Environmental Compliance and Enforcement in India: Rapid Assessment

This report was prepared in the context of the OECD Programme of Environmental Co-operation with Asia and the OECD work on environmental compliance and enforcement in non-member countries. It was produced jointly with the Secretariat of the Asian Environmental Compliance and Enforcement Network (AECEN) and presented at the AECEN annual forum in Hanoi, Vietnam on 4-5 December 2006. The key findings of the report were discussed and endorsed at a stakeholder workshop in New Delhi on 3 November 2006.

For further details please contact Mr Eugene Mazur at Eugene.mazur@oecd.org

OECD

TABLE OF CONTENTS

ACRONYMS

AECEN	Asian Environmental Compliance and Enforcement Network
CCA	Common Consent Applications
CETP	Common Effluent Treatment Plant
CPCB	Central Pollution Control Board
CREP	Charter on Corporate Responsibility for Environmental Protection
CTE	Consent to Establish
CTO	Consent to Operate
EMS	Environmental Management System
EPA	Environmental Protection Act (India)
GIS	Geographic Information System
LAEC	Local Area Environment Committee
MIDC	Maharashtra Industrial Development Corporation
MOEF	Ministry of Environment and Forests of India
NCS/PSED	National Conservation Strategy and Policy Statement on Environment and Development
NEP	National Environment Policy
NETA	National Environmental Tribunal Act
NPPA	National Policy on Pollution Abatement
PAAC	Pollution Awareness and Assistance Centre
PCB	Pollution Control Board
PIL	Public Interest Litigation
PLIA	Public Liability Insurance Act
PPP	Public-Private Partnership

OECD	Organisation for Economic Co-operation and Development
SME	Small and Medium-Sized Enterprises
SPCB	State Pollution Control Board
TERI	The Energy and Resources Institute
TSDF	Treatment, Storage, and Disposal Facilities
USAID	U.S. Agency for International Development
USEPA	U.S. Environmental Protection Agency

1. INTRODUCTION

This study is a rapid assessment of India's environmental compliance and enforcement programmes conducted by the Secretariat of the Asian Environmental Compliance and Enforcement Network (AECEN) – with funding from the U.S. Agency for International Development (USAID) – and the Organisation for Economic Co-operation and Development (OECD). It was carried out in close collaboration with India's Ministry of Environment and Forests (MOEF) under the guidance of the Central Pollution Control Board (CPCB).

1.1. Institutional Framework for the Study

Strengthening enforcement and compliance systems has become a subject of particular interest in the context of designing policies that can stimulate sustainable development and economic growth. Recent discussions have shown the need to promote better understanding of the incentive structures facing firms and the need to provide governments with approaches that can optimize their expenditure on assuring environmental compliance.

Asian Environmental Compliance and Enforcement Network. Established in 2005, AECEN works to promote improved compliance with environmental legal requirements in Asia through regional exchange of innovative policies and practices. Composed of national and sub-national environmental agencies, the objectives of the Network are to:

- Promote the development and implementation of improved environmental policies, laws, regulations and institutional arrangements;
- Strengthen practitioner capacity through specialized training and skills development; and
- Facilitate regional sharing of best practices and information on strategies for strengthening compliance and enforcement.

One principal activity of AECEN is to pilot innovative policies and practices at the country level and facilitate further adoption and dissemination through regional cooperation.

OECD Compliance Assurance Program. A Conference on Economic Aspects of Environmental Compliance Assurance organized in December 2004 in Paris within the framework of the OECD Global Forum on Sustainable Development facilitated a dialogue between OECD countries and transition and developing economies on designing optimal enforcement strategies and tools that can maximize environmental benefits and minimize costs to the regulators and regulated community. Participants requested the OECD and its partners like AECEN to extend the dialogue and to help, in particular, non-member countries, to design policy approaches that ensure environmental compliance and that are cost effective for the administration and the regulated community. Since India is one of priority targets for OECD's global relations as an important emerging economy, the OECD has conducted this study jointly with the AECEN Secretariat.

U.S. EPA and World Bank Studies. The MOEF requested that this rapid assessment complement recent comprehensive efforts by the U.S. Environmental Protection Agency (U.S. EPA)[1] and the World Bank[2] in evaluating environmental compliance and enforcement and institutional reforms in India. The present report attempts to provide further insights into challenges in ensuring effective environmental compliance and enforcement, and corroborate or reinforce recommendations identified in those important studies. Both U.S. EPA and the World Bank are AECEN partner organizations, and contribute expertise and resources in supporting members in developing and implementing pilot activities.

1.2. Objective and Methodology of the Study

The objective of this rapid assessment is to help India to define priorities to address its key challenges in environmental compliance and enforcement and lay the groundwork for potential pilot activities that could be carried out under the aegis of AECEN.

The study followed the AECEN methodology which was also used to prepare similar rapid assessments for Vietnam, the Philippines, and Sri Lanka. In preparing the assessment, a team of consultants, including experts from The Energy and Resources Institute (TERI, India) worked with the CPCB and selected state pollution control board (SPCB) officials to assemble the information via a survey questionnaire and follow-up interviews.

The questionnaire was designed to identify program strengths and weaknesses, priority reform areas and opportunities for strategic interventions in eight principal areas:

- Legal enforcement authority;
- Institutional arrangements and capacity building;
- Compliance monitoring: policies and procedures on inspections, self-monitoring and permitting;
- Enforcement response;
- Compliance assistance and data management;
- Economic and other incentive-based instruments;
- Indicators to evaluate program success; and
- Public participation in environmental compliance and enforcement.

Participating states were Gujarat, Maharashtra, West Bengal, Andhra Pradesh, Uttar Pradesh, Himachal Pradesh, Jammu and Kashmir, and Chattisgarh. A draft summary of findings was presented for consideration by MOEF and CPCB decision-makers and other relevant stakeholders at a workshop in New Delhi on November 3, 2006.

[1] Report on Environmental Compliance And Enforcement In India, United States Environmental Protection Agency, December 2005.
[2] India: Strengthening Institutions for Sustainable Growth, Country Environmental Analysis, The World Bank, October 2006.

2. BACKGROUND AND CONTEXT

2.1. Environmental Challenges

India's economic development propelled by rapid industrial growth and urbanization is causing severe environmental problems that have local, regional and global significance. Deforestation, soil erosion, water pollution and land degradation continue to worsen and are hindering economic development in rural India, while the rapid industrialization and urbanization in India's booming metropolises are straining the limits of municipal services and causing serious environmental problems.

More than 20 cities in India have populations of over one million, and some of them, including New Delhi, Mumbai, Chennai, and Kolkata, are among the world's most polluted. Assuming continued economic liberalization and increased urbanization, the damage to environment and health could be enormous if precautionary measures are not taken. The challenge, therefore, is to maintain the quality of air, water and land and protect the environment by reconciling environmental, social and economic imperatives.

Air quality data in India's major cities indicate that ambient levels of air pollutants exceed both the World Health Organization and Indian standards, particularly for particulate matter. Of the total air pollution load nationwide, vehicular sources contribute 64 percent, thermal power plants 16 percent, industries 13 percent, and the domestic sector 7 percent. Environmental effects from growing fossil fuel use can only worsen as India seeks to meet the energy needs of its growing economy. It is estimated that over 96 percent of India's total demand for commercial energy is met by fossil fuel with coal contributing 60 percent and petroleum products providing the remaining 36 percent.

India's rivers and streams suffer from high levels of pollution from waste generated primarily from industrial processes and municipal activities. Untreated sewage and non-industrial wastes account for four times as much pollution as industrial effluents. While it is estimated that 75 percent of the wastewater generated is from municipal sources, industrial waste from large and medium-sized plants contributes to over 50 percent of the total pollution loads. In major cities, less than five percent of the total waste is collected and less than 25 percent of this treated.

To address these environmental challenges in coordination with the state governments, the central government has identified and targeted 17 highly polluting industries and 24 environmental problem areas. The chemical and engineering industries are at the top of the government's list, since they are the major contributors to air, water, and waste pollution. These industries include integrated iron and steel plants, non ferrous metallurgical units, pharmaceutical and petrochemical complexes, fertilizers and pesticide plants, thermal power plants, textiles, pulp and paper, tanneries and chloralkali units.

