Chapter 6:
Conclusion and Policy Issues
6.1 The results of the current analysis

The emergence of the trade restricting measures on environmental grounds, including both impositions of environment-related sanctions and stringent standards, since late nineties, has been a major concern for Indian exporters. The problem has been especially noticeable in case of environmentally sensitive categories. While the difference in environmental standards across countries could partly be explained owing to the difference in their development level, it is a long-standing complaint of the developing countries that their developed counterparts often tend to protect their market with various environment-related sanctions / barriers on the pretext of environmental concerns.

It has been observed that the imposition of direct trade sanctions is recently giving way to imposition of stringent environmental standards. The environmental standard-related compliance requirements within the WTO framework could be considered as an economic sanction in a limited sense, the failure to comply with which restricts the export access. The current study is an attempt to understand through secondary data analysis the impact of these barriers on Indian exports of select environmental products and the policy scenario at the domestic level.

In the introductory chapter, the theoretical perspective of the sanctions in general and environmental sanctions in particular was discussed and a few research questions were mentioned so as to understand the impact of environmental measures on the exports of a developing country like India and its domestic scenario. It is understood that a country may respond to the imposed sanctions either by complying with the proposed requirement or by shifting the export focus to another market characterized by no sanctions (or less stringent standards), in which case the purpose of the sanction would be defeated.
The major hypothesis proposed by the current analysis is that the stringency of the environmental measures adopted by developed countries might affect the export flows of India in final products as well as the trade potential in intermediate products. The other hypothesis is that at the State level there may exist a relationship between (1) exports and environmental compliance scenario; (2) economic growth and environmental quality and (3) pollution and FDI inflow, given the domestic environmental governance scenario in India. It is also hypothesized that the level of environmental compliance could be higher in case of the well-established firms relying more on their export market. The analysis in the following chapters attempted to respond to these research questions.

The second chapter of the study undertakes a literature survey on the multilateral framework involving trade-environment linkage. It is observed that although the instance of using environmental sanctions has been less frequent in recent period, the stringency of government environmental standards (e.g. - packaging, labeling, inspection and testing regulations etc.) as well as the private and voluntary standards in developed countries on environmentally sensitive products has increased. The conversion of the voluntary environmental standards in government norms (especially in the US) or the multiplicity of the standards within a bloc (in the EU-countries) is also among the major concern areas.

The presence of certain gray areas within the WTO agreement, which creates a major hurdle for the exporters of developing countries like India, further aggravates the problem. Moreover, the environment-related case law in WTO is sometimes ambiguous on this front. For instance, the WTO dispute settlement panels have ruled against the imposition of unilateral environmental sanctions by developed countries at times. However, sometimes the verdicts of the concerned panels have left the question of the legitimacy of these measures unanswered, which may be used by the developed countries as precedence later. In this background, there is a growing concern among the developing countries that the environmental sanction route might be utilized against them in the long run, as a sanction / higher environmental standard always act as a countervailing duty on their exports and reduces their welfare.
In order to understand the impact of environmental standards on Indian exports, a review of the literature is also undertaken in the second chapter. It is observed that a considerable section of the literature have indicated towards the trade-distorting nature of environmental sanctions and standards imposed by developed countries on environmentally sensitive sectors, although various estimates of the compliance cost for undertaking necessary steps differ.

The developing countries like India have so far protested against the repeated attempts of the developed countries like the EU and the US for incorporating the environmental provisions under the wings of WTO, which would make the impositions of environmental sanctions on trade legitimate. Developing countries have so far countered the pressure from their developed counterparts by arguing in favour of discussing the trade-environment linkage and the associated concerns at the Multilateral Environmental Agreement (MEA) forums rather than the WTO meetings. While this has been a prudent strategy in the short run, there is however no room to feel complacent. The developing countries need to set their house in order fast, as they are likely to witness increasing challenge in the Multilateral Environmental Agreements (MEA) forums from the developed quarters as well in coming days.

One saving grace is that the application of the trade sanctions permitted by one MEA (Cartagena Protocol) by the EU has been successfully challenged by the US as a complainant in a recent WTO dispute. Nonetheless this event also underlined the potential conflict between the unilateral sanction provisions under the MEAs and the WTO obligations of the Member countries in no uncertain terms.

In the third chapter, India’s trade in general and the same in environmental products in particular are analyzed. A couple of points emerge from the analysis. First, India’s overall export and Intra-industry trade (IIT) has increased over the years, but the proportional export of the environmentally sensitive goods (ESGs) in the export basket (including textile products) has declined over the last decade. However, the proportional export of the ESGs excluding textile has increased to some extent over this period, which
is around one-third of total exports in value terms. In other words, the ESGs hold an important position in India’s export basket in terms of their presence. The import of ESGs on the other hand has marginally decreased over the years.

Second, the importance of the developed country markets (e.g. - North America and Europe) in India’s trade basket is found to be diminishing over the period, while the same for Latin America and Asia is increasing. This is partly explained by the economic vibrancy of the developing countries located in South East Asia and China. India is recently trying to enter into Regional Trade Agreements (RTAs) with a number of developing countries, including ASEAN members in South East Asian region, Brazil and other developing countries in Latin America etc. In light of the environmental barriers experienced in the developed country markets, this decision could perhaps be interpreted as an unconscious policy response to enhance market access in locations characterized by relatively less stringent environmental barriers, as India’s RTA partners are generally developing countries.

Third, a category-wise analysis of the proportionate contribution of the EU and the US in India’s ESG exports indicates a declining trend for several product groups, signifying - higher export of those categories in other locations. It is observed that a number of product groups showing proportional reduction towards the EU and the US market in India’s export basket is consumption-based (e.g. - marine products).

