

# **Doha Negotiations and India's Trade in Environmental Goods: Analysis of NAMA Sectoral Impact**



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## Doha Negotiations and India's Trade in Environmental Goods: Analysis of NAMA Sectoral Impacts

### *Abstract*

*It is an established fact that over the years non-tariff measures (NTMs) have been replacing the tariffs and these are now increasing being used as a trade policy instrument to discourage market access - for imported products that may be faced domestic/regional competitors. It is achieved by the indiscriminate use of national standards; the SPS Agreement provides ample scope for such deviations from the internationally harmonised standards. In this context, the present study analyses the export performance of India in the Environmental Goods (EGs) for three separate lists i.e., OECD, APEC and WTO, of the three list the best suited from India's point of view of trade balance and export competitiveness will be identified. An attempt is also made to analyse the most suitable for the purposes of negotiations, i.e., in which the imbalance between the tariff liberalisation and the escalation in non-tariff measures does not exist. It also takes into account which has the least embedded non-tariff measures (NTMs-like SPS and TBT). Finally, an attempt is also made to analyse the impact of liberalisation of Environmental Goods (EGs) and its indirect impact in the form of liberalisation of the fourteen (14) Sectoral proposed under the Non Agricultural Market Access (NAMA) Draft Mandate of December 2008.*

*The results suggests that India is having a positive trade balance only under the WTO list (i.e., with world as trade partner) which indirectly means with all the non-proponent countries. However, under all three lists India has negative trade balance with the proponent countries. This highlights possibility of India diversifying of India's exports into the markets of non-proponent countries. One of the reasons for this could be lesser stringent standards that were being imposed in these countries in comparison to the proponent countries. For example, if the number of notifications is taken as a simplified measure of stringency. Then the total number of SPS and TBT measures notified by eight proponent countries is 8,151 notifications, while the rest of WTO membership (152) notified 16,800 notification in the EGs category. Therefore, the average notifications per proponent countries is 10 time higher when compared to non-proponent countries. It further indicates toward a creation of global supply chain in the EGs sector; with India becoming a part of the whole supply chain integration. This is evident from the manner in which the intermediary goods imports is increasing from developed countries, thus creating a trade deficit with nearly all the proponent countries. Further, the assembled products are exported to diverse set of countries both developed and developing countries (classic examples are the solar and wind energy products etc.).*

*In final analysis, the observation show that at least six sectors were indicated to have an indirect consequence of the EGs liberalisation, as the HS tariff lines are spread across these sectors. These sectors are, Bicycle and related parts; Forest products; Automotive and related parts; Electronics/electrical products; Industrial machinery and Enhanced healthcare. Of these two sectors are in which mandatory participation by India was sort by some of the proponent countries. Therefore, it is critical for India to fully understand the implications of EGs Plurilateral liberalisation as it may be making binding committing like the ITA-I Plurilateral Agreement of 1997.*

**Keywords:** Doha Round Negotiations, Environmental Goods, NAMA Sectoral Proposals, Non-Tariff Measures, Sanitary and Phytosanitary Measures, Technical Barriers to Trade, Protectionism.

## Section I- Introduction

The academic debate on the linkage between trade and environment dates back to as early as 1970s. In the 1970s, there was a growing concern at international level regarding impacts of economic growth (driven by trade) on social development and environment; while this was formally done outside the WTO. However, these only got a fresh lease of life after the formation of WTO - with the Doha Ministerial Mandated (2001) the setting up of separate committee. The first committee meeting for negotiating the liberalisation of trade in environmental goods (EGs) was first tabled at the WTO fourth ministerial conference in Doha 2001. The mandate in Paragraph 31(iii) called for the reduction or, as appropriate, elimination of tariffs and non-tariff measures on all environmental goods and services (Ratna, Kallummal and Gurung, 2010).

However, this declaration was made even without a proper understanding on the definition of environmental goods.<sup>3</sup> The two important groups in the context of EGs are the Organization for Economic Co-operation and Development (OECD) and Asia Pacific Economic Co-operation (APEC). The two groups had their own lists on which negotiations were being conducted within the regional grouping. The OECD list was the outcome of combined work by the OECD and Eurostat. The APEC list was based on goods proposed by Member countries-heavily focused on end of the pipe environment technologies (Steenblik, 2005). The both these groups consisted of largely developed countries have had different interest on the EGs; however, one common interest was the exports of their products. Therefore, was no consensus among developed countries as to which list was best suited and should be the actual criterion for defining the EGs?

There are multiple organisation restricting the trade in EGs, with close to 200 international agreements dealing with various environmental issues currently and these are called multilateral environmental agreements (MEAs) outside the WTO. Close to 15 of such MEAs have provisions that can affect trade: for example they ban trade in certain products, or allow countries to restrict trade in certain circumstances. Among them are the 1) International Plant Protection Convention (IPPC)- 1952; 2) International Convention for the Conservation of Atlantic Tunas (ICCAT) - 1969; 3) Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) - 1975; 4) Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) - 1982; 5) Montreal Protocol on Substances that Deplete the Ozone Layer - 1989; 6) Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal - 1989; 7) Convention on Biological Diversity (CBD) - 1989; 8) Cartagena Protocol on Biosafety to the Convention on Biological Diversity - 2000; 9) Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity - 1992; 10) United Nations Framework Convention on Climate Change (UNFCCC) - 1995; 11) Kyoto Protocol to the United Nations Framework Convention on Climate Change -

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<sup>3</sup> As there is no single accepted definition of EGs to which all WTO members agree.

1997; 12) International Tropical Timber Agreement (ITTA) - 2011; 13) The UN Fish Stocks Agreement - 1995; 14) Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade - 1987; and 15) Stockholm Convention on Persistent Organic Pollutants -2004.

There is over-regulations in the EGs outside the WTO which governs activities of goods like agricultural products; endangered live animals; flora and fauna; dangerous chemicals, and pesticides; many of these do not cause any long term environmental degradation as these are largely products directly from the nature. There are some products which are produced by the extensive intervention of the mankind. These are industrial machineries and generally not regulated under the prominent MEAs. Because of Geo-political reasons and also because in this category of products there is a clear divide in terms countries belonging to developed (north) and developing (south)-based on technological capacities. The technological divide which is existing between these countries is being further crystallised through the negotiation process under WTOs, with TRIPS already an integral part, the trade and environment Committees by eliminating and binding tariff commitments and harmonising the non-tariff measures is ensuring success of few. There are many implication which need a detailed study; therefore this paper.

## Objectives of the Study

Having a very little evidence on transfer of technology in the case of environmental capital goods trade between the north-south and high presence of non-tariff measures. It was also seen these issues are not adequately addressed in terms of the EGs liberalisation (Kallummal *et.al.* 2011). The issues of liberalisation or otherwise market access in the context of EGs needs to be analysed holistically, involving all the three elements: tariff, non-tariff measures and technology transfer issues with special reference to TRIPs Agreement of WTO. However, most often while addressing the liberalisation debate only tariff liberalisation is taken-up as is more transparent of the other two issues.<sup>4</sup> Some of the developed countries for example Switzerland, may find it difficult to comply with the liberalised regime immediately<sup>5</sup> as many of the tariff lines are in Non-Ad-Valorem duties. (Kallummal, 2013). So clearly the wider acceptance of EGs liberalisation would depend upon many factors like: the definition; regime of TRIPs; and the presence of NTMs in the developed countries which distort the market access for the developing countries. The present study will try to examine whether SPS and TBT are trade distortionary and it would be analysed using the inventory method. Thereby this study will go a step ahead in terms of addressing two of the issues out of three issues.

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<sup>4</sup> Achieved only through progressively binding and elimination of Ad-Valorem tariffs alone without addressing issues of Non-Ad-Valorem tariff like the Ad Valorem Equivalents.

<sup>5</sup> Conversion of these tariff lines into Ad Valorem Equivalents (AVEs) and then undertaking the reduction or elimination would take some lag.

We would be analysing the incidence on the exports India to GFN being affected by the NTMs imposed by the GFN a comparison with world as a trading partner. A second analysis is done to understand which of the “Sectoral Proposals” mooted in the Draft mandate of December 2008 would be impacted as an indirect consequence of EGs liberalisation under the Doha Mandate at Bali in December 2013. Since there is no separate category for EGs under harmonised classification, the goods that are classified as EGs belong to various categories in HS classification (for e.g. Chemical, Electrical, and Forest products etc.). The question is if tariffs on EGs are brought down to zero will it lead to liberalisation across the 14 Sectoral Categories. A detailed analysis would be done to identify which of these 14 sectors would benefit indirectly from the EG negotiations under way in the Doha Round.

The purpose of this paper is to find answers to three central questions: **First**, to analyse India’s Export performance of EGs under the three different lists of APEC, OECD and WTO. To see if there exist comparative advantages for India in categories<sup>6</sup> other than EPPs in three different lists or is it only in EPPs? **Second**, which list is more suitable for negotiation purpose in current Scenario? It is intended to understand the list that has least embedded NTMs<sup>7</sup>. **Third**, if there is decision under the WTO negotiations and a decision on the EGs it would be important to make an assessment of the 14 Sectoral<sup>8</sup> content.

## Methodology

In this section attempt has been made to analyse the trade performance (terms of trade) of India in three lists. The primary focus would be to check for a balance scenario of negotiations; by balanced scenario we mean when tariff and non-tariff measures are decreasing or stable. The second aspect is that the performance of India will be analysed both with the world and the Group of Friends Nation (GFN) as trade partners. The reason for doing the analysis to answer the same question is to find out that whether India’s is actually gaining in EGs over the period 1996-2011 with the GFN? The third reason was to understand the extent of Sectoral coverage by the list of EGs and the backdoor liberalisation of tariff alone being achieved under the garb of environment.

For analysing the export performance of India in EGs under three different lists, we will make use of the OECD and APEC list given in the OECD working paper No 2005-04 prepared by OECD trade directorate [Steenblik (2005)]. The two lists are given along

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<sup>6</sup> APC=Air pollution Control, WWM=Waste water management, CT/P=Cleaner Technology and Products etc.

<sup>7</sup> In the present study we will be focusing upon the NTMs imposed by the proponent countries for market access on EGs, see document JOB(09)/139. We will not be considering Chinese Taipei, Penghu, Kinmen and Matsu because of the data availability problem. Thus we will be focusing only on 8 proponent countries which are also GFN.

<sup>8</sup> These includes Automotive and related part sector, bicycle and related part sector, chemical sector, Electronics and Electrical products, Fish and fish products, Forest products, Gems and Jewellery sector, Hand tools, Health care, Industrial machinery, Raw material Sector, Sports Equipment’s, Clothing and footwear and Toys sector

with the category and product description with HS code at 6 digit level. For the WTO list we make use of the list prepared by the WTO secretariat of 480 items as a synthesis of submission by members on EGs (TN/TE/W/63, 2005). But before this we will convert the 480 items to HS code at 6 digit level along with the product description. Beside world as trade partner other countries taken for the study are basically the proponent countries of market access on EGs, which are Canada, EU, Japan, South Korea, New Zealand, Norway, Switzerland, USA, Chinese Taipei, Penghu, Kinmen and Matsu<sup>9</sup> (Among these 9 are Group of Friends Nation). In the present study Chinese Taipei, Penghu, Kinmen and Matsu are not included because of the data availability problems. We are focusing only on 8 proponent countries which are also known as GFN. The period for the study will be from 1996 to 2012.

