



GLOBAL ENVIRONMENT FACILITY
INVESTING IN OUR PLANET


BUILDING PARTNERSHIPS
**For Sound
Management of
Chemicals**





Glossary

ADB	Asian Development Bank
AfDB	African Development Bank
API	Annual Parasite Index
BAT	Best Available Technology
BEP	Best Environmental Practice
CEITs	Countries with Economies in Transition
CPTF	Canadian POPs Trust Fund
DDT	Dichlorodiphenyltrichloroethane
DSSA	Demonstrating and Scaling-up of Sustainable Alternatives
EBRD	European Bank for Reconstruction and Development
EMTK	Environmental Management Tool Kit
FAO	United Nations Food and Agriculture Organization
GEF	Global Environment Facility
GIS	Geographic Information System
GMP	Global Monitoring Plan
IADB	Inter-American Development Bank
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IPM	Integrated Pest Management
IRS	Indoor Residual Spraying
IVM	Integrated Vector Management
LDC	Least Developed Countries
M&E	Monitoring and Evaluation
MEA	Multilateral Environment Agreements
MP	Montreal Protocol on Substances That Deplete the Ozone Layer
NIP	National Implementation Plan
ODS	Ozone Depleting Substances
PCB	Polychlorinated Biphenyls
POPs	Persistent Organic Pollutants
PRTRs	Pollutant Release and Transfer Registers
SME	Small and Medium-Size Enterprise
SMG	Small Grant Programme
STAP	Scientific and Technical Advisory Panel
TEQ	Toxic Equivalent
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organization
U-POPs	Unintentionally Produced Persistent Organic Pollutants
USAID	United States Agency for International Development



The work of the GEF on chemicals is done through a network of Implementing and Executing Agencies consisting of five agencies. UNDP, UNEP, UNIDO, The World Bank and FAO. UNIDO's work in the industrial sector gives it the ability to address primarily phase out of industrial POPs and also to assist countries to make improvements to industrial sectors to reduce the emissions of U-POPs. A coal burning plant spews out contaminants from its smokestacks.

Introduction by the CEO

The chemical industry produces over 100,000 chemicals which have improved the quality of our lives. These chemicals are being produced for purposes ranging from fulfilling domestic and industrial needs, boosting agriculture, making our clothing fire resistant and producing components for our mobile phones or other electronic devices. Every day new chemicals are formulated and produced. Wise use of chemicals will allow us to benefit from them and mitigate the risks posed by the unsafe use of them.

Globally there is a shift in the production of chemicals from developed to developing countries making it important for these countries to have the tools and means of managing these chemicals. The Global Environment Facility provides support to developing countries and countries with economies in transition, for the implementation of a number of Multilateral Environment Agreements (MEAs) including the Stockholm Convention on Persistent Organic Pollutants (POPs) and the Montreal Protocol on Substances that Deplete the Ozone Layer, both addressing chemicals of global concern.

Through 2010, the GEF and its agencies leveraged over US\$1 billion in resources to phase out 29,000 tons of ODP (ozone depleting potential) in Countries with Economies in Transition (CEITs) and the sound disposal of more than 200,000 tons of POPs chemicals in developing countries and CEITs.

The challenge we face is how to wisely use chemicals to ensure robust economic development without adversely affecting our health and environment. The challenge is deep and broad, and the GEF has over the years built a strong partnership of GEF agencies and national governments, the private sector and NGO's to help address the challenges of Sound Management of Chemicals.

More importantly, this partnership has built a foundation to work in a cost-effective and efficient manner. This will allow the GEF to consolidate the persistent organic pollutants and ozone layer depletion focal areas, as well as to broaden the scope of its engagement with the sound management of chemicals and to initiate work on mercury.

Previous publications have highlighted how the GEF has leveraged resources to finance cleanup of toxic and harmful chemicals and the results this has achieved. This publication focuses on the work of the GEF and its partners in bringing the technical resources and capacity of each partner in the network to provide solutions to an array of chemical management issues.

The portfolio and comparative advantage of the GEF agencies are highlighted in the publication. Some examples of projects that have built national and regional capacity of institutions to address POPs and other toxic chemicals are presented. These projects are examples of how hazardous chemicals can be managed and eliminated through combinations of investment, science and technical assistance.

Monique Barbut, CEO and Chairperson of the Global Environment Facility

Many chemicals are dangerous to human and ecosystem health. Among the worst is a range of synthetic organic compounds that persist in the environment for long periods of time. DDT removal and disposal operations take place in Tanzania.



The GEF

BACKGROUND

The Global Environment Facility (GEF) unites 182 member governments—in partnership with international institutions, nongovernmental organizations, and the private sector—to address global environmental issues.

An independent financial organization, the GEF provides grants to developing countries and countries with economies in transition for projects related to biodiversity, climate change, international waters, land degradation, the ozone layer, and persistent organic pollutants. These projects benefit the global environment, linking local, national, and global environmental challenges and promoting sustainable livelihoods.

Established in 1991, the GEF is today the largest funder of projects to improve the global environment. The GEF has allocated \$9.2 billion, supplemented by more than \$40 billion in co-financing, for more than 2,700 projects in more than 165 developing countries and countries with economies in transition. Through its Small Grants Programme (SGP), the GEF has also made more than 12,000 small grants directly to nongovernmental and community organizations, totaling \$495 million.

The GEF partnership includes 10 agencies: the UN Development Programme; the UN Environment Programme; the World Bank; the UN Food and Agriculture Organization; the UN Industrial Development Organization; the African Development Bank; the Asian Development Bank; the European Bank for Reconstruction and Development; the Inter-American Development Bank; and the International Fund for Agricultural Development. The Scientific and Technical Advisory Panel provides technical and scientific advice on the GEF's policies and projects.

The GEF also serves as financial mechanism for the following conventions:

- Convention on Biological Diversity
- United Nations Framework Convention on Climate Change (UNFCCC)
- Stockholm Convention on Persistent Organic Pollutants (POPs)
- UN Convention to Combat Desertification (UNCCD)
- The GEF, although not linked formally to the Montreal Protocol on Substances That Deplete the Ozone Layer (MP), supports implementation of the Protocol in countries with economies in transition.

THE GEF PARTNERSHIP FOR CHEMICALS MANAGEMENT

The work of the GEF is done through a network of Implementing and Executing Agencies. Currently this network consists of five agencies. UNDP, UNEP, UNIDO, The World Bank and FAO are currently active in delivering programs and projects to developing countries and countries with economies in transition in the Chemicals Focal Area.

The GEF and its agencies through their work on Chemicals have phased out 29,000 tons of ODP (ozone depleting potential) in Countries with Economies in Transition (CEITs) and the sound disposal of more than 200,000 tons of POPs legacy in developing countries and CEITs.

The GEF has been able, throughout the years to build trust in the relationships with the donor community, Convention Secretariats, recipient countries and agencies in ensuring high delivery of services in project management. In the area of chemicals management, the GEF has leveraged over US\$1 billion for POPs management and elimination and chemicals-related operations in the Ozone and International Waters focal areas.

The GEF Secretariat through its Chemical's Task Force, which has representation from the 5 agencies, the Stockholm Convention Secretariat and the Scientific and Technical Assessment Panel (STAP), coordinates the Work on Chemicals.

The five agencies that currently work on Chemicals through their corporate mandates provide different expertise to countries to manage POPs. This choice of agencies allows countries to find the best solution to their national POPs issues.

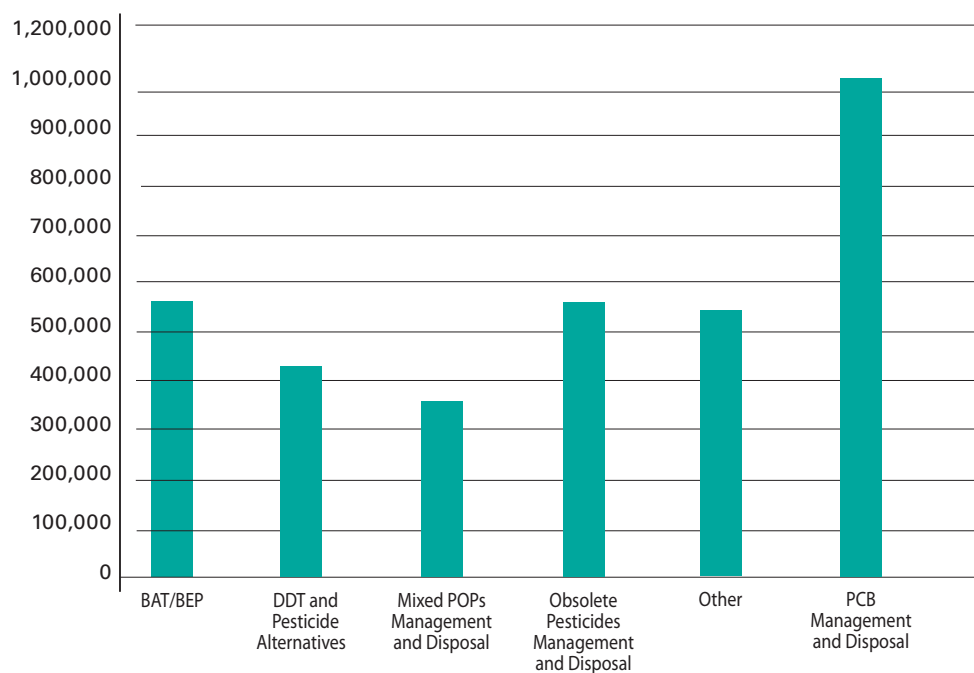
In building the chemicals portfolio, the GEF and its partners have worked to provide 138 countries with assistance to develop their National Implementation Plans for POPs and Institutional Strengthening Projects to a number of Countries with Economies in Transition for assisting their work on the phase out of Ozone Depleting Substances.

