

Environmental Protection: The Role of Regulatory System in India

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Abstract: *India incorporated environmental protection measures in the Constitution to implement decisions taken at International Conventions and Conferences. In addition, the Bhopal Gas Tragedy necessitated the Government of India to enact a comprehensive environmental legislation to mitigate externalities. On the basis of these, the Indian Parliament enacted the Environmental Protection Act, 1986. This is an umbrella legislation that consolidated the provisions of the Water Act of 1974 and the Air Act of 1981. Within the framework of the legislation(s), India established Pollution Control Boards (PCBs) in order to prevent, control, and abate environmental pollution. The focus of this article is to evaluate the functioning of PCBs (in particular, the State Pollution Control Board of Andhra Pradesh, and the Central Pollution Control Board, New Delhi) in relation to the prevention of externalities. The analysis of the paper is based on primary as well as secondary data. The data has been collected from published and un-published records. Based on the review of these documents, a questionnaire was prepared to obtain the opinion of the officials of PCBs on the functioning of the Boards. The primary emphasis was on the degree to which the objective of improving environmental quality in India has been fulfilled. The inferences drawn from the empirical analysis were then critically evaluated in the light of the theory of regulatory system. This provides insights into the effectiveness of providing incentives to polluters to take precautionary measures. The study reveals that the regulatory system is unable to improve the environmental quality effectively and efficiently because of an increase in its responsibilities, and the absence of deterrence mechanisms within the PCBs for imposing fines against rogue industries.*

A. Introduction

Environmental measures, to regulate emissions of air and water pollution are important due to limitations of market induced correctives to internalize the externalities. In addition, the liability system in India is unable to improve the environmental quality in the country because of informational disadvantages with respect to scientific knowledge, legal delays, and poor monitoring of compliance². For these reasons, the Government of India established Pollution Control Boards (regulatory system) both at the Central and State levels. Unfortunately, environmental degradation persists even after three decades of regulatory oversight. This necessitates an evaluation of the ex-ante approach in terms of internalisation as well as prevention of pollution externalities.

The state plays a major role both in the formulation as well as the enforcement of laws. According to Ogus (1994), there are four different degrees of state intervention, viz., and regulation of information, standards, licensing, and price controls. *Licensing* is the highest degree of state intervention because the firm has to take prior approval from the regulatory agency in order to market the product. However, state intervention involves:

- Administrative Costs³;
- Compliance Costs⁴; and

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² See Prasad, P M: "Environmental Protection: The Role of Liability System in India", *Economic and Political Weekly*, Vol. XXXIX, No. 3, January 17, 2004, pp. 257-269.

³ "They are largely born by the regulatory agency, which has the task of formulating, monitoring, and enforcing standards". See, for instance, Anthony I. Ogus, *Regulation: Legal Forms and the Economic Theory*, Oxford, Clarendon Press, 1994, P. 155.

- Indirect Costs⁵.

Regulatory agencies, under certain circumstances, also erect barriers⁶ which in turn impose costs on citizens.

This is an *ex-ante* approach, where parties pay a fine after violating regulatory standards, sometimes, even before harm has occurred. Standards are defined by the state, which also plays a major role in the enforcement of laws. On the other hand, liability as an *ex-post* approach, where parties pay damages after the harm has occurred. Under this approach, Courts set the due level of care based on the nature and the facts of the case, if harm occurs.

The theory of liability versus regulation reveals that both the systems have their advantages⁷ and disadvantages⁸ in providing incentives to the tortfeasor to take precautionary measures to reduce the risk of harm. Neither, however, protects citizens perfectly. Therefore, an optimal mix of regulatory and liability systems is required to internalise the externalities. They are substitutable⁹ as well as complementary¹⁰.

It should be noted that in the case of joint use of liability and regulation, the regulatory system sets minimum standards. In addition, it adopts the probabilistic method to test the established standards. Hence, the tortfeasor being caught by this approach may be uncertain. In such situation, courts provide remedial measures when the harm occurs. Similarly, if the court system is unable to provide incentives to the tortfeasor to reduce the risk of harm because of no case has been filed against him. Under these circumstances, the minimum regulatory standards may perhaps reduce the severity of the risk of harm. Once, the regulatory agency formulates the optimal standards then the courts shall resolve the conflicts between the *ex-ante* and *ex-post* approaches. Thus, the optimal-mix of liability and regulation should provide incentives to the parties to take precautionary measures in to reduce the risk of harm¹¹.

This paper tries to focus on the critical evaluation of the functioning of the Pollution Control Boards (regulatory system) in terms of prevention of environmental degradation in India. This paper is organised as follows. Section B lays out the environmental protection system in India. Section C deals with regulatory system in India, Section D focuses on suggestions, and the Section E is a summary and conclusion.

⁴“They are the capital expenditure on equipment and adoption of plant to meet the standard”. *Ibid*.

⁵ “They fall under the category of productive inefficiency, the inhibition of technology, and allocative inefficiency. The assessment of indirect costs is problematic because relevant effects which are widespread and data is difficult to obtain”. *Ibid*.

⁶For example, if two firms apply for a license to establish their units and only one of them gets the license. So, the other firm which hasn't obtained licence may also incurred expenditure on lobbying, which may leads to waste of resources. The result may be an inadvertent limiting of competition between firms in adaptation of green technology.

⁷The liability system is effective in providing incentives to the tortfeasor to take precautionary measures to reduce the risk of harm by setting the due level of care based on case by case adjudication, generating information from private parties, lower administrative costs, error correction by way of appeals, etc. Similarly, the regulatory system is effective in providing incentives to the tortfeasor to take precautionary measures to reduce risk of harm by the formulation of regulatory standards through scientific knowledge, collection of fines (which is helpful in case of inadequate wealth of tortfeasor), etc.

⁸The liability system has limitations with respect to the award of non- pecuniary costs, economic consequences of full, over, and under compensation, rational apathy, establishment of causational links, law's delay, etc. Similarly, regulatory system also has limitations such as regulatory capture, adverse effects in the case of formulations of standards for private goods, etc.

⁹For example, in the case of chopping down a tree in one's yard, it is less costly to use liability to force appropriate caution than to construct a myriad of permits and regulations covering tree felling. At the same time, in another example concerning air pollution it is less costly to promulgate well thought -out standard regulations than to let each victim to take the tortfeasor to court (C. D. Kolstand *et. al.*, “ Ex-post Liability for Harm vs. Ex- ante Safety regulation substitutes or complements? 80, *American Economic Review*, 888, 1990).

¹⁰For instance, in the case of potential deficiencies of incompatible uses of neighbouring property, where a hospital is situated next to a noisy, dusty cement manufacturing industry, there may be possibilities of minimising externalities by zoning ordinances (*ex-ante* approach) and at the same time exposing the externality generator to nuisance liability (*ex-post* approach). The classic comparison of the efficiency aspects of these alternate methods of minimising this type of externality is given by R. Ellikson, “Alternatives to Zoning: Covenants, Nuisance, and Fines as Land Use Controls”, *University of Chicago Law Review*, Vol. 40, Summer 1973, pp. 681- 781.

¹¹ *Supra* note 1 at p. 257.

B. Environmental Protection System in India

1. Environmental Laws

The Indian Constitution provides for power sharing between the federal and state governments. Parliament has the power to legislate for the whole country, while the State Legislatures are empowered to make laws only for their respective territorial jurisdictions. Under Article 246 of the Constitution the subject areas of legislation are divided between the Union and the States into three lists, that is, Union, State, and Concurrent list. Central law prevails over a State law in the concurrent list¹², however, State law prevails if it has received Presidential Assent. The Constitution also provides that the Centre may enact laws on State list, after receiving consent from the respective states.¹³

After the 1972 UN Conference on Environment and Human Development at Stockholm, the Indian government incorporated Articles 48A¹⁴, Article 51A (g)¹⁵, and 253¹⁶, to the Indian Constitution. On the basis of these Articles, the Indian Parliament enacted the Prevention and Control of Pollution Act, 1981 (Air Act), and the Environmental Protection Act of 1986.

An outline of the environmental legislation(s) in India is given below:

1. The Water Act of 1974 (Amendment, 1988)

This is the first law passed in India whose objective was to ensure that the domestic and industrial pollutants are not discharged into rivers, and lakes without adequate treatment. The reason is that such a discharge renders the water unsuitable as a source of drinking water, for the purposes of irrigation and to support marine life.

In order to achieve its objective Pollution Control Boards at Central and State levels were created to establish and enforce standards for factories discharging pollutants into bodies of water. The State Boards are empowered to issue Consent for Establishment (CFE) whenever a firm wanted to establish a new factory and also issue Consent for Operation (CFO) for existing factories. They were also given the authority to close factories or, in the case of disconnecting power and water supply, issue directions to the concerned Departments for enforcement of Boards standards.

2. The Air Act of 1981 (Amendment, 1987)

The objective of the Air Act of 1981 was to control and reduce air pollution. The working of this Act and the enforcement mechanisms are similar to that of Water Act. What was novel is that the Act also called for the abatement of noise pollution.

3. Environmental Protection Act, 1986 (The EP Act)

The objective of the EP Act is to protect and improve the environment in the country. It is an umbrella legislation that consolidated the provisions of the Air and the Water Act. It was environmental disasters¹⁷ that prodded the Indian Government into passing comprehensive environmental legislation, including rules relating to storing, handling and use of hazardous waste.

The EP Act empowered the Indian Government to make necessary rules and regulations to fulfil its objectives. It is under this Act and its rules that government takes all necessary steps such as the formulation of national environmental standards, to prescribe procedures for managing hazardous substances, to regulate industrial locations,

¹² Under the provisions of the Articles 251 and 254.

¹³ For example, The Water (Prevention and Control of Pollution) Act, 1974 was enacted by the Parliament after consent resolutions were passed by 12 State Legislatures.

¹⁴ It states that 'The State shall endeavour to protect and improve the environment and to safeguard the forests and wild life of the country'.

¹⁵ This article imposes a responsibility on every citizen 'to protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures'.

¹⁶ It (read with entry 13 of the Union list) provides power to the Centre to make laws implementing India's international obligations and also any decision made at international conference.

¹⁷ The Bhopal Disaster of December 3, 1984.

to establish safeguards for preventing accidents, and to collect and disseminate regarding environmental pollution. It also empowered the Government to set up parallel regulatory agencies to protect parts of the environment and to delegate its powers to such an agency. For example, the government could set up an agency to protect coastal resources.

The EP Act provided for civil and criminal penalties for the violation of its pollution standards. For example, it imposes a penalty for non-compliance of standards with a fine up to Rs. 1, 00,000 or imprisonment up to five years or both.

4. The Product Liability Insurance Act, (1991)

The focus of this Act was to provide for the payment of immediate compensation to the victims of industrial accidents.