As detailed below, the Government of India has established an environmental legal and institutional system to meet these challenges within the overall framework of India's development agenda and international principles and norms. Most recently, the Government put forward the National Environment Policy of 2006 which provides a guide to action in regulatory reform, environmental conservation, and enactment of legislation by government agencies at all levels.

2.2. Constitution and National Policies

India took a bold step to include environmental protection rights and duties in its Constitution. The Constitution of India specifies that the State shall endeavor to protect and improve the environment and to safeguard the natural resources of the country. According to the Constitution, it is the fundamental duty of every citizen of India to protect and improve the natural environment and to have compassion for living creatures. By raising environmental concerns to the constitutional level, India has provided its citizens with a powerful policy tool to protect the environment.

National Policies. In addition to the Constitutional mandate, India has a number of national policies governing environmental management, including the National Policy on Pollution Abatement (NPPA, 1992) and the National Conservation Strategy and Policy Statement on Environment and Development (NCS/PSED, 1992). While these national policies are not judicially enforceable, they serve as guiding principles for the central and state governments to follow.

The NPPA encourages the use of economic instruments to complement traditional command-and-control approaches to pollution abatement. To integrate environmental considerations into decision making at all levels, the policy adopts the following guiding principles:

- prevention of pollution at source;
- adoption of best available technology;
- the polluter pays principle; and
- public participation in decision making.

The NCS/PSED provides an overarching policy framework on environmental management, including conservation of natural resources and economic development. Key instruments for promoting environmental change include conducting environmental impact assessments, developing educational campaigns, and ensuring public participation. As the nodal agency, the Ministry of Environment and Forests (MOEF) is responsible for implementing the NPPA and the NCS/PSED.

National Environment Policy of 2006. Building on earlier policies, the National Environment Policy (NEP) of 2006 is the most recent pronouncement of the government's commitment to improving environmental conditions while promoting economic prosperity nationwide. The NEP's key environmental objectives include conservation of critical environmental resources, intra-generational equity, livelihood security for poor, integration of environment in economic and social development, efficiency in environment resource use, environmental governance, and enhancement of resources for environmental conservation. This policy promotes mainstreaming of environmental concerns into all development activities, advocating important environmental principles and identifying regulatory and substantive reforms.

With respect to regulatory reforms, the NEP recommends revisiting the policy and legislative framework to "develop synergies among relevant statures and regulations, eliminate obsolescence, and amalgamate provisions with similar objectives." The NEP identifies a new framework for legal action that includes application of a mix of civil and criminal sanctions, adoption of innovative economic instruments, and public-private partnerships in strengthening environmental compliance and enforcement. The MOEF is responsible for implementing the NEP.

2.3. Legal Framework

India has an elaborate legal framework with over two hundred laws relating to environmental protection. Key national laws for the prevention and control of industrial and urban pollution include the following:

- Water (Prevention and Control of Pollution) Act of 1974, amended in 1988
- Water (Prevention and Control of Pollution) Cess Act of 1977, amended in 1991
- Air (Prevention and Control of Pollution) Act of 1981, amended in 1987
- Environment (Protection) Act of 1986 (EPA)
- Public Liability Insurance Act of 1991
- National Environmental Tribunal Act of 1995
- National Environmental Appellate Authority Act of 1997

The medium-specific legislation (the Air Act and the Water Act) empower the central and state pollution control authorities to enforce emission and effluent standards for industries discharging pollutants into air and water. The Water Cess Act, among other things, stipulates the use of fees for water abstraction.

The Water Act vests regulatory authority in State Pollution Control Boards to establish and enforce effluent standards for facilities discharging pollutants into water bodies. The CPCB coordinates activities between the states and performs regulatory functions for union territories. The central and state boards were authorized to control domestic and industrial discharge via *consents to establish* (CTE) and *consents to operate* (CTO) and to advise state governments on siting of industrial projects.

The Air Act provides for the prevention, control and abatement of air pollution. With a framework similar to the Water Act, the Air Act gave the central and state boards authority to issue consents to industries operating within designated air pollution control areas. States also prescribe emission standards for stationary and mobile sources.

The Parliament responded to the Bhopal disaster of 1984 by enacting ***the Environment Protection Act*** in order to create overarching national environmental legislation. The EPA both articulates a policy for environmental protection covering air, water and land and provides a framework for central government coordination of central and state authorities established under previous laws, including the Water Act and Air Act. Under this umbrella law, the central government must set national ambient and emissions standards, establish procedures for managing hazardous substances, regulate industrial siting, investigate and research pollution issues, and establish laboratories and collect and disseminate information.

Among other relevant legislation, *the Public Liability Insurance Act (PLIA)* of 1991 mandates that business owners operating with hazardous substances take out insurance policies covering potential liability from an accident and establish Environmental Relief Funds to deal with accidents involving hazardous substances. *The National Environmental Appellate Authority Act* of 1997 requires the central government to establish an authority to hear appeals on area restrictions where industrial operations will not be carried out or will be carried out with certain safeguard measures. In 2005, Parliament enacted *the*

Right to Information Act designed to promote greater transparency and accountability of the government and public participation in decision-making.

2.4. Key Institutions

The primary institutions responsible for the formulation and enforcement of environmental acts and rules include the Ministry of Environment and Forests (MOEF), the Central Pollution Control Board (CPCB), State Departments of Environment, State Pollution Control Boards (SPCBs) and Municipal Corporations.

Ministry of Environment and Forests. Established in 1985, the MOEF is the central government nodal agency responsible for planning, promotion and coordination of all environmental activities, including formulation of national policies, standards and regulations. The objectives of the MOEF are:

- conservation and survey of flora, fauna, forests and wildlife;
- prevention and control of pollution;
- afforestation and regeneration of degraded areas;
- protection of the environment; and
- welfare of animals.

Central Pollution Control Board. Under MOEF, the Central Pollution Control Board (CPCB) is the national board with oversight powers over state boards. The CPCB has a central office as well as a network of zonal offices located in New Delhi, Calcutta, Shillong, Kanpur, Bangalore and Vadodara. Established in 1977 under the Water Act, the CPCB has wide ranging powers and responsibilities to:

- advise the central government on any matter related to prevention and control of water and air pollution and improvement of air quality;
- plan nationwide programs for the prevention, control and abatement of water and air pollution;
- coordinate the activities of SPCBs and resolve disputes among them;
- provide technical assistance and guidance to the State Boards,
- carry out and sponsor investigations and research relating to problems of water and air pollution and for their prevention, control and abatement;
- prosecute polluting industries pursuant to the Water Act;
- collect, compile and publish technical data on air and water pollution and measures recommended for their prevention, control and abatement;
- organize training of staff engaged in environmental programs;
- prepare manuals, codes and guidelines relating to industrial emissions and effluents;
- organize mass media awareness programs on environmental protection;

- disseminate information on water and air pollution and their prevention and control; and

- perform such other functions as prescribed by the central government.

The total number of employees in the CPCB is approximately 500, 100 of which have technical training. The CPCB has approximately 60 inspectors nationwide.

State Pollution Control Boards. The SPCBs were established following the State Legislatures' adoption of the Water Act of 1974 and then the Air Act of 1981. At the State level, the SPCBs are attached either to the Environment Department, or to the Forest and Wildlife Department. In general, SPCBs perform the following functions:

- advise the state governments on pollution related issues;

- plan a comprehensive state-level pollution control/prevention/abatement program;

- implement and enforce national standards, making them more stringent if warranted by local conditions;

- grant consents to establish and to operate under the Air and Water Acts and authorize hazardous waste disposal per rules under the EPA; and

- collect water cess for the use of water.

In the SPCBs, staffing numbers range widely between 10 and 800 (4 to around 300 technical) depending on the geographic area, number of industries and financial status of the board.