These enabling activities have built the basis for countries to plan and implement phase out and investment activities to meet their obligations under the Stockholm Convention and the Montreal Protocol. The following two figures gives a breakdown of projects approved post



NIP up to GEF 4 showing a breakdown by contaminant/ activity (Figure 1) and a regional breakdown of these projects (Figure 2).

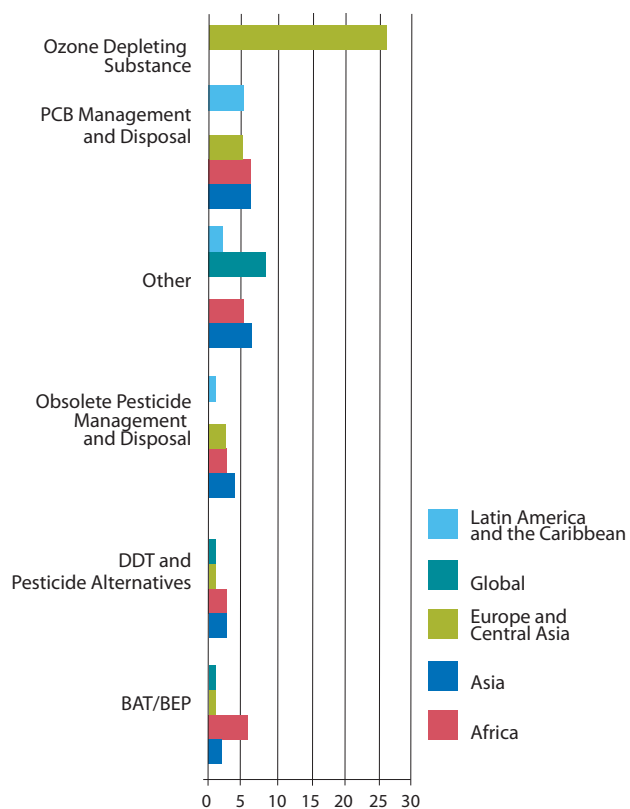
FIGURE 1: Projects Undertaken in POPs and Ozone other than enabling activities



-Other includes the Global Monitoring Plan, Enabling Activities that exceed 1 million dollars, NIP implementation support for LDC and SIDS, Cleanup of contaminated sites and capacity building projects.



FIGURE 2: Regional Distribution of Projects in POPs and Ozone except Enabling Activities.



Each agency in the partnership brings to the table technical expertise in specific areas, for example UNIDO brings its experience in Industrial Development projects to provide assistance to countries in improving their industrial sectors to reduce emissions of U-POPs. Similarly, FAO brings its experience in improving agricultural sectors to assist countries manage agricultural POPs.

The Current Portfolio is divided among GEF agencies as follows:

Agency	GEF Resources (USD)	Number of Projects
FAO	\$ 7,438,000.00	5
Multi Agency	\$ 59,579,840.00	8
UNDP	\$ 70,781,128.00	22
UNEP	\$ 31,783,472.00	17
UNIDO	\$ 80,969,100.00	20
World Bank	\$ 103,178,680.00	14

The following sections will describe the work of the agencies and case studies from each agency highlighting how they have used their technical capacity to enhance the projects.

GEF PARTNERSHIPS FOR CHEMICALS MANAGEMENT

UNDP, United Nations Development Programme

As the United Nations' global development network, with an on-the-ground presence in 166 countries, UNDP is well placed to assist countries in gaining the knowledge, experience and resources required to tackle POPs management and elimination issues.

UNDP assists countries in meeting their commitments under the Stockholm Convention, including:

- Meeting reporting obligations, sharing lessons learned and adopting global best practices.
- Building necessary capacity to implement POPs risk reduction measures, including the disposal of POPs and POPs waste.
- Reducing the exposure and release of POPs to protect human health and the environment.
- Demonstrating effective alternative technologies and practices that avoid POPs releases.

MAIN PROJECT AREAS

UNDP-supported country projects and global programmes address a variety of national and Stockholm Convention priorities, as well as GEF Strategic Objectives. Through the implementation of projects, UNDP supports the reduction and elimination of all types of POPs contaminants included under the Stockholm Convention (see graph 2), covering a multitude of sectors and activities.

PORTFOLIO IMPACT

Because UNDP POPs projects encompass a wide variety of POPs substances and approaches, reporting on the portfolio requires aggregating the results across groups of contaminants. In order to demonstrate the results achieved by the POPs portfolio, four indicators have been selected in the following areas: strengthening of national regulations, capacity building at the national level, and global and local impact.

The selected indicators include: i) number of national overarching POPs or sector regulations adopted; ii) number of people receiving training in POPs management or POPs alternatives (more than 3 days of training); iii) POPs chemicals disposed; of and iv) POPs chemicals safeguarded.

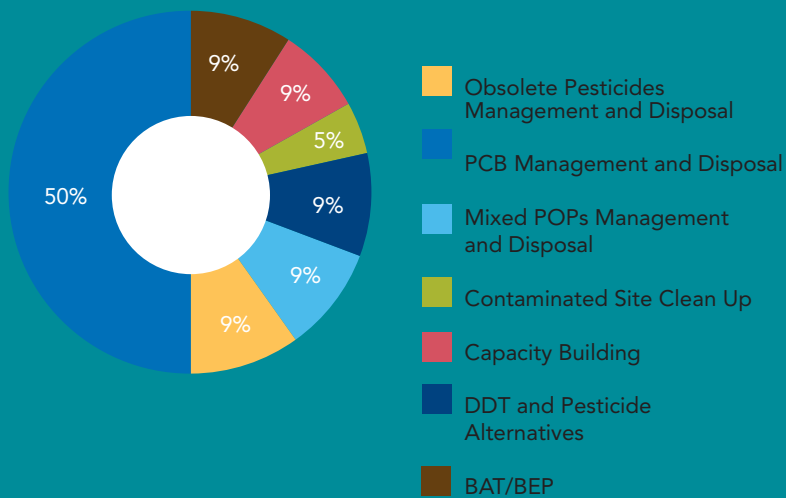
As most projects are still under implementation, the results shown below do not reflect the aggregated final results from the ongoing programs.

INDICATOR	CUMULATIVE RESULT
Number of national POPs regulative instruments adopted	16
Number of people trained in POPs management / alternatives	91,601
POPs disposed of (metric tons)	1,295
POPs safeguarded (metric tons)	220

The first compilation of the aggregated results on the POPs projects implemented by UNDP reflects the numerous successes made on the national level to address POPs issues, as well as the emphasis on regulatory strengthening and capacity building in the projects under implementation. Important and valuable experiences have been gained in the safe guarding and disposing of POPs and how to effectively eliminate them from the environment. **It is expected that cumulatively the amounts of POPs disposed of will be accelerated in coming years as the focus of many on-going projects is shifting from capacity building to direct POPs handling and release-avoiding activities.** For example, a recently completed project in Latvia overshot its target disposing 596 tons of PCBs waste instead of 280 tons as planned.



Figure 3: UNDP Portfolio By Contaminant/Activity



It is expected that cumulatively the amounts of POPs disposed of will be accelerated in coming years as the focus of many on-going projects is shifting from capacity building to direct POPs handling and release-avoiding activities.

GEF PARTNERSHIPS FOR CHEMICALS MANAGEMENT

UNEP, United Nations Environment Programme

UNEP is the UN body mandated to identify issues of global environmental concern where international action may be warranted; provide aid in the negotiation of international agreements; and support their implementation. UNEP hosts the majority of MEA secretariats. With regard to chemicals management, UNEP is the only agency with in-house capacity and capability, and performs the secretariat functions for the Basel, Rotterdam (with FAO) and Stockholm Conventions, the Vienna Convention and its Montreal Protocol, and SAICM. Furthermore, Parties to the more-recently developed agreements have chosen to co-locate these secretariats with UNEP's branch specializing in chemicals policy and management (UNEP Chemicals) to gain the benefits of coherence and integration. Furthermore, UNEP is leading the negotiations on mercury and is working very closely with the key stakeholders involved in drafting the legally binding instrument. UNEP is also working with partners in the field looking to mitigate the effects of mercury use/ handling and developing best disposal options.