Fourth, increase in the proportional export of a few non-ferrous metal categories to the EU and the US, where the polluting activities takes place in Indian territories, is an interesting development. This might reflect the fact that the EU and the US would prefer to allow the final products, where consumption related environmental effects are relatively lesser. This indicates adoption of strategic trade policies by the EU and the US.

Fifth, it is observed that India imports environmental technology from a number of developed countries, who have imposed sanctions on India in the earlier period, though the same is imported from several developing countries as well. Increasing import of environmental technologies in India is a good sign for ensuring cleaner production at
home and hence better compliance with the imposed standards, which could be part responsible in explaining the increase in export of several ESGs and the decline in the instance of outright sanctions in the last couple of years.

Sixth, analysing India's export data during mid-nineties, the major ESGs being exported during that time are identified. To understand the evolving competitiveness of these categories, a revealed comparative advantage (RCA) analysis is undertaken for these products. It is observed that barring a few product categories; the RCA index for these product groups in general is declining over 1996-2006. The decline in the RCA of these ESGs could partly be caused by the stringency of the environmental regulations although this may not be the only underlying responsible factor.

Although the above analysis are indicative, the impact of the environmental standards in developed countries on India's exports, if any, however, can not be concluded with certainty. Hence, the relationship between India's ESG exports as well as IIT patterns and environmental stringency involving India's trade with principal trade partners over the last decade is attempted through an empirical model in the next part of the third chapter.

In the proposed empirical model, India's overall export and the export of the ESG category is separately regressed on the difference of environmental stringency between India and the selected trade partners and a number of control variables. The regression analysis shows a negative and significant relationship between environmental stringency and exports, both in case of total exports and the ESGs. In other words, India's export of environmentally sensitive products is found to be lower to partners characterized by more stringent environmental norms. Along the expected lines, export is also found to be positively influenced by the income variable and negatively related to the distance variable. Among the control variables, it is observed that the exports are positively related to colonial linkages and regional partnership. The positive sign of the RTA dummies could be explained by the argument that India is mainly partnering with developing countries with similar level of environmental standards for trade promotion. The environment standard effect becomes clearer from the sign of the country dummies
as well. It is observed that the country dummies for the EU, Japan, the US and France are significant with a negative sign. It is to be noted here that Indian export of ESGs has earlier faced environmental sanctions / stringent environmental standards in all these countries.

It has been observed from the trade literature that apart from overall export of a country, its trade in intermediate products, reflected through IIT level could also be affected by imposition of environmental sanctions / standards. The next part of the third chapter attempts to explain India’s bilateral IIT pattern with environmental stringency of the trade partners, which indicates a mixed result. It is observed that India’s overall IIT as well as the same in leather sector are influenced negatively by the environmental standards. On the other hand, the IIT in non-ferrous metals is not significantly affected by the same. Among the control variables selected for the analysis, it is observed that per capita income difference and capital-labour ratio difference is significant in some cases, indicating the role of technology difference and choice difference to play a role in this regard. The chapter ends with a note on the Indian negotiating approach at the WTO and other international forums on environment-related issues, for protecting self-interest.

Since outright sanctions restrict trade flows completely, the stringency of environmental standards in the current context are considered as a threat to Indian exports, as non-compliance with them would act as sanctions and impede market access. The analysis undertaken in the third chapter indicates that Indian export of ESGs as well as IIT in some categories are getting affected in the developed country markets on the ground of stringent environmental standards. In other words, the sanctions or the threat of getting exposed to sanctions in case of non-compliance negatively influence India’s exports. Given this observation, a need to analyze the working of the domestic regulatory framework in India, and the environmental scenario at the State-level emerges.

The fourth chapter attempts to evaluate the environmental governance scenario at the State-levels in India. The idea to conduct the State-level analysis is to analyse what affects environmental quality in India. It is observed from the literature that the imposition of environmental standards in the developed countries may or may not enforce
better compliance in a developing country. Here, the external obligation should be complemented by internal urge, in order to experience a smooth transition. This becomes possible if growing income within the country simultaneously accompanies growing demand for cleaner environment, thereby facilitating better compliance. In other words, the environmental scenario in the richer states, with a significant contribution in State domestic product from the service sector, should be better than the states with more contribution from the manufacturing sector and a non-linear relationship between the two could be expected. In addition, the States with higher volume of exports should be witnessing higher compliance with environmental norms, as the firms located within their territories would increasingly attempt to enhance their compliance level.

If however, the economic growth is not accompanied with cleaner environmental conditions, it might as well happen that investment from abroad may come in increasing volume in certain locations towards the polluting industries. In that case the environmental sanction or standard imposed in the developed countries may not be able to enhance the compliance level in the developing countries. A State here could be considered as a collection of the firms located within its territory and hence a better compliance at the State level with domestic environmental sanctions / regulations is important to understand the response of the firms located therein. Also the domestic environmental norms, non-compliance with which may lead to closure of the units, could be considered as part of domestic sanction mechanism. This could either be initiated as part of India’s unilateral effort or as a part of its multilateral commitment to clean the environment.

