-	1	1
14	Government procurement procedures in destination market	1	4	1	6
15	Informal "additional payments" required to effect import of your product	5	4	1	10
16	Total	34	32	19	85

1. NTBs rated "major"

116. Given the absence of any reporting by the Indian exporters of "prohibitive" barriers, it would seem that the perception of "major" obstacles attains greater significance.

117. There are a total of 19 responses by 13 firms³⁴ of NTM areas as "major" obstacles to exporting. What are these obstacles, and which are the markets where they are encountered?

³⁴ In the questionnaire 15 firms identified major barriers, but the data provided by 2 firms were not usable and hence omitted from the barrier analysis

- 118. The 19 responses of major barrier were reported across 10 NTM areas. As shown in Table 6, most frequently mentioned problems relate to "customs procedures" (5 respondents) followed by "cargo handling and port procedures" and "product standards and technical regulations" (3 respondents each).
- 119. As shown in Table 7, major barriers are largely reported in two sectors: environmental monitoring analysis and assessment equipment (I) and waste water management (VI). Firms exporting pumps for the waste water management sector to Africa and Middle East reported to be heavily affected by barriers related to customs procedures.
- 120. No major barriers were reported by firms operating in the areas of Recycling System (III)) and Renewable Energy (IV). The firms operating in these sectors have identified obstacles related to customs procedures and other NTM areas as "moderate" or "minor" barriers. Further information about minor or moderate obstacles reported by the surveyed firms is provided in the next Section.

Table 7: Product description for "major" barriers

NTM category	Designations as "major" barrier	Environmental Sectors
Customs procedures	5	Environmental monitoring, analysis and assessment equipment (I), Waste water management (VI)
Cargo handling and port procedures or requirements	3	Waste water management (VI),
Product standards and technical regulations of destination country	3	Environmental monitoring, analysis and assessment equipment (I), Waste water management (VI)
Testing and certification in destination country	1	Solid and hazardous waste management (VII)
Restrictions on after-sale services	1	Waste water management (VI)
Price controls or administered pricing in destination market	1	Air pollution control (V)
High or discriminatory taxes or charges in destination market	2	Waste water management (VI)
Subsidies or tax benefits given to competing domestic firms in destination country	1	Waste water management (VI)
Government procurement procedures in destination market	1	Environmental monitoring, analysis and assessment equipment (I)
Informal "additional payments" required to effect import of your product	1	Environmental monitoring, analysis and assessment equipment (I)
Total number of designations	19	

2. NTBs rated "minor" or "modest"

- 121. Overall, as shown in Table 6 barriers rated "minor" and "moderate" far outnumber barriers perceived to be major. These less significant barriers should not be overlooked because, unless it is addressed, an obstacle perceived to be minor today may aggravate to more significant problems in the future.
- Examination of the questionnaire responses for all firms that identified either minor or moderate barriers to exporting indicates that three out of four responses reported "moderate" obstacles in the following NTM areas: customs procedures, cargo handling and port procedures, and informal additional payments. Overall, Table 6 also shows that there is a high similarity of frequency pattern between those identified as posing "major" barriers and those poing "moderate" barriers.

III. Concluding Observations

- 123. Non-tariff barriers (NTBs) are indeed the concern of trade professionals across the globe. The survey did manage to canvass the perceptions of the relatively large sample of Indian firms exporting environmental goods and services.
- About one in every three participating exporters from India reported having experienced one or several NTBs posing major obstacles to their exporting. Leading areas of concern include customs procedures, product standards and technical regulation, and cargo handling and port procedures.
- 125. Customs procedures and cargo handling and port procedures also top the list of the NTBs as posing "moderate" or "minor" obstacles.
- 126. The Indian environmental sector is emerging as a rapidly growing industry in the world. The focus on NTBs is timely and the survey responses underline the urgent need to address the NTBs.

IV. Compendium of specific firm experiences

127. Interviews with 11 firms provided further details about the nature of the "major" barriers encountered.

Firm # 1	
Environmental sect	Waste Water Management
Areas where trade	obstacles were reported
Major	Cargo handling and port procedures or requirements
	Restrictions on after-sale services
Details of company	v experience
Handled Product	Hand pumps not elsewhere specified, other than those of subheading No 8413.11 or 8413.19 – Canada
(841320)	Hand pumps, other than those of subheading No. 8413.11 or 8413.19 – Japan, Korea, New Zealand.

Problems are reported in Japan and Korea as well as in European countries. Overall, this exporter finds the documentation requirements at the port of entry very cumbersome. Although no additional documents other than the basic ones needed for import clearance are required for the product under HS 841320 in the Korean market, when the exporter declared the product with the required documents, the officials at the port asked for more documentation. The exporter got the impression that since the products are environmental goods, the officials at the port tend to take more caution by asking for more documentation. The pumps have to have an after-sales services protocol provided by the supplier. The supplier has found vise problems for their steff or a requirement
supplier. The supplier has faced visa problems for their staff or a requirement for a tie-up with local firms. All available options are very expensive for the
supplier/exporter. The after sales service is important for growth considerations
The firm has linkages with well-established manufacturing facilities as well. We did not investigate whether or not this manufacturing facility is a subsidiary or an independent operation. The firm employed 167 persons and reported exports accounted for more than 81% of income. Export performance is reported to be excellent.
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Firm # 2		
Environmental sector Waste Water Management		
Areas where trade	obstacles were reported	
Major	Product standards and technical regulations of destination country	
	High or discriminatory taxes or charges in destination market.	
Details of company		
Handled Product	Filtering or purifying machinery and apparatus for liquids; other – Japan & New Zealand	
(842129)	Filter/purify machine and apparatus for liquid not elsewhere specified or included – United States,	
	Other machinery for purifying liquids – Korea,	
	Other filtering and purifying machinery and apparatus for liquids - European	
	Countries.	
D 1	Opaqueness of TBT enforcement in the US is the issue. As an illustration, suppose	
Product	the US and the United Arab Emirates, another export market of the firm, have the	
Standards and technical	same product standard. However, enforcement of the standard differs in the countries because the classification "nes or I (not elsewhere stated/specified or	
regulations of	indicated)" is interpreted in an arbitrary manner in the US, whereas the UAE	
destination	policy is clear. For the small firm, the risk of having its products rejected on	
market	standard grounds by the US is too high financially; hence it concentrates on the UAE market.	
High or discriminatory taxes or charges in destination market	The firm also perceives applicable taxes and service charges in the US to be high or even discriminatory.	

	"Centrifuges, including centrifugal dryers; filtering or purifying machinery and
Additional	apparatus, for liquids or gases" is the broad category of products exported to the
Analytical Inputs	UAE market. The firm employs about 15 persons. Exports account for between
	41-60% of earnings and export performance for the past three years was rated
	good.

