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IMPLEMENTATION COMPLETION REPORT
(IDA-26450; SCL-37790; CPL-37800; SCL-37806)

ON TWO LOANS

AND ONE CREDIT

IN THE AMOUNT OF US\$ 80.42 MILLION

TO THE GOVERNMENT OF

INDIA

FOR AN

INDUSTRIAL POLLUTION PREVENTION PROJECT

06/30/2003

CURRENCY EQUIVALENTS

(Exchange Rate Effective Feb. 2003)

Currency Unit = Indian Rupee
INR 1 = US\$ 0.22
US\$ 1 = INR 45.5

FISCAL YEAR

April 1 March 31

ABBREVIATIONS AND ACRONYMS

AP	Andhra Pradesh
APPCB	Andhra Pradesh Pollution Control Board
CECB	Chhattisgarh Environment Conservation Board
CETP	Common Effluent Treatment Plant
CPCB	Central Pollution Control Board
EPA	Environmental Protection Agency
FI	Financial Intermediary
GIS	Geographic Information System
GOI	Government of India
IBRD	International Bank for Reconstruction and Development
ICICI	ICICI Bank Limited (formerly Industrial Credit and Investment Corporation of India, Limited)
ICR	Implementation Completion Report
IDA	International Development Association
IDBI	Industrial Development Bank of India, Ltd.
IFC	International Finance Corporation
IPP	Industrial Pollution Prevention
IOS	International Organization for Standardization
IWRP	Industrial Water Treatment Plant
KSPCB	Karnataka State Pollution Control Board
LGM	Laboratory Guidance Manual
MIS	Management Information System
MOEF	Ministry of Environment and Forests
MP	Madhya Pradesh
MPPCB	Madhya Pradesh Pollution Control Board
MTR	Mid-Term Review
NEERI	National Environmental Engineering Research Institute
NPC	National Productivity Council
PPAH	<i>Pollution Prevention and Abatement Handbook</i>
QAG	Quality Assurance Group
RSPCB	Rajasthan State Pollution Control Board
SAR	Staff Appraisal Report
TSDF	Treatment, Storage and Disposal Facility
TTL	Task Team Leader
WMC	Waste Management Circle
<i>crore</i>	ten million (1x10 ⁷)
<i>lakh</i>	one hundred thousand (1x10 ⁵)

Vice President:	Mieko Nishimizu
Country Manager/Director:	Michael Carter
Sector Manager/Director:	Jeffrey S. Racki/Richard O. Ackermann
Task Team Leader/Task Manager:	Bekir Onursal

INDIA
INDUSTRIAL POLLUTION PREVENTION

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<i>Project ID:</i> P010463	<i>Project Name:</i> INDUS POLLUTION PREV
<i>Team Leader:</i> Bekir A. Onursal	<i>TL Unit:</i> EASES
<i>ICR Type:</i> Core ICR	<i>Report Date:</i> June 30, 2003

1. Project Data

Name: INDUS POLLUTION PREV *L/C/TF Number:* IDA-26450; SCL-37790;
CPL-37800; SCL-37806

Country/Department: INDIA *Region:* South Asia Regional
Office

Sector/subsector: General water, sanitation and flood protection sector (86%);
Sub-national government administration (11%); General industry
and trade sector (2%); Central government administration (1%)

Theme: Pollution management and environmental health (P); Environmental
policies and institutions (P)

KEY DATES

	<i>Original</i>	<i>Revised/Actual</i>
<i>PCD:</i> 03/08/1993	<i>Effective:</i>	03/01/1995
<i>Appraisal:</i> 05/27/1994	<i>MTR:</i>	01/11/2000
<i>Approval:</i> 07/26/1994	<i>Closing:</i> 03/30/2002	11/30/2002

Borrower/Implementing Agency: GOI/MIN. OF ENVIRONMENT AND FORESTS

Other Partners: Industrial Development Bank of India (IDBI); Industrial Credit and Investment Corporation of India (ICICI)

STAFF	Current	At Appraisal
<i>Vice President:</i>	Mieko Nishimizu	Heinz Vergin (acting)
<i>Country Director:</i>	Michael Carter	Heinz Vergin
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<i>ICR Primary Author:</i>	Frederick Swartzendruber; Prasad Modak	

2. Principal Performance Ratings

(HS=Highly Satisfactory, S=Satisfactory, U=Unsatisfactory, HL=Highly Likely, L=Likely, UN=Unlikely, HUN=Highly Unlikely, HU=Highly Unsatisfactory, H=High, SU=Substantial, M=Modest, N=Negligible)

Outcome: U

Sustainability: L

Institutional Development Impact: SU

Bank Performance: U

Borrower Performance: U

<i>Quality at Entry:</i>	QAG (if available)	ICR
<i>Project at Risk at Any Time:</i> Yes		HU

During the first several years, performance in many respects was unsatisfactory or even highly unsatisfactory, as was quality at entry. However, the project has also demonstrated significant recent achievements, and early indications suggest these are likely to be sustainable. Overall, there was greatly improved performance by both Bank and Borrower after the Mid-Term Review, but the cumulative benefits, especially in terms of the amount of pollution averted, are probably lower than could have been the case with a better design and more effective supervision during the early years of project implementation. There was very strong performance from state pollution control boards (SPCBs) and ICICI during the last 2-3 years, facilitated by Bank supervision during the latter part of project implementation, with clear evidence of management commitment to continue and extend the initiatives introduced during the project, and evidence of uptake of some of these initiatives at the central government level and by non-project states, new commitment to improved environmental and social standards in lending by both development bank partners (IDBI and ICICI) which provide a significant share of project financing for India's large and medium-scale industries, and evidence that pollution prevention approaches and technologies introduced by the project in various industries are beginning to be adopted by other firms.

The project SPCBs are financially well-placed, and are making good use of the refurbished facilities and equipment, improved technical and management skills, and new procedures and tools provided under the project, which would result in better monitoring of industrial discharges and environmental quality (as already evidenced by the substantial increase in samples collected and analyzed during the last two years). The IT-related investments appear to have been institutionalized into the business processes of the SPCBs (e.g. in information systems/GIS use; revenue, financial management, banking, consent management and websites at most SPCBs; linkage of computer literacy to career development in many states; smartcard entry systems and requirements to send all formal communications from field offices to the headquarters by email in Karnataka, etc.) and would be difficult to reverse. The very enthusiastic response to IT training in all SPCBs, loan programs for home computers in some SPCBs and use of computers by all key SPCB staff (even in SPCBs like that of Rajasthan which previously had practically no computers) indicate a paradigm shift in the work culture. The project was also effective in creating environmental awareness in Andhra Pradesh and Karnataka. With consistency in management outlook, adequate continuing investments and further progress towards overall reforms, the States are well-poised for further strengthening even with their own resources. There is evidence of this happening already in the project states as they spend their own resources to deepen the reforms initiated under the project.

This experience has generated a number of useful lessons, including the need to strengthen the technical capacity of financial intermediaries *before* opening lines of credit aimed at reducing or preventing pollution, and for effective outreach mechanisms supported by strong commitment from Financial Intermediary (FI) management given that industrial borrowing is sensitive to changes in interest rates and perceived transaction costs; related to this is the need for donor coordination to harmonize credit terms within similar on-lending operations financed by different donors; the need for focusing credit resources on priority sites or zones where the marginal benefits of pollution reduction are high, and of linking these with strengthened regulatory efforts to increase industry's incentive for compliance; the need for monitoring systems which can track local pollution trends over time and which can meaningfully associate these with environmental investments financed by the project; and the need for more careful linking of project components and inputs with expected outcomes, taking into account the time lag which is likely between efforts to strengthen regulatory effectiveness and observed changes in industrial behavior.

Given these factors, sustainability of the project is rated as Likely, but performance of the Borrower and the Bank (in spite of significant improvements in later years) is rated Unsatisfactory. Although the institutional development impact is Substantial, the overall project outcome is still Unsatisfactory, due to the weak initial design, inadequate performance in initial years, and cancellation of a substantial portion of the IDBI credit line.

3. Assessment of Development Objective and Design, and of Quality at Entry

3.1 Original Objective:

The objective of the project was to promote cost-effective pollution abatement from industrial sources. Specific goals were to: (i) strengthen the staff and facilities of four SPCBs (Andhra Pradesh, Karnataka, Madhya Pradesh, and Rajasthan) and provide equipment and skills to enable them to more effectively perform their mandate while continuing the program of support to four Boards already assisted [under the earlier Industrial Pollution Control Project (IPCP)]; (ii) facilitate priority investments dedicated to prevent pollution from industrial sources by encouraging the use of clean technologies, waste minimization and resource recovery by industry or pollution control where cost effective and where there is significant demonstration and replicability potential; and (iii) provide technical assistance to adapt modern tools of information management and control of residues; organize a clean technology institutional network and an extension service on environmentally-sound practices for small scale industry.

Adequacy of the Objective

Assessing this operation is complicated by a complex mix of financing arrangements among multiple agencies (International Development Association (IDA) credit to Government of India (GOI), International Bank for Reconstruction and Development (IBRD) loans to two development banks, with two guarantee agreements from the GOI guaranteeing the FI obligations to IBRD, plus single and multi-currency loan agreements), and the number and diversity of implementation partners (six state regulatory agencies, two national-level development banks, and the national Ministry of Environment and Forests). In addition, the objectives presented in the SAR differ somewhat from those stated in the legal agreements: (i) the SAR specifically identifies abatement of industrial pollution as the objective, whereas the DCA omits the word "industrial;" (ii) the SAR does not reflect the strengthening of MOEF, although the DCA does; and (iii) the SAR objectives were not revised to be consistent with the DCA and remove reference to further support to four SPCBs strengthened under the previous IPCP. Overall, the development objectives are broad and too ambitious given the magnitude of the pollution issues in India.

Industrial Development Bank of India, Ltd. (IDBI) and ICICI had a very difficult time distinguishing *pollution control* investments (i.e., end-of-pipe measures to achieve minimum environmental compliance) that were the primary focus of the predecessor Industrial Pollution Control Project (IPCP) operation, from *pollution prevention* investments (through waste minimization and recovery, improved production techniques, and other measures "before the pipe") that were the primary focus of the Industrial Pollution Project (IPPP). In retrospect, it is not clear whether the distinction between pollution control and pollution prevention has added any value, as opposed to a more integrated approach of both control (to meet applicable legal standards for discharge) and prevention (which could help reduce materials and utilities costs for industries and also reduce pollutant discharges). The cost effectiveness aspect of alternative pollution reduction measures was never addressed though it is mentioned in the development objective.

Country and Sector Context

India is reportedly the first country to explicitly cite the protection and improvement of the environment within its Constitution (Article 51-(g) of the Constitution states that "it should be the duty of every citizen of India to protect and improve the natural environment including forest, lakes, rivers and wildlife and to have compassion for living creatures"). One of the early environmental regulations was the Water (Prevention and Control of Pollution) Act of 1974, passed as a result of the Stockholm Conference of 1972. The Water Act in fact set the tone for a comprehensive approach to pollution abatement consisting of both prevention and control. The Water Act was followed by the Water Cess Act of 1977 and the Air Act of 1981. The Environmental Protection Act of 1986 was passed in response to the tragedy in Bhopal, and provided the needed umbrella structure for development and maintenance of Indian environmental legislation². Indian environmental policy and legislation is implemented by both national and state level

regulatory institutions including the Ministry of Environment and Forests (MOEF), State Departments of Environment (SDOE), and the State Pollution Control Boards (SPCBs).

In 1992, at the time of the Rio Summit on Environment and Development, the Government of India issued a Policy Statement for Abatement of Pollution (PSAP), with the stated intention to integrate environmental and economic aspects in all development planning, with stress on the preventive aspects of pollution abatement and the promotion of technological inputs to reduce industrial pollutants. This policy reflected a significant shift in India's approach toward environmental regulation. Specific steps include measures to prevent pollution at source; to encourage, develop and apply the best available solutions; ensure that the polluter pays for the pollution control arrangement; focus protection on heavily polluted areas, and involve the public in decision making. The policy calls for a mix of instruments in the form of legislation and regulation, fiscal incentives, voluntary agreements, educational programs and information campaigns, and emphasizes that "while large and medium industrial units will remain totally responsible for control of their pollution, assistance will be provided to small scale industrial units, particularly those located in rural areas, to aid the implementation of pollution control measures," by development and adoption of cleaner technologies.

In 1994, the Ministry of Environment and Forests (MOEF) issued an Environment Action Program (EAP) identifying seven priority areas: conservation and sustainable utilization of biodiversity in selected ecosystems; afforestation, wasteland development, conservation of soil and moisture, prevention of ground and surface water pollution; control of industrial pollution, with emphasis on the reduction and management of wastes, particularly hazardous wastes; access to clean technologies; urban environmental issues; development of an alternative energy plan; and scientific understanding of environmental issues, training, creation of environmental awareness, and resource assessment. Since the mid-1990s, a significant number of amendments and new environmental legislation has taken place, and regulatory agencies, and the SPCBs in particular, have been under increasing court pressure to enforce the growing body of environmental legislation. Strengthening the SPCBs has therefore been critical, given the nascent stage they were in at project initiation. Results from CPCB (national) testing of the quality of state laboratories in general also indicates a major need for laboratory strengthening and providing quality control guidance. GOI is now taking steps to formulate a draft national cleaner production policy³, supported by the Asian Development Bank at the National Productivity Council in 2001, and a Charter on Environmental Protection (CREP)⁴.

Background and Current Relevance of the Project

Both IPCP and IPPP were developed in the context of discussions between the GOI and the Bank on the need for reforms in India's approach to environmental management. After a number of important macro policy changes had been agreed in principle between the GOI and the Bank, notably with respect to deregulation of industry and privatization of state enterprises, a Bank mission in 1990 focused specifically on the need for financial incentives to accelerate environmental compliance. This agenda became a major aspect of the GOI-Bank negotiations on IPCP in 1991, and a draft policy was presented to the Bank Board along with the IPCP proposal. The GOI accepted many of the Bank's subsequent recommendations, and the GOI's PSAP described above was adopted at the time preparation of IPPP was beginning. The implementation of these environmental initiatives has had mixed results, however. While large-and medium-scale enterprises in the industrial sector have mostly been able to comply with environmental requirements, small-scale industries have faced difficulties. In this context, two initiatives undertaken by MOEF that were supported by the Bank have produced some ground results, i.e. the scheme of Common Effluent Treatment Plants (CETPs), mainly driven through the IPCP, and Waste Minimization Circles (WMCs) supported in the IPPP. These initiatives have become models for pollution management in clusters of small and medium scale industries in India and replicated in various countries. Many Asian countries

such as Bangladesh, Philippines, Sri Lanka, Vietnam have picked up on the concept of CETP. In Thailand, ADB financed one of the largest CETPs at Samutprakarn Province. WMC and its success has also been discussed in several international conferences as a model to follow. Several countries, notably Indonesia, Egypt, Nepal, Sri Lanka, South Africa and Thailand have taken a cue from the WMC program. Today, the concept has been dovetailed into the design and operation of UNIDO/UNEP National Cleaner Production Centres.

In recent years the Bank has not extended new lines of credit through FIs for environmental purposes, on the grounds that in most countries (and certainly in India) the private sector now has adequate access to other sources of capital. From this standpoint, the IPPP can be seen as perhaps the last such operation for the foreseeable future. On the other hand, a number of useful lessons have been learned in the course of IPPP, with respect to strengthening of environmental regulatory agencies as well as national development bank financing for environmental purposes, and other donors continue to provide finance for similar lines of credit. But in retrospect, the intentions of implementing more market-based approaches to environmental regulation have yet to be achieved, and this issue remains highly relevant. Given the PSAP and priorities expressed in the EAP, the development objectives of IPPP - though overly broad - seem fully consistent with those of the GOI.

The Bank's Comparative Advantage

At project entry the Bank had substantial international experience to offer, notably from previous industrial pollution operations in Brazil and Mexico. The IPCP operation had also provided experience in terms of strengthening Indian SPCBs and operating environmental lines of credit through Indian development banks. More broadly, the Bank Group's private sector arm, the International Finance Corporation (IFC), could also have been expected to bring useful expertise to the operation, though this option was apparently not explored. During the implementation of the IPPP, there were concerns about the effectiveness of industrial lines of credit, especially for environmental compliance. In 1999, the Implementation Completion Report (ICR) for IPCP stated, as a key lesson learned, that "environmental lines of credit have been shown to rarely contribute to improved environmental outcomes". In parallel, there were also serious doubts about the potential to transform the weak SPCBs into modern, transparent, and effective environmental institutions. However, the GoI, FIs and the Bank decided that it was still worthwhile to demonstrate that there was significant opportunity to strengthen the SPCBs and FIs to improve environmental management. The restructuring of IPPP by GoI and the new task team enhanced the potential to strengthen these agencies further.

3.2 Revised Objective:

The project objectives were not revised during implementation.

3.3 Original Components:

The original components of the project include:

By Funding Source:

IDA Credit 2645-IN to GOI	\$ 25,000,000
IBRD Loan 3780-IN to ICICI	\$ 50,000,000
IBRD Loan 3779-IN to IDBI	\$ <u>93,000,000</u>
IBRD/IDA total	\$168,000,000

Co-financing

Govt. of India	\$ 16,000,000
IDBI/ICICI	\$ 60,000,000
project sponsors (industries)	\$ <u>86,000,000</u>
Co-financing total	\$162,000,000
Total Original Financing	\$330,000,000

Original Components (IDA/IBRD):

(A) Institution strengthening	\$ 19,500,000
(B) Investments	
- individual investments	\$125,000,000
- common treatment facilities	\$ 20,000,000
(C) Technical assistance	\$ <u>3,500,000</u>
original IBRD/IDA total	\$168,000,000

3.4 Revised Components:

Revised, IBRD/IDA

IDA Credit 2645-IN to GOI	\$ 23,370,000
IBRD Loan 3780-IN to ICICI	\$ 50,000,000
IBRD Loan 3779-IN to IDBI	\$ <u>28,830,000</u>
IBRD/IDA total	\$102,200,000

Components:

		<u>Latest Rating</u>
(A) Institution strengthening	\$ 19,500,000	S
(B) Investments		S
- individual investments	\$ 77,000,000	
- common treatment facilities	\$ 3,830,000	
(C) Technical assistance	\$ <u>1,870,000</u>	S
revised IBRD/IDA total	\$102,200,000	

Note: The component supervision ratings above were made in May 2002.

In total, the IPPP has had 11 amendments. The new state of Chhattisgarh was added after it was split away from Madhya Pradesh, and assistance was also provided to Gujarat in the area of information systems. Following the Mid-Term Review in January 2000, \$64.17 million were cancelled from the IDBI loan; earlier the Bank had also cancelled \$1.64 million from the IDA credit due to lack of progress in implementing the proposed Clean Technology Institutional Network. These cancellations reduced the Bank's total credit/loan amount from \$168 million to \$102.20 million. At project closing, given the final Bank financing of \$80.42 million for the credit and two loans, the total undisbursed amount was \$21.77 million. Several smaller components were also added after the Mid-Term Review (MTR), primarily for strengthening environmental information management systems (MIS/GIS) in the SPCBs and for environmental awareness programs; an updated needs assessment study for project SPCBs; an independent evaluation of WMCs which led to revision of this component; development of a laboratory guidance

manual to standardize procedures and strengthen quality control; and a resource optimization study to help SPCBs better plan their approach to sampling and analysis. Amendments to the IDA credit and the two IBRD loans were as follows:

GOI CREDIT (IDA):

- May 1999 - Cancellation of \$1.64 million (Clean Technology Institutional Network)
- January 2000 - Correction of inconsistencies in the DCA
- October 2000 - Addition of Environmental Information Management and Environmental Awareness
- January 2002 - Addition of Chhattisgarh as a Project State following bifurcation of Madhya Pradesh (MP)
- March 2002 - Extension of the closing date from March 31, 2002 till November 30, 2002

IDBI LOAN (IBRD):

- October 1998 - Revision of procurement thresholds in loan agreement.
- September 2002 - Cancellation of \$ 64.17 million (\$ 48.00 million from individual investments and \$ 16.17 million from common treatment facility investments)

ICICI LOAN (IBRD):

- Switch from multi-currency pool to single-currency loan, 1996.
- October 1998 - Revision of procurement thresholds in loan agreement.
- Extension of closing date from March 31, 2001 to March 31, 2002
- Extension of closing date from March 31, 2002 to November 30, 2002

3.5 Quality at Entry:

Quality at Entry is rated Highly Unsatisfactory. A high degree of overlap with the IPCP (operating from 11/91 to 3/99) caused confusion and delays in implementing IPPP. The IPPP was initiated too early to address serious flaws carried over from the design of IPCP (ICP's ICR was in 1999, 4 years after IPPP became effective); the design combined an IDA TA credit and two IBRD loans in a single operation with no coordination or integration of the various components. There was a lack of attention to sequencing of institution strengthening handicapped progress in this component, and without provision for strengthening technical or environmental capacity of the FIs. No subprojects had been appraised prior to Board approval. The waste minimization circles lacked links to financing options available under the project. The project design did not reflect any policy or operational links between SPCBs and state environment departments. The project states have widely varying demands for pollution regulation and their SPCBs had (and still have) radically different capacities for carrying out their functions. Studies were undertaken to customize the institutional capacity building for each of the SPCBs during project preparation, but there were not comprehensive or thorough enough (more reflective of desires rather than needs). A much more detailed needs assessment had to be conducted prior to MTR to customize procurement according to actual needs of each SPCB. A better framework could have been developed to maintain flexibility in terms of evolving demands, capacities, alternative support and technical options during implementation.

Also the national level, CPCB did not have a role in the project as designed, though it could have been instrumental in several TA and institution strengthening activities as well as for coordination at the national level (in fact, CPCB did participate actively in the Laboratory Guidance Manual preparation and in training activities). The design provided few realistic options for dissemination of good practices or for working level contacts between SPCBs, though a "road show" (not included in the design but added during implementation) in which other SPCBs visited KSPCB just prior to project closing appears to have had

very positive impact. No mechanism was provided for interaction among the SPCBs; the environmental information management component was originally provided for only a single activity (hazardous waste management) in one SPCB (Gujarat PCB), though such interaction later became the key to strengthening of all other SPCBs and ought to have been more obvious during the project preparation. The framework for targeting training under the project was inadequate. Finally, the project DO is worded very vaguely and includes a listing of activities rather than a clearly-defined objective. No formal financial management assessment of the project was conducted at appraisal in May 1994, given that this preceded the introduction of the Bank's LACI guidelines. The project was being implemented by existing government agencies (MoEF and SPCBs) and financial institutions (IDBI and ICICI), and there was no separate Project Implementing Unit/Agency.

