A STUDY ON ENVIRONMENTAL TRADE MEASURES IN MANUFACTURING INDUSTRY UNDER THE WTO CONTEXT AND RESPONSES OF EAST ASIA

By

Kyoung-Jin, Park

THESIS

Submitted to
KDI School of Public Policy and Management
In partial fulfillment of the requirements
for the degree of

MASTER OF PUBLIC POLICY

2008

A STUDY ON ENVIRONMENTAL TRADE MEASURES IN MANUFACTURING INDUSTRY UNDER THE WTO CONTEXT AND RESPONSES OF EAST ASIA

By

Kyoung-Jin, Park

THESIS

Submitted to
KDI School of Public Policy and Management
In partial fulfillment of the requirements
for the degree of

MASTER OF PUBLIC POLICY

2008
Professor KIM, Jong Bum

A STUDY ON ENVIRONMENTAL TRADE MEASURES IN MANUFACTURING INDUSTRY UNDER THE WTO CONTEXT AND RESPONSES OF EAST ASIA

By

Kyoung-Jin, Park

THESIS

Submitted to
KDI School of Public Policy and Management
in partial fulfillment of the requirements
for the degree of

MASTER OF PUBLIC POLICY

Committee in charge:

Professor Jong Bum KIM, Supervisor _____

Professor Joon Kyung KIM _____

Professor Jung Ho YOO _____

Approval as of November 21, 2008

2008

ABSTRACT

A STUDY ON ENVIRONMENTAL TRADE MEASURES IN MANUFACTURING INDUSTRY UNDER THE WTO CONTEXT AND RESPONSES OF EAST ASIA

By

Kyoung-Jin, Park

East Asia faces many new challenges in exporting their manufacturing products, including "Environmental Trade Barriers (ETBs)." ETBs are newly emerged trade measures to secure domestic environmental objectives which have impacts on imported goods' competitiveness and market access. In particular, the European Union has actively designed and implemented new, stringent measures in international transactions, which arouse lots of concerns from other exporting countries. ETB has become a new form of non-tariff barrier. Under the World Trade Organization, this trend will be more and more acceptable and people tend to admit this change. Furthermore, followed by EU, other developed countries also show similar movement. It will become a huge burden for East Asia's export. To overcome this challenge, East Asia should have more active attitude toward ETBs and trade and environment issue. Each country should implement or reinforce domestic environmental measures. Also, enhancing regional cooperation is a key. For this, the APEC would take a principle role. By strengthening on-going APEC's works, East Asia would overcome new challenge.

TABLE OF CONTENTS

Abstract ····· Ⅰ
Table of Contents ····· Ⅱ
List of Tables ····· Ⅲ
List of Figures ····· Ⅳ

Chapter 1. Introduction ····· 1

Chapter 2. Environmental measures in trade ····· 5

2.1 Background and purposes of ETBs ····· 5
2.2 Types and characteristics of ETBs ····· 7
2.3 Concerns and impacts ····· 25

Chapter 3. Current responses of East Asia countries ····· 32

3.1 Domestic responses ····· 32
3.2 Through APEC ····· 42

Chapter 4. Conclusion ····· 48

Bibliography ····· 52

LIST OF TABLES

Table 1 Taxonomy of environmental trade barriers 9

Table 2 Results of cases regarding GATT Article XX 22

Table 3 Core Technologies to Achieve Low-Carbon Society (Fukuda Vision) 36

Table 4 Ranking of countries based on US environmental patent data 38

Table 5 The priority areas and targeted years of the alignment work 45

Table 6 Number of Economies that achieved 100 percent alignment 45

LIST OF FIGURES

Figure 1 Share of exports in GDP 2

Figure 2 Price and Quantity Effects of a Technical Standard 12

Figure 3 Total Number of TBT Notifications since 1995 15

Figure 4 Schematic life cycle of a product 25

Figure 5 Number of TBT Notifications from major countries 40

Chapter 1 Introduction

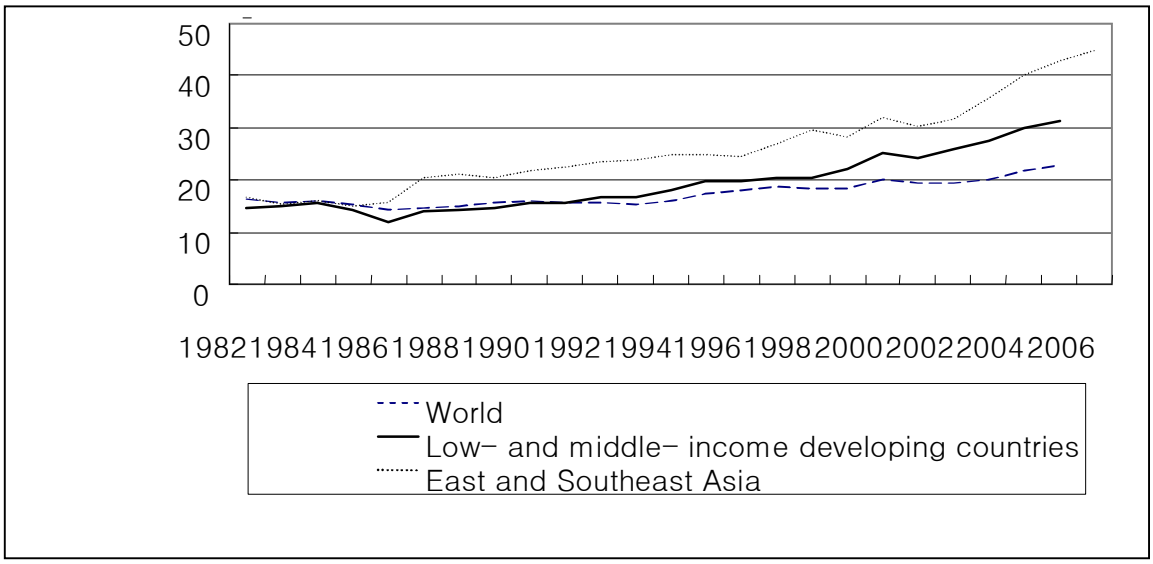
For many countries, trade is an engine of their economic growth. According to the principle of 'comparative advantage', "countries prosper first by taking advantage of their assets such as labor, capital and technology in order to concentrate on what they can produce best, and then by trading these products for products that other countries produce best[1]." Thus, through liberal trade, the unrestricted flow of goods and services, many countries have achieved their economic growth. Empirically, freer trade brought more prosperity in the world. According to the data provided by World Trade Organization (WTO), "during first 25 years after the Second World War, world economic growth averaged about 5% per year, a high rate that was partly the result of lower trade barriers. World trade grew even faster, averaging about 8% during the period.[2]"

Especially, East Asia has used active trade policies to boost their economic growth. By using relatively cheap, well-trained and high-educated labor, countries have produced good manufacturing products at comparatively lower cost. As Figure 1 shows, the share of export in Gross Domestic Products (GDP) in this region has continually grown and the rise has become more rapid since 2000. Most countries particularly have the high portion of

[1] WTOd (2007), p 11
[2] http://www.wto.org/english/thewto_e/whatis_e/tif_e/fact2_e.htm

manufacturing products in total exports. In several countries such as China, Korea, and Taiwan, the manufacturing has taken more than 90% of total export. In addition, according to Asian Development Outlook in 2007 by Asian development bank, exports' commodities composition in East Asia toward machinery categories, which are among the fastest growing sectors in world merchandise trade. Thus, it is very important for East Asia to pay attention to changes in trade policy under the WTO context.

Figure 1 Share of export in GDP



Source: World Bank, 2007

With the rapid increase of trade, the realm of trade policy has undergone a significant evolution. "When the GATT/WTO were established, domestic regulations not framed primarily with foreign trade in mind such as health, safety and licensing regulations

can also have more or less pronounced effects on trade[3].” Among many non-traditional issues, the relation between trade liberalization and the environment attracts particular attention because of reinforced environmental concerns. As the political power of environmentalists has been raised, more and more people start to ask about the environmental impacts caused by trade. Thus, the current agenda of the WTO embraces a number of thorny topics in the intersection of trade policy and environmental policy[4]. The bulk of attention has focused on the question of eco-labelling and product-processed measure, which are called “Environmental Trade Barriers (ETBs).”

ETBs are newly emerged trade measures to secure domestic environmental objectives which have impacts on imported goods’ competitiveness and market access. “Usually, ETBs are focused on areas which have been the subject of environmental campaigns, for example, eliminating use of toxic substances such as chemicals and heavy metals in particular, recycling waste and packaging, protecting wildlife, raising food safety standards and promoting organic food and opposing genetically modified organisms[5].” Thus, most ETBs are standards or product related regulations which concern the quality attributes of products, and for production process or method. Therefore, both agricultural and manufacturing products are the most vulnerable areas related to ETBs.

This paper addresses following two questions. First, what types of ETBs does we

[3] Goode (2007), p 439
[4] Ferrantino (2000), p 66
[5] Maskus, Wilson and Otsuki (2000), p 6

face and how are they designed and applied in international transactions? In particular, cases related to manufacturing industry, one of the East Asia's main export areas, are going to be focused. Through decades, ETBs certainly have become more stringent, which increase their influence on trade affecting products' competitiveness and market access. Secondly, what are the East Asian countries' responses? How countries have taken the actions so far to cope with this challenge? Current East Asia's responses are studied in both individual and regional level.

