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The World Bank

Report No: ICR00001945

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(TF-55875 TF-90384)

ON A

GLOBAL ENVIRONMENT FACILITY GRANT

IN THE AMOUNT OF US$6.35 MILLION

TO THE

REPUBLIC OF MOLDOVA

FOR A

PERSISTENT ORGANIC POLLUTANTS (POPS) STOCKPILES MANAGEMENT AND DESTRUCTION PROJECT

June 20, 2011

Ukraine, Belarus and Moldova Country Unit
Sustainable Development Department
Europe and Central Asia Region

CURRENCY EQUIVALENTS

(Exchange Rates Effective December 31, 2010)

Currency Units = MDL, USD, EURO, CAD
MDL 1.00 = USD$ 0.08
USD$ 1.00 = MDL 12.15
EURO 1.00 = USD$ 1.34
CAD 1.00 = USD$ 0.995

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

Basel	Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal
BAP	Best Available Practices
BAT	Best Available Techniques
BBL	Brown Bag Lunch
BEP	Best Environmental Practice
CAS	Country Assistance Strategy
DES	Department of Emergency Situations
DDT	Dichloro-diphenyl-trichloroethane
EA	Environmental Assessment
EU	European Union
FAO	Food and Agriculture Organization
FM	Financial Management
GDP	Gross Domestic Product
GEF	Global Environment Facility
GRM	Government of the Republic of Moldova
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
IPM	Integrated Pest Management
ISR	Implementation Status and Results Report
MAC	Maximum Allowable Concentration
MAFI	Ministry of Agriculture and Food Industry
MDL	Moldovan Lei (local currency)
MOE	Ministry of Ecology and Natural Resources (prior to November 2009)
MOD	Ministry of Defense
MOE	Ministry of Environment (since November 2009)
MOH	Ministry of Health
NATO	North Atlantic Treaty Organization
NEF	National Ecological Fund
NGO	Non-governmental Organization
NIP	National Implementation Plan
OHSE	Occupational Health, Safety and Environment
PCBs	Polychlorinated biphenyls
PMT	Project Management Team

POPs	Persistent Organic Pollutants
ppm	parts per million
Rotterdam	Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade
SDES	State Department for Emergency Situations
SEI	State Ecological Inspectorate
tons	Metric tons

Vice President:	Philippe H. Le Houerou
Country Director:	Martin Raiser
Sector Manager:	John Kellenberg
Project Team Leader:	Anatol Gobjila
ICR Team Leader	Craig Meisner

MOLDOVA
Persistent Organic Pollutants (POPs) Stockpiles Management and Destruction Project

CONTENTS

A. Basic Information

Country:	Moldova	Project Name:	Persistent Organic Pollutants (POPs) Stockpiles Management & Destruction GEF Project
Project ID:	P090037	L/C/TF Number(s):	TF-55875,TF-90384
ICR Date:	06/24/2011	ICR Type:	Core ICR
Lending Instrument:	SIL	Borrower:	REPUBLIC OF MOLDOVA
Original Total Commitment:	USD 6.4M	Disbursed Amount:	USD 6.4M
Revised Amount:	USD 6.4M		
Environmental Category: A		**Global Focal Area: P**	

Implementing Agencies:

Ministry of Ecology & Natural Resources

Cofinanciers and Other External Partners:

NATO

Dutch - Milieukontakt Oost-Europe

B. Key Dates

Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	11/22/2004	Effectiveness:		03/09/2006
Appraisal:	07/18/2005	Restructuring(s):		05/10/2010 12/21/2010
Approval:	12/15/2005	Mid-term Review:	09/01/2008	11/18/2008
		Closing:	05/31/2010	12/31/2010

C. Ratings Summary

C.1 Performance Rating by ICR

Outcomes:	Satisfactory
Risk to Global Environment Outcome	Moderate
Bank Performance:	Satisfactory
Borrower Performance:	Satisfactory

C.2 Detailed Ratings of Bank and Borrower Performance

Bank	Ratings	Borrower	Ratings
Quality at Entry:	Satisfactory	Government:	Satisfactory
Quality of Supervision:	Satisfactory	Implementing Agency/Agencies:	Satisfactory

Overall Bank Performance:	Satisfactory	**Overall Borrower Performance:**	Satisfactory

C.3 Quality at Entry and Implementation Performance Indicators			
Implementation Performance	**Indicators**	**QAG Assessments (if any)**	**Rating**
Potential Problem Project at any time (Yes/No):	No	Quality at Entry (QEA):	None
Problem Project at any time (Yes/No):	Yes	Quality of Supervision (QSA):	None
GEO rating before Closing/Inactive status	Moderately Satisfactory		

D. Sector and Theme Codes		
	Original	**Actual**
Sector Code (as % of total Bank financing)		
Central government administration	39	39
Other industry	9	9
Petrochemicals and fertilizers	19	19
Solid waste management	33	33
Theme Code (as % of total Bank financing)		
Environmental policies and institutions	25	25
Other environment and natural resources management	25	25
Pollution management and environmental health	50	50

E. Bank Staff		
Positions	**At ICR**	**At Approval**
Vice President:	Philippe H. Le Houerou	Shigeo Katsu
Country Director:	Martin Raiser	Paul G. Bermingham
Sector Manager:	John V. Kellenberg	Benoit Paul Blarel
Project Team Leader:	Anatol Gobjila	Rita Klees
ICR Team Leader:	Craig M. Meisner	
ICR Primary Author:	Craig M. Meisner	

F. Results Framework Analysis

Global Environment Objectives (GEO) and Key Indicators(as approved)

The development objective is to protect the environment and human health by safely managing and disposing of stockpiles of POPs contaminated pesticides and PCBs.

The global project objective is sustainable POPs stockpiles management and strengthening of the regulatory and institutional arrangements for 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 Moldova.

Revised Global Environment Objectives (as approved by original approving authority) and Key Indicators and reasons/justifications

There were no revisions to the GEO.

Numerical revisions to GEO indicator #1 and intermediate indicators (IO) #1 and #2 were made after site excavations revealed smaller numbers than original estimates.

(a) GEO Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Destruction of approximately 1,060 tons of PCB containing capacitors			
Value (quantitative or Qualitative)	0 tons destroyed	1,060 tons of PCB containing capacitors destroyed	937.5 tons of PCB containing capacitors destroyed	937.5 tons of PCB containing capacitors destroyed
Date achieved	12/15/2005	12/13/2010	12/13/2010	12/13/2010
Comments (incl. % achievement)	100% achieved. The difference in actual quantities and the indicator stems from the fact that the latter was based on estimates. The exact quantity could only be determined once excavation and clean-up works commenced.			
Indicator 2 :	Destruction of 1,150 tons of POPs containing and contaminated obsolete pesticides			
Value (quantitative or Qualitative)	0 tons destroyed	1,150 tons destroyed	1,293 tons destroyed	1,293 tons destroyed
Date achieved	12/15/2005	12/13/2010	12/13/2010	12/13/2010
Comments (incl. % achievement)	100% achieved			
Indicator 3 :	Modern regulatory system established for the management and control of POPs and other toxic and harmful chemicals and wastes			
Value (quantitative or Qualitative)	No regulatory system	Functioning regulatory system		Drafting of legislation, by-laws and regulations (as

				per the project's draft legislation plan) has been completed. Enactment of legislation has been partially completed. Regulatory system partially functional.
Date achieved	12/15/2005	12/13/2010		12/13/2010
Comments (incl. % achievement)	Partially completed			

(b) Intermediate Outcome Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Dismantling of 17,300 obsolete capacitors containing PCBs, packing in closed containers, shipping and destruction			
Value (quantitative or Qualitative)	0 capacitors dismantled	17,300 capacitors dismantled and destroyed	16,897 capacitors dismantled and destroyed	16,897 capacitors dismantled and destroyed
Date achieved	12/15/2005	12/13/2010	12/13/2010	12/13/2010
Comments (incl. % achievement)	100% achieved. The difference in actual quantities and the indicator stems from the fact that the latter was based on estimates. The exact quantity could only be determined once excavation and clean-up works commenced.			
Indicator 2 :	Excavation of 2,000 capacitors and contaminated soil in Vulcanesti Power Stations			
Value (quantitative or Qualitative)	0 capacitors and no soil excavated	2,000 capacitors excavated and destroyed	1,759 capacitors excavated and destroyed. Clean-up of the Vulcanesti site completed.	1,759 capacitors excavated and destroyed. Clean-up of the Vulcanesti site completed.
Date achieved	12/15/2005	12/13/2010	12/13/2010	12/13/2010
Comments (incl. % achievement)	100% achieved. The difference in actual quantities and the indicator stems from the fact that the latter was based on estimates. The exact quantity could only be determined once excavation and clean-up works commenced.			
Indicator 3 :	Guidelines issued on POPs contaminated site management issues			
Value (quantitative or Qualitative)	No guidelines available	Guidelines and handbook for POPs management.		Guidelines and handbook for POPs management have been drafted.

				Formal enactment is under way.
Date achieved	12/15/2005	12/13/2010		12/13/2010
Comments (incl. % achievement)	Partially completed.			
Indicator 4 :	POPs information management and reporting system in place			
Value (quantitative or Qualitative)	No information management and reporting system in place.	Information management and reporting system in place.	Design of the information management and reporting system.	The design of the information management and reporting system is complete.
Date achieved	12/15/2005	12/13/2010	12/13/2010	12/13/2010
Comments (incl. % achievement)	100% achieved. Activities were scaled down to only the design of the MIS and monitoring network.			
Indicator 5 :	PCB inventory registration system and national database in place			
Value (quantitative or Qualitative)	No PCB inventory registration system or national database.	PCB inventory and database complete.		PCB inventory and database complete.
Date achieved	12/15/2005	12/13/2010		12/13/2010
Comments (incl. % achievement)	100% achieved. Additional inventory activities are being carried out outside of the scope of the Project with country resources.			