The project design also reflects other missed opportunities. As there was no project launch workshop, an early opportunity was missed to focus on potential areas of confusion, to get project partners on board at an early stage, and to more sharply define eligibility criteria, objectives, expected results, and agree on a monitoring framework which had been promised in the SAR but which never materialized. If the project's objectives had been organized from the standpoint of focusing on identified pollution hotspots¹, i.e. establishing spatial terms of reference for project investments, the investments under the project could have resulted in locally measurable environmental improvements. Such a hot-spot specific approach would have aligned well with the MOEF's priorities in industrial pollution control, and probably achieved verifiable and replicable outcomes. Although the individual investments financed by IPPP appear to have had positive environmental benefits, it is difficult to empirically substantiate their real impact. Moreover, the rationale of extending project financing to industries in any part of the country appears to assume a model based upon broad-based demonstration and replication rather than mitigating specific pollution issues at priority sites (the SAR of IPPP states that the "project will play a role in the development and diffusion of pollution prevention techniques by industry") However, the project had no provision for "showcasing" environmental investments to disseminate across the industries (though some of this has happened in recent years, largely as a spontaneous response to subloans within certain industrial sectors). The waste minimization circles (WMCs) supported in the IPPP have provided an opportunity to spread the message of waste minimization/pollution prevention in the small and medium industrial sector (SMI) which was otherwise not targeted by the project. As the WMCs were not eligible for support from the investment component (which had large amounts of unused credit available throughout the project life), an opportunity was missed to finance additional projects that could have demonstrated the economic and environmental advantages of pollution prevention in the SME sector which is recognized as a priority in Indian environmental policy. The TA also included pre-investment studies especially related to the Common Treatment Facilities sub-component. As a design element, the TA studies were well positioned, but did not result in investments in projects, mostly due to economic factors, delays, and lack of ownership and support.

The original project design was based on the premise that pollution prevention activities by industry (and hence, demand for the lines of credit) would be triggered by more stringent enforcement from the regulatory agencies, specifically the SPCBs. At that time, there were no linkages between inputs designed to strengthen SPCBs and the lines of credit operated by national-level development banks, which operate across India, and which managed their respective IBRD loans as stand-alone projects. (The ICR team was told that the development banks and the SPCBs were each unaware of the others' participation in the project for the first several years of IPPP; however, these linkages improved after 1998). Discussions with industries financed by IPPP revealed that the major incentives were economic opportunities and market competition, together with growing public environmental pressures coupled with judicial activism. Design of IPPP should have included an explicit component to strengthen the Policy of Abatement of Pollution as the first step, followed by strengthening of regulatory agencies at both strategic and functional levels. The provision of lines of credit should probably have focused on small and medium industries rather than

operating through IDBI and ICICI, entities that assist mainly the medium and large enterprises. These lines should have been linked to project finding options appropriate to SMEs such as Waste Minimization Circles (WMCs).

Two Quality Assurance Group (QAG) reviews (in 1997 and 1999) were conducted for this project. The 1997 QAG review commented on problems in quality at entry of the project but was not acted upon. The second QAG review (1999) was highly critical and, although it correctly highlighted serious project processing deficiencies, it did not take into account the broader sector approach which the sector management was compelled to adopt, in order to deal with the problems arising from a decision to cancel a proposed India Hazardous Waste Management Project. The ICR for the IPCP also identified some of these issues and was used as a basis for restructuring this project at MTR, once the proposed India Hazardous Waste Management Project (proposing to add even more credit lines to an already saturated market) was cancelled.

4. Achievement of Objective and Outputs

4.1 Outcome/achievement of objective:

(i) Institutional strengthening component.

This component is rated Highly Satisfactory based on impressive recent gains which appear to be sustainable, and have become evident priorities for project SPCBs working to redefine their role as regulatory agencies and address long-standing issues of credibility and governance. Had these measures been incorporated much earlier in the project, this could well have been a case of Best Practice. Not only has this helped increase the capacities of all the project SPCBs, but there is evidence that significant reforms are being catalyzed in non-project SPCBs as a result of actions taken under IPPP. This can be further strengthened by continued SPCB and MOEF commitment in the reform process, enhanced inter-state sharing of experiences and information through activities such as "road shows" for key themes (e.g. environmental awareness, IT, laboratory functioning, etc.) and through implementation of the standardized laboratory guidance manual with support from the national CPCB.

The SAR identified numerous areas in need of improvement within the SPCBs: the need for better definition of the mission and objectives, streamlining and decentralization of structures, strengthening analytic and planning capabilities, greater financial autonomy from state budgets, improved scientific and technical training, and improved laboratory facilities. Indicators for improvement of SPCB functions were not provided in the SAR, but were to be developed during implementation. During the early years of the project there appears to have been little progress toward institution-strengthening. Refurbishment of laboratory facilities and procurement of equipment was very slow before mid-1999, which also delayed the associated training program (that could only then be implemented before project closing). This was similar to the situation during IPCP.

The SPCBs interviewed by the ICR mission indicated that, from their perspective, the project effectively began operations in 1999-2000, and was just gaining momentum in 2002. For example, though the DCA for the IDA credit financing IPPP's institution-strengthening and TA work was signed in November 1994 and became effective in March 1995, the first release of funds to the Rajasthan SPCB was in April 2000, nearly 5 1/2 years later. Chronically slow disbursement, two negative QAG assessments of the project (1997 and 1999), and doubts about the benefits of environmental lines of credit and of the effectiveness of environmental regulatory bodies could have triggered cancellation of the project even before the mid-term review (MTR). Following the MTR, the new task team organized a second needs assessment of the SPCBs, and the training program was also extensively revamped and closely supervised by the Bank.

The slow start was compensated by strong performance by all the agencies involved in the later period of

the project. At the time of the ICR mission it was apparent that some important transformations--introduced late in the project--are visible in several of the project SPCBs. The ICR mission observed significant progress in areas such as management accountability for results, professionalization of technical and scientific staff, streamlining and transparency of procedures and tighter internal controls to reduce the risks of corruption, and use of new technologies and analytic techniques to better understand environmental trends and provide timely advice to decision-makers. It is also significant that most of these improvements have been brought about in a rather short period of time, under strong guidance from the Bank's new task team combined with new Borrower leadership in several positions. Another outcome is increased interaction and dialogue among SPCBs; for example, KSPCB, after learning the Bank's procurement procedures, assisted Chhattisgarh Environment Conservation Board (CECB) on these aspects. These are important (though qualitative) improvements, and while it is regrettable that no monitoring framework was prepared for this aspect of the project, several observations related to the potential significance of this transformation are significant.

The achievements in Andhra Pradesh and Karnataka SPCBs (Andhra Pradesh Pollution Control Board (APPCB) and Karnataka State Pollution Control Board (KSPCB)) have been especially substantial. Improvements include an on-line complaint registration system in APPCB with regular meetings (in both HQ and field offices) with stakeholders to discuss issues and quality of service. Similarly, KSPCB has recently introduced a policy whereby it pays a penalty of Rs. 50 for each day a licensing ('consent') decision is delayed beyond the stipulated turn-around period for each category of industry (4 months for "red" industries with high pollution potential, 3 weeks for "orange" industries with moderate pollution potential). In both organizations, managers are candid in acknowledging the difficulties of overcoming governance problems within public sector regulatory agencies, but make a strong case that greater transparency and tighter internal controls are already producing important results and raising the public credibility of the boards. KSPCB introduced electronic identity cards for staff which have sharply reduced absenteeism and tardiness from a daily average of around 50% to less than 2% by project closing (daily attendance is posted publicly); other SPCBs are preparing to introduce similar systems. KSPCB also has, on its own initiative, eliminated a layer of middle management in order to flatten the organizational structure, redeploying staff to technical positions and reducing the time spent for internal approvals and reporting. The information systems developed an industrial database reconciliation with the Karnataka Industry Department, which has identified 60,000 currently unregulated industries (in addition to the 13,000 previously regulated) to be brought under the KSPCB's environmental regulation.

The performance of Rajasthan SPCB (RSPCB) has also been notable given its weak initial state before the project (e.g. poor laboratory facilities and practices, only one computer in the entire RSPCB). GPCB was financed for a GIS-based hazardous waste management component. This activity was expanded to a more comprehensive information management system including computerization of files on over 16,000 industries, CETPs and Treatment, Storage and Disposal Facility (TSDFs), and industrial estates in Gujarat. IT activities have also been customized to the demands and capacity of each project SPCB. The IT activities have financed hardware, software, data computerization, website and applications development, analysis and training activities. The development of IT knowledge bases and analytical capacity has assisted the SPCBs in queries and analysis for decision support, integration and visualization of data, industrial siting, monitoring and consent management, pollution targeting and modernizing management and outreach. There has also been significant computerization of all SPCBs, websites have been developed or improved in most project SPCBs, databases have been computerized and MIS developed. Most SPCB staff, even in states with almost no computers before the project, have been enthusiastic in participating in IT activities, with many staff taking computer training during personal time. SPCBs are now institutionalizing IT in their business processes, human resource development policies, and interaction with other state departments on multi-sectoral issues. In APPCB and KSPCB (the most initially advanced in terms of IT), GIS has been implemented with several environment and industry related

thematic layers being developed and analyzed. Many of these IT activities, with sustained development, have the potential to further modernize and professionalize SPCB staff, improve transparency and efficiency and reduce costs.

Most of the project SPCBs are also establishing cost-recovery programs (such as charging fees for laboratory testing of samples) to ensure the long-term sustainability of the equipment financed by the Bank; this also provides an indication of public willingness to pay for environmental testing services which had not been foreseen in the Staff Appraisal Report (SAR). All of the project SPCBs have scaled-up their efforts to identify firms operating without environmental permits (installing 'vigilance units') and several have also introduced programs for public "whistleblowers" to provide information about polluters. SPCBs are also reporting substantial increases in the pace of field inspections and testing of air and water samples. In Andhra Pradesh (AP), for example, against some 1,900 samples collected and 130 site inspections carried out in 1994/95, nearly 30,000 samples and 435 inspections were carried out in 2002/03, though staffing levels have remained relatively static under a government hiring freeze throughout this period. One result appears to have been an increase in the type of sampling (e.g. noise monitoring was introduced by the Project), the number of samples, and the reliability of results (although this should be monitored by CPCB in the future in its role of quality control overseer for state level laboratories).

Improvement in environmental quality would require the support of an adequate information base of pollutant discharges and ambient quality, and appropriate analytical tools. The ICR team found that several of the project SPCBs are now developing the necessary analytic tools, and while the project has closed before tangible results are available, there appears to be both management commitment as well as growing demand from policy-makers for these products.

Some of these improvements could have come about much earlier in the project; others, such as on-line application procedures for 'consent' (licensing) for industrial units and on-line registration of public complaints against polluting plants, have only recently become options. Another important factor outside the scope of the project is the financial autonomy now enjoyed by SPCBs (which receive substantial revenues from water 'cess' or discharge tariffs), providing an important cushion against state budget uncertainties. Many of the Boards also have accumulated substantial monetary assets without a business strategy (or even the procedural flexibility) for utilizing these funds effectively, and some industrial critics of the boards point out that the latter's role should be pollution control, not revenue generation. However, the evidence suggests that cess rates, though higher than at the time of the SAR, are still very low in comparison to other industrial costs such as water and energy, while financial autonomy appears to be one of the few respects in which the boards more nearly resemble private sector entities rather than public agencies. In other fundamental aspects (hiring, procurement, appointment of senior management) the boards remain hobbled by unresponsive state or central government procedures.

(ii) Investment component. This component is rated Marginally Satisfactory due to significant under-utilization of the IBRD and IDA funds available, and the modest number of firms which successfully accessed the credit lines. This performance is offset to some extent by evidence that the sub-projects which were implemented appear to have produced positive environmental benefits and also appear to be sustainable, with some uptake of lessons and technologies by other firms (two sub-borrowers appeared to be failing for commercial reasons at the time of the ICR mission).

The investment component had two major categories. The first comprised lines of credit for individual firms, with a total allotment of \$ 125 million through two IBRD loans (\$ 75 million to IDBI and \$ 50 million to ICICI); the second category comprised common treatment facilities (CTFs) shared between multiple plants, with a total allotment of \$ 20 million under two legal agreements, US\$ 18 million through the IBRD loan to IDBI, and \$ 2 million through the IDA Credit to MOEF. After 1998 ICICI, with top management support, set up a team of environmental specialists to provide sub-borrowers with extensive

assistance in the recasting of proposals to meet IPPP eligibility requirements. In addition, monitoring was done to expedite documentation for procurement clearances and claims as well as to ensure compliance with approval conditions. This helped in building industrial pollution prevention capacity at ICICI. In the early phase of IPPP, IDBI undertook training of its staff on environmental matters, with 175 officers trained on topics such as Environmental Impact Assessment and Hazardous Waste Management, financed through the TA component. IDBI was keen to continue this environmental training, however this could not be implemented as there was no such provision in the design of the project. ICICI on the other hand did not conduct such institution-wide environmental training for staff. During the last two years of the Project, both IDBI and ICICI made independent efforts to develop environmental policies for their lending operations. (IDBI's initiative on Environmental and Social Policy was more to do with meeting of the requirement of the Asian Development Bank (ADB) on Private Sector Infrastructure Fund and not connected with the IPPP. ICICI on the other hand developed its draft environmental policy mainly in response to IPPP). The adoption of environmental policies - under active consideration currently - by premier financing institutions such as IDBI and ICICI could certainly influence the other financing institutions and commercial banks in the country.

Total disbursements of these lines is shown in the table below. Note that the SAR gave no indication how many individual sub-loans were anticipated, thus the comparison is only on the basis of disbursement rather than number of firms participating.

Purpose	Original (\$ million)	Disbursed (\$ million)	No. of Sub-projects	Utilization (% of Original)
ICICI (individual investments)	50.00	39.47	12	79%
IDBI (individual investments)	75.00	26.33	12	35%
IDBI (common treatment facilities)	18.00	0.32	2	2%
MOEF (common treatment facilities)	2.00	0.95	3	47%

The profile of the subprojects financed has been in conformity with the 17 priority polluting sectors identified by the GOI and stated in the SAR, and most of the sub-loans have been pollution prevention (before the pipe) projects of good technical quality; only 15% of the investments were towards end-of-pipe facilities (mainly disbursed through IDBI). Unfortunately, the Project did not include dissemination workshops, development of websites or preparation of fact sheets for broader dissemination of this experience to other industries. However, the ICR mission found that such information has circulated through informal networks within the private sector, with many industries contacting and visiting the sub-projects to explore possible replication. This has been possible because most of the industries financed have been leaders in their respective sectors and considered as "lighthouses" by other industries.

Most subprojects demonstrated prevention of pollution at source with economic benefits such as conservation of materials and energy and higher efficiencies of conversion. Two sub-projects⁸ that were financed not only reduced release of pollution to the neighborhood, but also helped in improving safety and working environment. Eight subprojects⁹ demonstrated utilization of waste and energy conservation through waste heat recovery. Five subprojects¹⁰ included transfer of know-how on cleaner technologies from foreign countries. Three subprojects¹¹ promoted indigenous know-how on environmental friendly products on a commercial scale. Almost all the pollution prevention loans have demonstrated adaptation or

adoption of new equipment and technologies. There have also been cases where technologies from abroad have been fully understood and adapted to meet expansion needs¹².

In contrast to the operations under IPCP, IPPP financed four greenfield investments. Two greenfield sub-projects were related to waste utilization viz. organic fertilizer from sugar and distillery wastes, and manufacturing of carpet grade fibers from processing of waste plastic (PET bottles). These two projects were financed through IDBI. The remaining two Greenfield projects were related to manufacture of bio-pesticides, one financed through IDBI and one through ICICI. These projects found IPPP an attractive line of credit because they would otherwise have been treated as venture capital and attracted substantially higher rates of interest. In this sense, IPPP provided an interesting source of venture capital financing to test or scale-up innovative ideas related to manufacturing environmental friendly products¹³. The IRRs for the individual investment sub-projects were highly variable and ranged from about 20-92% for the ICICI line and about 16-35% for the IDBI line.

The CTF component also managed by IDBI included Common Effluent Treatment Plants (CETPs) and Industrial Water Recycling Plants (IWRPs). Under this subcomponent, two CETPs and one IWRP were financed. However, as required by the Bank, the CETPs financed through IPPP were however more comprehensive in scope as compared to CETPs financed under the earlier IPCP, and included aspects such as sludge management, waste minimization and effluent recycling/reuse, important aspects missed in schemes financed under the IPCP. To facilitate investments in this direction, technical assistance was provided to the CETP companies to undertake studies/pilots on waste minimization and effluent recycling and reuse. In addition, the two CETP companies were guided to evolve more realistic formulae (based on composite pollution load) for effluent charges to catalyze pollution prevention and improve financial recovery. If the project could have financed more CETPs on this basis, this could have set important examples for other CETPs to follow. The IPPP team also prepared for consideration of the MOEF a CETP Policy Note that captured many of the features of the two CETP schemes financed. A further discussion on this Note at a stakeholder workshop on CETPs, followed by issuance of national guidelines, could have been useful to improve sustainability of CETPs in India, but this did not materialize before project closing.

The project was not successful in developing, demonstrating or promoting the environmental and economic advantages of IWRP. One of the critical factors for this outcome could be lack of a customized approach and the lack of special attention that the IWRP required. Other factors included absence of involvement of other important stakeholders, notably the municipal corporations that are responsible to supply sewage services, and Industrial Development Corporations that are responsible for industrial water supply. The IWRP essentially followed the CETP model of financing that was based on capital subsidy. Perhaps, alternate financing models such as subsidizing through annuities could have been an attractive proposition.

(iii) Technical assistance component. This component is rated Marginally Satisfactory due to cancellation of the planned clean technology network, and the modest number of common treatment facilities established. This is offset to some extent by recent progress in operating a web site for waste management circles which has to some extent met the original objective of the CTN.

The TA component was designed to support:

- Establishment of a clean technology institutional network designed to promote the development, diffusion and transfer of technologies with environmental benefits for the industrial sector
- Identification of appropriate waste minimization and abatement methods for small-scale industry and the organization of waste minimization circles (WMCs)
- Carrying out feasibility and pre-investment studies for small-scale industries, and
- Provision of training and consultant services to assist MOEF

CETPs provided economies of scale in pollution control for clusters of small and medium-scale industries, and Waste Minimization Circles (WMC) served as a proactive mechanism to promote pollution prevention for these types of industries. While CETPs were essentially investment instruments in a rather physical sense, WMCs were more intellectual investments that were expected to lead to ideas that would reduce pollution at source and at the same time improve profitability of the units. In addition, the WMC program included building capacities of professionals in the country and catalyzing a market for pollution prevention. The WMC program was an MOEF initiative operated through the National Productivity Council (NPC), under financial support of IPPP, from 1997 to closure of the Project in 2002. In 1999, the Bank requested through MOEF an evaluation of the WMC program by an independent expert. The lessons learned and recommendations from the evaluation led to revised terms of reference for the NPC, including a request to develop outcome based performance indicators for each of the WMCs. These performance indicators have provided an excellent framework for monitoring the effectiveness of the WMC program. On these lines, the NPC has prepared a comprehensive database on each WMC, identifying the economic and environmental benefits of various waste minimization options. The WMC program has gained international attention as a means to promote pollution prevention in small and medium industries and the model is being replicated in countries including Indonesia, Egypt, Nepal, Sri Lanka, South Africa and Thailand, and is also being integrated into in the operation of UNIDO/UNEP National Cleaner Production Centres. Today, the MOEF has decided to continue financing of the WMCs under its own budget with a target of at least 500 WMCs, and is exploring linkages with financial institutions such as the Small Industrial Development Bank of India (SIDBI).

Although the WMC activities helped identify many pollution prevention options in small and medium scale industries, the associated potential investments were not eligible for financing under the IDBI and ICICI credit lines. Financing of such investments through the Small Industrial Development Bank of India (SIDBI), a sister institution of IDBI, could have helped considerably in this regard. WMCs could prove to be a very useful project identification mechanism for cost-effective abatement of pollution in India, especially for small to medium scale industries.

Overall, although there has been progress on achievement of objectives under this project, the overall project outcomes are still unsatisfactory, given the weak initial design to achieve the overly ambitious initial project objectives, late initiation of project activities, and cancellation of substantial portion of the IDBI credit line and some other activities.

4.2 Outputs by components:

The project provided modest to substantial achievements of outputs (see Annex 5) despite disbursement of less than half of the original Bank financing (see Annex 2). A more detailed description of outputs by project component is given below:

(i) Institutional Strengthening Component: There was substantial achievement of outputs in the institutional strengthening component of the project. The Institutional component was tailored to meet the perceived immediate needs of the project SPCBs in the targeted states, which were Andhra Pradesh, Karnataka, Madhya Pradesh, Chhattisgarh (formed after the bifurcation of Madhya Pradesh) and Rajasthan. Outputs achieved for the original project components include:

- Refurbishing and expanding laboratory facilities with 6 laboratories in Andhra Pradesh, 8 laboratories plus one mobile lab in Karnataka, 7 laboratories in Madhya Pradesh, 2 laboratories in Chhattisgarh, and 5 laboratories in Rajasthan.
- Acquisition of equipment required to upgrade the technical capabilities of the SPCBs, including laboratory analysis and monitoring equipment, and procurement of 23 sampling vans to greatly expand field monitoring.

- Training of 486 SPCB personnel (and 18 MOEF and Central Pollution Control Board (CPCB) personnel) to strengthen technical and managerial skills (including national training on 18 technical and management modules). Training was implemented according to the Training Strategy Note prepared under the project. No international training (except for a USEPA study tour) was conducted under the project.
- Development of a Geographical Information System (GIS) for the Gujarat State Pollution Control Board (GPCB) to track, monitor and control the release and disposal of hazardous wastes in Gujarat. During project implementation, this subcomponent was expanded into a comprehensive environmental management system to include air and water pollution management for GPCB.

The project's legal agreement for the IDA portion was amended in September 2000 based on a request by the project SPCBs and GOI to include broader IT and environmental awareness sub-components to reflect the changed needs of project SPCBs as compared to those at the original project design stage.

- Environmental information management, with procurement of hardware and software and training for MIS for all project SPCBs, in addition to GIS for APPCB and Karnataka State Pollution Control Board (KSPCB) and website development (see Section 10).
- Environmental outreach including two mobile exhibits for APPCB and three mobile exhibits for KSPCB, and other environmental awareness-raising measures (e.g. establishment of public outreach cells at both SPCBs, state of the environment movie at APPCB).

Training activities, carried out at a later stage under the project, included a module on financial management that helped train and evaluate 4 staff from the Central Government agencies and 16 staff from the project SPCBs. Activities such as information systems development for the project have assisted in building up financial management capacity in some SPCBs in terms of computerization of cess receipts, consent fees, payroll, accounts payable, salary, tax and other information, online banking, and have also facilitated the adoption of double-entry book keeping (in Karnataka).

(ii) Investment Component:

Individual Industrial Investments sub-component: There were substantial differences in the achievement of project outputs under the loans as indicated by project investments made. While the IDBI disbursed 35% of the original individual investment loan (of which \$ 48 million were subsequently cancelled at restructuring) and 2% of the original common treatment facility investment loan (of which \$ 16.17 million were subsequently cancelled at restructuring), ICICI disbursed 79% of the original individual investment loan.

The IDBI submitted 31 applications for individual industrial investments for approval to the World Bank amounting to \$ 83 million. Many of the applications were however received as a spillover from the pipeline that was built under the previous IPCP. Out of these, 12 applications were approved. Unlike the sub-project proposals prepared by ICICI, the IDBI sub-project proposals were not as comprehensive and structured to contain quantitative information on environmental and economic costs as well as benefits. Many of the applications at IDBI were cancelled by the prospective sub-borrowers. There was no approval of a loan from the Bank to IDBI between 1996-2001; and between 1998-2000, there was no withdrawal from the account of IDBI on IPPP. On average, the Project lent at a loan size of \$ 2.7 million.