## Data Sources

Trade Value and related Data on exports and imports were obtained from COMTRADE database maintained by World Integrated Trade Solutions (WITS). For the information on the SPS and TBT measures, we have used the new Data base of Centre for WTO Studies (CWS), Indian Institute of Foreign Trade (IIFT). This database is prepared on the basis of WTO notifications submitted by member countries to WTO secretariat under agreement on SPS and TBT till December 2011. The information on the 14 Sectoral was collated from the WTO's "NAMA Draft Report" of December 2008.

## Limitation of the Study

The Environmental goods under all three lists are given at 6-digit HS level. Therefore exact identification of NTMs should have been done at 6-digit HS level. The Centre for WTO Studies database of SPS and TBT has been created at 4-digit HS level depending on the notifications. Therefore, this mapping will give us a broad idea (By this we mean that if the product is notified at 4-digit level, then all the products at 6-digit under this will be covered by a single notification). Second limitation is that due to amendments made in regulation of SPS and TBT, there exist a possibility of overlapping measures leading to doubling effect despite the product remaining the same.

## Scheme of the Paper

The subsequent sections in this paper is structured in the following manner. In **Section 2**, which follow immediately after this section dwells on the objectives and methodology of the study. It also subsequently provides a details on the data source and the inherent limitation of the study. **Section 3** details out the literature review where we discuss the difficulty in defining and negotiating EGs and issues related to SPS and TBT measures. **Section 4** discusses the data and limitation of the study. **Section 5** clearly lays out the final results followed by conclusions and trade policy recommendations.

## Section II- Literature Review

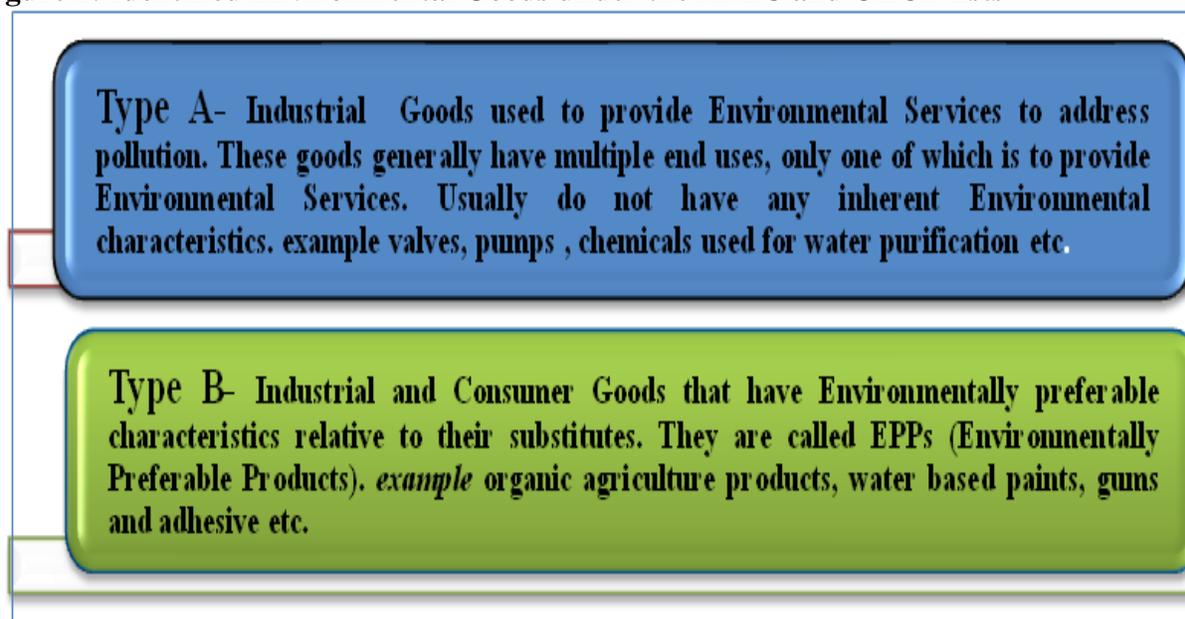
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<sup>9</sup> See for detail WTO document JOB(09)/132

## 2.1. The Definitional Issues of Environmental Goods

The OECD list includes goods and services which provide environmental utilities and classify them under three broad headings: pollution management; cleaner technologies and products; and resource management. While the APEC list was classified into various environmental activities or environmental services they provide (such as air pollution control; Heat/energy management; noise/vibration; waste water management; portable water treatment; and solid/hazardous). The two lists had very little common in terms of product lines in terms of HS Codes. It was imperative for the WTO membership to go beyond the two lists provided by OECD and APEC. Therefore, it becomes necessary to look at the EGs from two perspectives of multiple issues and end users of these goods<sup>10</sup>. One simplified way was to start the negotiations addressing two types of EGs under WTO Negotiations.

**Figure 1: Identified Environmental Goods under the APEC and OECD lists**



Source: See Hamwey, 2005, ICTSD, pp. 2-3.

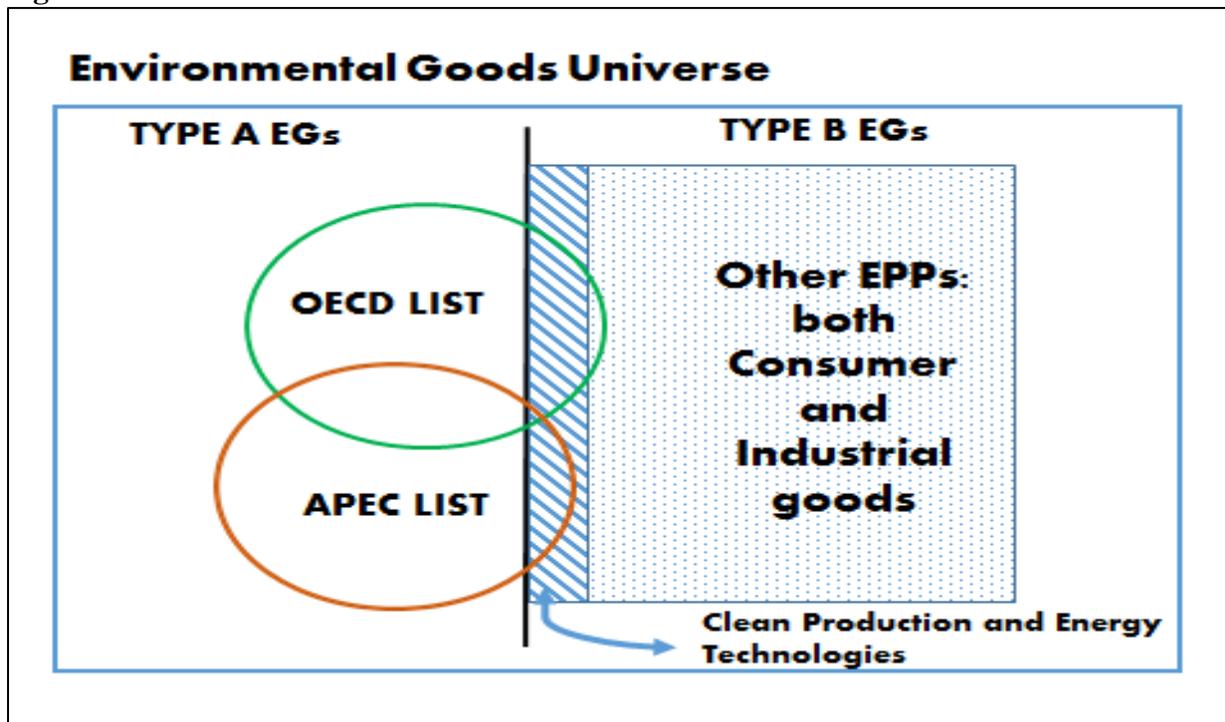
The process of defining and listing the EGs began within the WTO Committee on Trade and Environment under the Special Session called CTE-SS<sup>11</sup>. The objective of the WTO Members were to build upon the two lists of Organization for Economic Co-operation and development (OECD) and Asia Pacific for Economic Co-operation (APEC) and come-up with a single list defining the EGs which would be agreeable to every member of WTO. During periods 2002 to 2005 nine countries known as Group of friends

<sup>10</sup> For e.g. chemicals can be used in providing environmental services such as in Waste water treatment or management. It is only one end use of chemical which qualify it as EGs, however chemical can be used for other purposes also.

<sup>11</sup> The WTO Members started to compile the lists of goods provided by Organization for Economic Co-operation and development (OECD) and the second list of Asia Pacific Economic Co-operation (APEC).

Countries<sup>12</sup> made individual submission of the EGs to CTE-SS of the WTO (Ratna, Kallummal and Gurung, 2010). The WTO secretariat prepared a list of 480 items as a synthesis of submission by members on EGs.<sup>13</sup>

**Figure 2: The Total Universe of Environmental Goods**



Source: See figure in page 4, Hamwey (2005).

Still the issue of EGs definition was not fool proof the United Nation Conferences on Trade and Development (UNCTAD) defines Environmentally Preferred Products (EPPs) as goods which possess Environmental superior qualities compared to alternative products that serves the same purpose or the production of which contributes significantly to the preservation of the Environment (see UNCTAD, 1995). These qualities or advantages may be evidently over the product life cycle, production, end use and disposal, all the activities which do cause minimal or no environmental degradation. Besides the definitional issues, it was observed that in the liberalisation of International trade process was seen as a route to improve market access.

Although the Doha ministerial declaration negotiated trade liberalisation in EGs, but in fact it lacked a clear definition of EGs that is universally accepted by all the WTO members. Thus, the EGs under discussion in WTO negotiation were classified as Type 'A' EGs and Type 'B' EGs (Hamwey, 2005) as discussed earlier. There are two different aspects of the definition of EGs and the problem of multiple end uses that these goods provides the main reason for differences across members for a single definition of EGs. Beside this OECD and APEC have different definition and procedure for generating list

<sup>12</sup> Nine countries are Japan, Chinese Taipei, European Union, South Korea, New Zealand, Canada, USA, Switzerland and Norway.