G. Ratings of Project Performance in ISRs

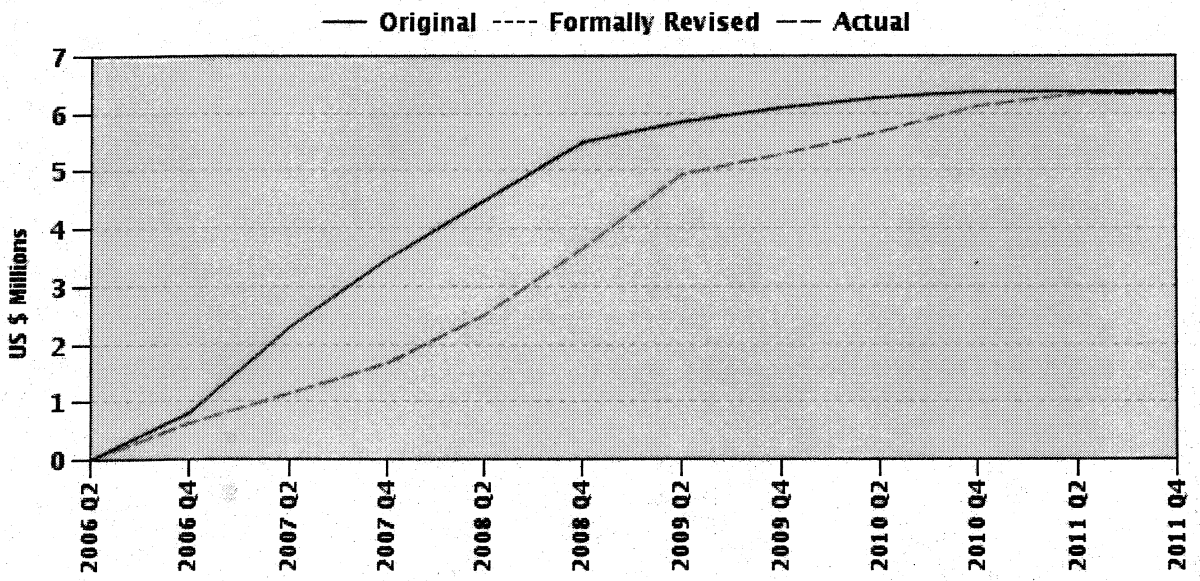
No.	Date ISR Archived	GEO	IP	Actual Disbursements (USD millions)
1	03/28/2006	Satisfactory	Satisfactory	0.00
2	12/11/2006	Satisfactory	Satisfactory	1.12
3	06/11/2007	Moderately Satisfactory	Satisfactory	1.61
4	06/05/2008	Satisfactory	Satisfactory	3.12
5	01/06/2009	Moderately Satisfactory	Moderately Unsatisfactory	4.92
6	10/08/2009	Moderately Satisfactory	Moderately Unsatisfactory	5.44
7	04/26/2010	Moderately Satisfactory	Satisfactory	6.12
8	01/02/2011	Satisfactory	Satisfactory	6.34

H. Restructuring (if any)

Restructuring Date(s)	Board Approved GEO Change	ISR Ratings at Restructuring		Amount Disbursed at Restructuring in USD millions	Reason for Restructuring & Key Changes Made
		GEO	IP		
05/10/2010	N	MS	S	6.12	The reallocation was necessary to allow for the scaling up of a number of project activities using existing project savings. More specifically, the Government of Moldova requested the reallocation of proceeds for the following activities: - The clean-up of the 400 KW Vulcanesti transformer station site; - Expanding POPs communication and awareness raising activities under Component 3; - Additional training for staff of the State Hydrometeorological Service chemical lab for POPs testing and analysis; - Additional IT equipment for the POPs sites database and PCB inventory; - Incremental operating costs, including the project's 2010 audit.
12/21/2010	N	MS	S	6.33	The reallocation was necessary to carry out a final adjustment of the disbursement categories to allow for full settlement of outstanding commitments under the Project. The need for the adjustment arose as a result of exchange rate fluctuations. The reallocation would allow the Implementing Agency to complete payments for the following activities: - The clean-up of the 400 kW Vulcanesti transformer station site; - Additional training to staff of the State Hydrometeorological Service chemical lab for POPs

Restructuring Date(s)	Board Approved GEO Change	ISR Ratings at Restructuring		Amount Disbursed at Restructuring in USD millions	Reason for Restructuring & Key Changes Made
		GEO	IP		testing and analyses; - Additional IT equipment for the POPs sites database and PCB inventory; - Incremental operating costs, including the project's 2010 audit.

I. Disbursement Profile



1. Project Context, Global Environment Objectives and Design

1.1 Context at Appraisal

Persistent Organic Pollutants (POPs) pose an immediate threat to the environment and human health in Moldova. POPs possess toxic characteristics which are persistent, accumulate in the fatty tissues of most living organisms, are prone to long-range transboundary transport, and are likely to cause significant adverse human health or environmental effects near to, and distant from, their sources.

Due to POPs' persistence and propensity to cross-border movement, countries have sought multinational cooperation to address the challenge. The Stockholm Convention on Persistent Organic Pollutants seeks to eliminate a group of 12 POPs. Under the Convention, which entered into force on May 17, 2004, and was ratified by Moldova by Law No. 40-XV on February 19, 2004, parties are required to develop implementation plans to indicate how they will meet their obligations under the Convention. In 2001, Moldova requested from the Global Environment Facility (GEF) financial assistance in fulfilling its Stockholm Convention obligations and it received a $410,000 GEF POPs Enabling Activity (EA) grant. The Moldova POPs National Implementation Plan (NIP) was one of the main outputs of the project and was approved on October 20, 2004. The NIP identified the POPs chemicals of concern in Moldova as being stockpiles of obsolete pesticides and Polychlorinated Biphenyls (PCBs) contained in electrical equipment, primarily capacitors.

It is estimated that between the 1950s and 1990s 560,000 tons of pesticides were used in Moldovan agriculture including 22,000 tons of organochlorinated pesticides (OCPs). Soil samples taken from 1976-1990 showed pesticide contamination levels exceeding the maximum allowable concentration (MAC) from five times in the Southern zone to 50 times in the Central zone of the country. Further tests concluded the presence of DDT in 60% of soil samples, exceeding the MAC, despite DDT's prohibition in 1970. Subsequent testing of pesticide residues in crops (1990-1995) further confirmed the situation – with residuals found in 56.4% of tomato samples and 40% in grapes.

Stockpiling of now banned and useless pesticides collectively referred to as "obsolete" pesticides is a significant POPs issue. In the absence of an obsolete pesticides management strategy, over the years, significant amounts of obsolete pesticides have been stockpiled in numerous warehouses on an ad hoc basis – with deteriorating conditions taking their toll on packaging material. In addition, obsolete pesticides were often indiscriminately mixed resulting in a mixture of POPs with non-POPS pesticides. Sampling analysis revealed that the average amount of POP pesticides out of the total stock of obsolete pesticides is about 20 - 30%. There are approximately 3,000 tons of obsolete pesticides stored in warehouses in Moldova. Studies have shown conclusively that these materials have contaminated the sites and surrounding soils and nearby surface waters.

In November 2003, the Ministry of Defense (MOD) and the State Department for Emergency Situations (SDES) initiated a consolidation of obsolete pesticides from 344 warehouses to 37 centralized district storage facilities, one in each of the administrative districts. This effort was a necessary first step, but did not address the longer-term solution of disposal.

The second major source of POPs in Moldova was concentrated in electrical power equipment in the energy sector – specifically in PCB-containing dielectric oils in capacitors and transformers. Most of this equipment was out of use but still in place. The main pathways of environmental pollution were from oil spills and leaks from electrical equipment, including from corroded capacitors leaking to the soil below the capacitor batteries. Approximately 20,000 PCB-containing capacitors (with a total weight of 1,060 tons), unused and referred to as "discarded," were located in 20 electrical substations throughout the country but most (12,000) were at the Vulcanesti Power station with two dumps containing approximately 1,000 broken capacitors each. The total PCB content in the 20,000 capacitors was estimated to be 380 tons. Analysis determined very high levels of PCB contamination at the capacitor sites primarily at Vulcanesti where the 10,000 m^2 of soil underneath this assemblage, to a depth of 60 cm, was found to be contaminated with PCBs.

Rationale for Bank involvement

As a GEF Implementing Agency the Bank has a responsibility to help its client countries achieve the global environmental objectives that are supported by the GEF. The GEF is the interim financial mechanism of the Stockholm Convention and the Project would contribute significantly to achieving the objectives of the corresponding GEF Operational Program for Reducing and Eliminating Releases of Persistent Organic Pollutants (OP14). At the time of appraisal, the Bank had been very active in supporting Moldova in improving its environmental management capabilities and in incorporating environmental and social concerns into its sector operations. The project's objectives were consistent with the Bank's Environment Strategy and 2005 Country Assistance Strategy (CAS) for Moldova – which focused on improving people's quality of life, quality of economic growth, and quality of regional and global commons. The Bank's technical knowledge on POPs management and its experience in the design and implementation of GEF investment projects gave it a comparative advantage among the GEF Implementing Agencies in providing this assistance.

1.2 Original Global Environment Objectives (GEO) and Key Indicators (*as approved*)

The main development objective was to protect the environment and human health by safely managing and disposing of stockpiles of POPs contaminated pesticides and PCBs.

The global project objective was sustainable POPs stockpiles management and strengthening of the regulatory and institutional arrangements for 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 Moldova.

To track the progress toward achieving this development objective, the project used four key results indicators as summarized below:

(i) Reduced risks of POPs environmental pollution to human health by safely storing and disposing of stockpiles of POPS contaminated pesticides and PCBs
(ii) Destruction of 1,060 tons of PCB-containing capacitors and 1,150 tons of POPs containing and contaminated obsolete pesticides
(iii) Modern regulatory system established within Moldova for the management and control of POPs and other toxic and harmful chemicals and wastes
(iv) Institutional and human capacities for enforcement of the POPs regulatory framework and for sustainable POPs stockpiles management strengthened

1.3 Revised GEO (*as approved by original approving authority*) and Key Indicators, and reasons/justification

The GEO was not revised.

GEO indicator #1 and Intermediate outcome indicators #1 and #2: Only 16,897 capacitors were destroyed since the indicator of 17,300 was based on estimates. Also, excavations at the Vulcanesti Power Station revealed only 1,759 capacitors were buried after the two explosions in 1974 and 1978, which was less than the estimate of 2000 capacitors. Thus the total amount of PCB-containing equipment was 937.5 tons instead of the estimate of 1,060 tons.

1.4 Main Beneficiaries

The primary beneficiaries identified at appraisal were:

(i) **Local**: approximately 150,000 people living in the vicinity of POPs sites and those employed and working in the vicinity of PCB contamination at power stations (it should be also noted that the number of people professionally and directly exposed to pesticides at work was estimated to have fallen from 34,700 in 1993 to 8,800 in 2002); also farmers, industry employees and those responsible for the disposal and collection of waste;

(ii) **Regional and global commons**: reduced pollution of water supplies; reduced pesticides and PCBs entering regional and global food chain through soil contamination; reduced impacts on land, biodiversity, trans-boundary watercourses and international waters; and

(iii) **Government of Moldova**: Ministry of Ecology and Natural Resources (MOE), the State Ecological Inspectorate (SEI) and national laboratories of SEI, Ministry of Health (MOH) and the State Hydrometeorological Service.