5. Environmental Protection Rules, 1986

The Rules of 1986 empowers the formulation of Standards for emission of environmental pollutants. In general the Rules were formulated by the Government of India for working and conduct of business under the Environment (Protection) Act, 1986. The formulated rules are: the **Hazardous waste (Management and Handling) Rules** of 1989¹⁸, the Public Insurance Act of 1991 (Amendment, 1992)¹⁹, and **Biomedical waste (Management and Handling) Rules** of 1998²⁰, etc.

II. Enforcement of Environmental Laws

The established environmental rules and regulations are enforced by the concerned administrative authorities. In addition, they act upon the directions of the courts and Pollution Control Boards (PCBs). Thus, both the ex-post and ex-ante approaches are playing an active role in improvement of environmental quality in the country. The PCBs, in particular, tries to prevent environmental degradation through formulation of standards, issuance of consents for establishment and operation, closure orders to rogue industries.

C. Regulatory System in India

The PCBs are a two-tier system, i.e., the Central Pollution Control Board (CPCB) at the central level and the State Pollution Control Boards (SPCBs) at the state level.

Water Boards were established under the provisions of the Water Act of 1974²¹ in order to prevent water pollution. The Boards later received the additional responsibility to control air pollution under the provisions of the Air Act of 1981. The Water Boards were then renamed as Pollution Control Boards under the provisions of the

¹⁸The objective of the Rule is to control generation, collection, treatment, import, storage and handling of hazardous waste.

¹⁹It was enacted to provide immediate relief to the victims of an accident involving a hazardous substance. The act imposes strict liability upon the owner of the hazardous substance and has to pay relief as:

- Reimbursement of medical claim up to Rs. 12, 500 in each case;
- Relief of Rs. 25, 000 per person for fatal accident in addition to the reimbursement of medical expenses;
- In case of permanent disability, the relief will be- reimbursement of medical expenses, cash relief based on the percentage of disability however the relief for permanent disability will be Rs. 25, 000;
- Wage compensation in case temporary disability Rs. 1000 per month for a maximum of 3 months; and
- For damage to property up to Rs. 6000 depending on the damage.

The Act obligates every owner to take out an insurance policy covering potential liability from an accident and also must make a contribution to an Environmental Relief Fund established by the GoI. The fund is relief to the victims of an accident.

The claim should be, with in five years from the date of cause of action arise, to the collector. He decides the amount and informs the parties within 15 days. The insurer will pay within 30 days. The collector has the power of Civil Court and the case should be disposed off within 3 months. There is a Rs. 50 million cap on the liability of insurer. However, there is no such cap on the owner of the hazardous substance.

²⁰Makes it binding on the health care institutions to streamline the process of proper handling of hospital waste such as segregation, disposal, collection and treatment enacted by the Government of India to improve the environmental quality.

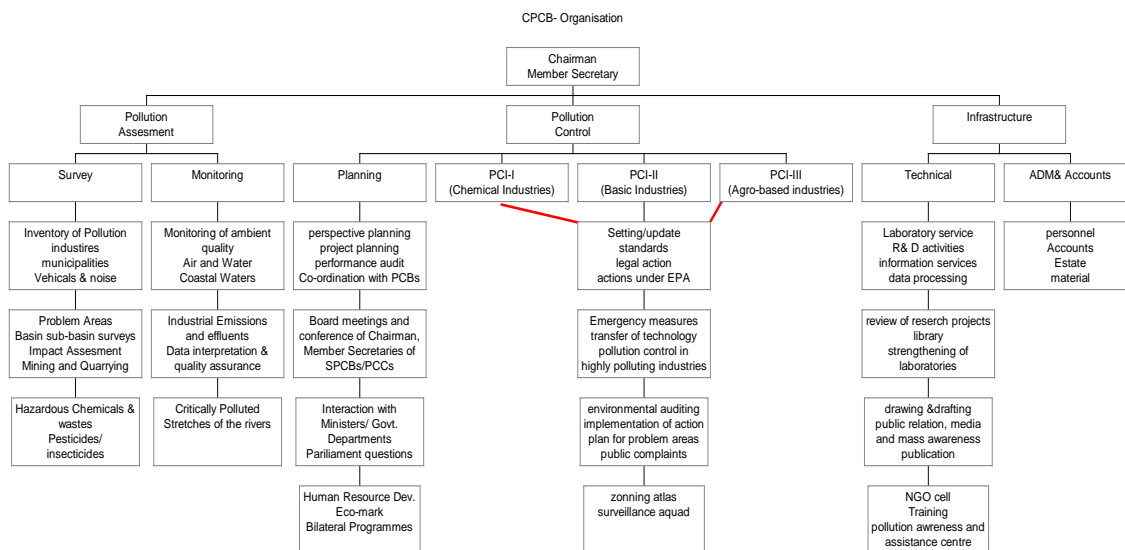
²¹Water is a subject in the State List under the Constitution (Entry 17, List II, Seventh Schedule). So the Act was enacted by the Parliament after consent resolutions passed by 12 State Legislatures under Article 252 (1) of the Constitution.

Environmental Protection Act of 1986. The responsibilities of PCBs increased with the adoption of environmental protection rules in the context of prevention of water pollution, supervision of hazardous wastes, implementation of court directions, etc.

I. Central Pollution Control Board (CPCB)

The Central Pollution Control Board was first established in September 1974 under the provisions of the Water Act to promote cleanliness of streams and wells in India. It got additional responsibilities in terms of prevention and controlling of air pollution under the provisions of the Air Act. In its structure the CPCB consists of 12 members²² and 6 zonal offices²³. The organisation aspects of the Board can be explained with the help of the following Chart.

Chart- I



Source: Compiled from the Annual Reports, CPCB

1. Functional and Structural aspects of CPCB

The CPCB²⁴ as a nodal agency, it tries to promote cleanliness of surface and ground water; to prevent, control and abate air pollution; to advise central government in the matters of prevention of water and air pollution; to co-ordinate activities of states and settle disputes; to direct and provide assistance to State Boards in prevention of water and air pollution; to formulate minimum national standards; to recognise laboratories for the analysis of samples; to submit expert reports based on the directions of the Court; and to promote research, training and dissemination of information about the prevention of water and air pollution.

2. Activities of CPCB

(a) Standard Formulations

The CPCB formulates pollution standards for industries under the provisions of the Water and the Air Acts. These standards are called “the Minimum National Standards (MINAS)” for liquid effluents and air emissions. They are approved and notified by the Ministry of Environment and Forests²⁵. The development of MINAS by CPCB,

²² One chairman; 5 members the representatives of government; 3 members from industry, agriculture and trade; 2 members from the PSUs; and a Member Secretary- all are nominated by Central Government.

²³ They are at Lucknow, Bhopal, Shillong, Kolkata, Vadodara, and Bangalore.

²⁴ Under the provisions of the Water and the Air Acts, 1974 and 1981, respectively.

²⁵ Under section 25 of the Environmental Protection Act, 1986. The State Pollution Control Board (SPCBs) must take into the consideration these standards while issuing consents to the industries. The SPCBs can make their standards more stringent than the Central standards but not less stringent. A World Bank Study however, stated that the MINAS fixed by the CPCB have not

during 1990-91 to 1998-99, can be presented with the help of a table:

Development of Standards: CPCB				
Year(s)	Developed	Developing	Initiation	Total
1990-91	11	11	8	30
1991-92	9	8	8	25
1992-93	12	10	17	39
1993-94	3	11	11	25
1994-95	7	11	10	28
1995-96	17	10	8	35
1996-97	8	5	5	18
1997-98	6	6	6	18
1998-99	11	2	2	15

Source: Compiled from the Annual Reports, CPCB

The table reveals that the Board has developed 84 MINAS during 1990-91 to 1998-99. It has developed 37 and 31 categories of industrial effluent and emission standards respectively. This is in addition to ambient air, ambient noise, automobile and fuels quality specifications for petrol and diesel.

(b) Effluent Treatment Plants (ETPs)

The CPCB promotes Common Effluent Treatment Plants (CETPs) in clusters of Small-Scale Industries (SSIs) because of the SSIs may have financial constraints, lack space, and installation of small effluent treatment plants²⁶ at their respective units may not be viable. In addition to this, the CPCB shall keep an eye on whether the established CETPs are effectively working or not. Otherwise, the purpose of its establishment may be not being served.

(c) Eco labelling

Rapid industrialisation, and urbanisation, changes the production and consumption patterns may generate negative externalities. In such a situation, the activities of regulatory agencies alone are inadequate to internalise the externalities. Thus, there is a need for pro-active and promotional role by the manufacturers and the consumers to prevent environmental pollution. The Eco-mark scheme provides signals to the consumers that the product is Eco-friendly. It also provides incentives to the manufacturers to adopt green technology to produce Eco-friendly products because the market is only for Eco-mark-products.

The Scheme on Eco-labelling, which is voluntary in nature, has been launched by the Government of India in 1991 to encourage consumers to use environmental friendly goods, and to achieve sustainable development. The technical committee²⁷, with the help of product specific subcommittees²⁸, finalises the guidelines of Eco-mark for

left any flexibility for the SPCBs to make them more stringent as MINAS at their current levels require near the maximum effluent reduction that is technically achievable.

²⁶Under this scheme the Central Government provides assistance as a grant up to 25 per cent of the total cost of the CETP but to ceiling of Rs. 25 lakhs and the concerned State Government provides a matching grant. In addition to this a soft loan is provided by banks such as Industrial Development Bank of India (IDBI), Small Industries Development Bank of India (SIDBI) to the extent of 40 per cent of the total cost and the remaining cost should be from the equity contribution by the industries. Moreover, the share of the Central Government financial assistance to establish CETP would be available only for cluster of SSIs, which were established prior to the year 1990. The scheme, initially, is for 5 years (i.e., from 1990-91 to 1995-96) but extended further.

²⁷ It consists of experts from Council for Scientific and Industrial Research (CSIR), National Test House, Bureau of Indian Standards (BIS), National institute of Occupational Health (NIOH), and Consumer Organisations.