Role of the Judiciary. Over the last twenty years, the Supreme Court of India and some High Courts of the states have led the way in the enforcement of environmental laws through citizen-led public interest litigation (PIL) that has its legal basis in the constitutional right to a healthy environment. Through this judicial activism, the courts have issued orders with specific implementation requirements that not only remedy the case at hand, but also set new policies and practices with widespread implications for the regulated community as well as regulatory agencies.

In addition, all environment-related penalties (fines and imprisonment) are provided under criminal law and must be imposed by lower courts.

2.5 Status of Environmental Compliance

According to the CPCB, as of June 2006, 73 percent of the 2672 units under 17 categories of highly polluting industries were in compliance, which is a decrease from 2004, when the rate was 84 percent. Table 2.1 provides a summary of the compliance status by industrial sector. The major non-complying sectors are chloralkali (29%), thermal power (27%), copper (25%), iron and steel (24%), and pharmaceuticals (23%).

Table 1. Sector-wise Compliance Status of 17 Categories of Highly Polluting Industries (June 2006)

No.	Industrial Category	Complying	Defaulting	Closed[1]	Total
1	Aluminium	6	1	0	7
2	Cement	198	16	20	234
3	Chlor-Alkali	24	10	0	34
4	Copper	3	1	0	4
5	Distillery	191	35	36	262
6	Dyes & DI	87	9	25	121
7	Fertilizer	104	10	21	135
8	Iron & Steel	28	9	1	38
9	Oil Refineries	17	3	1	21
10	Pesticides	95	9	11	115
11	Petrochemicals	73	7	1	81
12	Pharmaceuticals	351	124	59	534
13	Pulp & Paper	118	32	37	187
14	Sugar	438	49	91	578
15	Tannery	97	13	17	127
16	Thermal Power	129	51	8	188
17	Zinc	4	1	1	6
18	**Total**	1963	380	329	2672

[1] Some of the industries may have been shut down temporarily, often until corrective actions have been agreed upon. *Source: CPCB*

The data in Table 1 should be considered with caution as the table lists under "complying" those industries that have installed pollution controls after having been initially found in violation of the environmental requirements. According to the U.S. EPA (2005), there were 1551 initially non-complying facilities within the same 17 categories, of which 1351 facilities complied with subsequent SPCB orders and 178 were shut down, with 22 units defaulting. This actually shows a negative compliance trend in large industry in India in recent years. In addition, the real compliance rates are likely to be lower, since inspections usually do not evaluate compliance with all environmental requirements (e.g., stack tests are rarely conducted to check air emissions for compliance).

The situation with small and medium-sized enterprises (SMEs) is much worse. According to the MOEF, SMEs account for 40 percent of industrial production employ limited pollution control technologies and are responsible for an estimated 70 percent of the total industrial pollution load nationwide.

3. ASSESSMENT FINDINGS: CURRENT SITUATION AND KEY CHALLENGES

3.1. Legal Enforcement Authority

Most of compliance monitoring and enforcement is done by SPCBs. The few direct enforcement actions taken by the CPCB are generally done by the zonal offices. Under the Water Act, the Air Act and the EPA, the pollution control boards have the authority to issue and revoke consents to operate, require self-monitoring and reporting, conduct sampling, inspect facilities, require corrective action and prescribe compliance schedules. The ***enforcement powers*** include emergency measures of disconnecting water or power supply and facility closure, which are widely used in some states[3]. According to the Hazardous Wastes (Management and Handling) Rules of 1989, SPCBs can, with CPCB approval, impose administrative fines for any violation of those rules. Maharashtra is one of the very few states which have used this provision to impose penalties for unauthorized storage of hazardous waste.

Other sanctions (fines and imprisonment) must be pursued under the criminal authority of the courts. The EPA stipulates steeper penalties than the Water Act and the Air Act but at the same time defers to them (Section 24 of the EPA) in cases where the same type of violations is covered under the EPA and the other law. In addition, criminal cases brought by SPCBs are difficult to prosecute, have a low conviction rate (although that varies greatly between the states), and consume precious government resources and time.

All three laws also include provisions for citizens to bring legal actions. Citizens must provide the Central Government with 60 days advance notice of their intention to file a complaint to give the government an opportunity to take remedial action. Under the ***public interest litigation*** process, the Supreme Court of India and the High Courts have relaxed standing and other procedural requirements so that citizens may file suits by a simple letter without the use of a lawyer, and appear before "green benches" (specially assigned judges).

The 186th Report of India's Law Commission (September 2003) recommended the establishment of ***environmental tribunals*** with exclusive jurisdiction with regard to environmental cases. The Report stated that environment courts must be established to reduce the pressure and burden on the High Court and the Supreme Court. Such environmental tribunals would exercise all powers of a civil court in its original jurisdiction. They would also have appellate judicial powers against orders passed by the concerned authorities under the Water Act, the Air Act, the EPA, and other environment related acts. At the national level, there would be a National Environmental Tribunal, with corresponding tribunals at the state level. The proposal is still under consideration of the Government.

[3] For example, the West Bengal PCB used closure 230 times and electricity cut-off 222 times between April 2005 and March 2006.

Key Challenge

The lack of civil administrative authority (particularly, to impose administrative fines) limits the effectiveness of PCBs' enforcement efforts and leads to over-reliance on the judiciary for enforcement. Filing criminal cases against violators in trial courts or reacting to PILs is a time-consuming, unpredictable and ineffective enforcement mechanism.

3.2. Institutional Arrangements and Capacity Building

SPCBs have primary enforcement authority in the states, while the CPCB performs the same functions for union territories. The SPCBs have further delegated some enforcement responsibilities to their regional and sub-regional offices. The CPCB's role is to provide technical assistance and guidance to the SPCBs and to coordinate activities among the states. In addition, the CPCB exercises general oversight and, if a State Board fails to comply with a CPCB direction, may temporarily assume SPCB functions.

There is also an issue to coordination between SPCBs and other state-level government agencies that have some environment-related responsibilities, including departments of transport (with respect to mobile source pollution), of urban development (municipal waste), of industries (siting of industrial facilities), etc. At present, such interagency collaboration is very weak.

Dual Line of Command. SPCBs receive administrative directions and some funding from their state governments. This dual line of command with the CPCB can create problems, since at times the CPCB's proposed actions are not effectively implemented due to a state government's inaction or indifference. With the exception of the National Water Quality Assessment Authority, there is no formal institutional mechanism for interagency coordination on formulating and implementing environmental regulations. The interagency task forces and working groups established from time to time to tackle specific environmental issues do not adequately address long-term coordination on environmental management and enforcement. According to the assessment, the SPCBs are interested in strengthening coordination with CPCB and other states through a communication network, and annual action planning efforts.

Human Resources. This rapid assessment identified human and institutional capacity limitations at both the central and state levels. The human resources structure in most SPCBs is heavily dominated by non-technical staff. For example, in the Andhra Pradesh PCB, there are only 88 technical staff out of the total of 355 (25 percent), resulting in a situation where one technical person is required to monitor 100 polluting installations. Among the professionals, there are mostly engineers, with very few legal or policy experts. In an extreme case, the Arunachal State PCB has no staff of its own and is run by the personnel of the State Department of Environment and Forests. The vacancy ratio is as high as 65% at the SPCB of Karnataka, 54% in Punjab, 46% in Goa, and 43% in Andhra Pradesh (Planning Commission, 2001-2002). Often SPCBs hire contract employees (e.g., in Manipur, Sikkim, Kerala, Madhya Pradesh) who do not get standard civil service benefits and, therefore, have low work motivation.

Part of the reason for such severe staff shortages is that the Central Government has not laid down any norms for determining the staffing structure of the State Boards in terms of the share of technical staff or the coverage of pollution units. The pay scales for PCB staff also vary greatly across the states. While financial resources are often a constraint in filling the vacancies (see below), in many states where PCBs are doing well financially (e.g., Maharashtra, Uttar Pradesh, Tamil Nadu) they cannot get approvals from the respective state governments to hire more staff. Frequent change of chairmen has also hampered the work of PCBs: for example, the Uttar Pradesh PCB has changed 24 chairmen in the last 24 years (Gupta and Priyandarshini, 2003).