1.5 Original Components (*as approved*)

Component 1. Management and Destruction of POPS (US$8.23 m, of which GEF US$3.79 m) This component was to identify, manage and ultimately eliminate obsolete pesticide stockpiles and PCB-containing capacitors currently posing environmental and human health risks. This component included 2 sub-components:

(i) ***Sub-component 1.1. Destruction of Stockpiles of POPs Containing and Contaminated Obsolete Pesticides*** (US$5.37 m, of which GEF US$1.21 m) This sub-component was to finance the incineration of approximately 1,150 tons of stockpiled obsolete pesticides (out of a total 3,000 tons). NATO was to co-finance this sub-component and would seek additional financing to dispose of the remaining obsolete pesticides (about 1,950 tons). Warehouses were prioritized in terms of the risk they would pose to the environment and humans in the case of leakages. The project was to focus on the disposal of obsolete pesticides stockpiles at 10 sites ranked highest in terms of risk to the environment and human health. It was anticipated that as additional funds became available, the risk ranking would continue to be used to prioritize stockpiles for disposal (see Annex 4 of PAD). Local public authorities were responsible for supervising warehouses containing obsolete pesticide stockpiles.

(ii) ***Sub-component 1.2. Management of PCBs and Destruction of Obsolete Capacitor Stockpiles*** (US$2.86 m, of which GEF US$2.58 m) The purpose of this sub-component was to inventory, eliminate and develop a long-term strategy for PCBs. This sub-component included three activities:

a. *Activity 1. Establishing an Inventory of PCB Containing or Contaminated Equipment* (US$0.48 m, of which GEF US$0.28 m) This activity was to develop a detailed inventory of PCB-containing or contaminated equipment, and include appropriate labeling and identification of premises where the equipment was located, including: (i) preparation of inventory forms and guidelines to holders of PCB contaminated equipment on how to carry out an inventory, notification and reporting requirements; (ii) identification of potential holders of equipment; (iii) purchasing simple test kits for use by holders to screen transformer oils for potential contamination; (iv) purchasing analytical kits for three laboratories to enable them to carry out accurate analyses of oils that test positive for contamination and training of laboratory technicians in the use of such kits; (v) developing a labeling system and providing labels for use by holders; (vi) training of MOE's State Ecological Inspectorate (SEI) Inspectors on identification and notification of PCB contaminated equipment; (vii) seminar presentations to potential holders of equipment on the identification and test screening for contamination; (viii) sending information and forms to potential holders and follow up by SEI Inspectors; (ix) establishing a database for storing information from the inventory and for future management of PCB contaminated equipment (Component 3); and (x) development of future management options for final disposal of PCBs and decontamination of equipment.

b. *Activity 2. Destruction of a Stockpile of Obsolete Capacitors* (US$2.09 m, of which GEF US$2.07 m) This activity was to: (i) dismantle 17,300 obsolete capacitors from thirteen substations and pack in closed containers (approximately 899 tons); (ii) excavate 2,000 capacitors buried in two pits in Vulcanesti substation and pack in closed containers (approximately 111 tons); and (iii) destroy 19,300 capacitors and up to 50 tons of highly polluted soil (approximately 1,060 tons) by incineration.

c. *Activity 3. Feasibility Study of Site Clean-up at Vulcanesti Substation* (US$0.29 m, of which GEF US$0.24 m) This activity was to finance a study to assess the technical, financial and environmental feasibility of different remediation approaches and recommend a least cost solution.

Component 2. Strengthening the Regulatory Framework and Capacity Building for POPs Management (US$2.32 m, of which GEF US$1.27 m) This component was to modernize current legislation specifically related to the Stockholm Convention and incorporate provisions for establishing a broader chemical safety approach in the country based on EU directives. Full transposition of all relevant EU legal acts was to be achieved.

(i) ***Sub-component 2.1: Modification of the Regulatory Framework for POPs Management*** (US$0.74 m, of which GEF US$0.61 m) This sub-component was to provide a legal basis for POPs chemical management under Stockholm Convention requirements and set-up an overall chemical safety system in Moldova according to the EU regulation and legislation related to handling of dangerous chemical substances and hazardous waste. It was to develop an integrated system of POPs management through the following three activities:

a. *Activity 1. Assessment of Existing Legislation Regarding Compliance with EU Regulations* (US$0.25 m, of which GEF US$0.21 m) This activity was to finance a gap analysis comparing EU legislation and Convention requirements with existing legislation in Moldova and prepare a Table of Concordance in relation to international obligations for POPs, hazardous wastes and dangerous substances.

b. *Activity 2. Assistance in Drafting of Relevant Regulations and Instructions* (US$0.25 m, of which GEF US$0.21 m) This activity was to prepare national legislation by: strengthening the chemical safety management system in Moldova; clearly defining responsibilities; specifically prohibiting production and use of POPS chemicals and regulating their export/import; and providing a legal basis for reduction/elimination of unintentional releases from production processes. Legal provisions would cover: (i) POPs contaminated site management issues; (ii) responsibility for POPs contaminated sites; (iii) incorporation of POPs monitoring and reporting; (iv) assessment of new chemicals meeting POPs criteria; (v) Best Available Techniques (BAT) and Best Available Practices (BAP) for new and existing sources; and (vi) requirements for modified materials, products and processes.

c. *Activity 3. Development of Regulatory Mechanisms* (US$0.23 m, of which GEF US$0.19 m) This activity was to finance the development of specific implementing regulations (by-laws) and instructions. Regulations and instructions would be prepared based on EU legislation.

(ii) ***Sub-component 2.2. Capacity Building*** (US$1.58 m, of which GEF US$0.66 m) This sub-component was to strengthen government and laboratory capacity through the following three activities:

a. *Activity 1. Strengthening of Inspectorates for Enforcement of POPS Regulations and Prevention of Further Accumulation of POPs stockpiles* (US$0.25 m, of which GEF US$0.19 m) The goal of this activity was to increase the skills of key inspectors in government agencies who will be dealing with the enforcement of regulations developed under sub-component 2.1.

b. *Activity 2. Upgrading and Strengthening of Existing Laboratories for POPs Analysis* (US$1.23 m, of which GEF US$0.47 m) This activity was to finance upgrading of the laboratories of SEI, Ministry of Health (MOH) and the Hydrometeorological Service for POPs detection in different media; and support the regulatory requirements for reporting, management and control of POPs at national and international levels. This activity was to be co-financed by NATO's "NATO Science for Peace: Development of Modern Analytical Approaches for POPs Investigation Project."

c. *Activity 3. Prevention of Accumulation of New Stockpiles of Obsolete Pesticides* (US$0.11 m, of which GEF US$0.00 m) This activity was to address ongoing obsolete pesticide issues by promoting best practices in pest management in crop production, including integrated pest management (IPM) - based on careful integration of a number of available pest control techniques. The project would benefit from two related agricultural extension projects – the World Bank Rural Investment and Services Project (RISP) II and the Milieukontakt Oost-Europa (Dutch Environmental NGO) Project, "Elimination of acute risks of obsolete pesticides in Moldova, Georgia, and Armenia."

Component 3. Institutional Strengthening and Project Management Support (US$2.06 m of which GEF US$1.29 m) The final component was to strengthen institutions through the development of monitoring information systems, raise public awareness of POPs and provide project management support:

(i) ***Sub-component 3.1. Institutional Strengthening*** (US$1.43 m, of which GEF US$0.74 m) This sub-component was to strengthen the MOE's capacity for POPs management and raise public awareness through the following 4 activities:

a. *Activity 1. POPs Information Management and Reporting System* (US$0.40 m, of which GEF US$0.25 m) This activity was to finance: (i) the design of a central management information system, including data base and GIS applications; (ii) installation of required hardware and software and training of staff for operations; and (iii) testing of the information system performance.

b. *Activity 2. POPs Monitoring Network* (US$0.17 m, of which GEF US$0.11 m) This activity was to finance an interlinked monitoring network for POPs within national laboratories in SEI, MOH, and the Hydrometeorological Service.

c. *Activity 3. Identification of POPs Residuals and Mapping of Polluted Areas* (US$0.23 m, of which GEF US$0.19 m) This activity was to support a research effort by local institutes to identify, characterize and perform a risk assessment of these sites for decisions on future management options.

d. *Activity 4. POPs Awareness and Educational Activities* (US$0.62 m, of which GEF US$0.19 m) This activity was to build on the findings of the social assessment (SA) conducted during preparation, which revealed a very low awareness of POPs-related issues. The goal of this activity was to create a communications framework for POPs and other chemicals and to improve awareness of the Moldovan public regarding POPs sources and effects through awareness building activities, as well as training and education of target groups with higher exposure to risks.

(ii) ***Sub-component 3.2. Project Management Support*** (US$0.64 m, of which GEF US$0.55 m) This sub-component was to provide support to the project management team (PMT) within the MOE in carrying out project management functions of financial management, procurement, auditing, monitoring and evaluating project implementation, and dissemination of project results. The PMT had originally been formed to support preparation of the GEF-supported NIP. This group also helped oversee project preparation with support from a GEF PDF B Grant. The PMT included a Project Manager, an assistant, a procurement specialist and a part-time financial management/ disbursement specialist. The PMT staff was to remain the same under implementation.

1.6 Revised Components

Please refer to Section 1.3 on the revision of destruction targets.

Sub-component 1.2, Activity 2. Destruction of a Stockpile of Obsolete Capacitors. The Project planned for the incineration of approximately 50 tons of contaminated soil from Vulcanesti station prior to the clean-up feasibility study for the station. However, the study indicated that the total quantity of soil contaminated with PCBs above 50 ppm was more than 3,000 tons, far above

the planned 50 tons. It was decided that the best temporary solution was to store the soil in cofferdams built on the territory of the station. The solution was considered as the most feasible from technical, economic and environmental points of view. The cofferdams were covered with a protection layer to avoid any potential dispersal. The Project applied this solution for two of the pits after excavating capacitors. Moldelectrica was to apply the same technology to the other two remaining pits. The feasibility study also measured PCB pollution levels after the elimination of capacitors and provided recommendations for their clean-up. In this instance,.the Project diverged from the original proposal, but adapted to the situation on the ground and identified the best feasible solution to solve the soil contamination issue.