The real efforts on marketing of IPPP began at ICICI only after 1998. Unfortunately, the economic slow-down had already set in. In this period, ICICI performed much better despite the constraints due to the dedicated team efforts. While IDBI closed by 2001 at around \$ 26 million (34.6% of the loan amount on individual industrial investments), ICICI could complete claims for around \$ 39.4 million (79% of the loan

amount). ICICI submitted 30 applications amounting to \$ 116 million (2.3 times the amount available through the credit). Disbursements were associated with 12 sub-projects under each credit line⁵. The quality of subproject proposals prepared by the ICICI team was much superior as compared to IDBI - thanks to the intensive supervision and technical support from the Bank's task team after 1998. The second task team leader in particular, took efforts in training the team at ICICI on how to identify, develop and assess pollution prevention projects and prepare subproject proposals. The subproject proposals provided comprehensive and quantitative information on environmental and economic aspects on each of the sub-loans, and a statement of quantitative indicators that could be used to track the environmental and economic performance of the investment. In many cases, the scrutiny of the proposals from the Bank led to revision/ expansion of the scope of the subproject. This often led to improved environmental monitoring and control⁶ and reduction in environmental risks⁷.

Each sub-loan was from one of the 17 most polluting industries identified by MOEF. Amongst the various sectors covered under IPPP, four sectors viz. steel/aluminum, cement, petroleum coke and sugar constitute nearly 69% of the total industrial investments. More details on specific investments financed by the lines of credit to industries are found in Annex 3.

Common Treatment Facilities (CTF) sub-component: This sub-component included the CETPs and IWRPs with IDBI having the implementation responsibility. Out of the \$ 2 million IDA and \$ 18 million IBRD funds, \$ 0.95 million were disbursed under IDA (47% of utilization) and only \$ 0.32 million (2% of utilization) under IBRD by IDBI. Clearly, the IBRD component through IDBI was not found to be attractive by the borrowers of CTF, mainly because of the unfavorable terms of lending and demanding procedural requirements. Only two CETP schemes were sanctioned out of the 4 applications forwarded by the MOEF (this may be compared to the 53 CETP schemes financed under IPCP).

This sub-component of investments had an important extension to include Industrial Water Recycling Plants (IWRPs), with financing terms similar to the CETP. The IWRPs were tertiary treatment units mainly at the municipal sewage treatment plants for providing a competitive source of water to the nearby industrial units. The IWRPs were expected to include a commercial agreement with the municipality for purchase of sewage. However, only one IWRP was financed under IPPP¹⁴; one of the critical factors for this appears to have been the lack of a customized approach and special attention that the IWRP concept required. Other factors included absence of involvement of other important stakeholders given the institutional arrangements needed for establishing successful IWRPs (e.g. the participation of municipal corporations that are responsible to supply sewage, and Industrial Development Corporations that are responsible for industrial water supply).

(iii) Technical Assistance Component:

By the end of the project, the WMC program had established 115 WMCs covering 17 states and 41 industrial sectors, trained 168 professionals, and organized awareness seminars for 4,500 participants. Through these 115 circles, more than 500 small and medium-scale industries have interacted to generate ideas on waste minimization and pollution prevention. In terms of content development, a standard training package was developed, 15 newsletters were released and a website was launched (<http://wmc.nic.in/>). The web site of WMC is rich in technical content and features email based newsletters, case studies, case exercises, presentation slides, information sources, Government policy and answers to frequently asked questions. To some extent, the objectives of the cancelled component for a Clean Technology Information Network (CTIN), were met with the launch of WMC web site (see Annex). The Technical Assistance component also financed many studies taken under this project as well as consulting services to MOEF in the areas of project management and procurement of laboratory and field monitoring equipment. Of particular importance was the laboratory guidance manual (LGM) that aimed at standardization of the quality of data generated by SPCBs, training of the SPCBs on laboratory quality systems and the

associated U.S. study tour that allowed SPCB personnel to learn international good practices (these activities were implemented with the assistance of USEPA).

4.3 Net Present Value/Economic rate of return:

No economic cost-benefit analysis was performed at Appraisal, due to methodological issues related to the measurement of environmental benefits. A summary of economic and environmental benefits of the sub-projects under individual industrial investments is presented in Annex 3 based on the data made available by IDBI and ICICI. Although the IRRs have not been calculated for all sub-projects, the IRRs (calculated from direct financial costs and benefits alone) have a wide range (from 16% to 35 % for IDBI and 20% to 92% for ICICI). In addition, many of these subprojects have significant demonstration potential, multiplier impacts, and environmental benefits. The institutional benefits under the project (e.g. to SPCBs) are difficult to quantify in economic terms. Under the WMC program, over 220 of 500 identified pollution options were implemented, about \$ 2 million investment by WMC member units led to annual savings of about \$ 1.8 million, indicating a payback period of less than 14 months. These investment also had environmental and resource benefits (e.g. savings of 10-35% in water consumption, 15-20% in electricity consumption, 10-20% in fossil fuel consumption, 10-20% in raw material use, 10-30% in wastewater generation, 5-10% in air emissions, and 5-20% in solid waste generation).

4.4 Financial rate of return:

No financial analysis for the project was carried out at Appraisal.

4.5 Institutional development impact:

Institutional development impact is rated Substantial, based on clear evidence that several participating SPCBs are becoming more responsive to clients, more focused on achieving and reporting results, and less tolerant of poor performance and corruption. This transition is a long-term process with many difficult aspects, and it is too early to be confident that no reversals will take place. However, the working environment of SPCBs assisted by the project is clearly undergoing a wide-ranging process of reform, and in many respects their management systems are becoming more closely aligned with those of private sector agencies than classic public regulatory agencies. In contrast, one SPCB visited by the ICR team which had been assisted under the previous IPCP but which did not participate in IPPP, appears to have been left far behind in this process, despite being located in a prosperous state and enjoying a strong base of revenue from the consents (environmental licenses). On the FI side, ICICI has developed a significant level of expertise in marketing of environmental technology to industries, and senior management seems to see this as an important part of its business strategy, making the move more sustainable over time. If successful, it is likely that this innovation will be noticed by other financial institutions and similar measures adopted, thereby increasing the long-term impact.

5. Major Factors Affecting Implementation and Outcome

5.1 Factors outside the control of government or implementing agency:

Civil unrest in two states delayed one training module and a consulting firm input. At the macro level, the East Asian financial crisis of the late 1990s reportedly had some spillover effect on Indian industries, for example by reducing willingness to make investments in areas such as pollution control and prevention (industrial production grew at 11.6% in 1995/96 then fell to 3.4% in 1998/99, according to MOEF data).

5.2 Factors generally subject to government control:

Frequent turnover of top management (chairman and member secretary) in SPCBs and the project management at MOEF has been an issue throughout the project period (e.g. at RSPCB six chairmen and

three member secretaries served during the 1999-2001 period, and at KSPCB three chairmen and two member secretaries have served since 1997). Conversely, a government-imposed hiring freeze since the early 1990s has prevented recruitment of new technical staff in the SPCBs, and there appears to be limited attention to career development overall. The complicated and cumbersome procurement procedures in many SPCBs has brought about the unexpected result that, in at least one reforming Board, the Bank procurement guidelines are considered a more preferable and transparent option. Project management by MOEF improved after 1999, when a project management consultant (NPC) was contracted. Coordination and information exchange among the various implementing agencies for the project should have been improved.

Finally, a temporary restriction by the Government of Rajasthan (GOR) on public spending delayed refurbishment of RSPCB laboratories under IPPP. In addition, State Governments' restrictions on vehicle purchases (due to austerity measures) led to the need for IPPP financing of vehicles although this was not originally planned (as the loan is paid back to the Bank by the GOI, and not the State Government). Also, State Government-imposed restrictions on fuel allocations for public entities are reported to reduce the number of samples collected by SPCBs and to force SPCBs to use alternative sample shipment methods (such as trains) to laboratories, leading to time delays which can adversely affect test results.

5.3 Factors generally subject to implementing agency control:

There were significant delays in processing of procurement during the first three years of implementation, with proposals revised several times before meeting Bank requirements. In particular, preparation of proposals and procurement documents by SPCBs for laboratory facilities took considerable time because SPCBs lacked experience. In addition, delay in engagement of the procurement consultant (RITES) by MOEF delayed acquisition of field monitoring and laboratory equipment. This further delayed training of SPCB personnel. The engagement of a project management consultant (NPC) by MOEF improved monitoring of project activities significantly.

Promoting information exchange among SPCBs, and with non-project SPCBs, could have been better encouraged. Lack of involvement of the CPCB hindered efforts to disseminate good practices and lessons among project SPCBs which had historically had very few mechanisms for state-to-state interaction among technical staff. MOEF was apparently not engaged in conducting analysis on issues such as the cost-effectiveness of fiscal and tariff policies designed to stimulate greater environmental investment by industries, which had been an issue in Bank-Borrower dialogue during the preparation of IPPP. A study on market instruments for industrial pollution abatement was prepared by a task force appointed by MOEF in 1995-96 as a condition of effectiveness of IPPP, and though the report was submitted to MOEF in early 1997, the report's recommendations concerning introduction of market-based instruments (MBIs) do not appear to have been taken further in the context of IPPP.

5.4 Costs and financing:

During most of the life of project, the available financing, especially in the lines of credit, far exceeded the project's ability to deliver and supervise eligible activities. Availability of more competitive sources of financing for pollution control/energy efficiency within the same financing institutions was a factor in the implementation of IPPP. During the period of overlap of IPCP and IPPP, the more attractive terms of IPCP loans clearly was a major obstacle in marketing IPPP lines of credit. Moreover, several other donor-financed lines of credit offered more attractive lending terms and significantly easier procedures compared to IPPP. IDBI operated the ADB Energy Efficiency credit line at 50 basis points lower than IPPP, and the entire amount of \$160 million in the ADB line was disbursed between 1994/95 and 1998/99. From 1992 to 1998 ICICI also disbursed three pollution control loans financed by KfW, USAID and JBIC aggregating to around \$60 million. The KfW line operated at 75 basis points lower, and the USAID TEST

program offered a low rupee-denominated interest of 8 to 10%. JBIC also had significantly less stringent requirements. The legal agreements with ICICI and IDBI were amended (single currency / multiple currency pool) when the initial funding mechanism proved problematic. Late in the project a shortage of counterpart funding became an issue which delayed implementation of some components.

6. Sustainability

6.1 Rationale for sustainability rating:

Given the rapid uptake of key institutional initiatives by SPCBs in the last two to three years of the project, overall sustainability is rated Likely. Project SPCBs appear to have internalized these initiatives to an extent that the risk of significant "backsliding" following project closing appears low even given turnover of senior management (a significant problem in the past). Several of the project SPCBs now demonstrate significant progress in areas such as management accountability for results, professionalization of technical and scientific staff, streamlining and transparency of procedures and tighter internal controls to reduce the risks of corruption. In at least one case (Andhra Pradesh), these reforms are occurring in a context of broader reform of public agencies by state government, including comparative performance ratings which are placing new competitive pressures on the public sector.

The financial position of SPCBs also appears healthy, which provides an important cushion against year-to-year budget uncertainties and perhaps also offers some measure of insulation from political pressures. The key factor here is the law which entitles "cess" revenues and consent fees to go direct to the SPCBs rather than passing through the general treasury. Complete dependence on annual budget allocations from state government would undoubtedly undermine many of the initiatives which are presently helping transform the project boards into truly autonomous entities. The extent to which the favorable present financial retention arrangement may be vulnerable to future changes could not be assessed by the ICR mission, but this clearly bears on the future sustainability of these bodies. The training, streamlining of procedures and computerization in many SPCBs relating to financial management also contributes to sustainability, although the performance of the SPCBs is very variable in this regard. Other changes in the business culture of project SPCBs are also noticeable:

- Procurement of an environmental information management system and associated training (in some instances SPCB staff donated their own time) have resulted in efficiency increases and better planning, and also broadened employees' professional standing and resulted in higher morale. The employees, through loans provided by SPCBs, were able to purchase computers for use at home.
- About 500 SPCB employees (managerial, technical, and laboratory) were trained in India to improve their technical and managerial skills. A shift in SPCB management's attitude towards staff is also evident. For example, KSPCB management clearly states that their primary asset is their staff.
- There is also a more service-oriented approach towards clients (industries, Environment Department, and other public sector agencies) and concern about improving public image (awareness campaigns, mobile exhibits, etc.)
- Although SPCBs were previously reluctant to undertaking new initiatives, they are now willing to test new approaches (such as integration of a zoning atlas with the IT strengthening under IPPP) and also further deepen the reforms achieved in their institutions (LGM, ROS, SmartCard system, function-based organization). Transparency and a participatory approach have now been accepted by project SPCBs. Although the word "corruption" could not be openly mentioned in the past, measures to fight corruption are now openly discussed by SPCB management.

At the level of the FIs, ICICI and IDBI are preparing for their Board's approval (scheduled within a few months of this ICR) a new policy developed under the project for screening of industrial loans for social and environmental impacts, which would significantly expand the long-term "reach" of the project across a much larger portfolio. ICICI has invested substantial internal and management resources in developing an effective and credible environmental unit as part of its Technology Group, indicating that this FI has made a conscious business decision to internalize environmental screening as a standard business practice. IDBI is also making provisions for appointment of external environmental and social review consultants, officer training, and assessment of environmental and social risks by their Credit Rating and Monitoring Group.

6.2 Transition arrangement to regular operations:

Many of the activities supported by the project are integrated into the regular operations of the SPCBs, thus no special arrangements are needed for transition to regular operations. However, as noted above, several tasks were not yet complete at the time of the ICR mission, including finalizing the laboratory guidance manual (LGM) and preparation of a resource optimization study (ROS). The former will improve and standardize laboratory procedures, eventually across all SPCBs in India, while the latter will, if successful, help managers enable more efficient allocation of key resources such as skilled staff, testing equipment, vehicles etc. across the mix of central, regional, and local level testing facilities. This is especially important as work loads may increase significantly in the future while staffing and capital assets are unlikely to increase in proportion (if at all) in the post-project period.

The new focus of SPCB managers on measuring results is a very important necessary step in this direction, and if sustained, should continue to see these institutions developing into agencies with significantly stronger professional credibility and technical capabilities than has been true for most public sector agencies in India up to now. Continued support from the Environmental Management capacity Building (EMCB) project and other activities in the coming year may play an important role in ensuring that the LGM, ROS, laboratory and IT improvements achieve these high expectations, and that the GOI at the central level sustains its commitment to implementing these new instruments across all states.

ICICI and IDBI have taken steps to internalize the experiences from IPPP. IDBI has recently fully disbursed a \$ 150 million line of credit from ADB for an Industrial Energy Efficiency Project and is an FI for a World Bank affiliated Montreal Protocol Project for phasing out ozone depleting substances. ICICI has also demonstrated in-house environmental capacity and has been a successful FI for numerous environment-related lines of credit.

7. Bank and Borrower Performance

Bank

7.1 Lending:

Preparation of the IPPP operation (financed by Japanese trust funds) began in March 1993, about 16 months after the effectiveness of the predecessor IPCP, with very similar objectives and components in both cases. During 1992-94 the pace of individual investment loans under IPCP was faster than anticipated, and in December 1993 some \$ 8 million were reallocated from slower-moving components to top-up the line of credit for individual investments, and an early sense of optimism was clearly a factor in the preparation of IPPP. While preparation of IPPP probably began too early to critically assess IPCP's implementation performance, by the time of effectiveness of IPPP in 1995 some serious drawbacks of the basic approach should have become evident. What appears to have been overlooked was that the strong interest from Indian industrial firms was directly related to a significant differential between interest rates charged to IPCP sub-borrowers compared to prevailing market rates (project lending under IPCP remained fixed at 15.5% p.a. throughout, while other lending by the project's FI varied from a band of 18-20% during 1991

to a band of 13.5-17% during 1999). In some cases industrial firms accessed the IPCP line-of-credit in order to refinance projects already underway, thereby capturing the benefits of subsidized credit but "buying" no incremental environmental benefits as a result of the Bank's investment. After late 1994, IPCP sub-lending stagnated as commercial interest rates declined to levels close to, or even below, IBRD's 15.5% fixed rate. In sum, the implementation problems encountered by both projects are strikingly similar, as a result of basic design choices made in the late 1980s-early 1990s and not significantly revisited until early 2000, though the project environment changed markedly during this period.

Given this very problematic track record, it is surprising that the Bank did not take a more critical look at the basis for the design of IPPP. The critical difference between the two operations was the decision to tie IPPP on-lending rates to prevailing market rates, which could reasonably have been expected to influence lending volume. While the objective of reducing the element of subsidy was laudable, there is little evidence that the potential consequences of this decision received much attention during preparation. Apparently no sensitivity analysis or market assessment was carried out to better understand the potential impact of this change in approach. Another modification to lending terms was that while IPCP had borne the foreign exchange risk, in IPPP this risk was shifted to the sub-borrowers, in parallel with reliance on market rates of interest. Thus, under the IPPP operation a large new line of credit was opened--on much less attractive terms--at precisely the same time that IPCP lending was in serious decline. At the time of the supervision of IPPP, Bank was also implementing the EMCB Project, however there were no design or operational links maintained between EMCB and IPPP, and as noted above, IPPP had minimal policy content though implementing the GOI's PSAP had been an important aspect of the original concept. For these reasons, Bank performance in lending is rated Highly Unsatisfactory.

7.2 Supervision:

Until 1999, Bank supervision missed many issues which directly threatened the DOs. No project launch workshop was done, and early supervision missions were combined with preparation of a planned follow-on project for hazardous waste management (subsequently cancelled by the Bank, reportedly causing tensions with the GOI). The first QAG review of IPPP (in 1997) highlighted many of these points, but it is unclear if any action was taken on the recommendations at that time. A second QAG review (1999) came to very similar conclusions. Low disbursements apparently remained the main focus of country management attention, while sector management appears to have lost confidence in the approach of extending credit to industrial firms by the time of the IPCP ICR in 1999. These factors indicated the need for an early and rigorous MTR with cancellation clearly on the table as an option; however, the MTR was delayed to January 2000, nearly five years after effectiveness and with only two years left before scheduled closing of IPPP. It was not clear to the ICR team whether annual portfolio review exercises addressed any of these issues apart from disbursement lag, thus another opportunity to come to grips with some basic problems was apparently missed.

The performance of the Bank task team that supervised the project since mid 1998 was highly satisfactory and helped turn around many of the initial concerns about project implementation. The procurement and financial management specialists, as part of the task team, were involved in supervising and providing advice to counterparts in a proactive manner during this period. The task team took measures for strengthening capacities at ICICI and IDBI, facilitating the resolution of contractual difficulties between GPCB and its consultant, and undertaking independent assessments of the real needs of project SPCBs and the Waste Management Circle (WMC) subcomponent. Following the MTR, the Bank and counterparts appear to have been determined to retrofit the project to assist the SPCBs better, strengthen FI capacity and make the investments more consistent with project objectives. As a result, equipment and other needs - in the areas of environmental information management systems, public awareness, data quality, resource optimization, personnel and financial management - were identified and incorporated into the project

design. The team supervised implementation of these activities through constant interaction with MOEF, SPCBs, and consultants. The Bank, primarily in the later years, reviewed the financial management aspects of the project closely, including compliance with covenants and established procedures, and regularly appraised the counterparts on the extent of completeness to meet fiduciary requirements. The team also brought close scrutiny of eligibility criteria for sub-projects. This had a beneficial impact on the quality of sub-projects and their relevance to project objectives, although it took longer time period for review and approval of sub-loan proposals. Both IDBI and ICICI maintain that a significant volume of additional disbursements would have been possible under the less rigorous eligibility criteria of the first supervision team, while the new task team took the view that the project's objective of pollution prevention did not encompass some of the end-of-pipe investments sought by borrowers. While ICICI followed Bank's recommendation for capacity building to market the credit line and prepare good quality sub-project proposals to the Bank, IDBI did not show the same commitment. As a result, in 2000, a major amount (\$ 64.17 million) from the non-performing IDBI loan was cancelled, as determined at MTR. The diversity of opinions among the sector and country management, the task team and the project counterparts was reflective of the complexity of this project. The lack of agreement on the way forward, and on realistic measures of Borrower commitment and performance, significantly complicated the Bank's handling of two extension requests for the ICICI loan during 2001-02 and two extension requests for the IDA credit during 2002 (the first was approved, the second declined). Many if not most of the project's achievements came very late in the project life, and are directly attributable to intensive supervision post-MTR, which often crossed the line to direct management of the project. Without this effort (which would normally be considered unsustainable) it is likely that the project would have collapsed altogether. Had this supervision effort come earlier in the implementation, it would likely have led to a significant redesign and much improved the chances of fully achieving the DO, particularly had it been backed by consistent and timely management attention.

Overall, Bank supervision performance is considered marginally satisfactory. Despite the problems noted during the early phase of project implementation, this rating reflects the turn-around facilitated by the Bank as well as project partners, which illustrates the results of close supervision with diligent follow-up in complex situations.

7.3 Overall Bank performance:

Highly unsatisfactory in the project preparation stage, very weak in the first three years of implementation, but improved dramatically to a highly satisfactory stage with significantly enhanced supervision from MTR (Jan. 2000) onwards. The ICR team saw little official record of management feedback on issues such as the supervision strategy, performance indicators, and progress toward achieving the DOs. There could have been better coordination and synergy among various Bank teams working with project SPCBs and with MOEF. Overall, Bank performance in this project is rated Unsatisfactory.

Borrower

7.4 Preparation:

Involvement of Borrower institutions (including SPCBs and FIs) in the preparation seems to have been low; the design closely followed the IPCP model, but in four new states and with additional focus on the concept of pollution prevention, following GOI policy from 1992-93 which began to emphasize prevention. A needs assessment study was conducted for the SPCBs, and studies were conducted on hazardous waste inventORIZATION in Gujarat and treatment requirements of small-scale industries in project states. However, for the investment component, there was not a pipeline of subprojects prepared for the new operation before it was launched. Procurement weaknesses experienced during the previous project (IPCP) were not addressed in the design of IPPP, though the selected states had little or no experience with World Bank procedures. The FIs selected lacked technical capacity on environmental aspects as well as marketing the

credit line. This aspect is rated marginally satisfactory.

7.5 Government implementation performance:

Project implementation arrangements in MOEF were inadequate prior to the MTR, and were reflected in the highly unsatisfactory project performance during the early years. The project's slow start was substantially improved after the MOEF implementation unit (in the policy and law unit) improved its performance (primarily through engagement of NPC as a project management consultant in September 1998). This strengthened the technical, supervision and coordination capacity of MOEF and reflected in substantially improved project performance in the later years. MOEF also prepared an excellent proposal for extension of the project in late 2002, and also a Project Completion Report of excellent quality during preparation of this ICR.

7.6 Implementing Agency:

MOEF performance was highly unsatisfactory during the early years of the project, but improved to marginally satisfactory by the MTR. During the last two years of the project (including the extension period) MOEF performance improved to satisfactory. During the last year of the project, there were significant constraints in the flow of funds from MOEF to project beneficiaries. Performance by SPCBs was unsatisfactory before the MTR (although this varied widely across the project states), but converged to a reasonably satisfactory level by the end of the project in November 2002. Shortcomings at SPCB level included lack of management continuity, lack of experience with procurement procedures, and financial constraints. On the FI side, both IDBI and ICICI performance was highly unsatisfactory prior to 1998; after this period, ICICI accepted the Bank's recommendation to recruit an experienced environmental specialist able to prepare and appraise subprojects, and performance significantly improved, in part because of their new marketing approach using network of environmental technology vendors and service providers. By the end of the project, including two extension periods, ICICI performance could be considered highly satisfactory in key respects. By comparison, IDBI showed no improvement before the component closed in March 2001, and did not carry through on its initial agreement to also recruit qualified environmental staff, although the key IPPP officer at IDBI acquired a Masters degree in ecology and environment. During the last two years of the project, the project SPCBs, MOEF, and ICICI demonstrated dramatic improvements in performance, with strong management support in each of these agencies. There was no separate financial management manual or computerized system developed for the overall project management. In general, it was found that the claims from MoEF were delayed, reporting was incomplete and supporting documentation inadequate. The receipt of audit reports by MoEF, IDBI and ICICI has been rather irregular during the project period (this was also consistent with the findings of the IPCP ICR).