Finally, the low level of professional training contributes to the lack of institutional capacity. There is no formal procedural or technical training in any SPCB. Neither are there minimum training requirements specified by the Central Board. Less than one percent of the total SPCB expenditure goes to staff training. These issues are addressed in detail in the U.S. EPA report "Environmental Compliance and Enforcement Training Institutions in India and Training Recommendations"(2005).

Financial Resources. The staff costs and compliance monitoring and enforcement activities of SPCBs are funded by grants from the state governments, very limited program-based allocations from the central budget and, for the most part, by revenues from the water cess (80 percent of the total cess collected in the state is reimbursed to the respective SPCB), administrative fees for consent processing and laboratory analysis services (different rates apply in different states), as well as funds forfeited through bank guarantee programs (where those exist).

There are vast variations in the financial positions of SPCBs: some of them are heavily dependent on state government funding while others rely on their own resources. Some SPCBs like those of Maharashtra, Karnataka, and Uttar Pradesh have large own resources and even surpluses (due to the high revenues from the water cess). On the other hand, PCBs of states like Kerala and Jammu and Kashmir receive over 80 percent of their funding in government grants (Planning Commission, 2001-2002). Even those few SPCBs that are self-sufficient are faced with spending restrictions imposed by the state governments.

The expenditure patterns are also quite different from state to state. In most states, a major share of the budget (60-70 percent on average) is allocated to administrative expenses, primarily salaries. Due to the shortage of funds, the PCBs lack adequate infrastructure (monitoring equipment, laboratories, etc.) to execute their responsibilities. An example of this is the Bihar PCB that does not have a single laboratory to test effluent samples (Gupta and Priyadarshini, 2003).

Key Challenges

- There is *insufficient coordination between the CPCB and SPCBs* due to the double subordination of SPCBs (and the administrative influence of state governments) as well as to the lack of comprehensive standard compliance and enforcement policies and procedures.

- Significant *human and technical capacity constraints* are an obvious factor that impacts effective execution of all compliance and enforcement functions at the central, state and local levels.

- In the absence of strong political will to address environmental challenges, *funding limitations* remain a significant challenge facing all environmental institutions. The variations in the financial status and sources of funding of the PCBs lead to horizontally inequitable treatment of the regulated community. An over-dependence on fees can also lead to mixed incentives and priorities for staff.

3.3. Compliance Monitoring: Permitting, Inspections, and Self-Monitoring

Permitting. All polluting facilities are legally required to obtain from a respective SPCB a consent (permits) to establish (CTE) and a consent to operate (CTO). In accordance with a Notification issued by the MOEF in September 2006, certain new industrial projects/activities or those planning major notifications also require a Prior Environmental Clearance (from the CPCB for Category A or from an SPCB for Category B) based on an environmental impact assessment (EIA) report.

A CTE is granted after an evaluation of the potential environmental impact and of the design of pollution control installations. Conditions for pollution control measures are part of a CTE. Upon verification of compliance with these conditions, a CTO is issued with emission and effluent limits based on industrial sector-specific standards[4], as well as self-monitoring and reporting schedules. Industries involved in handling hazardous, bio-medical, or municipal wastes must also obtain an authorization. Some states (e.g., Gujarat) issue consolidated consents for air and water pollution and hazardous waste based on Common Consent Applications (CCA). Others, like Chattisgarh, issue water and air consents as well as waste management authorizations separately. In practice, only large and medium-sized facilities have the required permits. Most small-scale industries operate without any consents.

The CPCB has recently drafted Guidelines for Management of Consent and Authorization[5] which try to streamline the permitting process across the states and stipulate consent validity periods for different categories of industry (red, orange or green[6]) based on their potential environmental impact. Currently, each state sets its own rules, and consent validity periods vary between one or two years for highly polluting industries to 15 years for SMEs.

Central and state officials spend a significant amount of time and resources on permitting due in part to continuing industrial growth. In Andhra Pradesh, the number of new facilities applying for consent permits increased from 611 in 2005 to 970 in 2006. Cases of consent denials are rare: in Andhra Pradesh, they constituted a mere two percent of the total applications received.

Inspection. Monitoring and inspection are a key function of SPCBs. The frequency of on-site visits to verify compliance is determined by the pollution potential (red/orange/green) and size (based on the value of capital investment) of the industry. The CPCB guidance on the frequency of regular inspections is presented in Table 2. However, individual states seem to have differing interpretation of the guidance and did not regard it as binding. For example, red category facilities are supposed to be inspected once a month in Gujarat, once per quarter in Orissa, and once every two years in West Bengal.

Table 2. Minimum Frequency of Inspections: CPCB Guidance

Size of Industry	Category of Pollution Potential	Inspection Frequency
Large and medium-sized	Red	Once every 3 months
	Orange	Once a year
	Green	Once in two years
Small scale (capital investment below 10,000 rupees)	Red	Once a year
	Orange	Once in 3 years
	Green	Once in 5 years

In addition to inspections to evaluate compliance, SPCBs conduct inspections in response to complaints and sometimes as part of the consent renewal process. Most inspections are multimedia (covering air, water and waste) and unannounced. After inspection, inspecting teams prepare written

[4] The Minimum National Standards are established by the CPCB but SPCBs have the right to make them more stringent under their jurisdiction. The emission/effluent standards are based on studies undertaken by technical institutions, and many of them have proven to be unrealistically stringent and economically unfeasible (World Bank, 2006).

[5] At the time of this rapid assessment the authors were unable to secure a copy of these Guidelines, and it is unclear whether they have indeed been adopted.

[6] The red category includes 64 types of industry, the orange – 25 sectors, and green – 55 sectors.

reports. To best deploy resources, some SPCBs are also working to set priorities in keeping with annual plans that prioritize highly polluting sectors, projects or activities.

There are no standard inspection and sampling procedures prescribed either in the Water Act, Air Act or EPA, or their regulations, and the CPCB and SPCBs have not issued uniform guidelines. As a result, boards develop and apply their own approaches and methods, which is an inefficient way to use limited agency resources. For example, the deficiency of the sampling procedure is quoted as one of the main reasons why courts often rule against the government.

While the number of inspections conducted by different SPCBs is impressive (for example, in Andhra Pradesh, 24,565 inspections were carried out over the last three years), most SMEs are inspected very rarely or never at all. In addition, given the number of facilities the very few SPCB inspectors have to visit, there is tremendous pressure to complete inspections as quickly as possible, which limits their effectiveness and leads to poor detection of violations. Several SPCBs rotate inspectors within the state in order to reduce favoritism, but the need to relocate tends to demoralize staff which is already overstretched.

CPCB zonal offices also have a right to conduct inspections associated with a national strategy, a special project within a zonal area, the Environmental Surveillance Squad program, or a court obligation. Zonal office inspections are usually more extensive than SPCB inspections and often take several days to complete (U.S. EPA, 2005).

Self-monitoring and Reporting. According to the national Environmental (Protection) Rules of 1986, each polluting facility must submit an Environmental Statement at the end of each financial year (April through March). The Environmental Statement should include the following information:

- water and raw material consumption;
- air and water pollution discharged by parameter (average daily quantity and concentration as well as percentage of variation from the prescribed limits);
- hazardous waste generation (total quantity from the production process and pollution control installations) and methods of disposal;
- solid waste generation, reuse, recycling, and disposal; and
- pollution abatement measures implemented.

The consents prescribe parameters and respective self-monitoring frequencies, although procedures and requirements across states are not uniform. Lack of reporting or false reporting may lead to criminal or administrative penalties. The existing legal framework, however, does not authorize enforcement actions through the courts based on self-disclosed reports. Rather, government agencies can only pursue legal action on the basis of “legal” samples taken by inspectors who are certified to conduct inspections in accordance with specified procedures. As a result, not using self-reported information is a significant constraint in promoting compliance and enforcement.