Sub-component 3.1. Institutional Strengthening, Activity 1. POPs Information Management and Reporting System and *Activity 2. POPs Monitoring Network.* These two activities were modified from the original plan of a 'fully-developed software and hardware architecture' owing to time constraints and recognizing the delicate political situation in the country in 2010 (i.e. potentially leading to delays in implementation). Activities were scaled down to the conceptual development of the necessary platform architecture that can subsequently be supported for implementation with funding from MOE's own resources.

1.7 Other significant changes

Canadian Grant for the Remediation of POP Pesticide Polluted Areas and Clean-Up of PCB Contaminated Oil in Power Equipment. The project was catalytic in leveraging additional resources and fostering international cooperation as evidenced through securing, in 2007, a grant from the Canadian POPs Trust Fund to implement capacity building activities for identifying and implementing cost-efficient Best Available Techniques (BATs) for remediation of areas polluted with POPs pesticides, and cleaning of PCB contaminated oil. The total amount of the grant was CAD$ 646,250 (US$ 642,825). Activities supported by the grant enhanced the development impact of the Project by complementing ongoing activities and provided an opportunity for piloting new or alternative technologies. Specifically, the grant supported: (i) the implementation of demonstration pilots for the clean-up of pesticide contaminated sites in three rural areas, under different initial conditions, applying bioremediation and coffer-dam isolation; (ii) additional PCB sampling; and (iii) awareness and information raising activities on pesticide clean-up options.

Two minor restructurings (reallocations) were undertaken during the final year of implementation - one project extension from May 31, 2010 until December 31, 2010 with a reallocation of grant proceeds and another reallocation of grant proceeds on December 13, 2010:

May 20, 2010: The reallocation was necessary to allow for scaling up of a number of project activities using existing project savings. More specifically, the Government of Moldova requested the reallocation of proceeds for the following activities:

- The clean-up of the 400 kV Vulcanesti transformer station site;
- Expanding POPs communication and awareness raising activities under Component 3;
- Additional training for staff of the State Hydrometeorological Service chemical lab for POPs testing and analysis;
- Additional IT equipment for the POPs sites database and PCB inventory; and
- Incremental operating costs, including the project's 2010 audit.

December 13, 2010: The reallocation was necessary to carry out a final adjustment of the disbursement categories to allow for full settlement of outstanding commitments under the

Project. The need for the adjustment arose as a result of exchange rate fluctuations. The reallocation allowed the Implementing Agency to complete payments for the following activities:

- The clean-up of the 400 kV Vulcanesti transformer station site;
- Additional training for staff of the State Hydrometeorological Service chemical lab for POPs testing and analyses;
- Additional IT equipment for the POPs sites database and PCB inventory; and
- Incremental operating costs, including the project's 2010 audit.

Summary of reallocation of grant proceeds

Category of expenditure		Allocation (US$)		
Original	**Revised**	**Original**	**Revised – May 2010**	**Revised – Dec 2010**
1) Goods	No changes	650,000	608,000	604,548
2) Consultant Services, and Audit	No changes	2,160,000	2,117,000	2,089,500
3) Technical Services	No changes	3,040,000	3,060,000	3,073,000
4) Operating Costs	No changes	470,000	510,000	525,372
5) Training	No changes	30,000	55,000	57,580
TOTAL		6,350,000	6,350,000	6,350,000

2. Key Factors Affecting Implementation and Outcomes

2.1 Project Preparation, Design and Quality at Entry

Project background analysis was generally adequate. Background preparation benefitted from previous efforts under the National Implementation Plan (NIP), information from stockpile consolidation by the MOD/SDES in 2003 and a thorough Environmental Assessment. Together this gave a more accurate picture of the extent and severity of the problem and led to the prioritization of 10 of the highest risk obsolete pesticide sites among the 37 consolidated warehouses (Telenesti, Briceni, Hincesti, Cimislia, Floresti, Riscani, Straseni, Stefan-Voda, Nisporeni, and Soldanesti rayon warehouses). These 10 represented about 30% of the total stock of obsolete pesticides. The Bank also drew extensively from international experience in safe disposal, transport and mitigation methods of POPs (e.g., Stockholm Convention and guidelines under the EU Waste Directive), and previous POPs disposal projects such as those under the well-known Africa Stockpiles Programme. For PCB inventorying the Bank modified a UNEP Chemicals survey form to be filled out by equipment holders, which complemented information collected under NIP preparation, leading to a focused capacitor disposal strategy. Participatory processes, including those for the EA, also built on the nation-wide information campaign initiated under the NIP – including several stakeholder workshops in the 32 administrative units with discussions on "POPs and Human Health". A public survey was also undertaken, focusing in affected areas, which revealed clear support for the proposed cleanup activities.

The Project reflected on several lessons learned to be incorporated into its design:

Keep the design of the project simple. The logistics of POPs disposal, from "cradle to grave" was complex and the PMT considered keeping many of these responsibilities under one large contract to attract the most bidders and to realize potential cost savings. While these predictions largely came true, there were some delays in the first year of procurement from the Government side due

to the lack of experience in developing large, complex Terms of Reference, especially for operations in areas that were new to the MOE.

Setting up of the project management arrangements. Contrary to the Governments' lack of experience in developing large and complex operations, the Project did benefit from the (re-)use of PMT staff from the NIP's preparation. The procurement issue appears to have stemmed from a lack of experience in specialized disposal operations.

Early start on regulatory reform process. Previous experience in the region with slow regulatory reform led the Bank team to recommend MOE to fast-track initiatives under Component 2. Despite this, several reforms remained in draft and were not fully enacted by Project closing. Partial explanation can be attributed to the three elections in 18 months and three Ministerial changes in the MOE during Project implementation.

Involvement of local stakeholders. Widespread government and local support for the project was culminated early on through previous information campaigns under NIP, but also from the extensive consultations with stakeholders during the Environmental and Social Assessments. The Project also created local Initiative Groups in the rayons where repackaging of POPs pesticides occurred: Stefan-Voda, Hîncesti, Cimislia, Orhei (Pelivan), Rîscani, Floresti, Soldanesti, Briceni, Comrat and Dubasari (Cosnita).

The rationale for Bank intervention was sound. The World Bank was a logical partner in the project given its relationship with the GEF and previous project experience in POPs management and destruction (e.g. China, Africa, Belarus, among others). There were also positive synergies with ongoing World Bank projects in Moldova such as the IDA-funded Energy II project which supported upgrading of laboratory equipment for identifying PCBs (a complementary activity with this project), and the Rural Investment and Services Project (RISP) which provided credits for rural advisory services on pesticide use in agriculture, as well as the GEF Agricultural Pollution Control Project which supported environmentally friendly agricultural practices by farmers and agro-industry.

Project design was generally sound. Project objectives drew on the best available estimates for obsolete pesticide stockpiles from previous MOD consolidation efforts and equipment information from the energy sector. The EA was also used to confirm these estimates and to derive further confidence in the numbers finally set. The survey instruments as part of Component 1.2 provided further support to extent of PCB-containing equipment. These early actions also helped set geographical and logistical priorities.

A considerable effort was initially given to gauging possible storage and destruction alternatives (both local and regional). Storage options received a fairly high discount as it was perceived to only avoid an inevitable disposal problem in the future. Further centralization of POPs was publically unpopular and considered environmentally risky in terms of accidental release. In terms of destruction options local initiatives were either too costly or unfeasible due to the lack of adequate incineration technologies.

The extent of legislative reform anticipated under Component 2 could be considered ambitious given Moldova's rather vague waste and chemical legislation at the time and in particular the lack of POPs mention in any law. This risk was identified during preparation and from previous lessons learned, however what was not foreseen was the domino effect these activities would have on training and institutional capacity building activities in the absence of finally-enacted legislation (also see assessment of risks below). This resulted in the project's downgrade in 2009.

The Government's commitment was high as demonstrated through its ratification of the Stockholm Convention. Further commitment was shown through the Ministry's (MOE) creation of the National Coordinating Committee (NCC) in charge of implementing the Stockholm Convention and National Implementation Plan for POPs and an Evaluation Committee (Ministry's Decision no. 56 from November 5, 2004). The NCC was chaired by the Minister of MOE and included 10 additional members: representatives from Parliament; MOE; Ministries of Agriculture and Food Industry, Energy, Finance, and Health; the Academy of Science; and environmental NGOs.

Ongoing consolidation efforts continued under the Ministry of Defense (MoD) and the State Department for Civil Protection and Emergency Situations (DES). By 2005, more than 1,700 tons of obsolete pesticide materials were repackaged and stored from seven counties (territorial-administrative entities) out of a total of 37 counties in Moldova. In another 14 counties, the National Army together with DES began repackaging. The government also committed resources from the World Bank Energy II project (US$0.2 million for activities related to PCBs disposal in the energy sector).

Project-related commitments during Negotiations included the Government of Moldova and MOE to provide counterpart funding in 2007 and 2008 in the amount of US$1.6 million, including US$1.1 million from the state budget and US$0.5 million from the National Environment Fund (NEF). In addition, US$0.78 million was committed for ongoing repackaging efforts by the MoD mentioned above.

Most risks were adequately identified and rated; mitigation measures were adequate. Uncertainty of total obsolete pesticide quantities, rated a "substantial" risk, was effectively mitigated by contracting guaranteed minimum amounts and a cost per ton above the minimum. Detailed surveillance during the EA also placed greater confidence to the targets set relative to the overall scale of the problem. Component 2 risks on legislative reform, rated "substantial", had adequate mitigation measures in place, but unforeseen was the slow and poor initial communication between the consultant hired for the component on legislative reform and the MOE. Cumulative delays resulted in a partially completed component.

2.2 Implementation

Project targets under Component 1, Management and Destruction of POPs, were achieved by the Mid-Term Review (MTR) (and exceeded in the case of GEO indicator #2 with 1293 tons of obsolete pesticides destroyed). Attribution can be given to a variety of factors such as the detailed design at preparation, but also to the successful coordination between the MOE, MAFI, Ministry of Defense (MOD), Ministry of Health (MOH), as well as a number of other state agencies, donor institutions and NGOs. The project also benefitted from the successful coordination by the NCC as well as the day-to-day project management and coordination carried out by the PMT.