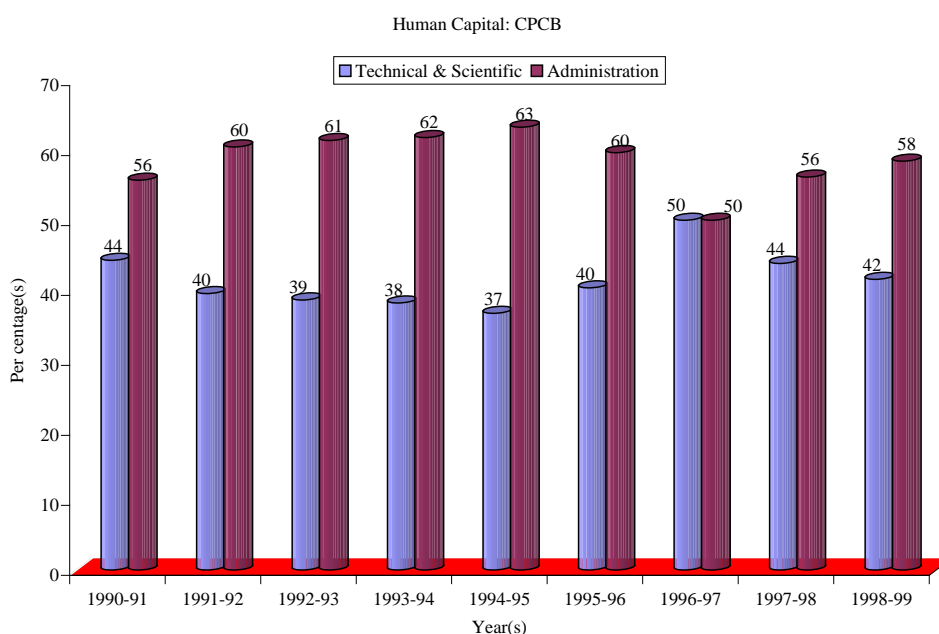
²⁸ The subcommittees prepare the draft Eco-mark criteria in their respective product categories in consultation with the organisations and the government. The draft criteria prepared by the technical sub-committee are considered by the technical committee for its recommendation to MoEF, and then draft notification is issued for public comments. The public comments received by MoEF are again examined by the technical committee and on the basis of its recommendation the final notification is issued by the MoEF so that the relevant Indian Standards are amended accordingly and the ECOMARK scheme becomes operational.

various product categories. The Ministry of Environment and Forests then notifies them in the Gazette. In fact, the guidelines encompass the extraction of raw material for manufacturing of a product to disposal of the used product by the consumer. The Eco-mark label is awarded to consumer goods that satisfy the specified environmental criteria and the quality requirements of Indian standards. Since 1991 the Eco-mark criteria has been finalised and notified for 16 product categories²⁹.

(d) Hazardous Waste Management

The waste generated by households, hospitals, industries and their improper disposal creates health hazardous. The Hazardous Waste Rules, 1989 under the EP Act and the EP Rules direct that hazardous waste disposal sites have to be designed and managed in such a way that no harmful substances reach the biosphere and hydrosphere in an unacceptable quantity³⁰. The Board has issued directions to SPCBs and District Pollution Control Committees (DPCCs) to monitor the steps taken by the municipalities for the prevention, control and abatement of pollution due to land filling.

Graph-I



Source: Compiled from the Annual Reports, CPCB.

(e) Recognition of Labs

The Government of India gave powers to the CPCB to recognise environmental laboratories and analysts as Government analysts³¹. Since its inception up to February 2001, the CPCB has recognised 44 laboratories in the

²⁹ Since 1991, the Eco-mark criteria has been finalised and notified for 16 product categories like Soaps and detergents, paper, food items, lubricating oils, packaging material/ package, architectural paints & powder coatings, batteries, electrical/electronic goods, food additives, wood substitutes, cosmetics, aerosol propellants, textiles, plastic products, fire extinguisher, leather.

³⁰ In a study (Inventorisation of Hazardous Waste Generation), the CPCB found that the hazardous wastes generation in 8 states (Gujrat, J&K, Punjab, Kerala, Andhra Pradesh, Madhya Pradesh, National Capital Region and Orrissa) accounted for 19 lakh tpa.

³¹ Under sections 12 and 13 of the Environmental Protection Act, 1986.

country. In addition, the World Bank project on Industrial Pollution Control strengthened laboratories of the PCBs³².

(f) Human Capital

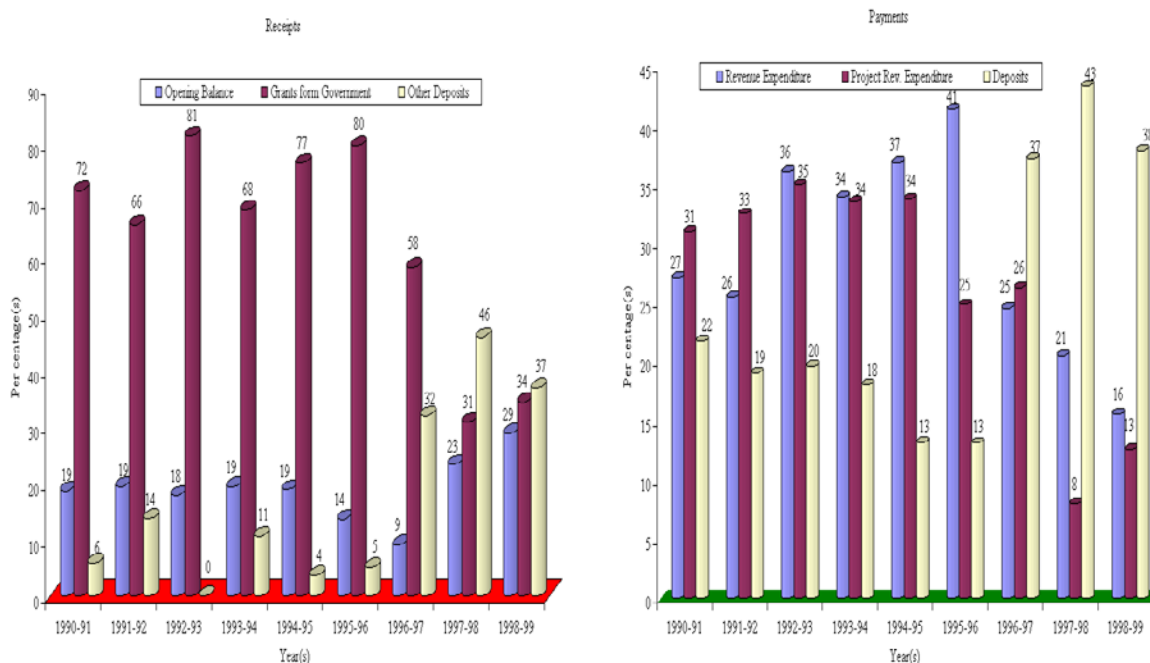
The CPCB manpower stood at 373 by the end of March 1999. The administration got the maximum number of personnel (218) as compared to the technical and scientific personnel (155). The following graph (I) explains the status of the Human Capital during 1990-91 to 1998-99.

Usually, the CPCB requires more number of scientific and technical personnel to deal with its functions. In addition, increase of its activities over the years also justifies more number of the personnel. Graph (I) reveals that per centage of the administrative personnel is higher to that of the scientific and technical personnel except in the year 1996-97 where both the staffs are on equal per centage. This could be one of the reasons why the Board is unable to carryout its activities effectively and efficiently.

(g) Income & Expenditure

The Ministry of Environment and Forest provides grants to CPCB to meet day to day expenses. In addition to this the CPCB raises financial resources by carrying out various projects. On the other hand, the Board is spending its money in the forms of revenue and project expenditure, and keeps some its revenue in Bank deposits too. Its financial structure can be explained with the help of a graph.

Graph-II



Source: Compiled from the Annual Reports, CPCB.

The Graph (II) shows that the grant from the MoEF, over the years³³, has been reduced from 80 per cent to 30 per cent of the total receipts. In fact, the resources generated by carrying out projects went up to 50 percent of the total receipts. In case of payments, the CPCB has reduced its revenue expenditure as well as revenue product expenditure. However, it is keeping its resources in the form of bank deposits which varies from 20 to 40 per cent of

³² In order to improve the abilities of PCBs of the heavy industrial states in the country such as Gujrat, Maharashtra, Tamilnadu and Uttarpradesh.

³³ That is from 1990-1991 to 1998-99.

the total payments, except for two years (i.e., during 1994-95 and 1995-96).

The CPCB being a regulatory agency is more prone to regulatory capture. In addition, uncertainty prevails over its resource generation. Thus, this may be one of the reasons why the CPCB wishes to keep some of its money in the form of bank deposits. It is not a healthy sign to strengthen its activities against environmental degradation.

(h) Promotional activities

The CPCB chooses its members from different fields³⁴ in order to achieve widespread acceptability of its standards. The Board conducts workshops, seminars and even encourages its personnel to go for training at the institutions within and outside the country. It has established Pollution Information Centre in 1994 to conduct exhibitions and to create awareness to stakeholders about status of pollution, its effects and measures for control of pollution³⁵. It also handles public grievances and even makes investigation if complaint is serious in nature, otherwise refers to the concerned SPCBs or District Pollution Control Committees (DPCCs) for actions.

The Board also established a Non-Governmental Organisation (NGO) cell for ensuring participatory programmes in the field of pollution control. Its role is to create awareness about Eco-mark among consumers and manufacturers through advertisement in newspapers. It also establishes international collaborations³⁶ for assistance to formulate, promote standards and prevent water and air pollution.

II. Andhra Pradesh Pollution Control Board (APCB)

The State PCBs are constituted under section 4 of the Water Act, 1974 and its functions are prescribed in section 17 of the Act³⁷.

In the State of Andhra Pradesh the activities of prevention and control of water pollution began with the creation of the Andhra Pradesh State Board in 1976 in compliance of the Water Act³⁸. The Board also has additional responsibilities such as collection of water cess³⁹, and prevention of air pollution⁴⁰. Moreover, the enactment of Environmental Protection Act, 1986 has augmented the activities of PCBs to prevention, control, and abatement of environmental pollution in their respective States. The APPCB consists of nine members⁴¹, 5 zonal⁴² and 17 regional⁴³ offices. The members have to meet at least once in every three months in order to deal with the requirements of the APPCB⁴⁴.

³⁴ Such as industry, agriculture, trade, etc.

³⁵ It has its own web page: <http://www.nic.in/envfor/cpcb/cpcb.html>.

³⁶ With the countries: Germany, Netherlands, Norway, and EEC.

³⁷ Section 25 and 26 of the Act provides for refusal or withdrawal of consent by the Boards. Section 33 of the Act empowers the Boards to make an application for directions to the Court of a Judicial Magistrate, where the Boards apprehend pollution. Section 33- A (53 of 1988) further empowers the Boards to direct the closure of polluted industries by regulation of supply of electricity, water or other sources.

³⁸ The Water (Prevention and Control of Pollution) Act, 1974 (Amendment, 1988).

³⁹ Under the Water (Prevention and Control of Pollution) Cess Act, 1977.

⁴⁰ Under the Air (Prevention and Control of Pollution) Act, 1981 (Amendment, 1987)- Noise Pollution has been added as an air pollution in 2000.

⁴¹ Special Chief Secretary from the Department of Environment, Forests, Science & Technology, the Government of Andhra Pradesh acts as an ex-Officio Chairman; Member Secretary of APPCB acts as member convenor; one member each from- the Departments of Municipal Administration & Urban development, -Health, Medical & Family Welfare, - Commissioner of Industries, - Forests, - Andhra Pradesh State Financial corporation, - Andhra Pradesh Industrial Investment Corporation.

The office of the Member Secretary supported by 13 cells: (1) CFE & CFO Cell. (2) Cleaner Production cell (3) Legal Cell (4) Bio-Medical Cell (5) Action Plan Monitoring Cell (6) Hazardous Management Cell (7) Task Force Cell (HO) (8) Information & Public Cell (9) Accounts (10) Administration Cell & Building Cell (11) Cess Cell (12) Board Laboratory (13) Documentation Centre.