7.7 Overall Borrower performance:

Early performance was clearly unsatisfactory, but by the end of the project, had improved to a satisfactory status. However, the ICR team considers that overall Borrower performance is Unsatisfactory, given the insufficient preparation, delayed implementation and inadequate performance on common treatment facility and some individual investments.

8. Lessons Learned

Key lessons learned from this project are as follows:

- There is a need to strengthen the technical capacity of FIs before opening lines of credit aimed at reducing or preventing pollution. Much time was lost during IPPP due to the FI's inability to properly screen and appraise sub-projects, and their inadequate comprehension of the technical standards that

were to be enforced by the Bank as a condition for approving sub-loans.

- There should be effective outreach mechanisms supported by strong commitment from FI management given that industrial borrowing is sensitive to changes in interest rates and perceived transaction costs. The earlier IPCP operation had significantly more attractive terms, as did other donor financed environmental lines of credit in India during the same period (JBIC, KfW, USAID, ADB). ICICI's performance during the last two years of the project demonstrated that there is a potential market for environmental loans to industry, where the FI provides the necessary technical backstopping and aggressively markets the service.
- Related to this is the need for donor coordination to harmonize credit terms within similar on-lending operations financed by different donors, or at least to minimize the potential for confusion and overlap between programs. Several sub-borrowers eventually shifted to other such programs after significant IBRD resources had gone into technical review and modification of proposals.
- Pollution prevention activities should be focussed on priority sites or zones where the marginal benefits of pollution reduction are high, and for monitoring systems which can track local pollution trends over time. IPPP investments are currently widely scattered in a spatial sense (though all are within priority industrial sectors), and there is no framework for empirically tracking their impact on effluents or emissions. At the time of project preparation MOEF had already developed a list of pollution "hot spots" which would have been a logical basis for focusing IPPP lending. Alternative mechanisms to spatially or thematically target polluting industries (e.g. through the WMC) could also have been explored with complementary financial and technical assistance. In any case, a solid sub-project investment pipeline should have been developed for at least the first project year.
- Project components and inputs should be more carefully linked with expected outcomes, taking into account the time lag which is likely between efforts to strengthen regulatory effectiveness and observed changes in industrial behavior, as well as the many intervening factors and indirect effects which are likely to be encountered. Better analytic work before project preparation might have helped to sharpen attention to these issues. If properly designed, a long-term programmatic approach could be an attractive design option in this situation, beginning with proper attention to the underlying policy framework, which was virtually ignored in the IPPP operation.
- Complex projects such as this require substantial time and level of effort for preparation and supervision, with technical inputs backed by consistent management oversight and institutional memory from internal reviews (such as from QAG). Much of the Bank's supervision effort during the early years of IPPP was apparently channeled toward preparation of another similar operation, while IPPP itself largely duplicated the design of the earlier IPCP, with little learning from mistakes in each case. Extreme efforts were needed to turn the project around in the last 2-3 years of its existence (as had been predicted in the ICR of the IPCP, which had underscored the transfer of serious design flaws from IPCP to IPPP the year before the IPPP MTR).
- There is a need to develop customized approaches for each SPCB given their vastly different requirements and capacities. In addition, there is a need to institutionalize information sharing arrangements with all related environmental regulatory agencies (both at national and state-level whether they are part of the project or not) to maximize effectiveness of such TA efforts.
- The design of such projects should assist counterpart agencies to improve their overall financial management and procurement processes and capacity and not focus only on project-related capacity-building. The design of such projects should also better reflect the delays that are common in audit reports from many implementing agencies in India and consider appropriate auditing arrangements in a well-devised financial manual.

- There should be upfront understanding and agreement to commit adequate resources (staffing and budgets) by the implementing agencies (FIs, SPCBs and MOEF) during preparation, implementation and post-implementation of project activities.

9. Partner Comments

(a) Borrower/implementing agency:

IDA Credit 2645-IN: Ministry of Environment and Forests Comments for ICR

(taken from Chapter 12 of MOEF's PCR report; complete PCR in Annex 8)

The World Bank aided Industrial Pollution Prevention (IPP) Project was initiated in 1994 following the Development Credit Agreement (DCA) entered by Government of India with the International Development Association (IDA). The total estimated project cost was US\$ 327 million, including an IDA grant of US\$ 23 million. Though the Project was started 1994, virtually the Project took off only in late 1998 mainly due to the pending activities under the previous project i.e. Industrial Pollution Control Project. The other reason for the delay is that the Project SPCBs were not familiar in preparing detailed proposals on laboratory up-gradation, Information Technology activities, etc as required by MoEF and the Bank. Most of the project activities were implemented during the period from 2000 to 2002 at the Project SPCBs. The Project was originally scheduled to close in March 2002; however it was extended till November 2002.

The Project had three major components as mentioned below:

1. Institutional strengthening Component covering activities related to equipment procurement, laboratory up-gradation, training of SPCB officials, Development of Information Technology activities & Environmental Outreach Programmes.

The Institutional Component aimed at strengthening the State Pollution Control Boards of Andhra Pradesh, Karnataka, Madhya Pradesh, Rajasthan & Chhattisgarh. It also supported GIS based Hazardous waste tracking at GPCB.

2. Investment Component- designed to support individual and common treatment facilities for pollution abatement, with a focus on waste minimisation and adoption of cleaner methods of production.

3. Technical Assistance Component designed to support identification of appropriate waste minimisation and abatement methods and the organisation of waste minimisation circles for small-scale industry and training & consultancy services to assist the Ministry of Environment & Forest.

A total of Rs. 77.12 Crores was utilised under the above components of the IPP Project and the following table gives the broad split-up of funds utilized under the three major components and among the Project SPCBs.

S.No.	Component	Funds Utilised (Rs. In Lakhs)
1	Institutional Component	6184.914
	Equipment Procured for Project SPCBs	1826.82
	APPCB	997.12
	KSPCB	1560.11
	MPPCB	388.53
	CECB	99.57
	RSPCB	460.16
	GPCB	720.50
2.	Investment Component	503.37
3.	Technical Assistance Component	989.51

GIST OF PROJECT ACTIVITIES

The following is the gist of activities carried out under different components of this Project:

I. Institutional Component:

1. Equipment procurement - Centralised Procurement of Equipment through RITES and National Shopping for direct Procurement of Equipment by SPCBs.
2. Laboratory Facilities up-gradation - Up-gradation of existing facilities at 29 laboratories of SPCBs; Activities included are:
Minor civil works - Aluminum partitions, Working Lab Tables with acid proof tiles at the top, Instrument Tables, False ceilings, AC and exhaust fan fixation etc.
Refurbishing of specialised rooms such as fuming chambers, dust free rooms for trace level sample preparation, glove boxes
Utility equipment - backup power facilities, data processing equipment and safety equipment
3. Training of SPCB officials - Development of training strategy, Preparation of Guidance Manual for training Institutes for conducting training programmes, Selection of training institutes, organisation of domestic training, Selection of participants for overseas training.
4. Information Technology activities at Project SPCBs:

APPCB - Development Of Geographical Information Management System - The activities included GIS Laboratory Arrangements, Data Processing Equipment, Consultancy, Data Creation, Data Collection, Sensitivity Analysis & Training

KSPCB - Development Of Geographical Information Management System - The activities included Creation of Infrastructure facilities, Procurement of accessories like scanner, CD Writer, LCD Projector, Camera, Procurement of computers and other peripherals, Backup Power facilities, Software like Oracle, Visual Basic and Kannada Software, Networking of computers, Procurement of GIS

Software, Procurement of Photocopier, fax machine etc., Data creation by KSRSAC, Training of officials in basic computer skills and other specialized training & Procurement of Environmental Models.

Madhya Pradesh Pollution Control Board (MPPCB) - Development of Integrated Management Information System – The activities included the development of Integrated Management Information System, Document Management System, File Management System, Pilot GIS Study & Development of Web Site

RSPCB - Development of Integrated Management Information System – The activities included the Procurement of Hardware and Software, Application Development under Management Information System (MIS) & Training:

5. Environmental Outreach Programme

APPCB - Up-gradation of existing Mobile Exhibit van on Children theme, Development of two additional Mobile Exhibit Vans for Urban & Industry themes, Strengthening of Environmental Education Wing & Preparation of video on 'state of the environment'.

KSPCB -Development of three Mobile Exhibit Vans for Urban, Industry & children themes, Strengthening of Environmental Education Wing & Preparation of video on 'state of the environment'.

II. Investment Component

This component supported Individual Industry sub-projects and common treatment facilities. Individual industry sub-projects were implemented through IDBI & ICICI. The Project supported two common treatment facilities and one Water Recycling plant through Ministry of Environment and Forests (MoEF):

Common Effluent Treatment Plants:

1. M/S. Sachin Infra Environment Ltd. (SIEL)
2. M/s Enviro Infrastructure Company Limited (EICL)

Industrial Water Recycling Project: M/s Rashtriya Chemicals & Fertilizers, Mumbai.

III. Technical Assistance Component

The following is the list of major studies/consultancy projects taken up under this component:

- Waste Minimisation Circles (WMC)
- Project Management Consultancy
- Training Management consultancy
- Tannery Project - National Environmental Engineering Research Institute (NEERI)/CLRI
- Industrial Safety and Disaster Prevention Project and Hazardous Waste Management Project.
- Preparation of Laboratory Guidance Manual (LGM)
- Workshop for finalisation of Laboratory guidance Manual
- Gap Analysis Study for implementation of LGM
- Resource Optimisation Study

PROJECT ACHIEVEMENTS

The Project has resulted in immense benefits to the Project SPCBs. A few of the salient benefits of the Project are:

- In total 29 Central and Regional/ zonal laboratories including 6 laboratories at APPCB, 9 Laboratories at KSPCB, 7 laboratories at MPPCB, 2 laboratories at CECB & 5 laboratories at RSPCB were upgraded with total outlay of about Rs.16.54 Crores. The up-gradation of laboratory facilities resulted in improved working environment, particularly for scientific staff of SPCB laboratories.
- Equipment worth about Rs.17.92 Crores was centrally procured by RITES for the project SPCBs. All the equipment has been delivered & installed at the SPCBs. The analytical and monitoring equipment including sophisticated instruments like HPLC, FTIR, GC, TOC, AAS, AOX etc supplied to the project SPCBs resulted in improved analytical capacity enabling SPCBs to monitor and analyse additional environmental parameters of concern and to undertake analysis of complex organic/inorganic chemicals.
- In respect of Management Information System including GIS and procurement of requisite hardware, activities worth about Rs.13.27 Crores had been taken up at the Project SPCBs. Owing to the establishment of Environmental Management Information system, the Project SPCBs evolved into computer savvy professionals increasing their efficiency in monitoring & enforcement functions. The working culture within the SPCBs has changed by improvement in their performance using modern tools of MIS/GIS. It is also worth noting that all the project SPCBs have developed their own web site which is accessible electronically to the public with regard to their organisational structure, contact names, phone, fax numbers, e-mail Ids, activities undertaken, redressal of complaints, etc.
- Preparation of Laboratory Guidance Manual in consultation with the SPCBs resulted in better understanding of scientific staff of SPCBs regarding Laboratory Quality Management Systems. The SPCBs had shown deep interest in implementation of LGM, which would enhance the credibility of data collection and analysis. The US (Environmental Protection Agency) study tour for the senior scientific staff of Project SPCBs complemented this by exposing them to international laboratories and the quality systems practiced in them.
- 486 officials from the project SPCBs (out of total 504 officials trained) were trained under eighteen different modules and equipment specific training was also imparted, as part of the domestic phase of training. These training modules were designed so that they were consistent with the work areas of the SPCB officials. The feedback from the SPCB officials revealed that they have been benefited through the training and many of their doubts relating to their work areas have been resolved. About 96% of all trainees were from project SPCBs. An average of 80 % of the persons nominated attended the training programmes. (75% of senior managers and 82% of laboratory & other personnel)
- Two Project SPCBs i.e., APPCB & KSPCB participated under the Environmental Outreach Programme and developed mobile exhibits for "urban", "industry" and "children" themes at a total cost of Rs. 2.51 crores. These mobile exhibits are being utilised for creating and developing environmental awareness. This has strengthened the interaction of SPCBs with the community. The community is becoming increasingly aware about local and global environmental issues & prevention and control of industrial pollution.
- Two CETPs & one Industrial Water Recycling Plant (IWRP) were supported to the tune of Rs. 5.03 crores under this project. The CETPs had developed their full -fledged Environmental Management Plan and also became member of the notified Secured Landfill Facilities for disposal of their solid wastes. For the first time, one of the CETPs took up recycle/reuse study and piloted it successfully. It was also in the process of setting up full scale recycle/reuse system, which would make it a model

CETP in the country.

- The 'smart card' system was installed at Karnataka State Pollution Control Board and reportedly it has resulted in improved work culture with decrease in absenteeism. A detailed discussion on the 'smart card' system was also held during the US-EPA study tour, in which officials from Project SPCBs and MoEF participated. All project SPCBs showed their keen interest in the system.

The IPP Project provided an opportunity for SPCBs to share information about their functioning and other developments. Periodic Project review meetings held at MoEF and World Bank review meetings provided a platform for information sharing among the SPCBs. In addition to this, Road Show programmes were suggested to see the unique facilities developed at a Project SPCB and also to discuss about them. One Road Show Programme was organised at KSPCB, Bangalore to share the unique facilities developed by KSPCB such as Mobile laboratory, GIS developments at KSPCB, Smart Card systems etc among the Project SPCBs under the IPP Project. The Programme was conducted for two days and the other five Project SPCBs participated in the Road Show.

Another important outcome of the IPP Project was the development of a comprehensive methodology for conducting training programmes. A training strategy note was developed initially which formed the base for conducting the training programme. A Guidance Manual providing guidance for institutes to conduct training programmes was also prepared for smooth organisation of these programmes.

Problems Faced During Project implementation

During the implementation of the project the following problems were faced which delayed the timely completion of the activities:

- The Project took off late - only in late 1998- causing shortage of time for completing the activities during the last two years of the Project.

Lesson Learnt:

- For procurement under this project the Project SPCBs were required to follow the World Bank procedures. However, the SPCBs were following the state government procedures as well. This created some confusion and delay in the procurement process.

Lesson Learnt:

- The Project SPCBs had problems in understanding the procurement procedures of the World Bank causing delay in completing the procurement process.

Lesson Learnt:

- Direct communication of the Bank with the Project SPCBs bypassing MoEF had created confusion in a few cases.

Lesson Learnt:

- The first extension of the project was intimated by Bank to MoEF just two or three days before the expiry of the project duration. This severely handicapped the projection and planning of funds and activities during the extended period. The flow of funds from MoEF to the Project beneficiaries was also constrained due to the taking up of additional activities during the extended period.

Recommendations:

- The engagement of a Project Management Consultant was extremely beneficial for smooth implementation of the Project and for sustaining an intensive communication network between the Project SPCBs, MoEF and the Bank. It is felt that the services of a Project Management consultant

should be engaged for such projects in future also.

- The Project beneficiaries should be involved at the Project design stage itself. This would help to include all the essential activities needed by the beneficiaries and also provide motivation for them during implementation of the Project activities.
- Changes with respect to design or addition or deletion of activities or the schedule of implementation, should be made sparingly and well before the closing of the Project. Such changes should not be contemplated during the last stages of the Project.
- The IPP Project had an Investment component, which was implemented through IDBI & ICICI. This component differs in nature from the other two components namely the Institutional and Technical Assistance Component. The latter components related to strengthening of State Pollution Control Boards whereas the Investment component envisaged direct support to the Industrial enterprises. The Investment component could have been kept as a separate Project in view of the fundamental difference in the nature of this component, and the different nodal/implementing agencies involved.
- Evaluation of the outcome/benefits of the Project should keep in mind not only the status regarding completion of the activities, but also the potential benefits obtained from those activities. The benefits of strengthening the SPCBs may be visible only after a period of about one year of using the facilities developed. The project benefits could be measured in a realistic sense only after this period. This should be kept in mind while evaluating the outcome and the sustainability of the initiatives and activities under the Project.
- Overall, the Project was highly successful in meeting its objectives of strengthening the Project SPCBs with respect to their efficient functioning and also to promote cost effective pollution abatement in the country. However, some of the activities of the project, which are "Reform Making" in nature, could not be continued, as the duration of the Project was not extended beyond 30.11.2002. As an implementing agency, MoEF strongly recommends the continuation of the left-over activities of the IPPP in any other form with the support of the Bank.
- MoEF also recommends to the Bank that keeping in mind the positive outcomes of the IPPP, the Bank should consider providing support to other SPCBs as a continuing activity. Such building-up of the Institutional capacity to combat and prevent pollution will definitely have positive, quantifiable and sustainable /lasting impacts on the environment scenario in developing countries like India. Support from multi-lateral funding agencies is of critical importance for achieving the goal of sustainable development, especially for developing countries pursuing the path of economic development and equity in an era of liberalisation and globalisation. Such support will help developing countries to overcome the financial and technological resource constraints which can severely hamper achievement of the goal of sustainable development.

(b) Cofinanciers:

NA

(c) Other partners (NGOs/private sector):

CREDIT LINE - IBRD 3780-IN: ICICI Comments for the ICR

Introduction

The World Bank Group has been involved in the overall effort to integrate environmental concerns with industrial development. As an economy – in – transition, industries in India are upgrading their

manufacturing facilities to make them economically viable. Thus, cleaner production and pollution prevention were seen as methods to reduce environmental pollution at the manufacturing stage. This set the stage for conceptualizing the Industrial Pollution Prevention Project by the IBRD.

Project Design

The project was conceptualized in late 1993 – early 1994 with focus on promoting adoption of pollution prevention techniques by the Indian industries. The project period earmarked for implementation was 1995-2000. We are of the opinion that this was a good effort to promote adoption of clean manufacturing technologies and pollution prevention techniques in the Indian industries. However, also keeping in mind the then status of the environmental management measures adopted by the industry, pollution control projects should have also been allowed, which attempted investments for new, first of its kind technology applications with significant positive environmental impacts and replication potential as a transition phase. This would have also been in tandem with the Industrial Pollution Control Programme, then under implementation, focusing more on routine end-of-the pipe treatment measures.

- The loan agreement was designed with a multi currency pool. There were no takers for the multi currency pool. Therefore, we had to request for the conversion from multi currency pool to single currency. The request was agreed to and effected by 1996. Thus an initial period was lost during which the industrial activities were at higher level.
- The project did not cover the foreign currency risk for the loans. This resulted in lower utilisation for foreign currency. The risk coverage could have promoted import of state-of-the-art, leading edge technologies having higher impact potential.
- The project did not provide any concessional funding for adopting "pollution prevention" measures.
- Certain graded incentives in terms of lower rate of interest or interest relief could have been instrumental in driving the adoption of cleaner technology initiatives or pollution prevention techniques over standard end-of-the-pipe treatment options.

Project eligibility

The “eligibility” criteria were not clearly defined.

- The category of eligible projects had been confined to "pollution prevention" type of projects.
- However, the investment scenario in 1994, was more in favour of "pollution control" type of projects as these were executed due to the "enforcement" of laws.
- Further, wherever pollution prevention projects were considered, these were subjected to a very narrow interpretation of the term “pollution prevention”.
- Some of the proposed projects were considered ineligible if they were linked to capacity expansion. Hence, even though the introduction of new technology resulted in a lowering of the specific quantum of pollutant, it was considered inadmissible as it was considered as “modernization” and considered to be ineligible for funding.
- The requirements of the World Bank for proposal submission were not defined.
- The format in which the projects are to be submitted for the technical approval was not outlined or defined during the project development stage or during the finalization of the loan agreement or even during the initial years of implementation. It was only in the later part of 2000 that a format was developed which demanded much more inputs from the implementing agency than envisaged originally. However, ICICI Bank continued with the efforts and also strengthened the existing environmental set up.
- The limit for funding a single sub-loan was pegged at US\$ 5 million.

- A flexible limit could have resulted in better loan utilization as the borrowers could have sourced their funding requirements from a single source and could have avoided resorting to borrowing from more than one lender.

Marketing and implementation of the project

- The execution of the program involved intensive marketing and follow up
- To promote the program, initiatives such as information dissemination through the websites, specially designed handouts, participation in numerous seminars and conferences, publication of articles through magazines, newsletters and interactions with environmental service providers, project and management consultants and industry experts were undertaken.
- Moreover, in order to prepare the detailed technical /environmental notes as per the World Bank requirement and the format specified, site /plant visits were undertaken to collate and verify the desired environmental related information.
- These efforts resulted in development of a pipeline of 30 projects amounting to US\$ 116 million, which eventually resulted in a loan utilization of US\$ 39.46 million. The projects covered various industry sectors such as aluminum manufacturing, pulp and paper, chemicals, ceramics, dyes, sugar etc and spread over 7 geographical states.
- All these marketing and implementation activities undertaken involved extensive travel and personnel costs. In order to compensate for costs related to such efforts necessitated due to design, eligibility criteria and specific requirements of the World Bank for technical and procurement approvals, the project should have budgeted a component for reimbursement of these expenses or an incentive based system could have been developed for the implementing agencies.

Documentation

- The project required extensive document preparation at all stages of the application.
- This requires considerable inputs by way of time and effort from the sub-borrowers and ICICI Bank.. As the loans were at market rates, many companies did not have any “incentive” to carry out the documentation.
- ICICI has had to spend considerable time and effort in preparation of detailed environmental notes, preparation of procurement related documents and loan disbursement documentation.
- Other loans for funding similar projects required lesser documentation and reporting requirements.
- Future loans could have lesser burden of documentation to facilitate easier implementation and co-ordination of the loan program.

Training

- The program did not provide for training (institutional strengthening)
- This environmental appraisal training could have resulted in increasing the capacity of the ICICI Bank and other implementing agencies,
- Resulting in improved loan utilization in the early stages of the program.
- Improved risk assessment from environmental point of view.

Conclusion

The current trend within Indian industry is to modernize and upgrade manufacturing facilities. The accent is shifting to energy efficiency and capacity expansion. The adoption of latest technologies also has inbuilt advantages of generating lesser waste during the manufacturing process. Thus, taking these trends into

consideration and lessons learnt from the existing program, the following key points may be considered;

- The loan assistance should have an attractive interest rate compared to the market rate.
- The loans should allow capacity expansions, if such processes also achieve cleaner production and improve energy efficiency.
- The foreign exchange risk component should be appropriately addressed to incentivize import of latest technologies.

Credit Line (IBRD 3779 In): IDBI's Comments for Implementation Completion Report

Background

The IPPP LOC became effective from 03rd March 1995 and came to a close on 31st July 2001. Under the Individual project component IDBI received authorization for 31 sub-projects aggregating USD 83.671 million thereby committing the entire allocated amount of USD 75 million in the first two years. Out of these, 2 sub-projects aggregating USD 12 million were fully utilized, 11 projects aggregating commitments of USD 10.50 million were partly cancelled and 11 sub-projects aggregating commitments of USD 42 million were fully cancelled.