If the analysis suggests that the States exporting more are characterized by lower environmental quality or the FDI is coming more to the States characterized by lower environmental quality, then perhaps it could be argued that the developed country sanctions against India has been on valid grounds. However, if such linkage is found to be missing, then the imposition of the environmental barriers on Indian exports might turn out to be unjust.
The analysis carried out in chapter four reveals that the environmental governance is improving in India with Government intervention (regular inspection of firms in the polluting sectors, closure of the non-complying units, provision of support for establishment of effluent treatment plants in several industry clusters etc.) and increasing industry participation in recent years, although the scopes to improve the framework are enormous. For instance, in recent years the expansion in the coverage of inspection in the seventeen polluting sectors reveals that a number of firms not surveyed during earlier years do not comply with environmental regulations. The increase in import of certain polluting materials for re-exporting purposes is also a worrying trend in recent years. The enforcement mechanism has been criticized at times in terms of the insufficient punishment structure, lack of adequate number of technical employees etc. However, the judicial intervention in the recent period has effectively curbed the polluting activities in various sectors, most notably in leather, which has faced environmental sanction in the European market earlier.

In order to understand the environmental quality (EQ) scenario across Indian States, a suitable indicator for that purpose is constructed first. It has been observed from the literature that a composite indicator is considered to be a better indicator of environmental quality (EQ) as compared to any single variable used for that purpose. Given this perspective, a number of environmental data series are considered for fourteen major Indian States to construct a composite indicator of EQ for two periods (1990-96 and 1997-2004), which reflect the environmental scenario in these States. While the first period covering early nineties to mid-nineties broadly reflects the pre-WTO period in general, the second period ranging from second half of nineties to the middle of the current decade embody the period characterized by the imposition of sanctions / stringent environmental standards in abroad and increasing environmental governance at home.

The cross-state EQ results indicate that the States have responded differently to the economic growth process over the last decade. For instance, Punjab and Haryana has experienced higher growth mostly at the cost of EQ. On the other hand a poorer state Orissa has performed reasonably well during both periods in terms of EQ. Other economically backward states like Bihar and MP have witnessed increasing growth in the
second period with a simultaneous decline in their EQ. However, only select States like Karnataka and Rajasthan have achieved economic growth with simultaneous improvement in their EQ score.

The analysis next focuses on the relationship between EQ in India and FDI / State level exports. If one such relationship exists, then there is considerable scope for government intervention in order to pre-empt environmental sanctions in the developed countries in future. One interesting area of research has been estimating the regional exports of India, since cross-State export data was not directly available. However the latest Economic Survey (2007-08) for the first time has reported the State level export figures. A literature survey is undertaken on the estimation of regional exports from India. Then an analysis is undertaken for understanding the relationship between State level exports and EQ trends in current analysis. It is observed that there is a positive relationship between the export of a State and its EQ.

It is further noted that the rank correlation coefficient between environmental compliance ranking and export ranking of the States is improving over the last decade. This could be interpreted as an effect of the increasing stringency of the environmental standards abroad and the domestic regulations, as the exporting units located within the territories of the major exporter States increasingly attempt to ensure environmental compliance.

The above-mentioned findings indicate absence of any evidence of export-led mass environmental degradation across Indian States in recent period. On the contrary, the internal and external sanction requirements might contribute positively in enhancing the EQ scenario across Indian States. However, there is need to investigate the relationship between State level export and environmental compliance with a longer data series.

Through an empirical model, the relationship between EQ and per capita net state domestic product (PCNSDP) is analysed next, which is a variant of the Environmental Kuznets Curve (EKC) hypothesis. It is observed from the analysis that although a non-
linear relationship between PCNSDP and EQ exists, the EKC hypothesis generally does not hold good in Indian context. The underlying reason behind this phenomenon is that instead of achieving higher EQ with higher growth, some States are characterized by higher PCNSDP (Punjab and Haryana) and lower EQ, which is a worrying observation.

In the international trade literature, Pollution Haven Hypothesis (PHH) is a widely researched area. The idea is that the multinational corporations (MNCs) from the developed countries often send FDI to developing countries characterized by less stringent environmental standard or weaker compliance mechanism or both. The current analysis looks into the existence of the PHH in the Indian framework, given the fact that environmental governance vary across Indian States, which may or may not influence FDI inflow.

The analysis with secondary data on Industrial Entrepreneur Memoranda (IEM) inflow reveals that the approved IEMs in India are generally more in the polluting sectors, which could be a matter of concern. However, a Panel Data analysis involving the fourteen major states selected with respect to three types of pollutants, SO$_2$, NO$_2$ and suspended particulate matter (SPM) reveals that the PHH phenomenon does not hold good in India. It is observed that, while on one hand the environmental pollution levels of the States do not significantly determine the direction of FDI inflows; the FDI inflows do not worsen the environmental scenario of the States on the other.

The findings of the fourth chapter need to be summarized here. First, the environmental governance is being increasingly strengthened in the country. Second, it is noted that the major exporting States are currently not the major polluting States and the compliance level is actually higher in case of the major exporter States. Third, several States characterized by higher income are characterised by lower EQ. Fourth, the FDI inflow in the States is neither fuelling environmental degradation, nor being caused by their pollution profile. These results taken together indicate that the trade / foreign investment-led environmental degradation are not obvious in case of India and hence trade sanctions may not be the best policy tool to improve EQ in the country. On the contrary, the same should be achieved through domestic measures.
Given this finding, there is a need to focus on the impositions of environmental sanctions on Indian exports and compliance-pattern more closely. There is a possibility that the environmental compliance could be a firm-specific concern in India, with little impact on regional environmental sustainability. Given that perspective, the next chapter focuses on the firm-level environmental compliance patterns.