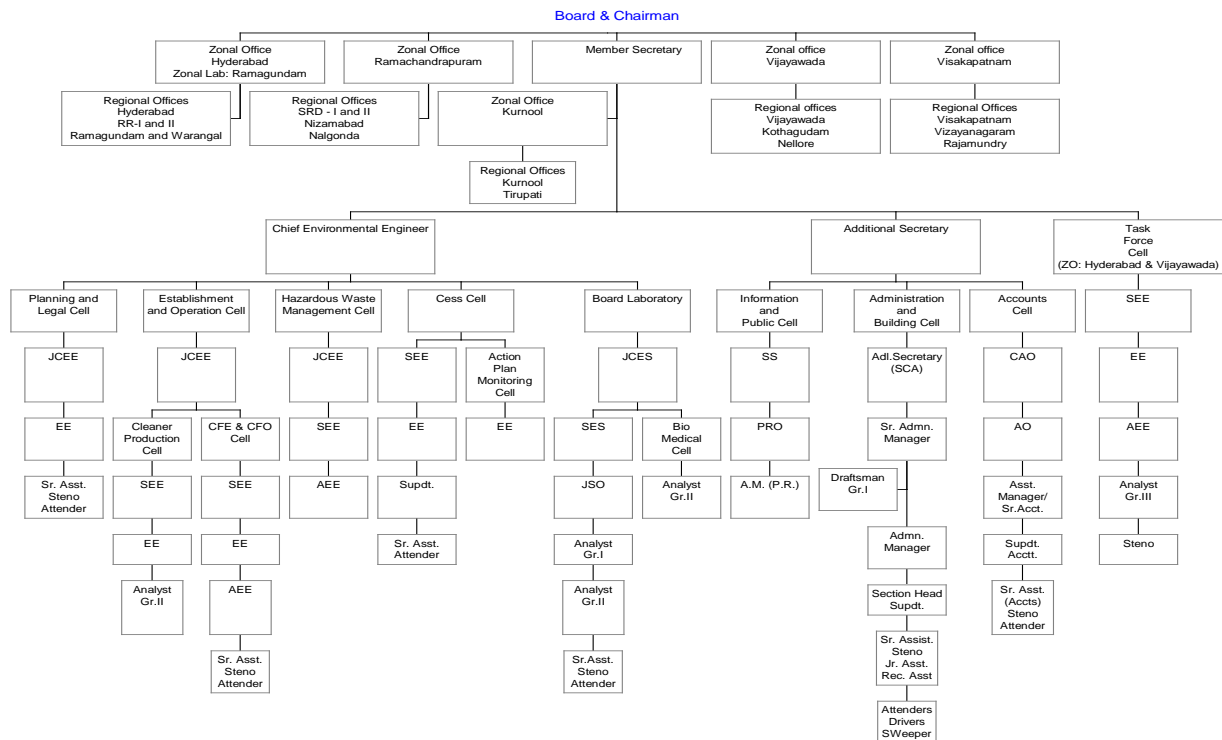
⁴² They are Visakapatnam, R.C. Puram, Hyderabad, Vijayawada, and Kurnool.

⁴³ They are Rajamundry, Visakhapatnam, Vizianagaram, Medak I & II, Nalgonda, Nizamabad, Hyderabad, Ramagundam, Ranga Reddy I & II, Warangal, Nellore, Kothagudem, Vijayawada, Tirupati and Kurnool.

⁴⁴ Chairman of the Board may convene a meeting whenever there is urgency- Section 8 and 10 of the Water and the Air Acts, respectively

The APPCB is a two-tier system. The first one consists of its Chairman, Member Secretary and other members (not exceeding 15). All are nominated by the State Government of Andhra Pradesh. The second one consists of appointed regular staff who runs the day to day activities of the Board. The organisational aspects of the Board can be explained with the help of the following chart.

Chart-II



Source: Computer Centre, APPCB

1. Functional and structural aspects of APPCB

The main functions of the APPCB are: maintaining and restoring the wholesomeness of the water, prevention and control of air pollution, formulation of standards in consultation with CPCB; advising the state government in the location of industry and prevention of environmental pollution; issuing consents for establishment, and operation to industries; collecting water cess; establishing waste disposal management system; controlling the improper use of consents; recognizing laboratories for standardisation and environmental quality control; and promoting research, training and dissemination of information in the interests of citizens.

The APPCB is empowered to collect samples⁴⁵ from industry and issue closure orders⁴⁶ in case of non-compliance of environmental standards⁴⁷. The Water and Air Acts set out an elaborate set of powers on inspection, regulation and punishment relating to the violation of standards set by Boards.

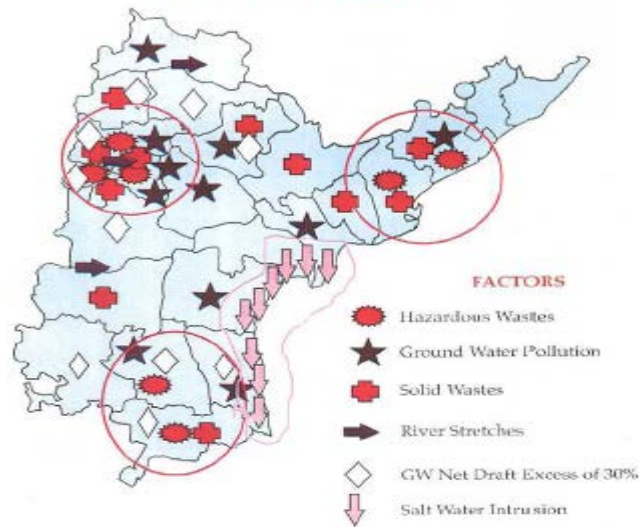
The APPCB have earmarked the environmentally sensitive areas (Hot- spots) in the State. They have been marked in the following map. Their focus is to prevent further degradation of the environment at these hot-spots.

⁴⁵ Section 21 and 26 of the Water and the Air Acts, respectively.

⁴⁶ Section 33 (A) and 31 (A) of the Water and the Air Acts, respectively.

⁴⁷ However, the industries can approach Appellate Tribunal and even go up to Apex Court of India in order to get remedial measures against disputed closure orders passed by the Board.

ENVIRONMENTAL HOT - SPOTS OF ANDHRA PRADESH



Source: Annual Report, APPCB, 1998-99, P.2

First of all, one can expect that the PCBs shall try to reduce the number of hot-spots. Secondly, if it is not possible the PCBs at least shall try to limit the expansion of the hot-spots over the years.

2. The Activities of APPCB

(a) Consent for Establishment (CFE) and Consent for Operation (CFO)

The industries must get CFE at the time of establishment of new plant. Similarly, the existing industries have to get CFO⁴⁸ in order to continue their activities. Industries have to pay a fee to obtain APPCB's consents⁴⁹.

The APPCB grants consent to establish a new plant and may grant it subject to conditions⁵⁰ that open for public scrutiny. These consents are reviewed once in every two years and a condition for renewal is the fulfilment of the previous years consent conditions. In the case of issuing consent for operations, there are three categories of industries *red*⁵¹, *orange*⁵² and *green*⁵³. The *red* category industries will be the highly polluting, the *green* industries will be the least polluting and the *orange* category of industries fall in between the red and the green. The APPCB has to record the reasons for refusal of consent in writing, and issue notices to industrialists that are denied the consent. The procedural aspects of issue of consents by the APPCB can be explained with the help of the following

⁴⁸ Section 25 and 21 of the Water and the Air Acts, respectively.

⁴⁹ The fee is based on the total investment of the industry. However, it excludes working capital and expansion costs of the industry but not depreciation.

⁵⁰ *Conditional clearances* may be given to the industries. This increases the possibility of fraud. For example, the State of Andhra Pradesh imposed certain environmental conditions for Hatcheries and Aquaculture projects. One of the conditions is that the production of shrimp shall not exceed six metric tonnes per hectare per crop and allowed only two crops per year, to maintain pollution levels at a minimum. In reality many industries violated these conditions. For example, in Nellore District, the Mega Prawn farms have no effluent treatment plants. They discharge effluents and dump the dead and diseased shrimp into the Buckingham Canal that supplies drinking water to Chennai City (*Indian Council for Enviro-legal Action v. Union of India and others*, W. P. No. 664/1993, Supreme Court of India). According to the *Public Trust Doctrine* (International Law) natural resources are public property entrusted to the Government of India for their safe and judicious use. Any action that leads to their improper use and damage amounts to violation of the doctrine. Thus, environmental clearances given by authorities without comprehensive Environmental Impact Assessment (EIA) are illegal.

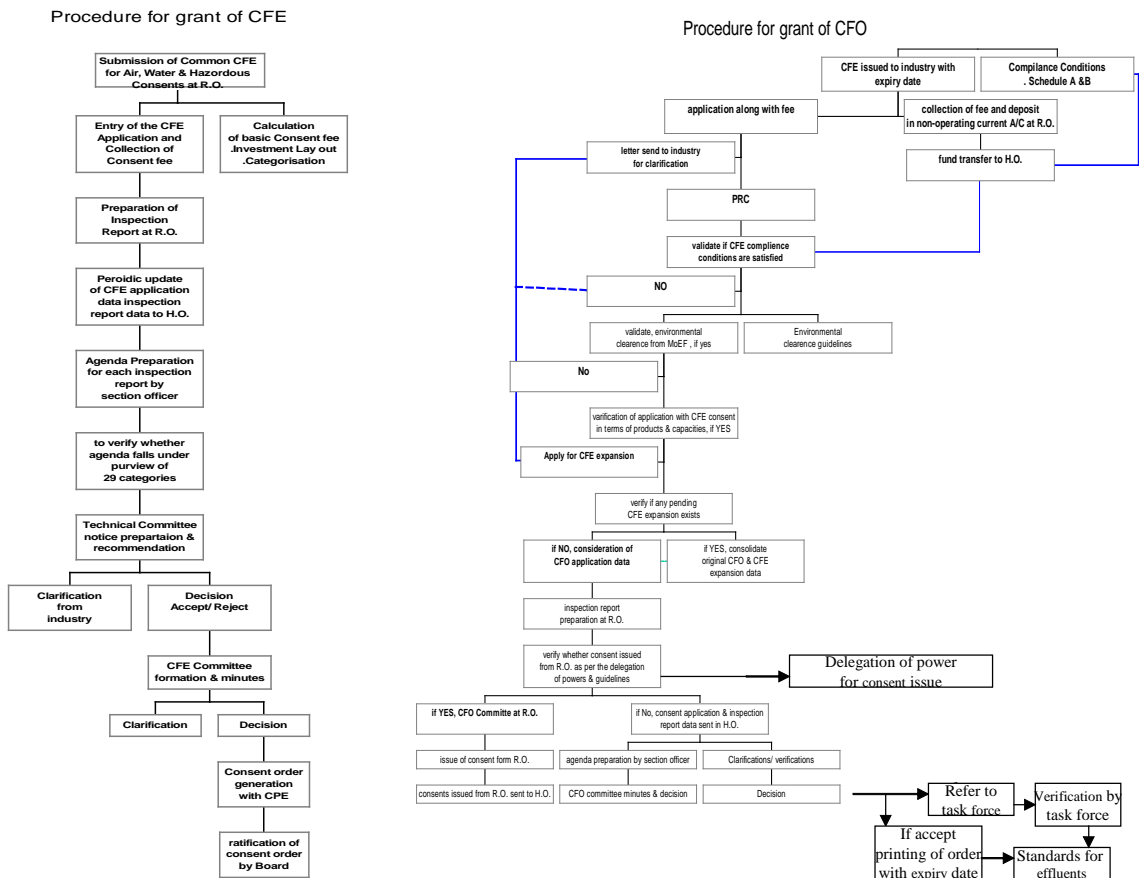
⁵¹ Every year by reviewing the fulfilment of previous year conditions.

