

PROJECT BRIEF (4MAY07REV)

1. IDENTIFIERS

PROJECT NUMBER:	GF/IND/07/XXX
GEF ID:	1520
PROJECT TITLE:	Development of a National Implementation Plan (NIP) in India as a first step to implement the Stockholm Convention on Persistent Organic Pollutants (POPs)
PROJECT DURATION:	2 years
IMPLEMENTING AGENCY:	United Nations Industrial Development Organization (UNIDO)
PRINCIPAL COOPERATING AGENCIES:	Ministry of Environment and Forests
REQUESTING COUNTRIES:	India
ELIGIBILITY:	Eligible under para 9 (b) of the GEF instrument. India has signed and ratified the Stockholm Convention on POPs
GEF PROGRAMMING:	OP#14 Programme for reducing and eliminating releases of Persistent Organic Pollutants
BENEFIT:	Linkages and structures to be established to integrate NIP for POPs in India's national sustainable development strategies

2. PROJECT SUMMARY

The Stockholm Convention on Persistent Organic Pollutants (POPs), which was adopted in May 2001 with the objective of protecting human health and the environment from POPs, come into force on 17th May 2004. Parties to the Stockholm Convention are required to develop National Implementation Plans (NIPs) to demonstrate how their obligations to the Convention will be implemented. Each Party is to submit their NIP to the Conference of the Parties (COP) within two years of the date on which the Convention enters into force for the Party. India signed the Convention on 14 May 2002 and ratified it on 13 January 2006.

India recognises its obligation, under Article 7 of the Convention, to develop and submit a NIP to the COP¹. As such, India is committed to complete and deliver its NIP within the timetable set out in the Convention.

The NIP for India is to be developed keeping in mind the specific requirements of the country. The focus is on socio-economic aspects, sustainable development and environmentally appropriate policies and actions. The Stockholm Convention places obligations on the Parties for 12 chemicals, however a provision is also made in this NIP to respond to the listing of any new chemicals.

¹ Articles 7 (1)(a)-(b) of the Convention

The GEF-funded, UNIDO-executed PDF-B project entitled “*Development of a National Implementation Plan in India as a first step to implement the Stockholm Convention on POPs*”, whose objective is to identify the requirements for the development of the NIP through a preliminary assessment, was implemented by the Ministry of Environment and Forests (MOEF) through the Industrial Toxicology Research Centre (ITRC), Lucknow. This project brief is the principal outcome of that preparatory project.

The project brief has been prepared to propose the necessary actions, timeframe, likely costing and sources of funding for Enabling Activities leading to the preparation of a National Implementation Plan for India.

The preparation of the project brief comprised of:

- (a) the development of a methodology to determine the extent and nature of POPs releases to the environment, stocks, wastes and contaminated sites, production, distribution, use and export established through consultation with various stakeholders including Government entities at national as well as at the States and Union Territories, private and public sectors, etc.;
- (b) a thorough review of the national as well as States and Union Territories infrastructure of government institutions, commerce and industry, public and private testing laboratories, research institutes, enforcement entities, public health institutes, NGOs and other associations which are relevant for the implementation of the Stockholm Convention; and
- (c) suggestion of a methodology for quantitative estimation of POP chemicals.

The methodology adopted for the study included field work, questionnaire to different stakeholders like regulatory authorities, industries, NGOs, research institutions, consultants, municipal corporations, electricity boards and research laboratories.

The National Expert Committee (NEC) for the project identified five representative zones in the country covering 16 states to assess the status of POP chemicals for the preparation of the project brief. A series of five workshops were conducted in New Delhi, Baroda, Pune, Bangalore and Hyderabad to sensitize the stakeholders, involve them in the process of identification and preparation of the inventory of the POP chemicals by developing a questionnaire that was used in the field survey. Five other interactive workshops were held at Chandigarh, Bhopal, Kolkatta, Trivandrum and Goa for representatives of national as well as the States and Union Territories’ infrastructure of Government institutions, commerce and industry, public and private testing laboratories, research institutes, enforcement entities, public health institutes, NGOs and other associations that are relevant to the implementation of the Stockholm Convention, to facilitate assessment of regulatory control, enforcement capacity, research and development, health and environmental risks and also assess capacity building needs.

Further data/information was collected through questionnaires, literature search, feedback from the interactive workshops and personal visits of the teams to the relevant stakeholders in various states such as the state pollution control boards, state agricultural departments (head office and regional offices, district level offices), state electricity boards, industry associations, research institutions and laboratories, agricultural universities, municipal corporations, NGOs, pesticide industries, oil manufacturing industries, common treatment and disposal facilities and experts. The field visits and the studies were conducted in a span of 2 months along with the 10 workshops.

The field survey revealed that Aldrin, Chlordane, Dieldrin, Endrin, Heptachlor and Toxaphene are banned for manufacture, use, import and export in India. DDT is banned for agriculture use and its restricted use was allowed in the public health sector only. Mirex and Hexachlorobenzene have never been registered as pesticides in India. Since the above pesticides were banned for use several years back, the stockpiles were found in small quantities. Various state agricultural departments or cooperative marketing federations have stocks of approximately 3,000 MT of out-dated/expired pesticides. However, exact quantities and active ingredients of the pesticides in the stockpiles/date expired pesticides are not available. Several reports on level of POP pesticides in the environment, animal and human tissues are available. However, these reports

are generally based on one time monitoring of pesticides residues in selected regions with no repetitive exercises to draw temporal trends. In the absence of regular, continuous monitoring and follow-up in most of the regions, it was not possible to observe any meaningful trends on pesticide levels. For the analysis of the pesticides, there are large numbers of institutions with required capability. It is suggested that few laboratories in each state be prioritized to strengthen the analysis of pesticides. The use of alternative POP pesticides has started but viable alternatives are not yet available. For the development of alternate product/technology, agencies have to be identified and extensive research work would be required. Proven technology available in other countries could also be availed.

Polychlorinated biphenyls (PCBs) were never manufactured in India. Little information is available on the import status of PCB raw materials and availability of finished product in the country. PCBs are used mainly in transformer oils and electrical appliances like capacitors. Proper data on the extent or presence of PCBs in transformer oils is not available with the authorities like the State Electricity Boards. A study conducted by Hess. Et.al on disposal options for ships, which focused on American Ship Industry, found that ship-breaking industry is a major source of PCBs. The transboundary impacts of PCBs in India cannot be ruled out. Since studies on PCBs contamination are yet in a dormant stage in the country barring a few individual or project specific studies, it is difficult to either quantify or identify the presence of PCBs in India. Considering the toxic effects and health hazards of PCBs, a detailed investigation on its sources is required. For PCBs analysis, limited facilities are available in the country.

The unintentional by-products (dioxins and furans) are one of the important areas of concern in the developing economy. Apart from industrial activities, the probable sources of dioxins and furans are municipal waste landfill sites including open burning of garbage and biomedical waste incineration. These include industrial incinerators, furnaces, ovens, chemical manufacturers, kilns, etc. Monitoring and research activities for the estimation of dioxin and furans are in the preliminary stage. Only few institutions in India are in a position to analyze dioxin and furans, however, they are not in a position to analyze all the congeners of dioxin and furans. The capabilities for monitoring and analysis need to be developed with good technical support. For dioxins and furans measurement, activities have been initiated at national laboratories like the Regional Research Laboratory, Thiruvananthapuram; National Environmental Engineering Research Institute, Nagpur; National Institute of Occupational Health, Ahmedabad. These initiatives are at the initial stages. Full-fledged dioxin and furan monitoring facilities have to be set up at least one in each state. There are several industries relating to the dioxin emissions in India, but few investigations about the pollutant sources and generation of the dioxins/furans have been carried out. Only a limited number of samples have been analyzed and hence the extent of emissions is not available.

In order to prepare the National Implementation Plan (NIP) and to execute the same for reduction and elimination of POPs, financial assistance is essential for a developing country like India. Furthermore, considering the geographical spread of India, its population, culture and religion, sufficient aid is essential to create awareness and build capacity of institution(s) to handle the issues related to POPs.

The NIP identifies the need for the following:

- development of a methodology for inventory of POP chemicals;
- capacity building for management of POP chemicals; and
- strengthening of existing infrastructure for undertaking research and developmental activities including capacity building for analysis of unintentional POPs by-products; searching suitable alternatives to POPs and adoption of cleaner technologies for industrial production.

3. COST AND FINANCING

		Amount (US\$)
GEF	Full Project (estimate)	3,241,100
	PDF-B	317,000
<i>TOTAL GEF</i>		<i>3,558,100</i>
Co-Financing for Full Project:		
	Government of India (in kind and cash)	6,880,000
	UNIDO (in-kind)	200,000
	<i>GOI (in kind) for PDF-B</i>	<i>40,000</i>
	<i>UNIDO (in kind) for PDF-B</i>	<i>40,000</i>
<i>TOTAL Co-financing</i>		<i>7,160,000</i>
TOTAL PROJECT COSTS		10,718,100

4. GEF Operational Focal Point Endorsement:

Name Mr. Sudhir Mittal
Position Operational Focal Point
Organization Ministry of Environment and Forests
 Paryavaran Bhavan
 C.G.O. Complex
 Lodhi Road
 New Delhi, INDIA 110003

Date 15 June 2006

5. Implementing/executing Agency Contact

Name Mr. Dmitri Piskounov Position Managing Director Organization UNIDO Programme Development and Technical Cooperation Division P.O. Box 300 A-1400 Vienna, Austria Phone: +43 1 26026 5578 Fax: +43 1 26026 6881 E-mail: D.Piskounov@unido.org	Mr. S.M. Si Ahmed Director UNIDO Multilateral Environmental Agreements Branch Programme Development and Technical Cooperation Division P.O. Box 300 A-1400 Vienna, Austria Phone: +43 1 26026 3782 E-mail: S.S-Ahmed@unido.org
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प्रो० वाई. के. गुप्ता

निदेशक

Prof. Y. K. Gupta, M.D. MNAMS

Director



औद्योगिक विष-विज्ञान अनुसंधान केन्द्र

महात्मा गाँधी मार्ग, पोस्ट बॉक्स नं० 80

लखनऊ - 226 001 (उ.प्र.) भारत

INDUSTRIAL TOXICOLOGY RESEARCH CENTRE

MAHATMA GANDHI MARG, POST BOX NO. 80

LUCKNOW - 226 001 (U.P.) INDIA

PREFACE

Persistent Organic Pollutant (POPs) are organo-chlorine compounds of concern to the international community as they are highly toxic to human and environment, persist for long time, taken up and bio-accumulated in biological species. These affect plant and animal development and growth and cause several adverse health effects including cancer. The Stockholm Convention, a global treaty was adopted in May 2001 with the objective to protect human health and the environment from POPs. India signed the Stockholm Convention on POPs on May 14, 2002. The convention has come into force w.e.f. May 17, 2004. The signatories to the Stockholm Convention are required to develop National Implementation Plan (NIP) to meet the obligations of the convention.

A preparatory project to identify the requirements for developing the NIP through a preliminary assessment was awarded to Ministry of Environment and Forests (MOEF), Government of India. The UNIDO in agreement with the Global Environment Facility (GEF) and MOEF, which is the focal point for POPs, awarded this project to Industrial Toxicology Research Centre, (ITRC), Lucknow in view of its expertise and capabilities. Dr. P.K. Seth, former Director and currently Director-Grade-Scientist at ITRC was identified as the National Coordinator and a Project Team (Annexure I) to implement the project was formed. In addition to the Steering Committee for POPs, a National Expert Committee (Annexure II) and a National Committee for Project Monitoring (Annexure III) was constituted. For gathering the data from different sources and conducting ten workshops, services of M/S Associated Environmental Engineers (AEE), Vadadora (Annexure IV) were obtained. This project brief provides the preliminary assessment of the requirements for developing a NIP in the country as a first step to implement the Stockholm Convention on POPs.

I acknowledge the guidance and support of MOEF, Government of India, UNIDO, National Experts Committee, Project Monitoring Committee, Ministries of Chemicals & Fertilizers, Agriculture, Health, Power, Industries and Industrial Associations, NGO's and all relevant stakeholders for providing their valuable suggestions and help in completing this project. I also acknowledge the hard work of the project team at ITRC, Lucknow


Prof. Y.K. Gupta

तार : इन्टॉक्स
Telegram: INTOXI

Website : <http://www.itrcindia.org>

टेलीफैक्स
Telefax } +91-522-2628227

E-Mail : director@itrcindia.org

कार्यालय/Office : 2621856, 2613357
2628227



Accredited by NABL for chemical and biological testing

1.0 PROJECT DESCRIPTIONS: BACKGROUND AND CONTEXT

1.1 Introduction

1. The Stockholm Convention on Persistent Organic Pollutants (POPs) was adopted in May 2001 with the objective of protecting human health and the environment from persistent organic pollutants. It has come into force with effect from 17th May 2004. All Parties to the Convention are required to develop the National Implementation Plan (NIP) to demonstrate how their obligations to the Convention will be implemented. Each Party is to submit their NIP to the Conference of the Parties (COP) within two years of the date on which the Convention enters into force for the Party. The NIP for India is to be developed keeping in mind the specific requirements of the country. The focus is on socio-economic aspects, sustainable development and environmentally appropriate policies and actions. The Stockholm Convention places obligations on the Parties for 12 chemicals; however a provision is also made in this NIP to respond to the listing of any new chemicals.
2. India recognises its obligation, under Article 7 of the Convention, to develop and submit its NIP to the COP within two years of entry into force to the Convention². India signed the Convention on 14 May 2002 and ratified it on 13 January 2006. As such, India would be required to transmit its NIP within the timetable set out in the Convention.
3. To that end, India is committed to start the compilation of the NIP. The country invited UNIDO to act as GEF Executing Agency with expanded opportunities for the development of the NIP and opted to undertake this work in two phases through the GEF full project cycle rather than by taking up the so-called “Enabling Activities”. The GEF-funded, UNIDO-executed PDF-B project, whose objective is to identify the requirements for developing the NIP through a preliminary assessment has been implemented by the Ministry of Environment and Forests through the Industrial Toxicology Research Centre (ITRC), Lucknow. This project brief is the principal outcome of that preparatory phase.
4. The project brief has been prepared with the goal of delivering the NIP thereby meeting the timetable set out in the Convention. In view of the considerable volume of work required to prepare the NIP, a start must be made as soon as the necessary technical and financial support from the international community can be obtained in accordance with Article 13 of the Convention.
5. The overall objective of the full project is to develop the NIP for India to implement the Convention. To stand by this commitment, the Project will:
 - establish inventories or otherwise develop strategies to establish inventories, on the production, use trade, stockpiles and wastes of, and sites contaminated by, the chemicals listed in the Annexes of the Convention and existing in India;
 - develop strategies and action plans for the reduction and elimination of the chemicals listed in Annexes of the Convention and existing in India;
 - assess infrastructure capacity and propose management options, including institutional arrangements, regulatory frameworks, and requirements for capacity building, raising stakeholders and public awareness and research and development, to ensure the effective and sustainable implementation of the proposed strategies and action plans and thus facilitate India's preparedness for compliance with the Convention;
 - formulate and gain stakeholder endorsement for a NIP, including priorities and objectives with the aim of estimating the total costs and the incremental costs likely to be incurred for introduction into development and assistance planning;

² Articles 7 (1)(a)-(b) of the Convention.

- build sustainable capacity sufficient to prepare the NIP and its component inventories, strategies and action plans, and to fulfill ongoing reporting requirements of the Convention; and
 - develop and demonstrate methodologies representing practical and feasible approaches to priority actions required by India in meetings its Convention obligations.
6. Capacity building at the national, state and district levels is needed in India. A long-term Capacity Building Programme addressing POPs issues therefore needs to be developed for donor funding.

1.2 Initial Institutional Arrangements for NIP Development in India

7. India invited UNIDO to act as GEF Executing Agency with expanded opportunities for the development of the NIP and opted to undertake this work in two phases through the GEF full project cycle rather than by taking up the so-called 'Enabling Activities'. During the Full-sized Project proposed here, support would be sought from UNIDO and other funding agencies. During the PDF-B phase a coordinating mechanism drawing together India's international development partners was established to ensure that NIP development takes full advantage of the findings and experience of associated projects and programmes executed by intergovernmental organisations and bilateral donors.
8. India established a National Steering Committee (NSC) within the MOEF to facilitate its full participation in the Intergovernmental Negotiating Committee (INC) for an International Legally Binding Instrument for Implementing International Action on certain Persistent Organic Pollutants that implies to harmonize the interests and standpoints of different sectors involved and to determine the position of the Indian Government with regard to POPs issues.
9. MOEF was responsible for the national implementation of the PDF-B phase. It has managed all local elements of the project and is responsible for the recruitment and supervision of local experts/subcontractor in preparing component for technical investigations and reviews and drafting of the project brief. A similar arrangement is suggested for the implementation of the proposed Full-sized Project. MOEF will coordinate with all concerned Ministries and Departments/Organizations at the Central and State levels and will set up a special cell or unit to monitor the Convention compliance.
10. During the PDF-B phase, funding has been provided for a series of capacity building workshops to raise awareness of national and state officials and industry to the requirements of the Stockholm Convention. These workshops were of particular assistance in the preparation of the project brief. Studies of exposure and health impacts of POPs on living systems and of integrated approaches to the replacement of POPs, as well as further capacity building to improve the management of PCBs wastes, as well as for the assessment of sources, releases and pathways of unintentional byproducts will be undertaken during the full project.

1.3 Current Situation

11. The following sections present the results of preliminary assessment studies undertaken on PDF-B project *"Development of a National Implementation Plan in India as a first step to implement the Stockholm Convention on POPs"*.
12. The National Experts Committee (NEC) for the project identified five representative zones covering 16 states in the country for core assessment and nationwide projections on POPs and POP-related activities.
13. With a view to develop questionnaire-based methodology to undertake inventories of sources, releases, contaminated sites, etc. of POPs, workshops were organized in each zone to discuss

technical aspects with relevant stakeholders (private sector representatives of large, medium and small enterprises, industrial and agricultural associations, academic institutions, testing laboratories, public institutions and Government bodies).

14. A series of five interactive workshops, one in each zone, were organized for representatives of national as well as the States and Union Territories infrastructure of Government institutions, commerce and industry, public and private testing laboratories, research institutes, enforcement entities, public health institutes, NGOs and other associations, which are relevant to the implementation of the Stockholm Convention to facilitate assessment of regulatory control, enforcement capacity, research and development, health and environmental risks and also assess capacity building needs.
15. Overlooked the analytical methodologies for estimation of POP-chemicals in different environmental samples/media (Annexure 6a).

