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Introduction
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1.1 Introduction

The use of sanctions in international trade on various grounds is a well-known phenomenon and has been practiced for a long time. The historical documents provide evidences that the Greeks and Romans had used this tool during their advances. In subsequent period, the boycott of the British goods by American colonies in the Eighteenth Century for obtaining more freedom, or the use of naval blockade by the United States against the Southern Confederate States during the American civil war for controlling their divisive attitude could be noted.

Sanctions in literal sense imply authorizations / restrictions. The policy of imposing sanctions has evolved as an important compliance mechanism in international forums. A country generally takes recourse to sanction policies, when it wants to inflict some economic costs on others in order to fulfill an objective (by restricting trade / investment-flows). The target country, confronted with such measures, might therefore be forced to adopt a policy regime more acceptable to the imposing nation(s). Sanctions could be used for fulfilling various kinds of objectives, including political, social (e.g. – labour standard related issues), environmental etc.

The mechanism of imposing sanctions in international trade is the following. Suppose country A wants country B to adopt / discontinue a policy on political / social / environmental grounds. Then it might decide to impose trade sanctions against country B. For instance, it may completely stop country B from exporting any product / product group to country A (import sanction). On the other hand, it may stop their local players from exporting to country B (export sanction). The coverage of sanctions however is not unique and differs considerably from case-to-case. Sanctions might be either limited (to one or two commodity groups) or comprehensive, based on the objective.
The limited economic sanctions generally focus on a narrow aspect of the target country, depending on the objective. In this case countries are denied certain types of assistance or export opportunities, with a limited impact on their economy. For instance, if country A comes to know that garment exports from country B are being produced by using child labour in the production process, they may decide to ban all garments exports coming from that country, until and unless all child labours are removed from these activities.

On the other hand, in the extreme case a complete prohibition between the sanctioning and sanctioned countries may be imposed, inflicting a greater economic cost on the latter. In between, sanctions can be imposed on certain product groups. Here instead of comprehensive sanctions, the sanction is limited to select group of products targeted to achieve the objective, but of considerable economic interest to country B. If the resulted economic costs are too high for B, then it may decide to comply with the stipulated objectives as laid down by country A.

Economic sanctions might be imposed on a country either multilaterally or unilaterally. Unilateral sanctions are imposed by one country (e.g. the Section 301 of the US Trade Act), while multilateral sanctions are imposed by more than one country through a commonly agreed upon forum (e.g., the environmental agreements under United Nations Environment Programme).

The use of economic sanctions as a policy measure in the arena of international trade has been quite extensive since the first quarter of twentieth century. In particular, the use of trade sanctions as a pressure tactics increased considerably from seventies to nineties.1 The United Nations (UN) has played a major role in this context. Sanctions as a policy tool for ensuring compliance were imposed on several occasions: on Portugal (1960-1974) for their colonialism in Africa; on South Africa and Rhodesia (Zimbabwe) for racial discrimination; on Iraq in 1990 for invading Kuwait; on Somalia, Yugoslavia and Sierra Leone at various points of time for the brutalities during their civil war etc.

1 A total of 115 sanctions were imposed during 1914-1990, among which 41, 67 and 50 incidents were registered in 1945-1969, 1970-1989 and 1990-1998 respectively (Askari et al 2003).
Apart from the multilateral sanctions thus initiated by the UN, several countries have also adopted individual or unilateral sanctions on their trade partners; if they are unsatisfied by any of the latter’s practiced policies. The use of economic sanctions by the US could be mentioned in this regard. For instance, after the Korean War, the US imposed unilateral sanctions on China on political reasons, which continued upto 1971. The prolonged US economic sanction on Cuba on ideological ground could also be quoted here. It is seen from the literature that the US had extensively joined the sanction coalition as well as simultaneously pursuing unilateral measures.\(^2\)

The targets of the sanctions imposed by a country could be multifarious. It could be the national Government / provincial Government of a country, or the firms located within the territory of the target country doing business with the imposing country, or particular sectors / organizations, and many other possible players. It is argued that if the target entities are not willing to implement a policy on the basis of request, then sanctions could ensure introduction of that.