<sup>13</sup> See for detail WTO document (TN/TE/W/63, 2005)

of the EGs<sup>14</sup>. The difference between the two lists is drawn by (Steenblik, 2005) in his working paper on EGs. According to the author *Steenblik*, to quote:

*“there was difference in the objective and procedure for generating the list, APEC list was drawn up on the basis of individual nomination countries, not unlike the request and offer procedure used in trade negotiations” and “Aim of the APEC list was to obtain more favourable tariffs treatment so they restricted themselves to the goods that could be distinguished by custom agents and treated differently for tariff purpose. Due to which it lead to omission of products which are defined by their production method and their life cycle impact on Environment”*

Therefore, the OECD list goes beyond the APEC list by including goods that are used as inputs into sustainable Agriculture, forestry (Howse and Bork, 2006). Besides this, many member countries have proposed list based approach. For example U.S. proposed two lists core list and complementary list. Core list is the one on which consensus exists among the member countries and complementary list is the one in which countries could nominate products<sup>15</sup> from the list of products on which definitive consensus does not exist but the goods provide environmental services. China suggested common list (including goods of export interest to both the developed and developing countries) and development list which include *“goods from the common list eligible for lesser reduction commitments”*<sup>16</sup>. During the period of 2002-2005 nine individual members made submission of list (Japan, Chinese Taipei, EU, Korea, New Zealand, Canada, United States of America, Switzerland and Norway). They are also called as “Group of friends”. WTO secretariat prepared a list of 480 items<sup>17</sup>. Beside this, during 2005-2007 India, Brazil and Argentina also proposed alternative approaches to create a list. India proposed “Environmental Project Approach” according to which environmental goods and services would be included in the project if approved by the Designated National Authority (DNA), the goods and services which qualify as EGs and services will receive concession for the duration of the projects<sup>18</sup>.

Difficulty for developing countries is to make trade liberalisation in EGs working in the absence of single definition. Despite the absence of single definition, negotiation is possible in which case *“it would take a form of barter system”* (Vikhlyaev, 2003), where countries trade by identifying coincidences of wants. Given that Innovation is inevitable in every field so does in EGs, it becomes important to address the issues of technological innovation while designing the list of EGs (Howse and Bork, 2006).

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<sup>14</sup> *To quote: “OECD defines the EG industry consist of activities which produces goods that prevent, minimize or correct Environmental damages to water, air, soil as well as waste, noise and eco-system. It includes goods under three headings pollution management, cleaner technology and products and Resource management” see for details (OECD, 1996c) and “APEC list largely includes end-of-pipe technologies, measuring and testing instruments, alternative power generating equipment, parts and components of both these categories of products”, see for details (Steenblik, 2005).*

<sup>15</sup> See for details WTO document (TN/TE/W/38, 2003)

<sup>16</sup> See WTO document (TN/TE/W/42, 2004)

<sup>17</sup> See WTO document (TN/TE/W/63, 2005)

<sup>18</sup> See WTO documents (TN/TE/W51, 2005) and (TN/TE/W/54, 2005)

## 2.2. The Spurt in Non-Tariff Measures (SPS and TBT)

The increasing technical and Sanitary and Phytosanitary Measures find their applicability with the objective of consumer health and safety, environmental protection, plant and animal health. Increasing use of these measures is threat to the competitiveness of developing countries given that complying with the standards has high cost. Due to difference in technical standards, TBT affect international transfer of products. However, the notification based on SPS are more stringent (as they poses danger to the safety of human, animal, plant and Environment) and countries are very strict with it. The difference in quality standards and way of production attracts SPS. There are many studies which focused upon the effect of NTMs on trade in agriculture products (Henson and Humphrey, 2010; Prevost, 2010). The developing countries either have to meet these requirements or can diversify the markets. Study done by (Cato, 1998) discusses the impact of ban put by EU on import of shrimps from Bangladesh in 1997, the Bangladesh government responded to this by upgrading their plants which cost them around \$17.6 million. (Henson et al, 2004) talks about the case study of Kerala (India) fish and fishery products, they found that Indian fish and fishery products faced difficulties in meeting different safety standards of USA and EU. The same story was with the Kenyan export of Nile Perch to EU. Both the Kenyan government and exporters took necessary actions in response to stringent regulation and standards (Henson and Mitullah, 2004)

Another study was done by (Alaeibakhsh and Ardakani, 2012) on quantifying the effects of SPS and TBT on export of Pistachios from Iran. They used a gravity model approach, the result of their studies shows that these measurements have a negative impact on export of pistachios from Iran. In a similar study to find out the impact on Agriculture (Disder et al, 2008) also used gravity Equation (they controlled for bilateral applied tariff protection and used ad-valorem equivalent of NTMs). The outcome shows negative impact on OECD imports. In an interesting finding their result shows that OECD exporters are not significantly affected by SPS and TBT when they export to other OECD countries but least developed and developing countries do get affected. So the following literatures shows developing countries face various problems in meeting NTMs standards set by the developed countries. However this is not only confined to the agriculture sector and any particular sector. On the other hand asking developed countries to remove and relax their standard is difficult The Reduction or eliminating tariff and non-tariff measures to trade in EGs was regarded as an obvious “win-win” proposition for good trade (OECD 2005). Further, some of these concerns in general was brought by the World Trade Report of 2013 by the WTO. While addressing the issue of the prospects for multilateral trade co-operation, suggests that while the trendsetter of the world trade in the coming decades are, to quote:

*.....the emergence of international value chains, the rise of new forms of regionalism, the growth of trade in services, the greater incidence of non-tariff measures, higher and more volatile commodity*

*prices, the rise of emerging economies, and evolving perceptions about the link between trade, jobs and the environment.*

*These trends will raise a number of challenges for the WTO. Trade opening, especially in the context of non-tariff measures beyond WTO disciplines, is taking place outside of the WTO. A greater focus on regulatory convergence will therefore be required. Interdependence between trade in goods and trade in services is increasing. Frictions in natural resource markets expose some regulatory gaps. The emergence of new players affects global trade governance in ways that need to be better understood. Coherence between WTO rules and non-trade regulations in other multilateral fora needs to be maintained.*

*Addressing these challenges will involve reviewing and possibly expanding the WTO agenda. Traditional market access issues will not disappear but new issues, particularly with regard to non-tariff measures, are emerging. Internal governance matters as well as the role of the WTO in global governance may need to be addressed. An important issue will be how to “multilateralize” the gains made in preferential trade agreements and to secure regulatory convergence.<sup>19</sup>*

Regulations/standards have emerged as a major trade policy instrument in the recent times as the high MFN tariff across developed and developing countries were bound and eliminated under various Rounds of WTO Agreements in Agriculture and industrial goods. According to WTO’s SPS and TBT Agreements all the Member are allowed to adapt standard/regulations as per the Sanitary and Phytosanitary (SPS) and Technical Barriers to Trade (TBT) Agreements - in order to protect human, animal, plant health as well as for environment. On a scale of measurement, the SPS Measures are generally more stringent than the TBT Measures. In the case of SPS measures it is mandatory to have scientifically proved evidence for any measure to be introduced. Secondly, the measures are also based on risk assessments (RA), this gives these measures an upper hand over the TBT measures.<sup>20</sup> These two measures are mandated to be internationally harmonised with the standards set by (and under) the technical committee of the inter-governmental bodies. The member is required to provide justification for any stricter national measure that it imposes, which is more stringent national than the international standard.<sup>21</sup> So it is a measure to protect health of the citizens without causing unnecessary obstacle to trade, in simple language these NTMs have to internationally Harmonised.

The TBT agreement was initially known as “Standards Code” which was first negotiated in the Tokyo round (1973-1979). It constitutes of substantive requirement relating to characteristics of the products, processes and production method. It also includes labelling requirements relating to products. The objective should be to apply SPS and TBT in a non-discriminatory manner and as per the international guidelines. However standards vary from country to country as there are national standards and

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<sup>19</sup> WTO, 2013, “World Trade Report: Factors Shaping the Future of World Trade”, Geneva, ISBN 978-92-870-3859-3, July.

<sup>20</sup> Risk assessment is the only provision under the SPS Agreement which gave a legal basis and clear upper hand for any developed country to introduce national measures under the garb of environment, health and food safety.

<sup>21</sup> International standards are mostly lower because of the nature of membership of these intra-governmental bodies like CODEX, OIE and IPPC. These organisations have nearly all countries and the decisions on the standard are made at the lowest common denominator.

regional standards as well. Therefore, too many national/regional standards make it difficult for producers and exporters. If the standards are set arbitrarily, they could be used as protectionist measures.

Hence despite paragraph 31(iii) specifying the removal of tariffs on EGs to improve market access there exist several impediments in the form of NTMs (Ratna et al, 2010). Technical regulations affect the International exchange of goods and services as there is lack of similarity among the standards of different countries. Hence, it becomes important for developing countries to understand their own market as well as the international market for EGs and identify the goods in which they have comparative advantage and also simultaneously having the least NTMs.

### 2.3. Issues of Developing Countries

In order to find out opportunities for developing countries it is important to identify products of export interest to developing countries. As OECD and APEC list mostly contains products which developing countries imports<sup>22</sup>. It is important to include EPPs as EGs, as most of the developing countries export interest lies in EPPs rather than in environment equipment. In the 1980s the rising concern for environment resulted in changes in developed countries market (greening of markets), which created new opportunities for developing countries as they are the main producers of these products (UNCTAD, 1995). Developing countries can gain if the definition of EGs take into consideration how the good is being produced (Ikiara, 2004). Developing countries have export potential in a particular EGs sectors.

*To quote:*

*“India has commercialized in equipment and maintenance services and has advantage in wind-power generating system and photovoltaic cells while Mexico has advantage in equipment which monitor air quality and atmospheric emissions and in services to optimize energy use in industrial processes<sup>23</sup>.”*

In 2000 developing countries as a group were net exporter of 26<sup>24</sup> products in the OECD and APEC lists, among these China, Mexico, Singapore, Republic of Korea and Malaysia were top five exporter of EGs listed in OECD and APEC lists. According to (Yu, 2007) the Environmental industries in developing countries is expected to grow at a faster rate, environmental industry of latin America and Asia are also expected to grow at faster rate. The main categories of EGs in which there exist advantage for Asia are water equipment, air pollution control and solid waste management. According to (Hamwey, 2005) export potential in EGs does exist for developing countries but it is more in case of the type ‘B’ product (which are basically EPPs), however in type ‘A’ case it is increasing gradually. For trade liberalisation to be beneficial to all countries it

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<sup>22</sup> Basically consist of end of the pipe technology which developing countries imports.

<sup>23</sup> See for detail document(UNCTAD, TD/B/COM.1/EM.21/2, 2003)

<sup>24</sup> See for detail document (TD/B/COM.1/EM.21/CRP.1, 2003)

is required that list of EGs should be wide and selective<sup>25</sup>. Thus, the studies show although developing countries have more advantage in EPPs, it is increasing for other categories also.

### 3. Section III - Data Analysis and Results

#### 3.1 Balance in the Doha Negotiation in EGs

The data analysis shows that the most critical aspect missing in the Doha negotiations was a balance in terms of market access, for a detailed discussion on the issue of NTMs refer to Ratna, Kallummal and Gurung (2010). It is further evident from a comparative analysis of Tariff and Non-Tariff Measures (517 tariff lines) in this study. An attempt has been made to analyse the average Ad-Valorem MFN tariffs<sup>26</sup>, for tariff lines of EG's and the total tariff lines and category-wise classification of EGs.