OVERVIEW

16. POPs are chemicals that persist in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of living organisms and are toxic to humans and wildlife. POPs circulate globally and can cause damage wherever they migrate to. Therefore, in implementing the Stockholm Convention, Governments will have to take measures to eliminate or reduce the release of POPs into the environment.
17. POPs are a class of synthetic toxic chemicals that cause severe and long-term effects on wildlife, ecosystems and human health. Some of the POPs have been implicated in the increase in incidence of certain cancers, e.g. breast, prostate, endometriosis, reproductive deficits such as infertility, sex linked disorders and declining sperm counts, fetal malformations, neurobehavioral impairments and immune system dysfunction. Because of the sufficient evidence of major threats to human health, an initial twelve substances called “ 12 dirty dozens” for elimination have been short-listed, which include organochlorine pesticides (aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, hexachlorobenzene, mirex and toxaphene), industrial chemicals like polychlorinated biphenyls (PCBs) and dioxins and furans (PCDDs/PCDFs).
18. The Stockholm Convention’s goal for those intentionally produced substances listed in Annex A (pesticides and industrial chemicals) is elimination of their production and use. Article 3 of the Convention, “*Measures to reduce or eliminate releases from intentional production and use*” is the central mechanism for achieving this goal. It requires the Parties to prohibit and/or take the legal and administrative measures necessary to eliminate substances listed at Annex A. The assumption is that proof of adopting these practices will be found in legitimate legislation, regulations, orders or other authoritative instruments of the Party’s system of government.
19. The current status of POPs in India is reflected in Table 1 below:

Table 1: Current status of POPs in India

<u>Sr. No.</u>	Name of chemical	Category	Situation in India
1	Aldrin	Pesticide	Banned
2	Chlordane	Pesticide	Banned
3	DDT	Pesticide	Banned with restricted use
4	Dieldrin	Pesticide	Banned
5	Endrin	Pesticide	Banned
6	Heptachlor	Pesticide	Banned
7	Hexachlorobenzene	Pesticide / Industrial	Never registered for use in India as Pesticide
8	Mirex	Pesticide	Never registered
9	Toxaphene	Pesticide	Banned
10	PCBs	Industrial	Never manufactured

11	Dioxins	By-product	Unintentional by-products
12	Furans	By-product	Unintentional by-products

20. The Stockholm Convention lists 10 chemicals in its Annexes A and B. The current regulation status of these chemicals in India is given as follows:

- The manufacture, use, import and export of **Aldrin** have been completely banned effective September 20, 1996 by Notification No. 648(E).
- **DDT** was banned for agriculture use as per Notification No. 378(E) of July 25, 1989. However, the manufacture of DDT of required quantities is permissible only for public health sector use.
- **Dieldrin** use is restricted to locust control in desert area under the direction of the Plant Protection Advisor by Notification No. 382(E) dated May 15, 1990. Complete ban was imposed on manufacture, import and export of Dieldrin in July 2001. Marketing and use was permitted for two years from the date of the ban on manufacture or date of expiry whichever was earlier. The chemical is under complete ban since 2003.
- Notification No. 382(E) dated May 15, 1990 imposed complete ban on manufacture, use, import and export of **Endrin**.
- Notification No. 648(E) dated September 20, 1996 put into effect the complete ban on **Chlordane** for its manufacture, use, import and export.
- **Mirex** was never registered in the country for manufacture, use, import and export.
- **Toxaphene** was completely banned in the country for manufacture, use, import and export effective July 25, 1989 by Notification No. 569(E).
- Notification No. 648(E) dated September 20, 1996 imposed complete ban on manufacture, use, import and export of **Heptachlor**.
- **Hexachlorobenzene** has never been registered for use in India as pesticide.
- **PCBs** have never been manufactured in India, however according to the World Bank Report (1996)³ an estimated amount of 2000-4000 MT of PCBs exists in India. Apart from transformers and capacitors, the ship breaking industry is also a source of PCB release into the environment. A study by Hess, et al. (2001)⁴ estimates that a typical merchant ship to be dismantled for scrap contains between 250 kg – 800 kg of PCBs, which is found principally in the paint as well as in the vessel machinery. The report further indicated that paints often left on the scrap metal that is re-rolled or re-melted could be another source of PCBs pollution⁵. Other sources of PCBs may be used oil from abroad, especially from the Middle East region that includes transformer oil containing PCBs mixed in the general pool.
- **Dioxins and Furans:** Toxicity of polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDDs/PCDFs) is described using the concept of toxic equivalency that measures the relative dioxin-like toxic activity of different congeners of dibenzo-p-dioxins and dibenzofurans and coplanar polychlorinated biphenyls in comparison to 2,3,7,8-tetrachlorodibenzo-p-dioxin (Annex C) of the Convention. The toxic equivalent factor values to be used for the purposes of this Convention shall be consistent with accepted international standards, commencing with the World Health Organization (WHO) (1998) mammalian toxic equivalent factor values for polychlorinated dibenzo-p-dioxins and dibenzofurans and coplanar polychlorinated biphenyls. Concentrations are expressed in toxic equivalents (TEQs).

³ S.Knight the management of PCB-India, report to the World Bank, Sydney: merz –PTY Limited 1996.

⁴ R Hess et al., *Disposal options for Ship*, N R – 1357/NAVY, 2001

⁵ <<http://www.rand.org/publication/MR/MR/1377/MR1377.ch4.pdf>>(3 December 2001).

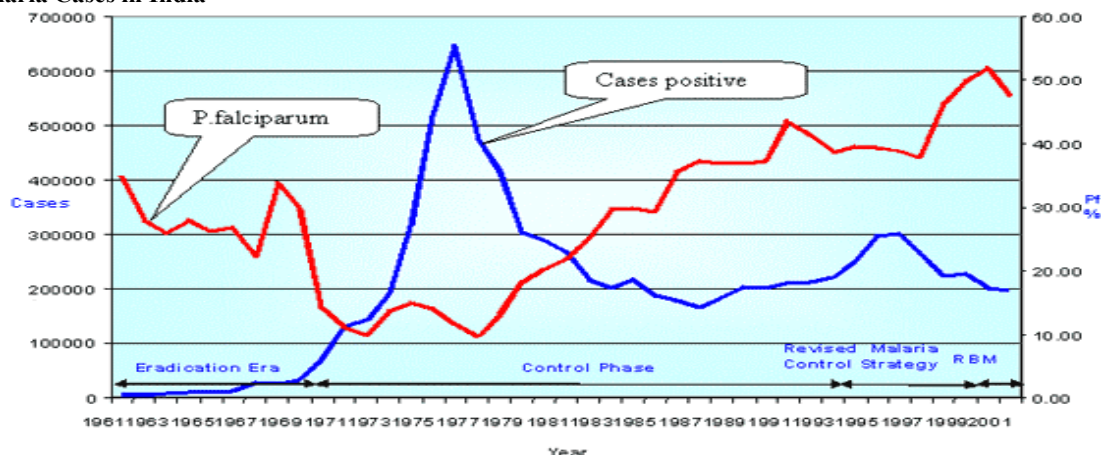
The status of these chemicals is described more elaborately in Appendices 1-3.

POP-CHEMICALS THAT ARE CURRENTLY PRODUCED AND USED IN INDIA

21. The Stockholm Convention's provisions⁶ pertaining to DDT (listed in Annex B) are to restrict its use and production (Article 3), with the goal of "reducing and ultimately eliminating the use of DDT" (Annex B, Part II, 5.) The production and use of DDT shall be eliminated except for Parties that have notified the Secretariat. These countries, to be listed on the Secretariat DDT Register, may use DDT for the sole purpose of disease vector control in accordance with World Health Organization recommendations and guidelines and when "locally safe, effective and affordable alternatives are not available to the Party". A number of specific exemptions for either production, or use, or both, of intentionally produced substances for acceptable purposes are noted in the Convention (see Appendix 1), but Parties that continue to use POPs under the exemptions provisions must take measures to prevent or minimize human exposure and releases to the environment.
22. Several countries in Asia and the Pacific region have successfully stopped the use of DDT. They have started using anti-malarial drugs and chemically treated bed nets to control malaria. In some countries, mosquitoes developed resistance to DDT. However, substantial concern exists, especially among malaria control specialists and few countries that are still using DDT, because these alternatives are not sufficiently effective, sustainable or affordable. Based on the reports of the WHO Roll Back Malaria campaign in Vietnam in 1990-1997, deaths from malaria dropped by 98 percent, from 4,500 to 100. This was accomplished using drugs and chemically treated bed nets.
23. India is among the three known producers of DDT (up to 10,000 MT capacity) in the world, the other two being Mexico and China. However, with the assistance from the World Bank, India is attempting to reduce its reliance on DDT. Mexico's production of DDT recently ceased and is on its way to meeting its goal of an 80 percent reduction in DDT use.
 - a. **Pesticides** (Detailed information is given in Appendix 1)
24. There is a sequential rise in the production and consumption of pesticides in India during the last three decades. Among the organochlorine pesticides produced during 1950s to 1970s, DDT was the major one. India has introduced Pesticides Registration System under Section 9(3) of the Insecticides Act 1968. Now, among the 9 POP-pesticides, only DDT is in production with limited use for public health sector for disease control and restricted up to a maximum of 10,000 MT (Tech.) per year as per Notification 378(E) of July 25, 1989. Mirex and HCB (as pesticide) were never permitted for production on industrial scale. Dieldrin has restricted usage for locust control but the production was banned effective July 17, 2001 and marketing/use was permitted for a period of 2 years (July 17, 2003) or date of expiry, whichever was earlier.
25. Among the vector borne diseases, malaria has been a major disease affecting the large populations.

⁶ Stockholm Convention on Persistent Organic Pollutants (POPs), UNEP, Geneva (2001)

Malaria Cases in India



Trend of estimated and reported malaria cases and deaths in India⁷ (in thousand) 1997-2001

b. Polychlorinated Biphenyls (PCBs)

(Detailed information is given in Appendix 2)

26. Polychlorinated biphenyls (PCBs) are industrial fluids that were commercially produced in various countries since 1930 and sold as mixtures containing varying amounts of the 209 possible different compounds. Due to their chemical inertness, resistance to heat, non-flammability, low vapour pressure and high dielectric constant, they were used in a wide range of industrial applications as dielectric fluids in transformers and capacitors, hydraulic fluids, heat exchange fluids, paint additives and in carbonless copy paper and plastics. By the 1970's, it was recognized that PCBs were persistent, toxic environmental contaminants and most countries banned the manufacture and import of PCBs and PCB-containing products and articles. However, due to their long in-service lifetime, thousands of electrical capacitors and transformers remained in service for many years and a considerable number are still in service in many countries around the world today.
27. PCBs were never produced in India. Little information is available about the import status of PCB raw materials and availability of finished products in India. However, the estimated quantity of PCBs in India is about 2000 – 4000 MT PCBs (World Bank 1996)². It is anticipated that India must have imported PCBs from the countries that manufactures them. Furthermore, the consent for import of PCBs is necessary as from December 12, 1994.
28. One of the sources of release of PCBs is scrapping of merchant ships. It is estimated that scrapping of one ship generates about 0.25 – 0.80 MT of PCBs. (Hess et al., 2001)³.
29. PCBs containing oils were mostly used in a wide variety of open systems, such as in oil paints and exterior emulsions. It is reasonable to assume that this may lead to environmental contamination with PCBs.
30. PCBs have been used in manufacturing of capacitors and transformers. In India, there are number of transformer manufacturers but they do not have neither an inventory of the quantity of PCBs being used nor the quantity of PCB-containing equipment. Manufacturers and officials dealing with the transformer oil were not aware about the presence of PCBs in oils. Efforts should therefore be made to identify PCBs and PCB-containing equipment as well as those that are in use, defunct and disposed of in order to obtain realistic estimates of PCBs sources. The electricity companies auction the old and defunct transformers. Agents buy these transformers and the waste oil present is used for reprocessing activities. The magnitude of such processes needs to be worked out.

⁷ <http://www.whosea.org/malaria/india.htm>

31. There are no dedicated disposal sites for PCBs containing waste. However, these wastes are handled following the Hazardous Waste Management Guidelines framed by the Government of India. Surveys and investigations conducted indicate that some temporary storage facilities remain for accumulations of discarded PCBs-containing equipment. Furthermore, the number of sites in which PCBs oils and PCBs-containing equipment were discarded is presently unknown and likely to be scattered throughout the country. Identification of these sites will, therefore, be time-consuming and costly tasks and quantification of PCBs will be more difficult.
- c. **Unintentional production of POPs as specified in the Convention**
(Detailed information on dioxins and furans is given in Appendix 3)
32. Dioxins and furans are usually produced as mixtures of varying composition and are widely recognized as the most toxic environmental contaminants presently known, especially as even minute amounts may cause severe adverse effects.
33. Annex C, Parts II and III of the Stockholm Convention lists 20 source categories that are significant sources of unintentionally produced POPs. All these sources are found in India and industrial activities in many of these sectors have contributed significantly to India's impressive economic growth in recent years. Investments in new technologies, combined with general measures to control air pollution, in particular of gaseous emissions, from large and medium scale enterprises, may already be contributing to the reductions of releases of unintentionally produced POPs.
34. Incinerators are being used to manage biomedical waste, however, all of them do not meet the standards. In 2000, a report by NGO Srishti indicated that Delhi has 59 biomedical waste incinerators, of which 60 percent were functioning at low temperatures and 38 percent were incinerating plastic waste.
35. The Indian Agro and Recycled Paper Mills Association reports that there are 406 pulp and paper companies in India with a combined capacity of over 6.0 million tonnes per year, of which only 60 to 65 percent is being utilized at present. The industry consists of three segments based on its principal source of fiber:
 - Wood/forest-based (43 percent of the capacity);
 - Agro-based (28 percent); and
 - Waste paper (recycled fibers) based (29 percent).
36. The industry is further categorized based on mill capacity:
 - Large-scale mills with capacities of 33,000 tonnes or more per year;
 - Medium-scale mills with capacities above 5,000 tonnes up to 33,000 tonnes per year; and
 - Small-scale with capacities below 5,000 tonnes per year
37. Almost all the mills continue to use chlorine to bleach paper. Use of chlorine can release organochlorines, including the carcinogenic dioxin that can enter the food chain. A few mills are generating chlorine dioxide in order to partially replace elemental chlorine in the first stage of producing pulp for pre-bleaching and second stage as a replacement for hypochlorite. The most recent initiative of some of the progressive, larger mills in India limits itself to the recovery of chemicals from black liquor for reusability.
38. The pulp and paper industry has been identified by the Central Pollution Control Board (CPCB) as one of the 17 most polluting sectors in India. A CPCB survey of the pulp and paper industry indicated that 62 of 96 mills with a production capacity of 309 tonnes per day have adequate facilities to comply with effluent/emission standards, while 19 have inadequate treatment facilities and 15 have been ordered to close down.
39. The unintentional release of POPs in the pulp and paper sector in India is contingent on a number of factors. The Pulp and Paper sector reports indicated that relatively few new plants have been built in the last 10 years. Most of the mills were apparently built in the 1970s and early 1980s. Plants of this

age generally use older models of technology and are less efficient. The majority of mills are of medium and small scale and process change and upgrading will be a challenge.

40. In the iron and steel sector, dioxins and furans are produced in the sintering process and in electric arc furnaces in a manner similar to other industries whose primary production processes involve combustion. The formation of PCDDs, PCDFs, HCB and PCBs in aluminum and zinc production cannot be ruled out in the smelter process associated with both industries.
41. The iron and steel industry in India is regulated and largely owned by the government including six of the seven large integrated iron and steel plants in the country. The seventh facility owned by the private sector Tata Group is the oldest steel plant in India. The seven integrated plants use the Blast Furnace and L.D./Basic-Oxygen Furnace (BF-LD/BOF) process and produce about 16.1 million metric tonnes per annum (MTPA) of crude steel. There are nearly 160 medium-sized steel plants in the private sector, which produce about 7.3 million MTPA of steel by the Direct-Reduced Iron and Electric-Arc Furnace (DRI-EAF) process. A third tier of about 550 small units, using arc/induction furnaces to melt steel scrap, produces a total of 1.5 million MTPA of steel castings and other items. The annual total of 24.9 million MTPA places India among the top ten producers of steel in the world.
42. Formation and release of dioxins and furans are likely to occur in foundries during the casting process. However, no estimates of releases are available. There appears to be low awareness of the level of dioxin production in the steel industry. Small-scale industries are unaware of the likely problems, but the large, organized enterprises have indicated that they would be interested in reducing emissions if solutions are cost-effective. The Joint Committee of Iron and Steel Manufacturers has an environmental committee comprised of representatives from eight to ten steel plants that meets every other months to discuss environmental issues pertaining to the industry.
43. Attempts were made to generate information on level of dioxin releases from the iron and steel sector. A reply from the Tata Group indicated the lack of measuring and monitoring ability, but agreed to pay if the government would undertake measures and monitoring.
44. Under the Environmental Protection Rules, industry specific effluent and emission limitations have been issued. For caustic soda production, a final effluent limit of pH range of 5.5-9.0 has been issued for the combined effluent from cell house, brine plant, chlorine handling, hydrogen handling and HCl plant.
45. The Indian Chemical industry consists of 45 producers, with the largest 10 responsible for 67 percent of the production. Most of the producers are located on the west coast of the country close to the supplies of salt. In 1998, the total domestic capacity was 2.19 million tonnes, but actual production was 1.4 million tonnes of caustic soda. The amount of chlorine produced was approximately 90 percent of this amount. While production capacity grew in the mid 1990s, actual production did not increase as fast.
46. Given the ubiquity of chlorine usage in industrial processes, the chances for the unintentional formation of the banned substances are high. The focus on pollution control efforts in the chlor-alkali industry has been on mercury releases based on the use of mercury cells to produce caustic soda and chlorine. The Indian Chemical Manufacturers Association (ICMA) reports that an increase of membrane cell production can be anticipated as any new mercury cell production has been prohibited. Currently, 90 percent of producers in India use the mercury cell process and this raises an opportunity for a transition to less polluting production methods. The required input of energy is a very high portion of the production cost, thus, methods requiring less energy will be sought by the sector.