Thus, this paper is organized into following two sections. In the Chapter two, the types and characteristics of ETBs are presented. Additionally, how ETB issues are dealt with and developed under the WTO context is going to be studied. In the Chapter three, we are going to consider current responses of East Asia both in individual and regional levels. Especially, responses of following three nations, China, Japan and Korea would be seen. Additionally, on-going regional efforts through Asian Pacific Economic Cooperation (APEC) will be presented. After examining East Asia's current responses, we also think about the future strategies to manage this challenge.

Chapter 2 Environmental measures in world trade

2.1 Background and purposes of ETBs

In Economics, costs born by others are called "externalities." If we fail to impose on full components of cost on the decision maker, often it brings out unintentional consequences such as excessive pollution. Economic theory now recognizes that the full benefits of free trade only accrue when each country pursues appropriate environmental policies, policies that fully internalize the costs of environmental damage in the market prices of goods[6]. In other words, without explicit environmental disciplines and constrains, trade and investment liberalization will not promote sustainable use of resources and ecosystem.

Therefore, the need of setting rules and disciplines related to protecting environment in the architecture of the world's trading system is addressed. Recently, instead of ignoring costs related to environment, we are encouraged to use the techniques and results of the analysis to make the ETBs more rational. The key concept of making ETBs is "rationalization" of all costs which were shadowed before. Especially, developed countries emphasize the importance of ETBs in trade.

To rationalize all components of costs, various ETBs, from environmental taxes to

[6] Ferrantino (2000), p 44

regulations related to environment, exist. Also, the increasing rate of such ETBs becomes faster. By the research conducted by Asian Pacific Economic Cooperation (APEC), "it reveals that about forty-four new ETBs have been imposed over the last decades. A further 23 environmental regulations that could prospectively impact on international trade have also been adopted. Around half of the trade barriers are relatively new, having been implemented since 1999 or 2000, a number of the EU barriers arise from measures implemented as early as the late 1980s, although the majority were instituted in the late 1990s. A significant number have emerged since 2000. Some important environmental policies have been adopted, particularly Europe which are likely to generate further barriers[7]."

Furthermore, United Nations Conference on Trade and Development (UNCTD) studied the number of ETBs and assessed their impact in trade. The study says that "of 4,917 products in world trade, there are only 1,171 that do not face any ETBs. It means the 3,746 other products, which face barriers in at least one importing country, accounted for 88% of world merchandise trade. Also, it is estimated that the value of trade directly affected by ETBs is $ 679 billion, 13% of world trade[8]."

In case of China, in 2002, 71 % of export enterprises and 39 % of exported products were affected by foreign technical barriers related to environment, causing a total loss of US$ 17 billion, which is significantly higher than that of 2000, when 66 % of export

[7] Oxley, Osborne and Marty (2003), p 6
[8] Environmental trade barriers: who wins, who loses, what's the score?, interview with Friedrich von Kirchbach, International trade forum, issue 2, 2001

enterprises and 25 % of the exported products are affected, causing a total loss of US$ 11 billion. Moreover, it was found by Ministry of Commerce that among the affected export enterprises, 40 % of them are affected by the technical barriers of EU, 27% by US, 25% by Japan, and 8 % by Korea and other States and regions[9].

2.2 Types and characteristics of ETBs

Concerning a huge impact born by ETBs, there is a growing awareness whether ETBs are disguised protectionist measures or not. Some people say that underlying cause of implementation of ETBs is to take a comparative advantage by using technical ability. Others argue that ETBs are necessary measures to correct market failures in a global stance. It is debatable whether the use of trade measures to secure environmental objective is necessary or not[10]. The debate is on-going, but the sharp emergence of ETBs, doesn't seem to be disappeared in a near future. Then, what types of ETBs do we face?

Vikhlyaev(2001) classified ETBs into three types; ban, fiscal and regulatory measures. "The most typical classic measure is banning on imports of products that has been produced under standards more lax than those imposed on domestic producers. Article XX, the general exception of GATT, allows import bans under special conditions relating to human, animal or plant life, health and safety, and something related to natural resources.

[9] Zhao (2007), p 539
[10] Mantovani and Vancauteran. (2008), p 34

Also, the Agreement on Application of Sanitary and Phytosanitary Measures (SPS Agreement) and the Technical Barriers to Trade (TBT Agreement) provide the room for embargo to protect environment. However, this method is regarded as the last measure to apply since this measure causes many problems and disputes between countries[11]."

Secondly, "taxes and charges applied to domestic products can also be taken to like imported products as border tax adjustments. In practice, the usefulness of border tax adjustments is limited by the fact that the current WTO rules allows only on products or on physically incorporated inputs, like chemicals in plastic products. It can't be applied to production processes or to non-physical incorporated inputs like energy used in the production process[12]." Since taxation is considered as a core element of national sovereignty, it is difficult to fix them at the multilateral talks. Also, it is hard to harmonize each nation's tax system to reduce the transaction cost under the WTO regime.

Thirdly, there are regulatory measures such as product standards, regulations and productions process or methods standards (PPMs). Product standards and regulations deal with the specific characteristics of goods such as its size, shape, design, functions and performance. So, it may operate as barriers to trade, influencing product's market access. If a product doesn't satisfy a specific standards or regulations of exported market, that product will not enter the market. While standards and regulations focus on products' characteristics,

[11] Vlkhlyaev (2001), p 4~5
[12] Ibid.

the PPM does regulate the way they are made or the way it is labeled, produced or packaged before it is put on sale, so it affects the conditions of competition. If a manufacturer doesn't meet certain qualifications, consumers may not be going to be interested in its product. "These act like non-tariff barriers, driving a wedge between domestic and border prices and protecting domestic markets, not because they are discriminatory, but simply because they are different[13]." The table 1 summarizes three types ETBs used in the WTO.

Table 1 Taxonomy of environmental trade barriers

<table>
<tr><th colspan="2">Type</th><th colspan="2">Traits</th></tr>
<tr><td>Ban</td><td></td><td colspan="2">-The last measure to apply</td></tr>
<tr><td>Fiscal measures</td><td>Taxes, charges</td><td colspan="2">-Imposed on products or physically incorporated inputs</td></tr>
<tr><td rowspan="3">Regulatory measures</td><td>Product standards</td><td rowspan="2">-Rule product's characteristics</td><td>Mandatory or voluntary</td></tr>
<tr><td>Product regulations</td><td>Mandatory</td></tr>
<tr><td>PPM(s)</td><td colspan="2">-Rule product's way to produce
-Voluntary measures</td></tr>
</table>

Source: based on classification of Vikhlyaev, the author elaborated

[13] Vlkhlyaev (2001), p 2~3

Among three types of trade measures, the most concerned one is regulatory measure. These measures differ fundamentally from taxes and charges on trade. First, regulatory measures exist in principle to achieve important objectives that would go under-served in the private market, such as public-health maintenance or environmental protection. Tariff and charges also may well exist for purposes of economic and social regulation. However, because they are indirect means and embody a protectionist and discriminatory element, they erect costs that would not arise from non-discriminatory regulations aimed directly at the underlying goals. Thus, it has been relatively straightforward for WTO members to establish the principle that if border restraints are inappropriate methods of regulation, or if there are more direct means available for achieving regulatory purposes, they should be removed[14]. Thus, in case of ETBs, it is hard for the WTO to say that regulatory measures should be removed because sometimes standards and regulations could be used as direct ways to achieve certain goals. Therefore, to prevent 'arbitrary and unnecessary barrier', the WTO reached relevant agreements which give the guidelines for designing and implementing regulatory measures, those are the TBT Agreement and SPS Agreements.

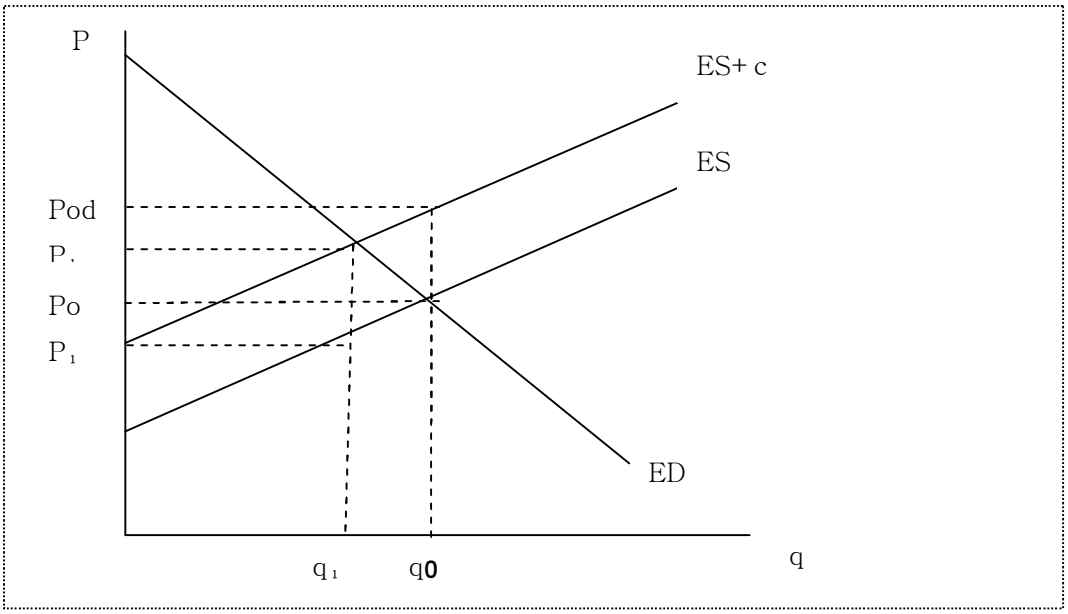
Secondly, there is a great degree of flexibility in the regulatory measures. The demand for regulatory measures is quiet different in various countries. Because standards and regulations are tools for satisfying preferences, they do not remain constant over time, nor are