**Table 1: Ad-Valorem MFN Average Tariffs of the Proponents**

Proponent Countries	1996	2000	2005	2011
<b>Total Lines MFN Applied Tariff (%) - (A)</b>				
Canada	8.50	4.58	3.82	2.57
EU	6.07	5.74	4.55	4.66
Japan	6.24	5.06	4.73	4.64
South Korea	19.63	16.03	13.97	11.58
New Zealand	7.10	3.69	3.52	2.28
Norway	5.44	3.30	2.29	2.00
Switzerland	0.00	0.00	0.00	0.00
USA*	5.53	4.14	3.96	3.94
Chinese Taipei, Penghu, Kinmen	8.55	7.99	6.24	6.00
<b>Average MFN Ad-Valorem</b>	<b>7.45</b>	<b>5.61</b>	<b>4.79</b>	<b>4.18</b>
<b>Environmental Goods (517 Products) (%) - (B)</b>				
Canada	6.19	3.66	2.94	1.57
EU	3.06	1.87	1.39	1.41
Japan	3.06	1.87	1.39	1.41
South Korea	13.02	9.30	6.61	5.36
New Zealand	8.17	4.13	3.10	2.14
Norway	4.48	2.31	1.21	0.11
Switzerland	0.00	0.00	0.00	0.00
USA*	3.35	2.02	1.79	1.79
Chinese Taipei, Penghu, Kinmen	5.79	5.39	3.22	3.31
<b>Average MFN Ad-Valorem</b>	<b>5.24</b>	<b>3.39</b>	<b>2.41</b>	<b>1.90</b>
<b>In percentage points C = (A less B)</b>				
Canada	2.30	0.91	0.87	1.00
EU	3.01	3.87	3.15	3.25
Japan	3.17	3.19	3.33	3.23
South Korea	6.61	6.73	7.35	6.22
New Zealand	-1.08	-0.44	0.41	0.14
Norway	0.96	0.98	1.09	1.89
Switzerland	0.00	0.00	0.00	0.00
USA*	2.18	2.12	2.17	2.14
Chinese Taipei, Penghu, Kinmen	2.76	2.60	3.02	2.69
<b>Difference in Percentage Points</b>	<b>2.21</b>	<b>2.22</b>	<b>2.38</b>	<b>2.28</b>

Note: \* refers to MFN tariffs of 1997 instead of 1996.

Source: WTO Database on Ad Valorem MFN Tariffs.

<sup>25</sup> To quote: "By wide it means it should include goods that are of export interest to different sets of countries and by selective it means countries should be able to exclude liberalisation of products in which it has export potential and liberalize the one which they Import". See for details (Hamwey, 2005)

<sup>26</sup> MFN Tariffs used in this paper refers to only the Ad Valorem Average MFN tariffs and does not include the Non-Ad Valorem tariff lines.

The analysis in the section A of the Table 1, for the total MFN applied tariffs suggests, that the proponent countries had MFN applied tariff of 4.2 percent in 2011 – it was observed that over 15 years period it had decreased by 3.3 percentage points. In the case of 517 EGs also a similar decrease of 3.3 percentage points could be seen – from the tariff level of 5.5 percent in 1996 to 1.9 percent in 2011.

Proponent countries had differential trade policies in the context of tariff liberalisation in manufacturing in general and environmental products in particular. The countries which were seen to be aggressive in terms of MFN applied tariff reductions were six countries and they were: Canada; EU; Japan; South Korea; United States and Chinese, Taipei, these countries showed a gradual decrease from their total tariff lines to the tune of average 3.2 percent. While on the other hand the countries seen to be less aggressive proponents were Norway, New Zealand and Switzerland having an average of decrease of 0.3 percent from the total MFN applied rates for the total tariff lines. Clearly this suggested an expansion by way of tariff liberalisation by the proponents in 517 environmental goods.

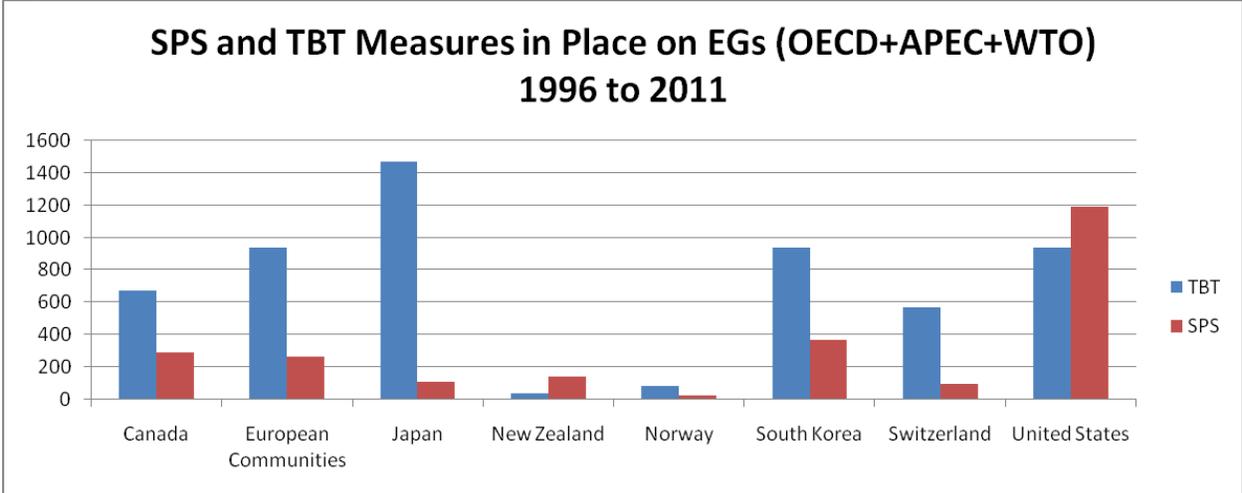
In the overall context market access is determined by the liberalisation both tariffs and NTMs as per the Paragraph 16 of Doha Ministerial Declaration of 2001.

To quote:

*“We agree to negotiations which shall aim, by modalities to be agreed, to reduce or as appropriate eliminate tariffs, including the reduction or elimination of tariff peaks, high tariffs, and tariff escalation, as well as non-tariff barriers, in particular on products of export interest to developing countries.”*

Although tariffs on EGs were brought down, there are no corresponding reductions seen in the context of NTMs (SPS and TBT measures). Figure 3, below shows the notification made in the form of SPS and TBT measures by the Group of Friends Nation (GFN), who are also the proponents of market access on EGs.

**Figure 3: SPS and NTMs Measures on EGs 517 Product Lists**



Source: Authors Calculation based on CWS, IIFT database

It clearly shows that these countries are rigorous with SPS and TBT. The notification is more in terms of TBT, but what is surprising to see is that there are SPS measures in place too. The question is, If these goods are danger to human, plant, animal and Environment, then on what basis they are classified as EGs? Most of the notifications are made by Japan, EU, South Korea and USA. In case of USA notifications based on SPS are greater than TBT notifications.

The Table 2 below shows that it is only under WTO list that India runs positive trade surplus with world as trade partner, while in other two lists it runs a trade deficit.

**Table 2: India's Phase wise Trade under the three lists (US \$ bn.)**

List	Partner	Trade flow	1996-2000	2001-2005	2006-2011	Trade balance
OECD	World	Export	2.0	5.0	22.5	-35.5
		Import	6.3	11.1	47.6	
		<b>Trade balance</b>	<b>-4.3</b>	<b>-6.1</b>	<b>-25.1</b>	
APEC		Export	1.6	4.3	19.7	-33.9
		Import	5.5	10.0	44.0	
		<b>Trade balance</b>	<b>-3.9</b>	<b>-5.8</b>	<b>-24.3</b>	
WTO		Export	15.8	53.9	300.3	9.5
		Import	41.9	57.9	260.7	
		<b>Trade balance</b>	<b>-26.1</b>	<b>-4.0</b>	<b>39.6</b>	

Source: Authors calculation based on WITS database.

The trade performance with GFN countries, table 2 clearly shows that India is not gaining under three lists with GFN.

**Table 3: India's Trade balance with GFN 1996-2011 (Value in US \$ bn.)**

	Canada	EU	Japan	S. Korea	New-Zealand	Norway	Switzerland	USA	Total Trade Balance
APEC	-0.36	-15.84	-4.85	-2.61	-0.03	-0.19	-1.40	-4.38	-29.65
OECD	-0.25	-14.67	-5.25	-2.58	-0.02	-0.11	-1.29	-3.34	-27.51
WTO	-1.50	-6.65	-10.20	-10.21	0.29	-2.12	-3.12	4.32	-29.19

Source: Authors calculation based on WITS database

Although India was gaining in WTO list when we consider the performance with the world, the same is not true with GFN. It is only with USA and New Zealand where it had a Trade surplus. While in other two lists it runs trade deficit. A detail phase and country wise analysis shows that the major trading partners are EU, USA and New Zealand. If we see the ratio of export to import over the phase, then we can see that it improves only with USA, EU and New Zealand, while with other nations the export did increase but imports increased by a much greater pace.

From the above analysis it is clear that, if we talk in terms of balance of payment, then WTO list is better than the other two (only with world as trade partner). Reason could be more number of products in the WTO list<sup>27</sup>. Also this list has more number of products which are classified as EPPs, which are of interest to developing countries. The question which arises at this juncture is whether it is solely due to the EPPs India is gaining in WTO list or has India shown better performance in other categories also (for e.g. Cleaner technology products, air pollution control, waste water management etc).

### 3.2. Analysis of Revealed Comparative Advantage

To find an answer to this question the paper analyses deeper using an index of revealed comparative advantage (RCA), this would allow us to find out in which of the categories does India has a better RCA index. The objective is to check for an increase during the period from 1996 to 2011 in the number of products having positive RCAs under the three lists. A comparison is then made with the GFN, to see how India has performed as compared to the GFN. The second attempt is to find out in which categories this advantage lies? If the category of EPPs is having an advantage then it is clear as to why India is having some trade surplus under WTO list.

RCA is defined as a country share of world export of a commodity divided by its share of total world exports. The Index for country I `` commodity j is calculated as:

$$RCA_{ij} = \frac{\frac{X_{ij}}{X_w}}{\frac{X_i}{X_w}}$$

$X_{ij}$  = ith country's export of commodity j

$X_{wj}$  = world exports of commodity j

$X_i$  = total exports of country i

$X_w$  = total world exports

If  $RCA_{ij}$  takes a value greater than unity, the country has a revealed comparative advantage in that product.

Table 4 shows that India has shown improvement or increase in terms of number of products in which it has RCA over the year under the three lists. **We can see that it increases from 3 in 1996 to 18 in 2011 under APEC list which is quiet impressive, given the fact that APEC list does not contain a single EPPs.** In terms of RCA the other hand no other nation is major gainer under APEC list. The same is true for the other two lists. In fact in between years India has gained quiet significantly, for example in the year 2004, 2006 and 2008 the number of products were to 151, 147 and 157 under WTO list, on the other hand in OECD list it increases to 23 in 2004, 2006 and 2008. While for countries other than USA and EU it has remained more or less constant.

<sup>27</sup> APEC list has 103 tariff lines, OECD has 132 and WTO list has 699 tariff lines.