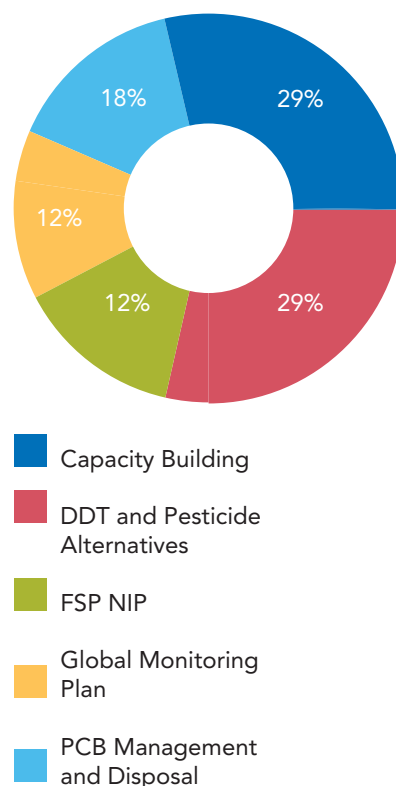
MAIN PROJECT AREAS

UNEP's work within GEF has mainly supported projects dealing with alternatives to POPs (e.g. DDT), assisting in developing systems to monitor presence of POPs in human health and the environment (e.g. Global Monitoring Plan (GMP)), demonstrating innovative approach to facilitate reporting and dissemination of POPs information (e.g. PRTRs), innovative regional approaches to manage and dispose of PCBs (PCB for West Africa and PCB in the mining sector in South America) and building capacity at the national and regional level to manage POPs in a sound manner (Capacity building projects for LDC countries in Africa, development and updated of National Implementation Plans). UNEP has worked on a number of regional and global projects to help strengthen policy and alternatives in PCBs and DDT.

PORTFOLIO IMPACT

UNEP interventions within the GEF have reached all regions. However, UNEP has put emphasis on the African region, followed by the Global projects and the Asian and Pacific region (see graph 3). The capacity building projects for least developed countries in Africa and the DDT initiatives have put emphasis on the African region. Regional approaches have often complemented global approaches.

Figure 4: UNEP Portfolio By Contaminant/Activity





UNEP has put emphasis on the African region, supporting innovative regional approaches to manage and dispose of PCBs and manage POPs in a sound manner (Capacity building projects for LDC countries in Africa, development and updated of National Implementation Plans).

UNEP is leading the negotiations on mercury and is working very closely with the key actors involved in drafting the legally binding instrument. UNEP is also working with partners in the field looking to mitigate the effects of mercury use/handling and developing best disposal options.

GEF PARTNERSHIPS FOR CHEMICALS MANAGEMENT

UNIDO, United Nations Industrial Development Organization

UNIDO strengthens the linkages between resource/energy efficiency and sustainable development in the industrial sector, the GEF Council in its 30th meeting in December 2006 decided that UNIDO, along with ADB, AfDB, EBRD, FAO, IDB and IFAD, should have direct access to the GEF Funds.

UNIDO's work in the industrial sector gives it the ability to address primarily phase out of industrial POPs and also to assist countries to make improvements to industrial sectors to reduce the emissions of U-POPs.

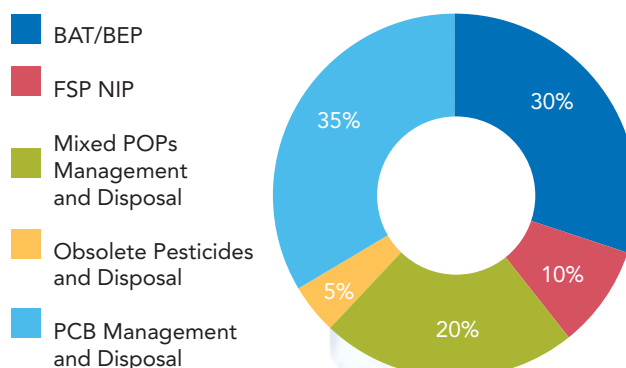
MAIN PROJECT AREAS

Based on the strategy and action plans outlined in the respective NIP, UNIDO assists the developing and economies in transition countries in implementing their relevant obligations under the Stockholm Convention. POPs related projects and activities are focused mainly in the following areas: (i) PCB environmental sound management and disposal, (ii) contaminated sites, (iii) pesticides, and (iv) BAT/BEP projects.

PORTFOLIO IMPACT

UNIDO has assisted 42 countries to develop their NIPs and is currently working with a number of countries in implementation of these NIPs. UNIDO's current portfolio is expected to achieve the following reductions in POPs.

Figure 5: UNIDO Portfolio By Contaminant/Activity





UNIDO works to avoid releases of dioxin/furan from medical waste treatment.

UNIDO's Portfolio

U-POPs

Project/Country	Indicator	Quantity g TEQ per year
Environmentally Sustainable Management of Medical Waste in China	1) Reduction from dioxin/furan releases from medical waste incineration disposal	1) 9.7g
	2) Avoided releases of dioxin/furan from MW treatment	2) 12.95g
Demonstration of BAT and BEP in fossil fuel-fired utility and industrial boilers in response to the Stockholm Convention on POPs, Regional (Cambodia, Indonesia, Lao PDR, Mongolia, Philippines and Thailand)	Total estimated reduction/avoidance in the 6 participating countries to be undertaken by the project	0.31g

PCBs

Project/Country	Indicator	Quantity t
Environmentally Sound Management and Disposal of PCBs in Azerbaijan	Project target of PCB oils and PCB contaminated equipment and capacitors disposal	540t
Safe PCB Management Programme in Morocco, Pillar II	1) Project target of PCB contaminated oils disposed of, or decontaminated wastes	1) 3,000t
	2) Project target of PCB contaminated equipment and wastes disposed of	2) 2,000t

GEF PARTNERSHIPS FOR CHEMICALS MANAGEMENT

UNIDO

UNIDO's Portfolio

PCBs

Project/Country	Indicator	Quantity t
Global Programme to Demonstrate the Viability and Removal of Barriers that Impede Adoption and Successful Implementation of Available, Non-combustion Technologies for Destroying Persistent Organic Pollutants (POPs), Philippines	Project target of PCB oils and PCB contaminated equipment and capacitors disposal Comment: The project has selected the Sodium Reduction technology for the decontamination/disposal of PCBs oil, PCBs-containing equipment and wastes	1,500t
Environmentally Sound Management and Final Disposal of PCBs in India	Project target of PCBs, PCB-containing equipment, PCBs-containing mineral oil and wastes disposal	7,700t
Capacity Building for Environmentally Sound PCBs Management and Disposal in Mongolia	Project target of treatment of PCBs, including PCB-containing equipment and oil.	1,000t
Demonstration project for Phasing-out and Elimination of PCBs and PCB-containing equipment in Macedonia	Project target of PCB-containing equipment and wastes disposal	150t
Environmentally Sound Management and Disposal of PCBs in Peru	Project target of PCB-containing equipment and wastes disposal	1,000t
Environmentally Sound Management and Disposal of PCBs in Nepal	Project target to dispose of 1) obsolete POPs pesticides 2) PCBs, PCBs-containing equipment and wastes	1) 33t 2) 167t

Pesticides

Project/Country	Indicator	Quantity t
Environmentally Sound Management and Disposal of Obsolete POPs Pesticides and other POPs Wastes in China	Project target of treatment of 1) of identified targeted POPs pesticide wastes 2) of PCDD/PCDFs rich fly ash	540t



UNIDO's work in the industrial sector gives it the ability to address primarily phase out of industrial POPs and also to assist countries to make improvements to industrial sectors to reduce the emissions of POPs waste. Specifically, Targeted is the treatment of PCDD/PCDFs rich fly ash.

Above, is a Chinese Coal Electricity Power Plant. Fly ash is a product of burning finely ground coal in a boiler to produce electricity. In the past, fly ash was generally released into the atmosphere, but pollution control equipment mandated in recent decades now require that it be captured prior to release.

GEF PARTNERSHIPS FOR CHEMICALS MANAGEMENT

FAO, United Nations Food and Agriculture Organization

FAO joined the GEF partnership in Chemicals to provide primarily expertise in agricultural POPs based on its mandate to assist countries develop their agricultural sector.

A key element of FAO's mandate is the provision of support to countries to ensure that improved agriculture productivity is achieved in a sustainable and ecologically sound manner. The push to boost agricultural production in response to these factors can potentially result in the increased use of chemical inputs including pesticides. In many of the developing countries the systems and capacity to adequately legislate and monitor the use of chemical pesticides is insufficient. The Pesticide Risk Reduction Group within the Agriculture Division at FAO therefore provides support to countries on how to apply the principles of the Code of Conduct on the Distribution and Use of Pesticides (the Code).

Addressing the obsolete pesticide stocks alone, without building capacity in pest management and pesticide management is unsustainable, and will lead to future generations facing a new legacy of obsolete stocks. FAO's strategy of working with countries to support the entire pesticide life cycle is a key response to this challenge.

MAIN PROJECT AREAS

The work of FAO has so far been on POPs pesticides. They work to assist countries to manage and dispose stores and stockpiles of obsolete pesticides and replacement of POPs pesticides with other chemical or non-chemical alternatives including Integrated Pest Management.