[14] Maskus, Wilson and Otsuki (2000), p 6

they identical across countries. Demands for public goods vary with income levels, relative endowments of factors, information, technologies, and other variables[15]. Think about the European Unions' ETBs. One of the most frequently raised problems regarding ETBs in EU is they are too diverse. Even though the EU gives Directives, a framework of the policy, the EU allows their members to decide the degree of standards or regulations by themselves. As the result, the level of ETBs becomes too different across the countries. That means depending on nations' conditions, regulatory measures may be stronger than necessary to achieve a particular level of social protection, imposing excess costs on consumers and using industries. As the result, it may increase the price at the same reduce the quantity. Consider the simplest case of measuring the effects of a pure cost-increasing industrial standard that is imposed on coming into a market in Figure 2. In the diagram, ED represents the domestic country's excess-demand (import) curve, while ES depicts the foreign country's excess-supply (export) curve. The standard or regulation erects an additional dollar cost per unit imported, due to strict conformity assessment or extra inspection requirement, shifting ES up to ES+c [16].

[15] Maskus, Wilson and Otsuki (2000), p 18
[16] Ibid. p 30

Figure 2 Price and Quantity Effects of a Technical Standard



Source: Maskus, Wilson and Otsuki (2000)

Thirdly, regulations and standards can promote economies of scale[17]. Sectors that had been segmented by variable standards can be rationalized by greater output scale, albeit at the potential cost of reduced product variety. Thus, it is common that large-market countries set regulatory measures in trade. Large-market states, which tend to be politically powerful, have also initiatives to institutionalize convergence in environmental policy in the context of negotiations over trade liberalization, including in the European Union and North America[18]. Through this, they can benefit from widening their market standards across the country. It is clear that having large scale becomes a strong competitive advantage to set the framework for regulatory measures.

[17] Maskus, Wilson and Otsuki (2000), p 18
[18] Ivanova (2006), p 634

As you see, regulatory measures are quiet different from classic measures. Reminding these characteristics, let's carefully study on regulatory measures under the WTO context. In the WTO, regulatory measures are categorized into following three; products standard, products regulation and productions process or methods standards (PPMs).

2.2.1 Product standards and regulations and the TBT Agreement

Regarding of products' standards and regulations in manufacturing industry, there is a special agreement in the WTO. That is the Technical Barriers to Trade (TBT Agreement). "Although Article XX, general exceptions, does not have direct reference to "environmental protection," in Article 2.2 of the TBT Agreement expressly identifies "environmental protection" as a "legitimate objective" to be considered in evaluating the GATT compatibility of environmental regulations, which may be technical barriers to trade[19]." This agreement includes three elements; adoption of technical barriers, conformity assessment and transparency-related standards.

First of all, basically, the government does not discriminate and technical regulations should not be more trade-restrictive than necessary to meet legitimate objectives. Relevant international standards developed by international bodies such as the international standards organization (ISO), if they exist, must be used as the basis for technical regulations, except if

[19] Zhao (2007), p 537

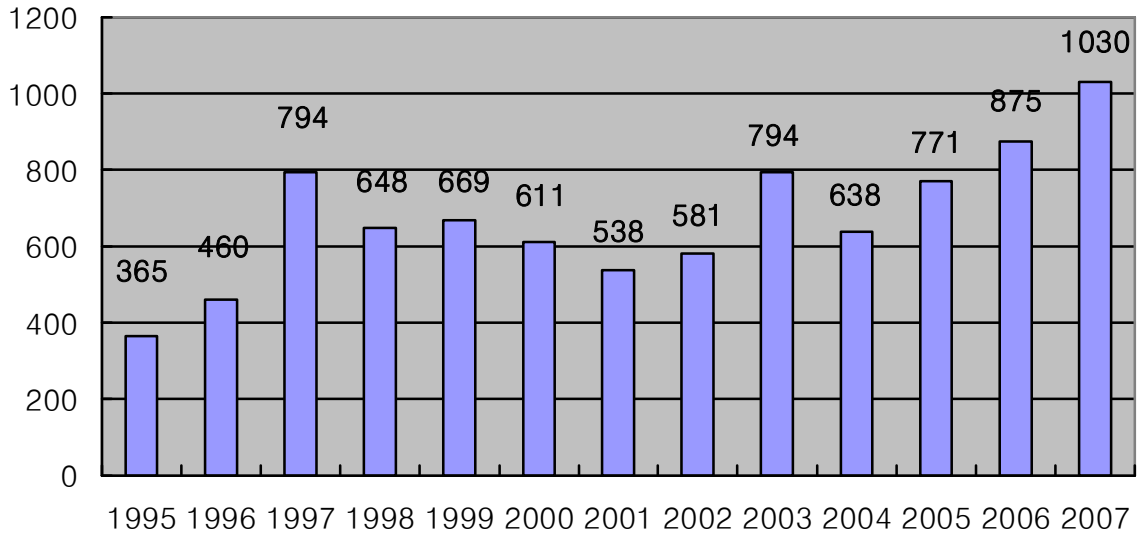
this would be inappropriate because of climatic, geographical, or technological factors. Also, technical regulations based on product requirements should be worded in terms of performance rather than design or descriptive characteristics. The WTO provides a Code of Good Practice which is applied for governments, non-governmental and industry bodies to prepare adopt and apply of voluntary standards. Over 200 setting bodies are applying this Code[20].

Secondly, conformity assessment procedure matter is covered in the TBT Agreement. In principle, WTO members are to join and use international systems for conformity assessment. The results of conformity assessment procedures undertaken in exporting countries must be accepted if consultations determine these are equivalent to domestic ones. If not, the products may be tested twice, first by exporting country and then by importing country.

Thirdly, regarding transparency, each member must establish a national enquiry point to answer questions and provide documents on technical regulations adopted or proposed by enforcement bodies, standards adopted are proposed by central or local government or regional standardizing bodies, and existing or proposed conformity assessment procedures[21]. Generally, as Figure 3 shows, in the TBT committee, the notified documents have been steadily increased.

[20] http://www.wto.org/english/thewto_e/whatis_e/tif_e/agrm4_e.htm
[21] http://www.wto.org/english/tratop_e/tbt_e/tbt_info_e.htm

Figure 3 Total Number of TBT Notifications since 1995



Source: World Trade Organization (G/TBT/23)

According to 2007 technical annual review of the implementation and operation of the TBT agreement, since the entry into force of the Agreement on 1 January 1995, up to 31 December 2007, 8,774 such notifications have been made by 103 Members. Around 900 new or changed regulations are reported each year. Among them, the share of environment-related notifications raised form 9% in the early 1990s to 15% in 1998 and 2000, dropping again to 11.1% in 2001. In 2005, it took 25% among total notifications. It shows an increasing influence of ETBs in international transactions. In a positive side, it shows the growing transparency in technical barrier. However, it also reflects that the potential threat of technical barrier becomes bigger and bigger.

Among various standards and regulations in the world, following three instruments attract global attention; REACH (Registration, Evaluation, and Authorization of Chemical Hazards), RoHS (Restriction of Hazardous Substances) and WEEE (the directive on Waste Electronic and Electric Equipment). All are complex pieces of legislation that will have an impact on a vast spectrum of products and initiated by EU.

2.2.2 Product Process or Methods standards

It is an important question in relation to environmental measures whether products may be treated differently because of the way in which they have been produced or labeled even if the production method used does not leave a trace in the final products, even if product remains identical. The PPMs are an important source of environmental impact and a fundamental factor in achieving sustainable development. For environmentalists, sustainable development is very much about how a product is produced. Products that are produced using environmentally sound production methods will contribute to both development and the environment.

However, it has been debated that the distinction between PPM-based standards and products-based standards has no basis in the GATT text or in GATT jurisprudence[22]. In the past, the GATT didn't allow the PPMs. Think about the "US-Tuna" case in 1999. US banned

[22] http://www.wto.org/english/tratop_e/tbt_e/tbt_info_e.htm

Mexico's tuna and tuna products under the excuse of the US Marine Protection Act. The Act says that if a country exporting tuna to the US cannot prove US authorities that it meets the dolphin protection standards set out in US law, the US government must embargo all imports of the fish from the country. The US argued that when Mexico caught the tuna, the country used "purse seine," which threatens dolphin's lives. Mexico asked for a Panel in February 1999 along with other intermediary countries, which suffered damage from US's ban. During the disputes, two things were actively debated; i) product verse process matter in interpreting "like product," and ii) extra-jurisdictional application of Article XX.