Significant delays in the implementation of sub-component 2.1, Modification of the Regulatory Framework for POPs Management, led to the project downgrade at the MTR from *satisfactory* to *moderately unsatisfactory*. The situation arose from divergences between the MOE and its consultant on the understanding of the assignment, and their respective roles in the process. This was partially explained by the change in MOE's leadership at the time, but also in the allocation of insufficient MOE staff to the task. Two major activities under this sub-component were to be completed by August 2008, but were yet to be drafted by the end of the calendar year. More

specifically, draft legal and regulatory acts aimed at strengthening the chemical safety management system in Moldova - mainly the Law on Dangerous Waste and the Law on Dangerous Chemicals – underwent significant back-and-forth revisions causing delays in their submission to Cabinet and ultimately, Parliament. A similar delay was experienced with draft instructions and explanatory notes on: (i) the management of abandoned storehouses and contaminated sites; (ii) the management of district storage facilities for obsolete pesticides; and (ii) the management of landfills/dumpsites to minimize the formation and emission of dioxins and furans. It was of the MOE's opinion that these instructions did not correspond to Moldovan legislative standards and requirements and considered the work incomplete leading to further rounds of revisions. As a consequence, extensions were necessary to complete the work.

Since final legislation served as an input to training activities under sub-component 2.2 and Component 3, these were similarly jeopardized. Disbursements by the MTR reflected this lag in implementation (PAD disbursement estimates for 2006-2008 were: US$5.4 million, whereas actual disbursements as of September 30, 2008 totaled US$4.92 million).

The Bank suggested that the MOE allocate staff to work directly with the consultant and help better guide work acceptable to the MOE. An action plan was formulated by the MOE, PMT and the consultant and found to be acceptable by the Bank.

There were also a few concerns about counterpart financing from the National Ecological Fund, however by time of the MTR, this commitment was honored. Funds were ultimately reallocated to other activities since the original activity under which these were to be used was completed at the time of the MTR (i.e. Component 1). In contrast, partner co-financing was received in a timely manner and works were ongoing by the MTR (i.e. NATO, Dutch Government through Milieukontakt, the WB Energy II project). In 2007, the PMT was also successful in securing CAD$646,250 from the Canadian POPs Trust Fund for capacity building activities in the identification and implementation of cost-efficient BATs for remediation of areas polluted with POPs pesticides, and cleaning of PCB contaminated oil (see also Section 1.7).

The Project also underwent two restructurings – one extension (May to December, 2010) with a minor reallocation of grant funds and another final reallocation of grant proceeds in December, 2010. No changes to the PDO or GEO were made.

2.3 Monitoring and Evaluation (M&E) Design, Implementation and Utilization

The four key performance indicators listed in Section 1.2 were adequate in tracking progress towards achieving the PDO and GEO. However, the disaggregated indicators given in the data sheet and tracked through the Results Framework (PAD, Annex 3) provide more detail on each of the 4 summary indicators. Those contained in the Results Framework were included in the Supplemental Letter to the GEF Grant Agreement.

Design. The M&E design was well developed in the early stages of preparation, mostly due to the uncertainty surrounding the estimated amounts of obsolete pesticides and PCB capacitors – and how results from preliminary studies would feed back into the revision of indicator targets. Data were to be collected through two means – the first as part of the private firm contract to work with Moldelectrica and MAFI in monitoring and supervising the packaging, transport and ultimate destruction of materials. The second information source was the MIS developed to inventory PCB-containing equipment. It was also intended to monitor Project implementation and identify areas for corrective action when needed. The development of the POPs Information

Management and Reporting System under sub-component 3.1 was intended to track the life of POPs-containing substances and equipment after Project completion.

Indicators relating to target values of obsolete pesticides and PCBs under Component 1 were realistic given existing baseline information. However the first summary indicator of 'developing a modern regulatory system' would have benefitted from more concrete intermediate indicators before draft regulations and by-laws were delivered to the MOE – and this could have triggered red flags in the absence of progress. The final objective of having regulations in draft form may have been more appropriate and not subject to uncertain political forces (i.e. elections, government reshuffling, etc).

Implementation. Monitoring activities related to issues under the Stockholm Convention were provided by the Ministry of Environment through the National Focal Point (Convention Focal Point, CFP), comprising of weekly or monthly progress meetings. Global issues were discussed at periodic meetings of the National Coordination Committee. Fiduciary (financial and procurement) activities were conducted by a member of the PMT, who also monitored Project progress set forth in the Results Agreement (PAD, Annex 3).

A substantial amount of information tracking project progress was generated during implemenation – most notably from the repackaging, transport and inventorying work conducted under Component 1 activities, the regulatory gap analysis under Component 2 and the nation-wide public opinion survey raising POPs awareness and knowledge under Component 3. Progress reports were generated and reviewed every 6 months by the PMT and the Bank.

Utilization. Data utilization, and its feedback into Project implementation, was crucial in measuring progress towards the PDO and GEO. For example, the clean-up feasibility study at the Vulcanesti site revealed that the total quantity of soil contaminated with PCBs above 50 ppm was more than 3,000 tons – far exceeding the initial estimate of 50 tons planned for incineration. Alternatives were sought and 350 tons of the most severely contaminated soil was unearthed and stored in two cofferdams at the sub-station site.

2.4 Safeguard and Fiduciary Compliance

Financial Management. Regular financial management reviews confirmed a satisfactory financial management system during the Project life and compliance with the financial covenants of the Grant Agreement. Internal controls and accounting procedures were also found to be satisfactory. Minor issues were raised during the 2007 Bank financial management review with the C1 accounting system, which were subsequently resolved by the following supervision mission. Annual Project audits were unqualified (clean), with only 2 recommendations raised in the 2006 audit and which were immediately addressed: (i) the need to keep accounting records in an accounting system rather than in a simple cash book spreadsheet; and (ii) the need to separate non-project related funds from the National Ecology Fund by maintaining a separate bank account. Agreed counterpart financing was received in a timely fashion and thus did not affect Project implementation.

Procurement. The PMT possessed an experienced procurement specialist, with support from the FM specialist and an advisor from the RISP II Project. Capacity building and training on World Bank procurement procedures was completed by 2005. Daily procurement activities were undertaken by the project manager's assistant supported by the procurement specialist. Offers/proposals were reviewed and evaluated by the Evaluation Committee created by MOE

ordinance no. 56 (Nov 5, 2004) and amended by MOE ordinance no. 51 (Nov 7, 2008). While coordinating procurement issues with the World Bank, the PMT also made use of the Client Connection system to aid in procurement and disbursement issues. The Procurement Plan was revised six times by the time of the MTR (Nov., 2008), reflecting changes in contracts for goods and consulting services during Project implementation. Procurement post-reviews (in 2007, 2008, 2009, and two in 2010) found that procurement processes, and/or contract administration were of generally good to high quality, reliability, timeliness, and transparency with only minor corrective actions needed by the Bank.

Disbursement. Disbursements were generally on time, with some lag experienced by time of the MTR due to delays in implementing activities under Components 2 and 3 (US$4.92 million out of a projected US$5.4 million). All funds were fully disbursed by Project closing.

Environmental Assessment. For Environmental Assessment (EA) purposes the project was rated "category A" due to the risks associated with handling of POPs contaminated pesticides and capacitors under Component 1. Project activities eliminated approximately 30% of the POPs-containing and contaminated pesticides held in ten warehouses and approximately 80% of the PCB contaminated electrical equipment in the country. These actions resulted in substantial local and global environmental and human health benefits. The EA concluded that the greatest risks to environment and human health were the 37 centralized warehouses where obsolete pesticides were being stored and the Vulcanesti power substation. Risk assessments were carried out at each of the centralized pesticide storage sites and ranked according to overall risk, including: condition of storage buildings; proximity to populated areas, agricultural lands, watercourses, forest and pasture; vulnerability to floods; depth to groundwater; amount of pesticides stored; and availability of space for storage. An EA workshop presenting the results was held in 2005, with participants agreeing that the most optimal (i.e. cost and risk minimization) solution was for the Project to focus on warehouses posing the highest risks and transporting them overseas for final destruction. PCB-containing capacitors at Vulcanesti were in one location, thus there was no need to prioritize. The EA also conducted soil and water analyses at the Vulcanesti Power Station and confirmed the extent of the contamination.

An Environmental Management Plan (EMP) was developed and attached to the Contract Conditions for the international contractor which carried out clean up operations. The EMP specified the following main mitigation activities: (i) a comprehensive POPs inventory and risk assessment; (ii) application and monitoring of Occupational Health, Safety, Environment (OHSE) requirements and international best practices; and (iii) utilization of commercially available and internationally acceptable POPs disposal technologies. It also included generic avoidance, prevention, minimization, containment and mitigation, environmental due diligence, occupational, health safety and emergency preparedness requirements, procedures and protocols. An internal EMP and Environmental Management System (EMS) were also developed to ensure compliance with the Project EMP and worker safety. Clean up operations were also subject to independent verification by a Supervising Consultant with monthly monitoring and compliance reviews.

Upon review of the monitoring reports, compliance with OP 4.01 was rated satisfactory throughout Project implementation. A comprehensive safeguards review was completed during the MTR (since much of Component 1 was complete) and found no environmental or public health complaints related to the Project.

Social Safeguards. No social safeguards were triggered by the Project. OP 4.09 Pest Management was not triggered since no Project activities were associated with the financing of pesticides and the IPM training activities under Component 3 were considered technical assistance.

2.5 Post-completion Operation/Next Phase

This section discusses the sustainability and replicability of Project interventions.

Sustainability. Project activities eliminated approximately 30% (1,293 tons) of obsolete pesticide stockpiles and 80% of PCBs in Moldova. The Government has been negotiating with the NATO Management and Supply Agency for the destruction of an additional 1,263 tons of obsolete pesticides, to be co-financed by the National Ecological Fund (see also Annex 2 for further cleanup activities the Project has spurred). PCB inventorying and testing was completed with over 33,500 samples taken by Project closing. Among those with chlorine levels above 50 ppm, less than 5% contained PCBs. The PCB inventory registration system and national database will continue with country resources. Overall, the elimination of POPs remains high on the Government's agenda in order to be fully compliant with its national and international commitments.

Regulatory reform. Despite the shortfall of regulations passing through final legislative approval, by Project closing all 15 draft laws and regulations were complete and awaiting reviews or submission to Cabinet or Parliament. The MOE indicated they would be hiring a local consultant to ensure legal processing of all draft law and regulations.

POPs Monitoring and Evaluation. The POPs Pollution Database houses 1,604 geo-referenced hotspot areas (1,588 old/ abandoned warehouses, pesticide mixing/preparation sites and 16 PCB contaminated sites) and can be accessed at http://pops.mediu.gov.md/. Central and local authorities will monitor and supervise these sites for their environmental and health risks. Data have been transferred to the MOE, and incorporated into their own IT systems with a proper allocation of human and financial resources for database operation and maintenance. The MOE confirmed the institutionalization of this database after Project closing.