PORTFOLIO IMPACT

FAO has worked on a number of GEF funded Pesticide projects in Africa under the African Stockpiles Project where they provided support to the Technical Support Unit. Under this project a number of tools and guidelines have been developed which can be applied to other chemical projects.

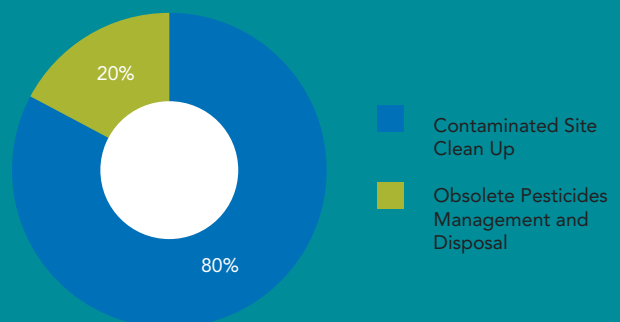
Of relevance to the work on POPs, FAO's work on POPs funded from other sources also has achieved building of capacity in national governments and the safeguarding of obsolete pesticides. In many cases this work will lead to building larger projects with GEF partnership.

- **ERITREA:** 400 tonnes of obsolete pesticides were inventoried, a safeguarding and disposal strategy developed, and a national Pesticide Risk reduction action plan formulated.
- **MOZAMBIQUE:** A three-phase project ran in parallel and resulted in the environmentally sound disposal of over 330 tonnes of POPs and obsolete pesticides in 2008;
- **MALI:** July 2006, 60 tonnes of POPs and other obsolete pesticides were safeguarded in GAO, Mali and shipped to France for incineration. – In the meantime the site and pesticide store were rehabilitated.
- **SYRIA:** FAO supported the safeguarding of 500 tonnes of obsolete pesticides in 2005. With funding from the GEF, the Government of Switzerland and the private sector, these 500 tonnes have been disposed of in 2010. The project is also supporting safeguarding and disposal of a further 170 tonnes of obsolete pesticides and building capacity in sustainable crop production and in pesticide management.
- **TUNISIA:** as an emergency component of the ASP project FAO supported the safeguarding of over 60 tonnes of obsolete DDT from a warehouse at the Menzel Bourghiba Hospital;
- **EASTERN EUROPE, CAUCASUS AND CENTRAL ASIA:** With GEF funding, FAO, with NGO partners Green Cross and Milieukontakt International, are building capacity in POPs and Obsolete pesticides in 9 countries in EECCA. Trainings have been organized for inventory, pesticide stock management system, awareness raising and repackaging obsolete stocks. The project supports pilot projects in the countries to put the new capacity into practice.



Addressing the obsolete pesticide stocks alone, without building capacity in pest management and pesticide management is unsustainable, and will lead to future generations facing a new legacy of obsolete stocks. FAOs strategy of working with countries to support the entire pesticide life cycle is a key response to this challenge.

Figure 6: FAO Portfolio By Contaminant/Activity



GEF PARTNERSHIPS FOR CHEMICALS MANAGEMENT

The World Bank

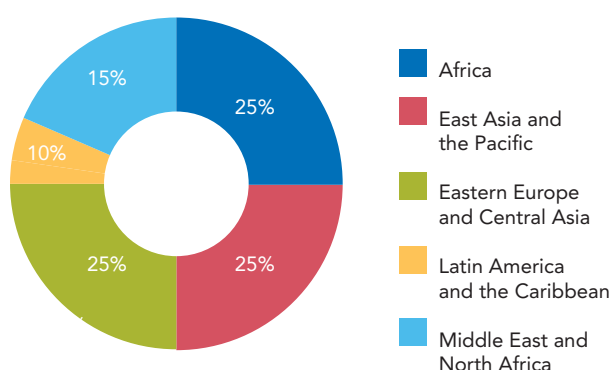
The World Bank's involvement in implementing GEF-financed persistent organic pollutants (POPs) projects dates back a decade when the Stockholm Convention was adopted. However, awareness of the global threats related to the release and proliferation of toxic chemicals led the Bank to become actively involved in projects related to the sound management of chemicals decades before. The Bank's contribution to the efforts underway in reducing and eliminating POPs is therefore based on vast experience gained through work conducted in a variety of sectors in which environmental health concerns have been steadily mainstreamed including, mining, industry, energy, solid waste management, agriculture, health care and transport.¹ This has laid the foundation for the World Bank to assist clients to strive to forge synergies at the sector level as they seek to comply with their obligations under the Stockholm Convention.

Subsequently, the World Bank has received GEF Council approval of US \$125 million to implement its POPs portfolio, made up of 20 projects, some of national and some of regional focus. To this, US \$106.7 million in IBRD/IDA financing and US \$199.5 million in co-financing have been added, bringing the total value of World Bank Council-approved POPs projects to US \$426.9 million.

MAIN PROJECT AREAS

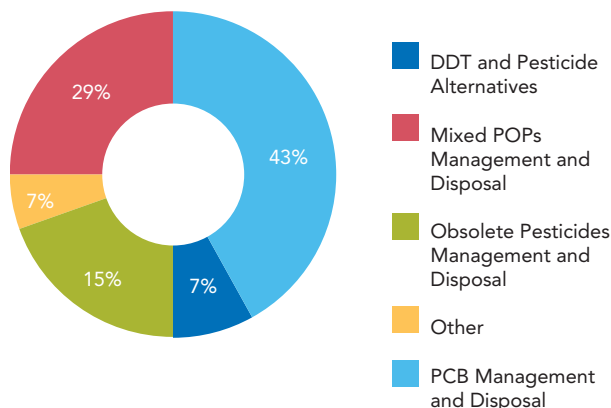
The World Bank's POPs portfolio addresses the development of programs to phase out the production and use of toxic chemicals, identification of alternative technologies, and encouraging the safe disposal of existing toxic stockpiles. Specifically, projects target the destruction, in an environmentally sound manner, of obsolete pesticides, including POPs, and the destruction of PCB and PCB-contaminated wastes, and strive to improve cost-effectiveness and the prospects for long-term sustainability for chemicals management at country level. Others address the use of POPs, and demonstrate alternatives so that POPs use and production can be sustainably phased out. In tandem, in order to ensure the long-term sustainability of efforts, all Bank-implemented projects seek to build capacity to ensure that regulation and enforcement capabilities are in place.

FIGURE 6: Distribution, by Region, of World Bank POPs Council-approved projects (2002-2011)



PORTFOLIO DISTRIBUTION

FIGURE 7: Distribution, by Type, of World Bank POPs Council-approved projects (2002-2011)





SAFEGUARDS: Policies and Tools That Support Sound Management of Chemicals in World Bank Group Operations

The aim of the World Bank's environmental and social safeguard policies is to prevent and mitigate undue harm to people and their environment in the development process. Two of the World Bank's ten environmental and social Safeguard Policies are particularly relevant to the work the organization undertakes with partner countries in support of their obligations under the Stockholm Convention. The Environmental Assessment policy is used to examine the environmental risks and benefits associated with Bank projects and to enhance their environmental impact. The policy requires that not only national legislation is taken into account in environmental assessment but also a country's obligations under relevant international environmental treaties and agreements. If a country has ratified all three conventions, the Bank's safeguard policy on environmental assessment would factor in these obligations.

Performance standards that apply to projects at the International Finance Corporation (IFC), the private sector arm of the World Bank Group, are similar in scope to the Environmental Assessment safeguards policy. For example, the Performance Standard on Pollution Prevention and Abatement makes explicit reference to the Basel, Rotterdam, and Stockholm Conventions in the context of the use and potential releases of hazardous chemicals, and encourages cleaner production and use of Pollutant Release and Transfer Registers (PRTRs). Regarding pesticides use in particular, the Pest Management policy promotes safe, effective, and environmentally sound pest and pesticide management, and prohibits procurement of extremely and highly hazardous pesticides (class Ia & Ib) and minimizes the use of moderately hazardous pesticides (class II).

¹ Managing Pollution for Poverty Reduction and Green Development, The World Bank Group, 2010 Environment Strategy, Analytical Papers, p.5 (<http://siteresources.worldbank.org/EXTENVSTRATEGY/Resource/es/6975692-1289855310673/20101102-Pollution-Management-full.pdf>)

GEF PARTNERSHIPS FOR CHEMICALS MANAGEMENT

The World Bank

Though the World Bank's portfolio of POPs projects is still relatively young and covers a variety of sectors, through careful monitoring and evaluation a number of cross-cutting lessons have started to emerge that will serve to contribute to the further development of the Bank's portfolio through the GEF5 period and beyond.