Third-Party Audit in Gujarat. To support monitoring and enforcement efforts, Gujarat has introduced an Environmental Audit Scheme aiming at ascertaining the performance of environmental management systems in various industries in the state. One objective of the program is to arm the Gujarat PCB and the association of industries with necessary performance information to support compliance monitoring.

Introduced under the directions of the High Court of Gujarat and implemented under the direction of a technical committee consisting of experts from the National Institute of Occupational Health, CPCB and the Government of Gujarat, the scheme requires industries to submit an annual environmental audit report through designated auditors recognized by the Board. If a specified industry does not submit its audit report according to the prescribed time schedule, the Board issues a notice of direction to the defaulting unit, failing which, the Gujarat PCB can request the concerned authority to disconnect water or electricity services.

According to the Gujarat PCB, the Environmental Audit Scheme has resulted in improved compliance and enforcement of environmental laws, creating an effective mechanism for supplementing legal monitoring of industries with a third party audit.

Area-Based Environmental Management Programs. The area-based approach to environmental regulation has been tried in India since 1991 through different CPCB and SPCB programs. For example, the CPCB and concerned SPCBs identified 24 "critically polluted/problem areas", action plans for which (including compliance monitoring measures) have been developed and are in various stages of implementation. Similarly, Urban Air Action Plans have been designed in 17 cities (out of 53 identified by the CPCB) where air quality exceeds the national ambient standards (World Bank, 2006). While area-based programs have an advantage of focusing regulatory and compliance monitoring efforts of the concerned SPCBs, they so far have had mixed success in India, mostly due to the lack of coordination of efforts targeting industry, municipal, mobile, and non-point pollution sources.

Key Challenges

- The *lack of nationwide implementing guidance on permitting and compliance monitoring* from the CPCB on such issues as definition of compliance, consent conditions, reporting format, sampling requirements, as well as interpretation of different regulations significantly impairs the quality of SPCB implementing programs and limits the exchange of experiences between the states.

- *Legal limitations on the use of self-monitoring data as evidence* in court and other proceedings puts an additional monitoring burden on SPCBs and serve as a disincentive for industry to conduct accurate self-monitoring and reporting.

- *Over-emphasis of permitting, monitoring and inspection activities on industry in general and large industry in particular* limits SPCB regulatory programs to an important but not dominant pollution source, while the significant cumulative pollution impacts from SMEs (contributing roughly 70 percent of the industrial pollution load), municipal sources, transport and agriculture are virtually disregarded.

- SPCB staff spend a *disproportionately high amount of time on issuing consents* (whose validity periods are often unjustifiably short) at the expense of their compliance monitoring and enforcement responsibilities.

3.4. Enforcement Response

While pollution control boards may close an offending facility or order the withdrawal of its power or water supply, it may only impose penalties by filing cases under the Water and Air Acts and the EPA, which may include fines and/or imprisonment. Pursuing cases through trial and appellate courts, however, has proven to be an ineffective enforcement response, since courts are overburdened, procedures are cumbersome, and resources of state boards are overstretched.

There are no uniform policies or procedures at the national or state levels guiding enforcement responses. Based on the survey, however, it is possible to identify a general enforcement sequence:

a) gather information on non-compliance based on-site visits and compliance monitoring;

b) analyze legal samples at a certified laboratory;

c) issue a "show cause" notice (warning letter) and, of the violation continues, a legal notice of violation;

d) review (in a hearing at the SPCB) evidence provided by the suspected violator in its defense;

e) issue a notice of proposed directive detailing enforcement response (which may include utilities cut-off or closure) and/or corrective action and compliance schedules;

f) after review of possible objection by the violator, issue a final directive; and

g) in case of non-compliance with the directive, initiate prosecution in criminal court.

Administrative Response. The use of emergency orders by a board to cut off the power or water supply of an industrial plant in violation of an effluent or emission standard has proved to be an effective deterrent. Between January 2005 and September 2006, for example, the West Bengal PCB disconnected the electricity for 373 facilities, though reconnected 257 over the same time period. Between 1997 and 2002, the Maharashtra PCB disconnected services for 858 for violation of the Water Act, and 145 for violation of the Air Act. Closure is also used fairly often in some states. In March 2006, for example, the West Bengal PCB issued 74 closure orders, although most of them were temporary. The SPCB may also revoke the violating facility's consent, which does not guarantee that the operations would actually cease, so board officials consider closure to be a more effective instrument.

Criminal Response. A court can impose stringent criminal penalties, including imprisonment of 18 months to 6 years plus fines. The government may also seek compensation for damage caused by the violation. However, the problem of long delays in getting a trial renders this instrument ineffective. In addition, the conviction rates are low. Since 1989, the Maharashtra PCB has had a 35 percent success rate in prosecutions under the Water Act, which it attributes to reluctance by courts to hand down harsh sentences for environmental violations and to the weak legal expertise of the boards themselves. Many cases are dismissed on the grounds that the samples are not properly collected in strict accordance with mandatory provisions in the Act. Monetary fines, even if ordered by the court, are too low to create effective deterrence. As a result, PCBs resort to courts less and less and prefer to use emergency administrative orders and forfeiture of bank guarantees (see Section 3.6).

Enforcement actions, like compliance monitoring programs, focus primarily on large industry. Small-scale industries are most often ignored by PCBs. In some cases, even large polluters are left off the hook because of the pressure exerted by powerful political groups and industrial lobbies.

Key Challenges

- There is a *lack of regulatory tools and flexibility to provide proportionate enforcement response* with appropriate deterrent effect against violations that do not have an immediate severe impact on the environment but represent continuous non-compliance with regulatory requirements (e.g., small but routine exceedance of emission/effluent limits, failure to do self-monitoring and reporting).

- *Available punitive tools for non-compliance have proven ineffective* because procedures are rigid and time-consuming while penalties are too low and fail to consider the full economic and environmental impacts of the violation.

3.5. Compliance Assistance and Data Management

To help industry achieve compliance, PCBs undertake a range of activities, including:

- organizing training and technical assistance;
- developing industry-specific reports outlining problems, compliance status and preventive/control options;
- disseminating the charter on Corporate Responsibility for Environmental Protection in the 17 categories of highly polluting industries, which seek voluntary compliance beyond the prescribed standards; and
- awareness campaigns.

Training and Technical Assistance. Most of the SPCBs provide general technical assistance, such as training programs or conferences and almost all have websites containing information on their activities and regulations. Some of the large SPCBs provide technical assistance to individual facilities, particularly in identifying the reasons for non-compliance and developing corrective actions and monitoring programs. To facilitate compliance in the waste sector, CPCB has developed waste minimization circles to encourage industries to reduce waste. In addition, the pollution control boards are promoting cleaner fuel to reduce emissions and ensuring compliance over time, since the quality of fuel plays an important role in the nature and extent of air pollution from these sources. Despite these initiatives, compliance in small-scale industry continues to pose a major challenge for the regulatory agencies.

Compliance Assistance Information. A National Action Plan for Cleaner Production has been adopted by the MOEF to help industries develop and adopt cleaner production technologies. The CPCB provides targeted technical assistance to the regulated community by developing and distributing industry-specific technical documents for major industries, including the Comprehensive Industry Document Series (COINDS), Resource Recycling Series (RERES), and Information Manual on Pollution Abatement and Cleaner Technologies Series (IMPACTS). These documents provide industry-specific descriptions, best practices and opportunities for pollution prevention and waste minimization. According to the PCBs, the CPCB technical documents target primarily large industry and do not address compliance promotion among SMEs. None of these documents provide the regulated community with summary information about regulatory requirements.

Charter on Corporate Responsibility for Environmental Protection. One voluntary initiative aimed at reducing industrial pollution is the Charter on Corporate Responsibility for Environmental Protection (CREP). In 2003, MOEF and CPCB, in consultation with industry, launched the Charter to promote waste minimization and adoption of clean technologies. Eight task forces comprising representatives of the MOEF, CPCB, SPCBs, industry associations and experts monitor implementation of the Charter. The Charter recognizes that some of the 17 category sources were not in compliance with all requirements and set new industry sector-specific compliance dates. As part of this process, non-complying facilities submitted bank guarantees (see Section 3.6) with their action plans.