Internalizing the POPs agenda. Continuation of the POPs agenda is imperative for ensuring the sustainability of long-term Project results. The MOE informed the Bank that an internal order would be circulated, assigning the POPs agenda to a division within the MOE. In terms of additional training, the MOE also indicated that it would be responsible for the repeat training of environmental inspectors in the finally enacted legislation.

Replicability. The Project was nation-wide, but the lessons and experience learned from the elimination of obsolete pesticides can be replicated to address remaining stocks in the country, and there appears to be sufficient internal momentum to do so (e.g. NATO request). Other more recent developments also make this an imperative. Nine new POP substances were introduced at the 4th meeting of the Conference of the Parties to the Stockholm Convention and as a Party to the Convention, Moldova will ultimately face similar compliance issues. The MOE would have a continued agenda of drafting relevant policy documents and action plans for these new substances, even if future inventorying does not discover presence in the environment.

Approaches in project design could also be replicated in other countries. Project dissemination activities by the MOE and PMT included events with an international audience in Moldova,

Belarus, Bulgaria, Romania, Russia, the Netherlands, Ukraine, and Senegal. One notable example was the 9th International HCH and Pesticides Forum in Chisinau (September, 2007), with representatives from 35 countries. Project results were also disseminated internally in the World Bank and GEF through BBLs in September, 2007 and in November, 2010. POPs projects in the Ukraine and Belarus are currently following the same model as Moldova's.

Proposed new GEF activity. The MOE requested further Bank support in designing and implementing a new, possibly midium-sized GEF-financed Project related to:

1) Develop a management information system for PCB-contaminated equipment with volumes greater than 5 liters. This information system would integrate information flows between the country's energy companies and regulatory bodies (energy and environment) responsible for the monitoring and control of PCBs contaminated equipment;

2) Develop a PCB Phase-out Elimination Plan to be in compliance with provisions of the Stockholm Convention and other relevant international treaties and implement provisions of Government Decision No. 81 of 02.02.2009 "On Approval of Regulation on Polychlorinated Byphenils"; and

3) Establish an inventory of POPs unintentional release, including projections and an inventory quality assessment for implementation of Article 5 of the Stockholm Convention and other relevant international treaties.

This new Project would be a natural follow-up activity and in line with the requirements of the Stockholm Convention.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

The Project's objectives, design and implementation remain highly relevant to Moldova's development and environmental priorities. Pillar II of the Country Assistance Strategy (CAS) for 2009-12 highlights the need to minimize social and environmental risks, such as those associated with POPs. Outcome indicator no. 11.4 sets the objective of reducing environmental degradation and health hazards and the Project demonstrated effective and affordable measures to address these issues in line with the PDO and GEO. The Project is also aligned with priorities under Moldova's National Development Strategy (NDS) which defines development objectives over the period 2008-2011. One of the main pillars is regional development focusing on the rural poor. The Strategy seeks to promote the development of small towns as "poles of growth"; enhance the performance of the agricultural sector; increase investment in rural infrastructure; *and improve the policy framework in the area of the environment and natural resource use.* Regulatory reform under the Project provides a solid and sustainable foundation for chemicals management. At the global level, the Project contributed to the fulfillment of Moldova in complying with the Stockholm Convention on POPs, the Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and Their Disposal, and the Rotterdam Convention on the Prior Informed Consent Procedures for Certain Hazardous Chemicals and Pesticides in International Trade and Strategic Approach to International Chemicals Management (SAICM). In addition, as the GEF is the interim financial mechanism of the Stockholm Convention, the Project contributed

to the objectives of the GEF Operational Program for Reducing and Eliminating Releases of Persistent Organic Pollutants (OP14).

3.2 Achievement of Global Environmental Objectives

A review of Project outputs against key performance indicators reveals that the GEO was achieved. A total of 937.5 tons of PCB-containing capacitors and 1,293 tons of POPs-containing and contaminated obsolete pesticides were destroyed. Environmental and human health conditions were improved by these actions since the risk of exposure has been significantly reduced or eliminated. Improvements to trans-boundary (and global) water quality is also ensured through the elimination of these substances and a more sustainable approach to POPs management. Prior to the Project, legislation on chemicals and hazardous waste was vague, sparse or minimal, with a complete absence of POPs in definition or interpretation. A total of 15 draft laws and regulations were completed under the Project, although not fully enacted through Cabinet or Parliament.[1] Despite this, this legislation forms the legal foundation for a modern regulatory system for the management and control of POPs and other toxic and harmful chemicals and wastes. As noted in Section 2.5 above, the Government is committed to completing this task – and aims to prepare for further work as the Stockholm Convention on POPs increases its scope. Finally, institutional capacity was strengthened through training activities in draft legislation, POPs monitoring and surveillance systems and analytical capacity (lab upgrading) of the State Hydrometeorological Service for POPs detection in different media (e.g. soil, water). Prior to the Project no inventory or information system existed and in the case of laboratories, they did not have the ability to test for the presence of POPs.

3.3 Efficiency

An incremental cost analysis (ICA) was conducted at appraisal. At the ICR stage, an ex-post ICA and cost-effectiveness analysis were conducted (Annex 3).

At appraisal, the Baseline Scenario included ongoing efforts by the MOD to repackage obsolete pesticides and consolidation into 37 warehouses. The cost was US$0.82 million. The GEF-Alternative scenario included a more ambitious program to repackage materials, transport and incinerate them in an international location. PCB-containing capacitors would be collected from power substations and from excavations at the Vulcanesti substation, transported and incinerated. The Alternative also included a massive overhaul of the regulatory and legislative system for improved chemicals management, including POPs. Institutional strengthening and capacity building initiatives would form a solid knowledge and analytical base for continued chemicals management. The cost of the alternative was US$12.6 million of which the GEF would finance US$6.35 million and the remainder (US$5.44 million) from other (parallel) co-financiers. Further details are contained in Annex 3.

Ex-post analysis indicates that the GEF-Alternative cost was US$13.41 million, including US$2.36 million in cash from Government and the National Ecological Fund (plus US$1.36 million through in-kind transfers for PCB inventorying and 20% VAT exemptions on goods and

[1] The Regulation on Polychlorinated Biphenyls was approved by the Government in February 2009. The National Programme on Sound Chemicals Management was approved in October 2010. Three handbooks (Environmental Sound PCB Management in Electrical Equipment, The inventory and mapping of POPs contaminated sites and Guide on remediation of POPs polluted sites) were developed and published.

services), US$1.55 million from NATO, US$0.84 million from Milieukontakt (Dutch Environmental NGO), US$0.58 million from the Canadian CIDA POPs Trust Fund, US$0.37 million from other IDA projects (WB Energy II and RISP II), and US$6.35 million from the GEF Grant. Project costs appear to be higher than the baseline, but many of the Projects' outputs were scaled up as a consequence of savings early in the Project. For example, savings were redirected toward further soil excavation at Vulcanesti beyond the revised 350 tons (in conjunction with Moldelectrica). Thus, Project results were achieved, or exceeded, with relatively similar resources – and the Project can be considered efficient.

The cost of reducing one ton of POPs was approximately US$4,183. Although this measure is broad and includes all of Component 1 costs (repackaging, inventorying, transport, and incineration costs), when compared to average incineration costs (US$1,000-1,500/ton), it appears to be a cost-effective overall result.

3.4 Justification of Overall Outcome Rating

Rating: Satisfactory

The PDO and GEO remain highly relevant for local and global environmental protection and in meeting the requirements of international conventions, including the Stockholm Convention. The PDO was achieved, and surpassed in the case of obsolete pesticides, and the GEO was achieved through strengthening the regulatory and institutional arrangements for the long term control of POPs and other toxic substances. Overall project costs were lower than anticipated and results were achieved in a cost-effective manner.

In the Project's final ISR, the Project GEO was rated *satisfactory* according to the last implementation mission, but *moderately satisfactory* according to the GEO at project closing on December 31, 2010 (see C3 in Data Sheet). The Bank submitted this last ISR for management approval on December 21, 2010 and it was cleared through management by December 23, 2010. Unfortunately, the system takes 10 days to post ratings, which occurred on January 2, 2011, past the Project closing date of December 31, 2010. Thus the rating difference was system-driven and not reflective of the true status of the Project GEO.

3.5 Overarching Themes, Other Outcomes and Impacts

(a) Poverty Impacts, Gender Aspects, and Social Development

Not applicable.

(b) Institutional Change/Strengthening

The Project built and strengthened capacity at several levels. First, capacity was strengthened at the MOE in developing regulation and legislation that conforms to the reporting requirements of the Stockholm Convention as well as harmonizing chemical and waste management law with other EU countries. Second, the logistics of hazardous waste disposal has been internalized and the experience can be drawn upon for future operations (important for remaining stocks). Third, support to the Hydrometeorological Service for POPs detection (both training and equipment) better enables authorities to test and monitor toxic substances in different media (important for ongoing PCB inventorying). Fourth, public awareness rose through the continuation of media campaigns on the hazards of POPs, especially among those with a high risk of POPs exposure

such as farmers, industry employees and staff of Moldelectrica (power authority). The Project also set up a website to be used for subsequent projects (www.moldovapops.md).

(c) Other Unintended Outcomes and Impacts

During the 5th Conference of Parties of the Stockholm Convention (April 25-29, 2011) in Geneva, implementation results over the past ten years were evaluated with the goal to set up objectives for the next period. At this event, Moldova's implementation performance was highly commended. The Republic of Moldova was able to achieve significant results in this field and hence won two awards: the POPs Star Award for the implementation of the Convention and the Award for the elimination of PCBs (2011 PCB Elimination Network (PEN) Award). See http://chm.pops.int/Implementation/PCBs/PCBsEliminationNetworkPEN/2011PENAwards/tabid/1460/language/en-US/Default.aspx.

3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops

Several national and regional workshops were conducted during the Project – as part of the stakeholder consultation process and raising public awareness (see Annex 2 for details). A final project completion conference was held on December 10, 2010, with local and international participation. Results from the Project were presented and stimulated much outside replication interest. National interest remained high in the context of Moldova's environmental pollution control agenda and that more targeted support is needed to continue clean up and management of remaining stocks.

4. Assessment of Risk to Development Outcome

Rating: Moderate

Project outcomes are likely to be sustainable given the near completion of regulatory enactments. The primary risk hindering implementation was mostly internal to the MOE or political (with three elections over an 18 month period) leading to slow progress in drafting regulations. With the bulk of these activities now complete – the MOE will now focus on staffing the new institutional agency dedicated to chemicals management (anticipated by 2013, after a legal framework is established). Internal support for this was confirmed with the Minister of Environment. As stated in Section 2.5, there is also significant interest (and obligation) to address remaining obsolete pesticide stockpiles, and with the PCB inventory nearing completion disposal operations can target relatively few sites. The State Hydrometeorological Service continues to test oil samples for PCB content with over 33,500 samples completed (or full national coverage for PCB-containing equipment), but State budget resources are required for a continued and uninterrupted supply of reagents for labs.