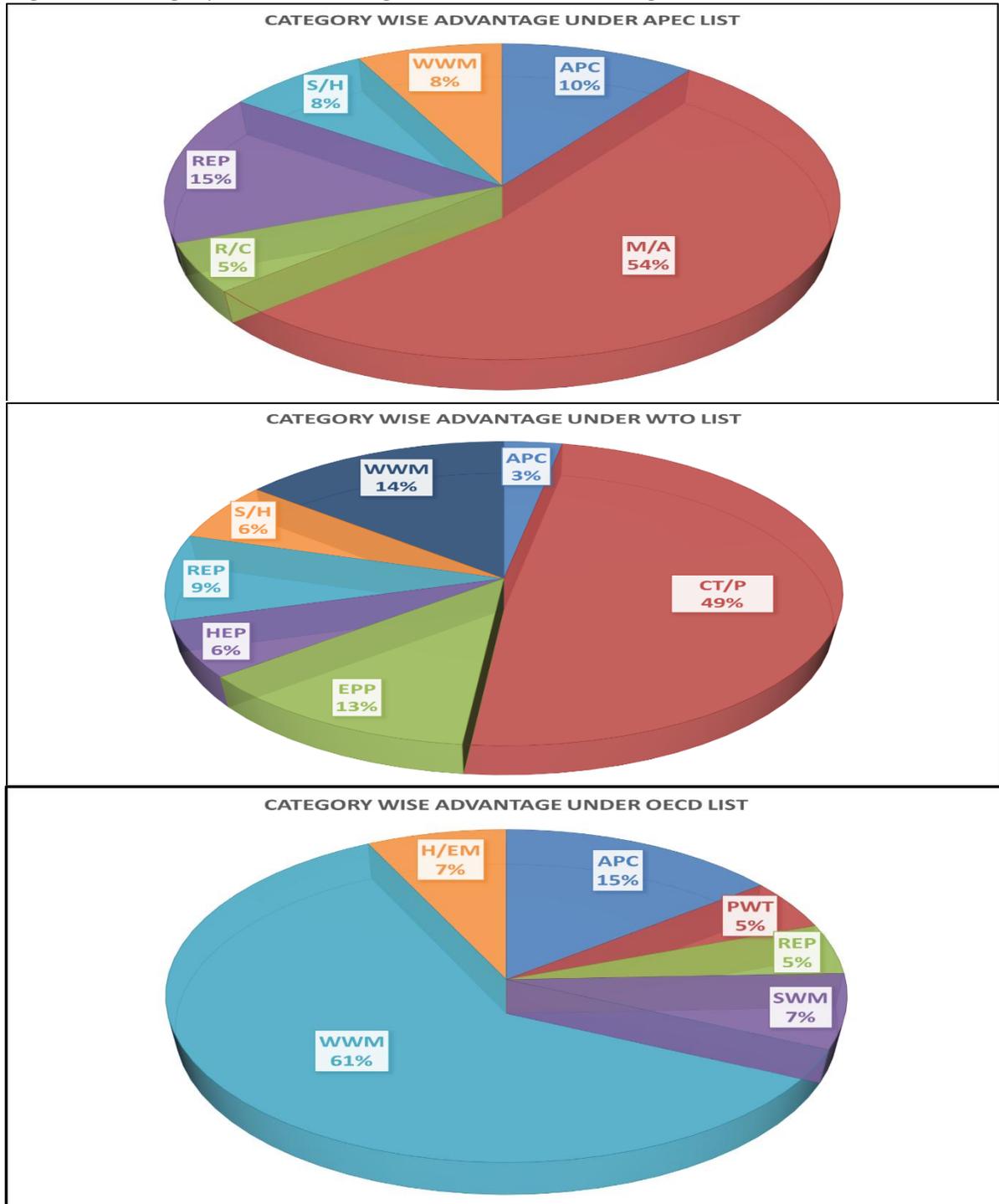
**Table 4: Number of products in which India and GFN has Revealed Comparative Advantage under Three Lists (1996-2011)**

Countries	Lists	1996	1998	2000	2002	2004	2006	2008	2010	2011
European Union	APEC			89	86	85	92	93	91	90
	OECD			83	78	83	85	84	85	83
	WTO			389	385	403	428	435	423	412
Canada	APEC	10	10	15	13	17	21	15	15	15
	OECD	17	21	23	22	26	25	20	25	22
	WTO	119	148	148	140	146	153	129	131	121
S. Korea	APEC	9	10	7	11	10	14	14	17	17
	OECD	6	14	8	14	14	16	15	17	19
	WTO	101	113	116	125	109	124	119	128	120
India	APEC	3	6	11	10	14	20	19	21	18
	OECD	10	14	15	17	23	23	23	21	21
	WTO	102	100	127	130	151	147	157	132	128
Japan	APEC	50	44	44	46	46	50	50	51	47
	OECD	42	39	43	42	44	45	43	46	48
	WTO	207	197	210	220	222	236	221	224	219
Switzerland	APEC	53	58	61	57	56	58	58	54	54
	OECD	55	56	63	55	58	56	57	55	53
	WTO	221	234	244	222	228	219	215	204	193
New Zealand	APEC	3	8	5	8	9	15	7	10	10
	OECD	9	13	9	8	13	12	8	6	8
	WTO	68	81	80	80	102	100	84	78	69
Norway	APEC	14	20	15	17	15	17	18	19	15
	OECD	12	19	14	17	16	14	14	17	15
	WTO	77	100	73	86	77	61	63	74	59
USA	APEC	63	68	76	66	73	74	72	75	75
	OECD	59	65	71	67	72	70	65	71	73
	WTO	290	316	364	341	346	346	321	337	320

Source: Authors calculation based on WITS database

According to literature it is EPPs in which developing countries have advantage or export interest (Hamwey, 2005; UNCTAD, 1995). Does that hold true for India too? From the above analysis it is clear that India runs a trade surplus under WTO list, while in other two list although India has a trade deficit but the export have increased over the years. Therefore it becomes important to find out if this surplus is solely due to EPPs or India's improved performance is due to advantage in some other categories (APC, WWM etc.). This can be done by checking the products in which India has RCA and to which category it belongs.

**Figure 4: Category wise Advantage under three lists (Avg. of 1996-2011)**



Source: Authors calculation based on WITS database

APC=air pollution control, H/E= heat/energy management, M/A= monitoring and analysis, N/V=noise/vibration abatement, PWT= potable water treatment, R/C= remediation/clean up, S/H= solid/hazardous, WWM= waste water management, REP=Renewable energy plants, CT/P=Cleaner Technology and Products, EPPs=environmentally preferable products.

Figure 4, it can be observed that India also has comparative advantage in other categories too. All the three list had different categories as dominant in the OECD list it is Waste Water Management (WWM) products category under the WTO list it is Cleaner Technology and Products (CT/P) and finally in APEC list it is Monitoring and Analysis (M/A). The gains that came to India in WTO list are not solely due to EPPs. Thus it becomes important to identify the lists of products from the three lists in which India have trade surplus for the whole period of the study (1996-2011). The lists of products in which India has a trade surplus (with world as partner) under three lists shows that there are only 11 products for the period 1996-2011. The trade surplus products, world as partner (1996-2011) out of these 11 products, 4 belongs to Monitoring and Analysis; 2 for the Waste Water Management (WWM); 2 for the Renewable Energy Plants (REP) and rest belonged to categories like Remediation/Clean-Up (R/C), Solid/Hazardous (S/H) and Air Pollution Control (APC) respectively. While in OECD list the number of products in which India runs trade surplus is 25 and most of the products belong to WWM. Finally in the WTO list the number of products in which India runs trade surplus for the period 1996-2011 are 219 and maximum of these belongs to CT/P, EPP and WWM Categories. **Therefore, it is clear that from the RCA analysis that India's advantage came from not only EPP but many other categories - unlike what had been suggested in the Hamwey (2005) paper.**

### 3.3. Analysis of Export Similarity Index (ESI)

From the above analysis it is clear that the number of products in which India's RCA has increased over the years and category wise analysis shows that India has advantage categories in other than EPPs too. Does GFN also has an advantage in the same category of products in which India has? By this we mean that whether there is any kind of competition between India and GFN for the products in three lists (Whether the export profile or basket of India and GFN are similar or not?), the answer to this question can be given by calculating Export Similarity Index (ESI), which tells us whether there exist any competition between India and GFN or not. If the index value is zero then there is no similarity and if it comes out hundred than there is complete similarity. ESI is given by the formula.

$$ESI_{jk}(L) = \frac{\sum [\min(X_{ij}, X_{ik})]}{\sum X_{ij}} \times 100$$

Where ' $X_{ij}$ ' and ' $X_{ik}$ ' are shares of exports of product 'I' in region 'j's' and region 'k's' total exports of all products 'I' belonging to the list 'L' (three lists). The index basically analyses similarity or dissimilarities between two countries in terms of export profiles or export basket. The value of the index varies between 0 and 100; with 0 implying complete lack of similarity and 100 reflecting complete similarity or countries have identical export baskets or composition.

Table 5 shows that India faces a moderate level of export competition with Japan, EU, USA and Switzerland under OECD and APEC lists - while with others there is hardly

any competition. In the WTO list we can see that the similarities are considerably lower, it is only in case of Norway where there is some similarity in the exports with India. The reason for moderate level of export similarities under OECD and APEC could be fewer number of tariff lines. On the other hand, the WTO list has more number of tariff lines with India having advantage in only some of them.

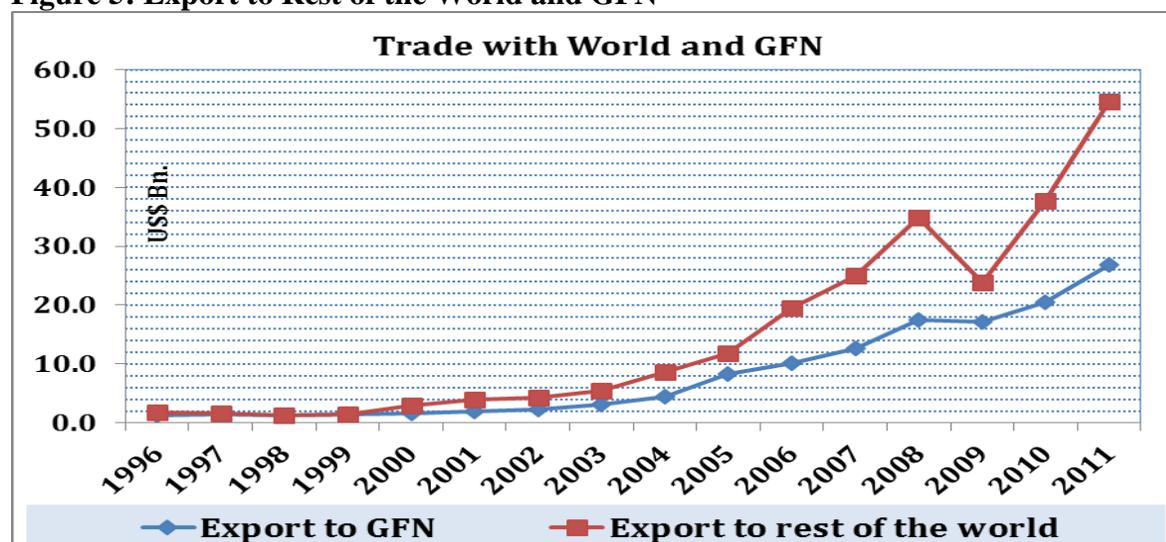
**Table 5: Export Similarity Index of India with the Proponent Countries**