47. According to the UNEP Standardized Toolkit⁸ cremation of dead bodies can result in the formulation of dioxins and furans but exact figures cannot be obtained.
48. There are no reliable estimates of total unintentional production of POPs from various sources in India. The limited research undertaken on dioxins and furans at present has been principally geared to determine their prevalence in certain limited and specific sites of environmental interest. There is no systematic monitoring of releases of unintentional POPs from anthropogenic sources.
49. Preliminary estimates of the unintentional production of POPs from each industrial sector or source category can be made using available methodologies such as the UNEP toolkit. However, on account of different methods adopted at various areas of operation, wherein multiple types of raw materials are used, it would be rather difficult to estimate the emissions based on the toolkit.
50. Attempts to improve the model estimates of unintentional production of POPs are hampered by the lack of monitoring capabilities and analytical facility. Although few enterprises have equipped themselves to measure the releases from stack emission, inadequate facility exist in India with respect to measurement of dioxins and furans. Few research laboratories affiliated with the government agencies have taken initiative to monitor dioxins and furans from selected sources of generation. However, for the assessment of the problem at national level through complete analysis and regular monitoring, dedicated facilities with adequately trained manpower and analytical infrastructure will have to be developed.
51. The capacity for monitoring and analysis of dioxins and furans needs to be built up on priority in India. For this, resources both in terms of training and infrastructure would be required.

d. Stockpiles, wastes and sites contaminated by POPS

52. The Stockholm Convention distinguishes between stockpiles, representing accumulations of POPs chemicals, or products containing intentionally produced POPs chemicals that remain in use or usable, and wastes, representing similar accumulations that are no longer usable or materials containing or contaminated with unintentionally produced POPs that must be disposed off. Sites may become contaminated from the improper management of these accumulations, from the improper production, distribution, handling, transport, use and disposal of the chemicals and products or from the improper control of releases of unintentionally produced POPs.
53. Stockpiles are likely, for example, at sites where POPs remain in production, including both primary chemical producers and secondary formulators, and at distribution depots where dealers *or* users store POPs products prior to their application. Wastes, comprising obsolete chemicals may also occur at these sites, at facilities where POPs chemicals were formerly produced, stored or disposed off, and at sites used for the storage and safe-keeping of PCBs-containing equipment discarded from service. These sites may also be contaminated as many areas where releases of unintentionally produced POPs are discarded or where emissions of them are deposited.
54. Adequate guidelines for the disposal and handling of hazardous waste exist, but there are only a few technically sound landfill sites that adhere to these. Due to lack of analytical and infrastructural facility for estimating POPs, identification of all contaminated sites in the country has not been possible so far.
55. There is a great need for identifying the contaminated sites and for developing good secured disposal system for hazardous waste on the basis of the hazardous solid waste management rules brought out in 2000 by the Government of India.

⁸ UNEP- 200 I. Standardized toolkit for the identification and quantification of Dioxin and Furan releases- *Draft report*

INDIA'S POLICIES AND LEGISLATIVE FRAMEWORK RELEVANT TO POPs

56. India is a federal polity. It has 28 State Governments and 6 Union Territories with separate capital cities. The Constitution provides for the Executive, the Legislature and the Judiciary. The Executive comprises the President, the Vice-President and the Council of Ministers headed by the Prime Minister. All executive powers are vested in the President, who functions as the constitutional head and acts on the advice of the Council of Ministers. The Prime Minister is the leader of the majority party in parliament and heads the Council of Ministers. The Union Legislature (Parliament) comprises two houses - the Lok Sabha (Lower House, elected directly by the people of India) and the Rajya Sabha (Upper House, elected by the state legislatures which in turn are elected directly by the people). The Parliament is responsible for enacting the laws of India.
57. A similar structure exists in the States, where the head of the Executive is the Governor, who is appointed by the President of India. The Council of Ministers is headed by the Chief Minister and is responsible to the State Legislature (Legislative Assembly). A few states have a second legislature known as Legislative Council, whose members are elected by special electorate. The people of each State elect the Legislative Assembly, which performs functions similar to those, performed by the Parliament.
58. Procedures for the establishment of new legal instruments at these various levels are set out in Appendix 4.

Development of India's environmental legislation

59. India is among the first few countries in the world that has made provisions for the protection and improvement of environment in its Constitution. As per the provision in Article 51 – a (g) of the Constitution, it shall be the duty of every citizen of India *“to protect and improve the natural environment including forests, lakes, rivers and wild life; and to have compassion for living creatures.”*
60. There are provisions in various enactments to tackle the environmental problems. The Indian Penal Code; the Criminal Procedure Code; the Factories Act; the Indian Forest Act; the Insecticides Act; the Merchant Shipping Act, etc., have provisions for regulation and legal actions for some specific environmental issues. However, with India's emerging environmental scenario, with industrialization in the post independence era, these regulations were found either inadequate or being not effectively implementable to check the degradation of the environment.
61. After the Stockholm Conference on human environment in June 1972, it was considered appropriate to have uniform laws all over the country for broad environmental problems endangering the health and safety of the people as well as the flora and fauna. The Water (prevention and control of pollution) Act 1974 is the first enactment by the Parliament in this direction. This is also the first, specific and comprehensive legislation institutionalizing simultaneously the regulatory agencies to control the water pollution. The Pollution Control Boards at the Center and in the States came into being in terms of this Act. Subsequent to the Water Act 1974, several other enactments were made by the Parliament like the Air (prevention and control of pollution) Act 1981, Environment (Protection) Act 1986, etc. In 1986, the Parliament enacted comprehensive or umbrella legislation for the environment, by enacting the Environment (Protection) Act 1986.
62. Over the years, several amendments have been made in various existing statutes to tackle the various environmental issues.
63. The list of some of the relevant environmental regulations is given in Table 2.

**Table 2: Legislations enacted on Environment, Forests, and Wildlife
[updated 8/06/2004]**

Sr. No	Category Name
A	Water Pollution
B	Air Pollution
C	Environment Protection
(1)	Coastal Regulation Zone
(2)	Delegation of Powers
(3)	Eco-marks Scheme
(4)	Eco-sensitive Zone
(5)	Environmental Clearance – General
(6)	Environmental Laboratories
(7)	Hazardous Substances Management
(8)	Noise Pollution
(9)	Ozone Layer Depletion
(10)	2-T Oil
D	Public Liability Insurance
E	National Environment Appellate Authority
F	National Environment Tribunal
G	Animal Welfare
H	Wildlife
I	Forest Conservation
J	Biodiversity

64. There is now an extensive framework of environmental protection legislation and standards that is described in more detail in Appendix 4. Among these instruments, perhaps the most fundamental are the Environmental Legislation Network, Insecticide Act 1968, The Water (Prevention and Control of Pollution) Act, 1974; including Rules, 1975, The Air (Prevention and Control of Pollution) Act 1981; including Rules 1982 and 1983, The Environment (Protection) Act 1986, Hazardous Waste (Management and Handling) Rules, 1989 (amended 2000). The EPA (1986) highlights the national plans and programmes and encourages a precautionary path towards balanced development between economic progress and environmental protection raising the awareness of local officials to the need for environmental protection and of their responsibilities in delivering it. In addition to these legislations, MOEF issues advisory notes recommending best available techniques (BAT) for environmental protection.
65. The shift from concentration based discharge control to total volume based discharge control (also called total emission control) in the mid 1990s represented a major change of India's environmental policies to cope with plant owners who diluted the concentration of their pollutant discharges to escape punishment. Levels of permissible emissions are prescribed by MOEF through the Central Pollution Control Board (CPCB) to the State Pollution Control Boards in respective states of the country to various subordinate departments and local enterprises. In this way, a vertical system of total emission control is established.
66. India has a well-developed independent Judiciary. The Supreme Court, the apex judicial authority, is vested with powers to uphold fundamental rights and act as a guardian of the Constitution. Further, the Court also has the power to adjudicate disputes between the Union and the States or between States. The Judiciary is independent of the Executive and the Legislature and safeguards the Constitution with objectivity.

India's regulatory framework for the safe management of hazardous chemicals

67. In recent years, the Indian government has adopted the precautionary approach in its efforts to protect human health and the environment from chemicals hazards. A series of specific laws,

regulations and rules have been formulated to ensure the safe management of pesticides, hazardous chemicals, pharmaceuticals and veterinary medicine (Appendix 4). Present law requires such chemicals to be registered prior to production, sale and international trade while a review and approval system governs use, storage and transport.

68. Although none of these measures were established specifically to address the obligations set out in the Stockholm Convention, a number of instruments include provisions for the control of chemicals listed in the Convention. Most of the 12 POPs listed in the Stockholm Convention are banned or restricted in India. For example, mirex and hexachlorobenzene were never registered into the pesticide registry. There is a complete ban on the manufacture, use, import and export of aldrin, endrin, dieldrin, chlordane, heptachlor and toxaphene.
69. A series of national standards and technical practices on classification, storage, transport, packaging and labeling of hazardous chemicals support this legislative framework.
70. India has also adopted a number of international treaties and agreements and is a signatory to the Convention on Safe Use of Chemicals at Work (ILO 170.177; 1990), the Montreal Protocol on Ozone Depleting Substances (1985); the Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal and the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade. The implementation of these conventions and protocols is reflected in the body of the domestic legislation. India is a party/participant to a number of multilateral agreements with possible linkages to POPs, including the Montreal Protocol, London Guidelines, the Food and Agriculture Organization (FAO), Code of Conduct, the International Labour Organization (ILO) Convention and the United Nations Expert Committee on Transport of Dangerous Goods. Negotiations are underway to develop India's participation in the Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals in International Commerce. India is a signatory to a number of multilateral environmental agreements including the Convention on Biological Diversity and the United Nations Framework Convention on Climate Change.
71. India is also a member/participant of a number of international organizations that work on chemical safety, including the Inter-Governmental Forum on Chemical Safety, UNEP Chemicals and the International Programme on Chemical Safety.

Barriers to effective operation to meet the obligations of the Stockholm Convention

72. Although sustainable development is taken as a fundamental policy principle, there are few barriers that are ineffectively meeting India's obligations of the Stockholm Convention such as:
 - a. local development strategies continue to emphasize economic growth promoting increased employment to meet the people's need for basic necessities and higher quality of life in the face of population growth pressure;
 - b. several industrial units are inefficient and can neither afford end-of-pipe treatment, nor take up precautionary measures within process changes;
 - c. many provisions of important Indian environmental laws are policy pronouncements and have not defined individual responsibilities for compliance;
 - d. administrative guidelines issued by one body may be in conflict or contradiction to those issued by another body;
 - e. State Pollution Control Boards (SPCBs) and other responsible bodies lack adequate monitoring facilities and have limited access to legal expertise;
 - f. the enforcement is not adequate which affects the efficacy of environmental laws and standards;

- g. existing national standards are adequate enough to meet the requirements of specific instruments such as the Convention; and
 - h. undue delays in judgment on litigations hampers the implementation of environmental reforms.
73. Overcoming these barriers and integrating the requirements of the Convention will require considerable and long-term capacity building at the national, state, district and taluka levels within government and more widely across industry and variety of key stakeholder communities.

Establishing a legal framework to meet the obligations of the Stockholm Convention

74. Any formulation, enforcement of laws or regulations to meet the obligations of the Stockholm Convention will need to be established within the general policy and legislative framework set out above in order to contribute towards India's overall development objectives.
75. A preliminary review, undertaken during the PDF-B phase and set out in detail in Appendix 4 indicates that there are elaborated laws for pollution control and environmental protection but no specific law addressing the elements of the Stockholm Convention.
76. In addition, there will be a need to incorporate the obligations of the Convention in national chemicals registration schemes as well as into a wide range of other legislation governing industry and chemicals production, use, trade and disposal.
77. A comprehensive study is now required to identify those obligations set out in the Stockholm Convention that are not met by current regulatory instruments and to recommend additions or amendments to ensure that India can expeditiously meet its obligations and reporting requirements. India will also need to identify those priority programmes and areas where in addition to mainstream, the control of POPs could play a role in supporting sustainable development nationally as well as India's contributions to international efforts to protect human health and the environment.
78. In each case, a methodology for their adaptation to meet the needs of the Convention and for their successful and effective implementation should be developed. In this regard the social and economic impacts associated with the continuing use of the chemicals listed in the Convention, and the consequences of any control measures established to eliminate or restrict their production and use, and to manage their destruction or disposal by environmentally sound means will need to be studied and evaluated. Such a study or studies, based, perhaps, on the parameters set out in Annex F of the Convention, would need to take account of the differing capacities and conditions of India's different regions.
79. In addition to changes to the legislative framework, a wider range of mechanisms, including education and information dissemination, capacity building and promotional schemes for industry should be considered to ensure that Convention obligations could be met in an increasingly diversified market-led economy.

RELEVANT INSTITUTIONS AND THEIR CAPACITIES

(For more details, see Appendix 5)

80. The **Ministry of Environment and Forests** (MOEF) is the nodal agency for planning, promoting and coordinating environmental programmes in India. The Ministry is mandated to protect the land, air and water systems and is responsible for the prevention and control of pollution including hazardous substances. The MOEF is the GEF and Stockholm Convention focal point in the country. MOEF is empowered to promulgate rules under the Environment Protection Act and is responsible for ensuring effective implementation of legislation, monitoring and control of pollution (including pesticide levels in soil and water), environmental clearances for industrial development projects, promotion of environmental education, training and awareness, and coordination with concerned agencies at the national and international level.

81. MOEF establishes standard for the quality of the environment, including emissions and/or discharges of environmental pollutants from various sources. MOEF is the nodal Ministry for the management of chemical disasters in India and has powers to establish procedures and safeguards for the prevention of accidents that may cause environmental pollution. MOEF can issue direction for the closure and prohibition or regulation of an industry, operations or processes.
82. The **Central Pollution Control Board (CPCB)** was constituted in September 1974 under the provisions of The Water Act (Prevention and Control of Pollution), 1974. The main functions of CPCB, as spelt out in the Water Act of 1974, and The Air (Prevention and Control of Pollution) Act, 1981, are: (i) to promote cleanliness of streams and wells in different areas of the States through prevention, control and abatement of water pollution; and (ii) to improve the quality of air and to prevent, control or abate air pollution in the country.
83. The **Ministry of Agriculture (MOA)**, the nodal ministry for dealing with pesticides, is responsible for assessing the benefits and hazards of pesticides, encouraging proper use of pesticides and developing alternatives to pesticides. Three main bodies are under the MOA to regulate pesticides namely:
- 1) the Central Insecticides Board, responsible for developing policies regarding pesticides;
 - 2) the Registration Committee, responsible for the registration of pesticides for manufacture, import and export; and
 - 3) the Central Insecticides Laboratory, responsible for quality control, safety, packaging and efficacy of pesticides.
84. MOA carries out research and technology development at the Pesticide Research Institute and the Indian Council of Agricultural research. MOA promotes sustainable agriculture and Integrated Pest Management (IPM) practices, including biological and cultural control systems, with a goal of implementing IPM programmes throughout India.
85. MOA is responsible for the overall supervision and administration of the Insecticide Act. It works in cooperation with the MOEF to assess pesticides. The Registration Committee for Pesticides of the MOA, a statutory committee under the Insecticides Act, administers the entire pesticide registration process, including application, examination of detailed data (application, waiting period, bioefficacy, toxicity, etc) testing, review of results, manufacture, import, export, application and handling rules. Once a product is determined safe and effective, it is registered as a pesticide. The Central Insecticides Laboratory advises the Registration Committee, providing verification of claims of insecticides through chemical testing.
86. The **Ministry of Chemicals and Fertilizers (MCF)**, Department of Chemical and Petrochemicals, is responsible for policy, planning, development and regulation of the chemical, petrochemical and pharmaceutical industries. Clearance is required from the Ministry to manufacture pesticides, although since the introduction of liberalization measures in 1991, industrial licensing has been eliminated for all chemical industries except a small list of hazardous chemicals, including chlorine.
87. The **Ministry of Health and Family Welfare (MHFW)** determines and manages the risks from chemicals in consumer products and foods. The Ministry, the only authorized user of DDT in India, mandates the amount and use of DDT for health programs for the control of insect vectors causing malaria and kala-azar. The Ministry oversees the National Malaria Eradication Program (NMEP), leading a government committee that develops an annual disease eradication plan based on input from State Health Departments. The Ministry purchases supplies from Hindustan Insecticides Limited (HIL), a public sector industry and the only authorized producer of DDT in India.
88. The MHFW sets permissible residue limits in foods, under *The Prevention of Food Adulteration and Safety Rules*. The focus is food safety, and risk assessment is undertaken on the basis of technical data provided by manufacturers, research studies and the review of levels established under North American and European standards. The Prevention of Food Adulteration Authority administers the Act through Food Inspectors in the respective State Health Administrations who are responsible for

enforcement of the Act. Responsibility for monitoring the level of pesticides is shared with MOEF and MOA.

89. The **State Health Departments** (SHD) control shipment, storage and distribution of DDT authorized for use for public health purposes. The States also oversee the application of DDT, including the hiring and training of seasonal laborers. The states are also responsible for disposal of out-dated/expired pesticides used in health programs.
90. The **Ministry of External Affairs** (MEA) is responsible for the administration of foreign affairs within the Indian Government and supervises the execution of State foreign policies. From the very beginning, a distinction was maintained between the “foreign” and “political” functions of the Foreign Department.
91. For those POPs chemicals still in production and use in India, it will be important also to engage MOEF, MOH together with MOA in order to strengthen production, use and trade controls.
92. In addition, the **Ministries of Urban Development** (MOUD), **Department of Roads and Building, Railways**, and **Department of Water Resources** are responsible for termite control within their respective jurisdictions and thus are important to the management and eventual elimination of POP chemicals. The MOUD is also responsible for municipal solid waste management.
93. These and other administrative organizations will be required to perform functions under their respective jurisdictions in the implementation of the Convention and will be called upon to assist in the preparation of the NIP and to comment upon and endorse its recommendations. In order to identify and ensure the participation of key stakeholders, a preliminary directory of stakeholders has been prepared as part of the PDF-B project. At present, this holds information relating to national and state Government institutions, R&D organizations, etc., but it will be extended during the full project to include all other relevant organisations that need to engage in the development of the NIP to ensure its effective and sustainable implementation.
94. The **Ministry of Labour** (MOL) is mandated to protect the health, prevent injuries to and save lives of workers. The Ministry works with the State Departments of Labour to regulate chemical safety in the workplace, including the establishment of permissible exposure limits and standards for the control of chemical exposure hazards to workers in most industries. The Factory Advice Service and Labour Institutes Division advises the Central and State Governments on the administration of the Factories Act and coordinates factory inspection services in the States.
95. The Factories Act is administered by the State Governments, which are required to appoint the Inspectorate of Factories. This Inspectorate shares co-responsibility for the enforcement of the Environment Protection Act. The Inspectorate of Factories is also responsible for enforcement of the Factories Act, including the approval and licensing of factories. The Factories Inspectorate and the SPCBs receive support for enforcement of the Environment Protection Act from the Mines Inspectorate and the Dock Safety Inspectorate in their respective jurisdictions.
96. The **Council of Scientific and Industrial Research** (CSIR) is an autonomous body under the Department of Scientific and Industrial Research. The mission of CSIR: “To provide scientific industrial R&D that maximizes the economic, environmental and societal benefits for the people of India”. There are 38 R&D laboratories in various disciplines, several of their activities related to chemical safety and environmental management.
97. The Chemical Group of CSIR Laboratories comprises the Central Electrochemical Research Institute (CECRI) in Karaikudi; Central Leather Research Institute (CLRI) in Chennai; Central Salt and Marine Chemical Research Institute (CSMCRI), Bhavnagar; Indian Institute of Chemical Technology (IICT), Hyderabad; Indian Institute of Petroleum (IIP), Dehradun; National Chemical Laboratory (NCL), Pune; and Regional Research Laboratory (RRL), Jorhat. Besides these laboratories, significant work in the area of chemicals is also being carried out at Central Fuel

Research Institute (CFRI), Dhanbad and Regional Research Laboratory (RRL), Thiruvananthapuram. These laboratories have developed expertise and attained national and international recognition not only for their scientific standing but also technology development. The chemical group of laboratories developed around 200 technologies and licensed 100 of these; another 40 were at advanced stage of up scaling to higher levels either in the laboratories or by the licensees directly. Industrial Toxicology Research Centre (ITRC), Lucknow engaged in toxicological research has been involved in several programmes on POP chemicals in environment. ITRC has recently completed MOEF project on “Status of POPs in India” and GEF-UNEP project on “Regionally Based Assessment of Persistent Toxic Substances (PTS) in Indian Ocean Region”. National Institute of Oceanography, Goa, has been involved in coastal and marine environmental quality studies including POP chemicals. National Environmental Engineering Research Institute (NEERI), Nagpur has been the leading organization in environmental technology development including hazardous waste management.