- Flexibility in management is key: Given the scope of the challenge both in terms of the variety of sectors affected by POPs and their highly toxic and long-lasting nature, experience has shown that the project team and stakeholders need to be aware of, and ready to accommodate, uncertainty in project design, as well as during implementation.
 - Stakeholder analysis of related stocks of obsolete pesticides must be confirmed to ensure project design effectively takes into account ownership (public/private).
 - Inventories are often underestimated.
- Investments must be linked to a regulatory framework and enforcement commitment: this helps sustain investments and facilitate securing stakeholder support.
- Where regulatory approval (e.g. issuance of operating licenses) is required for implementation of activities linked to hazardous waste management, implementation delays can be expected and must be understood to be largely beyond the control of a project team.
- Engage stakeholders at various levels – national, regional and local – in order to secure the committed engagement of authorities responsible for environmental protection.
- Flexibility must be built into the design of regional projects/programs in order to allow for specific country issues to be addressed with ease, including where lack of progress in one country not hinder progress in another country.



BYPRODUCT SYNERGIES

Sound chemicals management is also achieved through World Bank projects as a co-benefit of projects' primary objectives. The World Bank has a broad project portfolio on pollution management and environmental health, as well as on environmental policy and institutions (\$4 billion and \$2 billion respectively as of September 2010) that cover a number of activities, including some with linkages to POPs and trade in hazardous chemicals and pesticides. In addition, the World Bank Group has a strong portfolio of active projects with solid waste management components, some with linkages to POPs. Though not quantified in the past, looking forward the potential for such synergies serves as a driver for World Bank project managers to seek out areas of complementarity with POPs and sound chemicals management through other projects or lending flows.



Region	Country	Project title	Objectives and Progress Status
AFRICA	Regional - Ethiopia, Mali, Morocco, Nigeria, South Africa, Tanzania, Tunisia	Africa Stockpiles Program (ASP) Phase I	The objective of the Program is to eliminate inventoried publicly held obsolete pesticide stocks and associated waste and implement measures to reduce and prevent future related risks. An inventory database is in place and detailed inventory of obsolete pesticide stockpiles undertaken. Disposal is underway with 250 tons of stocks disposed off already.
	Nigeria	PCB Management and Disposal Project	The principal objective of this project is to assist Nigeria in its stated goals in managing its stockpile of PCBs wastes and contaminated equipment in an environmentally sound manner as contained in its National Implementation Plan (NIP). A target amount of 3000 tons of PCB oils and 5000 tons of PCB contaminated equipment are expected to be safeguarded by the project.
EAST ASIA AND THE PACIFIC	China	PCB Management and Disposal Demonstration	Implement policies and measures to identify and demonstrate environmentally-sound and cost-effective policies, procedures and techniques for safely managing and disposing of China's stored PCBs and associated PCB-contaminated wastes. Policies are under development and contaminated sites clean-up underway.
	China	Demonstration of Alternatives to Chlordane and Mirex in Termite Control	Minimize the risk of human and environmental exposure to POPs by strengthening the regulatory and monitoring framework and improve capacity for, and provide demonstrations of, safe management of PCBs, reduction of releases of unintentionally produced POPs, and reduction of exposure to POPs in contaminated sites. The project is in first stages of implementation.
	Philippines	Integrated POPs Management Project	Minimize the risk of human and environmental exposure to POPs by strengthening the regulatory and monitoring framework and improve capacity for, and provide demonstrations of, safe management of PCBs, reduction of releases of unintentionally produced POPs, and reduction of exposure to POPs in contaminated sites. The project is in first stages of implementation.
	Vietnam	PCB Management Demonstration Project	Develop national capacity in Vietnam to manage all PCBs (inventories, regulatory framework, risk containment) and on a pilot basis, in selected provinces, safely store significant amounts of PCBs in anticipation of future disposal. Project is in first stages of implementation.
	China	'GEF Sichuan Earthquake Emergency Project	Support the country's emergency responses to the Wenchuan Earthquake by identifying and assessing potential environmental impacts and risks associated with the releases of hazardous chemicals and waste in five out of a total of 40 hardest hit counties in Sichuan Province. Over 300 sites with potential risks were screened. Over 50 of the sites screened underwent detailed site investigations and monitoring activities. Recommendations were then made regarding appropriate management means for those sites considered to pose an unacceptable risk.
EASTERN EUROPE AND CENTRAL ASIA	Tajikistan	POPs Pesticide Elimination, Mitigation and Site Management	Reduce the environmental and public health hazards associated with stockpiles of POPs in priority areas and reduce farmer reliance on POPs pesticides.
	Belarus	Integrated Solid Waste Management	Strengthen national capacity to manage hazardous wastes associated with POPs. The project is in first stages of implementation. GEF grant is blended with an Integrated Solid Waste Management Bank project.
	Belarus	Enabling activities related to the Implementation of the Stockholm Convention on POPs in Belarus	This led to Belarus' submission on its NIP and lay the ground for the preparation of its NIP implementation project.
	Moldova	Enabling activities related to the implementation of the Stockholm Convention on POPs in Moldova	This led to Moldova's submission on its NIP and lay the ground for the preparation of its NIP implementation project.



Region	Country	Project title	Objectives and Progress Status
EASTERN EUROPE AND CENTRAL ASIA	Moldova	POPs Stockpiles Management and Destruction Project	Protect the environment and human health by safely managing and disposing of stockpiles of POPs contaminated pesticides and PCBs. 1,293 tons of POPs containing and contaminated obsolete pesticides were disposed of; as well as 934 tons of PCB containing capacitors.
	Kazakhstan	Elimination of POPs Wastes in Kazakhstan	Support the development of environmentally sound control measures for Persistent Organic Pollutants in Kazakhstan, to reduce the stress on human health and the environment caused by these materials in accordance with obligations under the Stockholm Convention. This project is linked with a World Bank investment on brownfield remediation. The Project is under preparation.
LATIN AMERICA AND THE CARIBBEAN	Colombia	Initial Assistance to Colombia to Meet its Obligations Under the Stockholm Convention on POPs	Develop a NIP, such that Colombia can meet its obligations to the Stockholm Convention. Completed. Project provided assistance to (i) assess and complete inventories of sources and contaminated areas; (ii) assess health and economic risks; and (iii) assess institutional capacity and needs required to deal with the new obligations under the Convention.
	Mexico	Enabling Activities to Help Mexico Comply with the Stockholm Convention on POPs	Develop a NIP for POPs, such that Mexico can meet its obligations to the Stockholm Convention. Completed. Project contributed to i) strengthening institutional capacity in relation to POPs to facilitate the formulation and implementation of the NIP; ii) evaluated baselines for inventories of POPs, contaminated sites and obsolete stockpiles; iii) assessed socio-economic impacts related to reduction of the use of POPs, and health-related impacts due to exposure to POPs; iv) encouraged interaction between stakeholders to outline national strategy towards POPs; and v) formulated and endorsed the NIP.
MIDDLE EAST AND NORTH AFRICA	Lebanon	PCB Management Project	Facilitate the implementation of the responsibilities of the Republic of Lebanon towards the Stockholm Convention by: (i) enhancing management of POPs and, (ii) establishing partnership to develop/implement a national strategy to eliminate the release of PCBs. Project is under preparation.
	Egypt	Integrated and sustainable POPs Management Project	Assist the government with its obligations under the Stockholm Convention for the sound management of POPs including, PCBs, dioxins and furans, and obsolete pesticides, and contribute to the sustainable development of capacity for the management of POPs. Project is under preparation.
	Tunisia	Demonstrating and Promoting Best Techniques and Practices for Managing Healthcare Waste and PCBs	Support the development of environmentally sound control measures for Persistent Organic Pollutants in Kazakhstan, to reduce the stress on human health and the environment caused by these materials in accordance with obligations under the Stockholm Convention. This project is linked with a World Bank investment on brownfield remediation. The Project is under preparation.



Case Studies

CASE STUDIES MEXICO

Environmentally Sound Management and Destruction of PCBs

Implementing Agency - UNDP

In Mexico, estimated national inventory of 30,639 tons of PCB containing materials indicated that the whole country is affected by PCBs. As many sources of PCBs are located in populated areas and sensitive sites such as hospitals, water supply wells, education establishments, etc. the PCBs have a potential to adversely affect society, especially children and workers, if left unchecked and unmanaged. Considering the extent of the PCB issue and the potential risks to human health and the environment the Government of Mexico and UNDP initiated in 2009 a project, co-funded by GEF, for addressing the situation.

The project, executed in partnership with the Federal Ministry of Environment (SEMARNAT), aims at strengthening the capacity for sound management of PCBs, materials and equipment which may contain or may be contaminated by PCBs. Towards this end, the project is developing various activities including from legal review and inventory development through awareness raising and communication. The project will further undertake awareness raising campaigns on the health and environmental consequences of poor PCB management. The project is also expected to destroy 3.215 tons of PCBs, which constitute about 10.5 % of total estimated remaining national inventory. However, UNEP has put emphasis on the African region, followed by the Global projects and the Asian and Pacific region (see graph 3). The capacity building projects for least developed countries in Africa and the DDT initiatives have put emphasis on the African region. Regional approaches have often complemented global approaches.