While the imposing country feels that the sanction should be forcing the target country to change its policy, the latter is confronted with two alternative options. It can on one hand choose to comply with the regulations put forward by the imposing country by undertaking certain compliance costs, which could take the form of modifying relevant domestic regulations and their implementation mechanism (e.g. social / environmental issues), or by changing international outlook etc. The other option for the target country could be searching suitable alternative markets for their exports, thereby bypassing the effects of the sanctions completely. The latter is likely to be the case, if the sanction is a limited and unilateral one. In other words, the possibility of success of the sanction increases if the same is a multilateral one or the sanction-imposing country posses a significantly large market, which the target country cannot ignore. Moreover, Kaempfer and Lowenberg (1999) noted that any sanction, be it unilateral or multilateral,

\(^2\) During 1945-1998, the US has been part of 115 multilateral measures apart from imposing 68 unilateral ones (Hufbauer 1999).
needs a well-organized supporter group within the territory of the target country for success. The effectiveness of a sanction significantly depends on these factors.

The existence, as well as the effectiveness of sanctions, imposed either unilaterally or multilaterally, have been extensively researched and the evidence from the literature is ambiguous. Cortright and Lopez (2000) have argued that the UN sanctions during nineties have achieved mixed success. Drezner (2000) has noted a negative correlation, or no correlation, between multilateral sanctions and their successes. Askari et al (2003) concluded that, sanctioned (target) Governments have rarely changed their policies to comply with the wishes of the sanctioning (sender) country, if not backed by military action. However, analysis of the trade-diverting effect of sanctions has revealed that they cause a dampening effect on bilateral trade flows (Hufbauer et al 1997; Askari et al 2003). The conclusion of the literature is supported by the recent experience; the UN sanctions against Iraq and Afghanistan on political grounds (terrorism) led to limited or no success, which ultimately required military actions.

The limited effect of the sanction policies led to exploration of alternative strategies for enforcing discipline in several streams. For instance, protection of human rights may be ensured through a policy of persuasion and embarrassment rather than outright sanctions (Weissbrodt and Schoff 2003). Here the human rights scenario / labour condition of a country could be published in a multilateral body report (e.g. - Human Development Reports, International Labour Organization Reports) and the countries securing a lower score on that count earns low respect from others, which thereby forces them to reform accordingly.

Though the use of sanctions in international forums is an interesting research question, the current analysis limits itself only on the effects of imposition of environmental sanctions on the export of the partner countries. No other kind of sanctions is considered within the present framework. The concerns pertaining to environmental sanctions as evolved within the trade framework are discussed in the following.
1.2 Environmental Sanctions in International Trade

The period between the two World Wars were marked by an increase in protectionist trade policies, which led to a decline in global trade volumes. Keeping this concern in mind, the General Agreement on Tariffs and Trade (GATT) came into existence in 1947, which was supposed to reduce the existing trade barriers.

Upto mid-Sixties, the GATT Member countries focused only on the reform of tariff issues, while anti-dumping measures were included in the negotiating agenda during Kennedy Round on 1964. During the seventies and eighties, the high prevalence of non-tariff barriers (NTBs) like subsidies and quota limits on exports acted as a major hindrance to international trade flows. Therefore, the negotiations during Tokyo Round initiated in 1973 focused on those barriers as well.

In addition to simple quantitative barriers like quota, several developed countries imposed another special kind of quota on textile exports of developing countries in 1974, which was in force upto 2004. The quota, known as Multi Fibre Arrangement (MFA), stopped many developing countries like India and China from freely exporting their products to the developed countries. MFA was a protectionist policy and was introduced to protect the lower competencies of the developed country producers in the area of textile and clothing.