5. Assessment of Bank and Borrower Performance

5.1 Bank

(a) Bank Performance in Ensuring Quality at Entry

Rating: Satisfactory

The Bank identified an area of support that was and remains relevant to the Moldovan environment, public health, as well as with the global commons (Stockholm Convention on POPs). Project activities targeted highly priority areas identified in the NIP, and complemented

ongoing clean-up activities by NATO (obsolete pesticides). Outcomes (supported by a design) struck an appropriate balance among three key areas: (i) clean-up/ remediation, (ii) improving institutional readiness and compliance with EU standards, and (iii) public consultation and awareness building.

The Bank properly identified regulatory reform as a significant risk at the outset of the Project, and emphasized an early start (2005) would help mitigate some of the concern about slow implementation. Unforeseen political instability and poor internal communications in the MOE ultimately resulted in a Project downgrade to moderately unsatisfactory, not only from slow reform, but also due to the inter-linkages between Components 2 and 3. The Bank may have set more modest expectations in terms of reform, perhaps stopping short of actual legislative enactment.

(b) Quality of Supervision
(*including of fiduciary and safeguards policies*)
Rating: Satisfactory

The Bank closely supervised Project implementation through semi-annual missions, fiduciary review and maintained a constructive dialogue between the PMT, the MOE and other stakeholders. Issues raised were addressed in a timely manner and were candidly reported in official documentation. For example, during the MTR the Bank specifically identified the substantial problem areas within Component 2 activities, suggested ways the MOE could resolve issues including a greater allocation of staff to tasks and worked with the PMT to revise the implementation schedule. The component was not 100% achieved by Project closing, but still led to the eventual outcome of a modern regulatory framework for chemicals and waste management.

The Bank maintained focus on the fulfillment of Project objectives. Since the Project involved the disposal of hazardous materials, constant supervision of safeguard compliance and worker safety was also necessary. No accidents were reported during the entire Project period. The Bank revised targets and developed alternative strategies in light of new information that could only be distilled upon site remediation. For example, site excavations at Vulcanesti revealed much larger contamination than was estimated (more than 3,000 tons of PCB soil instead of 50 tons) and the Bank quickly worked with the PMT to develop an alternative strategy using the knowledge gained from the coffer-dam pilots supported by the Canadian POPs Trust Fund (see Section 1.6).

(c) Justification of Rating for Overall Bank Performance
Rating: Satisfactory

World Bank support to the Government of Moldova in preparing and implementing the Project is rated as satisfactory largely due to its relative responsiveness to issues and adaptation to unpredictable circumstances. Closer attention to the arrangement of Component 2 activities within the MOE may have mitigated some of the delay, but ultimately one can only adjust to the political circumstances one faces.

5.2 Borrower
(a) Government Performance
Rating: Satisfactory

The Government strongly supported the Project and its objectives – many of which were aligned with the Stockholm Convention. For example, the National Coordinating Committee (NCC) which previously oversaw NIP development was made available for Project implementation. As

the project progressed, POPs issues were also elevated to higher priority in the National Development Plan 2008-2011. Operational activities also benefitted from good inter-agency coordination. The safe disposal of obsolete pesticides was a coordinated effort between MOE (State Ecological Inspectorate), MAFI (State Plant Protection Inspection), Ministry of Health, Department of Civil Protection, the Ministry of Defense and local rayon authorities. Counterpart funding was received in a timely manner (by the MTR), with a total of US$1.14 million in cash from the central budget, and the MOE allocating a further US$0.44 million from the National Ecological Fund (NEF). The Government also provided a substantial in-kind contribution by scaling up PCB oil sampling in the rest of the country (an additional 20,000 samples taken) and significant Project savings through VAT exemption (20% of goods and services).

(b) Implementing Agency or Agencies Performance
Rating: Satisfactory

The Ministry of Ecology and Natural Resources (later Ministry of Environment), as the main implementing agency, remained committed to the Project and provided satisfactory support to the PMT on daily issues and in resolving problems. Some delays were experienced due to governmental changes resulting in three different Ministers of Environment over the life of the project and as a consequence of elections some reshuffling in the NCC. Each change required time to become familiar with the Project, its objectives and counterpart commitments. Most critical however was the initial lack of understanding between the MOE and its consultant in charge of Component 2 activities which led to delays jeopardizing the Project from meeting its PDO and GEO – resulting in a Project downgrade to moderately unsatisfactory. However, clarifications and a renewed commitment in the final year of implementation led to draft regulations, laws and legislation.

Counterbalancing this shortfall, the PMT was very effective in its fiduciary and monitoring role as demonstrated by the success in meeting obsolete pesticide and PCB destruction targets (and exceeding them in some cases) within budget and without any major issues. The PMT should also be commended for their ability in attracting new co-financing through a *Canadian Grant for the Remediation of POP Pesticide Polluted Areas and Clean-Up of PCB Contaminated Oil in Power Equipment.* A significant determinant of the PMT's success was their previous experience and involvement in the NIP.

(c) Justification of Rating for Overall Borrower Performance
Rating: Satisfactory

Overall borrower performance is rated as satisfactory taking into account the Government's commitment to achieving the PDO and GEO, which is aligned with requirements under the Stockholm Convention. Implementation of nation-wide PCB inventorying was recognized by the Secretariat of the Stockholm Convention who awarded the Project with the *2011 PCB Elimination Network (PEN) award.* Despite the partial completion of some activities under Component 2, actions taken by the MOE and the superior performance of the PMT justify this rating.

6. Lessons Learned

Project experience highlighted the following importance factors for successful and timely implementation:

a) *Adaptation to local conditions*: Complex clean-up operations inherently involve a certain amount of risk or uncertainty, especially in situations where data are scarce. Maintaining a robust set of alternatives/ remediation options catering to different situations will help minimize the cost of surprise. The Project was able to benefit from cofferdam technology being piloted simultaneously at implementation for the temporary remediation of 3,075 tons of PCB-contaminated soil.

b) *Promoting a comprehensive approach to POPs*: In relatively small countries like Moldova it is more productive to apply a comprehensive approach to POPs management including: cleanup; inventorying and monitoring; policy, regulatory and institutional issues; capacity building and technical strengthening; and public awareness activities. All of these contributed to Moldova's ability in meeting requirements under the Stockholm Convention.

c) *Institutionalizing project experience*: Significant capacity was built during the development of the National Implementation Plan (NIP) for POPs – and which the GEF wisely continues to sponsor in countries preparing POPs projects. By maintaining the original composition of the PMT from the NIP's preparation, and capitalizing on the information collected, the Project benefitted from this tremendously.

d) *Realistic expectations in new areas of regulation*: Projects in countries that lack key pieces of legislation or embark into new areas currently not covered by existing regulation should set realistic objectives in terms of reform. Projects that span across electoral dates should take this into consideration. Also, it is important to be cognizant of linkages between project components and whether the failure of one will jeopardize others.

e) *Local stakeholder involvement remains a key determinant for success*: Local stakeholder involvement was necessary for receiving feedback on local site conditions and safety issues.

f) *Strong commitment of national and local stakeholders on POPs agenda as a precondition to project successful implementation*: The GoM and local Councils were strongly committed and provided relevant resources for the consolidation (and ultimate elimination) of obsolete pesticides. Once the Project identified complementary financial resources it was relatively easy to go ahead with implementation as counterpart commitment and readiness were already present.

7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners

(a) Borrower/implementing agencies

The borrower's contribution to the ICR was shared with the World Bank on March 3, 2011 and is reproduced in Annex 7. It provides a summary of Project experience with important assessments of the relationships and implementing arrangements that both aided and hindered implementation. Chief among these are the lessons learned that are reflected in the previous section.

The Ministry of Environment has examined the draft Implementation Completion Report prepared by the Bank team and considers that it reflects fairly large project results in accordance with the tasks initially established. The results mentioned and conclusions presented demonstrate that the project has achieved its objectives. More specifically, the Government's position as a beneficiary of the project is reflected in Annex 7.

(b) Cofinanciers

Milieukontakt Oost-Europa – Dutch environmental NGO (since 2010 – Milieukontakt International) worked in cooperation with the POPs Project team from the beginning. Communications were ongoing during the implementation period of Milieukontakt's project on planning, coordination activities, as well as informing stakeholders. Milieukontakt's experience was shared and presented during events conducted by the Project. Milieukontakt's joint agreements with the Project were fulfilled and support was provided if needed or requested. The Project staff was cooperative, open to discussion and willing to find solutions in different situations.

(c) Other partners and stakeholders
(e.g. NGOs/private sector/civil society)

Not applicable.

Annex 1. Project Costs and Financing

(a) Project Cost by Component (in USD Million equivalent)

Components	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions) *	Percentage of Appraisal
Management & Destruction of POPs	7.92	9.33	118
Strengthening the Regulatory Framework & Capacity Building for POPs Management	2.23	2.59	116
Institution Strengthening and Project Management Support	1.98	1.49	75
Total Baseline Cost	**12.13**	**13.41**	**111**
Physical Contingencies	0.24		
Price Contingencies	0.24		
Total Project Costs	**12.61**	**13.41**	**106**
Project Preparation Facility (PPF)	0.00		
Front-end fee IBRD	0.00		
Total Financing Required	**12.61**	**13.41**	**106**

* - Includes both in-kind contributions from the Government of Moldova and the Canadian CIDA Trust Fund for POPs.

(b) Financing

Source of Funds	Type of Cofinancing	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
Borrower (plus contributions from National Ecological Fund and in-kind transfers)	Direct	3.42	3.72	108.7
Global Environment Facility (TF055875)	Co-finance	6.35	6.35	100.0
NATO	Parallel co-finance	1.60	1.55	96.9
Dutch - Milieukontakt Oost-Europe (NGO)	Parallel co-finance	0.93	0.84	90.0
IDA (Energy II, RISP II)	Parallel co-finance	0.30	0.37	123.3
Canadian CIDA Trust Fund (TF090384)	Co-finance	-	0.58 [1]	-
TOTAL		12.61	13.41	106.4

1 - A total of CAN$646,250 was received from the Canadian CIDA Trust Fund for POPs, of which CAD$616,426 (US$581,577) was disbursed. The remainder was refunded back to the Canadian Trust Fund.