98. A large number of public organizations in India have interest in the sound management of chemicals; some of them have undertaken monitoring programme related to estimating levels of pesticides, metals, etc. generating public awareness. These organizations can be divided into three broad categories: industrial associations, environmental protection societies and medical societies.
99. **Industrial Associations** are voluntary non-governmental organizations comprising enterprises drawn from the same or related sectors, registered with the relevant government department. Such associations include, for example, Pesticides Association of India (PAI), Confederation of Indian Industry (CII), Indian Chemicals Manufacturers Association (ICMA) and CCFI.
100. These associations conduct exchanges concerning business activities of the industry, including development, science and technology, and business strategies; regulate the business activities of the industry; offer workers industry training in production, technology, labour safety, hygiene and health, and environmental protection; implement the State's laws, regulations and standards; and organize environmental protection activities. They actively participated in chemical control campaigns, implement the ILO 1990 Convention No. 170 on the Safety of Chemicals at the Workplace, and provide information for relevant government departments to manage chemicals.
101. Funded by the Government of India through the MHFW, the Indian Council of Medical Research (ICMR) is an autonomous body whose mandate is formulation, coordination and promotion of biomedical research.
102. The Council's research priorities coincide with the national health priorities such as control and management of communicable diseases, fertility control, maternal and child health, control of nutritional disorders, developing alternative strategies for health care delivery, containment within safety limits of environmental and occupational health problems, research on major non-communicable diseases like cancer, cardiovascular diseases, blindness, diabetes and other metabolic and haematological disorders, mental health research and drug research (including traditional remedies). All these efforts are undertaken with a view to reduce the total burden of disease and to promote health and well being of the population.
103. ICMR has several research institutes in different parts of the country. The National Institute of Occupational Health (NIOH) located in Ahmedabad has carried out pioneering research work in many occupational diseases, which include POPs pesticides. NIOH has also developed preventive intervention and control measures, which are economical and locally available.
104. The major objectives of the NIOH and its centers are to identify and mitigate the occupational and environmental health problems in the country using tools such as research, education, service and information dissemination. Most of the epidemiological studies need a multidisciplinary approach for which the infrastructure facilities and trained manpower have been developed at the institute. Besides clinical work, environmental monitoring for toxic agents in the working and community environmental form as integral component of various studies.

105. The All India Institute of Public Health & Hygiene (AIIPH), Calcutta established in 1932 continues to be the leader in pursuit of its mandate for Human Resource Development in the field of Public Health. Major objectives of the Institute are; to develop health manpower; to conduct research relating to various health problems and diseases in the community; to provide support services in urban and rural areas; and to support and guide various programmes at national level.

Environmental Protection Societies (EPS)

106. India is home to a number of international and national NGOs working in the field of nature conservation and environmental protection.
107. Some of the EPS involved in identification of environmental issues, creating awareness and capacity building through training programmes are as follows:
- (a) Greenpeace, Bangalore
 - (b) ERM, Delhi
 - (c) Centre for Science and Environment (CSE), Delhi
 - (d) TOXICS link, Delhi
 - (e) World Wildlife Funds (WWF)-India, Delhi
 - (f) Centre for Environmental Education (CEE), Ahmedabad
 - (g) BEAG, Mumbai
 - (h) SEI, Kolkata

2.0 RATIONALE OF GEF INTERVENTION

108. Article 13 of the Convention sets out the principles on which "... developed country Parties shall provide new and additional financial resources to enable developing country Parties and Parties with economies in transition to meet the agreed full incremental costs of implementing measures that fulfill their obligations under the convention". Article 14 of the Convention states that "The institutional structure of the Global Environment Facility... shall, on an interim basis, be the principal entity entrusted with the operations of the financial mechanism referred to in Article 13..."
109. In response, the Council of the GEF agreed at its 19th meeting in May 2002 to amend the Instrument of the Facility to enable it to serve as an entity entrusted with the operation of the financial mechanism of the Convention. The Council having reviewed document GEF/C. 19/14 recommends that the GEF Assembly designate "Persistent Organic Pollutants (POPs)" as a focal area in support to the implementation of the Convention.
110. India is the largest developing country in the South Asia region. It is experiencing rapid industrialization. GDP has also increased substantially and is in transformation to a market economy. These factors represent significant challenges on efforts to protect human health and the environment both within India and globally.
111. India has expressed its strong interest to play a full role as a Party to the Stockholm Convention. Enabling India to comply with the obligations on Parties set out in the Convention will have a significant and positive influence not only on India's own chemicals management regime but also on the ultimate global success of the Convention to protect human health and the environment from the threat of POPs. Successful efforts moving towards compliance will also serve as a model for other developing countries.
112. India has opted to pursue development of its NIP not through an Enabling Activities grant but through the full GEF project cycle, reflecting the scale of activities required in the country. It has succeeded in attracting considerable bilateral co-financing support for significant components of the work required in the NIP development and now seeks equivalent sums from the GEF to enable the completion of the NIP during the full project.
113. The proposed activities aim to remove barriers to the successful implementation of the Convention in India through a range of activities compatible with the requirements of the Convention and specific guidance documents. These activities include work to establish a national baseline together with strategies and action plans to address priority issues, initial capacity building, and demonstration activities that serve to inform action planning and prepare the way for implementation following the planning phase.

3.0 PROJECT OBJECTIVES, OUTPUTS AND ACTIVITIES

3.1 Long-term Objective

114. The goal of this project is to protect human health and the environment from persistent organic pollutants – the principal objective of the Convention. The purpose of the project is to enable India to take the first steps towards implementation of the Convention. Its principal outputs are:
- A comprehensive National Implementation Plan incorporating:
 - an assessment of the national baseline with regard to POPs chemicals incorporating preliminary inventories of POPs chemicals currently in production and use, of PCBs and equipment containing PCBs, of unintentional production of POPs, of human exposure of POPs and health impacts, of research and development capabilities, and of regulatory and institutional frameworks relating to POPs and chemicals management and control;
 - the management strategies, action plans and investment needs required by India to meet the obligations under the Convention; and
 - a methodology for the identification of sites contaminated by POPs or products containing POPs.
 - A Capacity Building Programme proposal to meet India's long term institutional strengthening and capacity building needs.
 - Management and information systems functioning at national level and instigated at state level.
 - A national information centre established and information dissemination and public awareness and education campaigns developed.
 - A pilot study to investigate the exposure to POPs and their adverse effects with special emphasis on the health of women and children and other high risk groups with the vastness of India's genetic diversity, environmental genomics based molecular epidemiology for POP affects needed.
 - Research study on non-POPs alternatives for vector control.
 - A pilot project to develop a detailed inventory methodology for PCBs.
 - A pilot capacity building programme on PCBs management.
 - A demonstration of methodologies to promote the implementation of BAT and BEP to reduce unintentional production of POPs in key sectors of industry.

3.2 Specific Project Objectives

115. To achieve the requisite outputs, the activities of the project have been grouped into a series of work packages each focused on a specific objective contributing to the planned outcomes. These objectives are as follows:

Objective 1: Convention implementation infrastructure at national and state levels

Objective 2: Measures in relation to DDT, the only POP pesticide currently being produced and used in India

Objective 3: Measures in relation to polychlorinated biphenyls (PCBs)

Objective 4: Measures in relation to unintentionally produced POPs

Objective 5: Measures in relation to wastes and contaminated sites

Objective 6: Project management and monitoring & evaluation

116. Each of these objectives will require the execution of a series of activities. Wherever possible, these activities are developed in accordance with the initial guidelines prepared by the GEF⁹ and following more detailed draft guidance prepared jointly by the UNEP and the World Bank¹⁰.

3.3 Expected Outcomes and Activities

117. The main expected outcome of the full project is the identification of the requirements for the formulation of the NIP for implementing the Convention in India in accordance with the requirements provided in Article 7 of the Convention. Thus, the principal final outcome of this full project is the NIP endorsed by the Government of India. This however, would have several related outputs, which would include:

- I. A complete inventory of the POPs
- II. A foolproof network for monitoring of the POPs
- III. A critical assessment of the need for continuation of DDT for vector control and timeframe for its replacement
- IV. An integrated regulatory mechanism for the regulation of POPs
- V. A selective list of alternatives for the POPs
- VI. Identification of the new POP-chemicals

118. The key elements of the NIP shall include:

- Government commitments to addressing the POPs issues including:
 - a statement of India's status and commitment in relation to the Convention; and
 - institutional and other arrangements for the development and implementation of the NIP, in particular, the determination of coordinating and implementing mechanisms.
- Country baseline including:
 - a concise and clear country profile, in particular the information on economic sectors closely related to POPs issues in India;
 - description and assessment of the current situations on institutions, laws and policies relevant to POPs management in India; and
 - inventories on specific POPs chemicals listed in the Convention.
- Strategies and action plans including:
 - strategies for the reduction and elimination of intentionally produced POPs, PCBs and unintentional produced POPs;
 - action plans for implementing the strategies, including action plans on capacity building, law and policy making, and action plans for the reduction and elimination of specific POPs;
 - priority setting; and
 - financial requirements, including estimates of costs and analysis of incremental costs, possible financial sources, etc. of alternatives POPs and alternative environmental sustainable technologies.

119. A series of case studies and demonstration project components within the full project will develop

⁹ Initial Guidelines for Enabling Activities for the Stockholm Convention on Persistent Organic Pollutants. GEF/C.17/4, April 6, 2001

¹⁰ Guidance on Planning and Developing National Implementation Plans under the Stockholm Convention.

methodologies presenting feasible approaches to priority actions required by India in meeting the Convention obligations. The results of these components will provide valuable input to the strategies and action plans for the NIP and give indications of likely incremental costs. They will also enable India to take up priority actions once the NIP has been transmitted to the COP.

120. In addition, proposals for a long-term Capacity Building Programme will be developed to take into account the large institutional strengthening and human resource development requirements in India to implement the Convention at all levels.
121. Undertaking all these components within the context of the full project to develop India's NIP has considerable co-benefits such as:
 - Experiences gained in one area of the work programme can be quickly transferred to other areas;
 - Scientific and technical findings and expertise can be shared between components and between government departments and their development partners;
 - Capacity building and demonstration activities will ensure a quick start-up of implementation actions ensuring early global impacts and form a secure foundation to the sustainability of POPs management in India; and
 - Safe and sustainable development and increase in quality of life can be achieved in an environment free from risk due to POPs.

Project Activities / Components and Expected Results

Outcome for Objective 1: Convention implementation infrastructure at national and state levels

Rationale:

122. The Convention specifies the following obligations for Parties relating to general policies and activities that will contribute to the efforts of Parties to reduce and/or eliminate the release of POPs. Each Party must:
 - a) Where it has in place or introduces regulatory and assessment schemes for industrial chemicals and/or pesticides, take into consideration the criteria in Annex D for screening candidates for addition to Convention when conducting assessments of (Article 3):

New substances, to take measures to regulate with the aim of preventing the production and use of new POPs; and

In-use substances, to identify potential POPs for possible risk management.
 - b) Develop and endeavor to implement a plan for the implementation of its obligations under the Convention (Article 7) and;
 - Include an action plan to identify, characterize and address releases of unintentionally produced POPs (dioxins and furans, HCB, PCBs) and to facilitate implementation of all the Convention requirements relating to these POPs (Article 5 and Annex C).
 - Include a specific action plan for DDT if the Party will produce and/or use DDT for disease vector control as provided for under the acceptable purposes provisions of the Convention (Article 3 and Annex B);
 - Submit this plan to the COP within 2 years of entry into force of Convention for the Party;
 - Cooperate with other Parties, either directly or through intergovernmental organizations, and consult with national stakeholders in developing, implementing and updating plans; and

- Endeavor to utilize and integrate these plans in national sustainable development strategies.
- c) Participate in evaluating data and information on chemicals that will be nominated by Parties for addition to the Convention by (Article 8):
- develop and submit dossiers on candidate chemicals;
 - evaluate information on nominated chemicals; and
 - participate in the operation of the POPs Review Committee that will be established at the first meeting of the COP to review nominations submitted by Parties.
- d) Designate a national focal point to facilitate or undertake information exchange on the reduction or elimination of the production, use and release of POPs and alternatives to POPs, while taking measures to protect information that is mutually agreed by Parties to be confidential (Article 9);
- e) Within its capabilities, promote and facilitate the following relating to public information, awareness and education on POPs and alternatives to POPs (Article 10):
- awareness among policy and decision makers;
 - public access to available and up-to-date information;
 - development and implementation of educational and public awareness programmes;
 - public participation and input in developing and implementing measures to address POPs;
 - training and development programmes for stakeholders including workers, scientists, educators and technical and managerial personnel;
 - development and exchange of educational and public awareness materials at the national and international levels;
 - development and implementation of education and training programmes at the national and international levels;
 - encouragement of industry and professional users to promote and facilitate provision of information on all relevant aspects of POPs at the national and other levels;
 - usage of a range of approaches to communicate information on POPs, such as information centres at national and regional levels; and
 - development of mechanisms, such as pollutant release and transfer registers (PRTRs), to collect and disseminate information on estimates of the annual amounts of the 12 POPs that are released or disposed of.
- f) Within its capabilities, and at the national and international levels (Article 11):
- encourage and/or undertake research, development, monitoring and cooperation relating to the following subjects for POPs, alternatives to POPs and candidate POPs (Article 11):
 - sources and releases to environment,
 - presence, levels and trends in humans and the environment,
 - environmental transport, fate and transformation,
 - effects on human health and the environment,
 - socio-economic and cultural impacts,
 - release reduction and/or elimination; and
 - methods for source inventories and for analysis of POPs.
 - support and further develop international programmes, networks and organizations to define, conduct, assess and finance research, data collection and monitoring;
 - support national and international efforts to:
 - strengthen national scientific and technical research capabilities, particularly in

- developing countries and countries with economies in transition, and
 - promote access to and exchange of data and analyses.
 - undertake research work on alleviating effects of POPs on reproductive health;
 - take into account concerns and needs particularly financial and technical resources of developing countries and countries with economies in transition, and cooperation in improving their capability to participate in these efforts;
 - make the results of these research, development and monitoring activities accessible to the public on a timely and regular basis; and
 - encourage and/or undertake cooperation with regard to storage and maintenance of pertinent information generated from research, development and monitoring.
- g) Submit reports to the COP on (Article 15):
 - measures it has taken to implement the Convention;
 - the effectiveness of the measures taken;
 - data related to production and trade in intentionally produced POPs and wastes containing POPs;
 - experiences in using DDT for disease vector control (every 3 years);
 - data related to production or use of HCB or DDT as a closed-system site-limited intermediate;
 - progress in eliminating PCBs (every 5 years); and
 - the success of its strategies in reducing releases of unintentionally produced POPs (every 5 years).

Activities for Objective 1:

123. India recognizes that some of the planned outputs of activities set out under Objective 1 may go beyond the strict limits of enabling activities. Nevertheless, it considers the activities below as necessary to establish a sustainable infrastructure to implement the Convention in India, the additional activities providing important information and experience as co-benefits to ensure effective and efficient national planning. For this reason India is committed to providing a significant proportion of in-kind co-financing to support activities under Objective 1.

Output 1.1 Develop and implement national management system for the Stockholm Convention compliance

Activity 1.1.1 Establish national management system

- The National Steering Committee (NSC) has been formed to harmonize the interests and standpoints of different ministries, state administrations and commissions as well as to determine the position of the Government of India with regard to POPs issues.
- The MOEF is the designated agency responsible for implementing the Stockholm Convention in India.
- Determine and formalize appropriate linkages between the NSC, national and state departments and bureaus providing monitoring information, regulatory control and other services.
- Conduct training to build capacity in national and state departments and bureaus providing monitoring information, regulatory control and other services.

Activity 1.1.2 Establish Information Management System (IMS)

- Examine existing IT architecture within lead organization.
- Determine inventory and reporting requirements of the Convention.
- Assess results and actions of other work packages (described below) relevant to information needs.
- Determine remaining information needs.
- Determine existing data holdings relevant to POPs within other government departments and non-government institutions.
- Encourage cooperation between institutions gathering information that may be relevant to the reporting requirements of the Convention so that this can be exchanged with the IMS.
- Recruit and train staff to operate IMS.
- Establish data management infrastructure capable of input, storage modeling and reporting of national and state information in formats compatible with Convention requirements.

Output 1.2: Preparation of the National Implementation Plan (NIP)

Activity 1.2.1 Draft National Implementation Plan

- Prepare national profile.
- Integrate profile, inventory reports, strategies and action plans from all objectives into a comprehensive draft NIP suitable for transmission to the COP according to requirements of Article 7 and in formats consistent with recommendations arising from the COP.
- Consolidate national priorities and their concomitant costs.

Activity 1.2.2 Review and Endorse National Implementation Plan

- Conduct a detailed review of the draft NIP and its component implementation plans with international and national experts and representatives of principal stakeholder groups.
- Correct, amend and modify the draft NIP to take into account the review recommendations.
- Hold a meeting/meetings with principal stakeholders at national and state levels to introduce and gain endorsement for, the NIP, its component implementation plans and priority actions.
- Disseminate draft NIP to relevant ministries to gain its endorsement.
- Correct, amend and modify the draft NIP to take into consideration the recommendations from these ministries.
- Submit the NIP for Government endorsement.
- Prepare the final NIP for publication in English with an executive summary translated into Hindi.
- Submit the final NIP to the appropriate authorities for transmission, via the Convention Secretariat, to the COP.

Output 1.3: Develop national and state policy, legal, regulatory and promotional frameworks to meet the Convention requirements

124. India has an established infrastructure of environmental and chemicals management legislation, administration regulation, operational rules, national standards and guidelines. None of this regulatory framework was established specifically with the obligations of the Stockholm Convention in mind but many of its provisions make reference to chemicals included in the Convention. It follows that a detailed review of this framework is required to ensure that obligations under the

Convention are met. The Convention requires Parties to address the regulation of intentionally and unintentionally produced POPs in different ways so that it is appropriate that the need to modify or add regulation is considered within each of the work packages of this project. Nevertheless, recommendations made by MOEF and endorsed by the NSC will be necessary for coordination and integration to ensure that they are mutually consistent and compatible with regulatory frameworks for other multinational chemicals and environmental agreements and with national sustainable development policies and strategies.