Firm # 3		
	Waste Water Management	
sector		
	obstacles were reported	
Major	Customs procedures High or discriminatory taxes or charges in destination market	
	Subsidies or tax benefits given to competing domestic firms in destination country	
Details of company	experience	
Handled Product (841320)	or 8413.19 – Canada Hand pumps, other than those of subheading No. 8413.11 or 8413.19 – Japan,	
Custom Procedures	Korea, New Zealand. Cost escalation due to heavy documentation requirements of the customs officials in the South African market.	
High or discriminatory taxes or charges in destination market	Protection is granted to domestic suppliers by South African and certain Middle East countries, which according to the respondent is a mere excuse for "favouring" competing firms. The customs documentation requirements mentioned above are other measures aimed at merely increasing the cost burden of genuine exporting firms.	
Subsidies or tax benefits given to competing domestic firms in destination country	According to the firm, small exporting firms are denied tax breaks in importing markets that are available for domestic producers. This was very prominently experienced in Middle East markets. The trade-offs are between exports earnings and higher transaction costs.	
Additional Analytical Inputs	This is the only firm, out of the 50 surveyed, to report three different types of NTB during the interview. The firm deals with a broad product category, i.e. "pumps for liquids, whether or not fitted with a measuring device; liquid elevators". Exports account for 0-20% of earnings and the firm rated its export performance for the past three years as OK. Strategies of the firm to cope with obstacles are hands-on. For example, the firm is entitled to obtain tax benefits but maintaining the documents for getting the tax exemption is very costly. Hence the firm forgoes the benefits, which reduces its competitiveness in foreign markets. Custom officials are also asking for various types of documents and it is cheaper for the firm to give some 'speed money' to the officials than providing all the documents.	

Firm # 4	
Environmental sector	Environmental Monitoring, Analysis and Assessment Equipment
Areas where trade	obstacles were reported
Major	Customs procedures
Details of company	y experience
Handled Product (902290)	Apparatus based on the use of alpha, beta, or gamma radiations, for other uses – Canada Apparatus based on the use of X-rays or of alpha, beta or gamma radiations for other than medical, surgical, dental or veterinary uses – Japan & New Zealand Apparatus use of alpha beta gamma radiations not for medical, surgical etc – United States
Customs Procedures	When exporting to Middle East some sort of vague product standards have to be maintained. Problems with customs are experienced when exporting to Mauritius. The Electronic Data Interchange (EDI) system is reported to be time consuming. The EDI system is dependent on a host of factors. Theoretically, it is expected to facilitate trade but under certain assumptions of perfect market conditions as well as infrastructure facilities. The facilities in both the exporting country as well as the importing country need to be in tune with each other. This is the basic condition. The firm is of the view that more often it is the European destination that indicates some hardware problem or the other. The time it takes has a cost dimension and this is often discounted at a heavy rate.

Firm # 5	
Environmental sector	Environmental Monitoring, Analysis and Assessment Equipment
Areas where trade of	obstacles were reported
Major	Product standards and technical regulations of destination country
Details of company	experience
Handled Product (902610)	Instruments and apparatus for measuring or checking the flow or level of liquid
Product Standards and Technical Regulations of Destination Country	While exporting to Pakistan more sampling is done. Sampling itself takes up much of the consignment. The firm exports directly to Pakistan based on the standards specified by the Pakistan government agency. Sampling size and quantity is not specified. Indian certification in normal course is acceptable. However, specifications are changed suddenly when the consignment arrives. The Pakistani authorities refuse to listen to any pleadings of the exporter. This is now happening in regular intervals.
	Since the product under consideration falls in the broad category of "instruments and apparatus for measuring or checking the flow, level, pressure or other variables of liquids or gases (for example, flow meters, level gauges, manometers, heat meters)," sampling practices greatly impact business.

Additional	The firm has a small exporting business with about 6 persons. Exports account for 0-20 % of earnings and export performance for the past three years was
Analytical Inputs	considered good.

Firm # 6		
Environmental Sector Solid and Hazardous Waste Management		
Areas where trade	obstacles were reported	
Major	Testing and certification in destination country	
Details of compan	y experience	
Handled Product	To be used for waste management system – Japan Korea,	
(851490)	Parts of the above furnaces for the destruction of solid and hazardous waste – US , Canada.	
Testing and Certification in Destination Country	In Dubai, authorities refused to accept the certification granted by an Indian authorized agency. This was done for some inexplicable reasons that could not be dealt with even with the intervention of CFA. The products in question were industrial or laboratory electric furnaces and ovens (including those functioning by induction or dielectric loss); and other industrial or laboratory equipment for the heat treatment of materials by induction or dielectric loss.	
	Pre-Shipment Inspection (PSI) is required for exporting to Kenya. For getting that inspection the firm approached an organisation called "Intertek", but so far has not received a response and meanwhile lost the deal with Kenya. Intertek is providing testing, inspection and certification services worldwide.	
Additional Analytical Inputs	The firm has 300 persons employed. Exports account for 0-20% of earnings and export performance for the past three years rating was rated ok.	

Firm # 7				
Environmental	Waste Water Management			
sector				
Areas where trade	obstacles were reported			
Major	Cargo Handling and Port Procedures or Requirements			
Details of compan	y experience			
Handled (854389) Product Ozonisers and parts thereof, UV disinfection technology – E.U.,				
	Parts of electrical machines and apparatus, having individual functions, not specified or included elsewhere in this Chapter – Japan,			
	Electrical machines and apparatus, having individual functions, not specified or included elsewhere in this chapter; other - Korea.			

Cargo Handling and Port Procedures or Requirements	In the US, cargo handling is regarded to be very unsatisfactory. US containers are wet inside which causes the rusting of components. Also, in this firm's experience cargo charges are very high.		
Additional Analytical Inputs	The firm has focused attention on the export markets of United States, Latin America, Europe, Japan and Middle East. It has 500 employees and exports account to 21-40% of earnings. Export performance for the past three years was rated excellent.		

Firm # 8	
Environmental sector	Waste Water Management
Areas where trade	obstacles were reported
Major	Customs procedures
	Cargo handling and port procedures or requirements
Details of company	y experience
Handled Product (560314)	Fabric of polyethylene/polypropylene/ nylon for filtering waste water – E C Non-wovens, whether or not impregnated, coated, covered or laminated: of manmade filaments; weighing more than 150 g/m2 – Korea, Non-wovens of manmade filaments; weighing > 150 g/m2 – United States.
Customs Procedures and Cargo Handling	In South America, customs & cargo clearing offices are open only from 10 am to 5 pm, which creates a problem to deliver the goods on time if there is some delay in the process. The firm thinks the offices should be privatised and open 24x7.
Additional Analytical Inputs	The firm's focus of exports is the South American market. It employs 25 persons and exports account for more than 81% of earnings. Export performance was rated to have been not so good in the last three years because of NTBs at the port of entry. The firm stated that for some specialised EGS product lines such entry barriers could have been expected. However, the products at issue (non-wovens, whether or not impregnated, coated, covered or laminated), are not specialised products and the firm is calling for immediate remedial action.

Firm # 9			
Environmental	Environmental Monitoring, Analysis and Assessment Equipment		
sector			
Areas where trade obstacles were reported			
Major	Product standards and technical regulations of destination country		
Details of company experience			

Handled Product (690310)	Other refractory ceramic goods (e.g. retorts, crucibles, muffles, nozzles, plugs, supports, cupels, tubes, pipes, sheaths, rods) – containing more than 50 % graphite, other forms of carbon or a mixture of these products – Canada,
	Other refractory ceramic goods with graphite/carbon over 50% - United States,
	Other refractory ceramic goods (e.g. retorts, crucibles, muffles, nozzles, plugs, supports, cupels, tubes, pipes, sheaths and rods), other than those of siliceous fossil meal or of similar siliceous earths; containing by weight more than 50% of graphite or other carbon or of a mixture of these products – Korea, New Zealand.
Product standards and Technical Regulations	In South Africa, the Indian certification is accepted for a period of time but then the product is suddenly rejected on grounds of standards and specifications that apparently suddenly have changed.
Additional Analytical Inputs	The firm is a public sector entity into the business for a long time with clear focus on the domestic market. The export market focus is South Africa, though the export earnings form a mere 0-20 percent of income. The past experience in export performance has a rating of "Good". The product line falls into the residual classification category of "Other refractory ceramic goods (for example, retorts, crucibles, muffles, nozzles, plugs, supports, cupels, tubes, pipes, sheaths and rods), other than those of siliceous fossil meals or of similar siliceous earths".