⁵² Every two years by reviewing the fulfilment of previous year(s) conditions.

⁵³ Every five years by reviewing the fulfilment of previous year(s) conditions.

chart. The issuance of consent for operation under the air and the water acts seems to be much more time consuming than the issuance of consent for establishment.

Chart-III



Source: Compiled from the Annual Reports, APPCB

The consents issued by the Board during 1991-92 to 1999- 2000 can be explained with the help of the following diagram. It indicates that in the case of the APPCB, consents issued for establishment and for operation accounted for 25 and 75 per cent, respectively, of the total consents 12375 issued.

(b) Water Cess

The Member Secretary of the APPCB is empowered to assess and collect water cess⁵⁴ on behalf of the Government of India (GoI) under the provisions of Water Cess Act⁵⁵. The Cess is to be levied for the quantity of the water consumed by specified Industries⁵⁶ and local authorities⁵⁷. The industries as well local authorities can get a rebate of up to 25 percent of the cess payable if they follow certain procedures and standards laid by the Government of India⁵⁸. The APPCB charges interest⁵⁹ for late payment, and also imposes penalty⁶⁰ for non-payment.

⁵⁴ Section 5 of the Water Cess Act of 1977.

⁵⁵ Water (Prevention and Control of Pollution) Cess Act, 1977 (Amendment, 1991). It was enacted to augment the resources of the PCBs and to conserve water.

⁵⁶ The major cess paying industries are Thermal Power Plants, Pulp and Paper, heavy Water Plant, Vizag Steel Plant, etc.

⁵⁷ The APPCB has been regularly assessing about 112 Municipalities (Gr. I, II, III)/ Municipal operations.

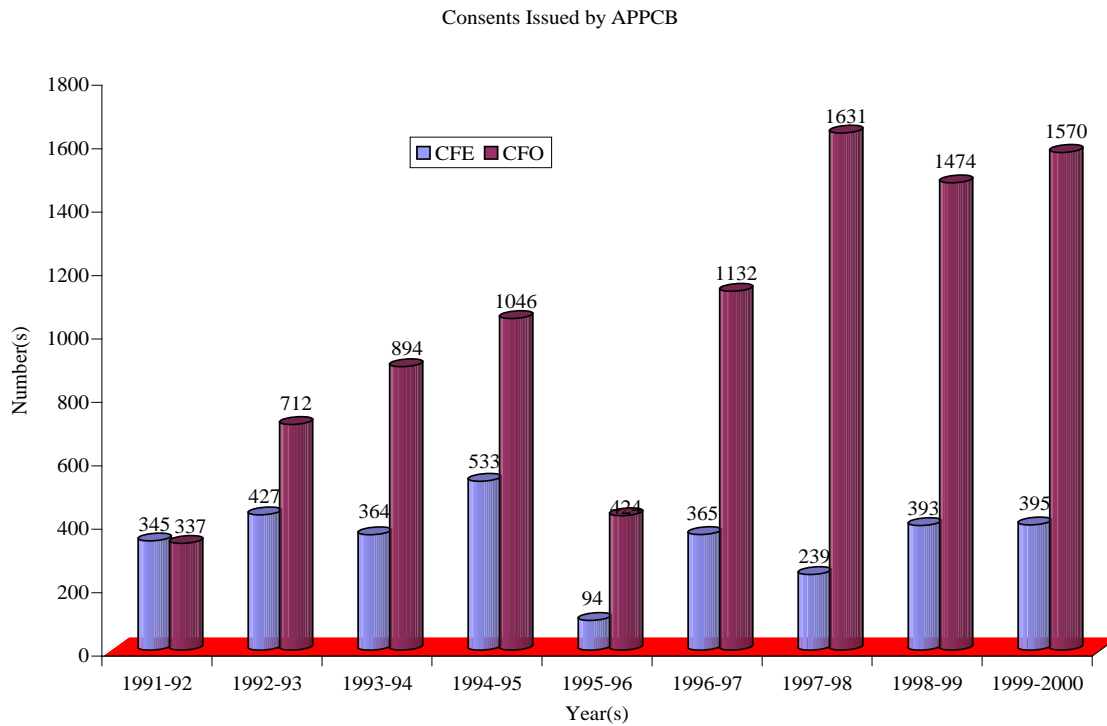
⁵⁸ Under the Environmental Protection Act, 1986.

⁵⁹ Section 10 of the Water Cess Act.

⁶⁰ Section 11 of the Water Cess Act.

It will take legal action⁶¹ against industries and local authorities for evasion of cess, failure to furnish returns, and false returns.

Graph- III



Source: Compiled from the Annual Reports, APPCB

The number of industries and local authorities covered under water cess increased from 398 in 1990-91 to 919 in 1999-2000. The assessment and collection of the cess by the board can be explained with the help of a Graph. The Graph (IV) reveals that there is a shortfall in the collection of cess except in the year 1997-98. This may be because only about 8 to 10 out of 112 Municipalities/ Municipal Corporations pay cess regularly and promptly⁶². It clearly indicates that the Board is lenient towards to the local authorities in terms of collection of water cess.

(c) Closure Orders

The Ministry of Environment and Forests has identified 17 categories of highly polluting industries under the provisions of the Water and the Air Acts. The APPCB established a Task Force in August 1995 to monitor the problematic polluting industries and provide remedies for public grievances. The actions of the task force⁶³ can be explained with the help of the following Graph.

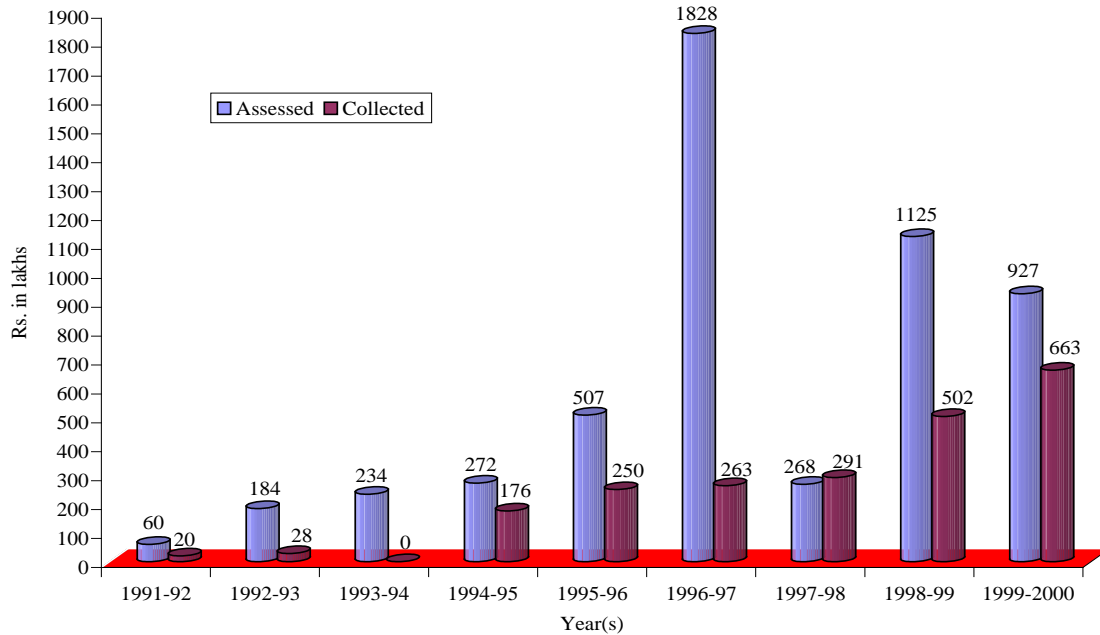
Graph- IV

⁶¹ Section 14 of the Water Cess Act.

⁶² The Municipalities/ Municipal Corporations and Thermal Power plants were not paid dues of about Rs. 4.5 and 22.4 crores, respectively.

⁶³ The primary aim is to attending complaints received from public as well as industries, issue of show cause notices/ directions/ closure orders to those industries which did not comply with the standards, night patrolling to prevent illegal outlets, and investigating the root cause of pollution and providing preventive measures.

Water Cess: APPCB



Source: Compiled from the Annual Reports, APPCB

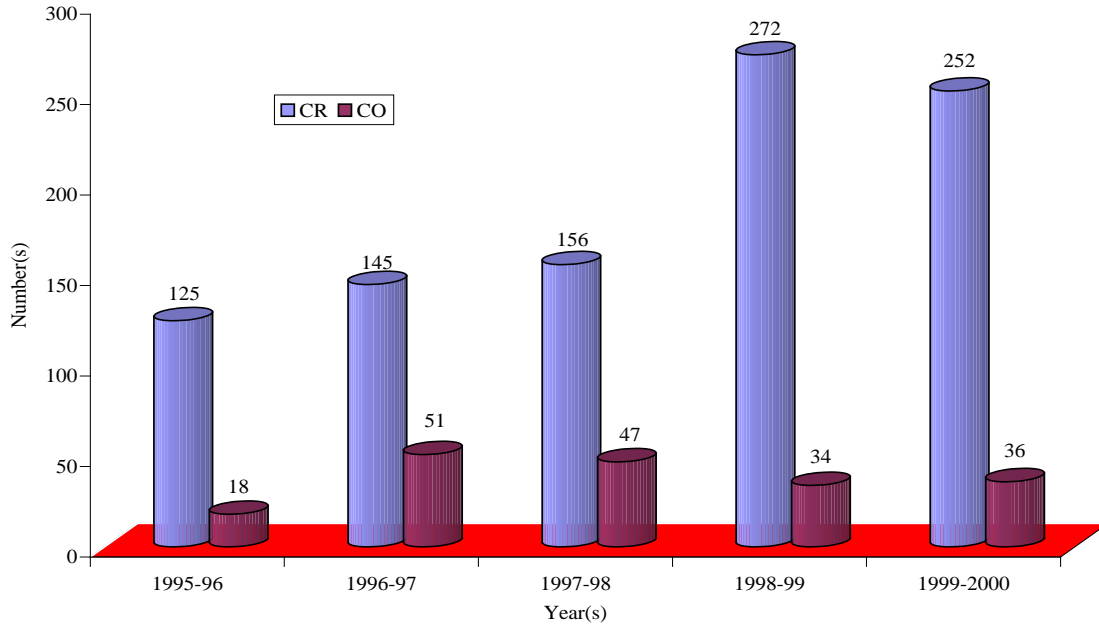
It shows that the Task force, over the years⁶⁴, has received 950 complaints and issued 186 closure orders. It initiates legal hearings, with complainants and technical experts, before taking any decision on closure of industry. The APPCB however, is not empowered to impose fines on non-compliant industries. It has to either issue directions (such as closure, prohibition, and stoppage of water and electricity services) or file a case in the court against these industries and wait for the court verdict. Interestingly, some of the rogue industries try exploit the courts in order to continue in its polluting activities. For example, Jayant Vitamins continued in its pollution activities for 20 years by using the system of appeals⁶⁵. Thus, there is a need for empowering the PCBs to impose fines on the rogue industries. This may perhaps provide incentives to the industries to take precautionary measures to reduce the risk of harm.