Activity 1.3.1 Establish regulatory requirements in relation to national sustainable development policies, national environmental protection plans, country assistance strategies, state laws and administrative regulations

- Integrate results and recommendations with regard to national sustainable development policies, national environmental protection plans and country assistance strategies.
- Integrate results and recommendations with regard to state laws and administrative regulations
- Examine the recommendations for consistency, conformity with Convention requirements and Government policies, plans and laws.
- Examine the recommendations for conformity with other multilateral environmental agreements.

Activity 1.3.2 Establish regulatory requirements in relation to national and state administrative rules, standards and guidelines

- Integrate results and recommendations from Objectives 2 - 5 with regard to national and state administrative rules, standards and guidelines.
- Examine the recommendations for consistency and conformity with the Convention requirements.

Activity 1.3.3 Assess opportunities for voluntary promotions schemes to address the Convention requirements

- Assess opportunities to encourage industry compliance with Convention objectives and obligations through market-led voluntary approaches, such as Cleaner Production, ISO accreditation or eco-labeling initiatives.
- Assess opportunities to encourage voluntary compliance with Convention objectives and obligations amongst users of POPs chemicals through the take-up, for example, of integrated pest management and improved health awareness.

Activity 1.3.4 Undertake socio-economic impact study

- Using parameters such as those included in Annex F of the Convention, study the social and economic impact of: (a) the continuing use of POPs chemicals; and (b) the possible regulatory requirements and voluntary schemes, to assess the costs and benefits of proposed actions to facilitate the consideration of proposals by legislative bodies.

Activity 1.3.5 Provide recommendations and gain endorsement for them

- Provide recommendations and cost-benefit analysis to relevant legislative bodies.
- Hold detailed consultations with legislative bodies and principal stakeholders to review and gain endorsement for inclusion of the recommendations in the NIP.
- Present the recommendations to MOEF who will in turn present the same to legislative bodies to facilitate legal drafting.
- Assess institutional strengthening and capacity building implications of recommended actions

at national and state level for integration with the Capacity Building Programme proposal.

Output 1.4: Information exchange, public awareness and education

125. An important aspect of the Stockholm Convention is its emphasis set out in Articles 9 and 10, on information exchange, public access to information and building of educational programmes facilitating public participation and awareness particularly amongst women and children who maybe most at risk.
126. Information exchange between India and other Parties to the Convention directly or through its Secretariat will form an important function of the national management and information system to be established during the project. This system will ensure that India meets its obligations in respect to reporting requirements and other substantive inputs to the COP and its review and expert group.
127. The emphasis in the Convention on public access to information and education is not intended merely to inform members of the public of the risks they face but to build active public participation in efforts to reduce and ultimately eliminate the release of POPs chemicals. Public ownership of schemes to provide improved management of POPs chemicals and to develop safe alternative techniques is recognized as an important aspect of the Convention compliance, particularly as India moves towards a market economy.
128. MOEF will devise schemes for public awareness and education along with the Ministries of Health, Agriculture, Information and Broadcasting, Human Resource Development and Department of Education and their respective development agency partners in providing informative and consultative materials to stakeholders. In this regard, the Agricultural Extension Network of the Ministry of Agriculture may provide not only useful experience but also a suitable vehicle for the dissemination of awareness materials and education to farming communities.

Activity 1.4.1 Establish National Information Centre

- Review national and state level requirements for the provision of information to stakeholders, including the public.
- Establish within MOEF a national information centre and determine appropriate arrangements for establishing an information network providing public access to POPs information consistent with Article 10 of the Convention at provincial level.
- Establish an Internet presence for the purpose of disseminating information related to the objectives of the Stockholm Convention and related multinational chemicals management agreements.

Activity 1.4.2 Increase public awareness of POPs issues related to agriculture

- Determine, in conjunction with the MOA, FAO and other stakeholders, appropriate educational schemes to raise the awareness of the hazards posed by the use and inappropriate management of intentionally produced POPs.
- Devise appropriate programmes and materials that can be delivered, for example through the agricultural extension workers network, to promote environmentally sound alternatives to POPs or integrated pest management alternatives.
- Develop appropriate programmes and materials for enterprises licensed to produce POPs chemicals, to use POPs chemicals in product formulations, and to distribute these chemicals and products to promote improved and safer manufacturing and handling and progressive transfer to effective and environmentally sound alternatives.

Activity 1.4.3 Increase industry and public awareness of unintentional production of POPs

- Determine, in conjunction with the MOEF, other relevant Ministries and their development partners and other stakeholders, appropriate educational schemes to raise the awareness of industry and the public of the hazards posed by the unintentional production and release of

POPs.

- Examine examples of best practice in other countries for methodologies useful in the country.
- Devise appropriate awareness raising programmes and materials that can be delivered in conjunction with schemes to promote the improved performance of industry.

Activity 1.4.4 Increase national and local government, municipalities, industry and public awareness of POPs issues related to waste management

- Determine, in conjunction with the national and local government, municipalities, relevant ministries and their development partners and other stakeholders, appropriate educational schemes to raise the awareness of administrations, industry and the public of the hazards posed by the inappropriate disposal of wastes comprising POPs or products containing POPs.
- Devise appropriate awareness raising programmes and materials that can be delivered in conjunction with schemes to promote environmentally sound waste management in conjunction with Activity 1.5.

Output 1.5: Develop R&D and monitoring strategies

129. In order to support national management activities, India will require research and development to address the areas of particular concern as well as to provide regular and systematic monitoring. The Convention provides in Article 11, indications of topics that Parties should address in defining research, development and monitoring objectives. During the development of the NIP, India's existing capabilities to address these objectives will be assessed. Proposals to strengthen the nation's research and monitoring infrastructure and build capacity will be developed and included in the NIP and in the Capacity Building Programme proposal to be developed in parallel with it.
130. A programme on hazardous waste is currently ongoing in the state of Karnataka with financial support from GTZ. A Central scheme is there for giving subsidies to common Treatment Storage Disposal Facility (TSDF) to the State Governments for the development of sites for environment management. MOEF has undertaken the preparation of the National Chemical Management Profile (NCMP) under the Indo-Canada Environment Strengthening Initiatives through UNITAR.

Activity 1.5.1 Undertake an exposure risk assessment study of POPs

- Collect available information on the adverse health effects of POPs from national and international studies.
- Study exposure and its effect to high-risk groups such as women and children.
- Hold expert workshop to review the information collected and select the study sites, design investigation methodologies and establish the sampling cohort.
- Conduct methodology training for field teams.
- Collect information through health and clinical examinations of population cohort, field investigations of levels of pesticides and PCB in the environment – water, soil and food in the pilot area, and monitoring and analysis of samples.
- Prepare a preliminary assessment of health impacts posed by POPs to guide future actions.
- Undertake studies on environmental fate and exposure pathways of unintentional POP chemical under Indian conditions including photochemical degradation.

Activity 1.5.2 Develop R&D and monitoring strategies to support the Convention implementation

- Examine national research and development facilities capable of undertaking specific research programmes as well as systematic and regular investigations into POPs production, use, trade, release, disposal, environmental occurrence and impact and provide recommendations for

institutional strengthening and capacity building to meet India's requirements under the Convention for monitoring and reporting information.

- Assess, incorporating results from work packages described below, and provide recommendations for strengthening national R&D programmes (a) leading to improved methodologies for preparing regular POPs inventories (b) leading to improved techniques for production, management and disposal of POPs and products containing POPs and alternative environmentally sound products and practices, removing barriers to POPs elimination, (c) providing testing information on new industrial chemicals and pesticides to ensure compliance with Article 3 para 3 and Annexes D, E and F of the Convention, (d) leading to the determination of release limit values, to improved disposal techniques, and to improved methodologies for the identification and characterization of land contaminated by POPs to ensure compliance, in particular, with Articles 5, 6 and 11.

Outcome for Objective 2: Measures in relation to DDT – the only POP pesticide produced and used in India

Rationale:

131. The Convention specifies the following obligations for Parties with regard to reducing and/or eliminating the releases associated with the production and/or use of intentionally produced POPs (Articles 3 and 4: Annexes A and B). Of the 10 intentionally produced POPs specified in the Convention, only DDT is currently produced and used in India.

- a) Parties must take legal and administrative measures to prohibit and/or eliminate the production, use, import and export of intentionally produced POPs.
- b) *Specific exemptions* are listed in the Convention that would permit India to produce and/or use DDT for vector control only. On becoming a Party to the Convention, India must inform the Secretariat if it intends to use a specific exemption in order to be included in the Register of Specific Exemptions and take measures to prevent or minimize human exposure and release to the environment related to production and/or use of a POP under a specific exemption.
- c) Parties must either eliminate the production and use of DDT or restrict production and/or use to the *acceptable purpose* specified in the Convention (i.e. disease vector control programs). As India intends to continue producing and using DDT under this provision, it must:
 - notify the Secretariat of its intentions and be included in the DDT Register;
 - produce and/or use DDT in accordance with WHO recommendations and guidelines and only when locally safe, effective and affordable alternatives are not available;
 - report every 3 years on the quantities of DDT used, the conditions of use, and the relevance of DDT to India's disease control strategy;
 - develop a national DDT action plan within 2 years of entry into force of the Convention, as part of the NIP required by Article 7 (Objective 1.1), to confine the use of DDT to disease vector control, to explore alternatives to DDT, and to take measures to strengthen health care and reduce the incidence of disease; and
 - take general measures to prevent or minimize human exposure and releases to the environment related to production and/or use under the *acceptable Purpose* provisions.
 - Strict measures must be taken to avoid the clandestine use of DDT for purposes other than vector control.

- d) Parties that intend to make use of the provisions that permit HCB and/or DDT to be produced and/or used as closed-system site-limited intermediates (i.e., they are chemically transformed in the manufacture of other chemicals that do not exhibit POPs properties) must notify the Secretariat of their intention to do so, the total amounts of HCB and/or DDT that are produced or used, the nature of the site-limited process, and the amount of HCB and/or DDT present in the final products produced. These exemptions are valid for a 10-year period and a Party may request an extension: however, such a request is subject to review by the COP. As India intends to make use of these *provisions* for DDT, it will have to address all these requirements.
 - e) Parties must restrict trade involving intentionally produced POPs. Imports and exports may only be made between Parties with *specific exemptions* or *acceptable purposes* or where shipments are intended for environmentally - sound disposal (Article 6). For trade with non-Parties, the non-Party must provide annual certification to an exporting Party specifying the intended use of the chemical and expressing commitment to: protect health and environment by minimizing or preventing releases; comply with the requirements of the Convention concerning POPs stockpiles and wastes (Article 6); comply with the Convention requirements that DDT production and/or use be in accordance with WHO recommendations and- guidelines; and supply information on domestic legislation, regulations, policy and guidelines. The exporting Party must submit this certification to the Secretariat within 60 days.
 - f) Parties must provide reports on trade in intentionally produced POPs including data on, or estimates of, the total quantities of chemicals that were produced, imported and exported, and a list of States from which it has imported or to which it has exported these POPs (Article 15).
 - g) All Parties must, within their capabilities, promote research and development to seek alternatives to DDT and also participate in a review at the first COP meeting, and every 3 years thereafter, to see whether DDT continues to be needed for disease vector control.
 - h) Parties must implement provisions that exempt intentionally produced POPs in quantities that are used for laboratory-scale research or as a reference standard, or that occur as unintentional trace contaminants in products and articles or as constituents of articles manufactured or already in use before or on date of entry into force of an obligation concerning that chemical.
 - i) Parties must develop and implement strategies for identifying *stockpiles* that consist of or contain intentionally produced POPs and manage these stockpiles in a safe, efficient and environmentally sound manner until they are deemed to be wastes (Article 6). A stockpile is deemed to be a waste/when there are no remaining specific exemptions or acceptable purposes for a POP or any prospects for exporting the stockpile. In this context, in-depth studies will be carried out for identifying contaminated sites and hotspots linked to historical and existing production sites.
132. India has indicated its intention to use the acceptable purpose provision to permit continued production and use of DDT in disease vector control. A priority in this component of the project is to develop mechanisms to monitor the uses of this chemical and, periodically, to test the continuing need for its production and use in India. The work package will also examine the viability of environmentally sound techniques and alternative chemicals permitting their elimination and enabling India to withdraw its requirement to use the specific exemptions and acceptable purposes provision of the Convention. In considering the viability of techniques and alternatives it will take into account best practice developments within the MHFW and WHO and their experience in delivering such practice.

Activities for Objective 2:

Output 2.1 Develop measures to restrict and/or eliminate production, use and trade of DDT

Activity 2.1.1 Establish inventories on production, distribution, use, and international trade

- Develop production inventory methodologies.
- Undertake preliminary inventory of production of currently produced DDT through questionnaires, field visits and in-depth studies.
- Undertake inventory of distribution and use of these DDT through customer investigations.
- Prepare inventory of international trade on currently produced DDTs.
- Identify potential obsolete pesticides during the above activities and prepare an inventory.
- Prepare current and forecast future production, distribution, use of these DDTs in the country and trade to and from India.
- Detailed retrieval and collection of data on DDT levels in different compartments over the years to find the trend in the change and develop mathematical modeling for future scenario.

Activity 2.1.2 Develop reduction and phase-out strategies

- Investigate alternative techniques for the control and phase-out of intentionally produced POPs, in particular, alternative technologies.
- Evaluate the feasibility of alternative technologies for use in India.
- Evaluate existing institutional and regulatory barriers to the reduction of intentionally produced and used POPs chemicals and develop viable alternative i.e. both cost effective and capable of controlling disease.
- Assess public awareness and participation opportunities and prepare recommendations to increase awareness and participation.
- Assess monitoring and R&D capacity.
- Formulate the strategy on reduction and phase-out of these POPs for inclusion in the NIP.

Activity 2.1.3 Build capacity within the national focal point

- Train government officials involved in the implementation of the Convention obligations relating to the POPs chemicals currently intentionally produced and used.
- Establish an IMS for the intentionally produced POPs within MOEF.
- Establish a long-term expert working group to support MOEF in the implementation of the Convention obligations relating to the intentionally produced POPs chemicals.

Output 2.2 Develop measures in relation to stockpiles of/or containing, intentionally produced POPs

Activity 2.2.1 Establish national inventory of stockpiles

- Develop stockpile inventory methodology, taking advantage, wherever possible, of information from inventories established in Activity 2.1.
- Undertake preliminary inventory of stockpiles through questionnaires and in-depth studies on contaminated sites/hotspots in the vicinity of historical and existing production sites.
- Prepare data in formats for inclusion in the data management system and for reporting in the

NIP.

Activity 2.2.2 Develop guidelines for the management of stockpiles

- Examine existing regulatory measures related to the management of stockpiles.
- Identify additional measures necessary for the safe, efficient and environmentally sound management of stockpiles and proper disposal of expired stocks at contaminated sites/hotspots.
- Identify and make proposals to overcome barriers to effective working of current and proposed management measures.
- Hold stakeholder workshop to review and endorse recommendations.
- Prepare recommendations for inclusions in the NIP and in the regulatory framework.

Outcome for Objective 3: Measures in relation to polychlorinated biphenyls (PCBs)

Rationale:

133. The Convention specifies the following obligations for Parties with regard to the management of PCBs and of PCB-containing equipment (Articles 3 and 4; Annex A, Parts I and II).
- a) The production of new PCBs must cease upon entry into force of the Convention.
 - b) All in-use PCB-containing equipment must be eliminated by 2025. However, a *specific exemption* allows all Parties to continue using such equipment provided: they make determined efforts to identify, label and remove this equipment from use; they promote measures to reduce exposures and risk; they use PCBs only in intact and non-leaking equipment and only in areas where risk of environmental release can be minimized and quickly remedied; they forbid use in food and feed production and processing areas; when such equipment is used in populated areas (schools, hospitals, etc.), all reasonable measures are taken to inspect regularly for leaks in equipment and to protect from electrical failure which could result in a fire; PCB equipment is not exported or imported except for the purpose of environmentally sound management of waste; and liquids with more than 0.005 % of PCBs are not recovered for reuse in other equipment. A Party using the PCB specific exemption must also take general measures to prevent or minimize human exposure and releases to the environment of PCBs (Article 3, para 6).
 - c) The environmentally sound management of wastes containing more than 0.005 % PCBs must be achieved by 2028. The Convention's general management provisions for all POPs wastes (Article 6) must be applied to PCB wastes and these are summarized in Objective 5.
 - d) Parties must endeavour to develop strategies for identifying sites contaminated by POPs, including PCBs, and while remediation is not required by the Convention, if it is attempted, it must be conducted in an environmentally sound manner (Article 6). Note that the issue of developing strategies to identify contaminated sites for all POPs under the Convention is addressed in Objective 5. In this context, in-depth studies will be carried out for identifying contaminated sites and hotspots linked to historical and existing production sites) Parties must report to the COP every 5 years on their progress in eliminating PCBs.

Activities for Objective 3:

Output 3.1: Prepare a preliminary national inventory of PCBs and equipment containing PCBs

Activity 3.1.1 Collect national information on production, import and use of PCBs and PCB-containing equipment

- Build on initial inventory prepared in PDF-B phase by gathering further information relating to import of PCBs and PCB-containing equipment.
- Prepare the national inventory of equipment still in use from records held by utility corporations, government and other sources.
- Conduct preliminary surveys at state level to develop a preliminary inventory.
- Present preliminary inventory to principal stakeholders.
- Prepare preliminary inventory in a format suitable for inclusion in the NIP.

Activity 3.1.2 Collect information on management and monitoring capacity

- Gather information related to existing control, management and replacement planning of equipment in use.
- Assess capacity to undertake any phase-out programme necessary to meet the Convention requirements.
- Make recommendations for capacity building and planning requirements.
- Present recommendations to principal stakeholders.

Output 3.2 *Develop and demonstrate a detailed inventory methodology for PCBs and a draft strategy on PCB disposal in India*

Activity 3.2.1 Develop and test a detailed inventory methodology for PCBs

- Prepare requirements, guidelines and training for inventory.
- Investigate PCB-containing devices in use.
- Investigate obsolete PCB-containing devices and their current storage conditions.
- Review inventory information and develop timetable for equipment replacement and for safe storage.
- Prepare a management information system to hold inventory data and replacement timetables.
- Prepare recommendations for PCB storage compatible with the Convention requirements.

Activity 3.2.2 Develop draft national strategy on options and approaches to PCB reduction and disposal

- Assess existing national institutional framework of PCB policy and management.
- Assess current PCB disposal management and monitoring and prepare draft strategy including storage and disposal of obsolete, out-of-use PCB-containing devices.
- Review draft national strategy.
- Disseminate information to relevant stakeholders within the central and state governments, electrical utilities and industry.