The fifth chapter looks into the firm-level responses in ensuring environmental compliance in five product groups through a secondary data analysis, the focus being on identification of the key determinants of the environmental expenses undertaken by Indian firms. It is assumed here that the environmental compliance of a firm can be captured through the environmental expense undertaken by it. The idea is that for meeting the requirement for exporting to developed countries, the firms need to follow a ‘clean’ production process, which would help them to meet the domestic regulations as well. In particular, the analysis attempts to identify whether the efficiency levels, outward orientation and size and ownership structures of the firms are functioning as major determinants in ensuring higher environmental compliance or not.

The efficiency levels of the firms within the selected categories are determined by Data Envelopment Analysis (DEA) technique. It is observed that the technical efficiency levels in the selected industries are generally at a low level and showing a fluctuating trend over the years, although pure efficiency and scale efficiency levels are relatively higher. This suggests many firms are operating with excess capacity. However it is also noted that the mean of obtained efficiency scores are quite high and the standard deviation of the efficiency scores is getting reduced in recent period, barring the exception of leather. In other words, several firms, which are currently not efficient, are not located too far away from the frontier either. Therefore, an increase in the efficiency level of the firms in the future is not improbable, which could be an important policy consideration for the policymakers.

The estimation results of the multivariate panel data analysis on the determinants of the environmental expense undertaken by Indian firms leads to a few interesting
observations. It is observed that the relationship between efficiency measures and environmental expenses are showing a mixed trend, and varies from sector to sector. Perhaps the result could be explained by the lower standard deviation in efficiency scores, i.e. to say, it might be the case that several firms located very near the frontier are considerably undertaking environmental expenses.

The importance of the dependence on foreign market on environmental expenses, if any, is also analyzed in the model. It is observed that export orientation of a firm is positively related with its environmental expenses in several categories like garments, textile and paper. In other words, the firms with higher export orientation in these sectors are undertaking higher expenses on pollution abatement, perhaps the regulations for compliance in the export markets playing a key role there. However interestingly, the coefficient of export orientation variable in case of leather sector is found to be negative. This apparent contradiction can be explained by the presence of major players like Bata among the sample here for whom export orientation is quite low, despite having high environmental expense.

A few control variables in line with the industrial organization theory are used in the model to understand their importance in determining the inclination of a firm towards environmental compliance. It is observed that the energy expense of a firm is generally positively related with environmental expenses, though in textile sector (171) the same is found to be negatively related. This could be argued as the firms consuming more energy are trying to lessen the environmental damage thereby caused in order to avoid punishment.

Moreover it is observed that the firms spending more on research account are spending more on environmental expenses. It could be argued here that the firms with an inclination towards accessing best available technologies and product innovation are also investing on pollution abatement. A similar relationship is observed between set up cost and environmental expenses.
Finally it is observed that the age of a firm is found to be positively related to its environmental expenses. In other words, the firms doing business for a longer period are prone to spend more on this account, perhaps owing to their superior market position on one hand and the ability to source information on environmental technology and to secure the required credit facility on the other.

Apart from the control variables, a number of dummy variables have been considered in the analysis to assess the impact of various criteria like firm size, ownership etc. on firm expenditure on pollution abatement for environmental compliance. It is observed that the size dummy is positively related with environmental expenses, implying that the tendency for adopting environmental technology is higher for bigger firms.

The ownership dummy is however showing an interesting trend. While the group dummy is positively significant with environmental expenses, the dummy for private Indian firms is found to be negatively significant. The better environmental compliance record by the Group firms could be explained by their better potential access to credit for undertaking environmental expenses and secure the requisite technical information for that purpose.

A brief field survey is undertaken in Kolkata and NCR area for understanding the response of the firms in the leather sector on environmental compliance. It is observed that while bigger and the medium sized firms are linked with common effluence treatment plants (CETPs) and also undertake other necessary compliance measures, the smaller firms in their effort to reduce cost burden may try to avoid the procedure. In addition, the compliance cost with the testing requirements might be quite stringent for the smaller units. The adoption of strategic trade policies by partners in terms of forcing them to purchase inputs from approved foreign units for ensuring consumer safety has also been reported during the survey.

To sum up, the research carried out in the current analysis indicates that the stringency of the environmental standard-related sanctions / barriers in the developed
countries is a major threat for Indian exports of environmentally sensitive products and the country's exports are getting affected because of this. While on one hand, this calls for active Government negotiation at the multilateral forums; it also highlights the need to ensure State-level and firm-level compliance domestically on the other. The State-level analysis reveals that their export-orientation does not generally lead to environmental quality degradation in India and environmental compliance in the major exporter States is gradually increasing. It is also observed that FDI inflow in India is not necessarily coming to the most polluting States, although an inclination towards the polluting industries could be observed. Given the absence of external influence on environmental degradation in the country, adoption of trade sanctions would be an inefficient tool to achieve any objective.

The fourth chapter also notes that environmental quality and economic growth exhibit a non-linear relationship, which requires policy intervention. On the whole, the external and domestic sanctions have not led to decline in EQ of the country as a whole or any part of the country. This also calls for an analysis at a more micro-level. The firm-level analysis on environmental compliance indicates that the bigger and established firms with higher export-inclination are more prone to follow environmental compliance, i.e., undertake expenses on pollution-abatement policies. While the external sanctions here might be helping the big and medium sized firms to achieve compliance through the threat of sanctions, the smaller firms due to lack of adequate facilities might end up shifting their export market or concentrating on the domestic market. This would on one hand hamper India's export opportunity and worsen the EQ of the country on the other. Therefore, in order to enhance adoption of environmentally sound production at home and ensure export flows to the developed countries, the government policy in future should facilitate smaller firms to achieve the compliance level on one hand and negotiate against imposition on trade sanctions in international trade on the other.