A. Major reasons for cancellations

1.(A) General Economic Recession and Market conditions

The implementation of the line began in mid 90s which was the period when the impact of economic liberalization (started in 1991) was deeply felt by the industry. This led to review of all projects on the basis of their international competitiveness and many projects covered under this line got scrapped/postponed leading to cancellations.

2.(A) Disbursement related problems

In view of the extensive documentation required for approvals and thereafter for disbursements including requirement of detailed technical feasibility studies, most of the projects could not get covered under the line and were financed by IDBI from alternate sources. Further, in the case of CETPs, IBRD insisted on exhaustive documentation in the form of financial statements and effluent treatability studies from each of the member units thereby, leading to substantial delays and their opting for other funding sources.

B. Inability to cover additional projects

1.(B) Difficulty in covering green field projects

During mid term review, IBRD agreed to fund green field projects under the line provided they met the norms set out in WBs 'Pollution Prevention & Abatement Handbook'. This required all new projects to confirm to international norms which were beyond the applicable Indian environmental norms. No green field project in India was interested in incurring expenditure over and above that required for obtaining NOC from the local PCBs.

2.(B) Procurement related issues

In India, the general practice for the projects is to approach the FIs after finalizing the vendors and freezing the project cost to that extent. It, therefore, happens that certain projects follow vendor selection norms which are at variance with the WB's procurement norms and, therefore, got rejected for funding under this line.

3.(B) Coverage of pollution prevention projects of IPPP under IPCP in the initial stage

Since IPPP line came when IPCP was nearing completion, the perception of IDBI's borrowers was that it was an extension of the earlier line which was utilized for pollution control. However, it was later realized that IPPP line was meant for pollution prevention and was applicable to existing projects taking up resource recovery/pollution reduction projects. Hence, the line did not move much for quite sometime.

Further, certain projects from IPPP line were transferred for funding under IPCP in order to complete the utilization of IPCP which was then expiring. This increased the shortfall under IPPP.

4.(B) Lack of incentive / Concessional funding

One of the projects namely; Rashtriya Chemicals and Fertilizers Ltd. which implemented an IWRP project availed only the nominal grant available and did not take the term loan under IPPP because of it being at market rates and non-availability of concessional funding. The low grant namely; Rs 2 lakh for IWRP does not provide any incentive for the same as the project cost runs into several crore rupees.

Suggestion for incentive structure : Since the objective of the line is for the project to continue its activity of pollution reduction, it is suggested that interest rate subsidy say of 5 % p.a for 8 years of the project life be considered so as to reduce operating cost instead of capital subsidy wherein project could close down midway due to some problem after availing benefits.

C. IDBI's efforts for promoting Environmental awareness

1(C) Environmental Training undertaken by IDBI under IPPP

IDBI received authorization for utilizing USD 100,000/- out of USD 500,000 available under the Technical assistance Component of IPPP for funding the 'Staff Development Program in Hazardous Waste Management & Environmental Impact Assessment'. IDBI has organized 10 such programs for 200 officers and one program for senior executives. These programs were undertaken during a period of February to October 1997. A senior officer of IDBI also attended an overseas program of 'Air & Waste Management Association'. IDBI's request of funding certain program's under TA component of IPPP for senior officers in IDBI was not acceded to by WB because of variance in selection procedure for the Training consultants.

2(C) Environmental & Social Policy

IDBI stands committed to the international norms of Environment and in this regard a Environmental and Social Policy (ESP) has been formulated and approved by IDBI Board in principle. A consultant was thereafter appointed and the detailed ESR report has been received from him. The same has been submitted to Asian Development Bank (ADB) two months for their comments before the same is finally adopted by IDBI's Board.

MOEF'S COMMENTS ON IMPLEMENTATION COMPLETION REPORT FOR INDUSTRIAL POLLUTION PREVENTION PROJECT (IPPP)

1. This Ministry is unable to agree with the principal performance ratings given by the Bank in respect of the IPPP. Overall the Project was highly successful in meeting its principal objectives of strengthening the Project SPCBs by providing requisite equipment, facilities and skills to enable them to perform their mandate more effectively. The Project has resulted in immense benefits to the Project SPCBs and the significant achievements have been brought out in detail in the Project Completion Report (PCR) submitted to the Bank. These achievements are also reproduced at pages 27 and 28 of the ICR. The achievements should have been considered in proper perspective while rating the overall outcome of the Project as well as the performance of the borrower.

2. Overall outcome of the Project has been rated as 'unsatisfactory' by the Bank. However it is felt that the Bank has placed undue emphasis on the weak initial design, ambitious initial Project objectives and late initiation of Project activities in awarding this rating. At the end of the Project it is the progress achieved by Project closing and the status of the achievements of principal objectives, which should be given most weightage rather than the unsatisfactory quality at entry. The achievements under the Project are manifold and do not warrant repetition here since these have already been brought out in the PCR. The ICR also contains laudatory references to these achievements, which appear to contradict the overall rating awarded to the Project. The ICR records that the Project has demonstrated significant recent achievements, which are likely to be sustainable. It is stated that the Project SPCBs are financially well placed and are making good use of the refurbished facilities and equipments, improved technical and management skills, and new procedures and tools provided under the Project, which would result in better monitoring of industrial discharges and environmental quality. Further the IT-related investments appear to have been institutionalized into the business process of the SPCBs and there are indications of paradigm shift in the work culture, as per the ICR. The Project was also effective in creating environmental awareness in Andhra Pradesh and Karnataka. The institutional strengthening component has been rated as 'Highly Satisfactory based on impressive gains, which appear to be sustainable and have become evident priorities of Project SPCBs working to redefine their role as regulatory agencies and address long standing issues of credibility and governance. The impressive performance of this component, as brought out in pages 9 to 11 of the ICR, should have been accorded more importance while rating the Project as a whole. While the disbursements of funds under this component may have been a small percentage of the total fund flow of the IPPP, it is important that the funds have gone a long way to build the capacity of the environmental regulatory agencies. It is axiomatic that the strengthened institutional capacity of the regulatory agencies will result in improved pollution prevention and abatement capabilities.

3. The principal performance ratings also appear to be slightly contradictory. When the

sustainability is considered as 'likely' and the institutional development impact is rated 'substantial', the overall outcome rating of 'unsatisfactory' does not appear to be justified. This is even more so considering that at page 6 of the ICR all the three components, namely the institutional strengthening component, investment component and technical assistance component are rated as 'satisfactory'. When the latest rating of all three components of the Project is satisfactory, the overall rating of 'unsatisfactory' does not appear to be in place.

4. Coming to specifics, MoEF records its objection to some baseless statements and comments in the ICR. At page 4 the ICR states that both the Policy Statements for Abatement of Pollution and the Environmental Action Programme of the MoEF remained more or less static documents until recently. Such a sweeping remark is not warranted since no justification is given for the same. Further such remarks should not form part of a document, which seeks to evaluate a particular Project rather than the environmental policy framework of the country.

5. The Ministry does not agree that the quality at entry is 'highly unsatisfactory' (para 3.5 of the ICR). A high degree of planning and consultation has gone into the design and planning of the Project.

6. The Ministry objects to the statement (para 3.5 at page 7) that the CPCB was sidelined. MoEF does not agree with the use of word 'sidelined', which creates the impression that CPCB was deliberately not associated with the Project and that it was willfully ignored. CPCB was involved very much in the implementation of the Project. In fact CPCB played an important role in the reform making activity relating to preparation and finalisation of the Laboratory Guidance Manual (LGM). CPCB was also represented by the Member Secretary and Chairman in the respective selection committees for selecting participants for domestic and overseas training.

7. The ICR mentions (page 8) two QAGs review in 1997 and 1999, which were critical of the Project. However these do not appear to have been communicated to MoEF.

8. The ICR records at several places that there was little progress during the early years of the Project. While it is generally recognized that the Project got off to a late start, this was compensated by strong performance by all the agencies involved in the later period of the Project duration. The reasons and the factors behind the late start have already been dealt with in pages 6 and 7 of the PCR furnished by MoEF.

9. The ICR states in para 4.1 (i) that the training programme took place shortly before Project closing. It is true that the training was delayed. However in retrospect the full benefits of the training could have been realized only after procurement and installation of equipment and refurbishment/up-gradation of laboratory and IT facilities was in place.

10. The ICR also states in para 4.1(i) that the procurement of equipment was very slow. However procurement took off late since MoEF wanted to go strictly by need assessment and not by 'desire' of SPCBs (as stated elsewhere in the ICR). The priority was to complete procurement keeping in mind the Bank's procurement guidelines and the need for complete transparency. Therefore the MoEF does not consider the situation as disappointing, keeping in view the

substantial achievement of objectives under the institutional strengthening component.

11. The statement in the ICR (para 4.1 (i)) that the MoEF was already committed to a training programme with fewer restrictions, is unsubstantiated. Further, counterpart funding was definitely not a constraint in implementation of the foreign training component.

12. The observation in the ICR at page 11 that CPCB complained that there is little data on pollution load is not warranted. We are not aware of the ICR Mission holding any discussions with the Member Secretary or the Chairman of CPCB, to arrive at this view.

13. The MoEF objects to the statement at page 11 of the ICR that the SPCBs remain hobbled by unresponsive state or central government procedures. SPCBs are agencies of the respective State Governments and have to follow the necessary procedures, which have been designed keeping in mind the need for transparency and accountability in decision making. These comments also apply to the remarks regarding complicated procurement procedures in para 5.2 of the ICR.

14. MoEF also objects to the remarks regarding turn over of top management in SPCBs and Project Management at MoEF in para 5.2 of the ICR. Deployment of top management/officials is the prerogative of Government. In any case, changes in the Project Management at MoEF were not frequent.

15. The statement (para 5.2) that the Project had no central management unit for several years until NPC was contracted is also not justified. The Project was being managed in the MoEF and NPC was contracted only as a Project Management Consultant. The statement in para 5.3, that lack of monitoring of Project SPCBs by MoEF was also a problem, is also not justified since the Project was managed quite effectively in MoEF.

16. The statement (para 5.2) that information exchange among implementing agencies should have been encouraged is unwarranted. The similar statement (at para 5.3) that information exchange among SPCBs was reportedly not encouraged by the borrowers until the last two years is also sweeping. The SPCBs are bodies under the State Governments and have considerable functional autonomy and independence in their day-to-day working. The review meetings organized at MoEF and NPC provided a forum for interaction between SPCBs and the ICR also recognizes this fact at page 10 where it is recorded that 'another outcome is increased interaction and dialogue between SPCBs'. No hurdles or restrictions were placed on interactions between SPCBs at any stage by MoEF and infact SPCBs hold regular meetings with each other under the forum of MoEF/CPCB and otherwise. The statement that MoEF resisted organization of Road Shows also appears not based on facts.

17. The ICR contains references (in para 5.2) to State Government's restrictions on hiring, vehicle purchase and fuel allocation. However these restrictions have to be viewed in the context of the drive towards austerity, downsizing and cost cutting.

18. The ICR (para 5.3) has commented adversely regarding delayed procurement. The comments of MoEF given in para 10 above apply equally here.

19. The ICR comments in para 5.3 regarding the location of the IPPP in the Policy & Law unit of MoEF are not acceptable since this is an internal decision of the Ministry.

20. The MoEF strongly objects to the comments regarding Government's implementation performance and implementing agency's performance in paras 7.5 and 7.6 of the ICR. The highly satisfactory outcome of the institutional strengthening component bears testimony to the management and coordination skills/competence displayed by MoEF during Project implementation. Though the physical implementation and execution got off to a start from 1999, the initial years were not a total dead loss since the process of technical studies, consultations and finalisation of needs assessment/proposals took place during the earlier part of the Project.

21. The MoEF does not agree that counterpart funding was an issue in the last year of the Project as stated in para 7.6 of the ICR. As stated in the PCR (page 132) the flow of funds from MoEF to the Project beneficiaries was constrained by the fact that the decision regarding extension of the Project was intimated to MoEF just two or three days before the expiry of the original Project duration, as also the taking up of additional activities during the extended period.

22. The MoEF does not agree with the rating of 'unsatisfactory' awarded for overall borrower's performance in para 7.7 of the ICR, keeping in view the above comments.

23. Corrections in Page 25 of ICR : a total of Rs. 77.12 crores were utilized under the Project instead Rs. 76.62 crores. This change is due to increase in amount towards equipment procured for Project SPCBs (under institutional component) from Rs 1792.194 to Rs. 1826.82 lakhs and towards technical assistance component from Rs. 973.59 to Rs. 989.51 lakhs

C. Viswanath
Joint Secretary

**FAX Message
(001-202-522-7147)**

FSD/ICCS/WB/IPPP/ICR/

June 27, 2003

Mr. Bekir A. Onursal
Senior Environmental Specialist
The World bank
1818H Street N. W.,
Washington, D.C. 20433
U.S.A.

Dear sir,

**Industrial Pollution Prevention Project (IPPP)- IBRD 3779 IN &
IDA 2645 IN : IDBI's Comment's on Implementation Completion Report (ICR)**

Please refer to your letter of June 25, 2003 seeking our comments on the ICR of IPPP. Our Comments on the report are as under :

1. Performance of IDBI prior to IPPP line

IDBI financed Pollution Prevention projects before the IPPP line came up as may be seen from out of 8 projects covered under the Demonstration Project Component of IPCP the Neem Pesticide project (D-009) is a purely pollution prevention project whereas out of the remaining seven all except D-007 are resource recovery projects falling within the ambit of Pollution Prevention projects.

2. Performance of IDBI between 1995 to 1998 under IPPP line

IDBI had from 1995 to 1998 i.e. prior to taking over of IPPP by the new task team, appraised & obtained authorization for 4 Pollution Prevention projects and received authorizations for 31 projects amounting to USD 83 million as against the allocated USD 75 million under the Individual Investment component of IPPP; however, the drawls for most of these authorized projects could not be effected due to reasons given in '3' below. The two CETPs at Sachin & Baroda were under appraisal prior to 1998 and the RCF IWRP project was covered under IPPP largely due to IDBI's efforts. Out of the 12 sub-projects which finally availed assistance under IBRD 3779 IN 4 authorized sub-projects viz. G-005, 011, 020, 028 are Pollution prevention projects comprising projects to convert Press mud into Organic Manure (G-005), recover ammonia & urea (G-011) & recycle plastics (G-020) which are resource recovery project's and a Neem Pesticide project which is a purely before the pipe (Pollution Prevention) project.

3. Performance of IDBI after 1998

A. Constraints in drawal of Funds for Authorized projects

IDBI was not able to draw funds for most authorized projects due to :-

- (a) Procurement related queries raised after lodging of drawal application
- (b) Extensive Documentation requirements for seeking reimbursements
- (c) Queries & documentation requirement's for Technical aspects.
- (d) Abandoning of projects by proponents due to economic slow down.
- (e) Migration of authorized projects to alternate sources of funding.

B. No fresh Authorizations

This was due to :

- (a) Exclusion of Green field projects from the scope of IPPP consequent to insistence of new task team on micromanagement of technical facets for compliance with International norms instead of national norms for which the market was not ready.
- (b) Stringent requirements for adherence with procurement related norms and procurement related queries for eg. IWRP of GMR Vasvai referred by IDBI to WB could not covered under IPPP primarily due to procurement issues.
- (c) Problems beyond IDBI's control viz. economic slow down, opening up of economy to global competition, availability of alternate funds from other sources which had less stringent requirements as compared to IPPP.

3. Strengthening of IDBI's Environmental Capabilities

(a) **Development of Environmental Policy** : IDBI is in the process of final Board approval for its Environment & Social report which inter-alia has provisions for :-

- (i) Appointment of external consultants to vet all environment & Social Reports of projects for conformity with the policy of IDBI.
- (ii) Training of officers in environment & social issues in the next three years.
- (iii) Special Module for assessment of risks of environmental & social aspects by IDBI's Credit Rating & Monitoring Group.

(b) **Recruitment of Qualified Environment Staff** : Even though IDBI could not recruit qualified environment staff due to the public Sector constraints IDBI provided monetary incentives to its serving officers to acquire qualification in the Environment Sector. The Head of Project Implementation Unit for IPPP in IDBI acquired a Masters Degree in Ecology & Environment.

(c) **Training of Officers under IPPP** : IDBI has trained 175 officers on environmental aspects under the Technical Assistance Component of IPPP.

(d) **Alternate sources** : IDBI used its in-house environmental expertise to

successfully utilize the entire line of credit for USD 150 million and also organised seminar's for polluting industrial sectors under the Industrial Energy Efficiency Project of Asian Development Bank which has a similar criteria as that of IPPP. IDBI is also a financial intermediary for the ODS Phase Out Program under the Montreal Protocol to which WB is a major Contributor.

4. Inconsistencies in the Report

(a) Number of Sub-projects : IDBI had submitted 31 sub-projects to WB and obtained cumulative authorization for USD 83 million for individual industrial investments in the first two years of IPPP as mentioned on Page 33 as against 24 applications to WB amounting to USD 67 million as mentioned on Page 15 .

(b) Quality of subprojects : Off the two biopesticide sub-projects one neem pesticide project which was funded by IDBI is exporting 98 % of its products as compared to the other bio pesticide projects at Tuticorin which is not doing well.

(c) Marketing : IDBI had been active in marketing IPPP from its inception stage and had prior to taking over of IPPP by the new task team successfully marketed, appraised & obtained authorization for committing the entire Individual project component of USD 75 million years before the closing date of IPPP as explained in '2' above. However, after a new team took over and implemented different norms as earlier mentioned; IDBI was not sure of having projects approved by IBRD and hence financed proposals from its other sources.

With Best Regards.

Yours sincerely

(S. Muhnot)

FINAL BORROWER COMMENTS - ICICI

"GIRISH MAHAJAN
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To: <Bonursal@Worldbank.Org>
cc: <Pmodak@Vsnl.Com>, <Harsh@Worldbank.Org>,
<Fswartzendruber@Worldbank.Org>
Subject: RE: IPPP: ICR -- ICICI's Review Comments -- URGENT

06/27/2003 11:12 AM

Dear Mr. Bekir,

We refer to your appended mail and provide our response on the ICR as under:

1. In abbreviations and acronyms and page 1 under "Other partners"

ICICI - ICICI Bank Limited (formerly Industrial Credit and Investment Corporation of India Limited)

2. The "lack of clearly defined eligibility criteria regarding the projects to be accepted by the Bank at the time of loan agreement" has not been highlighted - the criteria thus were determined post 1999 - this could have led to underutilisation of the loan amount

3. Page 8 Para 2 - line 3 "Yet there were no linkages -----several years of IPPP)

We would appreciate if it could be added therein, that ICICI Bank initiated this linkage from 1998 and maintained throughout till the closure of the project by meeting various SPCB officials.

4. Page 12 Para 1 line 11 " The adoption ----- country"

The policy is under consideration in view of the change in the nature of business post reverse merger of ICICI Limited with ICICI Bank Limited.

5. The technical approvals of USD 47.2 million (infact USD 52.2 million if Jaysynth Dyestuff added) should be mentioned under "Investment component" on page 15.

6. Page 18 Item 5.4 line 12 " In fact, ----- for investments"

This is not correct statement. None of the projects rejected by the Bank under IPPP were submitted to JBIC for approvals and therefore this sentence should be deleted.

7. Page 19 last para Line 4 " ICICI has also ----- indicating that ---"

The unit is a part of the "Technology Group" and "NOT reporting to Corporate Risk Management Department as mentioned therein.

8. Page 23 para 1 A line may be added highlighting innovative marketing approach adopted by ICICI Bank for identifying projects by using network of environmental technology vendors and service providers.

9. We are of the opinion that the overall borrower performance under 7.7 on page 23 should be rated as "marginally satisfactory" considering "highly satisfactory" performance of SPCBs, MOEF and ICICI Bank post 1998 and especially during the last two years of the project.

With best regards,

Girish Mahajan
Chief Manager
ICICI Bank Limited
Mumbai

10. Additional Information

List of Project-Supported Websites:

Andhra Pradesh Pollution Control Board: <http://www.apspcb.org/>

Karnataka State Pollution Control Board: <http://kspcb.kar.nic.in/>

Rajasthan State Pollution Control Board: <http://www.rpcb.gov.in/>

Madhya Pradesh Pollution Control Board: <http://www.mppcb.org/>

Gujarat Pollution Control Board: <http://gpcb.gov.in/>

Waste Minimisation Circles: <http://wmc.nic.in/>

End notes to ICR text:

1. For information on the pollution hot-spots in India, visit <http://164.100.32.5/faq.htm> (CPCB website)
2. For a comprehensive information on all acts, rules and amendments, please visit <http://envfor.nic.in/legis/legis.html>
3. Preparation of draft national cleaner production policy was supported by the Asian Development Bank at the National Productivity Council (NPC) in 2001.
4. CREP was established in 2003 after conducting 17 industry-sector specific interactions involving SPCBs (visit <http://www.cleantechindia.com/eicnew/News/17cat.htm> for details). The Charter is a commitment for partnership between regulatory agencies and corporate industries. The Charter is not necessarily limited to compliance of end-of-the-pipe effluent and emission standards, but towards establishment of environmental management systems.
5. Out of the 12 sub-projects under the IBRD loan to IDBI, one sub-project at Rain Calcining corresponded to 45% of the total disbursements made while the remaining 11 sub-projects aggregated to 55% of the total disbursement. One application in the ICICI line of US\$ 3.1 could not be claimed solely due to lack of time as the approval was obtained at a fairly late stage.
6. At almost all the ICICI sub-loans that included reduction of air emission, installation of continuous stack emission monitoring and continuous recording instruments was included in the scope of the project. This was not a requirement from SPCBs. This step not only provided a quantitative basis to estimate the pollution prevented, but it also provided an opportunity to optimize the process operations on a real time basis. Shree Cements at Ajmer, Rajasthan is now contemplating to include the data transmitted by the on-line particulate emission monitor in the Program Logic Controller (PLC) of its kiln operations.
7. At Orchid Chemicals and Pharmaceuticals Ltd. near Chennai, Tamil Nadu, the task team found a possibility of dioxin release from company's incinerator. Although incinerator was not part of financing of the project, a loan condition was set to ensure that the company segregated the chloride-bearing streams to the incinerator and raised the incineration temperature. These steps ensured that there will not be any possible release of dioxin to the neighborhood community and eliminate the risks at source.
8. Examples of industries where such sub-projects were carried out include MALCO and Sagar

Cements that were financed through ICICI.

9. Examples of such sub-projects include Orient Ceramics, Sagar Cement, Bannari Sugar, Balrampur Chini, Shree Cements, Rain Calcining, Nirmal Fibers, EID Parry (organic fertilizer).

10. Examples of such subprojects are MALCO, Rain Calcining, Nirmal Fibers, Orient Ceramics and Sagar Cements.

11. Examples of these subprojects include manufacture of neem pesticides and organic fertilizers by EID Parry and manufacture of biopesticides by Tuticorin Alkali Chemicals and Fertilizer Ltd., both in Tamil Nadu.

12. At Nirmal Fibers, Uttar Pradesh, the company used technology from Korea for the initial investment but today for its expansion, the Korean equipment was designed and fabricated locally at costs fractional to those originally paid.

13. Out of the four greenfield projects, three greenfield projects are financially doing well. The plastic waste (PET bottle) reprocessing plant is already implementing an expansion. The neem based pesticide unit at EID Parry, Cuddalore is exporting 98% of its products and is thinking of undertaking neem plantation on wastelands as a step of upstream integration. The organic fertilizer unit of the EID Parry Group at Ennore, Tamil Nadu is reasonably doing well. The bio pesticide unit at Tuticorin is however not doing well mainly due to high price of the bio pesticide and resultant low demand from the domestic market.