Output 3.3 *Building capacity in PCBs management*

Activity 3.3.1 Establish pilot training programme

- Facilitate national expert group meeting to reach consensus on key technical and logistical issues and to promote awareness of PCB issues in India.
- Undertake a pilot programme in each state by conducting workshops to raise awareness of PCBs health and safety issues, inventory, management and destruction methods and techniques for key stakeholders.

- Lead a study tour to PCBs management, storage and destruction facilities to a country with a well-developed PCBs management programme.

Activity 3.3.2 Develop a national PCBs training programme

- Develop a proposal for a permanent, sustainable training programme to address all aspects of PCBs identification, inventories, analysis and disposal work.

Outcome for Objective 4: Measures in relation to unintentionally produced POPs

Rationale:

134. The Convention specifies the following obligations for Parties with regard to unintentionally produced POPs and stresses that these measures are to be taken "at a minimum" to reduce the total releases derived from anthropogenic sources of each of these POPs, with the goal of their continuing minimization and, where feasible, ultimate elimination (Article 5 and Annex C).

- a) Parties must, as part of the overall implementation plan required by Article 7, develop an action plan within 2 years of entry into force of the Convention that will:
 - evaluate current and projected releases of unintentionally produced POPs, including the development and maintenance of source inventories and release estimates, taking into account the 20 source categories that are identified in the Convention (Annex C);
 - evaluate the efficacy of the Party's laws and policies to manage such releases;
 - develop strategies to reduce these releases;
 - promote education and training on these strategies;
 - include a schedule for implementation of the action plan;
 - review success of the strategies every 5 years; and
 - report on progress in implementing the action plan to the COP (Article 15).
- b) Parties must implement the action plan.
- c) Parties must promote the application of available, feasible and practical measures to achieve expeditiously realistic and meaningful levels of release reduction or source elimination.
- d) Parties must promote development and, where appropriate, require the use of substitute or modified materials, products and processes to prevent the formation and release of unintentionally produced POPs.
- e) Parties must address identified 'high potential' sources, including but not limited to the seven sources specified in Annex C Part II, by:
 - for existing sources, promoting the use of best available techniques (BAT) and best environmental practices (BEP), and
 - for new sources warranting such action, promoting the use of BEP and, as identified in the action plan, requiring the use of BAT, phasing in such BAT requirements for sources in the 7 categories listed in Annex C Part II as soon as practicable, but no later than 4 years after entry into force of the Convention. The Convention defines as "new" any source "of which the construction or substantial modification is commenced at least one year after the date of entry into force" of the Convention for a Party.

- f) Parties must address identified 'potential' sources, including but not limited to the 13 specified in Annex C Part III, by promoting BAT and BEP for both new and existing sources.
135. Reliable estimates of total unintentional production of POPs in India are not yet possible as there have been very few analytical studies of emissions and there is no systematic monitoring. Preliminary inventory work will rely on available methodologies but the limitation of these procedures with regard to industry in India has been noted above.
 136. All 20 of the sources listed in the Convention are found in India and industrial activity in many of these sectors has contributed significantly to India's impressive economic growth in recent years. Despite considerable investment and improvement in technology, there remains a large gap between the performances of industry in India with that of the developed world. This is particularly evident in pollution control technology and equipment. Some advances have been made in recent years to control air pollution emissions from large- and medium-scale enterprises and these may also have served to reduce emission of unintentionally produced POPs. However, a feature of many industrial sectors in India is the prevalence of relatively small-scale enterprises and these are not yet covered systematically by environmental monitoring regimes.
 137. The full project will address India's obligations in two parallel series of activities. A first group of activities will continue the preliminary inventory work started in the PDF-B phase and prepare agreed strategies and costed action plans to achieve the meaningful reductions in emissions. An important aspect of this is to devise schemes in order to move towards the adoption of BAT and BEP at the enterprise level within the context of an economy in transition to a market oriented system. These activities will form the essential components of the NIP.

Activities for Objective 4:

Output 4.1 Develop measures for the progressive reduction of releases and elimination of sources of unintentionally produced POPs

Activity 4.1.1 Develop inventories of sources and estimates of releases

- Train project management staff, entrepreneurs and government officials to disseminate knowledge on how POPs may be formed unintentionally under local conditions.
- Undertake surveys and establish questionnaires to collect data and information on sources of unintentionally produced POPs in India.
- Develop the source inventories and estimate the unintentional production of POPs, providing detailed technical commentary on the modeled results.

Activity 4.1.2 Evaluate existing analytical and monitoring capacity and needs

- Evaluate the analytical and monitoring capacity of existing laboratories, their human and physical resources, management and analytical standards.
- Develop a plan to strengthen national analytical institutions and capacity in order to establish national analytical capabilities for monitoring unintentionally produced POPs.
- Evaluate the need for establishing national standards for the sampling and analysis of unintentionally produced POPs.
- Evaluate available methods that use indirect data for the estimation and modeling of unintentional production of POPs and, where necessary, establish revised methodologies and models that are suited to the industrial practices of the key sources of unintentionally produced POPs in India.
- Observations on exposure and effect levels in humans through epidemiological surveys and biological monitoring in likely hot spots.

Activity 4.1.3 Evaluate and develop relevant policies, laws and promotional schemes

- Evaluate the current status of unintentionally produced POPs management in India, including relevant laws, rules and regulations and institutional responsibilities and identify the need to amend these or to develop relevant health and environmental standards and guidelines for unintentionally produced POPs in products, emissions, effluents, wastes, daily intake limits, etc.
- Propose sustainable monitoring and reporting regimes for major sources of unintentionally produced POPs.
- Develop legal and regulatory frameworks to implement BAT requirements for new sources (identified in Part II of Annex C) of unintentional production of POPs.
- Develop regulatory, administrative or other schemes to promote the use of BEP in new sources and BAT and BEP in existing sources of unintentional production.

Activity 4.1.4 Formulate strategies and action plan for the control of unintentionally produced POPs

- Assess the social and economic impacts of releases of unintentionally produced POPs.
- Develop the strategies for unintentionally produced POPs reduction and elimination in India.
- Prepare an action plan as part of the overall NIP within 2 years of entry into force of the Convention.
- Prepare an investment portfolio, including estimates of required costs incurred, to implement the strategies in the action plan relating to key priority industry sectors.
- Hold meetings to raise stakeholder awareness and to gain their support in the preparation of the NIP.

Output for Objective 5: Measures in relation to wastes and contaminated sites

Rationale:

138. The Convention specifies the following obligations for Parties with regard to reducing or eliminating the releases of POPs from wastes and identifying POP-contaminated sites (Article 6).
- a) Parties must develop strategies for identifying products and articles in use and wastes consisting of, containing or contaminated with intentionally or unintentionally produced POPs. Parties must take measures to ensure that these materials are:
 - handled, collected, transported and stored in an environmentally sound manner;
 - disposed of in such a way that the POP content is destroyed or irreversibly transformed into substances that do not exhibit POPs characteristics (persistence, transport and toxicity), or otherwise disposed of in an environmentally sound manner when destruction or irreversible transformation does not represent the environmentally preferable option or the POP content is low; and
 - not subjected to disposal operations that may lead to recovery, recycling, reclamation, direct reuse or alternative uses of POPs.
 - b) Parties must restrict trade involving POPs wastes and ensure that shipments crossing international boundaries respect relevant international rules, standards and guidelines (e.g., Basle Convention, regional waste conventions). Imports and exports of wastes with Parties or Non-Parties may only be made where shipments are intended for environmentally sound disposal. For trade with non-Parties, the non-Party must provide annual certification to an exporting party specifying the intended use of the chemical and expressing commitment to: protect health and environment by minimizing or preventing releases; comply with the requirements of the Convention concerning POPs wastes; and supply information on domestic legislation, regulations, policy and guidelines. The exporting Party must submit

this certification to the Secretariat within 60 days.

- c) Parties must provide reports on trade in POPs wastes including data on, or estimates of, the total quantities of chemicals that were produced, imported and exported, and a list of States from which it has imported or to which it has exported these POPs (Article 15).
 - d) Parties must endeavor to develop strategies for identifying sites contaminated by intentionally or unintentionally produced POPs. While remediation of such sites is not required by the Convention, if it is undertaken, it must be performed in an environmentally sound manner.
139. A considerable volume of information relating to wastes and contaminated sites as well as hotspots is likely to become available from specific inventory activities contained in other work packages under Objective 1. This information is likely to be in the form of direct evidence - where accumulations and contamination are known - and indirect or 'proxy' information - such as information on current and former production sites, distribution hubs, and centralized use facilities at high risk of remaining with stockpiled or waste materials or that are likely to be contaminated.

Activities for Objective 5:

Output 5.1 Develop and implement strategies to identify and manage waste consisting of containing or contaminated by POPs

Activity 5.1.1 Develop and implement strategies to locate and characterize wastes

- Develop methodology to locate and characterize wastes or sites that potentially host wastes, taking advantage, wherever possible, of information from inventories established in other activities of Objective 1.
- Conduct training in inventory techniques for officials, investigators and key stakeholders likely to hold wastes.
- Undertake preliminary inventory of wastes and contaminated sites through questionnaires, field visits and in-depth studies.
- Establish, within the overall POPs information management system, data management routines to identify, hold, display and report direct and other inventory data.
- Test these data elements through pilot investigations in selected areas.
- Monitoring of POPs can be made mandatory for all surveys on air and water quality in and around waste sites and other potential hotspots.
- Include inventory results in the NIP.

Activity 5.1.2 Develop methodologies for the sound management of products and articles in use, and wastes

- Collect draft recommendations arising from all other activities of Objectives 1 and 2 (workshops) as well as those related to the sound management of products and articles in use and wastes.
- Test their appropriateness against the obligations for wastes set out in Article 6 of the Convention and, where necessary, make additional recommendations to ensure compliance.
- Examine techniques that may be in use in India or elsewhere for the environmentally sound handling, collection, transport and storage of POPs wastes.

- Assess the appropriateness of these techniques to wide application in Indian context and prepare recommendations establishing a preferred methodology, or methodologies meeting the Convention requirements.
- Examine the incremental costs to those with actual or potential liabilities arising from the additional requirements of sound management of POPs products and wastes and prepare a national strategy for implementation.
- Identify the most effective destruction methods in conformity with the requirements of the Stockholm Convention dealing with the typical obsolete POPs pesticides/PCBs disposal and in this context introduce technical specifications for cement kilns and non-combustion technologies.
- Hold a national expert review meeting to examine and endorse the recommendations and a national implementation strategy based on agreed priorities.

Activity 5.1.3 Develop strategies for the appropriate disposal of POPs

- Review recommendations from other activities of Objectives 1 and 2 relating to the disposal of POPs materials and wastes and test their compliance with Article 6 of the Convention.
- Examine, where appropriate, techniques in use in India and elsewhere to destroy, irreversibly transform or otherwise dispose of POPs.
- Assess the appropriateness of these techniques for application in India and prepare recommendations establishing the preferred techniques to meet the requirements of the Convention, including BAT/BEP.
- Examine any additional costs involved in the introduction of appropriate disposal techniques or the modification of existing techniques to comply with the Convention.
- Prepare recommendations and a draft national strategy for implementation.
- Hold a national expert review meeting to examine and endorse recommendations and strategy.
- Conduct R&D for cost effective technology for safe disposal of POPs stockpiles/POPs containing wastes.

Activity 5.1.4 Evaluate regulatory framework and institutional responsibilities pertaining to the management of waste

- Review draft recommendations arising from other activities of Objective 2 for the modification of the regulatory framework governing the management of POPs products in use, and of wastes, their international trade and disposal to ensure compatibility with Article 6 of the Convention and, where applicable, with other multilateral environmental agreements to which India is party.
- Make, where necessary, additional recommendations to ensure compliance.
- Examine institutional responsibilities relating to measures ensuring that POPs wastes are handled, transported and stored in an environmentally sound manner and that actions are reported as required by the Convention and, where appropriate, prepare recommendations for revised responsibilities.

Activity 5.1.5 Prepare and disseminate training and awareness raising materials and technical guidance for the management of POPs wastes

- Prepare, in conjunction with Activity 1.4, training and awareness-raising materials and technical guidelines to promote environmentally sound management and assist stakeholders to dispose of POPs materials in a manner compatible with the Convention.
- Hold training and information meetings to disseminate information and guidance to national and provincial officials and for key stakeholders that possess POPs wastes requiring, or likely to require, disposal or who operate disposal facilities.

Output 5.2 *Develop measures to identify sites contaminated by POPs*

Activity 5.2.1 Develop strategy for the identification of contaminated sites

- Develop a methodology for the preparation of an inventory of potential contaminated sites and hotspots using, where possible, existing information relating to primary or secondary production, storage, transport, use and disposal of POPs or products containing POPs.
- Use this methodology and incorporate the results of inventory work undertaken in Outputs 1 and 2 to provide a preliminary national inventory.
- Conduct preliminary investigations to refine this inventory in selected states through field characterization and interviews with relevant authorities.
- Establish risk assessment criteria related to contaminated sites and hotspots and make a preliminary assessment to identify sites requiring priority attention.

Activity 5.2.2 Evaluate relevant laws, policies and institutions

- Assess laws, policies and administrative instruments related to the prevention and control of contamination, to the management of contaminated, or potentially contaminated sites and hotspots and to the environmentally sound clean-up of such sites in India and make proposals for their amendment to meet India's obligations under the Convention.
- Make recommendations for relevant legal and regulatory measures to control contaminated sites and hotspots by POPs including the legal principles guiding the assignment of responsibilities and obligations.
- Assess the capacities of relevant administrative institutions and propose options for institutional strengthening and capacity building.

Outcome for Objective 6: Project management and monitoring & evaluation

Rationale:

140. The requirements for NIP development are complex. Many of the required actions are crosscutting and form a matrix between technical, socio-economic and environmental considerations. Added to this is the scale of implementing the Convention at national and state levels in India, particularly at a time of rapid economic and social change in the country. In building a strong programme of actions towards implementation of, and compliance with the Convention, India has rightly sought to benefit from the different comparative advantages of its international development partners. In doing so, it has been successful in winning a considerable level of co- financing support for the work in hand.
141. In this section, only those incremental activities necessary to deliver the planned project outputs are described.
142. For the full project, a *National Steering Committee* (NSC) to review and comment upon project outputs, provide guidance to the project at the macro-level and help disseminate project findings and outputs will be established and chaired by MOEF. In addition to MOEF, membership of the NSC will comprise the MOA, UNIDO, as Implementing/Executing Agency, members of the Donor community with other development partners and the National Project Director (NPD) providing advice and guidance. The NSC will also request independent *peer review mechanisms* at national level and commission independent international reviews at key milestones.
143. For the full project, MOEF will appoint a *National Project Director* (NPD) responsible for the day-to day project management.

144. The NSC, within MOEF, will, under letter of agreement with UNIDO, manage all local elements of the programme included, for example, the recruitment and supervision of local expert subcontractors; the drafting of the project outputs; and the provision of secretarial support to the NSC. It will organize project activities and liaise with UNIDO for the procurement and delivery of international project inputs. The NSC will prepare a periodic forward planning, progress and financial reports through MOEF to UNIDO.
145. India invited UNIDO to act as GEF *Executing Agency with Expanded Opportunities* for the development of the NIP. During the full project, as in the PDF-B phase, UNIDO will establish a letter of agreement with MOEF allowing for the release of funds at milestones identified during implementation planning. UNIDO will assist MOEF in the execution of the project by holding and disbursing funding necessary for the recruitment of international expert assistance and for other international expenditure. It will also continue facilitation of a group representing the donor and development partner communities. UNIDO is responsible to the GEF for the execution of the project as a whole and will provide annual Project Implementation Reviews and make arrangements for a technical evaluation of the project in accordance with the policies and procedures of the GEF Monitoring and Evaluation Unit.
146. In view of the complex nature of the full project and its many and diverse components, a project focal point will be established within UNIDO to assist with the project execution. This focal point will comprise a small, dedicated staff. It will also benefit from the part-time services of professional and support staff colleagues, in particular of senior staff engaged in the management and coordination of UNIDO's programme of support to the Stockholm Convention, which UNIDO will make available as its in-kind contribution to the project.

Activities for Objective 6:

Output 6.1 Establish project management and implementation arrangements

Activity 6.1.1 Operate national coordination mechanisms and effective national implementation

- Strengthen the National Steering Committee.
- Appoint National Project Director.
- Operate the Project Management Unit.
- Implement project activities according to letter of agreement and implementation plans established with UNIDO.
- Recruit and supervise national experts and subcontractors as necessary to deliver project outputs.
- Prepare and present project plans, regular progress and financial reports to UNIDO and to meetings of the NSC.
- Establish arrangements for independent financial audit at key stages.

Activity 6.1.2 Establish a Technical Coordination Group at MOEF including the engagement of 5 institutions specialized in the field of pesticides, PCBs, dioxins and furans, analytical and legal

- Establish a Technical Coordination Group at MOEF and strengthen the existing UNIDO RCO in Delhi to provide administrative, financial and logistical functions in support of the project.
- Provide technical advice, international experts and other services as necessary to assist MOEF in accordance with letter of agreement and implementation plans.
- Participate in NSC meetings.
- Provide support to Technical Coordination Group.
- Provide necessary management, technical and financial reporting to the Implementing Agency

and the GEF and cooperate with any audit requirements.

Output 6.2 Operate project review, monitoring and evaluation mechanism

Activity 6.2.1 Establish independent technical peer review mechanism

- Establish an independent national expert group for peer review of project outputs.
- Recruit independent international experts to undertake technical reviews at key milestones.

Activity 6.2.2 Establish project evaluation mechanisms

- Undertake annual Project Implementation Reviews (PIRs).
- Agree on a mechanism to provide independent management and financial reviews according to GEF M&E procedures at the termination of the project.
- Undertake an independent terminal project evaluation according to GEF M&E procedures.

4.0 RISKS, SUSTAINABILITY AND COMMITMENTS

4.1 Possible Risks: Political willingness

147. The ultimate long-term success of the Stockholm Convention depends on the willingness of its Parties to meet their obligations. For developing countries such as India, this entails considerable efforts as follows:

- to strengthen and enforce regulatory frameworks;
- to encourage and promote efficient coordination and cooperation amongst stakeholders in many sectors of the government, industry and society;
- to build capacity and strengthen institutions; and
- to manage a transition to BAT and BEP across many sectors of industry and society.

These changes, prompted by the Convention, represent a major challenge for India as a major industrial power in transition to a market economy.

148. Development of India's NIP in a format acceptable to the COP will depend on the availability, at an early stage within the full project, of reporting formats and guidance to be agreed by the COP. Many of these have been developed or being developed by the COP.