Keeping these existing barriers to trade in mind, the Uruguay Round negotiations of GATT initiated in eighties (and later its successor WTO since 1995) focused not only on reducing tariff rates but also on gradual phase out of the traditional NTBs (e.g. - quota) as well as other standard-related barriers. It is observed from various issues of World Development Indicators that the simple mean tariff of Member countries considerable declined from their pre-WTO tariff level over the last two decades. However, the trade conflicts since nineties regarding imposition of higher environmental standards raised questions whether newer form of NTBs has partially nullified the enhanced market access originating from the removal of the traditional (e.g. - tariff and
para-tariff) barriers or not. Interestingly, the upsurge in environmental barriers in developed countries coincided with their declining tariff rates during Nineties.

For instance, the unilateral environmental actions by the US against developed / developing countries during the GATT period / early days of WTO have often been the focus of trade disputes and protectionist motives behind these actions have been suspected. The unilateral actions of Canada and European Union on environmental grounds have also been questioned at times. The US sanction on imports of tuna from Canada (1982); imports of yellowfin tuna from Mexico (1991 and 1994); Canadian sanction on imports of certain unprocessed herring, roe and pink and sockeye salmon from US (1988), the EU sanction on hormone-treated beef imports from the US (1996) etc. are among the few sanctions imposed on environmental / health-related grounds. In all these cases, the relevant GATT / WTO dispute settlement panels noted that the alleged actions violated their multilateral obligations. Among other measures, the German ban on the import of leather (and textiles) products treated with azo dyes (1994) or the recent ban on Chinese toys to the US should be mentioned.

Setting permissible limit on emissions / product characteristics etc. has evolved as a more common method of restricting trade than imposing outright sanctions in the post-WTO period (Jha and Vossenaar, 1997). For exporting several environmentally sensitive categories to the developed countries like the EU and the US, developing countries like India need to comply with environmental standards like stipulated testing requirements etc.

Although environment is not directly part of the WTO, a number of WTO agreements embody environmental concerns, as observed from Annex 1.1. The provisions, through which the environmental standard-related concerns are discussed includes the Agreement on Sanitary and Phytosanitary Measures (SPS) and Technical Barriers to Trade (TBT) etc. The provisions within the SPS and TBT agreements allow a member country to deviate from the international standard, and set a higher standard domestically, if that is required in national interest and is scientifically justifiable. This
exception provision may affect the export of developing countries like India in the developed country markets.

In other words, 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. It has been observed that during late nineties India had faced a number of sanctions imposed by the EU and the US on environmental grounds. In the later period, the mere threat of imposing sanction in case of non-compliance with the higher environmental standard has acted as a credible threat, which may partly explain the reduction in the number of actual sanctions.

The general argument in favour of imposing stringent environmental standards in developed countries is that environmentally degrading production methods adopted in a developing country may result into poor product quality or contribute to environmental disaster / trans-boundary pollution, which pose direct or indirect threat to the consumers in import markets. Therefore, an eco-labeling scheme / cleaner production requirement for environmentally sensitive products for providing relevant information to the authorities and consumers may be necessary. Moreover, whenever a WTO member is maintaining weaker environmental standard, it is providing the local firms an indirect subsidy in the form of lesser investment requirement on pollution abatement technology etc. (Perrings 2000). This in turn may provide an incentive to the multinational corporations to shift their production base in that developing country, compounding the problem further. Hence, the sanction imposed by a developed country on the export of a particular sector from a developing country is theoretically geared towards generating environmental governance at source. In other words, the requirement for adoption of environmentally clean technology by strict enforcement of measures like eco-labeling (through imposition of higher environmental standards) is to ensure greater consumer safety and lesser pollution in a developing country (Abrego et al 1997; Beghin and Potier 1997).