6.2 The Government Response

India's response to the environmental standards and sanctions has been two-layered, both on internal and external front. On one hand, India participated at the
multilateral forums to highlight the viewpoint of the country on trade-environment linkage. On the other hand, unilaterally India has tried to improve the domestic environmental scenario through stricter enforcement of environmental criteria.

Responding to the imposition of environment-related sanctions / barriers, the efforts at home so far has taken various routes. For instance, on one hand various procedural steps has been undertaken, including banning of the use of harmful substances in the production process of the environmentally sensitive industries and ensuring greater access to information relating to environmental standards in trade partners, for reducing the extent of the problem. In addition closure of the industrial units not following the laid down standard has led to gradual improvement in the compliance level among the surveyed units. On the other hand, unilaterally technological upgradation for pollution abatement purposes has been pursued through regulatory steps, which has controlled the pollution level at home and has been instrumental in lowering the incidence of environmental sanctions on exports through pre-emptive compliance. Indian negotiations at the multilateral level have complemented these efforts.

The environmental governance in India is currently being ensured through the working of Water (Prevention and Control of Pollution) Act (1974), Air (Prevention and Control of Pollution) Act (1981), Environment (Protection) Act (1986), National Forest Policy (1988), National Conservation Strategy and Policy Statement on Environment and Development (1992), Policy Statement on Abatement of Pollution (1992), National Water Policy (2002) etc. The National Environment Policy (2006) has been recently introduced to effectively coordinate between the existing policies to guarantee a greener environment. The Ministry of Environment and Forest (MoEF) also regularly take note of the compliance status of the firms within the seventeen identified major polluter industries for controlling the upsurge in the pollution load. The pro-active role played by Pollution Control Boards in laying norms for effluent treatment is worth mention in this regard.

The US ban on the fishery export from India during late nineties on the ground of turtles getting killed by fishing net used by the trawlers intensified the debate on trade-
environment linkage at WTO and the justifications of using sanctions for that purpose. The Government addressed the problem by distributing turtle excluder devices for Indian fishing boats, designed by Central Institute of Fisheries Technology through Marine Product Export Development Authority (MPEDA). Moreover, India banned fishing in certain coastal areas from February 18, 1998 to May 31, 2000. The testing and certification procedure in MPEDA laboratories has been upgraded over the years through investments. These steps, ensuring the requisite compliance level, were instrumental in resuming export to the US market once again.

The German prohibition of the use of azo dyes in the garment sector was another barrier faced by Indian players. In the aftermath of the ban, the Government prohibited the use of 74 azo dyes covering manufacture, treatment, packing, storage, transportation, use and transfer, which came into force from 1 April 1998. In addition, the textile-processing industry was brought under Textile (Development and Regulation) Order (1993), which required the units to undertake the latest modernization, adopt quality control and use the permitted dyes and chemicals only. These steps have been instrumental in pre-empting any further sanctions on these grounds.

Similarly in order to ensure lesser hassles for the processed food exporters abroad, the government has enhanced the safety standards in the domestic sector, apart from increasing the credibility of the export certificates in developed country markets (Sawhney 2005). Codex India has been set up at the Directorate General of Health Services under Ministry of Health and Family Welfare, which coordinates and promotes Codex activities in India in association with the National Codex Committee and facilitates India's input to the work of Codex through an established consultation process.

The official export certification body of India, Export Inspection Council (EIC), currently undertakes consignment wise inspection (CWI) of the export products, and the samples are tested for verifying their conformity with stipulated product standards in export market. Moreover, EIC is currently having dialogue with several trade partners to ensure recognition of its certification, subject to fulfillment of their standards. Presently, EIC's certification is recognized by several partners including EU, Japan and other
countries for a number of primary export items, namely: basmati rice, fish and fishery products, milk products, fruits and vegetable products; and several manufacturing items like household electrical appliances and switches, steel and steel products, electrical cables and cement etc. In addition, under the EIC Recognition Scheme (2002) currently 40 inspection agencies and 20 laboratories are approved to undertake the testing activities. This move has helped the Indian firms to comply with foreign standards in a better manner.

With a view to promote dissemination of information on environment friendly commodities (cradle-to-grave approach) in the market, the government had earlier introduced a voluntary eco-labeling scheme named ‘ECOMARK’ in 1991. While an Inter-Ministerial Committee determines the categories of products covered by the ECOMARK Scheme, a technical committee in Central Pollution Control Board (CPCB) develops the criteria for each product category, which is translated to product-specific Indian Standards by Bureau of Indian Standards (BIS). BIS also undertakes testing and certification responsibilities for granting ECOMARK along with the ISI Mark, which is initially awarded for one year on a renewable basis, in exchange of the prescribed license fee to BIS for certification and use of the ECOMARK. However, the scheme is yet to gain popularity among the 17 polluting industrial categories.

Attempts to enforce environmentally sound production in Indian industries has further been ensured through provision of financial assistance to the small-scale industries (SSIs) for operationalisation of the Common Effluence Treatment Plants (CETPs), under which the Central and the State Governments each provided a subsidy of 25 percent of the total project cost of installing the CETP. The remaining cost was met partly by loan from financial institutions like IDBI etc. (30 percent of the total project cost) and partly through entrepreneur contribution (20 percent). The State Pollution Control Boards (SPCBs) have played a major regulatory role in this regard.

A number of prominent industrial clusters with operational CETPs are currently hosting firms from pharmaceuticals and chemicals, textile and garment units, distillery, dye and dye intermediate, pesticides, plastic, paper, engineering industries, leather sector
etc. Given the fact that all these sectors are susceptible to environmental barriers, the government policy has been to the aid of the industry and also beneficial for the environment, as observed from the quality of discharges from the units in the post-CETP phase.