Firm # 10	Firm # 10					
Environmental sector	Environmental Monitoring, Analysis and Assessment Equipment					
Areas where trade obstacles were reported						
Major	Customs procedures					
Details of compan	y experience					
Handled Product (690320)	Other refractory ceramic goods (e.g. retorts, crucibles, muffles, nozzles, plugs supports, cupels, tubes, pipes, sheaths, rods) – containing by weight more than 50% of alumina or of a mixture or compound of alumina and of silica – Canada,					
	Other refractory ceramic goods not elsewhere specified alumina/silica over 50% United States					
	Other refractory ceramic goods (for example, retorts, crucibles, muffles, nozzles, plugs, supports, cupels, tubes, pipes, sheaths and rods), other than those of siliceous fossil meal or of similar siliceous earths; containing by weight more than 50% of alumina (Al2O3) or of a mixture or compound of alumina and silica (SiO2) – New Zealand, pan, Korea.					
Customs Procedures	In some African countries, particularly Kenya, there is a problem of classification codes, which doesn't match the ones of India, resulting in the rejection of the goods. Custom clearance is also very lengthy.					

Additional	
Analytical Inputs	

Examples of other problems encountered with African countries are the lack of recognition of Letter of Credit (LC), which causes delays. When an inspection team was sent to check the firm's products, the inspectors did not understand the products. Also, policies are not clearly defined and there is fear that these policies can be withdrawn without any prior notice.

The firm has 45 persons employed. The export business accounts for 0-20% of earnings. It relies heavily on domestic market and is seeking out markets with low barriers. The past three years of export performance was rated to be ok.

Firm # 11	
Environmental sector	Environmental Monitoring, Analysis and Assessment Equipment
Areas where trade	obstacles were reported
Major	Government procurement procedures in destination market, Informal "additional payments" required to effect import of your product.
Details of company	y experience
Handled Product (902730)	Spectrometers, spectrophotometers and spectrographs using optical radiations (ultraviolet, visible, infrared) These are the basic instruments required in the first instance to measure the level of any permissible standards.
Government Procurement Procedures /Informal "additional	According to the firm, government procurement is only for big players in the industry, it doesn't help much for small & medium size exporters. This has been the firm's experience with the Kenyan market, where this small firm has found it very difficult to get a foothold.
payments"	Being a small firm this respondent is unable to try to deal with closed procurement market by e.g. resorting to "speed money", which a big player would be inclined to use.
Additional Analytical Inputs	The focused market for the firm has been the East African Region in general and Kenya in particular. The firm employs 12 persons and exports account for 0-20% of earnings.

ANNEX 1: GEOGRAPHICAL FOCUS OF EXPORTS

Firm	Asia	North America	Africa	Middle East	Europe
# 2	Asia				EU
# 3				Gulf countries	
# 4				UAE	
# 5			South Africa	Middle East	
# 6				Middle East	
# 8	Vietnam	Canada			
# 10		USA			
# 11				Gulf countries	
# 12	Bangladesh		Mauritius	Middle East	
# 13				Middle East	
#15					
# 17		USA		Middle East	UK
# 18	Singapore			Middle East	
# 19	Pakistan				
# 20	Bangladesh, Pakistan				Europe
# 21	Far East	Latin America	South Africa		
# 22	Malaysia			Middle East	
# 23				Dubai	
# 28	Japan	USA			Europe
# 29	-	Latin America	Tunisia	Middle East	Poland, Fran
# 30			New Mauritius		
# 32		South America			
# 34	Singapore,		Africa		U.K.
# 36			South African countries		
# 38		Canada		Dubai, Egypt,	
# 39			South Africa		Finland, Sweden, Ital
# 40				Gulf countries	
# 41			Sudan	Middle East	Germany
# 42				UAE	
# 43		USA		Saudi Arabia	UK
# 44	Malaysia		Tanzania	UAE	
# 45			East African countries		
# 46	Singapore			Middle East	
# 47	Australia			Oil Refineries countries (i.e., Gulf Countries)	
Total 34	14	10	11	19	12

Note: Firm numbers are not listed in sequence as some of the surveyed firms were removed because their export products do not fall within the scope of the study.

BUSINESS PERCEPTIONS OF NON-TARIFF BARRIERS (NTBS) ENCOUNTERED BY JAPANESE FIRMS WHEN EXPORTING ENVIRONMENTAL PRODUCTS 35

I. Methodology

128. This case study presents the results of a survey of Japanese companies exporting environmental goods carried out in November 2006.³⁶ 25 companies exporting environmental goods in six environmental sectors have been identified with the help of the Ministry of Economy, Trade and Industry (METI) and through two business associations (Japan Society of Industrial Machinery Manufacturers; and Japan Machinery Center for Trade and Investment)³⁷:

II. Products and service categories

129. Environmental sectors covered by responding companies include the following categories (1 to 5 responses per category).

Environmental sectors covered by responding companies

Environmental monitoring, analysis and assessment equipment	2	Air pollution control	3
Recycling systems	3	Waste water management	4
Renewable energy	1	Solid and hazardous waste management	5

130. Research was carried out in two stages: on-line pre-screening surveys were first sent to the identified 25 companies, of which 10 companies have responded to the survey. Subsequently interviews were carried out with three companies. These companies indicated that they encountered NTBs that presented major or prohibitive obstacles for their business; six companies reported that they did not experience problems that were significant.

III. Key Findings

1. Company characteristics and business performance

131. In terms of the size of the companies, the majority of respondents providing this data are large companies with more than 1,000 employees. Only one respondent is a small scale firm with less than 100 employees.

³⁵ This study was carried out by Joy Kim of the OECD Trade and Agriculture Directorate.

³⁶ The findings of this country study reflect the perceptions of Japanese firms. Their accuracy has not been verified and they are documented here without prejudice to the views of governments.

³⁷ The classification of the "environmental industry" does not exist in the industry structure in Japan yet, and it is embedded in various industries such as machinery, chemicals and energy. There is no business association involved with the environmental industry as such and it was a difficult exercise in the absence of an environmental business association and due to the structure of the environmental industry to identify companies exporting environmental products and associated services.

< 100	250 to 1,000	1,000 to 10,000	> 10,000
1	1	3	4

132. In terms of percentage of gross income received from exporting, company responses mostly fall in the 0-20 % and 41-60 % categories. Those who fall in the 0-20 % category signify that they are domestic market oriented, rather than servicing export markets.

0-20%	21-40%	41-60%	61-80%
5	1	3	1

133. When rating their business performance in terms of exports over the last 3 years, the majority of companies consider that they are in the "OK" or "Good" categories. Only one company considers its performance as "Excellent" and two considers its performance as "Not so good". 38

Not so good	OK	Good	Excellent
2	4	2	1

- 134. Geographical focus of major export markets includes Asia, North America and Europe. Out of 10 companies which provided this geographical focus information:
 - 7 export to Asia
 - 4 to North America (all of them are to the US)
 - 5 to Europe (EU or Eastern Europe)

Firm	Asia	North America	Europe
# 1		US	UK, Germany
# 2	Korea, China, Thailand, Malaysia, Singapore, the Philippines	US	UK
# 3	China, Korea, Taiwan, Singapore, Vietnam, the Philippines, Malaysia		
# 4	China, Korea, Thailand, Malaysia, the Philippines, Taiwan		
# 5	Korea, Vietnam, Malaysia		
# 6		US	Germany and other European countries
# 7	# 7 China, Korea, the Philippines, Malaysia		EU
# 8	Taiwan, Singapore		Bulgaria
# 9	Korea		
# 10	China, Korea, Chinese Taipei, Southeast Asia	US	Germany
Total # of firms	8	5	6

³⁸ The reason for the low level of business performance appeared to be attributable to external factors (e.g. strong domestic currency or the change of domestic policy concerning their domestic market share) rather than any problems that are internal to the firm.