Awareness Campaigns. The MOEF, the CPCB and SPCBs are increasingly posting environmental information on their websites. The SPCB are now undertaking greater number of environmental awareness

programs. The Andhra Pradesh PCB conducts environmental mobile exhibition programs for industries, educational organizations and general public. In Gujarat, for example, community outreach programs like Pollution Awareness and Assistance Center (PAAC) are designed to build public support.

Data Management. The CPCB and some SPCBs (e.g., in Gujarat, Andhra Pradesh, Maharashtra and West Bengal) maintain database storage, retrieval and archive systems in paper as well as electronic form. These databases include information on individual facilities, consents, and inspection reports. A few states like Andhra Pradesh started using advanced tools like Management Information System (MIS) and Geographic Information System (GIS). Developed by the National Institute of Information Technology, the MIS at the Andhra Pradesh PCB aims to capture complete information on consents, authorizations, fee payments, inspections, violations and directives for corrective actions, etc. through different modules and the database, and facilitate communication between the offices of the Board. This software also seeks to integrate the data with GIS for effective spatial environmental management. The Andhra Pradesh PCB has recently abandoned paper filing and shifted completely to electronic data management.

The CPCB in association with SPCBs has recently initiated the creation of an Environmental Data Bank. It will collect data from 215 air quality monitoring stations in 23 states under the National Air Monitoring Program and 444 water quality monitoring stations in 20 states under the Monitoring of Indian National Aquatic Resources System. The data would be entered by respective SPCBs, verified by the CPCB and uploaded to the CPCB website.

Key Challenges

- SPCBs have *limited capabilities for providing targeted technical assistance* to the regulated community. While the CPCB and SPCBs have developed some outreach tools (e.g., websites), informational and training materials, these need to be upgraded and expanded, including making more resources available in local languages rather than in English.

- *Existing information management systems are far from satisfactory* in most states, and there are no national guidelines aimed at uniform collection, management and sharing of environmental information that would enable improved collaboration on enforcement actions. SPCBs also lack trained staff to store and analyze data at both the national and state levels.

3.6. Economic and Other Incentives-based Instruments

The NEP recommends a judicious mix of incentives and regulatory instruments and emphasizes the use of economic principles in environmental decision-making. It also recommends the preparation and implementation of an action plan on the use of economic instruments for environmental regulation in specified contexts, including those relating to unsustainable production and consumption. Currently, economic instruments play a very limited supplemental role in promoting environmental compliance in India. Principal economic instruments include rebate on the water cess, bank guarantees, subsidies for pollution control equipment, and other fiscal incentives.

Rebate on Water Cess. The cess rate is specified by the Government and the same in all the states: it varies for industry from 0.5 Rs/m3 to 3 Rs/m3 depending on the purpose of water use and the presence of biodegradable or toxic pollutants in the eventual effluent. The cess amount is calculated based on metered water consumption. Out of the cess collected and credited to the Consolidated Fund of India, 80 percent is reimbursed to respective SPCBs to augment the resources of the Boards (see Section 3.2). Due to the uneven distribution of water resource availability and water consumption in India, cess revenues are also vary dramatically among the states.

Industries that comply with effluent standards, are connected to a wastewater treatment plant, and do not consume water in excess of the prescribed limit are entitled to a 25 percent rebate in the water cess. The rebate scheme thereby encourages compliance.

Bank Guarantees. Some states (e.g., Maharashtra, Andhra Pradesh, West Bengal) employ a bank guarantee scheme as a means of ensuring compliance with SPCB directives. Under this scheme, a state board requires the non-complying firm to post a bank guarantee to ensure the implementation of corrective actions in accordance with the negotiated compliance schedule. Renewal of a CTO is conditional on posting the guarantee. Normally, 10% of the estimated total compliance cost is required as a bank guarantee. If the non-complying firm fails to comply in time, the SPCB forfeits a portion or all of the bank guarantee for its discretionary use. There is no official procedure to determine the amount of forfeiture, and the decision is made by the SPCB Chairman and Member Secretary (in principle, it should be proportionate to the extent of violation).

Between January 2005 and August 2006, the West Bengal PCB imposed 92 bank guarantees worth USD 3.5 million, of which two were forfeited. Since 2003, the West Bengal PCB reallocates 50 percent of revenues from forfeited bank guarantees for environmental improvements in the area where the non-complying facility is located.

The forfeiture is a powerful monetary penalty for a violator and a significant deterrent against future non-compliance. However, this instrument may not be applicable to SMEs which operate on small profit margins and cannot afford such a deposit. In addition, many issues related to the application of bank guarantees remain to be clarified: how the guarantee should be calculated, how forfeitures should be calculated and revenues used, whether supplementary collateral should be required if the compliance schedule is extended.

Subsidies for Pollution Control Installations. The central and state governments have introduced a number of subsidies for pollution control equipment and treatment installations. The Common Effluent Treatment Plant (CETP) subsidy scheme is undertaken by the MOEF to enable clusters of small-scale industries to establish or upgrade CETPs. The central and state governments subsidize each 25 percent of total project costs, 30 percent is secured through loans from financial institutions, and the remaining 20 percent is covered by the participating small industries themselves.

During fiscal year 2005-2006, ongoing and new CETP projects received approximately USD one million worth of financial assistance. The entire initiative has helped set up more than 90 CETPs, currently operating with mixed results. According to the MOEF annual report, only a quarter of the assessed CETPs complied with the prescribed limits for such basic parameters as BOD and COD, and mere 6.4 percent complied with standards for all general parameters. Poor operations and maintenance and insufficient treatment capacity were quoted as reasons for this mediocre performance.

Under the Credit Linked Capital Subsidy Scheme, the Ministry of Small Scale Industry is providing assistance to small industrial units for adoption of cleaner production technologies and installation of pollution controls. The financial support of up to USD 225,000 includes a 15 percent subsidy from the Small Industry Development Bank of India and the National Bank for Rural Development (World Bank, 2006).

To promote environmental compliance among small-scale industries, some states like Andhra Pradesh, Uttar Pradesh, West Bengal, and Maharashtra have initiated innovative economic incentive schemes that promote compliance with environmental requirements. For example, in Kolkata (West Bengal), the majority of small industries continue to use energy inefficient coal-fired heating installations without any pollution control systems. The West Bengal PCB adopted strict particulate emission standards

and intensified enforcement efforts targeting these pollution sources. In order to facilitate fuel conversion from coal to oil or gas in small boilers and ceramic kilns, the PCB launched in 2001 a project to provide financial assistance to these industries with support of the India-Canada Environment Facility (ICEF). Under the scheme, 25 percent of the capital costs of conversion are reimbursed after the implementation as a matching grant by the West Bengal PCB, and further 25 percent by the ICEF. As of December 2004, a total of 228 small boilers and 18 ceramic kilns had been converted to cleaner fuel. This has led to a drastic reduction of emissions of particulate matter from these industrial units. The same integrated approach of regulation, enforcement, technical and financial assistance, including support with providing the gas infrastructure, has been applied in Agra (Uttar Pradesh), reportedly also with success (World Bank, 2006).

Public-Private Partnerships. Through economic incentives, both the central and state governments are promoting public-private partnerships (PPPs) for the development of infrastructure for environmental services. For example, in Gujarat, 10 percent of the total investment of USD 1,644 million for controlling pollution has come through a public-private partnership. CETPs, TSDF, and conveyance pipelines for treated wastewater disposal into deep sea are eligible for a 25 percent state subsidy. This is in addition to the 25 percent central government subsidies designated for CETP, TSDF and common hazardous waste incinerators. Some states, including West Bengal, Andhra Pradesh, and Maharashtra, are applying PPPs to address bio-medical and hazardous waste management.