Lists		India	Canada	EU	Japan	Korea	New-Zealand	Norway	Switzerland	USA
OECD	India	100	33	49	59	39	29	17	42	51
APEC	India	100	35	46	55	36	24	36	47	45
WTO	India	100	15	32	15	26	7	56	34	36

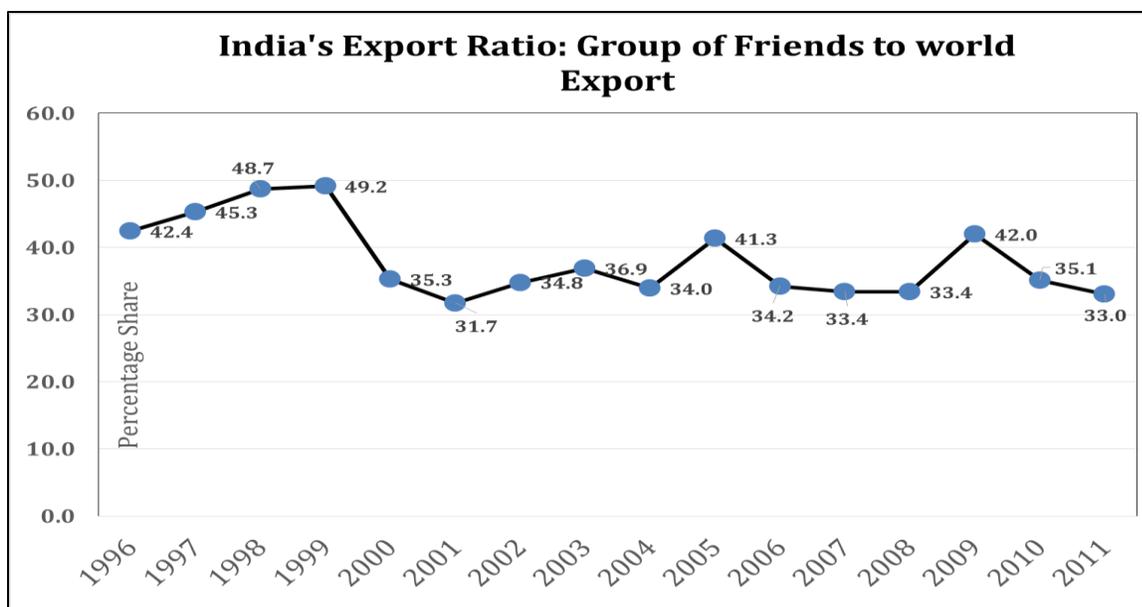
Source: Authors calculation based on WITS database

If there is hardly any competition between India and GFN, than why should India have a trade deficit with nearly all of the proponents and not with the rest of the world in WTO list? Figure 3 shows that export to GFN has declined over the years. If we talk about the initial years of the study, the below graph clearly shows that export to GFN was almost similar to export to rest of the world. But from 2000 onwards the export values to 'rest of the world' exceeded to that of the proponents countries.<sup>28</sup> The percentage of India's export share to GFN, showed a decline from 42% to 33% over the year. **This highlights the possibility that India might be diversifying its exports to markets of non-proponent countries. This diversification can be due to various reasons such as higher Non-tariff measures as was highlighted above. This highlights the importance of negotiating a reduction in the SPS and TBT Measures which the proponents have notified to the WTO.**

**Figure 5: Export to Rest of the World and GFN**



<sup>28</sup> A detailed study on the dispersion of the rest of world exports by India.



Source: Authors calculation based on WITS database

### 3.4. Application of NTMs based on Standards in the EGs

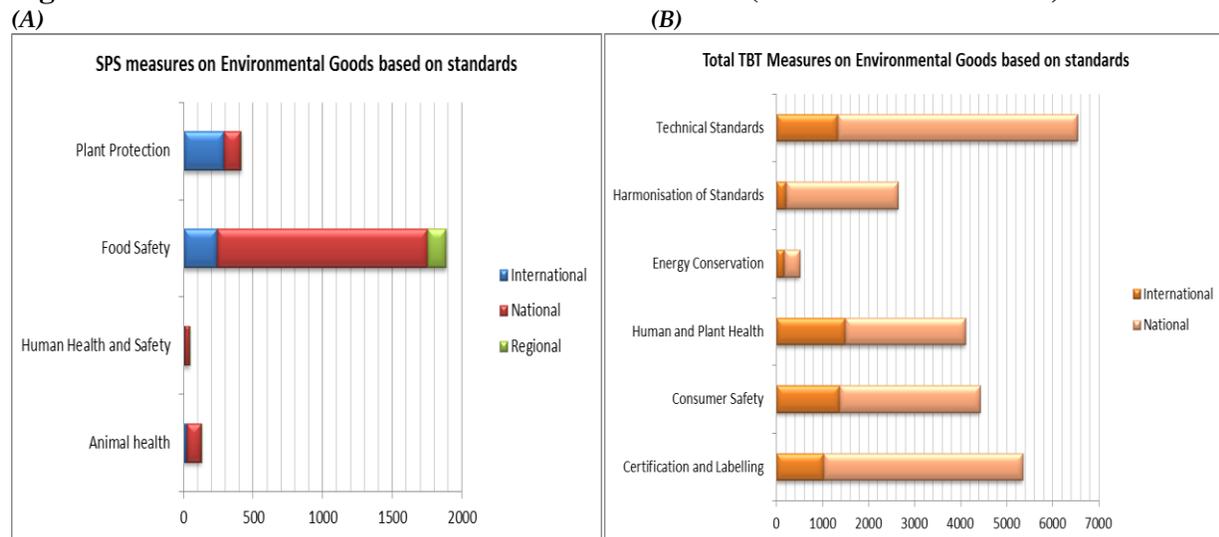
The study uses the database on SPS and TBT measures prepared by the Centre for WTO Studies, IIFT. To find an answer to the question of whether there exists any Market Access issues in the EGs, we would trace the number of Notifications made by the proponent countries under the SPS and TBT Agreements. Evidence suggests that with a reduction in MFN tariffs in these products<sup>29</sup> the countries are using NTMs as a measure to protect these products which fall under the EGs. Only 8 proponent countries were taken for this study<sup>30</sup>

Data for this analysis is based on the Centre for WTO Studies, IIFT on the SPS and TBT notification made by the 8 proponents on the 517 EGs (OECD + APEC + WTO). Figure 4(A), for the purpose of analysis the SPS notifications on EGs are categorized into four broad categories under the Plant Protection, Food Safety, Human Health and Safety and Animal Health. Major restriction to EGs come in the form of Food Safety followed by Plant Protection, Animal Health, and Human Health & Safety. A majority of these notifications made under the SPS Measures were based on national standards, while some of them in the case of Food Safety were also based on Regional Standards. Plant Protection is the only category wherein the International standards were greater than National Standards.

<sup>29</sup> There is no evidence of the existence of Non-Ad Valorem tariff except in the case of Switzerland.

<sup>30</sup> The data for Chinese Taipei, Penghu and Kinmen could not be ascertained.

**Figure 6: SPS and TBT measures based on Standards (APEC+OECD+WTO)**



Source: Authors calculation based on CWS, IIFT database

Figure 4(B) shows us the TBT measures imposed by the proponents and these are analysed in six broad categories like: Technical Standards, Harmonisation of Standards, Energy Conservation, Human and Plant Health, Consumer Safety and Certification and Labelling. In this case too, the notifications based on National Standards were found to be greater than those based on International Standards. In the above figure it could be seen that TBT measures are being applied on EGs on the ground of Human, Plant Health. If these goods are dangerous for the Human, Plant etc., then we need to question the basis of definition of EGs. Therefore, it is important to go to drawing board and prepare a list on which there have been lesser restriction based on the NTMs and have also lower MFN applied tariffs across the nine proponents.

### 3.5. Analysis on Trade Coverage Ratios and Frequency Index

In this part frequency of NTMs in percentage is calculated for the three lists. This is basically to find out the number of EGs lines covered by NTMs in each country. The process is performed for three lists to find out that on an average what percentages of total EGs are covered by NTMs.<sup>31</sup>For the OECD list there are total 712 products out of 1056 (132 tariff lines times 8 countries) on which SPS and TBT is applied by all 8 countries. In APEC list there are 542 products out of 832 (104 tariff lines times 8 countries) on which NTMs are applicable. While in WTO list there are 3921 products out of 5592 (699 tariff lines times 8 countries) either the SPS or TBT measures are applicable.

<sup>31</sup> The methodology is simple, multiply the number of EGs lines in each list by number of countries and then calculate the application of NTMs on the total products.

Table 6 shows existence of NTMs on 67.4 % of product coverage for these 8 countries in OECD list. For the APEC and WTO lists this comprises of about 65 % and 70 % of product Coverage. Japan, South Korea, EU and USA are the countries which impose restriction on almost every product in three lists, and again these are also the countries who are the proponents of market access on EGs. This shows that while the MFN tariff may be made zero as per the mandate of the Doha Round Mandates at Bali in December 2013 the presence of NTMs stares at the possibility of an “Effective Market Access”<sup>32</sup> for the EGs.

**Table 6: Application of NTMs across Countries (EGs tariff lines)**

Countries	OECD		APEC		WTO	
	Number of products on which NTMs applied (SPS and TBT)	Frequency of NTMs in percentage	Number of products on which NTMs applied (SPS and TBT)	Frequency of NTMs in percentage	Number of products on which NTMs applied (SPS and TBT)	Frequency of NTMs in percentage
Canada	70	53	35	34	431	62
EU	121	92	97	93	588	84
Japan	129	98	94	90	655	94
New Zealand	77	58	62	60	370	53
Norway	10	8	11	10.5	81	12
S. Korea	127	96	96	92	655	94
Switzerland	90	68	76	73	520	74
USA	88	67	71	68	621	89
Average	89	67	68	65	490	70

Source: Authors calculation based on CWS, IIFT database

It is also important to find out that which lists is heavily embedded with NTMs, for this the author’s calculate Coverage Ratio and Frequency Index. Various approaches to quantify NTMs were discussed by (Bora et al, 2002) one of which was Inventory approach. Inventory method allows us to estimate the extent of the trade covered by NTMs and the frequency of applications. It basically comprises of Coverage Ratios and Frequency Index. Under the Coverage Ratios the calculation of the value of trade flow covered under a Non-Tariff Measures (SPS and TBT).