The panel concluded that the import prohibition under the *direct* and the *intermediary* embargoes did not constitute internal regulations within the meaning of Article III. That means the US could not embargo imports of tuna products from Mexico and other countries simply because their regulations on the way of tuna produced did not satisfy US regulations or environmental standards. This statement brought up the product versus process issue. Also, the Panel found that Article XX (b) did not extend to measures protecting human, animal or plant life outside of the jurisdiction of the country talking the measures. In addition to this, the Panel rejected an extra-jurisdictional application of Article XX (g). Thus, it was not justified by Article XX paragraph (b) and (g). Moreover, the *intermediary* embargo was not justified under Article XX (g)[23]. This conclusion heavily criticized by environmental

[23] http://www.wto.org/english/tratop_e/envir_e/edis04_e.htm

groups who got the impression that trade rules could be an obstacle to environmental protection.

However, recently the WTO presents a clear move away from the understanding that GATT/WTO rules shall not regulate PPM, i e, as opposed to product characteristics[24]. The Appellate Body Reports such as the "US-Shrimp" and "EC-Asbestos," support this argument. First, the dispute in "US-Shrimp" provides an interesting example of a justifiable discrimination between products on the basis of PPMs. The dispute concerned the manner in which fishermen harvested shrimp. Certain production methods, involving the use of fishing nets and shrimp trawl vessels, resulted in a high rate of incidental killing of sea turtles, as turtles can be trapped and drowned by the nets used to harvest shrimp. The US aimed to reduce the killing of turtles by imposing an import ban on shrimp harvested by methods which may lead to the incidental killing of sea turtles. In order to avoid the ban, exporters were required to demonstrate the use of TEDs (Turtle Excluder Devices), which limit the incidental catch of endangered sea turtles, or similar equipment, when harvesting shrimp[25]. Under this condition, Malaysia requested the Dispute Settlement Body.

The Appellate Body viewed the US measure as directly connected to the policy of conservation of sea turtles. The measure was thus considered to be provisionally justified under Article XX(g). In addition, the Appellate Body upheld the Panel's finding that Section

[24] B S Chimni (2002), p 133
[25] http://www.wto.org/english/tratop_e/envir_e/envt_rules_gatt_e.htm

609, as implemented, by the revised guidelines and as applied by the US, was justified under Article XX(g), as i) it related to the conservation of exhaustible natural resources as set out in Article XX(g) and ii) it now met the conditions of the chapeau of Article XX when applied in a manner that no longer constituted a means of arbitrary discrimination as a result of i) the serious, good faith efforts made by the US to negotiate an international agreement and ii) the new measure allowing "sufficient flexibility" by requiring that other Members' programs simply be "comparable in effectiveness" to the US programs, as opposed to the previous standard that they be "essentially the same".

In this regard, the Appellate Body rejected Malaysia's contention and agreed with the Panel that the US had only an obligation to make best efforts to negotiate an international agreement regarding the protection of sea turtles, not an obligation to actually conclude such an agreement because all that, was required of the US to avoid "arbitrary or unjustifiable discrimination" and to provide all exporting countries "similar opportunities to negotiate" an international agreement. The Appellate Body noted that "so long as such comparable efforts are made, it is more likely that “arbitrary or unjustifiable discrimination” will be avoided between countries where an importing Member concludes an agreement with one group of countries, but fails to do so with another group of countries don’t provide arbitrary or unjustifiable discrimination[26]. B S Chimni (2002) says that the report of the WTO Appellate

[26] http://www.wto.org/english/tratop_e/dispu_e/cases_e/1pagesum_e/ds58sum_e.pdf

Body in the “US-Shrimp” not only allows some influence on the sovereign rights of states to have their own environmental protection regimes, but also goes a long way to legitimize green protectionism. The Appellate Body Report legitimizes, subject to the conduct of ‘good faith’ negotiations to arrive at a bilateral or multilateral arrangement, the use of unilateral trade measures to realize environmental protection goals.

Secondly, there is the “EC-Asbestos” derived from the French Decree, which prohibits of asbestos and products containing asbestos, including a ban on imports of such goods. However, the Decree allows to use certain domestic substitutes such as polyvinyl acetate (PVA), cellulose and glass (PCG) fibres and products containing such substitutes. During the dispute, the two crucial issues addressed by the Panel and Appellate Body Reports; i) interpretation of “like products” and ii) consistency with Article XX. Moreover, this case is well-known that it was the first time the WTO has approved the use of a trade restriction to protect human health.

Having found insufficient the Panel's likeness analysis between asbestos and PCG fibres and between cement-based products containing asbestos and those containing PCG fibres, the Appellate Body reversed the Panel's findings that the products at issue were like and that the measure was inconsistent with Article III:4. The Appellate Body emphasized a competitive relationship between products as an important factor in determining likeness in the context of Article III:4. Then, having completed the like product analysis, the Appellate

Body concluded that Canada had failed to demonstrate the likeness between either set of products, and, thus, to prove that the measure was inconsistent with Article III:4.

Regarding consistency with Article XX, the Appellate Panel upheld panel's findings regarding its justification under Article XX (b). It ruled that WTO Members have the right to determine the level of protection of health that they consider appropriate in a given situation. Having agreed with the Panel that the measure "protects human life or health" and that "no reasonably available alternative measure" existed, the Appellate Body upheld the Panel's finding that the ban was justified as an exception under Article XX (b). The Panel also found that the measure satisfied the conditions of the Article XX chapeau, as the measure neither led to arbitrary or unjustifiable discrimination, nor constituted a disguised restriction on international trade[27].

Theses changes are a considerable result. It clearly reflects the changed perspective on the value of environment in the WTO. Before the WTO were heavily criticized by environmentalists because of their ignorance on environment value. However, the WTO has steadily changed their position toward more environmental friendly, allowing PPM-based criteria in trade. The table 2 in the next page shows the changes made in GATT/WTO context through three cases.

[27] http://www.wto.org/english/tratop_e/dispu_e/cases_e/1pagesum_e/ds135sum_e.pdf

Table 2 Results of cases regarding GATT Article XX

		US-Tuna	US-Shrimp	EC-Asbestos
Article XX (b)	To protect human, animal or plant life or health			Justified
	Necessary	Not justified		Justified
Article XX (g)	Relating to conservation of exhaustible natural resources		Justified	
	In conjunction with restrictions on domestic production or consumption	Not justified		
Article XX chapeau	Not arbitrary or unjustifiable discrimination		Not Justified	Justified
	Not a disguised restriction on international trade			Justified
Relevance with Article XX		Not justified	Justified	Justified
Result		Lost	Lost	Win

Source: The author elaborated

Halle (2006) argues that that greatest progress for the environment in the WTO has come by means of the Appellate Body carrying out its function of clarifying ambiguities in the WTO rules, filling gaps left by the negotiators, and interpreting the intent of negotiators in crafting the legal texts based on close examination of the negotiating history. This breakthrough in the determination of the "likeness" of products, the Appellate Body may also change subsequent WTO jurisprudence in determining the "likeness" of products based on PPMs. These days, "it seems the conventional understanding of "like product" has been

challenged more recently by both scholars and WTO dispute settlement regime[28].”

Philippe Sands discusses the product/process distinction by referring to the TBT Agreement and points out that the formulation of Article 2.2 suggests that “both characteristics of the product itself, and the process by which it is produced, are relevant in assessing the health or environmental risks posed by a product.” The representative example actually applied PPM-based criteria, is eco-labelling.

Eco-labelling used to describe whether for the way a product is produced is environmentally-friendly or not. However, this policy instrument does not link market access to compliance with specific standards and, therefore, are generally WTO-consistent. The labels intend to inform customers about the environmental characteristics of the products or the methods used in their productions, helping them identify products that have harmed or helped the environment during production either in their own countries or aboard.

There are many different voluntary environmental performance labels and declarations. Now, in the world, there are more than 40 countries are participating in this program. Among them, EU is well known for developing eco-labels based on a life-cycle analysis of the products, which is a comprehensive study of the environmental consequences resulting form acquisition of raw materials to production of primary product, consumption and final disposal of products after use[29]. For the WTO, the key point is that labelling

[28] Zhao (2007), p 541
[29] Ibid. p 539

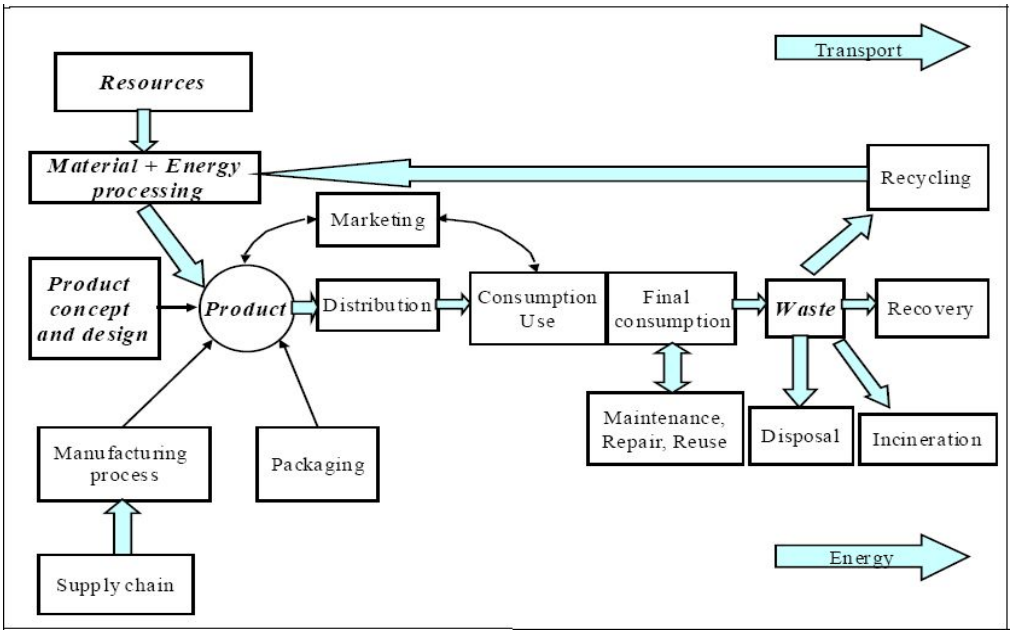
environmentally-friendly products requirements and practices should not discriminate, either between trading partners or between domestically-produced goods or services and imports.