2. NTBs by Environmental Sectors

135. Responding companies are exporting products in six environmental sectors. Non-tariff measures or policies that companies have identified as major or prohibitive barriers for each sector are shown in the next Table.

	Sector	Major or prohibitive barriers were reported for the following NTM categories
1	Environmental monitoring, analysis and assessment equipment	None mentioned
2	Recycling system	IPR
3	Renewable energy	None mentioned
	Air pollution control	Customs procedures
4		Cargo handling & port procedures & requirements
		IPR
5	Waste Water Management	Technical Standards/Regulations
		Government Procurement
6	Solid, Hazardous Waste	IPR
0	Management	Government Procurement

3. NTBs and Export Markets

136. Four companies provided information about export markets where NTBs are reported to be encountered. These companies reported that they have encountered problems related to IPR protection and government procurement mostly in Asia, while NTBs related to technical regulations, standards, testing and certification are reported mostly for the US and European markets.

Category of NTMs	Export markets	Regions
Customs procedures	US	North America
Cargo handling & port regulations and requirements	US	North America
Technical regulations and standards	France, Germany, UK	Europe
	US	North America
Testing and certification	France, Germany, UK,	Europe
	US	North America
Protection of intellectual property rights	China, Thailand, Malaysia, Singapore, the Philippines	Asia
Government procurement	Malaysia, Taiwan	Asia

4. Specific NTBs encountered

When taking stock of significant problems reported by the three companies interviewed (i.e. problems marked as "major" or "prohibitive"), the following four categories appear as problems that more

than one company has encountered: 1) cargo handling and port regulations and requirements; 2) IPR protection; 3) technical regulations and standards; and 4) testing and certification issue. Specific problems that companies have indicated for each category of NTMs are summarised in the following table:

Category of NTMs	Specific problems
Cargo handling and port regulations and	Unexpected special fees or charges (e.g. port security fees)
requirements	Unclear rules and regulations concerning the special fees
	Pirated copies and counterfeit trademark
Protection of intellectual property rights	Unexpected cost involved with technology transfer and training
	Inadequate protection of trade secrets
Technical regulations and standards	Different standards for each export market

a) Cargo handling and Port Regulations and Requirements [US]

138. The following problems were reported to be encountered in the US ports: excessive cost of cargo handling; the need to pay unanticipated fees for cargo handling (e.g. port security fees); and insufficient information of rules concerning such payments.

Typical illustrations include:

- Excessive fees charged by cargo-handling companies in the US.
- Special port fees, such as "port security fees", which were costs not anticipated by the exporter. Moreover, the rules and regulations concerning how to calculate the special fees (e.g. port security fees) based on the price/volumes of export products are considered unclear.

b) Adequacy of IPR Protection [China, Thailand, Malaysia, Singapore, the Philippines]

139. Experiences of the Japanese companies interviewed confirm that the inadequate protection given to IPR in some exporting markets represents a major or prohibitive obstacle to exporting. This is the case with Vietnam and some companies still fear entering the market due to IPR protection issues.

Typical illustrations include:

- A Japanese exporter of "pumps for liquid" used for a water treatment management plant reported
 that counterfeit trademarks are rampant and pirated copies are produced or circulated in China
 and many South East Asian countries (Vietnam, Thailand, Malaysia, the Philippines and
 Singapore) Such practices are often tolerated by the governments.
- Parts of the pumps are patented, but their exclusive rights are not adequately protected.
- Difficulties in protecting business secretes and know-how: One Japanese company constructing water treatment and solid waste management plants in China was requested to provide various documents which show the use of technology being transferred through the project. This includes documents such as "construction drawing" of other projects that the Japanese company had carried out with other business partners. While the Chinese partner argued that the request was consistent with the "process license" provision of the contract and a common business practice in China, the Japanese company thought that such information was of a confidential nature since it

was not being disclosed by the other partners. In addition, it risks releasing the company's know-how.

- "Training" for technology transfer also incurred unexpected costs for exporters as the Chinese partner frequently changed the agreed "hours and contents" of the trainings.
- 140. The companies who indicated "customs procedures" and "government procurement" as major or prohibitive NTBs specified the following problems in these two categories:

Category of NTMs	Specific problems
Customs procedures	Unexpected fees involved with random inspection
	Request of information containing business secrets
	Heavy penalty for minor mistakes at customs
Government procurement	Increase of local contents
	Non-compliance of decisions made by the arbitration authority

c) Customs Procedures [US]

141. The interviews reveal that firms encounter various problems at customs which hinder their export activities. This includes data or document requirements; unanticipated fees to be paid to obtain customs clearance; and heavy penalties for minor errors.

Typical illustrations include:

- US customs occasionally carry out random inspection, the cost of which exporters are required to cover. This results in unexpected costs for exporters.
- Exporters are requested to specify detailed components and materials of products at customs (e.g. auto-catalysts), but they find such a request difficult to comply with as this is information they treat as confidential.
- Heavy penalties for a simple mistake at customs and subsequent delays in clearing customs: In one instance, two different products from the same exporter arrived at customs, but their invoices were mixed up and attached to the wrong products. As a result, an incorrect price was declared for each product and taxes paid based on the incorrect invoices had eventually to be reimbursed. Exporters found the reimbursement procedures extremely complex and time consuming. It took 2-3 weeks to reimburse the taxes and both products had to be brought back to customs to redeclare their prices.
- 142. The firms interviewed also mentioned that although appeals procedures are available in the export market, these take too long (approximately 2 weeks), often causing further delays in clearing customs. In addition, exporters are reluctant to use the available procedures to solve problems that they face at customs point since it would leave a negative impression of the company with customs authorities.

d) Government Procurement [Malaysia, Taiwan]

143. Another issue raised relates to the frequent change of local contents provisions (use of local labour, inputs, R&D required) that result in unexpected costs for foreign providers.

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Typical illustrations include:

- Exporters of water treatment/solid waste treatment plants are requested by their Malaysia partner to raise local contents from the initially agreed 20% to 60%. This request was made in the middle of the project implementation and the exporters were told by their Malaysian partner that if the local contents were not raised to 60%, they would cancel the contract. In order not to lose the contact, the Japanese firm decided to comply.
- A contract was signed with a Taiwanese partner to build an incinerator. No "inflation clause" was included in the contract, but because of price increases for materials such as steel and cement etc., the exporter asked that these supply prices be raised by 20-30%, which the Taiwanese government refused. The contractor brought the case to the "public industrial commission", an arbitration procedure in Taiwan and won the case. However, the Taiwanese partner has not complied and the exporter is considering a law suit.