The percentage of trade subject to NTMs for an exporting country ‘j’ at a desired level of product aggregation is given by the trade coverage ratio:

$$C_{jt} = \frac{\sum(D_{it} \cdot V_{it})}{\sum V_{it}} \times 100$$

where, if an NTM is applied to the tariff line item ‘i’, the dummy variable ‘D<sub>i</sub>’ takes the value of one and zero if there is no NTM; ‘V<sub>i</sub>’ is the value of imports in item ‘i’; t is the

<sup>32</sup> Effective Market Access the article refers to a scenario wherein both tariff and non-tariff measures are minimal or virtually none, as visualize by the Paragraph 16 of Doha Ministerial Mandate in 2001.

year of measurement of the NTM; and ' $T$ ' is the year of the import weights.<sup>33</sup> A problem for interpretation of this measure arises from the endogeneity of the import value weights. At the extreme, if an NTM is so restrictive that it precludes all imports of item ' $i$ ' from country ' $j$ ', the weight ' $V$ ' will be zero and, in consequence, the trade coverage ratio will be downward biased. Similarly, the coverage ratios will not indicate the extent to which NTMs have reduced the value of the affected import items, and so they will reduce the weight of restricted items in the total value of a country's imports. It would be a refinement to use import weights from the world as a whole, as a proxy for free trade weights, but, as noted in the discussion on tariff-weighting, many important items in trade are subject to import restrictions in a wide range of countries.

Another procedure, which avoids the problem of endogeneity of the weights, is the frequency or transaction index. This approach accounts only for the presence or absence of an NTM, without indicating the value of imports covered. Thus, it is not affected by the restraining effect of NTMs (as long as they do not completely preclude imports from an exporting country)<sup>34</sup>. The frequency index shows the percentage of import transactions covered by a selected group of NTMs for an exporting country. It is calculated as:

$$F_{jt} = \frac{\sum(D_{it} \cdot M_{it})}{\sum(M_{it})} \times 100$$

Where ' $D_i$ ' once again reflects the presence of an NTM on the tariff line item, ' $M_i$ ' indicates whether there are imports from the exporting country ' $j$ ' of good ' $i$ ' (also a dummy variable) and ' $t$ ' is the year of measurement of the NTM.

Unlike the coverage index, however, the frequency index does not reflect the relative value of the affected products and thus cannot give any indication of the importance of the NTMs to an exporter overall, or, relatively, among export items.

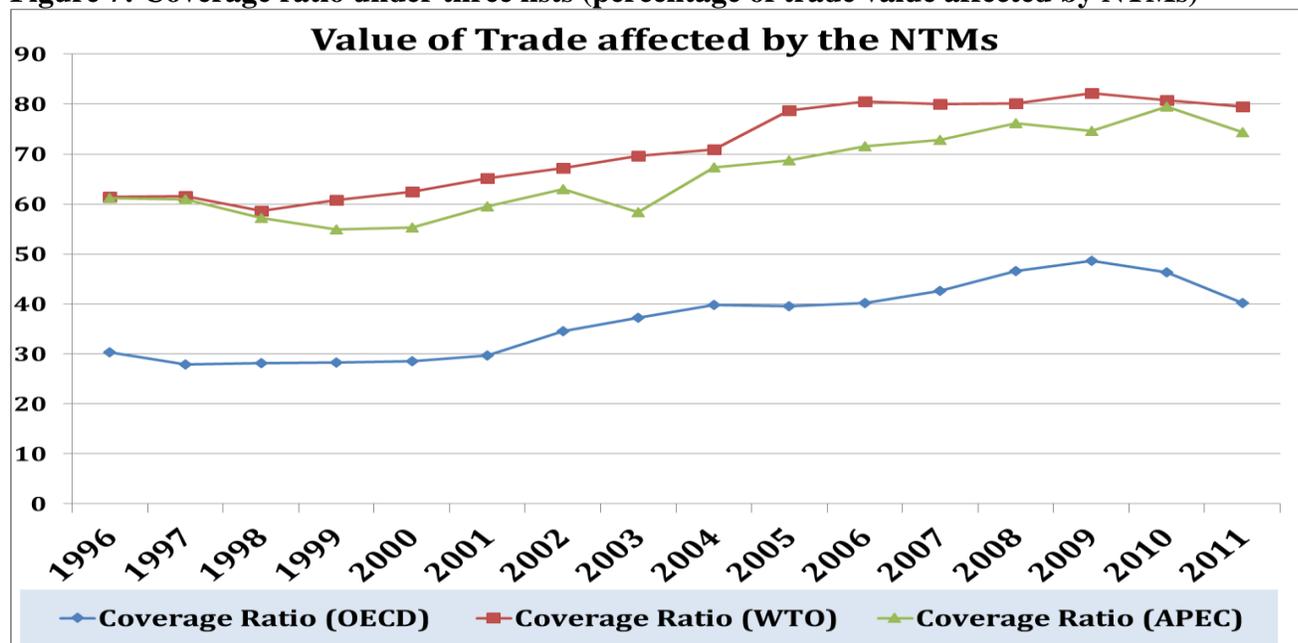
Where  $Di$  once again reflects the presence of NTMs on the tariff line item, the difference between Coverage ratios and is that in case of frequency Index  $Mi$  (Import) is treated as dummy variable, Such that it accounts only for the presence or absence of Import.

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<sup>33</sup> It is normal to use fixed year weights, so that movement in the ratio is related to changes in the application of measures against countries or products, rather than because of changes in the value of trade under different items.

<sup>34</sup> If imports from some countries are excluded, this ratio will also have a downward bias. In this case, the ratio could be computed only for tariff items.

**Figure 7: Coverage ratio under three lists (percentage of trade value affected by NTMs)**



Source: Author calculation based on CWS, IIFT database

The methodology is to find out at the aggregate level of the 8 proponents' countries and then to analyse the value and extent of India's export to the proponent countries as a block affected by NTMs. These are further analysed for all the EGs and all the lists like: OECD, APEC and WTO. Figure 5 analyses the CR the total value of trade that is being covered by NTMs (1996-2011). The total value of Indian export impacted by NTMs of the proponent countries clearly indicates toward an increasing coverage ratios under all three lists. The above figure 5 shows that the value of trade that is affected by NTMs is higher for WTO list followed by APEC and OECD - under each list it has increased over the years. The reason for high coverage ratio in WTO list is very clearly the large number of tariff lines.

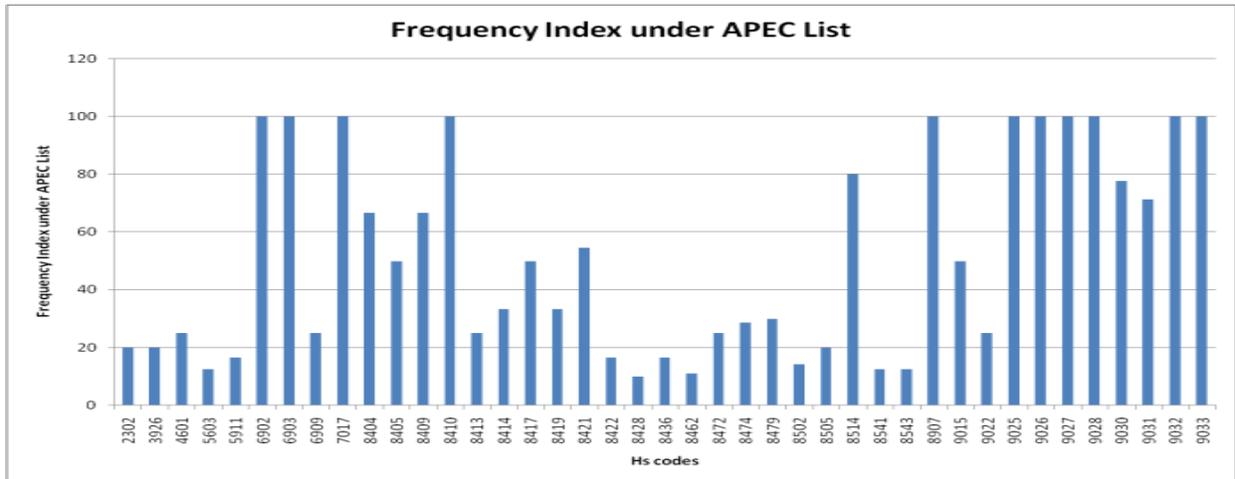
On the other hand the frequency Index shows that there is high incidence of NTMs in WTO list followed by APEC and OECD, the reason is the same which is mentioned in the case of Coverage Ratio. Therefore, it shows that it is WTO list which is heavily embedded with NTMs. It is therefore, clear that the list that is best suited for archiving an effective market access - based on the evidence from the study it suggests the high presence of NTMs the WTO list and it may not be acceptable list for WTO final negotiation.

However, we should also see that this is the list that has more number of tariff lines, which also includes the goods of developing countries interest. Our analysis also shows that this is the only list under which India runs a trade surplus and it is only with these 8 countries (GFN) where it runs a trade deficit as per this list.

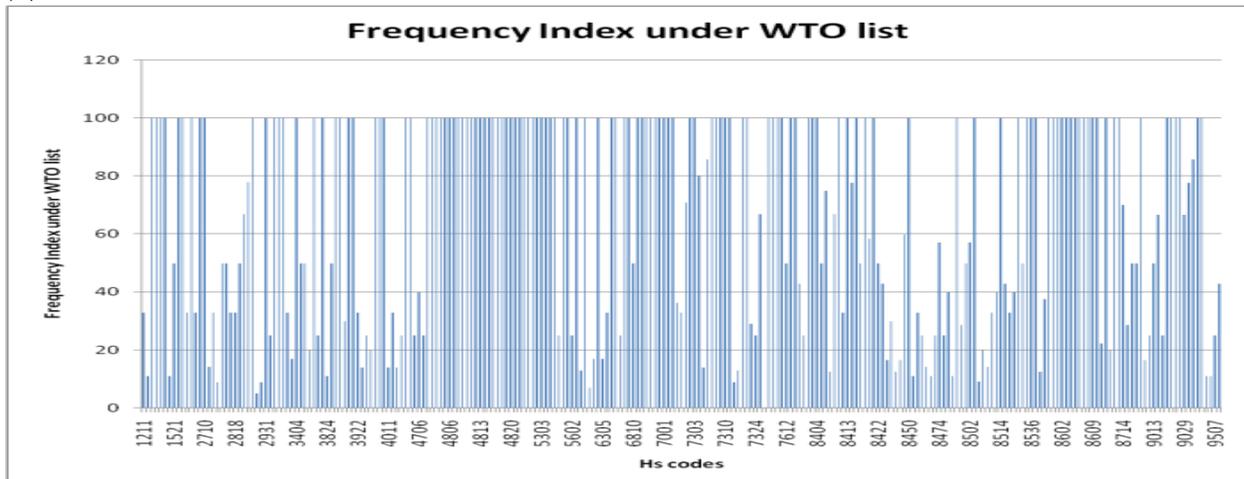
Therefore, the problem is not with the list but with the notification made on these goods by proponents of EGs themselves. This is because if we go with the OECD list on the basis of NTMs we can see that it will not be beneficial to any developing countries, as developing country like India is running trade deficit both with the World and with the proponent countries under OECD lists. **Thus what is required is that NTMs (SPS and TBT) on these goods should also be addressed in the negotiations - to begin with all the national and regional measures should be harmonised at the international level.**