Recently, the EU announced a new policy which called Integrated Product Policy (IPP). "Since 2000, it has become formal policy in the EU to apply the precautionary principle extensively in regulations and to broadly regulate to achieve "the whole of lifecycle" environmental regulations. The EU released several position papers indicating the direction in which Community-wide regulation will move[30]."

"IPP represents an integrated product policy approach which seeks to reduce the life cycle environmental impacts of products from mining of raw materials to production, distribution, use, and waste management. The driving idea is that integration of environmental impacts at each stage of the life cycle of the product is essential and should be reflected in decisions of stakeholders. IPP focuses on those decision-points which strongly influence the life cycle environmental impacts of products and which offer potential for improvement, notably eco-design of products, informed consumer choice, the polluter pays principle in product process. It also promotes instruments and tools which target the whole life cycle of products[31]." The idea of IPP is well summarized in Figure 4, schematic life cycle of a product.

[30] Oxley, Osborne and Marty (2003), p 8
[31] Green paper (2001), p 4

Figure 4 schematic life cycle of a product



Source: Green Paper on integrated product policy

2.3 Concerns and impacts

2.3.1 Concerns

During the meeting of TBT committee, new legislations, particularly those of EU, were intensively discussed. Many countries, including developed countries like US, voiced their concerns on environment-related instruments. “Actually, claims that countries have violated provisions of the TBT Agreement have surged since 1995. Disputes over domestic regulations affecting PPMs through which goods are manufactured are becoming more

frequent. And the affected range of ETBs becomes broader and wider. For example, the US and EU draft regulations on waste from electronic and electronical equipment which would affect the use of chemicals and other inputs used to produce a wide range of consumer electrical products. As a consequence, the viability of WTO disciplines to address areas where domestic regulation affects trade is being tested[32]."

Also, by the nature of ETBs, it is highly possible to bring out "contagion effect" initiated by "large market." A "large market" realizes the potential cost of reduced product variety so that market is willing to harmonize the measures. Also, trade openness can be used as a transmission belt. Although there is no legal binding to make follow large market's direction, developing countries eventually take the direction which large market pursues because they don't want to lose that "large market." In reality, this trend happens. For instance, EU's RoHS, which controls the use of cadmium in manufacturing products, is slightly modified and enacted by other countries such as US, China and Korea. In case of eco-labelling, it had begun in 1977 from Germany, the Blue Angel program. However, these days, more than 40 countries are participating in this program.

"From the developing countries' side, there are four major concerns about this contagion effect; a) access to relevant information, b) difficulties in adjusting to technical regulations and standards, c) difficulties concerning the procedure for the development of

[32] Maskus, Wilson and Otsuki (2000), p 8

standards and regulations and d) the mechanisms for implementation and periodic review of such measures[33].”

First of all, the transmission of information on importers' environmental requirements to the exporting countries or sectors concerned, in particular the least countries and small and medium-sized enterprises in developing countries, is sometimes insufficient, distorted, delayed or even non-existent. Thanks to developed internet, there is usually no real problem in getting information to a country, but getting it distributed in a timely manner to the domestic industry requires that effective communications networks be in place. Even though the information is well distributed, the exporter may lack the capacity necessary to comprehend important details about the importer's measure or to have them translated. Translation of necessary documentation does not cheap. Accessing relevant information is burdensome for developing countries.

Secondly, the exporter in developing countries may not have the capacity necessary to apply certain measures or to conduct conformity assessment. The risk of this type of situation arising is higher when the substance in question is a complex organic compound which must be measured by sophisticated laboratory equipment operated by highly qualified technicians. Also, the developing countries lack of know-how or method due to insufficient prior research. These difficulties may not be solved in a short-term.

[33] OECD (2004), p 5

Thirdly, as standards and regulations become various, it is highly possible to increase variation in environmental requirements by governments and other organizations. According to the developing countries, one of the chief problems of market access that they face lies in proliferation of technical measures. Unfortunately, it seems this worry become realized in EU. One of the frequently addressed complaints from the outside of Europe is their diversity about one policy.

Fourthly, there are problems on implementation and review mechanisms. Although developing countries do overcome all possible barriers, they still worry about its implementation and after implementation. It needs to review environmental requirements on a regular basis in order to take into account developments in understanding of the consequence of the environmental problems or the data underpinning the original measures. In some cases, developing countries have expressed concerns about the continued relevance or actuality of an environmental measure.

2.3.2 Impacts

Roughly, there are two types of impact on trade caused by ETBs; market access problems, and product's competitiveness matter, which is affected by increased production cost for manufacturers trying to comply with the ETBs.

First of all, there are worries about market-access problem due to environmental

measure. In the study of Ederington and Minier (2003), they said environmental policy has been used as a secondary means of trade barrier and estimated the impact of environmental regulation on trade. Empirically, US environmental policy had the tendency to set less stringent regulations on import-competing products and more stringent regulations on exported products. In addition, they pointed out those previous studies which regarded environmental policy as exogenous variable had wrong conclusion. They argued that the level of environmental policy is regarded as endogenous variable. If so, the impact of environmental policy on trade is much more significant.

[Sony Cadmium Crisis] In 2001, the Dutch government was blocking Sony's entire European shipment of PlayStation game systems; more than 1.3 million boxes were sitting in a warehouse instead of flying off store shelves because the cables of the game controls contained too much cadmium. The government said in a statement that Dutch customs and the state's health inspection service had discovered the consoles and 800,000 accessories, estimated to be worth $162 million. Sony rushed in replacements to swap out the tainted wires. It also tried to track down the source of the problem, an 18-month search that included inspecting more than 6,000 factories and resulted in a new supplier management system. The total cost of this "little" environmental problem was more than $130 million. Sony executives refer to their PlayStation disaster as the "Cadmium Crisis[34]."

[34] http://www.sustainableflorida.org/documents/GreentoGold.pdf

Secondly, environmental measures impose costs that could restrain competition. The most straightforward problem is that costs of complying with standards may be higher for developing countries than developed countries. Finge and Schuler (1999) noted the costs to developing nations of implementing requirements under the SPS Agreement in order to comply with obligations and exercise their rights are extremely high relative to development budgets. Costs of implementing the TBT Agreement are likely equally high. Moreover, technology-intensive testing and certification systems are often needed to assure that products meet required standards, especially in areas on health and safety. Lacking this infrastructure poses clear problems for developing countries in meeting import requirements in conformity assessment and in defending their practices in WTO cases[35].

It is estimated that in the developed world, the cost of complying with environmental regulations appears to be steadily over time and, for the US alone, was estimated to be US$184 billion in 2000, equivalent to 2.6 % of US GNP[36]. Although there is no concrete data on developing countries, if we consider more difficult conditions of developing countries, it seems obvious that the burden of developing countries is far heavier than that of developed countries.

[China Wood packaging case] China faced competitiveness problem due to its environmental matter. Since 17 December 1998, the US requires Chinese exporters to have

[35] Wilson, Otsuki, and Sewadeh (2002), p 20
[36] Cole and Elliott (2003), p 1163

all their solid-wood packaging materials heat-treated, fumigated or treated with preservatives before they can be allowed into the country so as to prevent the entry of Asian long-horn beetles, Anoplophora glabripennis[37]. Soon the EU announced its new inspection standards for wood packaging used for exports from China on 1 June 1999, to be effective on 10 June 1999. The new measures require wood originating from China to be stripped of their bark, free of insect bore holes greater than three millimeters and kiln-dried to below 20 percent moisture content. At the time the EU notified China of the decision, most of the shipment of exports for June had already arrived at port. Official estimates show that the decision had affected some US$7 billion worth of Chinese exports to EU. All the requirements on packaging materials have forced Chinese manufacturers to go through the costly and time-consuming treatment process, rendering their products less competitive in the world market[38].

As you see, from the side of developing countries, emerging environmental concerns is a big challenge for boosting their exports because the impacts of ETBs are significant enough. Also, as ETBs have been evolved more strengthened and reinforced, their potential impact becomes more significant and powerful.

[37] The one-inch long pest, black with white spots and long black-and-white antennae, is native to China, Japan and Korea and usually found in wood products

[38] Zhao (2007), p 548

Chapter 3 Current responses of East Asia countries

"Whether it is intentional or not, East Asian countries are already deeply related to environment related issues in trade[39]." They have been involved in environment-related disputes. Or they get in trouble exporting or expanding their markets. The disparities in environmental standards and schemes between East Asia and their major trading partners have led to the emergence of ETBs, which become the most significant form of trade barrier affecting East Asia's export trade. In order to overcome this condition, East Asia has to, on the one hand, reform its domestic environmental regulations and programs to bring them into conformity with international or developed-country's standards. On the other hand, get actively involved in the international rule-making and standard-setting processes so that in the long run, values and concerns of developing countries will be reflected in more international environmental standards and schemes[40].