14. This was despite the feasibility studies conducted during the preparation of IPPP at the sewage treatment plants of Thane-Belapur, Airoli, Pune and Vadodara. The cost of IWRP at Rashtriya Chemicals and Fertilizers (RCF) was Rs. 390 million and the co-financing was done as IDA grant to the tune of only Rs. 5 million as this was a cap considered in the CETP financing scheme. RCF declined to borrow loan from IDBI that was made available through the Project as IBRD component. Discussions with RCF indicated that RCF would have implemented the recycling project without any support from IPPP.

Annex 1. Key Performance Indicators/Log Frame Matrix

Outcome / Impact Indicators:

Indicator/Matrix	Projected in last PSR ¹	Actual/Latest Estimate
DO1: Implementation of training program by Dec. 31, 1999 (20%)	not given	70% of all training; 100% for training in India
Procurement of equipment completed by Dec. 31, 1999 (80%)	not given	
DO2: Commitments of both lines of credit by Dec. 31, 1999 (60%)	not given	85-90% of restructured credit lines
Complete disbursements by closing date	not given	
DO3: GIS Design by March, 2000 (100%)	not given	100%

Note: No Logframe was prepared for this operation.

Output Indicators:

Indicator/Matrix	Projected in last PSR ¹	Actual/Latest Estimate
Training for senior managers	100%	76 managers trained, total 380 person-days
Laboratory and other technical training	97%	428 staff trained, total 2,875 person-days
Refurbishing of laboratory facilities	80-92%	29 laboratory facilities at 5 SPCBs completed
Lab and field monitoring equipment	96%	Equipment procurement for 34 central and regional/zonal laboratories at 5 Project SPCBs completed
Environmental information management systems	85%	6 SPCBs (incl. Gujarat) fully completed as designed (with cost savings due to dropping IT prices, technological improvements and redesign); Significant computerization (hardware, software, networking) of all SPCBs (e.g. 58 computers in RPCB where there had been 3 pre-pentium PCs, 45 computers in MPPCB where there were 9 earlier); Computerization of key industry and ambient monitoring data (e.g. for 11,000 industries in Gujarat) Georeferencing of industries and integration with MIS in Gujarat and Andhra Pradesh; 31 GIS thematic layers created in 18 districts of Andhra Pradesh; 60,000 additional industries that had escaped regulation identified in Karnataka; Smartcard system in Karnataka SPCB reducing staff tardiness; Hundreds of employees trained in every project SPCB on IT (e.g. 204 staff in Karnataka); Websites developed or strengthened in all SPCBs with significant public access to data, forms, and information; MIS developed or strengthened in Rajasthan, Andhra Pradesh, Madhya Pradesh, Karnataka and Gujarat
Environmental awareness	90-95%	5 mobile exhibits completed, and an environmental video completed
Waste minimization circles	70 WMCs formed, 350 members from small-scale industry	115 WMCs formed
Disbursement of credit lines	IDBI = 91% after restructuring; ICICI = 53%	IDBI = 91% after restructuring; ICICI = 79%
Lab guidance manual and resource optimization study	In progress	To be transferred to EMCB project for completion and dissemination

¹ End of project

Annex 2. Project Costs and Financing

Project Cost by Component (in US\$ million equivalent)

Component	Appraisal Estimate US\$ million	Actual/Latest Estimate US\$ million	Percentage of Appraisal
Institutional: Training and consulting services	1.10	3.06	278
Institutional: Equipment	12.50	10.20	82
Institutional: Facilities	3.80	1.02	27
Institutional: Operation (Note: IDA estimate and costs were 0.00)	3.00		
Investment: CETPs & IWRPs	50.00	14.12	28
Investment: Individual subprojects*	250.00	1016.93	407
Technical Assistance: Training and consulting services	1.50	1.29	86
Technical Assistance: Equipment	3.00	0.00	0
Total Baseline Cost	324.90	1046.62	
Physical Contingencies	1.80		
Price Contingencies	3.30		
Total Project Costs	330.00	1046.62	
Total Financing Required	330.00	1046.62	

* Note: SAR estimate of \$250 M total project costs included an IBRD financed portion of \$125 M; actual/latest estimates are \$1016.93 M total project costs and \$65.80 M IBRD financed portion. However, the total project costs are not necessarily specific to environmental investments, and may have included sub-borrowers' additional financing for expansion and modernization; **thus comparison with Bank-financed pollution prevention may be very misleading.** This was also an important point in the ICR of the predecessor IPCP operation, which was found to have seriously overstated the magnitude of actual investments by including all sub-project costs rather than the pollution-related investments alone.

Project Costs by Procurement Arrangements (Appraisal Estimate) (US\$ million equivalent)

Expenditure Category	Procurement Method ¹			N.B.F.	Total Cost
	ICB	NCB	Other ²		
1. Works	0.00 (0.00)	1.00 (1.00)	9.03 (2.00)	0.00 (0.00)	10.03 (3.00)
2. Goods	16.50 (14.30)	2.40 (2.40)	2.00 (0.80)	0.00 (0.00)	20.90 (17.50)
3. Services	0.90 (0.90)	0.00 (0.00)	7.20 (3.60)	0.00 (0.00)	8.10 (4.50)
IDBI Investment	36.42 (29.27)	0.00 (0.00)	152.83 (63.73)	0.00 (0.00)	189.25 (93.00)
ICICI Investment	19.58 (15.73)	0.00 (0.00)	82.17 (34.27)	0.00 (0.00)	101.75 (50.00)
Total	73.40 (60.20)	3.40 (3.40)	253.23 (104.40)	0.00 (0.00)	330.03 (168.00)

Project Costs by Procurement Arrangements (Actual/Latest Estimate) (US\$ million equivalent)

Expenditure Category	Procurement Method ¹			N.B.F.	Total Cost
	ICB	NCB	Other ²		
1. Works	0.00 (0.00)	0.00 (0.00)	1.97 (1.77)	0.00 (0.00)	1.97 (1.77)
2. Goods	4.56 (4.09)	4.89 (3.91)	0.75 (0.60)	0.00 (0.00)	10.20 (8.60)
3. Services	0.53 (0.45)	0.09 (0.09)	3.73 (3.73)	0.00 (0.00)	4.35 (4.27)
IDBI Investment	0.00 (0.00)	0.00 (0.00)	890.03 (26.33)	0.00 (0.00)	890.03 (26.33)
ICICI Investment	0.00 (0.00)	0.00 (0.00)	140.07 (39.47)	0.00 (0.00)	140.07 (39.47)
Total	5.09 (4.54)	4.98 (4.00)	1036.55 (71.90)	0.00 (0.00)	1046.62 (80.44)

Note: The Bank financed portion includes both the IBRD loan and IDA credit amounts.

The Bank disbursed 48% of the appraisal estimate for the entire project (out of the appraisal estimate of \$ 168 M, \$ 80.44 M were disbursed, \$ 65.81 M of which were cancelled in project restructuring, and \$ 21.77 M were undisbursed at project closing). Also, as can be seen from the above two tables, procurement under ICB was only about 7% of appraisal estimates.

^{1/} Figures in parenthesis are the amounts to be financed by the IDA Credit. All costs include contingencies.

^{2/} Includes civil works and goods to be procured through national shopping, consulting services, services of contracted staff of the project management office, training, technical assistance services, and incremental operating costs related to (i) managing the project, and (ii) re-lending project funds to local government units.

Annex 3. Economic Costs and Benefits

Sub-Projects Financed through ICICI

Project title, Project description, loan application date and loan approval date taken from ICICI's response to the ICR questionnaire and from the correspondence between World Bank and ICICI

Sr. No	Code	Industry	Project Title	Location & State	Project Description	Cost of Project \$ (M)	Loan Amt. \$ (M)	Loan application date	Loan Approval date
1	G-ICICI-001	Jaysinth Dyechem	Solvent Extraction/recovery & expansion of Effluent Treatment Plant	Raigad, Maharashtra	The project involves partial financing of a comprehensive solvent recovery unit for recycling of nitrobenzene, methanol, toluene and ortho dichloro benzene, and expansion of the existing Effluent Treatment Plant.	2.58* Site visit made. Exchange rate on 11/11/96 was 1\$ = 35.9 INR	1.90	17-10-96	11-11-96
2	G-ICICI-002	Varinder Agro	Caustic soda recovery & cogeneration of power	Sanghera, Sangur, Punjab	The project involves financing partially a caustic soda recovery from the black liquor and co-generation plant of 5 MW.	15.02 Exchange rate on 14/2/97 was 1\$ = 35.89 INR	1.28	16-01-97	14-02-97
3	G-ICICI-003	Tuticorin Alkali Chemicals & Fertilisers *	Expansions & Biopesticides Project	Anna Salai, Teynamput, Tamilnadu	The project involves partial financing of incremental costs of a fermentation reactor for the manufacture of a biopesticide based on Bacillus Thuringiensis.	1.22 Exchange rate on 5/6/97 was 1\$ = 35.75 INR	0.35	06-05-97	05-06-97
4	G-ICICI-009	Orchid Chemicals & pharmaceuticals Ltd*	Wastewater treatment & recovery of water for reuse	Alatur, Kancheepuram, Tamilnadu	The project involves financing recovery of solvents, acetic acid and ammonium chloride from wastewater streams.	93.42 Exchange rate on 19/4/02 was 1\$ = 48.92 INR	5.00	16-11-00	19-04-02
5	G-ICICI-010	Madras Aluminium Company Ltd*	Smelter modernisation project	Mettur Dam, Salem, Tamilnadu	The project involves modernisation of the smelter Section of the Aluminium plant to eliminate fugitive gas emissions, to reduce noise levels in the work place, to improve energy consumption and productivity.	15.05 Exchange rate on 31/7/01 was 1\$ = 47.18 INR	5.00	10-07-01	31-07-01
6	G-ICICI-013	Shree Cements Ltd*	Utilization of Pet Coke as an alternative fuel	Bangur Nagar, Beawar, Rajasthan	The project involves utilising Pet Coke (waste material in petrochemical plants) as a substitute to conventional fuel (coal) to reduce operating costs.	7.41 Exchange rate on 3/9/01 was 1\$ = 47.22 INR	5.00	03-01-01	03-09-01
7	G-ICICI-017	Jindal Steel & Power Ltd	Coal Washery	Patrapati, Raigarh, Chattisgarh	The project involves setting up a coal washery with heavy media cyclones, of 400 tonnes/hour capacity. This coal washery is to cater to the handling of low grade coal. As per the law of conservation of coal in India, all the three seams viz. 7th, 8th and 9th shall have to be mined, alone 9th seam cannot be mined. The 7th and the 8th seam coal has a very high ash content (above 45%) and has poor washability characteristics due to presence of large quantity of near gravity material.	7.48 Exchange rate on 23/11/01 was 1\$ = 48.1 INR	5.00	18-02-01	23-11-01
8	G-ICICI-018	Jindal Steel & Power Ltd	Captive Power Plant	Patrapati, Raigarh, Chattisgarh	The project involves setting up an additional 55 MW captive power plant utilising the coal fines from the coal washery.	46.78 Exchange rate on 26/3/02 was 1\$ = 48.1 INR	5.00	12-03-01	26-03-02
9	G-ICICI-022	Orient Ceramics & Industries Ltd (OCIL)*	Fuel switchover/Roller dryer - Roller Hearth Kiln	Sikandrabad, Buluandshahar, Uttar Pradesh	The project involves setting up a co-generation based power plant using natural gas based engine by switching over from fossil fuel. The flue gas from the engine is utilized in spray drying process, intended to convert the ceramic slurry in the form of dust granules.	8.23 Exchange rate on 5/6/97 was 1\$ = 47.16 INR	2.33	07-07-01	19-07-01
10	G-ICICI-024	Sagar Cements Ltd	Process Upgradation & resource conservation	Mattam Pally, Nalagonda, Andhra Pradesh	Existing K-Line Preheater and C-Line Preheater was modified by installing latest generation 6-Stage Preheater with precalciner.	1.27 Exchange rate on 26/3/02 was 1\$ = 48.78 INR rounded off to 1.27	1.27	21-12-01	26-03-02

11	G-ICICI-025	Balrampur Chini Mills Ltd (BCML)	Bagasse based co-generation power Plant	Balrampur, Uttar Pradesh	The project involves setting up a 16 MW bagasse based captive power plant to utilise the bagasse generated from the sugar-crushing unit.	10.15 Exchange rate on 5/4/01 was 1\$ = 48.86 INR	5.00	07-02-02	05-04-02
12	G-ICICI-031	Bannari Amman Sugars Ltd*	Bagasse based co-generation power Plant	Alathukombai, Tamil Nadu	The project involves setting up a 20 MW bagasse based captive power plant to utilise the bagasse generated from the sugar-crushing unit. The excess power is sold to state electricity board.	12.02 Exchange rate on 17/7/02 was 1\$ = 48.81 INR Source for exchange rates: http://www.x-rates.com/cgi-bin/hlookup.cgi	1.87	11-07-02	17-07-02

Summary of Environmental and Economic Benefits of sub-projects financed through ICICI
Project benefits taken from World Bank's Office Memorandum and responses to the ICR questionnaires by ICICI.

S.No	Code	Industry	Project Title	Project benefits	Project viability Payback / IRR
				Environmental	Economic
1	G-ICICI-001	Jaysinth Dyechem	Solvent Extraction/recovery and expansion of ETP	The project has recovered solvents which are reused in the process. Solvent recovery reduced the pollution load to the Effluent Treatment Plant and thereby led to a cost-effective pollution abatement.	Neither quantified nor described. Not calculated.
2	G-ICICI-002	Varinder Agro	Caustic soda recovery and cogeneration of power	The project has achieved 85% recovery of caustic soda from the black liquor, and helped the company to comply with the regulatory norms.	Neither quantified nor described. Not calculated.
3	G-ICICI-003	Tuticorin Alkali Chemicals & Fertilisers	Expansions of Biopesticides Project	The project consists of manufacture of 90 KL of bio-pesticides on an annual basis, using the technology developed by Anna University, Chennai. This technology is based on bacillus thuringiensis (BT) and the biopesticide developed can effectively control pests of cabbage family and cotton. The biopesticide has several environmental benefits such as no formation of toxic residues (and hence preservation of soil productivity), less or no damage to other species and long term effectiveness (less dosage or application). The company can also produce another biopesticide that is developed from bacillus sphaericus (BS). This biopesticide is effective for vector control, especially malaria.	Neither quantified nor described. Not calculated.
4	G-ICICI-009	Orchid Chemicals & pharmaceuticals Ltd	Wastewater treatment and recovery of water for reuse	The solvent and chemical recovery projects have assisted in reducing the pollution load of polluting streams. Earlier, these solvents and chemicals were incinerated as waste. The cost of waste treatment has therefore been reduced. In the process of recovery, water of high quality is produced that is reused in the process.	Solvents worth \$1.02 million/year are saved less than 4 years
5	G-ICICI-010	Madras Aluminium Company Ltd (MALCO)	Smelter modernisation project	The project has improved the operational efficiencies, leading to augmentation of outputs. reduced energy, carbon and aluminium fluoride consumption. The reduced fugitive emissions of fluorides and noise have led to improvement in the working environment.	Aluminium fluoride worth \$0.32 million, Carbon worth \$0.33 million and Energy worth \$1.17 million are saved per annum. Payback period = 3.26 years.
6	G-ICICI-013	Shree Cements Ltd	Utilization of Pet Coke as an alternative fuel	The project utilises pet coke (waste generated from Reliance industries refinery operations in Jamnagar, Gujarat) as a low cost alternative to imported coal, pet coke also has lower ash content which allows increasing the fly ash (waste from a thermal power plant from Kota, Rajasthan) content in the Pozzolanic Portland Cement (PCC). The consistent quality of the pet coke as compared to coal, allows steadier flame temperature in the rotary kiln and improves the quality of the clinker. Use of pet coke has allowed using low grade limestone which was initially wasted. The sulphur content of the pet coke has helped in reducing the requirements of gypsum to the kiln. Besides, as wastes from other operations are utilized, the overburden to the environment is reduced. In 2001-2002, the company utilized pet coke of 1,83,498 Metric tonnes.	Quality of the cement has improved. The total carbonate content has been reduced from 76% to 75.5%, to keep 42.55% lime. This has resulted in conservation of high grade limestone. Reduction of 61 Kg Carbon dioxide per ton of cement has been achieved. 17800 MT of Gypsum was saved during the year 2001-02. Around 4.5 kWh/ of electrical energy was saved per tonne of PCC produced. The total benefit due to the project was \$6.95 million. Payback period = 1.05 years, IRR = 91.60%.
7	G-ICICI-017	Jindal Steel & Power ltd	Coal Washery	The project has helped in utilising low grade coal which otherwise would have been wasted, owing to two stage washing process the fines and reject materials are utilised for power generation. The process is energy efficient. Use of washery rejects has enabled reduction of 41 T/hr consumption of fossil fuels.	Recovery of coal fines from the coal dust and effluents has resulted in savings of \$1.67 million per annum and \$0.77 million are saved, on account of waste disposal per annum. Not calculated.
8	G-ICICI-018	Jindal Steel & Power ltd	Captive Power Plant	The project has reduced the fresh coal requirements with washery rejects. The environmental advantages are thereby substantial in view of reduced coal extraction. In addition heat	Raw material worth \$5.78 million is saved annually. Payback period = 4 years, IRR = 29.78%.

				emissions from the plant are reduced because of the waste heat recovery.	
9	G-ICICI-022	Orient Ceramics & Industries Ltd (OCIL)	Fuel switchover/Roller dryer - Roller Hearth Kiln	The project has reduced the consumption of fossil fuels to the tune of 69.7% as the waste heat (flue gas) is utilised in spray dryer. Sulphur dioxide and Suspended Particulate Matter (SPM) are reduced by 51.2 % and 41.4% respectively. The gas fueled electricity generation and cogeneration equipment were installed and successfully commissioned on 07.March, 2002. The system was running steadily till June 2002. However, in July, the Gas Authority of India Ltd (GAIL) suspended supply of gas due to orders of the Hon. Supreme Court of India. At present, the plant is being run on furnace oil.	The project has led to reduced processing time, as the new roller hearth takes 65 min as compared to the 108 min in the traditional tunnel kilns. The new energy saving kiln has resulted in stable operations, improved product quality and enhanced the image of the company's products. Fuel worth \$0.22 million and electricity worth \$0.083 million is saved. Payback period less than 3 years, IRR = 35%.
10	G-ICICI-024	Sagar Cements Ltd	Process Upgradation and resource conservation	Existing K-Line Preheater and C-Line Preheater was modified by installing latest generation 6-Stage Preheater with precalciner. About \$0.05 million saved per annum as environmental benefits. The work environment in the Coal Mill and Pyro sections improved due to elimination of fugitive emissions.	The benefits include reduced power consumption, reduced fuel consumption, increased production capacity and improved operation efficiency. Total savings are \$0.51 million per annum. Payback period = 3.17 years.
11	G-ICICI-025	Balarampur Chini Mills Ltd (BCML)	Baggasse based co-generation power Plant	The project utilises baggasse for energy generation, thus displacing the fossil fuels. About 145920 tones of coal is saved per year, and generation of 50688 tons of ash and its disposal is avoided per annum.	The excess power is being fed to the grid. Payback period = 4.3 years, IRR = 21.81%.
12	G-ICICI-031	Bannari Amman Sugars Ltd	Baggasse based co-generation power Plant	The project utilises bagasse for energy generation thus substitution use of coal. About 25956 MT per annum of coal is saved. Around 1.13 TPH of Sulphur dioxide emission is reduced. In addition the problem of disposal of bagasse is eliminated.	The excess of power is sold to the grid. At an average 4.5 million units of electricity are exported each month. Payback period = 4 years, IRR = 19.90%.

Sub-Projects Financed through IDBI¹

Project title, Project description, loan application date and loan approval date taken from IDBI's response to the ICR questionnaire and from the correspondence between World Bank and IDBI

* Site visits made

S. No	Code	Industry	Project Title	Location and State	Project Description	Cost of Project \$ (M)	Loan Amount \$ (M)	Loan application date	Loan Approval date
1	G-IDBI-002	Rain Calcining Ltd.*	Waste heat boiler, circulating fluidised incinerator and boiler, FGD	Visakhapatnam, Andhra Pradesh	The project involved setting up a 45 MW cogeneration plant comprising a waste heat boiler, circulating fluidised bed incinerator and boiler which would burn volatile matter and dust generated from calcinations and a steam turbine generator. To control the emissions from boilers, the project financed a flue gas desulphurization facility.	78.4	11.70	29/03/95	05-04-95
2	G-IDBI-003	Divis Laboratories Ltd	Waste water treatment facility	Chouttupal Mandal, Nalgonda, Andhra Pradesh	The project involved setting up a wastewater treatment facilities to control the quantity and strength of the liquid residues by solar evaporation pond and an aerobic wastewater treatment plant.	16.93	0.53	29/03/95	04-04-95
3	G-IDBI-005	EID Parry I.Ltd. (Organic)	Setting Organic manure plant	Ennore, Tamil Nadu	The project involved manufacturing of organic manure prepared from the combination of molasses waste and baggasse of a sugar mill.	1.90	1.00	29/03/95	04-04-95
4	G-IDBI-006	Bhavani Distilleries and Chemicals	Waste water treatment and Solid Waste Management	Pudur, Arcot Ambedkar Tamil Nadu	The project involves partial financing for a wastewater treatment plant and corresponding sludge management and disposal. The project enabled to comply with standards prescribed by the Tamil Nadu Pollution Control Board (TNPCB). The company is now closed down due to poor financial performance.	2.67	0.54	06-10-95	13-10-95
5	G-IDBI-007	Balarampur Chini Mills Ltd	Modernisation-cum-expansion and waste collection and treatment facility	Sugar, Uttar Pradesh	The project involved partial financing of the modernisation of waste collection and treatment facilities as well as refurbishing of boiler systems. The project assists the company to meet the regulatory standards.	24.45	0.32	06-10-95	18-10-95
6	G-IDBI-011	Nagarjuna Fertilizers & Chemicals	Design and implementation of ETP recovery of ammonia and urea by stripping	Kakinada, Andhra Pradesh	The project involved implementation of Effluent Treatment Plant (ETP) to recovery and control ammonia in the discharge.	230.95	0.98	24/11/95	20/12/95
7	G-IDBI-014	Shree Cement Ltd	Design and implementation of a scheme for controlling dust emissions	Bangur Nagar, Beawar, Rajasthan	The project involved implementation scheme consisting three Electrostatic Precipitators for controlling dust emissions and other air borne pollutants.	77.38	1.18	17/11/95	05-01-96
8	G-IDBI-020	Nirmal Fibres Ltd.*	Recycling of plastics for manufacturing textile grade fibres	Moradabad, Uttar Pradesh	The project involved financing of a plant for the manufacturing of 3000 tons/year of polyester staple fibre filler using polyester chips from crushed polyethylene bottles. The product is used for textile grade application in the manufacture of carpets, pillows, blankets and toys.	2.26	1.38	03-04-96	29/04/96
9	G-IDBI-024	India Cements Ltd.	Set up of pollution control equipment to control particulate emissions	Sankar Nagant, Sankari Durg, Tamil	The project involved setting up pollution control equipment to control the emissions of particulates by financing Electrostatic	88.10	1.48	12-04-96	10-05-96