PCB INVENTORY VERIFICATION

The first stage of the national PCB inventory verification undertaken by the project has found PCB containing oils (over 50 ppm) in approximately 5.5% of the transformers when sampling and analysing oils in 1,291 transformers in 416 sites located in 13 (out of the 32) states in the country. Inventory verification shows that there could still be more than 45,000 tons of PCB containing materials in the country. Moreover, half of the samples with PCBs come from sensitive sites: hospitals, water supply wells for agriculture and cities, food processing facilities and education centres. Out of 105 transformers sampled in 39 hospitals, PCBs have been determined in 9; 8 out of 109 transformers sampled in water wells had traces of PCBs. Transformers in water wells and hospitals in rural communities have yet to be sampled in detail. Additionally, transformers at airports and army installations are presently being sampled.

POLICY STRENGTHENING FOR PCB MANAGEMENT

Based on the analysis of the current management practices and a regulatory gap assessment, the project has proposed a revised technical Standard for PCB management. The proposed Standard represents a federal regulation of electrical maintenance workshops at local and provincial levels, in order to assure proper management of PCBs containing oils to avoid further cross contamination of transformers in Mexico. This revised Standard has been presented to federal authorities for review and adoption.

REDUCTION OF PCB RISKS AT ELECTRICAL MAINTENANCE WORKSHOPS

Project activities in pilot areas allowed determining that cross contamination caused by bad practices of electrical maintenance workshops are the main source of PCB containing materials. For example, transformers as new as 2006 models and capacities from 15 kVA to 10.000 kVA have PCB contaminated oil with concentrations above 50 ppm but below 500 ppm in most cases. **The project has developed a general recommendations document for SME on how to manage their electrical transformers, particularly urging them to select those maintenance workshops for servicing which assume responsibility and undertake necessary correction measures in case PCB contamination is detected.**

The project also analysed the hazardous waste management practices at 6 maintenance facilities. It has been found that 30% of samples in the inventory contain PCB between 5 and 50 ppm, which is another indication of cross contamination and of the importance of electrical maintenance workshops. Based on the findings the project put forward recommendations to lower exposure risks for employees handling PCB containing materials and to ensure overall environmentally sound management of PCBs and other hazardous waste at these facilities. These recommendations were further refined on the basis of the experience during the training to 28 workers of these facilities and will serve as a basis to develop this year the "Best practices technical guide for electrical maintenance workshops".



Mr. Gregorio Jacobo, maintenance chief at IMSS (Instituto Mexicano Del Seguro Social - Public Health Care System in Mexico) General Hospital in zone 36 says: "support of the project enabled us to be aware of possible PCB contamination in our hospitals. A more complete inventory with project support will help us plan and take care of contamination".

Mr. Jose de Jesús Contreras from the enterprise "Anodizados Especializados S.A. de C.V." in Mexico City says: "The project informed us about PCB contamination and advised on the selection of maintenance workshops. Our experience up to date was that a maintenance company comes, does the retro filling and takes the oils without telling us how they would dispose of the oil; and now we know through the project that the disposal has not been done in an environmentally sound manner. The project has given us advice now on how to select and proceed with the maintenance workshops".

CASE STUDIES

MEXICO

CAPACITY BUILDING AND AWARENESS RAISING

The project is supporting the strengthening of government and private entities capacities regarding inspection and chemical analytical techniques. For example, targeted training sessions for over 250 participants from authorities at federal, state and municipal levels, chemical laboratories and even fire and civil protection services have been organized; later in 2011 a Guide on best practices for PCBs inspection at local level authorities will be prepared. In order to stimulate the responsible PCB waste management and increase awareness among SMEs, the project has handed the acknowledgements of non-existence of PCBs to over 300 enterprises during public events with representation of local authorities and press coverage for awareness rising.

COMMUNITY-LEVEL BENEFITS

As a particular case, during the inventory of PCB in the country, the project confirmed SEMARNAT's information that people in a poor community used barrels, which formerly stored illegally imported PCB contaminated oils, as building materials and water containers. As part of the awareness and outreach efforts, the project has replaced such contaminated metal construction materials with safe ones in this small community of San Felipe Nuevo Mercurio (300 inhabitants) in the state of Zacatecas.

The community had been subject of a former study by SEMARNAT, where PCBs content in blood level of the population had been determined as above limits; project foresees a deeper study on the community extended to electrical maintenance workshops personnel.

Beneficial local health and environmental effects due to raised awareness of PCB contamination in equipment owned by SMEs including the workers and the populations located in these areas. Through the cooperative approach small PCB holders were able to find resources for managing the POPs problem.

About one third of the PCBs positive samples have been found in sensitive sites such as transformers supplying energy to water wells and to hospitals. Though not verified by water monitoring it can be safely said that a risk for affecting the quality of drinking water has been mitigated at community level.

In the Pilot entities and in other states, 5 electrical maintenance workshops have been diagnosed in detail with respect to their hazardous waste management, including PCBs in materials and soil. In these instances worker protection and exposure issues have brought positive health effects to the employees handling PCB containing materials.

Additionally, metallic materials contaminated with PCBs, which had been used for construction in a 300 people poor community in the State of Zacatecas, were replaced by the project with new materials.

INTEGRATED SERVICES MANAGEMENT SYSTEM (ISMS) FOR PCB DISPOSAL

The high cost of destroying small quantities of PCBs in a large country is a barrier for small and medium-sized enterprises and operators of sensitive sites, since they cannot take advantage of the economies of scale with respect to costs of transport, interim storage and decontamination and/or destruction. Therefore, the project has devised a PCB management system that envisages different actions, from identification of PCBs, their safe storage and transport through to their destruction and appropriate reporting to government. The ISMS also includes capacity building of inspection authorities and analytical laboratories as well as an awareness raising and communication strategy.

Among the benefits, **this will allow a large number of PCB possessors to pool their waste and achieve environmentally sound disposal of PCBs at a reasonable cost.** This Integrated Services Management System (ISMS) is in progress of establishment. It was developed and tested as a pilot in a State of Guanajuato (5.5 million inhabitants) and in Cuautitlán Izcalli (a municipality with 800,000 inhabitants). The ISMS is being further tested and refined in 3 other states of the country: Nuevo Leon, Chiapas and Distrito Federal (Mexico City). The ISMS will be later expanded to the whole country. Results so far demonstrate that the unit cost of destruction for pooled PCB waste (where companies can bring as little as one piece of equipment) is starting to approach the cost for large possessors of PCB containing equipment like Mexico's Federal Electricity Commission (CFE).



The project has assessed available PCBs management services in order to better assist the destruction service companies to adhere to highest safety standards for PCB destruction. The project will further undertake an awareness raising strategy on the health and environmental consequences of poor PCB management, particularly directed towards small and medium-size enterprises (SME) and operators of sensitive sites in order that they can better handle their PCB waste and also provide required reporting to authorities.

CASE STUDIES

CHINA

Environmentally Sustainable Management Of Medical Waste In China

Implementing Agency - UNIDO

The outbreak of SARS in 2003 exposed significant shortcomings in the infection control practices and environmental management of medical wastes in China. The Government of China responded to the public health crisis by immediately commissioning 70 quick-response temporary incinerators, a plan to establish 277 dedicated medical waste disposal facilities throughout China and the issuance of emergency regulations to control SARS-like biological hazards. While these measures were viewed as crucial to combat the SARS crisis, they were developed and implemented in an emergency context and before China's accession to Stockholm Convention on Persistent Organic Pollutants (POPs) in 2004. As a result the requirements for the implementation of the Convention were not sufficiently considered.

The 5-year project entitled "Environmental Sustainable Management of Medical Waste in China" was launched in 2008. It aims to reduce and ultimately eliminate the release of unintentionally produced POPs and other globally harmful pollutants into the environment, and assist China in implementing its relevant obligations under the Stockholm Convention. The total budget of the project is USD 45M, including USD 12M from the Global Environment Facility (GEF). The project interacts with the Nationwide Investment Plan and promotes the widespread adoption of Best Available Techniques/Best Environmental Practices (BAT/BEP) in the medical waste management infrastructure and industry in a manner that reduces adverse environmental impacts and protects human health.

This project is the first one in China to explore and apply BAT/BEP to substantially reduce and eliminate the release of unintentionally produced POPs.

Conceptually, the overall objective is being achieved by a combination of strategies to reduce and modify materials before their disposal, among them the optimization of incinerations technologies; the introduction of non-combustion technologies; the raising of awareness and dissemination of know-how; the incorporation of management systems; innovation and adapting of appropriate technologies and techniques; integration of economic and financial systems and more importantly, the modification of relevant laws and regulations.

More specifically, the project is strengthening the national, provincial and local regulatory framework for medical waste management through the adaptation and application of regulatory measures related to medical wastes (MW) management and the upgrading and establishment of pollution performance levels associated with Best Available Techniques (BAT) for medical waste disposal. The project has established a selection criteria and chose 20 Medical institutions in 6

municipalities according to selected demonstration disposal sites to show systematic management and applications of Best Environmental Practices (BEP), covering such aspects as good procurement practices, waste segregation at source, waste reduction/minimization, reuse and recycling, intermediate storage, transportation, traceability and staff training. Six demonstration medical waste disposal centers, including 1 rotary kiln facility, 2 pyrolysis facilities, 1 autoclave facility, 1 microwave facility, 1 chemical disinfection facility in 6 municipalities were identified and selected to demonstrate BAT for medical waste disposal including air pollution monitoring. These demonstration activities also support the development of specifications for the engineering design and construction of such facilities by adopting BAT as well as operational safety. Experiences will be derived and summarized for wider dissemination of BAT/BEP.