However the misuse of environmental and technical standard-related measures are not uncommon, as reflected from the occurrence of several disputes on these grounds at
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the WTO Dispute Settlement Forum (Maskus and Wilson 2001). The philosophy of imposing environmental sanctions / standards has been questioned in the literature, which argued that environmental sanctions are generally ineffective as an enforcement device (Whalley 1991; Bhagwati and Srinivasan 1996; Perroni and Wigle 1999; Rege 2000; Griswold 2001). Bansal and Gangopadhyay (2001) have noted that stricter environmental regulation is better, but the strictest possible regulation is not optimal. ESCAP (1999) has stressed that since trade may not always necessarily be the main reason behind the environmental concerns, these standard-related measures acting as limited economic sanctions on developing country exports may end up disrupting their exports.

Given this background, the various scenarios associated with the imposition of stringent environmental standards in a developed country and the compliance requirements from the developing country perspective is explained with the help of Figures 1.1 and 1.2 in a partial equilibrium framework in the following.

Let us consider a partial equilibrium framework. Suppose the market is characterized by competitive scenario. In Figure 1.1, D represents the domestic demand curve for an exportable product category. $MC_p$ and $MC_s$ denote the marginal private and marginal social cost curves respectively, where the latter curve is the sum of the former and marginal compliance cost of domestic environmental regulations. From the figure, it is observed that under autarchy scenario, the equilibrium output and prices are $Q_1$ and $P_1$ respectively when no environmental policy is domestically enforced. The equilibrium changes to $Q_3$ and $P_3$ in that order when a domestic environmental policy is introduced by the home Government (i.e., a per unit output tax is imposed). It is observed that the output is reduced as a result of introducing domestic compliance measures. This may lead to improvement of domestic environmental quality if the pollution is production-based / consumption-based or both.
Figure 1.1: Trade and Environmental Policy under Autarky – Comparing Perfect Competition and Imperfect Completion Case

Now suppose the market for the aforesaid product is characterized by imperfect competition scenario. In the figure, MR then represents the marginal revenue curve and the thicker lines are used for determining the equilibrium point. It is observed that under autarchy scenario with imperfect competition, the equilibrium output and prices change to $Q_2$ and $P_1$ respectively when there is no domestic environmental policy. The equilibrium changes to $Q_4$ and $P_4$ in that order when a domestic environmental policy is introduced. Clearly in this case the production is lower vis-à-vis the competitive case, with possible positive implications on the environment; though the equilibrium price is much higher. Clearly, here the pollution generated from both production / consumption would be much lower as compared to the perfect completion case.
Now, export opportunity comes into picture, when $P_w$ is the prevailing world price. The scenario is explained with the help of Figure 1.2. The assumption here is that the country being a developing country cannot influence the world price through its exports. When international trade takes place and there is no domestic environmental policy in force, the equilibrium output would increase to $Q_5$, i.e., where the world price is equal to $MC_w$. The domestic consumption is determined by the intersection of the D curve $P_w$, which is $Q_6$.

The equilibrium output comes down to $Q_7$ if a domestic environmental policy is implemented (i.e., $MC_e$ is the relevant cost curve). The domestic consumption is still $Q_6$, but given the reduction in production, the volume of export decreases, as seen from Table
1.1. Moreover, if the country is forced by a developed country to comply with an environmental standard higher than the one appropriate for its level of economic development, then the high marginal social cost for complying with the standard ($MC_s$) reduces its equilibrium output further to $Q_8$. As observed from Table 1.1, the volume of exports from the country shrinks accordingly and reaches minimum value when the country is forced to comply with stringent foreign standard ($Q_8 - Q_6$).

Under imperfect competition, with $P_w$ as the prevailing world price, we see that the equilibrium outputs would be $Q_5$ (in absence of domestic environmental policy), $Q_7$ (with domestic environmental policy) and $Q_8$ (for complying with foreign environmental standards) respectively. However, the domestic demand would be determined by the intersection of the MR curve with $P_w$. It is observed from Table 1.1 that the volume of exports in the three cases would be $Q_5 - Q_9$, $Q_7 - Q_9$ and $Q_8 - Q_9$ respectively; the volume of export being lowest in case of compliance with the higher standard. It could be noticed that in the imperfect competition case, the volume of export is higher, vis-à-vis the perfect competition case.