3.1 Domestic responses

3.1.1 China

China, stigmatized as the "World's largest smokestack," is putting their efforts to

[39] Maskus, Wilson and Otsuki (2000), p 11
[40] Zhao (2007), p 548~549

overcome ETBs. However, efforts to incorporate international and developed-country standards are still at an early stage and continue to progress slowly. China actively makes the laws, regulations and programs related with environment. Only over the past few years have China's decision-makers started to pay more attention to foreign and international standards and related practices in the law-making process.

Currently, packaging requirements can be found in Chinese law, but they tend to be general principles rather than specific criteria for the industry to follow or for strict enforcement. The Law on the Prevention for Environmental Pollution by Solid Wastes promotes the idea of clean production in the design and manufacture of products and packaging to minimize the generation of solid waste caused by excessive packaging of products. It also provides the products shall use packaging materials that are easy to be recycled or disposed, or than can be degraded in the environment. The Promotion of Clean Production Law requires that the design of products and packaging materials shall take into account the impacts they generate during their lifecycle on human health and the environment and priority shall be given to non-toxic, non-hazardous, degradable and recyclable options. Besides, the Ministry of Commerce has issued specific packaging directories on packaging-related rules and technical requirements adopted by China's different trading partners, together with detailed packaging technologies and methods for all major export products. These directories provide timely and much-needed assistance to the export-oriented

producers and traders[41].

China also has developed its own eco-labeling programs in resent years. The eco-labeling programs was officially launched with the formation of the Certification Committee for Environmental Labeling of Products in May 1994, taking charge of environmental labeling certification and the more general administration and supervision of China's environmental labeling program. In April 1995, the Committee first awarded environmental labels to 18 products of 11 manufacturers in six products categories. By the end of 2001, more than 1,000 products of 300 manufacturers in 41 categories have been awarded environmental labels. It increased sharply that there are 12,000 products from more than 800 companies in China had been labeled in 2004. Specifications/criteria for 41 products categories have been issued. Its power of certifying products for environmental labeling was then granted to the newly established China United Certification Center in Beijing on 15 October 2003. Since then, the Committee's major role is seen in the promotion of eco-labeling programs in China[42]. Furthermore, China tries to be prepared to gradually adopt more stringent "international standards" into its domestic law regime where economically and technologically feasible so that enterprises are better informed of the mandatory standards they need to comply with in the production, processing, packaging, storage and

[41] Zhao (2007), p 555~556
[42] Ibid. p 551~552

final disposal after consumption[43].

China is also eager to establish information network to gather and disseminate relevant information. Progress is being made with some local governments setting up database on TBT to provide relevant information and consultancy service to the enterprise. Moreover, China wants to be more actively involved in international standard setting. Effective preparation in the international arena could transform China from a traditional standard taker into a standard maker so that preferences and concerns of developing countries will also be considered and reflected in the international standards themselves. All these efforts show the China's strong will and active attitude to overcome ETBs.

3.1.2 Japan

Japan, a superpower in more efficient, cleaner production technologies, has adopted a "low-carbon society" as a national wide vision since 2007 and has been concentrating on the development of new technologies. In this respect, the "Fukuda Vision," a strategy released in June 2008, targets reducing present levels of green-house gases by 60 to 80 % by 2050 and is harnessing the development of core technologies accordingly. As part of its efforts, the Japanese government has set up, jointly with private sector, the New Energy Development Organization (NEDO), an organization that supports the industrialization of green-related

[43] Zhao (2007), p 549

next-generation technologies at the research and development stage[44]. Table 3 shows the overview of the "Fukuda Vision."

Table 3 Core Technologies to Achieve Low-Carbon Society (Fukuda Vision)

Area	Core Technologies
Power Generation and Transmission	Highly-efficient fire power based on natural gas and coal, Carbon Capture & Storage (CCS[45]), solar power generation, nuclear power generation, highly-efficient electric power transmission, etc.
Transportation	Fuel cell vehicles, plug-in hybrid electric vehicles, biofuel, etc.
Industries	Innovative technologies for materials, manufacturing, and processing, innovative steel-making process, etc.
Public Livelihood	Energy-saving houses and buildings, high-efficiency lights, fixed-type fuel cells
Others	High-performance batteries; manufacturing, transportation, and saving of hydrogen

Source: Korea Institute for International Economic Policy

Since its establishment in 1980, and especially after its reorganization as an incorporated administrative agency in October 2003, NEDO has played a unique role in the field of technology development. As Japan's largest public research and development management organization, NEDO will endeavor to more actively promote advanced industrial technology that contributes to sustainable economic growth and strive to address

[44] Samsung Economic Research Institute (2008), p 11
[45] CCS us a technology that stores CO2 generated in the production process instead of releasing it into the atmosphere

energy and environmental problems both in Japan and abroad. NEDO comprehensively coordinate research and technologies in both public and academic or private sector to achieve superior results. At most, central government's strong financial support makes many projects plan and realize more actively. In 2007, the total R&D budget invested in NEDO is about US$ 1.49 billion.

Japan's technologies related to environment and energy is already known internationally to be at a high level. Chinese President Hu Jintao, while visiting Japan in 2008, expressed his hopes that Japan would share environmental technology with China, as it attempts to deal with the side-effects of its rapid growth. Technological strength indicators based on patent statistics are used to describe national strengths and weaknesses in environmental technologies[46]. The below table 4 shows how strong is technological ability of Japan in the US. The US market has always been attractive to foreign companies and individuals because of its advanced technological nature and large market[47]. Followed by Germany, in the US market, Japan's environmental technology comes the second.

[46] Marinova and McAleer (2002), p 4
[47] Ibid. p 8

Table 4 Ranking of countries based on US environmental patent data

1975~2000[48]

Country	Patent Share[49]	Rate of assigned patent[50]	Citation rate[51]	Mean	Mean score
Germany	1	2	4	2.3	1
Japan	3	1	1	4.3	2
Canada	2	11	2	4.3	2
Australia	9	3	9	5.5	4
Swiss	4	10	6	6.0	5
Sweden	10	4	5	6.5	6
France	5	9	3	6.5	6
Netherlands	8	6	7	6.8	8
Italy	7	7	8	7.5	9
Great Britain	6	8	11	7.5	9
Korea	12	5	12	9.8	11
Taiwan	11	12	10	11.0	12

Source: Marinova and McAleer (2002)

With strong political will and advanced technologies, Japan is in the forefront in environment-related issue. Using their high-level technologies and well-organized management system, Japan is actively developing new technologies and participating in international standard programs to take first-mover advantage.

[48] The data were extracted on 5 March 2002
[49] Shares in total US environmental patent data
[50] Rate of assigned patent shows its commercialization
[51] The Citation, which is an indicator of the value of registered patents for further technologies knowledge development

3.1.3 Korea

Korea is in an infancy stage regarding boosting energy efficiency and environmentally-friendly products. In 2007, Korea enacted the Framework Act on Sustainable Development to balance economic growth with social development. On May 2008, the National Commission on Sustainable Development (NCSD) was newly established in accordance with enforcement of the Framework Act. NCSD establishes the vision and strategies to secure sustainable development at the ministerial level and advises President in the related policy of critical importance.

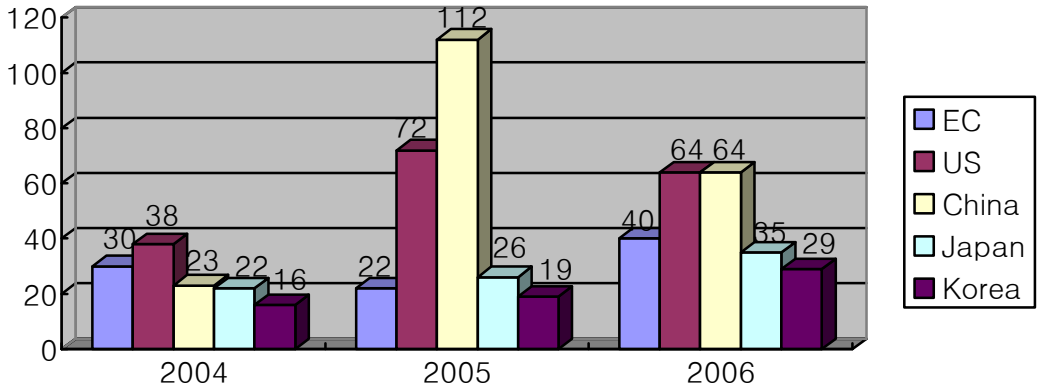
Followed by the Frame Act on Sustainable Development, several laws related to environment, were passed. In April 2007, the Act on recycling on electronic and electronical equipments and automobile, regarded as Korea's WEEE, was enacted. The law encourages the recycle of electronics and automobiles to manage resources more efficiently. In December 2007, the Act on control of noxious chemical products was legislated. This law prevents any risk by adequately control harmful chemicals. By setting these laws, Korea established the framework to rationalize environmental costs in products or product process satisfying international standards.