Other Incentive Initiatives. Some states are introducing initiatives to encourage good environmental behavior through packages of economic and regulatory incentives. For example, the Gujarat PCB provides incentives to industries implementing environmental management systems (EMS) by issuing them consents on a priority basis and of longer validity (six years), providing 25 percent rebates in water cess and 50 percent discounts on fees for environmental audits (see Section 3.3). Some states have even tried to make ISO 14001 certification a precondition for consent renewal for the 17 most polluting categories of industries. However, turning EMS into a sector-wide requirement creates a disincentive for companies to adhere to voluntary initiatives in the future.

India has also started to experiment with environmental information disclosure and performance rating schemes to exert public pressure on non-complying industries. The Green Rating Project for the pulp and paper industry was launched in 1999 by the Centre for Science and Environment with support from the Confederation of Indian Industries. The exercise has achieved impressive results in terms of motivating industries to adopt environmental policies but did not get widely replicated (Gupta and Priyadarshini, 2003).

Key Challenges

- *The use of economic instruments for promoting regulatory compliance remains quite limited* in India. Albeit emphasized in the new NEP, economic instruments are not explicitly authorized by the law and remain confined to pilot initiatives. Their positive experiences are disseminated very slowly across the states in the absence of national leadership and guidance.

- Despite a number of promising initiatives, financial incentive packages for small-scale industries that are often unable to bear the cost of cleaner technologies are underdeveloped. In the absence of a well-structured and needs-based grant or loan system, these industries will continue to violate environmental requirements.

- The existing structure of user fees for water/wastewater and hazardous and municipal solid waste management is a major impediment for broader implementation of public-private partnerships in providing environmental infrastructure services. Until private operators can recover their costs in a reasonable timeframe, they will not be interested in investing in such projects.

3.7. Indicators to Evaluate Program Success

As indicators of program success, presently some SPCBs track activity levels: the numbers of inspections, corrective actions, closures, bank guarantees imposed, court cases filed and won, monetary value of fines per year, even the amount of funds collected through water cess and administrative fees. At the same time, CPCB reports try to measure success against a few critical environmental quality indicators, which are not tied to any enforcement activity.

Overall, SPCBs lack a standard set of indicators to evaluate their respective programs. However, in a recent positive development, the Maharashtra PCB has drafted a comprehensive set of indicators to assess the performance of the board that could be potentially replicated in other states. It comprises the following five components:

- *Approvals:* number of different consents and authorizations issued and renewed, environmental clearances granted, and public hearings held;

- *Pollution:* total emission/effluent loads per key parameters, waste generation and management;

- *Environment and Monitoring:* number of locations monitored, ambient quality of air, surface freshwater, groundwater, and surface waters, and noise levels;

- *Enforcement:* number of complaints files, show cause notices, notices of violation and directives issued, prosecutions launched and convictions secured; and

- *Infrastructure:* staff numbers and breakdown, training, laboratory equipment, number of environmental infrastructure projects.

Indicators are also an instrument to facilitate short and long-term planning. The Gujarat PCB was one of the first to prepare a vision document entitled “Vision 2010-2015 and Strategy Planning” which was released in June 2006. The vision document is a positive step towards a proactive, integrated, target-oriented framework for environmental compliance and enforcement activities.

Key Challenges

- There is no CPCB guidance on how to establish accountability and measure SPCB performance and no uniformity in data collection and compilation across the states. *The lack of standard national indicators to assess and compare effectiveness of enforcement agencies* is an important constraint for improved policymaking and priority setting.

- The absence of performance indicators reflects the present *reactive approach to compliance and enforcement* and the lack of priority setting and strategic thinking in India's environmental agencies.

3.8. Public Participation in Environmental Compliance and Enforcement

The NEP emphasizes the importance of public participation for strengthening environmental institutions and improved implementation and enforcement. Indeed, the public is playing an increasingly important role in supporting environmental compliance and enforcement in India.

Public Interest Litigation. Indian citizens benefit from a unique approach for enforcing environmental law by exercising a constitutional right to a healthy environment before the Supreme Court and the High Courts. As detailed in Section 3.1, although PIL has advanced India's environmental agenda and resulted in some environmental improvements, it has resulted in more work for PCBs because of court-ordered directives and ultimately contributed to the confusion of their compliance and enforcement efforts.

Citizen Complaints. Citizen complaints to the PCBs are an important mechanism for triggering compliance monitoring and enforcement response. In Maharashtra, for example, between April 2004 and March 2005, citizens filed 761 complaints with respect to air (306), water (292), solid waste (31) and noise pollution (132).

SPCBs adopt different approaches to respond effectively to citizen complaints. For example, the Andhra Pradesh PCB created in 1995 a Task Force cell to respond to public complaints, conduct surprise inspections and require corrective action. In West Bengal, the public can lodge a compliant by directly approaching the Board office or by submitting a complaint on the Board's website along with the necessary accompanying information. The complaints are acknowledged, investigated and subsequently redressed during a hearing at the PCB in the presence of both parties.

Public Participation in EIA. As part of the Environmental Impact Assessment (EIA) process stipulated in the MOEF notification of 14 September 2006, public consultation (including a procedure for written comments and a public hearing) is mandatory for certain categories of projects that have significant environmental impacts. This mechanism provides an opportunity to the affected people to raise their concerns about the project and get them addressed accordingly. Involving the public during project preparation facilitates decision-making on project development, raises public awareness of the project and its potential impacts, and helps effective monitoring in the operational phase.

Stakeholder Consultative Bodies. Some state boards are now involving stakeholders in the compliance monitoring process. For example, in Maharashtra, the Board appointed Local Area Environment Committees (LAEC) in the Tarapur and Dombivali industrial areas to monitor compliance with court and PCB directives and bring the defaulters to the notice of the Board. Comprised of Board officials and representatives from the Maharashtra Industrial Development Corporation (MIDC), industries, and technical experts. The Andhra Pradesh PCB involves NGOs and community-based organizations in environmental audits, waste minimization projects, etc.

Access to Information. The Right to Information Act of 2005 is a major milestone for enhanced public involvement through information disclosure. Under this Act, PCBs must make information available to the public regarding the effects of pollution, the need to prevent and control pollution and to protect the environment. India's commitment to improving access to information is also reinforced in the NEP, which recognizes that access to environmental information is the principal means by which stakeholders may evaluate compliance by the regulated community with environmental requirements.

Key Challenges

- SPCBs face serious resource *limitations to deal effectively with citizen complaints* as their number has gone over a thousand per year in some states.

- *Access to environmental information guaranteed by the Right to Information Act is not easy for citizens,* as PCBs either do not have the information is a usable form (and have no resources to systematize it) or are reluctant to provide it to the general public. Examples of the latter are consent applications, consents and authorizations themselves, and inspection reports.

4. RECOMMENDATIONS

Based on the findings from the rapid assessment, a number of short-term and medium-term recommendations are proposed in conjunction with those already advanced in the recent U.S EPA (see Annex 1) and World Bank reports. They were discussed at a consultation workshop hosted by MOEF on November 3, 2006 in New Delhi.

The short-term recommendations (with a time horizon of 2-3 years) deal primarily with urgently needed measures to improve the application of a number of compliance and enforcement instruments (self-monitoring, fines, bank guarantees) and to build PCB capacity by establishing standardized policies and procedures and conducting extensive training programs. Another major direction for improvement in the short-term perspective is to focus more attention on SMEs, both in terms of compliance monitoring and financial assistance.

The medium-term recommendations (in a 5-7 year perspective) target improvements in the overall management capacity of PCBs which will require more substantial programmatic development efforts and resources.

4.1 Short-term Recommendations

Establish a system of administrative fines and streamline the system of criminal fines

Introducing civil administrative penalties imposable directly by SPCBs for certain categories of violations not leading to a severe immediate environmental impact would provide an flexible, effective enforcement tool that would also generate revenues for SPCBs. According to the U.S. EPA report, the existing statutes (EPA, Air and Water Acts) can be interpreted to give authority to develop a civil penalty program. Administrative fines set at an appropriately high level to serve as a deterrent and PCB enforcement policies to implement them would allow more timely, cost-effective enforcement and would reduce the environmental workload of the courts.