5. Strategies for addressing NTBs

While consultations have taken place at the government level to improve the protection of IPRs in China – inadequate IPR protection is perceived by many Japanese exporters to represent a prohibitive obstacle to doing business in the country – there is no strategy at the company level to address the specific problems encountered by individual Japanese firms. In part, this can be attributed to the business culture in Japan. What transpired from the interviews is that Japanese companies tend to tolerate the problems they are facing and either will seek to work around problems or forego efforts to enter markets with serious problems. Also, companies do not wish to be seen by their export partners as having problems; hence company representatives interviewed were reluctant to reveal some of the problems they are facing in their export activities. Among others, survey responses show that none of the participating large companies exporting energy solar energy systems report having major problems with the NTMs covered by this project.

BUSINESS PERCEPTIONS OF NON-TARIFF BARRIERS (NTBS) ENCOUNTERED BY KOREAN FIRMS WHEN EXPORTING ENVIRONMENTAL PRODUCTS³⁹

I. Introduction

145. Since early 1990s when Korea began actively promoting its environmental technologies, the environmental industry in Korea has been expanding continuously. In 2002, the total expenses for environmental protection amounted to US\$ 14bn, which was 2.3% of the GDP. In terms of export, the environmental industry is still at its early stage in exploring foreign markets, although its volume is fast growing. Within a year between 2002 and 2003, the total export income has jumped from US\$ 425 millions to US \$ 619 millions. More than 90% of export markets are developing countries. In 2003, 250 companies exported to 27 foreign markets, of which 71 companies exported to China, 8 to Southeast Asia, 2 to OECD countries and 17 to others.

146. In terms of the environmental sector, 38.5% of exports were from the water management sector and 30.2% were from the air pollution sector in 2003. The exported products were mostly environmental equipment. In 2001, the Korean Ministry of Environment has launched "the Development Strategy for the Environmental Industry between 2001 and 2010" with a goal to further develop and disseminate environmental technology; create demand for the domestic environmental market and promote the export of environmental products.⁴¹

II. Methodology and Environmental Sectors Covered by Responding Companies

- 147. This case study presents the results of a survey of Korean companies exporting environmental goods carried out in January 2007. Companies exporting environmental goods in five environmental sectors have been identified with the help of the Korean Environmental Industry Association and the Korean Ministry of Environment (MOE).
- Research was carried out in two stages: pre-screening surveys were first sent to the identified 243 companies, of which 20 companies have responded to the survey. Subsequently interviews were carried out with seven companies. These companies indicated that they encountered NTBs that presented major or prohibitive obstacles for their business⁴³; 10 companies reported that they did not experience problems that were significant.

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³⁹ This study was carried out by Joy Kim of the OECD Trade and Agriculture Directorate.

⁴⁰ Korean Ministry of Environment (2004), Medium and long term strategies to foster the exports of the environmental industry in Korea.

⁴¹ *Ibid*.

⁴² The findings of this country study reflect the perceptions of Korean firms. Their accuracy has not been verified and they are documented here without prejudice to the views of governments.

⁴³ In total 10 companies have indicated that they encountered NTBs that presented major or prohibitive obstacles for their business, but three of them were excluded from interviews since either they reported that their business performance is not so good due to problems internal to the firms, such as lack of finance and competitiveness in the global market or they are still exploring export markets.

149. Environmental sectors covered by responding companies include the following categories (2 to 10 responses per category).

Environmental sectors covered by responding companies

Environmental monitoring, analysis and assessment equipment	5	Air pollution control	6
Recycling systems	2	Waste water management	9
		Solid and hazardous waste management	2

III. Key Findings

1. Company characteristics and business performance

150. In terms of the size of the companies, the majority of respondents (more than 50%) providing this data are small and medium companies with less than 50 employees. Only one respondent is a large firm with employees more than 10,000.

<10	10<50	50 to 100	100 to 250	250 to 1,000	1,000 to 10,000	> 10,000
2	10	2	1	2	2	1

151. In terms of percentage of gross income received from exporting, company responses mostly fall in the 0-20 % category signifying that they are still domestic market oriented rather than servicing the global market. This is because the majority of responding companies have only recently started exporting to the global market.

0 – 20 %	21 – 40 %	41 – 60 %	61 – 80 %	81-100%
13	2	2	0	3

152. When rating their business performance in terms of exports over the last 3 years, 10 out of 21 companies consider that they are in the "not so good" category, while 8 of them in the "ok" category". Three companies consider its performance as "good" and none considers its performance as "excellent.

Not so good	OK	Good	Excellent
9	8	3	0

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⁴⁴ The reason for the low level of business performance appeared to be attributable to the fact that many of responding companies have a relatively short history of exporting rather than any problems that are internal to the firm.

- 153. Geographical focus of major export markets is Southeast and East Asia. Out of 21 companies which provided this geographical focus information:
 - All of them export to Asia (13 of them specifically indicated China as an export market).
 - 4 to Middle east,
 - 1 to the US and Europe.

Firm	Asia	Middle East	North America	Europe
# 1	Indonesia, China			
# 2	# 2 Japan, China			
# 3	Japan, China, Philippines		US	Europe
# 4	China			
# 5	China, Vietnam,			
# 6	Australia	U.A.E		
# 7	India			
# 8	Indonesia, Japan			
# 9	Southeast Asia	Middle East		
# 10	Southeast Asia, China			
# 11	Southeast Asia			
# 12	Southeast Asia			
# 13	China, Thailand			
# 14	China	U.A.E		
# 15	Japan, China			
# 16	Thailand			
# 17		Middle East		
# 18	Southeast Asia, China			
# 19	China			
# 20	China			
Total # of firms	21	4	1	1

2. NTBs reported by Korean exporters

- 154. Table 1 summarise the NTBs reported by Korean exporters. China has been mentioned as an export market where several exporters have experienced problems in a number of NTBs categories such as testing and certification; product standards; adequacy of intellectual property; customs procedures; and restrictive after-sales services. Japan has also been pointed out as an export market where exporters have experienced barriers in obtaining certifications and import licensing. Non-tariff measures or policies that companies have identified as major or prohibitive barriers for each sector are shown in the next Table.
- 155. Environmental sectors in which responding companies are exporting products include five sectors. Non-tariff measures or policies that companies have identified as major or prohibitive barriers for each sector are shown in the next Table.

	Sector	Major or prohibitive barriers were reported for the following NTM categories
		Adequacy of Intellectual property
1	Environmental monitoring, analysis and assessment equipment	Government procurement
		Restrictive after-sales services
		Customs procedures
3	Recycling system	Product standards
3		Adequacy of intellectual property
		Import licensing
5	Air pollution control	Product standards
		Regulations on payment
		Restrictive after-sales services
		Regulation on payment
		Product standards
6	Waste Water Management	Cargo handling
		Adequacy of Intellectual property
		Government procurement

3. NTBs reported by the majority of exporters

When taking stock of significant problems reported by the 7 exporters interviewed (i.e. problems marked as "major" or "prohibitive" as well as "moderate"), the following four categories appear as problems that the majority of respondents (more than 50%) have reported: 1) Testing and certification; 2) Product standards; 3) Regulations on payment; and 4) Cargo handling.

Policy measures or areas	Moderate	Major	Prohibitive	Total
Testing and certification	10	1	2	13
Product Standards	10	1	0	11
Regulation on payment	10	2	0	12
Cargo handling	10	1	0	11

157. Problems concerning product standards and certifications include: sudden upgrading of product standards; no recognition of domestic certification; discrimination against foreign companies to register their products; diverse certification systems; and standards that are stricter than international ones.

Typical illustrations include:

An exporter in the air pollution sector reported that they started exporting their products to the
export market in 2003, but had to stop in 2005 due to a sudden upgrading of product
standards in the export market as regulations on air pollution control changed. It was difficult
to meet the upgraded product standards in time both because getting the information took

longer for an exporter and upgrading the technology required R&D. At the company level, the exporter is enquiring about relevant government bodies in the export market to see whether they could be informed about future change of the standards in time to meet the strengthened product standards (Japan).