Also, there is eco-labeling program in Korea. This program has been conducted from April 1992, certifying Eco Labels to qualifying eco-products for excellent quality and performance, as well as general environment-friendliness during the entire production

process. The Act on Environmental Technology Development & Support provides a legal base on eco-labeling in Korea. 5,450 products of 1,179 companies have a license under 126 product groups in July of 2008[52].

Korea also is participating in the WTO/TBT committee or international standard program. In 2006, Korea made 29 notifications in TBT committee. By department, Korean Agency for Technology and Standards (KATS) made 12 notifications, Korea Food & Drug Administration made 7, Ministry of Health, Welfare and Family affairs 4, Ministry for Food, Agriculture, Forestry and Fisheries made 3, Ministry of Land, Transport and Maritime Affairs registered 2, and Ministry of Environment notified 1 to the WTO/TBT committee. Although this is the largest number since 1995, as shown in Figure 6, compared to major countries, Korea has a poor record.

Figure 6 Number of TBT Notifications from major countries



Source: WTO, author elaborated

[52] http://www.koeco.or.kr/eng/business/business01_03_01.asp?search=1_2

To cope with this problem, central government reinforces the information network. Government set up database on TBT such as “knowTBT” and “N-CER (Network for Compliances with Environmental Regulation)” to provide relevant information and consultancy service to the enterprise. Also, at private sector level, enterprises offer the information about ETBs through “TEN (Trade & Environment information Network).” In addition, both government and private section provide joint seminars and public presentations to inform especially targeting small and medium enterprises and remind the ETBs.

In particular, Korea Agency for Technology and Standard (KATS) is doing a major job regarding environmental standards and regulations in Korea and abroad. KATS, representing all the ministries in the field of standardization as National Standards Body of Korea, plays a key role in international and regional standardization organizations such as ISO. By securing reliability and enhancing of Korean industrial Standards (KS) and strengthening industrial infrastructure with development of testing/evaluation and relevant measurement technology integrating with R&D projects, KATS improves domestic standardization and expand financial support and improve private standard system by converting the main body of standard development from government to the private sector. Moreover, through active participation in international standardization activities, they are putting their efforts to propose and develop international standardizing using Korean technologies and experiences.

3.2 Through APEC

There are also regional efforts are ongoing in East Asia. These efforts are seen in the Asian Pacific Economic Cooperation (APEC). The APEC is the influential forum in East Asia. It has now 21 members, which account for approximately 41% of the world's population, approximately 55% of world GDP and about 49% of world trade[53]. There in no legal instrument, no environmental aspect of the APEC "rules" that can be discussed. However, the APEC works to create an environment for the safe and efficient movement of goods, services and people across borders in the region through policy alignment and economic and technical cooperation[54].

It was in March 1994 when the APEC countries' environmental ministers met in Vancouver and that the environment was given serious consideration. The resulting "Environmental Vision Statement" emphasized the following points: i) that there were "inseparable linkages between environment protection and economic growth" in the creation of "an enduring foundation for sustainable development," ii) that APEC should take the lead in "addressing global [environmental] problems and solutions in line with the global consensus reached at United Nations Conference on Environment and Development (UNCED), and iii) that the "market can be an efficient and flexible means of allocating resources but that market outcomes do not achieve sustainable development while taking

[53] http://www.apec.org/apec/about_apec.html
[54] Ibid.

advantage of the dynamism that market economies provide." In August 1994 report of the Eminent Persons Group, the quasi-official body that served as APEC's intellectual shepherd in the early 1990s, encouraged member economies "to harmonize national product standards, develop and share pro-environmental technologies, jointly fund environmentally sound development projects, and seek international acceptance of the principle of the internalization of the costs of environmental protection."

In mid-1996, during the second meeting of environmental ministers in Manila, Manila declaration was adopted. Point three of this declaration refers to the leasers' commitment to "sustainable growth and equitable development." Point 16 asserts that "as an essential complement to our trade and investment agenda, economic and technical cooperation helps APEC members to participate more fully in and benefit from an open global trading environment, thus ensuring that liberalized trade contributes to sustainable growth and equitable development and to a reduction in economic disparities." Point 19 affirms that promoting rapid economic growth that ensures a healthy environment and improves the quality of life our citizens is a fundamental challenge." Finally, Point 20 directs the senior ministers of the APEC countries "to develop specific initiatives to implement an initial work program for sustainable development in APEC that includes the themes of the sustainability of the marine environment, clean technology and clean production, and

sustainable cities[55].”

Among the 11 APEC Working groups, one is explicitly dedicated to improving environmental technology, the Industrial Science and Technology Working Group. The objective of this group is being a dynamic and prosperous Asia-Pacific region built on the development and application of industrial science and technology that improves the quality of life while safeguarding the natural environment and achieving sustainable development. Also, the APEC Sub-Committee on Standards and Conference (APEC/SCSC) was founded to achieve the standards and conformance related components of APEC’s trade and investment liberalization and facilitation agenda[56]. The APEC/SCSC was formed in November 1994 to promote cooperation among member economies on standards and conformance to facilitate trade in the region[57].

An important objective in APEC is to move toward Mutual Recognition Agreements/Agreements (MRAs) in regulated products sectors. Negotiation MRAs is highly encouraged. There is also the alignment work. Each APEC member has made an effort for alignment with international standards through the Voluntary Action Plans (VAP) and the APEC/SCSC conducted a comprehensive review of its alignment work from 2001 to 2005. The agreed priority areas and targeted years of the alignment works are shown in Table 5.

---

[55] Ivanova (2006), p 636~637

[56] http://www.apec.org/apec/apec_groups/committee_on_trade/sub-committee_on_standards.html#

[57] WTO/TBT Committee, report on the result of standards alignment work in APEC, 10 March 2007 (G/TBT/W/262)

Table 5 The priority areas and targeted years of the alignment work

Priority areas	Developed economies (Year)	Developing economies (Year)
Electrical and Electronic Appliances, Food Labelling, Rubber Products, Machinery	2000	2005
Standards and guides on conformity assessment and management systems	2002	2005
E/E equipment(IEC60335s and CISPR) IT equipment(IEC60950s)	2004	2008

Source: Report on the result of standards alignment work in APEC, 2007

The result was quiet successful. Among the 21 APEC member economies, 16 economies have updated and submitted their alignment reports of 2005. The result shows that at least 14 countries out of 16 have achieved 100% alignment. The Table 6 shows a detail.

Table 6 Number of Economies that achieved 100 percent alignment

Area	Number of economies with 100% alignment
Electrical and Electronic Appliances	15 economies
Food Labelling	All
Rubber Products	14 economies
Machinery	All
IEC 60335s	All

CISPRs	All
Standards and guides on conformity assessment and management systems	All
Safety of information technology equipment	All

Source: Report on the result of standards alignment work in APEC, 2007

While its alignment work from 2001 to 2005 was on-going, one question was addressed; whether APEC's move toward MRAs is beneficial or not. During the Policy Dialogue with APEC Business Advisory Council held in September 2004, business people expressed that alignment of national standards to international standards is valued by industry as one of the most effective measures for trade facilitation, while gaps between international standards and regulations of member economies had been recognized. Additionally, it is stated that MRAs were viewed as an ideal approach, but such an approach was not realistic from the perspective of business. It is problematic whether MRA is really beneficial or not particularly for developing countries. Wilson (1995) criticized the framework of APEC, implementation mutual recognition. He argued that negotiating MRAs is time consuming and uses up political energy. Members sign and implement in MRAs only among APEC nations and not extend to others. So he doubted the net benefit of MRAs, especially for developing countries.

Therefore, during the Policy Dialogue, the existence of possible MRA alternatives such as IECEE CB Scheme was mentioned. Although MRA is a bi-lateral agreement,

IECEE CB Scheme is multi-lateral arrangement. The approach of MRA is different from that of IECEE CB Scheme. While MRA is usually concluded between two countries, IECEE CB Scheme is applied to all Member countries. In general, the standard used in MRA is in the favor of politically powerful country's standard, while IECEE CB Scheme gives more rooms for developing countries to voice their concerns.

IECEE stands for the International Electrotechnical Commission (IEC) system for conformity testing and certification of Electrical and Electronic components, equipment and products. The acronym CB Scheme simply means Certification Bodies' Scheme. The IECEE CB scheme is a truly international cooperation between prime certification bodies in over 40 countries, mainly consisted of EU Member countries, and is to facilitate the acceptance of test reports when applying for national safety certification of electrical products in the different IECEE member countries. CB Test Certificates are today universally recognized also outside the member countries, and have become the prime document for demonstrating product safety in business-to-business trading of electrical equipment. Currently, there are 52 Member Bodies in the IECEE. There are 65 participating national certification bodies and some 276 CB Testing Laboratories[58].

Additionally, APEC put their efforts to give the information and train officials related to ETBs. In 2007, the Trade Facilitation Task Force (TFTF), formed by the APEC/SCSC[59]

[58] For more information, visit http://www.iecee.org/

[59] the APEC Sub-Committee on Standards and Conference (APEC/SCSC)

to advance the agenda on trade facilitation in APEC, focuses on issue of product related environmental regulations. An APEC-funded project to provide an e-learning course on the practical use of environmental product standards in the ISO 14000 series was offered during from November 2006 to June 2007. In February 2008, TFTF held a joint meeting with APEC Chemical Dialogue on Restrictions on Hazardous Substances (RoHS) and REACH, a European Community Regulation that deals with the Registration, Evaluation, Authorization and Restriction of Chemical substances, to continue its exchange of information and cooperation on technical and trade issues arising from product-related environmental standards, technical regulations and conformity assessment procedures.