149. Furthermore, the development of the NIP will be constrained if practical guidance related to BAT and BEP is not forthcoming from the COP and its Expert Group. The Convention requires that measures to be employed, for example, in the reduction of releases of unintentionally produced POPs are available, feasible and practical. These parameters are likely to vary between the Parties to the Convention. Recognition by the Expert Group of the barriers faced by developing country Parties in introducing BAT and BEP, and the need for flexible arrangements, is critical.

150. Further details of potential risks and the relevant mitigation measures are described in the table below

Potential Risks	Proposed Mitigation Measures	Rating
1. Delays in development and implementation of the project activities.	The National Steering Committee for the implementation of the proposed project has been set up comprising of Stakeholder Ministries, Department, NGOs, and this would ensure active involvement of all in the implementation process. During the preliminary assessment studies necessary linkages have been established with the stakeholders and their active partnership in the implementation. Therefore, the possible delays in the implementation of the project activities would be avoided.	Low
2. Insufficient project management capacities might lead to delays or restrict the achievement of project benefits	The Project Management System designed for the implementation of this project has been developed after due consultation with all the stakeholders. Since majority of the stakeholders are from the concerned Ministries, Department and Governmental institutions with good work culture, there would efficient management of the project and would avoid delays or restrict the overall outputs of the project. Furthermore, UNIDO would be providing the overall supervision for ensuring effective and timely delivery of the targeted outputs.	Low
3. Risk of inadequate and ineffective stakeholder participation	In course of the preliminary assessment project stakeholders were selected, concrete contacts established and were all involved in the development of the various activities defined under the present programme. Therefore, there participation would be effective.	Low

Potential Risks	Proposed Mitigation Measures	Rating
4. Availability of cost effective alternatives to POPs pesticide, PCBs, and waste disposal technologies	The Government of India has been actively pursuing the policy of environmental protection through enforcement of appropriate legislation measures and providing incentives to the manufacturers to switch over to cost effective pesticides namely, Neem based pesticide, Bt based biopesticides to eliminate the eight POP pesticides. The use of PCB in the transformer oil has been banned which would continue.	Low
5. Ensuring effective cooperation between concerned agencies at all levels of government.	While the Steering Committee would ensure effective coordination between the centrally sponsored agencies, Departments and Ministries, the Project management committee would ensure effective participation of concerned stakeholders at the State, district and Community Development Block levels,	Low
6. Difficulties in securing access to public and private sector information sources	During the preliminary assessment stage, a beginning has already been made towards strengthening the institutions both in the public and private sector required for data collection, processing and reporting. This would ensure securing access to private and public sector information sources.	Modest
Overall risk rating		Low

4.2 Sustainability

151. Sustainability implies not only the commitment of India and its national implementing agency to continue in making provisions for the Convention implementation, but also on the development of a NIP that provides initiatives to mainstream the objectives of the Stockholm Convention into the nation's broader development policies, strategies and priorities encompassing a wide range of stakeholders.
152. Various objectives of the full project are directed to address these issues. The initiative to develop approaches to BAT for key sectors of industry relies on the active and willing participation of the enterprises. The methodology set out for this activity is broadly similar to that employed globally by UNIDO in its Cleaner Production Programme. This emphasizes both the environmental and economic benefits of participation. Raising production effectiveness and reducing manufacturing inputs, for example, generate lower production costs and provide a positive incentive for enterprises to participate. Concomitant reductions in pollutant releases bring the environmental benefits sought by the general community.
153. The national implementing agency, MOEF, has over twenty years experience in the development, implementation and managerial oversight of projects and programmes funded by various multilateral agencies and their funding mechanisms, including the GEF. It has wide experience of collaboration with various Intergovernmental Organizations, bilateral donors and enterprises in India. It has acted successfully as the national implementing agency for the PDF-B phase of this project and is currently establishing convention implementation measures that are intended to be permanent.
154. Nevertheless, it is recognized that capacity building and institutional strengthening to ensure that India moves successfully from development to the subsequent implementation of its plans cannot be fully achieved within the duration or financial resources of the project proposed here. For this reason, the full project will develop and invite donor to support the proposal for a long-term Capacity Building Programme.

4.3 Commitments

Commitment of India

155. India has signed and ratified the Stockholm Convention on POPs and recognizes its obligation, under Article 7 of the Convention, to develop and transmit a National Implementation Plan (NIP) to the Conference of Parties (COP) within two years of entry into force of the Convention in the country.
156. India is committed to start the compilation of the NIP as soon as the necessary technical and financial support from the international community is provided in accordance with Article 3 of the Convention. The preparatory project, to identify the requirements for developing the NIP, has been successfully implemented by the Ministry of Environment and Forests (MOEF) through the Industrial Toxicology Research Centre (ITRC), Lucknow with the assistance of UNIDO under a PDF-B grant from the GEF. This Project Brief is the principal outcome of that preparatory project.

Commitments of UNIDO

157. UNIDO is committed to assisting its developing country Member States with regard to the Stockholm Convention. The GEF has approved Enabling Activities proposals submitted by UNIDO for 40 countries including India, which has opted to undertake the NIP development through the GEF full project cycle. In addition, UNIDO is executing or developing a range of demonstration and capacity building projects geared to support the Convention implementation. UNIDO has committed considerable effort to build this assistance programme. This commitment is based on a clear understanding that such activities are compatible with UNIDO's mandate, Corporate Strategy and comparative advantage leading towards the Millennium Development Goals (MDG).
158. India is one of UNIDO's largest recipients of technical cooperation assistance. Activities undertaken by UNIDO in India include a range of measures related to investment, industrial efficiency and waste management. The experience gained in these projects will be of relevance in the development of the NIP.

5.0 STAKEHOLDERS PARTICIPATION AND IMPLEMENTATION ARRANGEMENTS

5.1 Stakeholders Participation

159. Activities to be undertaken during the full project have been planned in accordance with the initial guidelines for POPs enabling activities established by the GEF. Many of these activities require the willing participation of a broad range of stakeholders. Inventories, for example, require enterprises, local authorities and others to cooperate in the provision and sharing of information. Each of the activities such as provision for stakeholder reviews and endorsement at various stages of development of the NIP and its various action plan and strategies will require the development of successful methodologies *inter alia* encouraging active participation by relevant stakeholder groups. Furthermore, activities set out for the proposed project have been designed so that draft findings are taken to principal stakeholder groups for review and endorsement before being included in the NIP.
160. The main stakeholders are Government departments such as the Ministries of Environment and Forests, Agriculture, Health and Family Welfare, External Affairs, Chemicals and Fertilizers, Urban Development, Department of Roads and Buildings, Railways, Water Resources, Labour, Central Pollution Control Board, Department of Scientific and Industrial Research, Chemical Group of CSIR Laboratories, Industrial Toxicology Research Centre, other relevant research centers/institutes as well as industrial associations, NGOs, public and private enterprises and others. The development of the stakeholder directory will continue in order to facilitate engagement with appropriate actors at key stages.
161. Awareness of the Convention amongst stakeholders at national and state levels has been raised through a series of workshops organized during the PDF-B phase. Representatives from national, state and districts of all government departments viz. health, agriculture, electricity, power, municipal corporations, chemical and fertilizers as well as representatives from industry, non-governmental organizations, research and educational institutions attended the workshops held in Delhi, Vadodara, Pune, Bangalore, Hyderabad, Chandigarh, Bhopal, Kolkatta, Trivandrum and Goa.
162. During the full project, each component work package will include opportunities to engage stakeholders in the development of strategic actions, ranking of objectives against national and Convention priorities, and endorsement of action plans and other outcomes. In many cases, the proposed actions require stakeholder engagement drawn from both the producers and users of POPs chemicals.
163. The obligations of the Convention require more than the establishment and enforcement of a legal framework. In developing actions to protect human health and the environment from POPs chemicals within the context of a market economy, the Convention stresses the need to develop and promote a range of voluntary actions. Developing successful positive drivers for change will require stakeholder to be involved in their formulation. The project will take full advantage of the experience of other development activities in order to establish successful initiatives, the group representing the donor and development partner communities will be of value in this regard.
164. An important aspect of participation is empowerment through capacity building, public awareness and education, particularly in those groups most at risk from exposure to POPs chemicals. Capacity building within MOEF and its cooperating departments that started during the PDF-B phase of the project will continue. A technically sound, feasible and knowledge based approach that satisfies the needs of all concerned stakeholders will be developed. However, considering the scale of work to be undertaken and the limited duration and financial resources available, it is not feasible to address all of India's capacity building requirements in terms of the Convention within the full project. For this reason, a proposal for a long-term Capacity Building Programme will be developed in parallel with the NIP. Donors will be invited to participate in this long-term

partnership to ensure that sustainable capacity is built not only at national level but also amongst relevant officials and stakeholders at provincial level and below.

5.2 Training and capacity building

165. Capacity building within MOEF and its cooperating departments that have started during the PDF-B phase will continue in the full project. All the component work packages of this proposal include provision for capacity building. Nevertheless, considering the scale of work to be undertaken and the limited duration and financial resources available, it is not feasible to address all of India's capacity building requirements in terms of the Convention within the full project. For this reason, a proposal for a long-term Capacity Building programme will be developed in parallel with the NIP. Donors will be invited to participate in this longer-term partnership to ensure that sustainable capacity is built not only at national level but also amongst officials and other stakeholders at provincial level and below.

5.3 Project Implementation Arrangements

166. India invited *UNIDO* to act as *GEF Executing Agency with Expanded Opportunities* for the development of the NIP. During the PDF-B phase, UNIDO has assisted MOEF through the provision of timely assistance at key phases, in the review of inventories and reports prepared as outcomes to the project and in guiding MOEF in relation to the requirements of the Stockholm Convention and GEF procedures. UNIDO is also responsible in the overall management of the project and its funds.
167. The *Ministry of Environment and Forests* (MOEF) is the nodal agency for planning, promoting and coordinating environmental programmes. MOEF is the focal point for the Stockholm Convention and the GEF. MOEF has over 20 years experience in the development, implementation and managerial oversight of projects and programme funded by various MEAs and their funding mechanisms, including the GEF. It has wide experience of collaboration with various intergovernmental organizations, bilateral donors and enterprises in India. It has acted successfully as the national executing agency of the PDF-B phase of the project and is currently establishing convention implementation measures that are intended to be permanent. For the execution of the project, MOEF will engage 5 institutions specialized in the field of pesticides, PCBs, dioxins and furans, analytical and legal.
168. The *National Steering Committee* (NSC) already constituted within MOEF represents the nucleus for sustainable and integrated management of the Convention implementation activities. The NSC will be responsible for planning, guidance and monitoring all actions needed for the compliance of the provision of the Stockholm Convention. It would delegate appropriate authorities namely the National Project Director (NPD) as head of the Project Management Committee (PMC) and relevant specialists who will be responsible for the day-to-day project implementation and for this a core cell will be formed within the MOEF. This cell would coordinate the project activities to ensure compliance of the various provisions contained in the Stockholm Convention in all its aspects. The PMC will manage all local elements of the project included, for example, the recruitment and supervision of local experts subcontractors preparing component technical inventory and recommendations and drafting of the project outputs. It will cooperate with UNIDO for the procurement and delivery of project inputs and the organization of project activities. The PMC will prepare periodic forward planning, progress and financial reports through MOEF to UNIDO. It will provide support for India's representatives to the COP (described in Article 19) and its review committees and be responsible for vertical coordination with local and state government representatives and stakeholders representing public, industry, academia and other groups. The PMC will be charged with fulfilling the national review, reporting and information exchange obligations set out in several articles of the Convention.
169. A *National Project Director* (NPD) responsible for day-to-day project management will be required and supported by the. For this, core cell that will be formed within the MOEF.

170. During the full project implementation, it is expected that UNIDO will establish a letter of agreement with MOEF, its national implementing agency counterpart, and assist the Ministry in the execution of the project by holding and disbursing funding necessary for the recruitment of international expert assistance and for other international expenditures.
171. During the PDF-B phase, UNIDO facilitated a coordinating mechanism drawing together India's donor and development partner communities. The purpose of the group was to ensure that the activities towards NIP development take full advantage of the findings and experiences of associated projects and programmes executed by intergovernmental organizations and bilateral donors. This group, which will continue to meet during the full project, includes both agencies, such as UNDP, WHO and FAO that are not directly involved but are recognized as having important experience of benefit to the project.
172. In view of the complex nature of the full project and its many and diverse components, UNIDO will establish a project focal point in its existing Regional Coordination Office (RCO) in Delhi to facilitate the project execution. This focal point will comprise of a small team of dedicated staff for technical backstopping and project management on day-to-day basis. The focal point will also render the services of a National Project Management Expert who would be supervising the development of the NIP. The existing RCO in Delhi with its network in the countries of the Asia-Pacific region will ensure exchange of experiences and expertise between India and other countries of the region and beyond, as well as ensure national awareness of regional initiatives on POPs. It will also benefit from the part-time services of professional and support staff colleagues, in particular of senior staff engaged in the management and coordination of UNIDO's programme of support to the Stockholm Convention, which UNIDO will make available as its in-kind contribution to the project.

6.0 INCREMENTAL COSTS AND PROJECT FINANCING

173. In order to comply with the various provisions under the Stockholm Convention the proposal for the project has been designed which incorporates actions required within the institutional and regulatory framework existing in India. These action, therefore, would invite incremental costs which otherwise would not have been required had the Convention not been ratified by the Government of India. Therefore, the incremental costs are required to be incurred primarily to undertake various actions required for containing future actions which otherwise would have had to be incurred by India as well as globally for addressing various human health problems as well as for remediation of environmental damages caused by POPs chemicals.
174. In accordance with Article 13 of the Stockholm Convention, the incremental costs to undertake such Enabling Activities are fully borne by the international community through the GEF in respect of most of the developing countries. While the Government of India would provide the major co-financing for the proposed activities through the GEF project cycle, financing from the GEF will ensure that all the necessary components of the project are undertaken in a time bound manner through provision of the required support for essential coordination, integration and capacity building activities.
175. The continued use, disposal and release of POPs chemicals into the environment would essentially risk the environment and human health if urgent actions are not initiated in India. Also, because of the massive size of the chemical industry inaction by a country like India, it will certainly weaken the global accord established in the Stockholm Convention.
176. Within the time limit specified in Article 7 of the Stockholm Convention, India will not be able to fulfill its obligations to provide a NIP to the Conference of Parties if urgent actions are not taken thereby seriously upsetting India's abilities to meet the major obligations under the Stockholm Convention.
177. The Government of India has already incurred significant baseline expenditures while preparing itself to become party to this Convention with the establishment of coordination and administrative arrangements at different governmental levels and investments in upgrading laboratories and research centres for undertaking basic work on POPs chemicals and their alternatives.
178. India has already spent significant amount of money through its actions particularly in multi-million dollar programmes of technical coordination undertaken with the World Bank, WHO, Integrated Pest Management with FAO and on-going work on cleaner solid waste management and Regional Network on Pesticides for Asia and the Pacific (RENAP) with UNIDO. All these experiences and other similar associated programmes will provide invaluable support to the proposed project.

7.0 MONITORING, EVALUATION AND DISSEMINATION

7.1 Monitoring and Evaluation

179. The National Steering Committee (NSC) has already been constituted in the MOEF and the same will be engaged in the execution of the full project. A coordination cell to oversee the implementation of the project activities would be set up which, amongst others, would ensure compliance of the various provision contained in the Stockholm Convention in all its aspects.
180. Coordination between India's development partners will continue and facilitate the integration of successful operational experience in the development of strategies and action plans required as elements of the NIP.
181. Provision has also been made for the establishment of a National Expert Review Group (NERG) to undertake independent technical reviews at key milestones of the project. The review group will report its findings to the NSC.
182. Formal monitoring and evaluation of the project will follow the procedures set out in the GEF Monitoring and Evaluation policies and procedures. UNIDO, as executing agency, will be responsible for the preparation of Annual Project Implementation Reviews (PIR). UNIDO will also make arrangements for an independent international mid-term evaluation of the project according to Monitoring and Evaluation procedures established by the GEF. The NSC and their partners will use the results of these reviews to inform project implementation planning in subsequent phases of the project. UNIDO will also make arrangements for the independent international terminal evaluation of the project.
183. Ultimately, the success of the project will be measured by the endorsement of its principal outcome, the National Implementation Plan, by the Government and its successful review by the Conference of Parties of the Stockholm Convention.

7.2 Dissemination of Results

184. The principal output of this full project is the NIP for transmission to the COP of the Stockholm Convention. This plan will describe how India intends to implement the Convention in order to meet its obligations. It is expected that this plan will be made available to other Parties and more widely, through the Secretariat to the Convention, in its clearing-house function.
185. Prior to its transmission to the COP, the NIP will be endorsed by the Government of India and made available to those stakeholders with direct responsibilities for elements of plan implementation. It is likely that a very wide range of stakeholders will have responsibilities during plan implementation so that the dissemination of the NIP to them will ensure its widespread release across Government and various non-government communities.
186. Throughout the project, these and other stakeholders will be engaged to review and endorse its many elements at various stages of their development. In this way, preliminary results and draft recommendations can be circulated widely and evaluated prior to their formalization.
187. The Convention requires the establishment of a National Focal Point for information exchange between each Party, the COP and the Secretariat. The full project includes provision for the establishment of such a focal point and for the data management systems required to hold, process and report the information that India is obliged to present periodically to the COP. It is expected that this information will be available to other Parties and more widely through the Secretariat to the Convention.
188. The Convention is based on a consensus-based approach to the safe management of the chemicals listed within its various annexes. It requires Parties to promote and facilitate public access to various forms of information pertaining to POPs. The full project includes provision for a review of national and provincial requirements to ensure public access to information, for the establishment of a national facility and for the determination of appropriate arrangements for

establishing an information network at provincial level. With the present stature of telecommunication and Information technology, networking is easy.

189. The Convention also obliges Parties to promote and facilitate public awareness and education, especially for women, children and the least educated. The project contains provision for the development of public awareness strategies and educational materials.

8.0 FINDINGS AND RECOMMENDATIONS

8.1 Findings

190. The field survey conducted through out the country revealed the lack of awareness among the population about POP chemicals. Stakeholders were aware of the fact that the use of pesticides can harm individuals and the environment, however, they were unaware of its toxic effects. As far as PCB's are concerned ignorance prevails not only in the unorganized sector but also in the organized sectors such as electricity, transformers, etc. None of the concerned stakeholders were aware of mode and means for its safe handling and disposal. With respect to dioxins and furans, there is a total lack of knowledge on the subject; however, stakeholders and the general public were interested to learn more about dioxins and furans and sources of their generation.
191. POP chemicals were reported to be present in the country.
192. Although there is presence of POP chemicals in the country, their systematic inventory has not been done.
193. Manufacturers of POP chemicals do not have proper record of data, in particular on the contamination caused by these POP chemicals. There is inadequate data available on sources, emissions, environmental levels, stockpiles, and health effects of POP Chemicals.
194. The existing infrastructure facilities for estimation of concentration of POP chemicals being inadequate, several POP chemicals such as PCBs, toxaphane, dioxins and furans are not monitored and hence dearth of information on POPs.
195. Very scanty data is available on POPs and the same is not recorded on a continuous basis hence no estimates and/or interpretation available on sources and emissions of dioxins and furans in particular.
196. Regulation at multi-agency level. Though policies and legislations exist, various agencies and government departments are implementing them. Hence, their regulation becomes weak, as there is hardly any communication between those implementing multi-agencies.
197. The following table lists the findings from the feedback received from questionnaires through workshops and interactions with concerned stakeholders during the actual field surveys.