Graph- V

⁶⁴ That is from 1995-96 to 1999- 2000.

⁶⁵ *Hari Ram Patidar v. Union of India & others*, (in the SC, W. P. No. 330/ 1995). See *Supra* note 1 at p. 263.

Complaints Received (CR) and Closure Orders (CO) Issued by APPCB



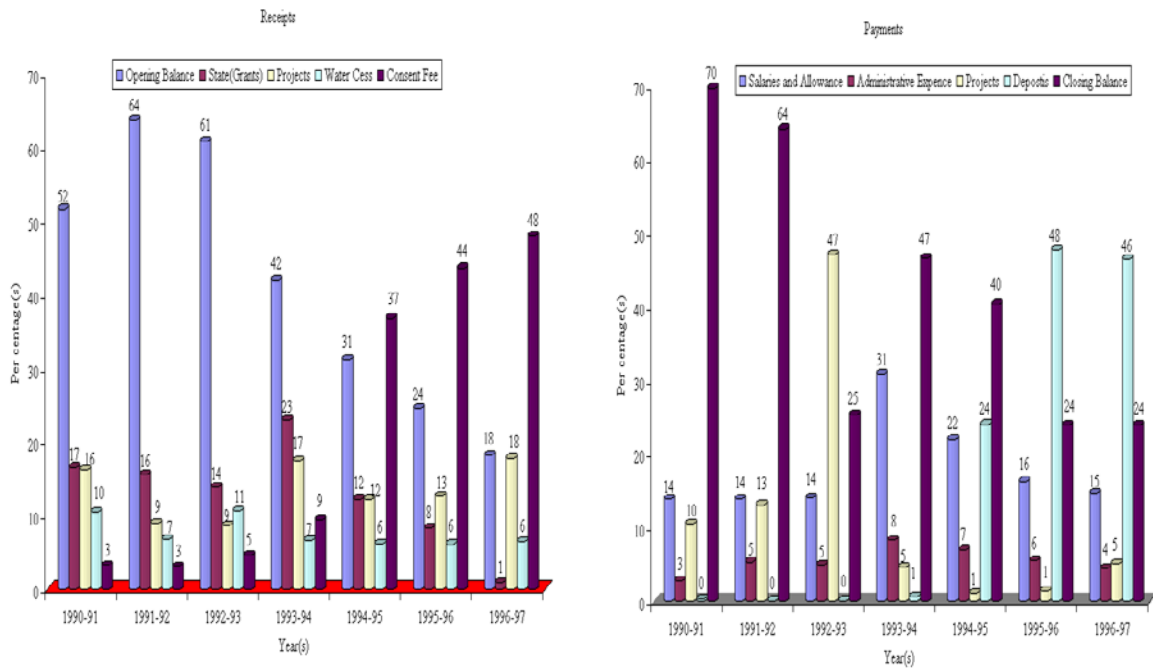
Source: Compiled from the Annual Reports, APPCB

(d) Income and Expenditure

The state governments of the concerned PCBs provide grants to meet their day to day expenses. In addition to this, the APPCB raises its financial sources through collection of consent fee, water cess, projects etc. The APPCB incurs expenditures on salaries and allowances, administrative expenses, and puts some of its money in the form of bank deposits. The receipts and payments of the Board can be presented with the help of the following Graph. The Graph (VI) reveals that the Financial Sources and the Payments of APPCB 66, viz., the grant from the state government has reduced from 17 percent to 1 percent of the total receipts over 1990-91 to 1996-97. In fact, most of its resources were raised by charging consent fees.

⁶⁶ We have reviewed the receipts and the payments of APPCB instead of income and expenditure for purposes of the study.

Graph-VI



Source: Compiled from the Annual Reports, APCCB

In case of payments, the salaries and allowances accounted for less than 15 percent of the total except during the period of 1993-95. The closing balance of the APCCB, over the years, has gone down from 70 percent to 24 percent of the total. In addition, the Board is keeping some of its resources in the form of bank deposits, which accounts for 48 per cent of the total payments. Once we treat the closing balance and the bank deposits of the Board as unspent money then the available money for the wider activities of the Board accounts for less than the 50 per cent of its total payments.

Usually, the received money is not sufficient to carry out the Board's obligations. The graph reveals that the board is not utilising its available resources effectively and efficiently towards to prevent the environmental degradation. One reason could be the prevalence of uncertainty over resource generation. In addition, the resource generations through the consents fee, water cess, etc., may raise the doubts about the Board's credibility in terms of fulfilment of its objectives. Thus, there is a need for policy measures towards to strengthening of the PCBs resource base.

(e) Promotional and Informational Activities

The APCCB encourages its officials to attend training programs, workshops and seminars to broaden their skills, increase interaction with experts, and establish partnership with institutions. It conducts environmental awareness programmes, orientation programmes⁶⁷, and seminars on environmental issues to create awareness among stakeholders. The Documentation Centre⁶⁸ of the Board keeps track of the data on the projects and programmes conducted by the different cells of the Board. The APCCB networks with NGOs and Educational Institutions for

⁶⁷ Like AP Children's Environmental Science and Action Congress.

⁶⁸ Established in 1998.

collaboration in public consultation programmes.

(f) Hazardous Waste Management

According to MoEF “around five million tonnes of hazardous waste is generated in India every year. It is largely concentrated in four states; Andhra Pradesh, Gujrat, Maharastra and Tamil Nadu”.

The Hazardous Waste Management Cell has been established⁶⁹ along with the Cleaner Production Cell by the APPCB with the financial assistance of Australian Government⁷⁰. The purpose is to identify, quantify and characterise hazardous waste producing industries. The Cleaner Production Cell also advises and provides technical and financial assistance to industries to minimise waste by adopting cleaner production options. The cell tries to create awareness among industrialists by releasing information bulletins⁷¹ about the advantages of waste minimisation and adaptation of cleaner technology. The cell provides incentives, such as issuing of three-year Consent for Operations, concessions in water cess payment, etc., to industries that are practising cleaner production. As per the rules, the APPCB identified 596 industries as hazardous waste generating industries and issued authorisation for 535 industries for onsite collection and safe storage.

The cell perhaps needs to foresee the consequences of disposal of Municipal Solid Waste, which includes household trash and the hazardous hospital waste. The cities and the towns in our country, majority, dispose the waste without segregation which may leads to long term ecological effects.

(g) Laboratory Testing

In 1977 the APPCB has established central and regional⁷² laboratories to undertake analysis of all polluting parameters⁷³. Laboratory equipment is added through government grants and projects. The Central lab of the APPCB, over the years⁷⁴, has carried out 44 percent and 56 percent of the total 41448-sample analysis of water and air, respectively.

(h) APPCB and Its Human Capital

The status of Human Capital of APPCB can be explained with the help of the Graph (VII). It indicates that the Board’s manpower stood at 258 by the end of March 2000. The administration, technical, and scientific personnel accounted for 53, 31, and 16 per cent, respectively, of the total staff. The ratio of technical persons to the number of polluted (red and orange categories) industries stood at 1:100. We can infer from these statistics that the APPCB has very restricted activities

(i) Legal cell

The APPCB has established a legal cell to provide expert advice on technical environmental issues, within the scope of the enacted environmental legislation(s), to courts. It files affidavits in courts through its standing councils. In addition, the cell acts as a catalyst between the board and the industry. It also looks into the cases bought against the board by the industries and the public. The personnel of this cell do not have any legal training so the Board simply approaches its standing council to deal with the environmental disputes.

Graph- VII

⁶⁹Based on the Hazardous Waste (Management and Handling) Rules, 1989 (Amendment, 2000).

⁷⁰In 1990 the Government of Australia offered assistance (Australian Agency for International Development- Aus AID) to the Government of India on environmental matters. The APPCB has designed a project on Hyderabad Waste Management under the assistance and the project started in the year 1996 in order to promote waste minimisation and cleaner production.

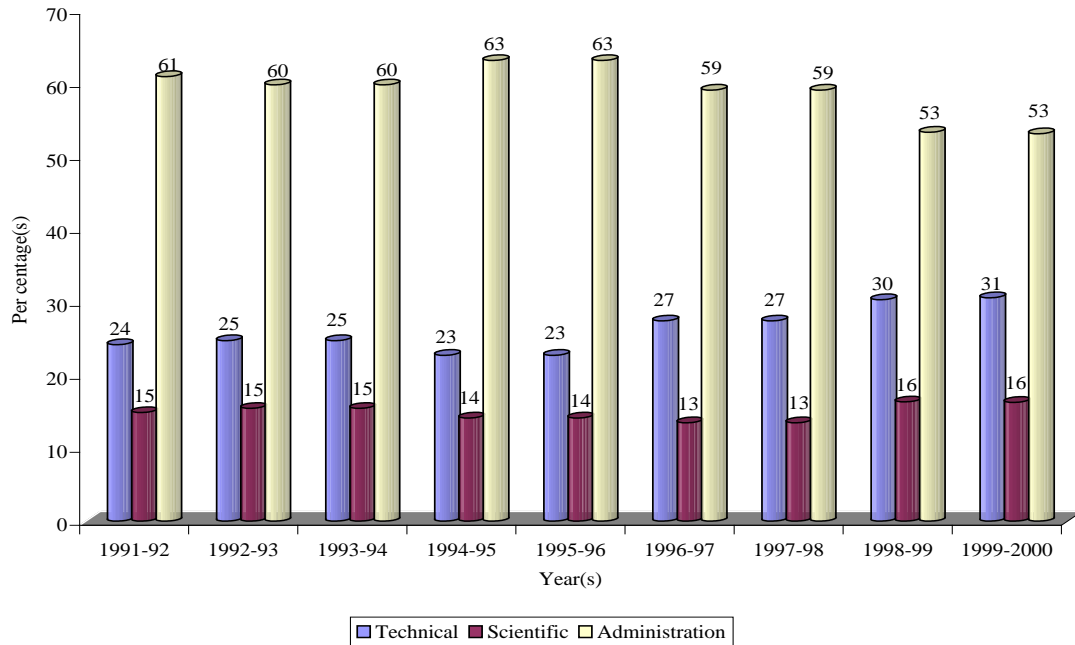
⁷¹So far the cell has issued 10 information bulletins such as waste minimisation in textiles, electroplating industries, chemical industries, in bulk drugs and dye intermediate industries, etc.