**Figure 8: Frequency Index for three lists**

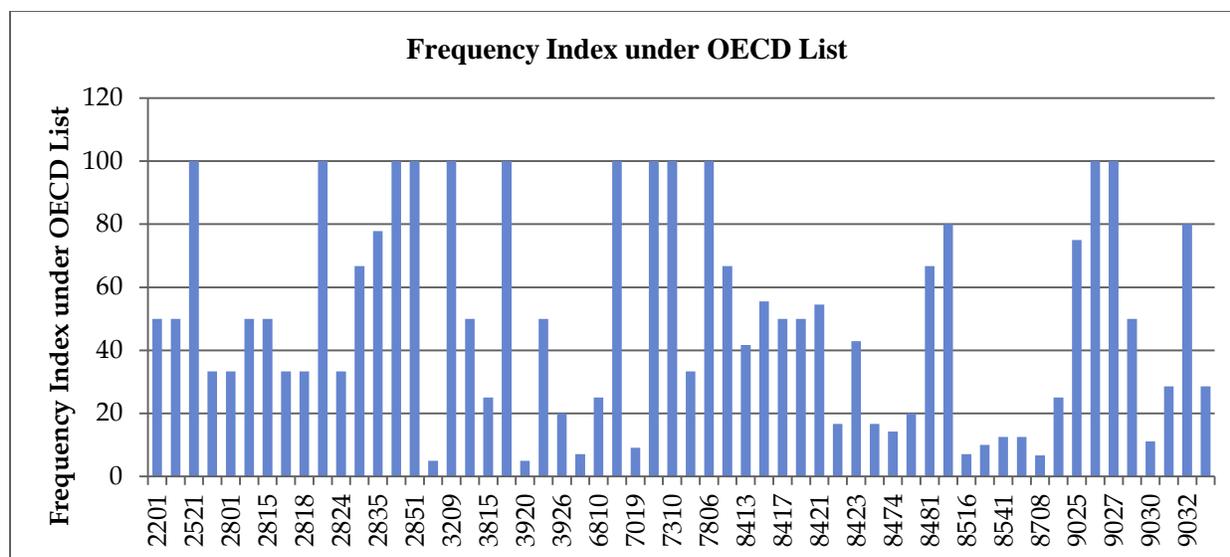
(A)



(B)



(C)



Source: Author calculation based on CWS, IIFT database

### 3.6. Analysis on 14 Sectoral Proposal - The Impact of EGs

Finally in the paper we address the most critical element of the EGs list which has the coverage of products belonging to under the 14 Sectoral Proposals covered by the NAMA draft text of 2008. The analysis is done in accordance with the paragraph 16 of the Doha Ministerial Declaration members agreed to reduce or as appropriate eliminate the tariffs. Sectoral tariff and NTMs reduction was a key to achieve the paragraph 16 of DDA<sup>35</sup>. According to this modality was drafted for the Sectoral tariff elimination in the 14 sectors. Under this 16 Members agree to participate in negotiating the terms for Sectoral tariffs elimination<sup>36</sup>. Among these 16 countries 9 are the one who are the proponents of market access on Environmental goods. Given the fact that the 14<sup>37</sup>Sectoral proposal has been stalled because of the concerns raised by the developing members of the WTO.

The objective is to check if there exists an indirect link between the Sectoral proposals and EGs. What is this linkage and how each of the 14 Sectors recommended by the WTO in the Draft Mandate would be impacted by a single proposal of EGs Liberalisation. It is an attempt to see whether the proponent countries are using EGs as a way to achieve the same objective what they tried with 14 Sectoral proposals under the DDM.<sup>38</sup> By this we mean that if Negotiation has been successfully completed in EGs

<sup>35</sup> TN/MA/W/103/Rev.3

<sup>36</sup> Canada, European Communities, Hong Kong, Iceland, Japan, Korea, New Zealand, Norway, Oman, Singapore, Switzerland, Thailand, Chinese Taipei, United Arab Emirates, United States of America, Uruguay.

<sup>37</sup> These includes Automotive and related part sector, bicycle and related part sector, chemical sector, Electronics and Electrical products, Fish and fish products, Forest products, Gems and Jewellery sector, Hand tools, Health care, Industrial machinery, Raw material Sector, Sports Equipment's, Clothing and footwear and Toys sector

<sup>38</sup> The 14 Sectoral proposal has been stalled because of the issues raised by the developing countries.

(if tariff on EGs are brought down to zero), then which of the 14 sectors will have the largest impact due to the presence of tariff lines falling in the EG list. Thereby, it would also suggest which of the Sectoral proposals could be easier to negotiate after a successful EGs mandate in the Bali Ministerial Mandate.<sup>39</sup>

An attempt has been made to assess whether the developed countries which also include the proponents are using the negotiations under the Trade and Environment of WTO to achieve an unfinished agenda of the 14 Sectoral proposals under the Draft Mandate of 2008.

**Table 7: Number of Environmental good falling under 14 Sectoral Proposals**

Sectors	Number of Environmental goods	Total goods under the Sectoral	Percentage of EGs (Coverage)
1. Bicycle and Related Parts Sector	18	19	94.7
2. Forest Products Sector	115	224	51.4
3. Automotive and Related Parts Sector	42	111	37.8
4. Electronics/Electrical products Sector	153	489	31.3
5. Industrial Machinery Sector	109	430	25.4
6. Enhanced Health Care Sector	24	156	15.4
7. Sports Equipment Sectors	4	28	14.3
8. Raw Material Sector	13	95	13.7
9. Chemicals Sector	86	911	9.7
10. Textiles, Clothing and Footwear Sector	37	851	4.4
11. Fish and Fish Products Sector	0	107	0.0
12. Gems and Jewellery	0	53	0.0
13. Hand Tool Sector	0	32	0.0
14. Toys Sector	0	21	0.0
<b>Total/Average</b>	<b>601</b>	<b>3527</b>	<b>17.1</b>

Source: Authors calculation based on lists of EGs and 14 Sectoral Proposal document.

From Table 6, it is clear that the EGs list consists of many of the Sectoral Tariff lines. In absolute numbers of EGs products we can see that sectors like Automotive and Related Part sector, Chemical, Electronic & Electrical Parts, Forests Products, Industrial & Machinery, Textiles, Clothing & footwear Sectors are heavily present in the EGs list or *visa-versa*. However when we calculate the percentage of EGs in these sectors and take average of that, it comes out to be 21.3%. Secondly, the Sectoral arranged in descending order we can see that the Bicycle and Related Parts sectors with 95% tariff lines present in the EGs list (18 out of 19 products) followed by Forest Products Sector with 51.3 percent, Automotive and Related Parts with 38 percent, Electronics & Electrical Products with 31 percent and Industrial Machinery sector with at least 25 percent. Therefore, if tariffs on EGs are brought down to zero then the following observation can be made. One, it will benefit the countries who were the proposers of the Sectoral Proposals and the EGs also. Secondly, the EGs sector would lead to an indirect partial liberalisation of the said Sectors. Thirdly, the WTO membership as whole would reduce their tariffs as mandated, but this alone would not address the issue of Effective Market Access. This issue could only be addressed if the NTMs in these products proposed under the EGs list are addressed equally. Hence, for a balanced outcome in the

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negotiations in trade and environment should not be limited to tariffs, but should include effective elimination of non-tariff measures and technological issues.

## Section IV - Conclusion

India has significant trade advantage in Environmental goods but only when the list is broad and includes more number of tariff lines like in the WTO list. RCA calculated shows that the number of products in which India's has advantage increased over the years – suggesting a gain in the categories other than EPPs. Further, India is having a trade deficit with these nearly all of 8 proponent countries. The export shares to countries have fallen over the years. ESI indicates that there is export dissimilarity in the export profiles of India's and the proponent countries exports. All of which suggested that India's has been at a disadvantage position in the negotiation of EGs – owing to reduction in MFN applied tariff were not commensurately balanced by the liberalisation/harmonisation in the NTM like SPS and TBT measures. Therefore, India has been having trade deficit with all the proponent countries', suggests that it was unable to export to these countries. The potential value chain possibility seen in India may be owing to its skill in assembling and consuming some of these and partially exporting them to non-proponent countries.

Results from trade Coverage ratio and Frequency Index shows that WTO list is heavily embedded with NTMs. If the impose huge barriers on the EGs under the pretext of Human, Animal, Plant and Environmental Protection, the question arises how are these polluting goods? As the number of notifications based on National Standards is far greater than the International Standards, we could suggest that the proponent countries are using these means of protectionist measures. What is required is that NTMs (SPS and TBT) on these goods should also be addressed in the negotiations – to begin with all the national and regional measures should be harmonised at the international level. This highlights the possibility that India might be diversifying its exports to markets of non-proponent countries. This diversification can be due to various reasons like higher Non-tariff measures as was highlighted above. This highlights the importance of negotiating a reduction in the SPS and TBT Measures which the proponents have notified to the WTO. If we look at the number of notification made by these 8 countries on EGs (OECD+APEC+WTO), this comes out to be 8,151 (SPS + TBT) on the other hand Notification made by 100 other countries is 16,800. This means 1,019 notification per GFN countries and 168 for the rest 110.

The study also indicates some level of global supply chain integration happening in environmental goods sector; with India being a part of this whole supply chain integration at the intermediate level. This is not a direct conclusion form this analysis done in this paper, but incidental finding from the various exercise carried out in this paper. It was derived from the negative trade balance for India with the proponent countries. The negative balance can be assigned partially to the classic cases like the sectors of solar and wind energy; wherein, India has been exporting finished products

to both developed (non-proponent) and developing countries form the imported intermediaries form largely the proponent countries.

Results from the 14 Sectoral analysis shows that if tariffs on EGs are brought down to zero, then it would lead to indirect partial liberalisation of these sectors, which would be beneficial to the Sectoral proponents (16 countries) which includes the countries which are also the proponents of EGs. Sectoral impacts of EGs liberalisations in which more than the total 14 Sectoral average of 21 percent were sectors like: Automotive and Related Parts (37.8%); Electronics/Electrical Products (31.3 %) and Industrial Machinery (25.4%). Two of the three sectorals where in mandatory participation was sort from the emerging economies like India did have above average presence in the EGs list. Although this would lead to complete liberalisation for these proponents but for the developing countries that mainly depend on the international standards to protect in the absence of tariff protection would be vulnerable.

The analysis of this paper shows that the proponent countries (mostly developed) of market access on EGs are not providing market access to other countries. In this context, it is important that reduction of tariffs should be held congruently with the removal of NTMs (or International harmonisation) in the Environmental Goods Sector. Further, the extensive use of national standards by the developed countries this adds to the protection offered under the WTO's TRIPs Agreement which insulates the developed countries from any technology transfer<sup>40</sup>, thereby nullifying the long term threats of any emerging competition.

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<sup>40</sup> As per the conditions on the technology transfer under the Part VI of TRIPs Agreement under the Article 66.2...*“Developed country Members shall provide incentives to enterprises and institutions in their territories for the purpose of promoting and encouraging technology transfer to least-developed country Members in order to enable them to create a sound and viable technological base”*. The TRIPs Agreement does not suggest technology transfer as viable form of industrial activity - as such measures are best endower clause and not binding commitments. In Doha, ministers agreed that the TRIPs Council would **“put in place a mechanism for ensuring the monitoring and full implementation of the obligations”**. The council adopted a decision setting up this mechanism in February 2003. It details the information developed countries are to supply by the end of the year, on how their incentives are functioning in practice.

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