				Nadu	Precipitators (ESPs) with gas conditioning towers at dust generating areas. This assists the company to comply with the Tamil Nadu Pollution Control Board (TNPCB) standards.				
10	G-IDBI-025	SIV Industries Ltd.	Modernisation and expansion	Tamil Nadu	The project involved financing for modernisation and expansion for the manufacture of Rayon Grade Wood Pulp, expansion of the capacity for the manufacture of Viscose Staple , augmenting capacities of its utilities (15 MW cogeneration Plant) and upgrading its pollution control facilities. The company is now closed down due to poor financial performance.	252.22	3.44	31/07/96	27/08/96
11	G-IDBI-028	EID Parry I.Ltd. (Neem) based pesticides*	Manufacture. of Neem based pesticide	Cuddalore, Tamil Nadu	The project consisted design, construction and operation of a commercial scale facility for the extraction and manufacture of a solution of 5% azadirachtin from the seeds of the Neem tree. This solution serves as a pesticide and replaces chemical pesticide for select agricultural applications. By-products from the manufacturing process consist of Neem oil and Neem cake. The oil is used in the manufacture of soap and organic fertilizers/blends respectively.	7.14	1.91	27/9/96	03-10-96
12	G-IDBI-027	JK Corp	Modernisation cum expansion & modernisation cum balancing of its paper division	Jaykay-puram, (Rajasthan) Sirohi (Orissa)	The project involved air pollution control equipment for a cement plant in Rajasthan and partial financing of a chemical recovery facility at a paper plant in Orissa.	113.33	1.54	04-09-96	30/9/96

Summary of Environmental and Economic Benefits of sub-projects financed through IDBI

The following information are based on Project documents, World Bank Office Memorandums and IDBI's responses to the ICR questionnaire

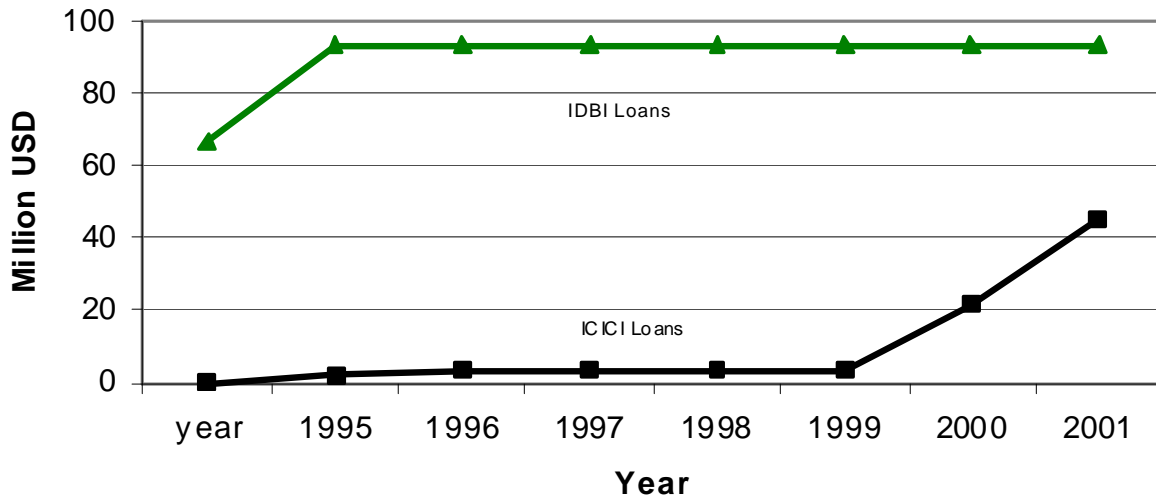
S No	Code	Industry Name	Project Title	Project Benefits	Project Viability - Payback / IRR
				Environmental	Economic
1	G-IDBI-002	Rain Calcining Ltd.	Waste heat boiler, circulating fluidised incinerator and boiler, FGD	Project helped in achieving compliance with SO ₂ emission standards and generation of power from waste heat.	Neither quantified nor described. IRR = 21%.
2	G-IDBI-003	Divis Laboratories Ltd	Waste water treatment facility	Treatment of liquid effluent (220 m ³ /day) was carried out to meet required effluent discharge standards.	Neither quantified nor described. Not calculated.
3	G-IDBI-005	EID Parry	Manufacture of Organic Manure	The project led to utilization of wastes viz. bagasse and molasses to prepare environmental friendly fertilizer (manure) that can be used by the farmers.	
4	G-IDBI-006	Bhavani Distilleries and Chemicals	Waste water treatment and Solid Waste Management	Project assisted in treating wastewater and sludges to achieve environmental compliance. The other benefit was recovery of methane that could be used as energy supplement. The treated wastewater could be used for irrigation of agricultural fields. The company is now closed down due to poor financial performance.	Neither quantified nor described. IRR = 22%.
5	G-IDBI-007	Balarampur Chini Mills Ltd	Modernisation-cum-expansion and waste collection and treatment facility	Reduction in workplace dust and fly ash generation.	Neither quantified nor described. Not calculated.
6	G-IDBI-011	Nagarjuna Fertilizers & Chemicals	Design and implementation of Effluent Treatment Plant (ETP) recovery of ammonia and urea by stripping	Effluent treatment Plant (ETP) for treating ammonia and urea plant effluents have helped in achieving environmental compliance.	Neither quantified nor described. Ammonia and methanol are recovered from process condensates of the ammonia and urea plants and are recycled back to the process. IRR = 19.7%.
7	G-IDBI-014	Shree Cement Ltd	Design and implementation of a scheme for controlling dust emissions	Project helped in achieving emission compliance and recovery of material (cement dust) from 3 Electrostatic Precipitators (ESP).	Neither quantified nor described. Not calculated.
8	G-IDBI-020	Nirmal Fibres Ltd.	Recycling of plastics for manufacturing textile grade fibres	Recycling of PSF / PET waste to produce 3600 MT/year of Polyester Staple Fiber (PSF). The waste otherwise would need to be land-filled at a cost and led to environmental damages.	Neither quantified nor described. IRR = 35%.
9	G-IDBI-024	India Cements Ltd.	Set up of pollution control equipment to control particulate emissions	Reduced workplace dust emission (to 100 mg/nm ³) due to Electrostatic Precipitator (ESP) and gas conditioning towers.	Neither quantified nor described. Not available.
10	G-IDBI-025	SIV Industries Ltd.	Modernisation and expansion	Project was initiated to avoid legal liability (closure) from Tamil Nadu Pollution Control Board (TNPCB). Upgradation of Effluent Treatment Plant (ETP) resulted in reduction of pollution to downstream areas of Bhavani river. 15 MW of Steam Cogeneration plant was financed. The company is now closed down due to poor financial performance.	Neither quantified nor described. IRR = 15.9%.
11	G-IDBI-027	JK Corp	Modernisation cum expansion & modernisation cum balancing of its paper division	The project led to reduced energy consumption and control of workplace dust levels in the cement plant. Effluent Treatment Plant (ETP) of paper plant handles 25,000 m ³ /day of wastewater Settled solids from clarifier are recycled for secondary quality boards. Lime recycling and recovery is practiced.	Neither quantified nor described. IRR for cement project = 23%. IRR for paper project = 18%.
12	G-IDBI-028	EID Parry I. Ltd.	Manufacturing of Neem based bio-pesticide	Manufacturing of 200,000 tons per year of active ingredient Azadirachtin. Environmental benefits are substantial as this product replaces the conventional chemical pesticides.	Neither quantified nor described. Nearly 98% of the product is today exported. Not calculated.

Summary of Centralised Treatment Facilities financed through IDBI

The following information are based on Project documents, World Bank Office Memorandums and IDBI's responses to the ICR questionnaire

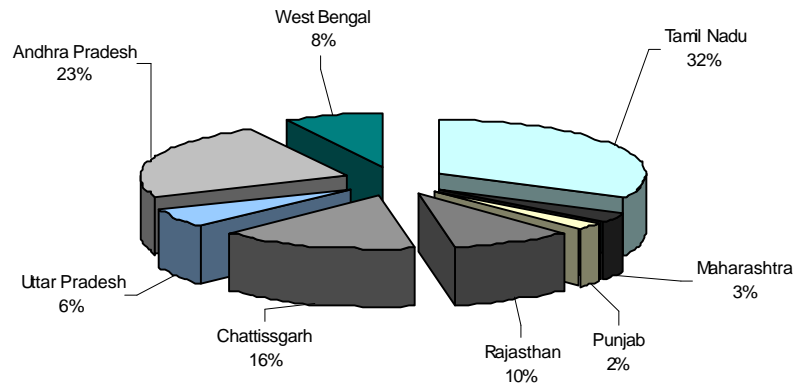
Code	Industry	Project Title	Location	State	Project Description	Cost of Project million \$	Loan Amount IBRD \$ (M)	Loan Amount IDA \$ (M)	Loan application date	Loan Approval date
T-IDBI-05	Enviro Infrastructure Structure Company Ltd *	CETP	Baroda	Gujarat	The Project involves setting up a CETP for 27 industries (chemical and Pharmaceuticals) with a total capacity of 2.25 MLD. The treated effluent from the CETP is discharged to the Effluent Channel Project. The CETP today received only 30% of the design flow as some of the members set up their own wastewater treatment facilities. This has led to financial difficulties.	1.42	0.5	0.26	18-10-99	19-01-01
T-IDBI-03	Sachin Infra Environment Ltd (SIEL)*	CETP	Sachin	Gujarat	Treatment scheme is designed for 50 MLD peak wastewater load from 48 textile industries. The plant includes three stages: Flow and quality equalization, Chemical treatment and biological treatment. Solids are disposed through filtration and finally to a secured landfill. At the time of the field visit, it was observed that the construction of the CETP was delayed because of disputes between the civil works contractor.	4.04	1.338	1.165	07-10-98	19-01-01
T-IDBI-004	Rashtriya Fertilizer & Chemicals (RCF)*	Industrial Water Recycling Plant (IWRP)	Chembur, Mumbai	Maha-rashtra	The Project involves setting up a 5 MGD per day IWRP at RCF Complex, for collection and purification of sewage water from Brihan Mumbai Municipal Corporation (BMC). The IWRP operates on 3MGD capacity to produce treated water from sewage that is used for meeting part of the process water needs of RCF's operating plants.	8.66 Calculated considering exchange rate \$1= 45 INR.		0.1118	16-10-98	19-11-98

Cumulative Loans approved by World Bank to ICICI & IDBI



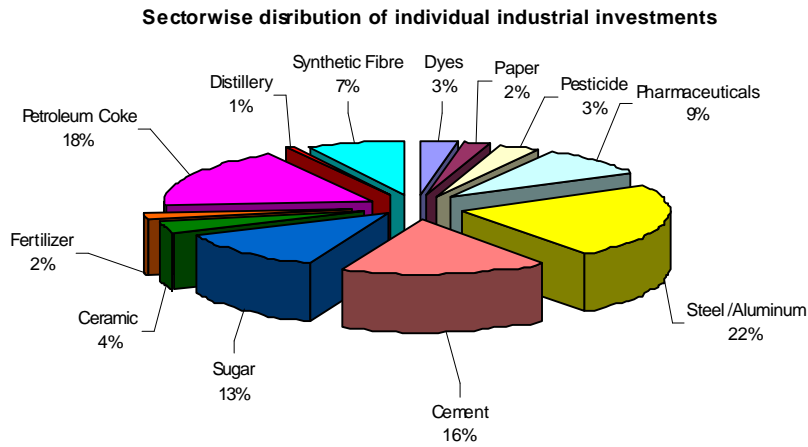
Geographical distribution of individual industrial investments under IPPP. An analysis of the 24 individual industrial investments indicates that these investments occurred across the eight states (Tamil Nadu, Maharashtra, Punjab, Rajasthan, Chattisgarh, Uttar Pradesh, Andhra Pradesh and West Bengal) (see Figure below). Nearly 55% of the investments under IPPP have been made in the State of Tamil Nadu and Andhra Pradesh, two southern states of India. Discussions during the field visits indicate that there does not seem to be much correlation between the investments and the level of enforcement in these two states. Analyses of the trigger factors for the investments indicate that the reasons for investments were primarily driven by productivity concerns. GOI has identified 17 priority polluting industrial sectors for the purpose enforcement.

Geographical distribution of individual industrial investments

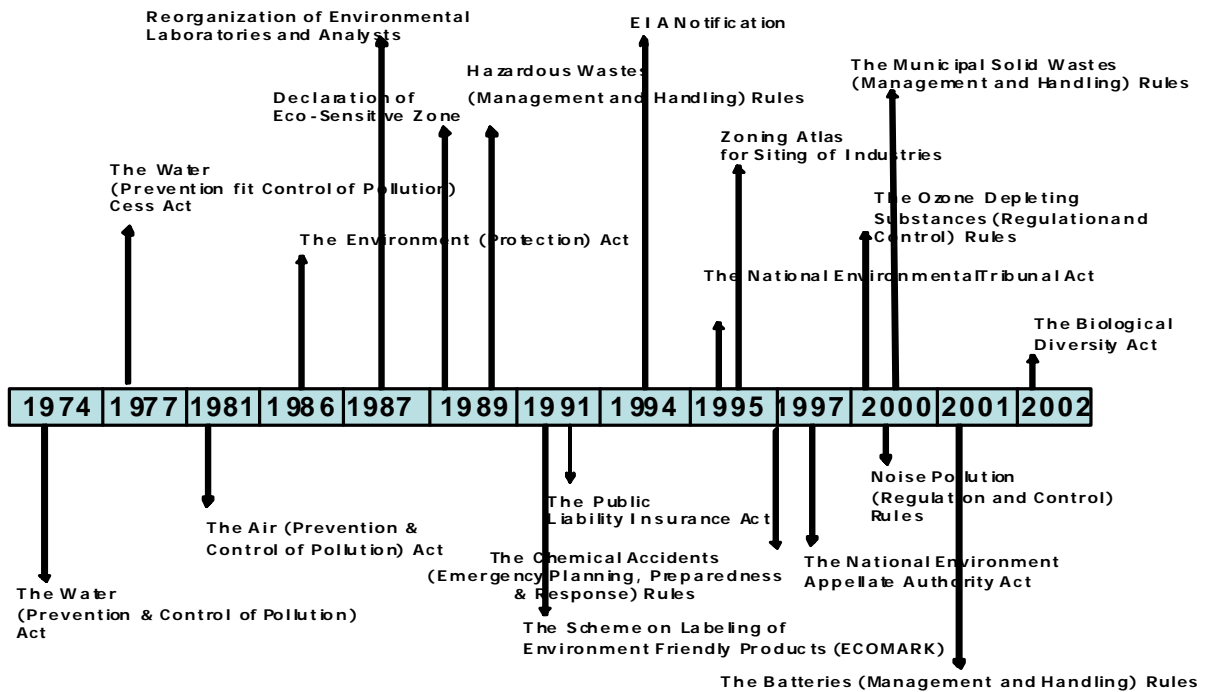


Sectorwise distribution of individual industrial investments under IPPP . The distribution of individual industrial investments has been across 12 of the above 17 sectors and is further fairly well distributed. (see Figure below). On an average, the Project lent at a loan size of \$ 2.7 million. Amongst the various sectors, four sectors viz. steel/aluminum, cement, petroleum coke and sugar constitute nearly 69% of the total

industrial investments.



Timeline of Indian Environmental Legislation



Annex 4. Bank Inputs

(a) Missions:

Stage of Project Cycle	No. of Persons and Specialty (e.g. 2 Economists, 1 FMS, etc.)		Performance Rating		
	Month/Year	Count	Specialty	Implementation Progress	Development Objective
Identification/Preparation 9/30/1993			ENVIRONMENTAL ENGINEER, ENVIRONMENTAL SPECIALIST OPERATIONS OFFICER, ECONOMIST, GIS SPECIALIST		
Appraisal/Negotiation 02/21/1994			ENVIRONMENTAL ENGINEER, ENVIRONMENTAL SPECIALIST OPERATIONS OFFICER, ECONOMIST, GIS SPECIALIST		
Supervision					
02/29/1996	5		ENVIRONMENTAL ENGINEER (1); RESEARCH ASSISTANT (1); OPERATIONS OFFICER (1); ECONOMIST (1); CHEMICAL ENGINEER (1)	S	S
02/26/1997	3		CHEM. ENGG. (1); ECONOMIST (1); ENV. ENGG. (1)	S	S
09/01/1997	1		CHEM. ENGR. (1)	S	S
09/25/1998	4		TEAM LEADER (1); TEAM MEMBER (1); PROCEUREMENT ENGINEER (1); ENVIRONMENT SPECIALIST (1)	S	S
04/16/1999	4		SR. ENVIRONMENTAL SPEC (2); PROCUREMENT SPECIALIST (1); INFORMATION TECH SPEC (1)	S	S
01/18/2001	5		TASK TEAM LEADER (1); ENV./IT SPECIALIST (1); PROCUREMENT SPECIALIST (1); DISBURSEMENT SPEC. (1); ENV. CONSULTANT (1)	S	U
11/26/2001	5		TASK TEAM LEADER (1); IT SPECIALIST (1); SR.	U	U

ICR	05/10/2002	6	PROCUREMENT SPECIALIST (1); ENVIRONMENT CONSULTANT (1); SR. FINANCIAL SPEC. (1) TASK TEAM LEADER (1); ENVIRONMENTAL SPECIALIST (2); FINANCIAL SPECIALIST (2); PROCUREMENT SPECIALIST (1)	S	S
	February, 2003	4	TASK TEAM LEADER (1); ENVIRONMENTAL SPECIALIST (1); ICR CONSULTANTS (2); with inputs from FINANCIAL SPECIALIST (1) and PROCUREMENT SPECIALIST (1)		

(b) Staff:

Stage of Project Cycle	Actual/Latest Estimate	
	No. Staff weeks	US\$ ('000)
Identification/Preparation	93.6	240.7
Appraisal/Negotiation	38.9	118.8
Supervision	280.4	1,710.4
ICR	25.6	103.0
Total	394.3	2,172.9

Annex 5. Ratings for Achievement of Objectives/Outputs of Components

(H=High, SU=Substantial, M=Modest, N=Negligible, NA=Not Applicable)

	Rating				
<input checked="" type="checkbox"/> <i>Macro policies</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input checked="" type="checkbox"/> <i>Sector Policies</i>	<input type="radio"/> H	<input type="radio"/> SU	<input checked="" type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input checked="" type="checkbox"/> <i>Physical</i>	<input type="radio"/> H	<input type="radio"/> SU	<input checked="" type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input checked="" type="checkbox"/> <i>Financial</i>	<input type="radio"/> H	<input type="radio"/> SU	<input checked="" type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input checked="" type="checkbox"/> <i>Institutional Development</i>	<input type="radio"/> H	<input checked="" type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input checked="" type="checkbox"/> <i>Environmental</i>	<input type="radio"/> H	<input type="radio"/> SU	<input checked="" type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA

Social

<input type="checkbox"/> <i>Poverty Reduction</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input type="checkbox"/> <i>Gender</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input type="checkbox"/> <i>Other (Please specify)</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input checked="" type="checkbox"/> <i>Private sector development</i>	<input type="radio"/> H	<input type="radio"/> SU	<input checked="" type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input checked="" type="checkbox"/> <i>Public sector management</i>	<input type="radio"/> H	<input checked="" type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input type="checkbox"/> <i>Other (Please specify)</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA

The project lacked a policy component, and therefore has had only modest (though some) effect on sector policies. Outputs and outcomes with respect to institutional strengthening were very substantial, although this accounted for little on the disbursement side. However, the objectives of the much larger investment component were affected by the low disbursements under the IDBI credit line, which financed physical investments in pollution prevention by industries (a point also reflected in the ratings for financial objectives and for private sector development). Institutional impact at the level of state pollution control boards had been impressive in the last 2-3 years, and some of these innovations are likely to spread to other states. This is also reflected in the rating for public sector management. Finally, environmental objectives have seen substantial progress, though cumulative benefits could have been much higher given a different project design and more consistent implementation. Thus, although there were some achievements towards the broad and ambitious project objectives, these were not sufficient to make the overall project outcome satisfactory.

Annex 6. Ratings of Bank and Borrower Performance

(HS=Highly Satisfactory, S=Satisfactory, U=Unsatisfactory, HU=Highly Unsatisfactory)

6.1 Bank performance

Rating

<input checked="" type="checkbox"/> Lending	<input type="radio"/> HS	<input type="radio"/> S	<input type="radio"/> U	<input checked="" type="radio"/> HU
<input checked="" type="checkbox"/> Supervision	<input type="radio"/> HS	<input type="radio"/> S	<input checked="" type="radio"/> U	<input type="radio"/> HU
<input checked="" type="checkbox"/> Overall	<input type="radio"/> HS	<input type="radio"/> S	<input checked="" type="radio"/> U	<input type="radio"/> HU

6.2 Borrower performance

Rating

<input checked="" type="checkbox"/> Preparation	<input type="radio"/> HS	<input type="radio"/> S	<input checked="" type="radio"/> U	<input type="radio"/> HU
<input checked="" type="checkbox"/> Government implementation performance	<input type="radio"/> HS	<input type="radio"/> S	<input checked="" type="radio"/> U	<input type="radio"/> HU
<input checked="" type="checkbox"/> Implementation agency performance	<input type="radio"/> HS	<input type="radio"/> S	<input checked="" type="radio"/> U	<input type="radio"/> HU
<input checked="" type="checkbox"/> Overall	<input type="radio"/> HS	<input type="radio"/> S	<input checked="" type="radio"/> U	<input type="radio"/> HU

Performance in the lending phase of the project had several serious weaknesses, which greatly complicated and delayed project implementation and undermined the achievement of the development objective. The project was prepared prematurely and failed to take account of important lessons from the predecessor IPCP operation. Many of these issues were addressed after the arrival of a new supervision team on the Bank side shortly before the Mid-Term Review, and Borrower and Implementation agency performance also greatly improved following closure of IPCP. The overall ratings are therefore based on clear evidence of improved performance on nearly all aspects, and some signs that innovations introduced by the project are being picked-up at the national level and by other private sector firms.

Annex 7. List of Supporting Documents

"Report of the task force to evaluate market-based instruments for industrial pollution abatement." January 1997.

Environmental Management Centre. "Lessons learnt from the World Bank assisted Industrial Pollution Control and Industrial Pollution Prevention Projects in India." June 1998. Mumbai.

Kirloskar Consultants Ltd. "Assessment of the needs of the state pollution control boards in Andhra Pradesh, Karnataka, Madhya Pradesh and Rajasthan (Pollution Prevention Project - India). March 1994. Pune, Maharashtra.

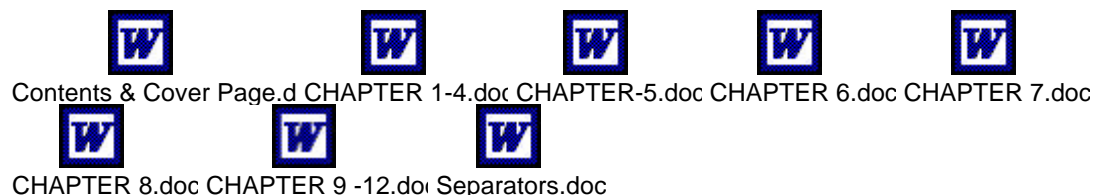
Mantec Consultants Pvt. Ltd. "Survey of treatment requirements for small scale industries in Karnataka, Rajasthan, Madhya Pradesh, and andhra Pradesh." Final Report. March 1994. New Delhi.