The planned reduction in releases of by-products by means of BAT/BEP demonstration and adoption in incineration facilities within the project areas and time frame will be 1.94 g TEQ per year amounting to US\$ 150,000 per g TEQs. National replication will result in a reduction of 47.88g TEQ/year with a corresponding incremental cost of US\$ 7,182,000/year. Avoided releases of by-products by means of BAT/BEP demonstration and adoption of alternative treatment processes will be 2.59 g TEQ per year amounting to US\$ 66,274/g TEQs.

As of its mid-term review, the project managed to successfully change the domestic medical waste disposal technical route selection and altered the use of technology for disposal of medical waste towards the use of non-combustion technology. Before 2006, the planned 277 MW disposal centers initially planned to use incineration technology whereas with the project implementation, nearly 80 are now using non-incineration techniques. The project also managed to create an improved National Medical Waste Management system with 22 national policies, technical guidelines & standards and 16 management measures and booklets, which stimulate the emerging application of Non Combustion facilities.

The project has promoted and established a city centered Medical Waste management model, which was accepted by all major stakeholders, through establishing trans-department mechanism, solved problems on fee, transportation and waste stream management and realized systematic management of medical waste.



The implementation of dioxin control requirements stipulated in the NIP was achieved through the upgrade of incineration pollution release limits, with more strict control on release of dioxin and furan. The high level of awareness at governmental and provincial level created through extensive trainings and the fact that more funds are being made available to promote BAT / BEP for the MW management in China are key success factors of the project to achieve the transformation to non-incineration techniques for medical waste disposal.

The project benefitted largely from its mixed form of agency and national execution, which proved to be a very efficient implementation modality. Good opportunities to attain financial support to promote POPs elimination arose from the inclusion of BAT/BEP requirements for MWM into the national & local economic, environment and social development plan. China's continuous drive and strong commitment are key factors for the project's success.

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CASE STUDIES

Mexico and Central America

Regional Program of Action and Demonstration of Sustainable Alternatives to DDT for Malaria Vector Control

Implementing Agency - UNEP

The project “Regional Programme of Action and Demonstration of Sustainable Alternatives to DDT for Malaria Vector Control in Mexico and Central America” had three main goals: to implement demonstration projects of malaria vector control without DDT or other persistent pesticides that can be replicable in other parts of the world; to strengthen national and local institutional capacity to control malaria without the use of DDT; and to eliminate DDT stockpiles in the eight participating countries. The project involved eight countries: Mexico, Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, and Panama and nine sites for demonstration projects were selected in each country. The project began in August 2003 and was finished by July 2008 (except for the POPs Disposal component; this component which will dispose off some 100 tons of DDT is expected to be closed in June 2011).

MAJOR OUTCOMES

A major planned outcome was to increase government and local community awareness of DDT and other pesticide hazards to the environment and human health. Through the project, the personnel of national and local teams, leaders, community agents and teachers became informed, trained and strongly empowered and mobilized, and the project succeeded in increasing community participation in vector control activities without insecticides.

There was a considerable reduction in the number of malaria cases registered and in the Annual Parasite Index (API) in all of the 202 pilot communities.

The project used a combination of malaria control methods according to the Roll Back Malaria policy: diagnosis and prompt treatment, elimination of mosquito breeding sites by physical media called EHCA (Elimination of habitat and mosquito breeding sites of anopheles), larvae-eating fish, cleaning of houses and patios and whitewashing houses (painting with lime) through community participation. A typical example of applying a cocktail of interventions based on epidemiologic, social-economic and cultural characteristics of the malaria-vector and the intervention area concerned.

All participating countries executed activities to promote the public alert about health and environmental risks due to the use of DDT and other POPs. Experts from all countries were trained and executed studies about environmental impacts, and the national laboratories now have the necessary equipment and trained personnel for this purpose.

DDT and other POPs were not used; only insecticide impregnated bed nets were used in some localities. In addition, the project contributed to achieving the Millennium Development Goals, the Roll Back Malaria goal and the possibility to eliminate the malaria in these localities and also in the entire communities of demonstrative areas.

Country ownership of the initiative as well as stakeholder participation was highly satisfactory. At the national level, Technical Committees were constituted with delegates from several institutions (health and environment fundamentally), universities or researchers. At demonstration sites, technical local committees were constituted with participation of municipalities and NGOs. At the community level, the participation of delegates from the majority of the community organizations (Committees of Malaria Control or Groups of Health) was high. Empowerment of community leaders and health workers was high at the local level.

CATALYTIC ROLE

The Catalytic Role was one of the most successful elements of the project. Indeed, the control strategy on the initiative of the community leaders and health workers has been considerably replicated in other neighboring localities and municipalities. In Mexico, Guatemala, Nicaragua and Honduras the replication was very extensive; in the last three countries alliances were forged, among others, with the Global Fund Projects. In Costa Rica, the Ministry of Health is replicating the strategy in all Atlantic areas in order to eliminate malaria transmission.

In addition to the catalytic role at the local and national level, the project has also triggered the joint WHO/UNEP Global DSSA Programme: Demonstrating and scaling up of Sustainable Alternatives to DDT in Vector Management.

While the malaria situation in Africa and Asia cannot be compared with the situation in Central America, the approach of applying a cocktail of to-the-situation-adapted interventions, has been copied to other parts of the world through various ‘Regional projects promoting alternatives to DDT’, this is fully in line with WHO policy of reducing the dependency on chemicals in vector management, as well as promoting Integrated Vector Management (IVM).



CONCLUSION

It is possible to control or even eliminate malaria with environment-friendly methods and without the use of persistent insecticides. The main condition is inter-sectoral and community participation. The community easily adopts the strategies needed for this kind of intervention, such as the control of mosquito breeding sites. They also contribute to the empowerment of the community and to change the conception about their participation in malaria control activities.

Malaria control requires a multi methodological approach with the combination of interventions: diagnosis and complete treatment (compliance), plasmodium reservoir elimination (active search for asymptomatic and febrile persons), control of mosquito breeding sites with physical and biological methods (larvae eating fishes), control of typical mosquito hiding places (house and yard cleaning) and creation of barriers between people and mosquitoes (Insecticide Impregnated Bed Nets).

The approach requests for active empowerment of the population close collaboration between government and grass root levels, as well as a clear understanding of the malaria vector and its behavior. Interventions should be evidence based, and not chosen based on tradition, history, or political preference (from both donor and recipient). Definitely; it is more demanding compared to Indoor Residual Spraying (IRS) with DDT, as well as it requires active involvement from all concerned.

On the longer term it could very well be the only sustainable solution to reduce the burden of malaria in the malaria areas of the world.



CASE STUDIES

Mozambique

A review of pesticide legislation and the pesticide life cycle in Mozambique plus the development of new guidelines for pesticide registration at national level. Implementing Agency - FAO

This project is a country level initiative that benefitted directly from the systems and guidance developed by FAO for the Africa Stockpiles Project. Delays in the ratification of the Stockholm Convention resulted in Mozambique not being included in the first group of countries supported by the ASP. At the same time donor support was mobilized from the Government of Japan, the Netherlands and USAID. These contributions allowed for the development of a phased programme of work based on inventory of stocks, safeguarding of obsolete materials and, disposal of repackaged stocks. The projects also allowed for a review of pesticide legislation and the pesticide life cycle in Mozambique plus the development of new guidelines for pesticide registration at national level.

PHASE 1: INVENTORY

The programme started with the training of key focal points at the Ministry of Agriculture and Environment at national level. The training of trainers approach was seen as the most cost effective method of training the large number of national staff, which would be needed to complete a comprehensive inventory of pesticides in Mozambique. The focal points, supported by FAO personnel conducted a number of training sessions for Provincial teams from the Ministries of Agriculture and Environment.

Teams from the Provincial departments supported by national experts conducted a national inventory of all pesticides stored within the government and private sector over an 8-month period. Over 550 tonnes of stocks were identified as being obsolete or close to the manufacturer expiry date. Analysis and testing of the products resulted in the reclassification of some materials with a total of 300 tonnes being declared as obsolete.

PHASE 2: SAFEGUARDING

Due to funding limitations it was decided by national stakeholders that trained national teams under the supervision of FAO and specialist waste management consultants should complete the safeguarding activities. This process started with the selection of team members, the completion of work medicals including blood tests for impaired cholinesterase activity due to pesticide exposure and training in the use of equipment for safeguarding. The training included the completion of a "fit test" for respiratory protection as shown here. Safeguarding activities require a suitable storage collection to be identified and prepared for waste storage. The example opposite is from the north of Mozambique. A derelict government store was refurbished to allow acceptance and storage of safeguarded

pesticides. Storage management systems were also developed. All preparations were completed based on the advice provided in the FAO EMTK. This project is a country level initiative that benefitted directly from the systems and guidance developed by FAO for the Africa Stockpiles Project Volume 2.