In parallel, the provision of the EPA deferring to other applicable legislation for penalties (Section 24) should be repealed so as to allow the imposition of criminal penalties under the EPA. In the future, the maximum rate of criminal fines should be further increased because after the introduction of administrative fines, criminal fines would be applied only to grave violations.

Overcome legal limitations on using self-monitoring information as evidence in court or other proceedings

Reinterpreting existing laws or modifying legislation to enabling pollution control boards to use self-reported information (rather than only “legal” samples) as legal evidence would greatly facilitate compliance monitoring and enforcement. The U.S. EPA report argues that India already has the legal authority to implement this change. The use of self-monitoring data as evidence of non-compliance would not only make enforcement easier but would put pressure on industry to ensure self-monitoring data integrity, thereby providing an incentive to enhance the use and improve the quality of self-monitoring and self-reporting.

Establish and disseminate comprehensive standard compliance monitoring and enforcement policies and procedures, and develop and deliver related training programs

To overcome institutional coordination challenges and enable a more effective compliance and enforcement programs, the CPCB should develop in partnership with state boards and set forth comprehensive national policies, procedures (mandatory at least in key aspects), and guidelines for compliance and enforcement (including consent issuance, monitoring, inspections, and sanctions). Such national guidance, disseminated in a timely manner, would allow SPCBs to increase consistency, transparency, effectiveness, and cost efficiency of their activities. It would also promote exchange of practical experiences and lessons learned among the state boards. To support implementation, the CPCB should develop and organize delivery in the states of an across-the-board training program for SPCB staff. Minimum training requirements under the new procedures and guidelines would provide greater nationwide uniformity in the staff qualifications and will raise the SPCB profile both in relation to the regulated community and in court proceedings.

Increase the emphasis on compliance monitoring and enforcement and prioritize inspection efforts based on environmental risk

SPCBs should improve their strategic planning in order to better balance resources between consent management (which currently absorbs most of the staff time) and compliance monitoring and enforcement. This can be done extending the validity periods of consents and authorizations based on environmental risk and compliance record of industrial facilities. Inspections and enforcement efforts should also be prioritized across the regulated community based on relative potential environmental impact. The CPCB can help establish a methodology and mechanism for the states to identify priority targets that would take into account local needs and practices.

Develop more balanced compliance monitoring and compliance promotion programs by extending them to SMEs

By expanding targeted monitoring and compliance assistance efforts to SMEs and clusters of small-scale industries, central and state boards would address a significant and growing pollution source. As strongly advocated by the World Bank in its India Country Environment Analysis, a whole regulatory package should be put together by the CPCB and SPCBs to target SMEs at the state level and local levels, including a comprehensive inventory (to identify units that currently operate without consents), simplified monitoring procedure, environmental awareness raising, and technical and financial assistance programs. Close cooperation with industry associations is essential in developing user-friendly technical guidance documents (and making them available on websites) and setting up economic incentive schemes, based on best practices which already exist in some states. However, compliance assistance would be effective only if there is a credible threat of detection and enforcement action against violators.

Develop a uniform, effective bank guarantee system

The MOEF and the CPCB should build on successes of bank guarantee initiatives pioneered by selected states to develop a coherent national system with policies and guidance that would make deposits proportionate to damage from potential violations and establish transparent procedures for their partial or full forfeiture in case of non-compliance. mechanisms to ensure effective. Making the amount of required bank guarantee commensurate to the facility's compliance history may further amplify the incentive effect of this instrument.

4.2. Medium-Term Recommendations

Increase direct central and state government funding levels to PCBs

The government should increase direct budget funding for environmental agencies to fill existing vacancies with highly qualified and raise the share of technical staff in SPCBs, as well as build up the technical capacity (laboratory, computer hardware and software, transport) of the boards. Creating a stable source of funding would also correct an over-dependence on fees that can lead to mixed incentives and priorities for PCB staff.

Establish a public information disclosure program

The PCBs should leverage public pressure against violators by developing a public disclosure program that would publicize compliance information of individual polluters. Based on the experience of public disclosure programs in other Asian countries (Indonesia, the Philippines, China, and Vietnam), the CPCB, working together with SPCBs and industry associations, should introduce a rating system for most important industrial polluters based on self-reported and inspection data. Such a system would be a compliance incentive and benchmarking tool for industry, information source and accountability vehicle for the public, and priority setting aide for environmental agencies.

Upgrade and expand capabilities and capacity in information management

The CPCB and SPCBs should establish a uniform system of collection, management and sharing of compliance and enforcement information at the national and state levels. The current positive experiences of some states (e.g., Andhra Pradesh) should be used to design and disseminate standardized data requirements and formats, as well as appropriate software with an objective to gradually convert to electronic information management system that would link all PCBs. It should also be considered whether the CPCB's Environmental Data Bank on environmental could be expanded to include compliance and enforcement data. The government should also provide extensive staff training on information management. The new system would save administrative costs, improve data quality, and increase transparency of PCB activities by enabling public access to the information.

Create performance management systems and nationwide performance indicators

With a linkage to improved information management, the CPCB should work with states to establish a performance management system for priority setting, planning and performance evaluation of compliance and enforcement programs, including establishing a set of national performance indicators. The emerging experience in Maharashtra may serve as a pilot in establishing such a system. A proper mix of activity (output) and results (outcome) indicators would enhance the accountability of PCBs on the one hand and help the boards design proactive compliance and enforcement strategies on the other.

ANNEX 1. U.S. EPA RECOMMENDATIONS ON ENVIRONMENTAL COMPLIANCE AND ENFORCEMENT IN INDIA

Summary of Recommendations

Recommendation 1: Advocate for more resources, and streamline current practices to maximize currently available resources.

Recommendation 2: Develop policies and implementing guidance to assist the zonal offices and SPCBs in implementing compliance and enforcement programs. As these policies and guidance are developed, effective organization will necessitate that a system for cataloguing and distributing the guidance in a timely manner also be developed.

Recommendation 3: Establish the authority to use self-monitoring, self-recordkeeping, and self-reporting as direct evidence of a violation in the courts (and administratively should such a process be established); develop and distribute the necessary policies and implementing guidance; and provide training to SPCBs.

Recommendation 4: Establish opacity standards and test methods for emissions from stacks; develop implementing policies and guidance; and establish the necessary training infrastructure.

Recommendation 5: Develop national guidance on minimum inspector training requirements; develop and fund a compliance and enforcement training program to implement the requirements; and ensure that all SPCBs are aware of the program and the schedule of courses.

Recommendation 6: Develop a policy and provide implementing guidance that requires regulated industries to provide bank guarantees for negotiated compliance schedules incorporated in directives issued by the Boards.

Recommendation 7: Utilize current statutory provisions to establish civil administrative authority; establish the infrastructure for managing administrative cases; develop the necessary enforcement response and penalty policies; and provide training for the states.

Recommendation 8: Develop educational materials and compliance assistance tools for the regulated community, especially small businesses, and distribute the materials to all regulated sources.

Recommendation 9: Develop measures of success for the compliance and enforcement program utilizing a variety of parameters, and communicate these measures and the rationale for why they are needed to SPCBs, the regulated community, and the public.

Recommendation 10: Develop a uniform computerized system for collecting, maintaining and utilizing compliance and enforcement data at the national as well as the state level; develop the necessary implementing policies and guidance; and ensure that the SPCBs are aware of them.

Recommendation 11: Establish a support organization to facilitate communication among SPCBs on important environmental compliance and enforcement issues, and between CPCB and the Boards.

Source: U.S. EPA, 2005.

REFERENCES

Gupta O.K. and K. Priyadarshini (2003): *Compliance to Environmental Regulations: The Indian Context*, International Journal of Business and Economics, Vol. 2, No. 1, 9-26

Planning Commission, Government of India (2001-2002): Evaluation Study on the Functioning of State Pollution Control Boards, New Delhi, http://planningcommission.gov.in/reports/peoreport/peof.htm

U.S. EPA (2005): *Report on Environmental Compliance And Enforcement In India*, December 2005

The World Bank (2006): *India: Strengthening Institutions for Sustainable Growth*, Country Environmental Analysis, October 2006