Like this, APEC is doing their best to overcome environmental barriers in trade and to facilitate international transactions. Their efforts are revealed in various channels such as political consensus, relevant committees and their voluntary harmonization work.

Chapter 4 Conclusion

To sum up, things have changed dramatically inside WTO in regard to environmental trade barriers. Writing in *the Far Eastern Economic Review*, Barfield observes “Developing countries in Asia, the America and Africa should be particularly concerned with this trend

because, bending to the political will, the WTO Appellate Body has moved to support problematic issues, for instance trade and environment, that developing nations have opposed." For decades, the WTO has suffered from harsh criticism on environmental matters. Rapidly increasing environmental concerns make the WTO seriously consider of environmental impacts caused or influenced by international transactions.

Among diverse measures to achieve environmental purposes, we need to focus on regulatory measures such as standards, regulations and product process method because of their different attributes. Unlike classical measures such as taxes and quotas, regulatory measures have following three characteristics; i) they are direct means of environmnetal goals, ii) they have a great degree of flexibility and iii) they are largely influenced by "Large market." In other words, since regulatory measures are regarded as a straight-forward method to rationalize environmental cost in trade, the WTO doesn't have any reason to object them. Thus, to maximize comparative advantages while minimizing the unnecessary cost, the most effective and efficient way is setting and following international consensus. That explains the existence of TBT Agreement in the WTO context.

However, things have become more complex. Think about the PPM-based criteria, on which is actively debated. Even though some people argue that regulating product process method is not consistent with GATT Article XX or Article III, the Appellate Body reports on following two cases, the "US-Shrimp" and "EC-Asbestos," show significant changes of the

WTO in regard to the PPM. Both cases recognize the possibility and viability of product process and methods even though there is a potential risk to access market for developing countries. As environmental value is strengthened, more and more measures and policies are moving toward to more stringent and powerful criteria under the excuse of protecting environment. In particular, “large market,” like the EU, actively has designed and implemented environmental barriers in trade. Unsurprisingly, other countries, both developing and developed countries, are following EU’s trend to keep their products’ competitiveness and not to lose their export market.

Therefore, it is necessary for East Asia to take steps to prevent problems raised by ETBs. To cope with this challenge, first of all, East Asian countries need to remind the importance of laws and regulations related with environment. After carefully examining laws and regulations, the government should implement a more detailed green industrialization strategy by making technology, industry and export competitiveness. Moreover, the government should encourage businessmen to take part in a concrete long-term road map covering R&D for developing environmental technologies. To realize this, it is necessary to establish a comprehensive body like NEDO in Japan as explained in Chapter 3.1.2, where environment-related R&D can be connected to business. Although countries like China and Korea are putting their efforts on making legal frameworks, they also need to remind the importance of collective actions with private sectors in the environment-friendly direction.

Secondly, East Asia should cooperate with each other. In that, a regional organization such as APEC can be a major player. APEC's on-going Voluntary Action Plans (VAP) to harmonize with international standards shows how East Asia deals with confronting trade barriers, not creating binding obligations. Its good results reflect interests of East Asia and its concerns on this issue. Along with spreading VAP, APEC should shift their policy from Mutual Recognition Agreements/Agreements (MRAs) to a multi-lateral standard agreement like IECEE CB scheme[60]. The principle of MRA is "once approved, accepted everywhere". However, usually MRAs are concluded between developed countries and developed countries, rarely with developing countries. Thus, instead of encouraging MRAs, establishing international body to take conformity testing and certification between APEC countries may be better for countries in APEC. It may be more beneficial for APEC Members, instead of just following more stringent standards provided by EU or designed in favor of other developed countries. To realize above actions, most of all, all East Asian states should have commitment and dedication to overcome the ETBs in trade. And by sharing relevant information and technologies, countries should work together.

[60] It refers to the International Electrotechnical Commission (IEC) system for conformity testing and certification of Electrical and Electronic components, equipment and products. It was initiated by EU countries.

BIBLIOGRAPHY

Alan Oxely, Kristen Osborne, Lisa Marty. (2003, August). *European unilateralism: Environmental trade barriers and the rising threat to prosperity through trade*. Melbourne: the Australian APEC Study Center.

Alexey Vlkhlyaev. (2001). *The use of trade measures for environmental purposes: Globally and in the EU context*.

Andrea Mantovani, Mark Vancauteran. (2008). Environmental Policy and Trade of Manufacturing Goods in the Central and Eastern Enlargement of the European Union. *Emerging Markets Finance & Trade, Vol. 44, No. 3,* p 34-47.

Antonina Ivanova, Manuel Angeles. (2006). Trade and environment issues in APEC, *The Social science journal 43* pp629-642

Brain R. Copeland, M. Scott Taylor. (2004, March). Trade, Growth, and the Environment. *Journal of Economic Literature, Vol. 42, No 1*, p7-71.

Commission of the European communities. (2001, February 7). *Green Paper on integrated product policy*. Brussels.

Commission of the European communities. (2001, February, 27). *White Paper: Strategy for a future chemical policy*. Brussels.

Daniel C. Esty. (1994). *Greening the GATT : trade, environment, and the future*. Institute for International Economics.

Dukgeun Ahn. (2001). *Comparative analysis of the SPS and the TBT agreements.* KDI School. Seoul.

Edited by Gary P. Sampson and W. Bradnee Chambers. (2002). *Trade, environment, and the millennium / 2nd ed*. United Nations Univ. Press. Tokyo, New York.

John J. Audely. (2001, July). *A greener fast track: Putting environmental protection on the trade agenda*. Washington D.C: the Carnegie Endowment for International Peace.

John Jackson. (1998). *The world trading system: Law and policy of international economic relations, 2nd Edition*.

John H. Jacson, William L. Davey, Alan O. Sykes. (2002). *Legal Problems of International Economic Relations: Cases, materials and text, 4th Edition*.

John S, Wilson, Tsunehiro Otsuki, and Mirvat Sewadeh. (2002, March) *Dirty exports and environmental regulation: Do standards matter to trade?*

Josh Ederington, Jenny Minier. (2003 February). In environmental policy a secondary trade barrier? An empirical analysis. *Canadian Journal of Economics, Vol. 36, No 1,* p 137-154.

Keith E. Maskus, John S. Wilson, Tsunehiro Otsuki. (2000). *Quantifying the impact of technical barriers to trade: A framework for analysis*.

Lionel Fontagne, Friedrich von Kirchbach, Mondher Mimouni. (2001, November). *A First Assessment of Environment-Related Trade Barriers.*

Mahe Louis-pascal. (1997). "Environment and quality standards in the WTO: New protectionism in agricultural trade? A European perspective." *European Review of Agricultural Economics, No. 24*, 480-503.

Marinova and McAleer. (2002). *Environmental technology strengths: International ranking based on US patent data*

Matthe A. Cole, Robert J. R. Elliott. (2003). *Do environmental regulations influence trade patterns? Testing old and new trade theories*, Blackwell Publishing Ltd, Oxford.

Matthias Busse. (2004). Trade, Environmental Regulations and the World Trade Organization: New Empirical Evidence. *Journal of World Trade 38(2),* p 285-306.

Edited by Mike Moore. (2004). *Doha and beyond : the future of the multilateral trading system*. Cambridge University Press.

Michael J.Ferrantino. (2000), International trade, environmental quality and public policy, *World Economy Volume 20 Issue 1*, pp43-72

OECD. (2004, September). Addressing market-access concerns of developing countries arising from environmental and health requirements: lessons from national experiences. *OECD trade policy working paper no. 5.*

Peter Swann, Paul Temple, Mark Shurmer. (1996, September). Standards and Trade Performance: the UK Experience. *The Economic Journal, Vol. 106, No. 438,* p 1297-1313.

R.Daniel Kelemen. (2007, February 23). *Globalizing EU Environmental Regulation.* Paper prepared for conference on Euroup and the Management of Globalization, Princeton University.

Samsung Economic Research Institute. (2008, October 13). Korea Economic Trends- *A weekly review and analysis of Korea's economic and management trends, Vol 13, No. 39*

Wen-chen Shin. (2006). Trade and environment linkages and challenges facing east Asian WTO members. *Asian Journal of WTO & International Health Law and Policy, Vol.I,* 157-188.

Won-Mog Choi. (2003). *"Like Products" in International Trade Law-toward a consistent GATT/WTO jurisprudence*, Oxford University Press

WTOa. (2002 March), *GATT/WTO dispute settlement parctice relating to GATT Article XX, paragraph (b), (d) and (g)*. WT/CTE/W/203

WTOb. (1999). *The Legal texts : the results of the Uruguay Round of multilateral trade negotiations.* Cambridge University Press. Cambridge, New York.

WTOc. (2005). *World Trade report 2005*. WTO Publications, Geneva.

WTOd. (2007 February). *Understanding* the *WTO*. WTO Publications, Geneva.

Zhao yuhong. (2001, July). Overcoming "Green Brriers": China's first five years into the WTO. *Journal of Wolrd Trade 41(3),* 535-558.

Zia-Zarifi. (2000, March). The vital issues in the WTO asbestos dispute. *TUTB Newsletter March 2000 N. 13.*