National Productivity Council (Environment Division). "Interim project report on establishment and running of the waste minimisation circles." n.d.. New Delhi.

National Productivity Council. "Inventorization of hazardous waste in Gujarat for hazardous waste tracking in Gujarat through GIS." May 1998. New Delhi

Additional Annex 8. Project Completion Report

The MOEF Project Completion Report is located in Project Files:



Attached below is the section on conclusions and recommendations:

Conclusions and Recommendations

The World Bank aided Industrial Pollution Prevention (IPP) Project was initiated in 1994 following the Development Credit Agreement (DCA) entered by Government of India with the International Development Association (IDA). The total estimated project cost was US\$ 327 million, including an IDA grant of US\$ 23 million. Though the Project was started 1994, virtually the Project took off only in late 1998 mainly due to the pending activities under the previous project i.e. Industrial Pollution Control Project. The other reason for the delay is that the Project SPCBs were not familiar in preparing detailed proposals on laboratory up-gradation, Information Technology activities, etc as required by MoEF and the Bank. Most of the project activities were implemented during the period from 2000 to 2002 at the Project SPCBs. The Project was originally scheduled to close in March 2002; however it was extended till November 2002.

The Project had three major components as mentioned below:

1.Institutional strengthening Component– covering activities related to equipment procurement, laboratory up-gradation, training of SPCB officials, Development of Information Technology activities & Environmental Outreach Programmes.

The Institutional Component aimed at strengthening the State Pollution Control Boards of Andhra Pradesh, Karnataka, Madhya Pradesh, Rajasthan & Chhattisgarh. It also supported GIS based Hazardous waste tracking at GPCB.

2.Investment Component- designed to support individual and common treatment facilities for pollution abatement, with a focus on waste minimisation and adoption of cleaner methods of production.

3.Technical Assistance Component – designed to support identification of appropriate waste minimisation and abatement methods and the organisation of waste minimisation circles for small-scale industry and training & consultancy services to assist the Ministry of Environment & Forest.

A total of Rs. 76.62 Crores was utilised under the above components of the IPP Project and the following table gives the broad split –up of funds utilized under the three major components and among the Project SPCBs.

S.No.	Component	Funds Utilised (Rs. In Lakhs)
1	Institutional Component	6184.914
	Equipment Procured for Project SPCBs	1792.194
	APPCB	997.12
	KSPCB	1560.11
	MPPCB	388.53
	CECB	99.57
	RSPCB	460.16
	GPCB	720.50
2.	Investment Component	503.37
3.	Technical Assistance Component	973.59

GIST OF PROJECT ACTIVITIES

The following is the gist of activities carried out under different components of this Project:

I. Institutional Component:

1. Equipment procurement – Centralised Procurement of Equipment through RITES and National Shopping for direct Procurement of Equipment by SPCBs.

2. Laboratory Facilities up-gradation – Up-gradation of existing facilities at 29 laboratories of SPCBs; Activities included are:

Minor civil works - Aluminum partitions, Working Lab Tables with acid proof tiles at the top, Instrument Tables, False ceilings, AC and exhaust fan fixation etc.

Refurbishing of specialised rooms such as fuming chambers, dust free rooms for trace level sample preparation, glove boxes

Utility equipment - backup power facilities, data processing equipment and safety equipment

3. Training of SPCB officials – Development of training strategy, Preparation of Guidance Manual for training Institutes for conducting training programmes, Selection of training institutes, organisation of domestic training, Selection of participants for overseas training.

4. Information Technology activities at Project SPCBs:

APPCB – Development Of Geographical Information Management System – The activities included GIS Laboratory Arrangements, Data Processing Equipment, Consultancy, Data Creation, Data Collection, Sensitivity Analysis & Training

KSPCB – Development Of Geographical Information Management System – The activities included Creation of Infrastructure facilities, Procurement of accessories like scanner, CD Writer, LCD Projector, Camera, Procurement of computers and other peripherals, Backup Power facilities, Software like Oracle, Visual Basic and Kannada Software, Networking of computers, Procurement of GIS Software, Procurement of Photocopier, fax machine etc., Data creation by KRSAC, Training of officials in basic computer skills and other specialized training & Procurement of Environmental Models.

MPPCB – Development of Integrated Management Information System – The activities included the development of Integrated Management Information System, Document Management System, File Management System, Pilot GIS Study & Development of Web Site

RSPCB – Development of Integrated Management Information System – The activities included the Procurement of Hardware and Software, Application Development under MIS & Training:

5. Environmental Outreach Programme

APPCB - Up-gradation of existing Mobile Exhibit van on Children theme, Development of two additional Mobile Exhibit Vans for Urban & Industry themes, Strengthening of Environmental Education Wing & Preparation of video on 'state of the environment'.

KSPCB -Development of three Mobile Exhibit Vans for Urban, Industry & children themes, Strengthening of Environmental Education Wing & Preparation of video on 'state of the environment'.

II. Investment Component

This component supported Individual Industry sub-projects and common treatment facilities. Individual industry sub-projects were implemented through IDBI & ICICI. The Project supported two common treatment facilities and one Water Recycling plant through MoEF:

Common Effluent Treatment Plants:

1. M/S. Sachin Infra Environment Ltd. (SIEL)
2. M/s Enviro Infrastructure Company Limited (EICL)

Industrial Water Recycling Project: M/s Rashtriya Chemicals & Fertilizers, Mumbai.

III. Technical Assistance Component

The following is the list of major studies/consultancy projects taken up under this component:

- Ø Waste Minimisation Circles (WMC)
- Ø Project Management Consultancy
- Ø Training Management consultancy
- Ø Tannery Project – NEERI/CLRI
- Ø Industrial Safety and Disaster Prevention Project and Hazardous Waste Management Project.
- Ø Preparation of Laboratory Guidance Manual (LGM)
- Ø Workshop for finalisation of Laboratory guidance Manual
- Ø Gap Analysis Study for implementation of LGM
- Ø Resource Optimisation Study

PROJECT ACHIEVEMENTS

The Project has resulted in immense benefits to the Project SPCBs. A few of the salient benefits of the Project are:

Improved working conditions at SPCB laboratories by up-gradation

Ø In total 29 Central and Regional/ zonal laboratories including 6 laboratories at APPCB, 9 Laboratories at KSPCB, 7 laboratories at MPPCB, 2 laboratories at CECB & 5 laboratories at RSPCB were upgraded with total outlay of about Rs.16.54 Crores. The up-gradation of laboratory facilities resulted in improved working environment, particularly for scientific staff of SPCB laboratories.

Enhanced Environmental Monitoring Capacity.

Ø Equipment worth about Rs.17.92 Crores was centrally procured by RITES for the project SPCBs. All the equipment has been delivered & installed at the SPCBs. The analytical and monitoring equipment including sophisticated instruments like HPLC, FTIR, GC, TOC, AAS, AOX etc supplied to the project SPCBs resulted in improved analytical capacity enabling SPCBs to monitor and analyse additional environmental parameters of concern and to undertake analysis of complex organic/inorganic chemicals.

Efficient Environmental Information Management System

Ø In respect of Management Information System including GIS and procurement of requisite hardware, activities worth about Rs.13.27 Crores had been taken up at the Project SPCBs. Owing to the establishment of Environmental Management Information system, the Project SPCBs evolved into computer savvy professionals increasing their efficiency in monitoring & enforcement functions. The working culture within the SPCBs has changed by improvement in their performance using modern tools of MIS/GIS. It is also worth noting that all the project SPCBs have developed their own web site which is accessible electronically to the public with regard to their organisational structure, contact names, phone, fax numbers, e-mail Ids, activities undertaken, redressal of complaints, etc.

Laboratory Quality Systems for enhanced understanding for producing credible analytical data

Ø Preparation of Laboratory Guidance Manual in consultation with the SPCBs resulted in better understanding of scientific staff of SPCBs regarding Laboratory Quality Management Systems. The SPCBs had shown deep interest in implementation of LGM, which would enhance the credibility of data collection and analysis. The US EPA study tour for the senior scientific staff of Project SPCBs complemented this by exposing them to international laboratories and the quality systems practiced in them.

Increased Skill of SPCB officials

486 officials from the project SPCBs (out of total 504 officials trained) were trained under eighteen different modules and equipment specific training was also imparted, as part of the domestic phase of training. These training modules were designed so that they were consistent with the work areas of the SPCB officials. The feedback from the SPCB officials revealed that they have been benefited through the training and many of their doubts relating to their work areas have been resolved. About 96% of all trainees were from project SPCBs. An average of 80 % of the persons nominated attended the training programmes. (75% of senior managers and 82% of laboratory & other personnel)

Partnership with the community

Ø Two Project SPCBs i.e., APPCB & KSPCB participated under the Environmental Outreach Programme and developed mobile exhibits for "urban", "industry" and "children" themes at a total cost of Rs. 2.51 crores. These mobile exhibits are being utilised for creating and developing environmental awareness. This has strengthened the interaction of SPCBs with the community. The community is becoming increasingly aware about local and global environmental issues & prevention and control of industrial pollution.

Implementation of concept of Recycle/Reuse & Environmental Management Plan at CETPs

Ø Two CETPs & one Industrial Water Recycling Plant (IWRP) were supported to the tune of Rs. 5.03 crores under this project. The CETPs had developed their full -fledged Environmental

Management Plan and also became member of the notified Secured Landfill Facilities for disposal of their solid wastes. For the first time, one of the CETPs took up recycle/reuse study and piloted it successfully. It was also in the process of setting up full scale recycle/reuse system, which would make it a model CETP in the country.

Improvement in working culture at KSPCB through 'smart card' system

The 'smart card' system was installed at Karnataka State Pollution Control Board and reportedly it has resulted in improved work culture with decrease in absenteeism. A detailed discussion on the 'smart card' system was also held during the US-EPA study tour, in which officials from Project SPCBs and MoEF participated. All project SPCBs showed their keen interest in the system.

Increased Information Sharing among Project SPCBs

The IPP Project provided an opportunity for SPCBs to share information about their functioning and other developments. Periodic Project review meetings held at MoEF and World Bank review meetings provided a platform for information sharing among the SPCBs. In addition to this, Road Show programmes were suggested to see the unique facilities developed at a Project SPCB and also to discuss about them. One Road Show Programme was organised at KSPCB, Bangalore to share the unique facilities developed by KSPCB such as Mobile laboratory, GIS developments at KSPCB, Smart Card systems etc among the Project SPCBs under the IPP Project. The Programme was conducted for two days and the other five Project SPCBs participated in the Road Show.

Formulation of comprehensive methodology for training.

Another important outcome of the IPP Project was the development of a comprehensive methodology for conducting training programmes. A training strategy note was developed initially which formed the base for conducting the training programme. A Guidance Manual providing guidance for institutes to conduct training programmes was also prepared for smooth organisation of these programmes.

Problems Faced During Project implementation

During the implementation of the project the following problems were faced which delayed the timely completion of the activities:

- The Project took off late – only in late 1998- causing shortage of time for completing the activities during the last two years of the Project.

Lesson Learnt: Project execution should follow a strict implementation schedule.

- For procurement under this project the Project SPCBs were required to follow the World Bank procedures. However, the SPCBs were following the state government procedures as

well. This created some confusion and delay in the procurement process.

Lesson Learnt: The Project SPCBs should get special permission from the State Government to follow the Bank's procedures for procurement under such World Bank Projects. If needed, the support of GoI should also be obtained.

- The Project SPCBs had problems in understanding the procurement procedures of the World Bank causing delay in completing the procurement process.

Lesson Learnt: Training on the World Bank procurement procedures should be provided in the beginning of the project.

- Direct communication of the Bank with the Project SPCBs by passing MoEF had created confusion in few cases. **Lesson Learnt: The Bank should have intensive communication with MoEF. Any communication with the Project beneficiaries should be intimated to or routed through MoEF. On critical policy matters, the Bank should directly correspond with MoEF only.**

- The first extension of the project was intimated by Bank to MoEF just two or three days before the expiry of the project duration. This severely handicapped the projection and planning of funds and activities during the extended period. The flow of funds from MoEF to the Project beneficiaries was also constrained due to the taking up of additional activities during the extended period.

Lesson Learnt: The Bank should consult and intimate the recipient about Project Extension well in advance. The Bank officials should also have some knowledge of the financial procedures and mechanisms of GoI, which should be kept in mind while formulating, planning, implementing and monitoring Project activities.

Recommendations:

Ø The engagement of a Project Management Consultant was extremely beneficial for smooth implementation of the Project and for sustaining an intensive communication network between the Project SPCBs, MoEF and the Bank. It is felt that the services of a Project Management consultant should be engaged for such projects in future also.

Ø The Project beneficiaries should be involved at the Project design stage itself. This would help to include all the essential activities needed by the beneficiaries and also provide motivation for them during implementation of the Project activities.

Ø Changes with respect to design or addition or deletion of activities or the schedule of implementation, should be made sparingly and well before the closing of the Project. Such changes should not be contemplated during the last stages of the Project.

Ø The IPP Project had an Investment component, which was implemented through IDBI & ICICI. This component differs in nature from the other two components namely the Institutional and Technical Assistance Component. The latter components related to strengthening of State

Pollution Control Boards whereas the Investment component envisaged direct support to the Industrial enterprises. The Investment component could have been kept as a separate Project in view of the fundamental difference in the nature of this component, and the different nodal/implementing agencies involved.

Ø Evaluation of the outcome/benefits of the Project should keep in mind not only the status regarding completion of the activities, but also the potential benefits obtained from those activities. The benefits of strengthening the SPCBs may be visible only after a period of about one year of using the facilities developed. The project benefits could be measured in a realistic sense only after this period. This should be kept in mind while evaluating the outcome and the sustainability of the initiatives and activities under the Project.

Ø Overall, the Project was highly successful in meeting its objectives of strengthening the Project SPCBs with respect to their efficient functioning and also to promote cost effective pollution abatement in the country. However, some of the activities of the project, which are “Reform Making” in nature, could not be continued, as the duration of the Project was not extended beyond 30.11.2002. As an implementing agency, MoEF strongly recommends the continuation of the left over activities of the IPPP in any other form with the support of the Bank.

Ø MoEF also recommends to the Bank that keeping in mind the positive outcomes of the IPPP, the Bank should consider providing support to other SPCBs as a continuing activity. Such building-up of the Institutional capacity to combat and prevent pollution will definitely have positive, quantifiable and sustainable /lasting impacts on the environment scenario in developing countries like India. Support from multi-lateral funding agencies is of critical importance for achieving the goal of sustainable development, especially for developing countries pursuing the path of economic development and equity in an era of liberalisation and globalisation. Such support will help developing countries to overcome the financial and technological resource constraints which can severely hamper achievement of the goal of sustainable development.

Additional Annex 9. Questionnaire on Individual Industrial Investments

IDBI and ICICI are requested to provide information on items as listed below.

A. General information

1. Please provide a short summary of internal organization, including human resources for development, appraisal of environmental projects, monitoring and evaluation system
2. Please provide indications of growth in the environmental portfolio since 1994, and in the share of total operations. This may include management of loans from other agencies such as Asian Development Bank, US AID, Japanese Bank for International Cooperation, Multilateral Fund etc.
3. Please list advantages/disadvantages of credit line provided under the project, compared with other financing sources, in terms of:
 - (a) Interest rates
 - (b) Terms (repayment period and grace period)
 - (c) Access to foreign exchange
 - (d) Equity requirements (contribution from own resources)
 - (e) Access to other government subsidies
 - (f) Administrative process and procedures (paper work and documentation) involved to access the loan
 - (g) Other factors.
4. Please provide information on environmental policy and the policy implementation framework that has been formally adopted by the organization. If yes, kindly share with us the drafts/final versions and state the experience thus far, the benefits e.g. in terms of improved effectiveness, higher rates of loan return and compliance etc. If no, state reasons for not developing or operating the environmental policy framework.
5. Please provide a short description of the project finding and project promotion process used build a pipeline of sub-loans. Provide publications and brochures that may have been used to disseminate information about the sub-loans to potential borrowers
6. Please list sub-loan granted as percent of applications, in both numbers and amounts
7. How many sub-loans were canceled by the proponents? Please explain why? If only part of the funds were canceled, please indicate in percentage of the total sub-loan.

B. Sub-loan specific information (industrial plants)

It is proposed that 6 sub-projects (50% of all subprojects) be surveyed for ICICI and 4 subprojects (about 33% of all sub-projects) for IDBI. In the case of IDBI, all the Centralized Treatment Facilities (CTFs) as financed through this project are proposed to be visited.

List of sub-projects identified for field visits of industrial plants and information collection is provided below. In developing this list, consideration has been given to representative ness of the industrial sectors, size, technology or intervention and geographical distribution. Industrial plants that have been visited earlier under the Industrial Pollution Control Project have been excluded. A final list will be developed on

discussions with the officers of the ICICI and IDBI considering additional factors such as the logistics.

IDBI

Rain Calcining, Vizag – Petroleum Coke
Nirmal Fibers, Moradabad – Waste processing
Shree Cement – Ajmer – Cement*
EID Parry – Cuddalore - Neem Pesticide

ICICI

Varinder Agro – Sangur - Agrochemicals
Tuticorin Alkali – Chennai – Biopesticides
Orchid Pharma – Chennai - Pharma
Malco – Mettur dam Salem – Aluminium
Orient Ceramics – Bulandshahar – Ceramics
Bannari Sugar – Satyamangalam – Sugar

**Units common to IDBI and ICICI.*

Please provide information on all selected sub-loan or sub-project in the format below

1. Basic data on each sub-loan: This will include name of the sponsor, location, manufacturing capacity, annual turnover and investments over past three years, project cost of the sub-loan, financing, technology description and source, start and completion date, pollution problems addressed

2. Justification for the investment:

- What was the major motivation for the investment?
- Was it corrective, to comply with environmental standards? Was it to Increase process efficiency? Minimize waste? Recover resources? Save energy? Or improve the health and safety situation?
- Was it to address non-conformities under an agreement that an industrial plant and SPCB had reached to be implemented over a period of time?
- Did the investment:
 - (a) Provide pollution control to an existing industrial plant?
 - (b) Modify process in an existing industrial plant to reduce pollutants?
 - (c) Replace an existing industrial plant with a more modern and less polluting plant (indicate if the old plant was closed)?
 - (d) Financed pollution prevention facilities of a new industrial plant?
 - (e) Was it part of an increase in capacity?

3. Status of present operation

E.g. whether fully operational and at steady state; or whether implemented but not fully operational or operations not yet stabilized etc

4. Main benefits of the investments:

(a) Technical (reduced consumption of raw materials and increase in the yield of finished products, reduced generation of wastes, increase in energy efficiency, reduced processing time, more stable operation requiring less maintenance etc, improved product design and quality , market advantage – if applicable)

(b) Environmental (lowering and elimination of pollution, better environmental conditions in the neighborhood, improvement on health and safety)— Quantify the environmental benefits in economic terms to the extent possible

- Provide actual environmental monitoring data (missions at source and ambient environmental conditions) before and after taking up the investment under the project, compared with guaranteed figures and local or agreed environmental standards. Indicate for the data reported number of samples and number of locations of sampling

(c) Economic (quantification of benefits as described in (a) and (b), Include other cost reductions such as reduction cost of waste management, reduction in pollution charges or water cess, avoidance of penalties)

(d) Overall effectiveness of the loan in terms of payback period, internal rate of return

5. Environmental Management: Provide details on the environmental management unit at the industrial plant e.g. organizational chart, human resources employed, monitoring activities etc.

Has the company developed an environmental management system e.g. as per International Organization for Standardization (ISO) 14001? If so, please describe and provide details. Has the implementation of the sub-loan helped in alleviating any of the significant environmental aspects? If so, please provide the details.

Evaluation of Common Treatment Facility (CTF) Subprojects

1. IDBI would provide an updated table on these subprojects. The table would include the sub loan number, the name of the CTF, the location of the CTF, the total project cost, the sub loan size (GoI subsidy), and the state subsidy. In addition, IDBI would provide information on the implementation status (completed and operational, under construction) and benefits of the sub loan.
2. IDBI would request all sub-borrowers to submit the following additional information:
 - (a) Number and types (e.g. pharmaceutical) of discharging industries served by the CTF, and the total average wastewater inflow (m³/day) – design and actual to the CTF. Number of participants or members at start of the project and now. Classification of participants by size of assets. Reasons for dropping out, if any.
 - (b) Average, Minimum and Maximum Influent characteristics to the CTF. Whether pretreatment is done by discharging industries? What are the set standards? Was waste characterization from discharging industries carried out prior to CTF design? How is pretreatment requirement of the industry assured? Has the wastewater load to CTF reduced over time? If yes, then has this happened because of waste minimization efforts by the industries or because of reduced industrial production activities?
 - (c) Wastewater collection mechanism from discharging industries (piped, collected by tankers)?
 - (d) Description of the Main treatment units (e.g. equalization, solids removal/precipitation, biological treatment-aerobic, thickening of sludge, filtration of sludge, multimedia filtration, ion exchange, reverse osmosis) as well as liquid/solid waste/residue disposal facilities.
 - (e) Handling of wastewater after treatment: If recycled/reused, describe recycle/reuse practices. If wastewater is discharged to environment, specify the receiving water body and pollutants discharged after treatment, compared with legal or agreed standards and with design guarantees; quality of effluent (provide pollutant levels and norms).
 - (f) Management of solid/hazardous wastes from the CTF, and information on the design of the landfill (name of the landfill, hazardous or sanitary landfill, lining/monitoring wells/closure plan, provisions for groundwater monitoring, leachate collection and treatment).
 - (g) Description of the monitoring system in place and monitoring results since operations started; compliance records from State Pollution Control Boards. The monitoring system refers to the monitoring of: (i) wastewaters from individual industries discharging to the CTF, (ii) aggregate wastewater inflow to the CTF, (iii) treated water discharge from the CTF to the environment, and (iv) the solid/hazardous wastes from the CTF to the landfill.
 - (h) Management structure. Composition and responsibility of CTF's Board. Describe what authority and power rules are enforced and penalties are imposed on members for not pretreating properly.
 - (i) Cost recovery mechanisms and financial sustainability. Describe discharging industries' (partners') contribution to investment and cost recovery mechanisms (including basis for calculation and levels of charges for different types of pollutants and volumes. Provide the cost recovery formula). Provide information on the wastewater recycling costs, solid/hazardous waste transportation and disposal

costs. Provide past and current yearly budgets, identifying sources of revenues and types of expenditures. Compare actual costs with design estimates.

(j) Are there any outstanding issues, such as compliance by participants with pretreatment requirements (when necessary), specific parameters of non-compliance e.g. total dissolved solids, and disposal of sludge? Indicate how these issues were or are being addressed.

(k) Role of SPCBs in promoting and supervising CTFs, and any outstanding issues. How often does the SPCB visit the discharging industries to the CTF, and the CTF? Does SPCB collect samples? Does SPCB share these monitoring results with the CTF? What measures are taken to correct non-compliance by member industries, and by whom?

(l) Were any training programs organized for CTF staff and management? If so, please describe the nature of training, sources of funding, location, number of people trained, duration of training, etc.

(m) Implementation issues:

- What were the major constraints faced by CTFs during construction?
- Were project funds made available in a timely manner?
- If major delays were experienced, what were the reasons? State, Center, IDBI?
- If delays were attributed to construction delays, what were the reasons?
- If the delays resulted in a cost overrun, who absorbed it?

(n) Were there any social issues and resettlement issues raised for the CTF? If so, how these issues were resolved? Have there been any complaints from the neighborhood because of odor nuisance or ground water pollution etc.