⁷²Six regional labs at Ramagundam, Rajamundry, Vijayawada, Vishakapatnam, Tirupati, and Warangal.

⁷³Such as heavy metals, pesticide residues, air pollutants, organising water pollution and industrial waste surveys, establishing water quality standards, maintaining the data etc.

⁷⁴That is, from 1991-92 to 1999-2000.

Human Capital: APPCB



Source: Compiled from the Annual Reports, APPCB

III. Views of the Officials of the PCBs

We prepared questionnaires for the Boards officials in order to obtain their opinion on the functioning of PCBs. These questionnaires were prepared after a review of the environmental PIL cases from the Supreme Court of India and the Andhra Pradesh High Court; environmental legislation that they enacted; and material collected from the CPCB and the APPCB.

Six officials were interviewed to get their opinion about the functioning of the regulatory system in the country. We asked their opinion on the following issues:

1. Dissemination of Information

Although the board will provide expert opinion to the Courts about the state of affairs of environmental pollution, some of the officials conceded that their expert reports may hide factual information about the polluting industry.

The PCBs also do not provide the citizens information about the activities of polluters. For instance, disclosure of information about the industries may create panic amongst the public. In addition, they argue that the disclosure of information about the negative externalities of the polluters may be exploited by the rival/competitive industries.

Dissemination of information about polluters is the bedrock function of the PCB's. Citizens can exercise their rights and campaign against the polluting industries.

2. Issuance of Consents

Officials were of the opinion that in the case of issuance of the Consents, such as CFE and CFO, standards were applied uniformly irrespective of the nature of the industries (i.e., public or private) involved.

3. Implementation of Standards

The schedule of implementation of standards varies amongst the industries. For example, Thermal Power, Integrated Iron & Steel, Oil Refineries, and Mines may require larger investments and longer time to install pollution abatement machinery.

According to the officials, monitoring industry is a complex issue for the PCBs. A majority of the industries do not comply with the conditions because they are not economically viable⁷⁵. Further, even industries that pretend to be complying do not. For example, industries establish the Effluent Treatment Plant but do not run it; and, they operate it only at the time of the PCBs team visit. Courts are also impotent to stop the pollution and, at times, provide incentives to the industries to pollute more⁷⁶. As a result a majority of the officials favour the introduction of the concept of fine against rogue industries.

Officials also felt that the decentralised regulatory system should curb pollution but the involvement of politicians and lack of honesty among the PCB's personnel led to a breakdown. In addition, they face pressure from interest groups, threats, inadequate job security and lack of trained personnel, expertise, financial resources, sincerity, incentives, and infrastructure facilities.

Moreover, they felt that the standards formulated by the PCBs are not scientifically and economically viable. That is the reason why most of industries violate the standards. As a result, a majority of the officials of the PCBs stress the need for the establishment of separate environmental protection courts equipped with technical and scientific prowess. According to them it will also result in a timely disposal of cases, monitoring, and the implementation of orders, etc.

4. Suggestions by the Officials

Officials are against the establishment of parallel regulatory agencies, such as Shore Area Regulatory Authorities⁷⁷, but favoured competition among PCBs in order to achieve sustainable development in the country. They made the following suggestions:

- Establishment of the National Environmental Protection Authority in place of CPCB and, similarly establishing State Environmental Protection Authority in place of SPCBs;
- All cities should have pollution monitoring stations;
- No governmental interference;
- Committee systems should be encouraged; and
- Awareness programmes in the media.

⁷⁵ In the case the effluents of Drug Industries, Patancheru, even after treating the effluents under common treatment plant, the TDS (BoD and CoD) levels are high (from 14000 to 1200) and need to find the place for its discharge. The Supreme Court of India asked the CPCB to look into the matter and do needful. The Board estimated a cost of Rs. 16 cores (approximately) to resolve the problem of treated effluents of the Drug Industries of Patancheru.

⁷⁶ For example, in the *K. Sai Vijayendra Singh v. Andhra Pradesh State Pollution Control Board* (W. P. No. 28363/ 1997, in the High Court of Andhra Pradesh), The APPCB issued closure orders based on the court direction. However, the industry challenged the closure orders of the Board by filling a Writ Petition in the Court. The Court, in its interim orders, dismissed the closure orders, in spite of the Board's affidavit stating that the closure order was in the line with compliance of the Court direction. After nine months, the Court again passed the orders against the industry by stating that the industry has not complied with the APPCB standards.

⁷⁷ In a Public Interest Case (*Indian Council for Enviro-legal Action v. Union of India and others*) the Supreme Court of India stated that "considering the fact that the PCBs are not only over worked and have a limited role in effective implementation of the Notification 1991 the GOI should consider setting up State as well as National Coastal Management Authorities under section 3 of the Environmental Protection Act, 1986.

IV. Critical Evaluation of the PCBs in the Light of Theory of Regulation

1. Enforcement of Environmental Standards

PCB personnel monitor compliance of environmental standards by industries by issuing show cause notices, legal counselling, and closure orders. Though are empowered to collect samples in and around the industry premises and test them to determine whether the effluents/ emissions are according to the standards or not. In a majority of the cases they take action against polluting industries based on complaints received from citizens. PCB's do not have any 'Consent for Establishment/ Operation Manual' to carry out minimum sample tests and ensure that the industries strictly follow the relevant standards. It is handicapped in terms of enforcement of its standards and providing deterrent incentives to violating firms because the PCBs are not empowered to use punitive measures. However, the PCBs may blacklist the polluting firms. Moreover, PCB's have a greater number of administrative personnel than scientific and technical personnel. A conclusion that can be drawn is that the PCB's are handicapped in terms of carrying out its functions towards to prevention of pollution in the country.

2. PCBs and their Resource Mobilisation

PCBs over the years have been woefully under funded. They raise their resources to meet even daily expenditure. The SPCBs, in particular raise income through the consent fee, no objection certificate, and water cess that are paid by the industrialists and the local authorities. For example, in the year 1999- 2000, the APPCB raised Rs. 10.6 cr. (out of the total receipts of Rs. 10.9 cr.) through consent fees, NOC and water cess.

These circumstances increase the possibility that the PCB's may issue consents subject to conditions that favour the industries rather than protect the environment in the country. Thus, self-reliance of PCBs is at a great cost and reduces its effectiveness. This is an issue that needs to be addressed because the Board has been unable to reduce the degradation of the environment in the State of Andhra Pradesh for the last three decades.

3. Informational Difficulty

It is difficult to get information from a regulatory agency. In the case of PCBs even the information that they are required to disseminate is not made available to the public, often in the name of *confidentiality*, *secrecy* or *not to create panic among public*.

Information programmes such as labelling and reporting requirements may help faster (market-oriented) solutions to environmental problems. The PCBs need to publish the information on firms' use, storage and release of hazardous chemicals. In fact, dissemination of this type of information to the public may bring awareness, and also ease the task of the PCBs in monitoring the activities of polluting industries. Public scrutiny can provide incentives to firms to alter their behaviour.

Information is power and the consequence of asymmetric information further aggravates environmental pollution in the country. Moreover, information disclosure provides an opportunity to the public to carry out their statutory duty under Article 51A (g) of the constitution. Hence, the PCBs should disclose information rather than restrict their activities to just conducting awareness programs among the general public.

4. Influence of Interest groups on PCBs activity

The theory of regulation predicts that there interest groups always cast a shadow on regulatory activities because it is easy to capture. Given the increasing levels of environmental pollution the PCBs are not free from the influence of interest groups. Further, there is indirect evidence about the validity of the theoretical arguments about capture theory. For instance, since PCB's mobilise their own resources, consents are issued with conditions that are favourable to interest groups. Otherwise it would not have been possible to mobilise 95 per cent of its resources through Consent Fee, NOC and Water Cess in 1999-2000.

Moreover, the lack of job security amongst the PCB employees provides an opportunity to the interest groups. Monetary bribes are theoretically possible, although they are not common because of their illegality. It is, however, personal relationships that provide incentives to the government officials to treat their industry partners kindly. The

industry also exercises power by obtaining transfers of key elected officials who have influence over the agency⁷⁸.

5. Jurisdictions of the PCBs

There is often overlapping jurisdiction that creates problems with the enforcement of the environmental law. For example, a regulatory agency's jurisdiction is on the territory (State boundary); but there are other parallel agencies such as Shore Area Regulatory Authority, Traffic Authority, licensing for small scale industries, etc., that leads to delay and confusion as the regulatory agencies debate their respective jurisdiction. For instance,⁷⁹ :

The Citizen's Forum, Tanuku, approached the court against release of effluents into the Godavari⁸⁰ by industries such as paper, chemical, cement, coal, and the domestic sewage from towns and villages. A 1993-94 report shows that the river Godavari that flows in AP is classified under the 'B' category but pollution from industries and community sewage from nearby habitats reduce the river quality to C category. The APPCB, in its study, revealed that it is monitoring water quality⁸¹ under MINRAS/ GEMS program by collecting samples once in a month, at stations of Mancherial, Polavaram, Kumaradevaram, and Doweleswaram, since 1997.

The HC of AP, in its oral order, stated that there were some deficiencies in preventing water pollution. Since these deficiencies could be rectified there is no need to close the industries. The court directed the APPCB to take necessary measures against the polluting industries by applying the principles of natural justice. It also mentioned in its order that AP is getting either C or D category water because the river is also being polluted in the Madhya Pradesh and then in the Maharashtra. Evidently, the pollution began at the point where the water flows from Madhya Pradesh (MP) to Maharashtra⁸². Thus, the APPC had no jurisdiction beyond the territorial limits of the State, and it was the CPCB that should control water pollution in the states of MP and Maharashtra. The court directed the APPCB to convey the court order to the CPCB in order to prevent the pollution in the river after consultation with the Ministry of Environment and Forests, Government of India.

6. Expert role of PCBs

⁷⁸ Extension of time to set up ETP: the case was against tanneries, all along the Palar River (Tamil Nadu), effluents which causing air and water pollution, land degradation and health effects. According to Tamil Nadu Agricultural Research Centre at Vellore, 35000 hectares of agricultural land fully/ partially unfit for cultivation in a 1000 sq. kms of Tanneries belt (i.e., from Vaniambadi to Walajapet). The pollution aggravated in 1970's and 1980's when the tanneries adopted chrome tanning to reduce the period of the processing of the skin. Usually, a total of 175 types of chemicals are used in the process and 35 litres of water is used in order to process one kg of finished leather. The Government gave time to tanneries up to 31. 7. 1985 to set up Effluent Treatment Plant (ETP). 33 tanneries out of 550, so far, have set up the ETP. The established ETP is not functioning as per the standards of the TNPCB. However, the TNPCB gave 15 times extension to the tanneries to install ETP. The Court too suspended the closure orders from time to time to enable the firm to install the ETP. At one stage, the court pointed out that "it has been monitoring the petition for the last 5 years. The NEERI, CPCB and TNPCB visited the units several times.... Despite repeated extensions granted by this court and the TNPCB, the tanneries have miserably failed to control the pollution generated by them" *Vellore Citizens Welfare Forum v. Union of India & others*, W. P. No. 914/ 1991 in the SC.