The MEA commitments of the country have also played a key role in ensuring environmental governance. The Hazardous Substances Management Division (HSMD) within the MoEF takes care of India's commitments under Basel Convention, Rotterdam Convention and Stockholm Convention. MoEF has identified nearly two hundred zones in the country as hazard prone industrial pockets, and has conducted hazard analysis for most of them. Moreover, financial assistance has been provided to several industry associations and State-run institutions for conducting training programmes on Hazardous Waste Management, with focus on setting up of common Treatment, Storage and Disposal Facilities (TSDFs) for proper treatment and disposal of hazardous wastes to ensure environmental sustainability.

MoEF is involved in establishment of common TSDFs in Maharashtra, Gujarat, Andhra Pradesh, Karnataka, Tamil Nadu, West Bengal, Orissa, Haryana and Punjab etc. In addition, the Industrial Toxicology Research Centre (ITRC), Lucknow worked on a National Implementation Plan (NIP) as a first step to implement the Stockholm Convention with UNIDO as an executing agency. ITRC prepared the Final Project Brief based on the POPs related data obtained through 10 interactive workshops organized in different cities. The Inter-ministerial Steering Committee has reviewed the report and further follow up actions on the recommendation and findings of the study are being considered by the Ministry (MoEF Annual Reports).

The better utilisation of the budgetary allocation by the MoEF in recent period can be considered as an indicator of the increasing efficiency on that front. For instance, while in 1997-98, the actual expenditure was only 74.80 percent of the budgeted amount, the same increased to 77.00 percent in 1999-00 and further to 93.73 percent in 2003-04. The figure has increased to 100.00 percent during 2004-05 and 2005-06, which could be taken as a proxy of better mobilization of funds in the Ministry programmes. It can be
argued that the increasing fund mobilization capacity at the MoEF has been a good sign for improvement of the environmental scenario.

Apart from the MoEF efforts, the Ministry of Commerce (MoC) has also collaborated with industry bodies for ensuring greater dissemination of environmental standards. For instance, recently MoC collaborated with UNCTAD and DFID to publish a handbook on the mandatory and voluntary standards on leather and footwear products from Federation of Indian Micro and Small & Medium Enterprises (FISME). The handbook provides detailed information on the commodities subject to restrictions, the mandatory and voluntary requirements in India’s trade partners like the EU and the US and the other developed / developing countries (including test procedures and permissible limits) and the relevant ISO certification norms. The Ministry has also organized workshops on SPS-TBT issues in association with industry organizations like FICCI and CII on several occasions. Access to this kind of concise information dissemination as well as CPCB efforts has been instrumental in enhancing the number of ISO certified firms in India, especially in textile sector. EIC is also conducting several awareness programmes for exporters in various cities in recent times.

Greater cooperation between the public sector and the private sector initiatives has been quite important for information dissemination, and the experience of the leather sector in Tamil Nadu is a case in point. Quasi-public sector institutions such as Council of Leather Research Institute (CLRI) and Council of Leather Exports (CLE) played a key role in standard setting, monitoring, testing and certifying and dissemination of new information about the German standards there and also developed customized certification and testing procedures. Moreover, leading exporters after the German ban helped the smaller firms, who were their input-suppliers, to comply with the stringent regulations. In addition, to popularize adoption of alternative dyes developed, the chemical companies offered technical assistance to small firms.

The judicial interventions at various occasions have also positively contributed towards ensuring firm-level compliance with environmentally sustainable production norms in the country. At times, the court directives for closure of the polluting units in
the absence of requisite reforms have been commendable and acted as a sanction like mechanism.

While the above-mentioned steps undertaken by the government has been instrumental in ensuring higher environmental compliance in several export-oriented sectors and consequently in having better environmental quality at home, there is enough room for further improvement of the scenario. Though the current analysis does not focus on import related issues, they can influence the environmental scenario as well. It is to be noted that a trembling hand approach has been noticed in formulating the domestic and import policies with environmental implications at times.

For instance, the MoEF in 1996 debated the possibility of segregating metal waste and scrap, which would have meant a smoother import of metal scrap in the country with obvious environmental consequences. The initiative was later abandoned. Similarly, although India joined Basel Convention in 1992, the hazardous waste rules of the country were brought in line with its obligations under Basel only in 2000, and that too after the Supreme Court interventions. MoEF amended the hazardous waste rules of 1989 in 2000 and 2003, and 29 chemicals have been completely banned for export and import. However the effectiveness of these moves has been questioned (BAN 2005).

A point of concern has been the emergence of several toxic waste zones, owing to the increasing import of several waste items (include e-waste) in the country since late nineties (Sharma 2005), spread over leading exporting states like Gujarat, Maharashtra, Andhra Pradesh etc. While all these products are not re-exported, their influence on domestic environment needs to be accounted in policy formulation. The definitional shift in regulations over the years is also worth mentioning here. While during eighties and nineties, import of hazardous waste for processing or reuse as raw material was permitted, currently wastes cannot be re-exported after 30 days, which may prompt exporters to simply dump the product at ports. Similarly, it has been argued that Draft Hazardous Materials (Management, Handling and Transboundary Movement) Rules (2007) prepared by CPCB specifies if 60 percent of any waste is recyclable, then it would
not be considered as waste but a material fit for import. This may increase the volume of waste import in the country further, with obvious environmental implications.