The summary of the above-mentioned scenarios is reported in Table 1.1, which shows that the attempts to impose higher environmental standards by developed countries might lead to lower exports for developing countries. In other words, the analysis indicates that if the purpose of imposing the higher standard in a developed country is protectionist in nature that adversely affects the export interest of a developing country in question.

The effect of the environmental standard on domestic environment in the developing country is however ambiguous. For instance, if the production process is environment-deteriorating in nature, then the reduction in production both under competitive and imperfect competition scenario (with stringent environmental policy) might be good for the local environment. Since domestic demand is also lower,
consumption-based environment-deterioration might also go down. However, since the consumer surplus also reduces, the net welfare effect may be ambiguous.\(^3\)

Table 1.1: Trade Liberalization and Environmental Policy – Equilibrium Output, Price and Exports

<table>
<thead>
<tr>
<th>Equilibrium</th>
<th>Perfect Competition</th>
<th>Imperfect Competition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Autarky</td>
<td>Trade Liberalization</td>
</tr>
<tr>
<td></td>
<td>No Environmental Policy</td>
<td>Domestic Environmental Policy (MC(_S))</td>
</tr>
<tr>
<td>Output</td>
<td>(Q_1)</td>
<td>(Q_3)</td>
</tr>
<tr>
<td>Price</td>
<td>(P_1)</td>
<td>(P_3)</td>
</tr>
<tr>
<td>Exports</td>
<td>(Q_5 - Q_6)</td>
<td>(Q_7 - Q_9)</td>
</tr>
</tbody>
</table>

While the difference in environmental standards across countries is partly owing to the difference in their development level (Kolstad 2000), 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. The inappropriateness of one standard for other countries has been noted in the literature (Pearson 2000), which calls for harmonization / mutual recognition of environmental standards (Leebron 1996).

India as a developing country also faces the environmental standard related challenges in the developed country markets and has witnessed imposition of sanctions on its exports on this ground at times. As mentioned earlier, India could be faced with

\[^3\] It is generally argued that any attempt to enforce a higher environmental standard by the developed countries through environmental sanctions would be welfare-reducing from the developing country perspective (Sanyal 2001; CUTS 2005).
two alternatives; either to comply with the environmental standards imposed by the EU and the US and avoid the strict sanction (i.e., compliance with $MC_H$), or to look for substitute markets (e.g. other developing countries) for its exports, where the compliance requirement level would be lower (i.e., compliance with some hypothetical $MC_M$). While the former would involve adoption of compliance costs (both fixed and variable costs) by Indian firms in environmentally sensitive categories, the latter would involve devising an entry strategy in a new market characterized by weaker environmental standards.\footnote{It can be shown that the volume of export would increase when $MC_M$ is the environmental standard as compared to $MC_H$, since the former is at a more comparable level with $MC_s$, the domestic environmental standard.}

Over the last decade, the directional export pattern as well as export composition of India has undergone a change. While during early nineties, India’s trade with the EU and the US accounted for a significant proportion of total trade, the same in the recent period is geared more towards developing countries located in West and Southeast Asia, Latin America and Africa as compared to the earlier period. This directional change since late nineties, although might be coincidental, needs to be focused in light of the prevailing higher environmental standard in the developed countries, and the implications of the associated compliance requirement on Indian players.

1.3 Framework of the Current Analysis

A section of the trade literature, including both theoretical models as well as policy studies, indicates that the discretionary and redundant standard-related measures put in force by developed countries often takes the cost advantage away from a developing country producer, and therefore, might turn out to be welfare and export reducing. While a reduction in these technical and environmental standard related policies in the EU and the US itself does not guarantee an enhancement in export opportunities for the developing countries like India, it certainly provides a better level playing ground to them. Given this background, the current thesis would like to explore
the effect of the environmental standards on India's export performance and its domestic environmental scenario.