⁷⁹ *The Citizens' Forum v. Government of AP and others*, (W. P. No. 27917/ 1996, in the HC of AP).

⁸⁰ It rises at Trimbak in Nasik District of Maharashtra flows for about 1465 kms and falls into the Bay of Bengal after passing through Andhra Pradesh (771kms). The major tributaries of the river in Andhra Pradesh are Manjera, Pranahita, Indravati, Sabari, and Kinnerasani.

⁸¹ Generally the river water quality has been classified as (APPCB report published by CPCB in the year 1993-94):

- A- Drinking Water source without conventional treatment but after disinfecting.
- B- Outdoors Bathing.
- C- Drinking Water source with conventional treatment followed by disinfecting.
- D- Propagation of Wild- Life and Fisheries.
- E- Irrigation, Industrial cooling, Controlled Waste Disposal.

⁸² It is based on a Central Pollution Control Board report.

Although the PCB's are playing an important role in providing expert opinion to the liability system, its work is often shoddy and has drawn strictures from the Supreme Court. For example in the context of Jayant Vitamins Ltd., the Supreme Court was not satisfied with the pollution report submitted by the MPPCB⁸³. Similarly, the CPCB submitted its expert report to the Supreme Court of India by visiting the polluting industries, on a day on which they were closed⁸⁴, and during peak monsoon period when the effluent discharge is diluted by rainwater⁸⁵.

7. PCB's and Issuance of its Consents

The study reveals that industries play a tactical role while obtaining consents from the PCBs. The Industries initially apply for consent to produce less polluted goods but actually they produce highly polluted goods under the same consent. For instance,⁸⁶:

Chemical industries, such as Messers, Hindustan Agro-Chemicals, Silver Chemicals, Rajasthan Multi Fertilisers, Phosphate India, and Jyoti Chemicals, in and around Bichhri village (GIRWA Taluk, Udaipur District) in Rajasthan were polluting the environment. The RPCB, in its affidavit indicated that the Hindustan Agro Chemicals obtained No- Objection Certificate (NOC) subject to certain conditions to produce sulphuric acid and alumina sulphate. However, the industry started producing Osum and Single Super Phosphate (SSP).

8. PCB's and Issuance of Closure Orders

Industries continue in their pollution activities even after receiving closure orders from the concerned PCB, by simply changing the name of the polluting unit. For example *B. Sadanandam v. Government of AP & others, W. P. No. 17148/ 1999 in the HC of AP* :

The residents of Allwyn Colony (126 out of 2000 members) approached the HC of AP against the activities of the Hyderabad Ossein Ltd (animal bones crushing and storage unit) in residential zone. The court issued closure orders in the year 1997 against the Industry. The Trans Gel Industry, however, has taken over the Hyderabad Ossein Ltd., and requested the APPCB to revoke the closure orders. The APPCB, after hearing complainants view (14 out of 126 members) issued temporary revocation of closure order subject to certain conditions. The court in its order stated that the APPCB revocation of closure of the industry ends on 30 January 2000. It directed the APPCB to make periodical inspection and take appropriate action against the industry in case of default.

9. Does the Compliance of PCBs Standards Exempt the Polluter from the Liability?

The compliance of PCBs standards does not protect the Polluter from the liability in the event of harm. At the same time, non -compliance of PCBs standards by the polluter does not automatically lead to liability. However, the PCBs may prevent the polluter to establishment of his units and operation of his existing units under the provisions of the Consents for Establishment and Consents for Operation, respectively.

The PCBs, since, formulates only Minimum National Standards (MINAS), the courts justifies that irrespective of compliance of the standards the polluter is liable for the harm occurred. In other words, the polluter who

⁸³ *Hari Ram Patidar v. Union of India & others*, (in the SC, W. P. No. 330/ 1995). The MPPCB in its affidavit (1992) stated that the Jayant Vitamins Ltd., Ratlam, is the chief source of the pollution and discharges about 600 cm per day of effluents into Kurel River which is a drinking water source for near by villages and towns. The Board initially granted Consent for one year in 1975 and not renewed it because of violation of its standards. However, the industry, in its affidavit, stated that the effluents are from the neighbouring industries such as Ratlam Alcohol Plant (produces alcohol from molasses), Sajan Industry (produces H. Acid), Statar Drugs (produces Trimathoprine, Ibuprofen, Atenol, and Isoniazid), Sri Ram Chemical Industry (produces Sodium and Sulphide- solid), and Diesel Shed Western Railway, Ratlam (repairs its diesel engines). The MPPCB filed its affidavit to the Supreme Court of India and in its order (January 20, 1995) stated that it is not satisfied with the report of the MPPCB and directed the CPCB to inspect the industries and file report.

⁸⁴ *Tarala V. Patel & Others v. Government of Pondicherry*, (W. P. No. 184/ 1996 in the SC).

⁸⁵ *Rurkela Shramik Sangh vs. UoI and others*, (W. P. No. 285/1991 in the SC).

⁸⁶ *Paryavaran Suraksha Sangarsh Samiti v. Union of India & others*, W. P. No. 94/ 1990 in the SC.

complies with the MINAS may not be exempt from the liability in the event of harm. For instance, under the provisions of the Public Interest Litigation the citizens of India are approaching to the liability system to seek remedial measures against the rogue industries.

D. Suggestions for improving the functioning of the PCB's

I. Financial Assistance

PCB's require resources for the formulation and monitoring of standards, conducting exhibitions and awareness programmes on the availability of *state of art* green technology and measures of abatement of pollution. We find that the Government has drastically reduced their contributions to PCB's. For instance, the Andhra Pradesh State Government provides only one percent of the total receipts of the APPCB. In addition, mobilisation of resources through water cess is inadequate because the local authorities do not pay their dues and the Board is unable to do much to recover them. Moreover, the PCB's cannot rely on NGOs and foreign country funding because it is specific and temporary in nature. They, therefore, rely on fees gathered from the issuance of consents. There is, however, variability in revenue obtained from consents because it depends upon the establishment of new industries and also the existence of old industries. We also find that the PCBs are depositing their funds with financial institutions to obtain interest income rather than investing on research and development because of the uncertainty of the revenue.

As a result we have a unique situation. On the one hand, as an ex-ante system, the PCBs should adopt stringent measures against polluting industries to prevent environmental degradation. On the other hand, since they raise their own revenues, PCB's may be required to compromise in use of stringent measures. Thus, there is a need for providing financial assistance directly from the Ministry of Finance.

II. Dissemination of Information

Information asymmetry is the root cause for the breakdown of markets. We find that the PCB's are reluctant to disclose information to the public about the activities of polluting units. Information disclosure by the PCBs largely reveals their achievements in abating pollution. These claims, can however, be challenged since there is clear evidence of environmental degradation.

Disclosure of the activities of polluting industries provides incentives to manufacture environmental friendly products and comply with environmental standards. Disclosure enables the public to participate in the preservation of ecology in the country. The Right to Information Act will enable the public to obtain the necessary information if the PCB's are unwilling to part with it.

III. Punitive Measures

Fines imposed on those violating environmental standards generate efficient deterrence. The PCBs, however, are not empowered to impose fines and their activities are restricted to the issuance of consents and monitoring compliance by the industries. In the event that industries violate the consent condition the PCBs need to follow the principles of natural justice in order to carry out action against the industries; including approaching the judiciary. Once it is under the purview of judiciary the industries can happily be in business till the decision of the Court and the implementation of the Court's order. It is therefore, wise to grant PCB's the power to impose fines, including punitive damages to prevent environmental degradation ex ante.

IV. Adopting Sample Testing Manual

The effectiveness and efficiency of the functioning of the PCBs depends upon the monitoring of its established environmental standards. This function is directly dependant on the periodic collection of samples and its testing by the PCBs in its laboratories. We find that the collection of samples by the PCB's is dependant on whether there is a complaint and they are not performing their duty of voluntarily collecting samples. Moreover, the PCBs do not have a minimum sample testing manual under the provisions of the Consent for Establishment and Operation given by the PCB's. Failure to test provides incentives to polluting industries not to comply with environmental standards. The PCB's therefore needed to adopt the minimum sample testing manual to enforce its standards.

V. Organizational and Structural Changes

The regulatory responsibility of the PCB's is increasing because of the severity and increase in environmental pollution. In the decentralized model, with the CPCB acting a nodal agency under the Ministry of Environment and Forest, the CPCB collects information and provides it to the SPCB's. The role of the SPCB's is restricted to their respective state jurisdictions. One of the justifications for establishment of SPCBs is that these institutions facilitate greater participation by the people in local affairs, promote better planning and implementation of development and environmental programmes, and the responsiveness to the needs of the people. However, the PCB's have been unable to internalise the externalities in an effective and efficient manner. There is, therefore, a need for the establishment of a separate independent statutory agency to prevent and reduce hazardous pollution in the country.

E. Summary and Conclusion

The study focused on the evaluation of the functioning of the Pollution Control Boards (PCBs) with the goal of determining whether the regulatory system is effective in preventing environmental pollution in India. Since the market and the liability systems are unable to provide incentives to the polluter to reduce pollution, there is a need for the regulatory system to prevent, control, and abate environmental pollution in the country. The PCBs were established under the provisions of the Water, Air and EP Acts in order to fulfil the objectives of formulating environmental standards, monitoring them, issuing consents for the establishment and operation of industries, and advising the Courts and the Government on scientific and technicalities of environmental issues.

Our study is based on primary and secondary data. The insights obtained from the data were used to prepare questionnaires that were then submitted to the officials of the PCB's to get their opinion on the functioning of the PCBs. We have critically analysed the data and the opinions of the PCB officials in the light of the theory of the regulatory system to determine the role of an ex-ante system in abatement of pollution in the country.

The study reveals that the role of the Board is of great importance in preventing, controlling, and abating environmental pollution in the country. The PCBs however, are ineffective in ensuring internalization of environmental concerns in the process of economic development. This is mainly because of the responsibilities of are manifold, inadequate technical and scientific staff, prevalence of uncertainty over resource base, presence of the influence of the interest groups, existence of jurisdictional problems, absence of punitive measures, non-existence of minimum sampling tests manual, lack of effective and efficient working culture, and non-disclosure of information about the activities of the hazardous industries. Thus, there is a need to introduce policies on restructuring of the existing PCBs, establish competitive environment, empower PCBs to impose fine against rogue industries, incentive mechanism for the personnel, reduce the revenue generation responsibility and provide financial assistance directly from the Ministry of Finance.

Overall, the study emphasises the necessity of improving the functioning of the regulatory system by making necessary changes not only in substance of the law, but also in the working conditions of the PCBs so as to improve the environmental quality in the country.