- An exporter in the air pollution sector reported that Korean product certifications are not recognised in the export market. The exporter also reported that it is difficult for a foreign company to register their products, and thereby obtaining product certifications directly, it claimed that local authorities tend to prefer to give local companies rights for product registration. Although there is a committee for certification, the exporter is reluctant to file an enquiry since it might work against them in obtaining product certifications (Japan).
- An exporter in the air pollution and the recycling/waste management sector reported that product standards in Europe are stricter than international standards and certification systems are diverse, so obtaining certifications is costly and difficult (Europe).
- An exporter in the waste water management sector reported that they deliver 70-80% of cartage parts from the local market, but it is difficult to find a local product that meet standards in the export market. In addition, certification system in the export market is inadequate (China).
- 158. Exporters also reported that payments were not made in a timely manner for various reasons.

Typical illustrations include:

- An exporter in the waste water management sector reported that despite the exporter has a local branch in the export market, any contract with the private sector should be done through a local importing company. The payments can be made also through the importing company, which prolongs the time of receiving the payment (China).
- An exporter in the air pollution control sector reported that the payments are being made through a bank in Hong Kong, since the buyers' credit rating is too low and a bank in Korea refuses to receive payments from a bank in India. This has resulted in delaying the payments and involved additional costs (India).
- 159. Excessive fees for port stay have also been reported by one exporter.
 - An exporter in the waste water management sector reported that a shipping company requested excessive amount of fees for port stay through an importing company. The exporter did not pay as the shipping company failed to provide reasons for the excessive fees (U.A.E.).

4. NTBs reported by the significant minority of exporters

160. Despite the small number of respondents, still a significant minority of firms reported problems in the following areas: 1) Adequacy of intellectual property right; 2) Government procurement; 3) High or discriminatory taxes; 4) customs procedures; and 5) import licensing.

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Policy measures or areas	Moderate	Major	Prohibitive	Total
Adequacy of intellectual property right	7	1	1	9
Government procurement	7	1	0	8
High or discriminatory taxes	8	0	1	9
Customs procedures	7	1	0	8
Import licensing	6	1	0	7

Typical illustrations include:

- An exporter in the recycling/waste management sector reported that the period of obtaining patents in the export markets is excessively long and costly (China).
- An exporter in the waste water management sector reported that in order to protect the domestic market for used products, import charges for used products are double of those for other imported products (Vietnam).
- An exporter in the recycling/waste management sector reported a special packaging requirement to clear the customs in the export market, which incurs additional expenses (China).
- An exporter in the air pollution control sector reported that despite the fact that it has its own local branch in the export market, it still has to contact an importer since it is difficult to obtain an import license as a foreign company. The exporter finds that licensing requirements such as a long business history and good performance of tax payment ambiguous (Japan).
- An exporter in the waste water management sector reported that it is difficult to obtain import license in the export market due to limited information available. Thus, they resorted to a joint venture with a local company (China).

5. Other barriers and cost implications

- 161. Although it doesn't concern regulations in export markets, an exporter in the waste water management sector reported that the regulations of a loan contract impose heavy burden on their business. According to the regulations, exporters under a loan contract should deliver 60% of products from Korea, and the rest from export markets. Such requirements increase the overall budget of the project, which is burdensome for a small scale firm.
- 162. It is interesting that sometimes a lack of standardised products and adequate certification systems in the export market were perceived as an obstacle to exports. This mainly applies to exporters who are exporting technologies rather than products to developing countries. These exporters are inclined to make use also of local products in order to reduce costs.
- 163. In addition, environmental industries in many developing countries are still in the public domain and exporters are often expected to bring in financial investment, which is burdensome for a small and medium scale enterprise. Other difficulties facing SMEs include limited man power and speciality; and obtaining relevant information in time.

164. Several exporters pointed out opportunity costs in addressing NTBs. For instance, while several exporters have their local offices in export markets, they still have to contract local importing companies since it is difficult as a foreign company to obtain import licensing or to receive payments directly.

IV. Conclusion

165. It appears that the majority of exporters have a relatively short history of export (4-5 years). In order to promote exports of the environmental industry, the Korean Ministry of Environment together with the Agency to promote small and medium scale companies have taken several initiatives. For instance, the Korean Ministry of Environment together with the Chinese State Environmental Protection Administration (SEPA) created a Korean/China Environmental Centre which facilitates information exchange for exporters, particularly SMEs. The MOE has also provided funding for joint research with a Chinese institute on developing relevant environmental standards and policy.

BUSINESS PERCEPTIONS OF NON-TARIFF BARRIERS (NTBS) ENCOUNTERED BY US FIRMS WHEN EXPORTING ENVIRONMENTAL PRODUCTS⁴⁵

This case study presents the results of a survey of US companies exporting environmental goods carried out in October and November 2006. Eight US exporters were interviewed that export environmental goods in the following sectors: Monitoring and analysis instruments (4 companies), Renewable energy (2 companies), Air pollution control (3 companies), and wastewater treatment (1 company). Two companies operated in more than one sector, and they are identified in the text below by their dominant area of export business. One company is an environmental consulting firm that facilitates export of air pollution control equipment produced by multiple US vendors.

167. The individual respondents are executives within these companies who are responsible for export sales and/or shipping logistics.⁴⁷

Key Findings

1. Non-tariff barriers reported

Respondents reported experiencing major or prohibitive non-tariff barriers to trade (NTBs) in the following areas:

- Government procurement (7 respondents)
- Customs procedures (6)
- Technical regulations and standards/testing and certification (5)
- Import licensing (4)
- Regulations on payment (2)
- High or discriminatory taxes or charges (2)
- Intellectual property protection (2)
- Subsidies or tax benefits for domestic competitors (1), and
- Price controls (1)

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⁴⁵ This case study was carried out by Jim Hight of *Environmental Business International*, Arcata, California, United States.

⁴⁶ The findings of this country study reflect the perceptions of U.S. firms. Their accuracy has not been verified and they are documented here without prejudice to the views of governments.

⁴⁷ Companies have not been identified — a practice that granted respondents confidence to speak freely. Subject companies' products are not identified beyond the broad sectors noted above because some of them are among the only U.S. suppliers of the relevant goods, and to be more specific about their product types would compromise their confidentiality.

- 168. None of the U.S. respondents to the survey reported "major" or "prohibitive" obstacles in the following categories of NTMs: Pre-shipment controls; Import quota or prohibitions; State trading monopoly; Cargo handling and port regulations; Investment regulation; Import surcharges at border; and Restriction on after-sale services. Informal "additional payments" was mentioned by some respondents as a specific barrier encountered in certain NTM areas surveyed.
- 169. In some cases, respondents were not aware whether their exports faced certain NTBs. They suspected that in many cases their shipping agents handled NTB obstacles, with the costs paid by their importing customers. Much of the front-line work of overcoming the NTBs facing specific shipments is handled by shipping agents or brokers and an attempt was made to contact two such companies mentioned by respondents. However, company personnel did not respond. 48
- 170. The export markets where respondents report either anticipating or encountering problems rated as major or prohibitive are shown in the following Table.