Apart from the internal actions, the country has also strongly put forward its views in the multilateral forums at times to protect self-interest. It has been observed that compliance requirement for the developing country firms with the developed country environmental standards is essentially technological / technical in nature, involving rigorous testing of the product for certifying absence of harmful substances contained in it or ensuring adoption of an environment-friendly production process for reduction of harmful emissions / discharges. However, acquiring the right technology / obtaining information on the availability of technology by an average Indian small or medium sized firm is not always an easy exercise. This practical problem has led India to rightly argue at the multilateral forum that environmentally sound technologies and processes (ESTPs) should not be made obligatory on developing countries until these items are freely available.

In this background, the Environmental Project Approach (EPA) proposed by India at the multilateral forum as against the List approach proposed by the developed countries is an attempt to ensure market access in the environmentally sensitive commodities in the developed countries in one hand, and simultaneously to acquire modern environmental technology from them on the other. In the post-Doha period, India has also stressed on the need to clarify the relationship between Specific Trade Obligations (STOs) set out in MEAs and WTO Rules at times. In addition, it has actively participated in the standard-setting process at codex and aired its reservation against the proposed stringent standards on several occasions.
6.3 The Future Issues

On the basis of the analysis carried out in this research and the policy actions adopted by the government, an attempt is made in the following to arrive at a conclusion on the possible future course of action by the policymakers, both at the internal and the external levels.

6.3.1 Issues for the Internal Forum

At the internal level, the government effort must first focus on a unilateral move to strengthen the environmental governance framework further. It has been argued that the environmental sanctions on Indian export was sometimes based more on perception about the poor production / processing standard in India rather than evidence-backed. Ensuring environmental governance would be major step to pre-empt this kind of barriers in future.

However it has been observed that while the requisite legal framework is very much in place in India, there is considerable scope to enhance the enforcement mechanism. It has been argued that the rules provide limited incentive for the firms to minimize or reduce waste; hence many of them do not play a responsible role on this front. Strengthening the Central and State-level pollution control boards in terms of modified testing facilities and skilled manpower is one policy to be urgently adopted. Moreover, the actual severity of the existing penal mechanism for ensuring environmental compliance has been questioned at times. The domestic sanction procedure must also be strengthened by strict enforcement of the standards and increasing the limit of penal actions.

In addition, widening the reach of the annual firm-level compliance status analysis for the seventeen polluting industry categories is the other policy to be urgently implemented. On one hand, the number of industries coming under the survey needs to be increased in line with present polluting capacity of the industries, and the number of firms within the covered industries needs to be increased on the other. Adoption of a mix
of incentive-based taxation policy and sanction policy (i.e., closure of non-complying units) would be the other option for the government.

Compliance with the restrictions imposed by developed countries on the use of certain harmful chemicals by substituting them with environmentally acceptable substitutes has so far been quite successful for two reasons: one, considerable presence of producers of these alternate chemicals in India and two, zero capital equipment requirement for making this switch (Joseph and Nithya 2009). However, the compliance scenario in a sizable segment of the industry, especially smaller units, is still forthcoming owing to the high cost of machines and high cost of accessing the required capital. A major challenge for the government would be to enable them to undertake these changes, through a policy of easy access to credit and appropriate incentives.

Ensuring access to the required technology / necessary capital for guaranteeing cleaner production is another major step to be taken in coming future. Installation of the CETPs in leather and other sectors has been possible, thanks to the Government funding scheme. There is an urgent need to enhance the reach of this programme, especially in order to facilitate adoption of environmentally sound technology for smaller firms. Other sector-specific schemes like Technology Upgradation Fund (TUF), used for new capacity creation in the textile sector could be employed to further this goal in other environmentally sensitive sectors. The government is already trying to ensure higher allocation of funds for developing green technologies. Expediting such efforts would be the need of the hour.

Since a number of industrial clusters are currently having links with CETPs, one possible course of action for the government to pre-empt the environmental sanctions in the trade partners could be to have generic branding of the clusters in terms of environmental cleanliness. It has been noted that currently firms within chemicals, distillery, engineering industries, garments, paper, pharmaceuticals, plastic, textile etc. in several clusters are linked with CETPs. Making an arrangement to declare that the products from these clusters as produced with environmentally sound production process will provide them international quality recognition, which will allow them to realize
higher prices and attract fewer barriers. The economies of scale owing to the presence of considerable number of firms within the clusters would generate better capacity building for compliance with environmental standards. Establishment of / approval to competent laboratories through EIC Recognition Scheme (2002) in the clusters in general and in other major export locations would also be helpful. The government should take necessary policy actions in this regard.

ISO 9000 series of quality management system has already emerged as the basic requirement for doing international business. In 1996, an analogous ISO 14000 series, which requires firms to have a documented environmental management system, was introduced. It has been noted that the attraction of ISO 14000 is increasing among Indian firms, although at a slow pace. The government should adopt necessary fiscal instruments for motivating the firms in environmentally sensitive sectors to obtain ISO 14000 certification. This would automatically lower the instances of environmental barriers on Indian exports.

It has been witnessed from the literature and the RCA analysis that competitiveness of the firms might suffer from the stringent environmental compliance requirements. India has already set-up the National Manufacturing Competitiveness Council in 2004, in order to enhance the competitiveness of the domestic industries. The Council has brought out “The National Strategy for Manufacturing” in February 2006, which talks about enhancing performance of several key sectors including textiles and clothing, leather products, drugs and pharmaceuticals, food processing and IT hardware etc., which are also environmentally sensitive. The Council initiatives may attempt to ensure that the firms within these sectors do not end up by being uncompetitive after achieving compliance with import country standards. One particular initiative may include provision of research grants to the firms for developing commercially viable by-products, so that the adverse effect of the compliance cost is reduced.