It is observed from Figure 1.2 that the stringent environmental compliance requirements for exporting to a developed country and the consequent threat of getting exposed to sanctions may affect the export flow of a developing country like India. In order to understand whether such a phenomenon is observed in India's trade vis-à-vis the developed countries, the volume as well as direction of India's regional and country-specific trade in general, and select environmentally sensitive categories in particular needs to be analyzed. A declining share of the developed countries in India's export of environmentally sensitive categories would indicate a trade diversion owing to higher standards, which may further be probed with the help of an empirical model.

Since the objective of imposing the sanctions is environmental in nature, there is a need to understand what determines the environmental quality in a country: trade, economic growth or investment. On one hand, the developed country sanctions might influence the domestic environmental policy making and strengthening of the compliance mechanism at the National and Provincial level, with consequent impact on the environment of the developing country. The States within a developing country could be considered as collection of industrial units located within their territories. The Ministry of Environment and Forest (MoEF), Government of India, regularly reviews the environmental compliance situation of the firms within the identified polluting sectors and non-compliance with the domestic standards leads to closure of the units (domestic sanction mechanism). An analysis of the State level environmental compliance scenario might provide an indication of their overall environmental performance. Here the domestic environmental governance could either be strengthened as part of India's unilateral effort or be part of its multilateral commitment to clean the environment.

The environmental quality of a State may or may not improve with its export intensity and an analysis needs to be undertaken to understand the evolving scenario on this front in India. Enhanced environmental compliance of the States with higher export orientation might be an event caused by the environmental standards in the developed
country markets. This would then positively contribute to the India’s environmental quality.

However apart from export intensity, economic growth scenario may also influence the environmental scenario in a country. The idea is that States with higher income might demand a better environmental quality, which rather than the export compliance requirement, might play a more significant role in abatement of polluting activities. In other words, growing income might facilitate the environmental compliance process, which in long run would result a better environmental quality. The influence of economic growth on environmental quality in India needs to be analyzed by testing the existence of the Environmental Kuznets Curve (EKC) hypothesis in a cross-State framework. The analysis would be instrumental in understanding the changing perspective of environmental quality across Indian States over the last decade.

If however, economic growth process is not accompanied by proper environmental governance mechanism, the regions maintaining weaker environmental standard (i.e., relatively intensive in polluting firms) might end up attracting foreign investment in increasing volume in certain polluting industries. Here the Multinational Corporations (MNCs) may be tempted to invest there in order to benefit from the consequent lower cost implications (the cost being $MC_p$ or closer to it rather than $MC_s$). 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.

The influx of foreign investment in this fashion would contribute in deteriorating the environmental quality in a developing country on one hand, and provide additional justifications to developed countries to impose environmental sanctions on India on the other. An analysis to understand the interrelationship between State level pollution in select categories and the FDI inflow, i.e., the Pollution Haven Hypothesis (PHH) in the Indian framework needs to be undertaken here. Absence of PHH in Indian framework would imply that the State-level domestic environmental regulations are not sufficiently weak to attract foreign investment in the polluting sectors, which speak in favour of environmental governance prevalent in the country.
Finally, as observed from Figure 1.2, the effects of the stringent environmental compliance requirements is ultimately felt by the local firms of the concerned categories, who may respond to the same by changing their techniques of production, reflected through a shift toward environment-friendly methods. Firms belonging to different categories may behave differently here. For instance, a firm with higher export orientation or more established credentials might act differently vis-à-vis a smaller firm operating only to serve the domestic market. A firm-level determinant analysis needs to be conducted for understanding the motivation for the firms in select environmentally sensitive sectors towards incurring environmental expenses. In case the firms with higher export orientation are found to be undertaking higher environmental expenses, the event might then be motivated by the foreign environmental regulations.

1.4 Structure of the Thesis

The organization of the current thesis, given the earlier discussions, is explained in the following. The first four chapters focus on the evidence from the literature and the core analysis. The final chapter would summarize the findings and draw the conclusions.