Category of NTMs	Export market
Government procurement procedures	China, Chinese Taipei, India, Pakistan, Bangladesh,
	Sri Lanka, France, Canada, developing countries,
	Projects contracted by multilateral funding agencies
Customs procedures	Mexico, China, India, Brazil, Venezuela, Qatar
Technical regulations and standards/testing and certification	China, EU (and member countries e.g France,
	Germany), Russia,
Import licensing	Saudi Arabia, Qatar, Korea, Jordan
Regulations on payment, incl. foreign exchange restrictions	China, Venezuela,
High or discriminatory taxes or charges	Japan, Brazil
Adequacy of intellectual property protection	China, Chinese Taipei, Korea
Subsidies or tax benefits for domestic producers	Korea
Price controls	India

2. U.S. Company characteristics

171. The eight responding companies ranged in size from large corporations with more than 10 000 employees to small and medium sized enterprises with less than 50 employees.

Number of employees

< 10	10 – 50	50 to 250	250 to 1,000	1,000 to 10,000	> 10,000
0	2	1	2	2	1

⁴⁸ Expertise in clearing customs and handling other NTB issues has value in the export business, and brokers and shippers with such expertise may be reluctant to share it, even confidentially. Nonetheless, these companies would be ideal respondents for continuing research; and if their clients (the exporters) asked them to speak with researchers, their participation would be more likely.

Geographical focus of major export markets

Firm	Asia	Americas	Africa	Middle East	Europe
# 1	Philippines	Mexico, Venezuela, Brazil, Canada			
# 2	Japan, Korea, Taiwan, China				
# 3		Canada			Germany
# 4	China, Japan	Canada			Germany, Spain, Italy
# 5	Korea, Philippines, Australia			Jordan	
# 6	> 10 countries	> 10 countries	(declined to identify)	> 10 countries	> 10 countries
# 7	Chinese Taipei, Thailand			UAE, Qatar	
# 8	> 10 countries	> 10 countries	5-10 countries	> 10 countries	> 10 countries

Percentage of gross income received from exporting

0 – 20 %	21 – 40 %	41 – 60 %	61 – 80 %	81 – 100 %
4	1	2	1	

Company rating of business performance in terms of its exports over the last three years

Not so good	OK	Good	Excellent
1	2	4	1

3. Compendium of firm experiences

Details of companies' experiences

Government Procurement

China: A renewable energy exporter reported that Chinese procurement policies favor domestic producers. There are no explicit laws or regulations in this regard, but the wishes of the government are made known.

(Seven respondents ranked this category of NTMs as major or prohibitive in the following countries and regions)

An exporter of air pollution control equipment reported that informal additional payments are required to obtain government contracts in China. His company is prohibited by U.S. laws from participating in that practice. The company is no longer bidding on government projects in China.

India, Pakistan, Bangladesh and Sri Lanka: An exporter of monitoring and analysis instruments reported that government bid procedures have overly burdensome terms and conditions and a lack of clarity. Bid submissions can be as long as 3 000 pages. This respondent also reported that tender notices from these governments are often received close to the deadline — within a week, on one occasion — which favours domestic companies. Additionally, earnest money deposits that must accompany bids have not been returned in approximately half of the instances where this company bid and lost, according to the respondent.

Chinese Taipei: An exporter of monitoring and analysis instruments reported that in the early 1990s, the government issued a tender for a national air quality monitoring network. The government reserved the right to modify software associated with the project, a clause it later used as a mechanism to refrain from paying, causing a 14-month delay and loss of several million dollars for the contractor. This respondent suspects that officials were expecting informal additional payments. He further commented that Chinese Taipei still retains a negative reputation among international suppliers for this reason.

France: According to an exporter of monitoring and analysis instruments, French competitors sometimes were encouraged to bid artificially low prices on projects with the understanding that the government would later reimburse the company for its loss. The exporter also mentioned that French companies receive subsidies to defray low bid costs for projects in foreign markets, particularly the Middle East.

Canada: An exporter of renewable energy equipment reported that it has built production facilities in Canada to satisfy Canadian preferences for domestic production. The added capacity was not needed from a business perspective but was built primarily to overcome this NTB.

Developing Countries: An exporter of monitoring and analysis instruments reported that informal additional payments are required in government procurement projects in most developing countries. He argues that in a corrupt environment, environmental projects fail at a much higher rate. He advocates that national governments and multilateral funders shift contracts to build-own-operate models, in which contractors own and operate the equipment and systems, receiving compensation for the data generated. This method greatly reduces opportunities for corruption by reducing near-term disbursements and spreading payments over many years or decades.

Another company exporting renewable energy equipment reported that it has been excluded from bidding on multiple projects in developing countries over the last three years because the projects were funded by the Danish development agency, which tied the aid to use of Danish renewable energy equipment. The respondent estimates his company lost \$30 million in sales as a result.

Projects contracted by multilateral funding agencies: An exporter of monitoring and analysis instruments reported that non-transparent bidding processes by multilateral funding agencies supports corruption. This respondent stated that enduser representatives and consultants appointed to evaluate bids sometimes receive informal additional payments from bidders in exchange for their influence. He argued that multilateral funders should adopt better practices and more transparency in appointing bid review committees.

Customs Procedures

(Six respondents cited this category of NTMs as major or prohibitive in the following countries) Mexico: An exporter of monitoring and analysis instruments reported that Mexican customs procedures were inconsistent and frequently changing. The respondent also reported that equipment sent back to the U.S. for repairs by Mexican customers is often charged tariffs based on total value of the item (as opposed to value of the repair) upon return shipment. The value of equipment is typically \$10,000, while the value or the repair is typically \$200, causing a significant tariff overcharge or staff cost to resolve the issue.

China: An exporter of air pollution control equipment recently sought to begin assembling finished machines in China. But its imported component parts were not considered to represent environmental goods, and hence the company was charged a 25% tariff. Resolving the difficulty required hiring special consultants. Officials also expected to receive informal additional payments. Adding up the costs of solving the dispute, lost business and penalties levied by clients because equipment delivery was delayed, this classification problem has cost the company more than \$200 000 to date.

Another exporter of monitoring and analysis instruments has experienced delays of up to a month in Chinese customs as its staff tried to resolve conflicts over item descriptions and quantities. This company's equipment is typically configured with multiple enhancement options. These options appear as multiple line items on an invoice for one piece of equipment, leading customs staff to challenge the accuracy of invoices. The company has resolved the issue by preparing shipping invoices independently from its accounting system as a cost of \$100 per transaction.

India: An exporter of renewable energy equipment experienced a three-month delay in clearing customs for a shipment of component parts to a customer in India who planned to manufacture finished goods. The source of the problem was not identified, but it was suspected that customs personnel were expecting informal additional payments. This exporter decided to abandon the Indian market until it received higher prices and better terms to compensate for the anticipated cost and delays of dealing with this barrier.

Brazil and Venezuela: an exporter of monitoring and analysis instruments reported problems with parts shipped to customers for warranty repairs (for which there is no charge to the customer). While declaring the value of these parts at their cost to the company, the items are often subject to tariffs and value-added tax (VAT) based on their market value. This exporter experiences a related problem in these two countries when pumps associated with its products are arbitrarily classified as pumps (subject to 100% tariffs) instead of environmental monitoring instruments (subject to 20% tariffs). In these countries, this exporter has also experienced conflicts over invoice descriptions similar to those noted under China above.

A renewable energy exporter reported that customs procedures have improved a great deal in Brazil over the last two to five years. Previously, items would typically languish in customs facilities for several months.

Qatar: An environmental consulting firm that facilitates export of air pollution control equipment experiences delays of two weeks to six months because of arbitrary Qatari requirements for describing the characteristics of gases needed to calibrate equipment.