Apart from the directives from the government, initiatives from the industry associations can also contribute positively in this regard. A number of industry-specific interactions were instrumental in formation of the Charter on Corporate Responsibility
for Environmental Protection (CREP) in March 2003, which is a participatory action commitment for progressive improvement in environmental management system for 17 categories of polluting industries. Eight task forces have already been established with participation from institutions and industry associations to implement this charter, who conduct regular meetings and on-site inspections to assess the compliance with the determined standards. Strengthening the initiatives under this forum needs to be ensured by the Government. In addition, the government should ensure greater reach of the applicable standards to the polluting industries through various industry associations like CII, FICCI, CAPEXIL etc.

The judicial intervention has also positively contributed in terms of ensuring firm-level environmental compliance through strict rulings. Establishing designated courts to promote this objective further and to clear the existing court congestion backlog should also be undertaken simultaneously.

It has been observed that the States have different strength and weakness in various environmental categories. This indicates that individual States should have certain flexibility to adopt environmental management practices based on their local (at the most disaggregated-level) environmental information, under the broad umbrella of the National guidelines like the National Environmental Policy 2006.

Last but not the least, addressing the data issues in order to have a clear understanding of the pollution/environmental degradation scenario in the country is of utmost importance. Planning Commission (2000) had noted earlier that there is a mismatch between the classification of industrial heads made by CPCB and the Annual Survey of Industries (ASI), as a result of which a large number of industries who are capable of producing high level of pollution load are left out. The problem occurs particularly because of the fact that ASI reports data for units employing 10 or more workers and using power and units with 20 or with more workers but not using power. The Planning Commission study pointed out that this could be a serious problem especially in Haryana, which obtained a lower ranking in the environmental quality index
Chapter 6: Conclusion and Policy Issues

(EQI) ranking generated in present research. A detailed analysis on this front and subsequent action to correct the data anomalies is necessary.

6.3.2 Issues for the International Forum

At the international front the country need to negotiate at the WTO and other multilateral forums on various issues. The major agenda of the country should be to argue against imposition of trade sanctions on environmental grounds.

It has been argued that developing country participation in the Codex forum has been limited. Therefore, in the standard-setting forums, active participation on any unreasonable environmental / related standard is necessary. India has already participated in these forums and is currently negotiating for ensuring that the weaker technological scenario of the developing countries in terms of ESTPs does not become a handicap for their exports. There is a need to intensify negotiations on that front, in particular focusing more on compulsory licensing of ESTPs from the developed countries in more favourable terms and conditions. In addition, the unreasonable unilateral moves / actions need to be fought regularly. For instance, the recent EU proposals to impose some economic penalty against developing country exports on the pretext of carbon emission need to be countered. Potential misuse of other EU new regulations like "Registration, Evaluation, Authorisation and Restriction of Chemical substances" (REACH) also needs to be effectively countered.

The problem faced by the developing countries in not unknown to the WTO. It has already acknowledged the role of special and differential treatment for developing countries to be an integral part of all negotiations, especially in providing technical assistance and capacity building in the field of trade and environment to developing countries in the Doha Ministerial Declaration. Although the provision has never been revoked, effective technical assistance to the developing countries is not easily forthcoming. There is an urgent need to ensure the same through constant negotiations by developing countries like India at WTO forums. However, as the experience reveals, the country is yet to enter into any negotiating collaboration with another country on this
front. Lack of negotiating partners may put the country in a less advantageous position, which underlines the need to enhance environmental compliance at home through Government policy intervention in no uncertain terms.

At the bilateral level, the major problem behind the proliferation of environmental sanctions / standards is that developed countries do not have much trust in inspection procedures in developing countries. Ensuring equivalence of Indian domestic environmental standards with other countries including the same for developed countries is one option that can solve the problem effectively. This approach, based on mutual recognition of each other’s standards may begin with other developing countries first and slowly be extended to the developed countries.

It has been noted that India is currently entering into Regional trade agreements with a number of developing countries and significant proportion of India’s ESG exports are going in that direction. Therefore, in the upcoming agreements with groups like ASEAN, SACU, GCC etc. an equivalence agreement could be formally incorporated so as to further export interests. The focus should be on abiding to the codex standards. The EIC is already working on this front and a number of countries currently recognize its certification for several primary and manufacturing commodities. Expansion of the list and countries through constant negotiation is to be earnestly followed.

It is to be noted that the process of mutual recognition is not always smooth. For instance, the EU-U.S. Agreement on Mutual Recognition, in force since 1 December 1998, has not yet been fully implemented (USBTI 2006). Therefore the attempts to enter into mutual recognition agreements should be based on practical scenario rather than ambitious agendas. It has been noted that, India is attempting to enter the APEC market through the Regional Trade Agreement (RTA) route since nineties. One major initiative of APEC has been to move toward MRAs in regulated product sectors (Maskus and Wilson 2000). India therefore needs to start preparing for that eventuality if after 2010 APEC opens up their doors for the country.
The other major concern area is that the Indian negotiating standpoint (EPA method) is currently relying on a project-by-project approach, which offers the developed countries a less than expected market access in India in environmental goods and services. As revealed from the trade literature, environmental measures are extensively used as strategic trade tools. In that light, the stringency of the environmental measures applied by developed countries against Indian exports as arm-twisting devise may increase in future, in order to obtain additional market access in the Indian market. Therefore, the policymakers should keep due note of this perspective in their future actions.