Area	Strength	Weakness
Database	Scattered data on some POP Pesticides	Negligible on PCBs, None on Dioxin/Furans
Analytical Capabilities	Infrastructure	Specific to POP analysis lacking
Technology	Industry awareness	Cost effectiveness of available technology
Capacity building	Knowledge base	Inadequate
Awareness	Marginal	Countrywide campaign required
Legislation and policy	Exists	Several agencies are involved
Impact on health	---	Limited information
Manpower	Available	Inadequate super specialization

198. The areas requiring immediate concern identified through the field investigations are as follows:
- POP Pesticides: Gujarat, Andhra Pradesh, Karnataka, Tamil Nadu, Uttar Pradesh, Maharashtra, Punjab, Haryana, Bihar.
 - PCBs: Coastal areas especially Ship breaking yards, Electricity Boards and old stocks of non-functional transformers
 - Dioxin and Furans: Municipal Waste Incinerations and open burning, Pulp & Paper industries, Iron and Steel industries and Foundries.

8.2 Actions Required

Inventory of POP Chemicals

199. Need for compiling detailed inventory on POP chemicals at the national level information on POP chemicals are scattered.

Inventory of stockpiles

200. There are POP chemicals lying either at the backyard of industries manufacturing POPs and /or end users. These are not quantified, as there had been no strict regulation to keep the record of stockpiles. Information on stockpiles is scattered at individual industries, and mostly, those at scrap yard are often not accounted. For example, quantity of PCBs in the scrapped transformers lying unattended or those removed from the scrapped transformers and considered for recycle are not recorded. Therefore, detailed inventory of stockpiles is essential to meet the requirement and to abide with the Stockholm Convention on POPs.

Identification of contaminated and disposal sites

201. Detailed investigation to identify the contaminated sites and hotspots through out the country needs to be carried out. These sites may be located in places where unauthorized chemicals and scraps are disposed of. Some of these may be notified sites for hazardous waste disposal. In addition, illegally operated incinerators and those operated at inadequate temperature range need to be identified to prevent the releases of unintentional produced POPs viz. dioxin and furans.

Strengthening the analytical capabilities

202. There are few laboratories in the country that can collect, analyze and interpret the POP chemicals. There is a need to set-up laboratories capable to analyze all the parameters directly or indirectly associated with POPs. Those that are analyzing few of the POP chemical parameters should be upgraded to enable them to handle analytical works for estimation of all parameters.

Coordinated Regulatory Framework

203. Proper regulation and regulatory framework need to be setup for monitoring and understanding the status of POP in the environment. Good coordination between the regulatory body at the central government and in association with the state government as well as other implementing agencies is essential to collect, compile, and generate data on POP chemicals present in air, water and soil and also in all faunas and floras.

Availability of the alternative molecules to POPs

204. In order to eliminate and reduce the use POP chemicals, there is a need to undertake a research and developmental work to identify a new environment friendly molecule equivalent of POP chemicals.

Availability of BAT and BEP for cleaner production and disposal

205. To phase out or eliminate and reduce the production of chemicals identified in the list of POP chemicals alternate technologies for the manufacture of environment friendly products, the BAT should be identified and need to be economical and feasible. Furthermore, until the final closure orders are made for industries manufacturing POP chemicals and those that generate unintentional products viz. dioxin and furans, BEP should be made available through cleaner production system to minimize waste generation.

Awareness and capacity building

206. The Government of India, through its various departments, has taken adequate steps to protect and safeguard the environment. However, a line of action has to be put in place to create awareness among its ministries, stakeholders and in particular the masses at the grass root. In order to do this, the government and non-government agencies as well as individuals working for environment must come together and create awareness at all levels in the society. In addition, special training programmes on train the trainers must be conducted so that they in turn can educate all concerned stakeholders.

Raising resources

207. To abide by the objectives of the Stockholm Convention and to implement the same, there is a need to raise adequate resources both in terms of trained professionals and financial support. Sources need to be identified from where both technical know-how and grants can be obtained to implement the NIP.

9.0 Project Budget

Objective	Activity		Increment (US\$)		
			GEF	Government of India	UNIDO
1. Convention implementation infrastructure at national and state levels	1.1 Develop and implement national management system for the Stockholm Convention Compliance				
	1.1.1	Establish national management system	109,000		0
	1.1.2	Establish Information Management System	109,000	200,000	0
	1.2 Preparation of the National Implementation Plan				
	1.2.1	Draft NIP	157,600	0	0
	1.2.2	Review and endorse NIP	121,600	0	0
	1.3 Develop national and state policy, legal, regulatory and promotional frameworks to meet the Convention requirement				
	1.3.1	Establish regulatory requirements in relation to national sustainable development policies, country assistance strategies, state laws and administrative regulations	50,700	170,000	0
	1.3.2	Establish regulatory requirements in relation to national and state administrative rules, standards and guidelines	16,500	50,000	0
	1.3.3	Assess opportunities for voluntary schemes to address the Convention requirements	34,300	25,000	0
	1.3.4	Undertake socio-economic impact study	101,000	0	0
	1.3.5	Provide recommendations and gain endorsement for them	97,200	0	0
	1.4 Public awareness and education				
	1.4.1	Establish National Information Centre	109,100	0	0
	1.4.2	Increase public awareness of POPs issues related to agriculture	5,200	50,000	0
	1.4.3	Increase industry and public awareness of unintentional production of POPs	25,800	25,000	20,000
	1.4.4	Increase national and state government, municipalities, industry and public awareness of POPs issues related to waste management	31,000	25,000	0

Objective	Activity		Increment (US\$)		
			GEF	Government of India	UNIDO
	1.5 Develop R&D monitoring strategies				
	1.5.1	Undertake exposure risk assessment studies and modeling	0	415,000	0
	1.5.2	Develop R&D monitoring strategies to support the Convention implementation	55,600	50,000	0
	OBJECTIVE 1: TOTAL COSTS		1,023,600	1,010,000	0
2. Measures in relation to chemicals currently produced and used in India (DDT)	2.1 Develop measures to eliminate production, use and trade of DDT				
	2.1.1	Establish inventories on production, distribution, use and international trade	16,000	75,000	0
	2.1.2	Develop reduction and phase-out strategies	26,500	75,000	0
	2.1.3	Build capacity for the national focal point	12,200	81,800	0
	2.2 Develop measures in relation to stockpiles of, or containing, intentionally produced POPs				
	2.2.1	Establish national inventory of stockpiles	135,500	0	0
	2.2.2	Develop guidelines for the management of stockpiles	65,900	0	0
	OBJECTIVE 2: TOTAL COSTS		256,100	231,800	0
3. Measures in relation to Polychlorinated biphenyls (PCBs)	3.1 Preliminary national inventory				
	3.1.1	Collect national information on import and use of PCBs and PCB-containing equipment	128,800	736,000	0
	3.1.2	Collect information on management and monitoring capacity	47,400	13,700	0
	3.2 Develop a detailed PCBs inventory methodology and draft strategy on PCBs reduction and disposal in India				
	3.2.1	Develop and test PCBs inventory methodology in the states	43,800	0	0

Objective	Activity		Increment (US\$)		
			GEF	Government of India	UNIDO
	3.2.2	Develop draft national strategy on options and approaches to PCBs reduction and disposal	10,000	75,000	0
	3.3 Build capacity in PCBs management				
	3.3.1	Establish pilot training programme	35,100	0	0
	3.3.2	Develop a national PCBs training programme	26,500	58,500	0
	OBJECTIVE 3: TOTAL COSTS		291,600	883,200	0
4. Measures in relation to unintentionally produced POPs	4.1 Develop measures for the progressive reduction of releases and elimination of sources of unintentionally produced POP				
	4.1.1	Develop inventories of sources and estimates of releases as well as focused and in-depth inventories	408,100	237,400	0
	4.1.2	Evaluate existing analytical and monitoring capacity and needs	77,400	0	0
	4.1.3	Evaluate and develop relevant laws, policies and promotional schemes	92,600	0	0
	4.1.4	Formulate strategies and action plan for the control of unintentionally produced POPs	195,900	0	0
	OBJECTIVE 4: TOTAL COSTS		774,000	237,400	0
	5.1 Develop and implement strategies for identifying and managing waste consisting of containing or contaminated by POPs				
5. Measures in relation to wastes and contaminated sites	5.1.1	Develop and implement strategies to locate and characterize wastes	165,300	210,000	0
	5.1.2	Development methodologies for the sound management of products and wastes	119,100	185,000	0
	5.1.3	Develop strategies for the appropriate disposal of POPs	117,300	275,000	0
	5.1.4	Evaluate regulatory framework and institutional responsibilities pertaining to the management of wastes	29,800	150,000	0

Objective	Activity		Increment (US\$)		
			GEF	Government of India	UNIDO
	5.1.5	Prepare and disseminate training and awareness raising materials and technical guidance for the management of POPs wastes	83,800	100,000	0
	5.2 Develop measures to identify sites contaminated by POPs				
	5.2.1	Develop strategy for the identification of contaminated sites	176,300	900,000	0
	5.2.2	Evaluate relevant laws and policies and institutions	44,200	180,000	0
	OBJECTIVE 5: TOTAL COSTS		735,800	2,000,000	0
6. Project Management and monitoring and evaluation	6.1 Establish project management and implementation arrangements				
	6.1.1	Operate national coordination mechanisms and effective national implementation	114,000	575,000	50,000
	6.1.2	Establish a Technical Coordination Group in MOEF including the engagement of 5 institutions specialized in the field of pesticides, PCBs, dioxins and furans, analytical and legal	0	1,605,100	0
	6.2 Operate project review, monitoring and evaluation regime				
	6.2.1	Establish independent technical peer review mechanism	0	100,000	100,000
	6.2.2	Establish project evaluations mechanism	46,000	30,000	50,000
	OBJECTIVE 6: TOTAL COSTS		160,000	2,310,100	200,000
	<i>Sundries</i>			207,500	
	TOTAL GEF PROJECT BUDGET		3,241,100		
	TOTAL FULL PROJECT CO-FINANCING			6,880,000	200,000
	TOTAL PDF-B		317,000	40,000	40,000
	TOTAL INCREMENTAL COST (incl. PDF-B)		10,718,100		

* The planned activities of the Ministry of Environment and Forests focusing on Hazardous Substances Management include Chemical Safety, Hazardous Waste management and Solid Waste Management and the counterpart funding would be available accordingly from out of the budgetary allocation under the 10th Five Year Plan.

10.0 PROJECT WORK PLAN

Outcome/Output/Activity	Year 1				Year 2			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Objective 1. Convention implementation infrastructure at national and state levels								
<i>Output 1.1 Develop and implement national management system for the Stockholm Convention Compliance</i>								
Activity 1.1.1 Establish national management system								
Activity 1.1.2 Establish Information Management System								
<i>Output 1.2 Preparation of the National Implementation Plan</i>								
Activity 1.2.1 Draft National Implementation Plan								
Activity 1.2.2 Review and endorse NIP								
<i>Output 1.3 Develop National and State policy, legal, regulatory and promotional frameworks to meet Convention requirement</i>								
Activity 1.3.1 Establish regulatory requirements in relation to national sustainable development policies, country assistance strategies, state laws and administrative regulations.								
Activity 1.3.2 Establish regulatory requirements in relation to national and state administrative rules, standards and guidelines								
Activity 1.3.3 Assess opportunities for voluntary schemes to address Convention requirements								
Activity 1.3.4 Undertake socio-economic impact study								
Activity 1.3.5 Provide recommendations and gain endorsement for them								
<i>Output 1.4 Public awareness and education</i>								
Activity 1.4.1 Establish National Information Centre								
Activity 1.4.2 Increase public awareness of POPs issues related to agriculture								
Activity 1.4.3 Increase industry and public awareness of unintentional production of POPs								
Activity 1.4.4 Increase national and state government, municipalities, industry and public awareness of POPs issues related to waste management								

Outcome/Output/Activity	Year 1				Year 2				
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Output 1.5 Develop R&D monitoring strategies									
Activity 1.5.1 Undertake exposure risk assessment studies and modeling									
Activity 1.5.2 Develop R&D monitoring strategies to support Convention implementation									
Outcome 2. Measures in relation to chemicals currently produced and used in India (DDT)									
<i>Output 2.1 Develop measures to eliminate production, use and trade of DDT</i>									
Activity 2.1.1 Establish inventories on production, distribution, use and international trade									
Activity 2.1.2 Develop reduction and phase-out strategies									
Activity 2.1.3 Build capacity for the national focal point									
<i>Output 2.2 Develop measures in relation to stockpiles of, or containing, intentionally produced POPs</i>									
Activity 2.2.1 Establish national inventory of stockpiles									
Activity 2.2.2 Develop guidelines for the management of stockpiles									
Outcome 3. Measures in relation to Polychlorinated biphenyls (PCBs)									
<i>Output 3.1 Preliminary national inventory</i>									
Activity 3.1.1 Collect national information on import and use of PCBs and equipment containing PCBs									
Activity 3.1.2 Collect information on management and monitoring capacity									
<i>Output 3.2 Develop a detailed PCBs inventory methodology and draft strategy on PCBs reduction and disposal in India</i>									
Activity 3.2.1 Develop and test a PCBs inventory methodology in the states									
Activity 3.2.2 Develop draft national strategy on options and approaches to PCBs reduction and disposal									

Outcome/Output/Activity	Year 1				Year 2			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<i>Output 3.3 Build capacity in PCBs management</i>								
Activity 3.3.1 Establish pilot training programme								
Activity 3.3.2 Develop a national PCBs training programme								
Outcome 4. Measures in relation to unintentionally produced POPs								
<i>Output 4.1 Develop measures for the progressive reduction of releases and elimination of sources of unintentionally produced POP</i>								
Activity 4.1.1 Develop inventories of sources and estimates of releases								
Activity 4.1.2 Evaluate existing analytical and monitoring capacity and needs								
Activity 4.1.3 Evaluate and develop relevant laws, policies and promotional schemes								
Activity 4.1.4 Formulate strategies and action plan for the control of by-product POPs								
Outcome 5. Measures in relation to wastes and contaminated sites								
<i>Output 5.1 Develop and implement strategies for identifying and managing waste consisting of containing, or contaminated by POPs</i>								
Activity 5.1.1 Develop and implement strategies to locate and characterize wastes								
Activity 5.1.2 Development methodologies for the sound management of products and wastes								
Activity 5.1.3 Develop strategies for the appropriate disposal of POPs								
Activity 5.1.4 Evaluate regulatory framework and institutional responsibilities pertaining to the management of wastes								
Activity 5.1.5 Prepare and disseminate training and awareness raising materials and technical guidance for the management of POPs wastes								
<i>Output 5.2 Develop measures to identify sites contaminated by POPs</i>								
Activity 5.2.1 Develop strategy for the identification of contaminated sites								
Activity 5.2.2 Evaluate relevant laws and policies and institutions								

Outcome/Output/Activity	Year 1				Year 2			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Outcome 6. Project Management and overview								
<i>Output 6.1 Establish project management and implementation arrangements</i>								
Activity 6.1.1 Operate national coordination mechanisms and effective national implementation								
Activity 6.1.2 Establish a Technical Coordination Group in MOEF including engagement of 5 institutions on specialized fields								
<i>Output 6.2 Operate project review, monitoring and evaluation regime</i>								
Activity 6.2.1 Establish independent technical peer review mechanism								
Activity 6.2.2 Establish project evaluations mechanism								

LIST OF ABBREVIATIONS

AIIPH	All India Institute of Public Health and Hygiene
BAT	Best Available Techniques
BEP	Best Environmental Practices
CECRI	Central Electrochemical Research Institute
CEE	Centre for Environmental Education
CFRI	Central Fuel Research Institute
CIB	Central Insecticides Board
CII	Confederation of Indian Industry
CIL	CIL Central Insecticides Laboratory
CLRI	CLRI Central Leather Research Institute
COP	Conference of Parties
CPCB	Central Pollution Control Board
CSE	Centre for Science and Environment
CSIR	Council of Scientific and Industrial Research
CSMCRI	Central Salt and Marine Chemical Research Institute
DDT	Dichlorophenyltrichlorethane
DRI-EAF	Direct-Reduced Iron and Electric-Arc Furnace
EPA	Environment Protection Agency
EPS	Environmental Protection Societies
FAO	Food and Agriculture Organization
GEF	Global Environment Facility
HCB	Hydrochlorobenzene
HIL	Hindustan Insecticides Limited
ICMA	Indian Chemical Manufacturers Association
ICMR	Indian Council of Medical Research
IICT	Indian Institute of Chemical Technology
ILO	International Labour Organization
IMS	Information Management System
INC	Intergovernmental Negotiating Committee
IPM	Integrated Pest Management
IT	Information Technology
ITRC	Industrial Toxicology Research Centre
MCF	Ministry of Chemicals and Fertilizers
MDG	Millennium Development Goals
MEA	Ministry of External Affairs
M&E	Monitoring and Evaluation
MHFW	Ministry of Health and Family Welfare
MOA	Ministry of Agriculture
MOEF	Ministry of Environment and Forests
MOL	Ministry of Labour
MOUD	Ministry of Urban Development
MTPA	Metric tones per annum
NCL	National Chemical Laboratory
NCMP	National Chemical Management Profile
NEC	National Expert Committee
NEERI	National Environmental Engineering Research Institute
NGO	Non-governmental Organization

NIOH	National Institute of Occupational Health
NIP	National Implementation Plan
NMEP	National Malaria Eradication Program
NPD	National Project Director
NSC	National Steering Committee
ODS	Ozone Depleting Substances
OP	Operational Programme
PAI	Pesticides Association of India
PCBs	Polychlorinated Biphenyls
PCDD	Polychlorinated dibenzo-p-dioxin
PCDF	Polychlorinated dibenzofuran
PDF-B	Project Development Facility B
PIC	Prior Informed Consent
PIR	Project Implementation Review
POP	Persistent Organic Pollutant
PRTR	Pollutant Release and Transfer Register
PTS	Persistent Toxic Substances
R&D	Research and Development
RRL	Regional Research Laboratory
SCCO	Stockholm Convention Compliance Office
SHD	State Health Department
SPCB	State Pollution Control Board
TEQ	Toxic Equivalent
TSDF	Treatment Storage Disposal Facility
UNFCCC	United Nations Framework Convention on Climate Change
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization
UNITAR	United Nations Institute of Training and Research
WB	The World Bank
WHO	World Health Organization
WWF	World Wildlife Fund