Technical Regulations and Standards

(This category of NTMs was identified as major or prohibitive by three respondents in the countries and regions listed below. Two others identified it as potentially major, and their comments are expressed below as well.)

China: Two exporters of monitoring and analysis instruments reported that obtaining pattern approvals for equipment imported into China is a major obstacle. Of the two exporters, the one with more experience commented extensively. He estimated that the process of gaining approval cost from \$1 200 to \$3 000 for each model. He believes the requirements are legitimately designed to ensure product performance, but said that domestic producers go through a less costly process with regional authorities while importers must have their products reviewed by the central government.

In addition, Chinese government environmental agencies have begun imposing their own certification requirements that are far more costly – as much as \$20 000 per model. But domestic manufacturers have to go through the same process, so there is no unfairness in this respondent's view.

An exporter of air pollution control equipment reported that Chinese regulations for importing pressure vessels (components of some air pollution control equipment) are arbitrary. Obtaining the needed permit is very difficult, requiring much staff time. In some cases, the process is so difficult that the exporter chooses to procure lesser quality components locally.

European Union: Several respondents reported that their goods must pass certification by the Technische Überwachungs-Verein (TÜV) in Germany and similar national certification agencies in other European countries, as well as "Conformité Européene" (CE) Marking throughout the EU.

One renewable energy exporter said these requirements are not arbitrary, given differences between U.S. and European voltage limitations for this company's class of renewable energy equipment. But the respondent also reported that these and other national certification schemes create major delays and costs in introducing new products and upgrading existing ones. She hopes that a new global standard from the International Electro-technical Commission (IEC 61215) will be adopted soon and provide some relief from the need for different certifications in different countries.

This exporter did not rank European technical standards as a major or prohibitive barrier, but said it had the potential to become a major obstacle if currency exchange rates shift to make the European market less favourable for U.S. exporters. Another renewable energy exporter had a similar perspective, calling such technical standards a moderate obstacle with the potential to become major.

An exporter of monitoring and analysis instruments reported that technical regulations and standards in the EU have cost his company several million dollars in lost business and regulatory compliance costs since January 2005. The respondent believes that attempts by the EU to harmonize standards and requirements within Europe have not been successful, requiring exporters of his class of equipment to obtain multiple redundant certifications from national governments. The respondent reported that two of his company's machines have completed German TÜV certification at a cost of \$40 000 each. But he says this certification has not been honoured in France. He argued that French standards give preference to French manufacturers because they require specific design (not performance) prescriptions that are used only in French-made equipment. He said that when presented with data showing his company's equipment performed better than equipment meeting French design standards, he learned that an EU directive mandates revisions to technical standards only be considered after five years. Additionally, meeting French certification would require sponsoring annual visits to the U.S. factory. This NTB has led the company to abandon efforts to export to France.

The respondent also argued that multiple standards in different European markets constitute a competitive advantage for larger importers (such as his company) and a barrier to small and medium sized enterprises. He estimated that certification costs add as much as 30% to the cost of developing a new instrument in his company's class of equipment. The respondent acknowledged that the United States has similar barriers: the non-governmental UL accrediting agency for electrical devices and the U.S. Environmental Protection Agency's requirements for monitoring and analysis instruments. He said certification by the US Environmental Protection Agency (EPA) is a requirement for market access to many countries in Latin America and Asia, and he characterised more recently adopted European certification schemes as an effort to counter-balance this trade advantage. He also said that the EPA certification process is more efficient than German, French and other European schemes.

Russia: An exporter of monitoring and analysis instruments reported that the process to become certified for technical standards in Russia was prohibitive, causing the company to give up on exporting to that country.

Import licensing (Four respondents ranked this category of NTMs as major or prohibitive in the

following

countries)

Saudi Arabia: An exporter of monitoring and analysis instruments reported that shipping documents must be notarized, certified by the California Secretary of State and delivered by an intermediary to the Saudi Arabian consular offices in New York or Washington, D.C. The process takes several days, sometimes creating expensive delays for customers who are awaiting the imported equipment to operate a facility in compliance with environmental standards. Cost is typically 1% of the shipment value.

Qatar: An environmental consulting firm that facilitates export of air pollution control equipment spent two years in the process of obtaining an import license. Before completing this process, it paid import fees to domestic agents amounting to \$8 000 for a typical shipment value of \$100 000.

Jordan: An exporter of monitoring and analysis instruments reported that it spent a month seeking authorization to ship to a customer in Jordan. The process required obtaining multiple certified documents from third parties verifying that the products were authentically manufactured in the U.S. by the supplier. Because of the time and staff costs involved, the exporter decided not to serve customers in Jordan in the future.

Korea: An exporter of monitoring and analysis instruments reported that when items are missed in shipments to Korea, an additional import license is required to send the missing items to customers.

Regulations on Payment, including foreign exchange restrictions

(Two respondents ranked this item as a major or prohibitive NTB in the following countries) *Venezuela:* An exporter of monitoring and analysis instruments reported that Venezuelan measures to restrict contraband trade have made it extraordinarily complicated for Venezuelan customers to make payment. Very precise invoices and shipping documents are required to allow the end user to purchase equipment in U.S. dollars.

China: An exporter of monitoring and analysis instruments reported that foreign exchange controls prevented it from investing in developing a Chinese subsidiary because of concern over its ability to transfer profits out of the country.

High or Discriminatory Taxes or Charges

(Two respondents ranked this category of NTMs as major or prohibitive in the following countries) *Japan:* An exporter of renewable energy equipment reported that the criteria for granting tax credits to suppliers of his company's class of equipment give Japanese competitors a 3% to 5% cost advantage.

Brazil: The same exporter of renewable energy equipment reported that Brazilian taxes on transactions between unrelated parties result in 25% to 30% cost advantages for domestic companies that are vertically integrated. The respondent reports that his company is investigating the feasibility of restructuring its Brazilian operations to reduce tax costs.

An exporter of monitoring and analysis instruments reported that non-tariff taxes in Brazil typically raise the cost of imported environmental goods by 100%.

Intellectual **Property Protection**

(This category of NTMs was identified as major or prohibitive by two respondents in the countries listed below. One other identified it as a major, and this respondent's comments are expressed below as well.)

China and Chinese Taipei: An exporter of air pollution control equipment reported that local partners in these countries copied proprietary equipment and became significant competitors. The respondent said that attorneys advised the company that attempting legal action to protect its intellectual property would not succeed. The company has largely given up exporting to these markets.

An exporter of renewable energy equipment reported that is has major concerns about intellectual property theft, and this has made it conservative in terms of building facilities in China. However, it has recently invested in a Chinese facility in part because China's membership in the WTO gives it greater confidence that its rights will be respected.

An exporter of monitoring and analysis instruments reported that intellectual property protection has improved in China. However, it continues in forms more subtle than outright copying, such as distributors releasing similar competitive products.

Subsidies or Tax Benefits for **Domestic Producers**

(One respondent ranked this category of NTMs as major or prohibitive in the following countries and regions)

Korea: An exporter of air pollution control equipment said his company's class of equipment is rendered non-competitive as domestically produced equipment has tax benefits, but imported equipment does not. Once they are in the market, competition becomes fair though. Because of such disadvantages the company has considered establishing a local fabrication enterprise, but concerns about intellectual property theft have thus far prevented it from doing so.

(One respondent ranked this item as a major or

Price Controls

prohibitive NTB in the following country)

India: An exporter of monitoring and analysis instruments reported that government purchasers require certification that equipment is being sold at a price at or below the lowest price it has ever sold for.