A comprehensive communications and awareness campaign was conducted as part of the outreach programme for the project. Provincial ministry personnel (shown opposite) completed a number of sessions prior to work commencing in each Province. National NGO partners were included in this process to assist with outreach and communications work as the project proceeded.

In addition to the local awareness creation a series of local television and radio announcements were also made during the safeguarding phase. This was used to allay fears in the general population but also to encourage stakeholders holding obsolete stocks to come forward. These activities formed components of a national communications strategy which was developed based on guidance generated by WWF as part of ASP Phase 1.

A total of 330 tonnes of obsolete pesticide were safeguarded under the project. This includes a significant amount of DDT waste related to new imports linked to Malaria vector control. The project was successful in linking with this initiative to prevent improper disposal of the DDT waste produced as a result of the national indoor residual spraying programme. Over 30 tonnes of DDT waste were safeguarded under the project indicating the need for close coordination in countries where DDT use is still allowed. The safeguarding work was major input into the development of EMTK Volume 4 (Safeguarding Implementation).

Safeguarding works included the removal of visible signs of contamination from the original storage locations. Spillages were collected and floor areas cleaned. Large-scale excavation of contaminated materials was not possible due to budget limitations.





Once safeguarded materials were sent to the pre-allocated collection centers. Materials were stored as shown and security and monitoring procedures put in place whilst the disposal phase of the project was developed. Materials were stored for over 12 months whilst the resources for disposal were mobilized highlighting the need for strong management systems to prevent leakage or theft.

PHASE 3: DISPOSAL

The safeguarded stocks were sent for environmentally sound disposal following an international tender managed through the FAO procurement service. A detailed terms of reference and technical specification of services was developed by the national team and FAO. Goods were exported from Maputo port and shipped to Europe in accordance with the Basel Convention. Materials were destroyed by high temperature incineration at a licensed facility.

PHASE 4: WHAT IS LEFT BEHIND?

The previous projects in Mozambique did not address the issues of pesticides / POPs burial sites, contaminated soils and contaminated pesticide containers. The focus of the past projects was the removal of stockpiles of obsolete POPs and pesticides from the 130 original storage locations scattered around the country. The projects were successful in removing the risk of exposure from the communities living immediately adjacent to the storage sites and prevented the sale of obsolete stocks on the casual market. The projects also identified the problem of the use of contaminated soils for fishing, the fish then being sold directly to local populations. This stimulated the development of a GEF project to address the remaining problems in Mozambique and to provide support in the development of the necessary institutional capacity to prevent future accumulations of similar stockpiles. The Government of Mozambique developed a GEF project for US\$1,950,000 to address the areas of pesticide burial sites, contaminated soils and container management. This can be considered as an incremental component of the overall inventory, safeguarding and disposal operations which were funded from alternative sources. The project was approved in December 2010, became operational in April 2011 and is scheduled to be completed in 2014.

LESSONS LEARNT

The phased approach adopted in Mozambique was a direct result of the realities of bi-lateral donor support to countries. Donors at country level will generally only support projects which have a scheduled implementation period of 12 – 24 months. POPs inventory, safeguarding and disposal projects typically take upwards of 36 – 48 months to implement if all funding is in place and so there was a need to adapt the project implementation time line to match the flow of funds from the Embassy of Japan in Maputo. This limitation, along with gaps in implementation during the three phases did result in the project taking longer to implement than expected under normal circumstances.

The decision to implement the project through local capacity development also had an impact on the implementation schedule. The limited budget matched by the logistical challenges of working in Mozambique (poor road links, season weather issues and the distances between stores) resulted in the training of national teams by a series of international experts. This did require the development of strong M&E systems to ensure worker and environmental safety were maintained and the partnering with local NGO groups to complete this task was an added lesson which will be taken to other projects. The approach did, however, demonstrate that technically complex and high risk projects such as this one can be successfully implemented using national personnel under the correct conditions and with the adoption of high standards of supervision and technical support.



CASE STUDIES

Moldova

Coping with the environmental legacies of the past.

A common issue confronting all countries in the World Bank's Europe and Central Asia region is the struggle they face with the environmental legacies of the past: heavy industrialization and collective agriculture, with little to no environmental oversight, leaving pollution hotspots scattered throughout the region.

In the Republic of Moldova, large quantities of pesticides were imported during the 1980s to help spur agricultural production which, at the time, remained under collective production. Risks related to human and environmental health emanating from the use, exposure and improper storage of pesticides were not well understood by agricultural workers. As a result, during the 1990s, the incidence of chronic ailments rose significantly in both men and women, particularly in rural agricultural areas.

Following Moldova's declaration of independence in the early 1990s, agriculture underwent major reform. Land was privatized and most collective farms ceased to exist. By the end of the 1990s, over 3,000 tons of obsolete pesticides had been abandoned without management, much of which had been pillaged by rural communities or left in the open air, to be spread by wind and rain.

A similar problem was faced in the energy sector where, in approximately 26,000 power installations, large amounts of PCB contaminated oils had accumulated in electric capacitors and transformers.

In 2005, the Government of Moldova, which had initially received funding through the World Bank from the Canadian POPs Trust Fund (CPTF) to conduct baseline study work, received a GEF grant of US \$6.35 million, with matching co-financing, to protect the environment and human health by safely managing and disposing of stockpiles of POPs contaminated pesticides and PCBs. The project's particular focus was on instituting sustainable POPs stockpiles management and strengthening of national regulatory and institutional arrangements to support the long term control of POPs and other toxic substances, in line with the requirements of the Stockholm Convention and other related conventions and protocols ratified by the Government of Moldova. Cognizant that GEF financing could also serve to help catalyze government and donors' resources to achieve broader development goals and increase impacts at the local, regional and global levels, the World Bank was pleased to remain involved in a project that would form part of a larger program on environmental management supported by the Bank in the region.



Implementing Agency - World Bank

The project was successful in improving the country's POPs stockpiles management system and destroying a significant amount of POPs contaminated and containing substances. In terms of installing a viable management system, the project supported a POPs residual areas identification and mapping exercise which began with development of a POPs pollution study and risk assessment methodology that was then applied in the identification and mapping process. The management system designed is supported by a modular POPs Pollution Database. The system has allowed for 1,604 hot spots including 1,588 old or abandoned warehouses and pesticide mixing/preparation sites and 16 PCB contaminated sites to be identified and organized into the POPs Pollution Database using GIS technology. This tool can be used by the central and local authorities in monitoring and supervising POPs polluted sites, as well as for identification and classification of environmental and health risks in these areas.

In terms of numbers, the project successfully achieved the removal and export for environmentally sound destruction of 1,293 tons of POPs containing and contaminated obsolete pesticides, surpassing the projected destruction target of 1,150 tons; as well as the removal and export for environmentally sound destruction of 934 tons of PCB containing capacitors, followed by site remediation and the planting of trees; and, established the elements for a modern regulatory system for the management and control of POPs and other toxic and harmful chemicals and waste.

The Project's results are considered to rest on a solid platform for long-term sustainability in light of the success it achieved in raising awareness and engaging stakeholders amongst the various levels of government, local communities and civil society, as well as the extensive support it generated for regulatory reform and capacity building for POPs management. The fact that the project supported a comprehensive array of activities aimed at raising awareness and knowledge on POPs issues has increased demand from the public at large for the government to institute a modern and safe chemicals management system, including for POPs.

On the right, below, electrical station: capacitors with accumulated PCBs were dismantled and shipped for final disposal to France.



“It is an unbelievable thing. [Following] project [launch], I was looking forward to seeing the start of the pesticides evacuation. This is the biggest obsolete pesticides storage in Moldova, and the neighbouring communities were very much concerned about it when it was placed here. Today, seeing that the works have started, we are very grateful to all [those] involved in this activity.”

-Raisa Pavlov, Mayor, Ratu community, Telene ti district:

A very important aspect of this process is to avoid the appearance of new pesticide stockpiles in the future, and thus not to create new problems for the environment and public health. In this context adequate legislation regulating the procedure of import, storage, marketing and use of such products was worked out by the Government and adopted by the Parliament. The Ministry of Agriculture is entrusted to authorize and regulate the import of such materials according to the needs of the technological works in agriculture, and not to permit the accumulation of such stockpiles in the future.

-Anatolie Spivacenco, First Deputy Minister of Agriculture and Food Industry

Even this important and unique project is not enough to fully solve the problem of accumulating POPs wastes. It will contribute to the elimination of about one third of the existing stockpiles in Moldova. We are seeking for ways of withdrawing the remaining 2/3 of obsolete chemicals. In addition we are now considering the ways of decontaminating the locations where the storage facilities used to be. This issue stays on the agenda of the Ministry of Ecology.

-Constantin Mihăilescu, Minister of Ecology and Natural Resources





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