The second chapter provides a detailed literature survey on environmental sanctions and standards affecting international trade flows. The chapter begins by describing the relevant Multilateral Environmental Agreements (MEAs), which enshrines the provisions of environmental sanctions. The inter-linkage between trade and environment provisions within the WTO framework is described next, followed by a note on potential conflict areas between MEA-permitted environmental sanctions and the WTO obligations of a country. A literature survey on the impact of the environmental sanctions and standards is followed, narrating both global (theoretical as well as empirical) and Indian experiences. The analysis undertaken in this chapter helps in understanding the extent of the environmental standard related barriers.

The third chapter provides an account of India’s trade performance, in light of the environmental sanctions and standards, which may potentially affect its exports as a
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barrier. First, both India's overall trade and the intra-industry type trade (IIT) over the last decade are analyzed. After studying the export direction of the country in general, the export direction of the environmentally sensitive products is also analyzed, with special reference to the EU and the US market. The discussion is followed by a Revealed Comparative Advantage (RCA) analysis on the environmentally sensitive products facing sanctions / higher environmental standards, in order to understand the changing perspective of their competitiveness. Then empirical estimation of a proposed multi-country model is undertaken for analyzing the effects of environmental sanctions and standards on Indian exports and IIT separately. Finally given the empirical findings, a discussion on Indian responses to the environmental standard related initiatives at the international level is carried out. The analysis undertaken in this chapter helps in understanding the implications of the environmental standards on Indian exports.

The fourth chapter intends to review the relationship of environmental quality with export, growth and FDI in Indian framework. While the environmental sanctions / standards in place in the developed countries may potentially hurt India's export interest, internal sanctions could play a major role domestically in ensuring compliance at the firm level. The chapter begins with an analysis of the environment-related regulatory mechanism in India and its limitations. Then a composite environmental quality (EQ) index for fourteen major Indian states is created for two periods to understand the evolving nature of their environmental performance. The analysis is followed by a discussion on the relationship between EQ and State level exports, for verifying whether major exporter States happen to be major compliants to environmental regulations or not.

Then an attempt is made to verify the relationship between economic growth and EQ in India (Environmental Kuznets Curve Hypothesis), to analyze whether growing income in India is generally accompanied by growing affinity towards environmental governance. Finally, it is analyzed whether cross-State foreign direct investment (FDI) inflows in India are in any way getting influenced by their environmental achievements (determined with respect to the average of three pollutants, SO₂, NO₂ and SPM), i.e., the Pollution Haven Hypothesis. The analysis undertaken in this chapter helps in verifying
the presence of any export-led / inward investment-led environmental degradation effect and in understanding the environmental compliance level across the Indian States.

The ultimate impact of the environmental sanctions / standards is however actually felt by the firms in the target sectors, as they need to undertake the necessary compliance costs, by the way of installing environmentally sound technologies or by providing requisite testing and certifications for exports or both. The fifth chapter intends to focus on the determinants of the decision of a firm in select sectors to undertake environmental expenses. Four sectors (namely, textile, garments, paper and leather) are selected for the analysis, which have faced environment related sanctions / standards earlier. First, the efficiency level of the firms within the selected sectors is determined, as it is sometimes argued that the operational efficiency level of a firm does play a decisive role in determining it's inclination towards adoption of environmentally-sound technology. Second, an empirical analysis has been undertaken for determining the motivating factors behind the decision of a firm to undertake environmental expenses. Finally, the results of the empirical analysis are then linked with the interactions with select firms within the leather sector in a field survey. The analysis undertaken in this chapter helps in understanding the response patterns of the Indian firms under various categories to the stringent environmental sanctions / standards.

The final chapter attempts to conclude by collating the findings of the earlier chapters with future options for the policymakers. First, the research questions discussed in the analysis chapters are revisited and the findings of each chapter are summarized. The Government responses so far towards limiting the negative effects of the environmental sanctions and standards and the unilateral measures initiated at home for improving the environmental quality are discussed next. The analysis finally concludes by noting down the possible course of future action by the Government, both at the internal and international forums.