Annex 2. Outputs by Component

Component 1. Management and Destruction of POPS

(i) ***Sub-component 1.1. Destruction of Stockpiles of POPs Containing and Contaminated Obsolete Pesticides***. This sub-component financed the repackaging, transport and incineration of 1,293 tons of stockpiled obsolete pesticides from 13 warehouses in the 11 rayons of Telenesti, Briceni, Hincesti, Cimislia, Floresti, Riscani, Straseni, Stefan-Voda, Nisporeni, Soldanesti and Vulcanesti. NATO and Milieukontakt Oost-Europe (Dutch environmental NGO) were co-financiers. Within the NATO Project the Ministry of Defense trained military's staff consolidated stockpiled obsolete pesticides in 37 central warehouses across more than 350 sites in the country. In 16 warehouses stockpiled obsolete pesticides were packed in UN-approved drums and ready for final disposal/incineration stage. The total NATO Project cost for repackaging of OP waste was in amount of 850,000 Euro. This budget was used for purchasing packing materials, cost of services and logistics costs. Under sub-component 1.1 Milieukontakt Oost-Europe was responsible for inventory, collection, repackaging and storage of obsolete pesticides from Hincesti rayon and transported by an international company for final disposal in France within the GEF financed project. Milieukontakt Oost-Europe used specialized military staff trained in repackaging under the supervision of an international consultant experienced in the management of hazardous waste. This experience has been considered further the Ministry of Defense in continuing works of centralization of OP waste from other districts. Additional to the budget for inventory and repackaging of OP waste from Hincesti rayon, Milieukontakt Oost-Europe also tested clean-up technologies in one contaminated site in Hincesti rayon which cost 15,000 Euro.

The Project's long-term catalytic response:

In the Framework of Development Cooperation between the Czech Republic and the Republic of Moldova, in February 2011 the Czech Development Agency initiated a project on the disposal of POPs containing obsolete pesticides. On May 4, 2011 the Memorandum of Understanding between Czech Development Agency and Ministry of Environment of Moldova concerning the implementation of the project "Remediation of Environmental Burdens Caused by Pesticides in Moldova" was signed. The agreement provides a grant of 500,000 Euro for the removal of approximately 200 tons of OPs from four districts of Moldova. The works will be carried out in the period of June 2011 - May 2012.

Also, in order to expedite OP destruction, the Ministry of Environment has expressed the willingness to co-finance with Euro 500,000 from the National Ecological Fund, in 2011-2012, the evacuation and destruction of OP stockpiles, within the project financed NATO countries and implemented by the Ministry of Defense. However, given the problems occurred in collecting the necessary funds for such works in the NATO project, the Ministry of Environment is considering the possibility to initiate in June-July 2011 their own project with Euro 500,000 from National Ecological Fund for the evacuation and destruction of 200-230 tones of pesticides. The works would be carried out in July 2011 - June 2012.

As a result, these two projects would address 400-450 tones of OP from 8-10 storages with higher risks.

In 2010 the Ministry of Environment has initiated the collection and disposal of chemical wastes from the pre-university institutions, allocating three million Moldovan Lei (approximately US$ 250,000) from the National Ecological Fund under the project "Collection, centralized storage and disposal of obsolete laboratory chemicals from the pre-university institutions in Moldova". On May 3, 2011 Ministry of Environment signed a contract with a German company for the collection and disposal of approximately 50 tons of obsolete chemicals and package in the next 10 months.

(ii) Sub-component 1.2. Management of PCBs and Destruction of Obsolete Capacitor Stockpiles

a. *Activity 1. Establishing an Inventory of PCB Containing or Contaminated Equipment*

The initial task of the project was the inventory of 6,400 units of equipment. This task was fully met. During the project implementation this task was extended to about 30,000 units of equipment (in order to cover all energy sector in the country), based on the additional funds allocated from National Ecological Fund and by the Canadian CIDA Trust Fund for POPs.

The country's four energy generating companies (CET-1, CET-2, CET-Nord, HES Costesti) completed inventorying and sampling and presented oils to the laboratory for testing. Sampling and inventory from consumers of electrical equipment was also completed. Three distribution companies and one transportation company (Union Fenosa, RED Nord, RED Nord-Vest and Moldelectrica,) continue the inventory with funding from sources mobilized by the Project (Canadian POPs Trust Fund and the National Ecological Fund) and are expected to be complete before the end of 2011. The total number of samples taken will reach 33,500.

Within the generation, transportation and distribution sectors, and large consumers the PCB inventory have been undertaken by the companies trained staff based on the provided equipment for sampling and screening of electrical oil sampled from the electrical equipment owned by companies from the energy sector (generation, transportation and distribution). In case of small consumers who own electrical equipment the PCB inventory process was organized by the Energy Inspectorate and three mobile units paid from the Canadian CIDA POPs Trust Fund and equipped with vehicles and sampling equipment procured part from National Ecological Fund and part from the CIDA POPs Trust Fund.

The PCB approach as well as 6,400 units of sampling equipment and one screening unit was procured from the GEF sources. Additional to this three more pieces of screening equipment and 28,000 sampling kits were procured through CIDA and the National Ecological Fund to ensure a national PCB inventory. One screening center is located within SE Moldelectrica and is the national company responsible for electricity transmission from the generation sector to distribution. The second and third are placed within the distribution sector (one covering RED Nord, RED Nord-Vest, CET-Nord, HES Costesti and one covering Red Union Fenosa) and the fourth are located in the State Hydrometeorological Service which is responsible for screening of electrical samples taken from consumers and other owners of electrical equipment.

All 'false-positive' samples (concentration of chlorine more than 50 ppm have been analyzed by a gas chromatograph-mass spectrometer (GC-MS) method in order to identify the exact content of PCB) have been processed by the State Hydrometeorological Service which was equipped with proper equipment purchased within the GEF financed project.

By December 2010, in total 25,193 pieces of electrical equipment were sampled and screen tested for Chlorine out of 32,770 declared units within the Energy and distribution sectors, including consumers. From the 25,193 screened – 2,280 samples indicated Chlorine levels of more than 50 ppm. From the 2,280 false positives, 1,177 were analyzed for content of PCB using the GC-MS method which indicated that in 181 samples the PCB level shown was over the limit of 50 ppm. The difference of 7,577 electrical units are to be sampled and screened during 2011 as long as for sampling purposes these transformers could be disconnected in line with a National Plan which is coordinated with all Moldovan authorities due to their usage in the Energy Sector (the majority are from the transmission sector owned by Moldelectrica).

b. *Activity 2. Destruction of a Stockpile of Obsolete Capacitors* The Project objective called for the destruction of 1,010 tons of PCB contaminated obsolete capacitors (17,300 from a number of selected sub-stations and some 2,000 from two burial pits at the Vulcanest substation), and; excavation and shipment for destruction of 50 tons of PCB contaminated soil. Activities under the sub-component commenced in October, 2006 and were fully completed by October, 2007. The activity resulted in a full removal of PCB contaminated capacitors from the project sites, although quantitatively below initial estimates, due to smaller de-facto quantities of capacitors at the sites. All in all, the sub-component effected the destruction of 937.5 tons of PCB contaminated capacitors (18,656 units), including 84.5 tons (1,759 capacitors) unearthed from four burial pits in Vulcanesti.

c. *Activity 3. Feasibility Study of Site Clean-up at Vulcanesti Substation* This activity was to finance a study to assess the technical, financial and environmental feasibility of different remediation approaches and recommend a least cost solution.

The original proposal was to unearth, transport and incinerate 50 tons of highly PCB contaminated soil. The feasibility study provided by the international consultant and upon excavation of capacitors from the 4 pits, the amount of contaminated soil was found to be higher - 350 tons. Therefore the international consultant recommended isolating the contaminated soil in a cofferdam. These works were completed by the international company, after excavating capacitors (two cofferdams). All expenses were covered by the Project.

In the summer of 2010, based on the project savings and other means allocated by Moldelectrica, further works were initiated and completed by December 2010 at Vulcanesti station, which consisted in the removal of contaminated soil layer below the capacitors (2,725 tons from 0.9 ha area), its isolation in two cofferdams, and a land cover with clean soil and planting trees. Together with the 350 tons from 2007, there is now 3,075 tons of PCB-contaminated soil in four cofferdams.

Component 2. Strengthening the Regulatory Framework and Capacity Building for POPs Management This component was to modernize current legislation specifically related to the Stockholm Convention and incorporate provisions for establishing a broader chemical safety approach in the country based on EU directives. Full transposition of all relevant EU legal acts was to be achieved.

(i) Sub-component 2.1: Modification of the Regulatory Framework for POPs Management This sub-component was to provide a legal basis for POPs chemical management under Stockholm Convention requirements and set-up an overall chemical safety system in Moldova according to the EU regulation and legislation related to handling of dangerous

chemical substances and hazardous waste. It was to develop an integrated system of POPs management through the following three activities:

a. *Activity 1. Assessment of Existing Legislation Regarding Compliance with EU Regulations* The Legal Gap Analysis Report summarized findings and recommendations for amendments to the existing legislation and/or new legislation – indicating the scope of such new provisions.

Most significant gaps

The review of the Moldova chemicals and waste legislation shows that no adequate general framework for chemicals management exists with many legal gaps regarding basic elements of chemical life-cycle legislation. The most important shortcomings are:

- No regulatory framework for POPs;
- Lack of classification and adequate packaging and labeling requirements for dangerous substances;
- Lack of regulatory framework to take decisions, e.g., registration, bans, restrictions;
- Gaps in basic aspects of waste management, e.g. absence of key definitions and principles and no legislation on specific waste streams or specific waste operations.

Furthermore the distribution of competences among different institutions is confusing and in some cases inadequate - nor is there any guarantee that all issues are adequately addressed. Moreover, there is no clear allocation of responsibilities on operators (importer, producer and holder). Finally no inter-ministerial coordination mechanism has been established to allow cooperation and exchange of information between the different institutions and bodies in charge of chemicals management implementation and enforcement. However, inter-ministerial coordination experience exists in pesticides and POPs.

Proposed changes in legislation

Develop a framework Law on Dangerous Chemicals and a Law on Hazardous Waste, with a view to increase consistency and simplification of the legal framework for hazardous chemicals and waste, including POPs management. It was to be supplemented by a limited number of Regulations (Governmental decisions). Some changes in existing instruments were also recommended.

The analysis and recommendations for legislative changes looked at how amendments to the existing Moldovan legislation and new primary legislation should be developed to:

- Ensure compliance with the POPs related requirements set out in the four international treaties to which Moldova is a Party; and
- Transpose those related EU requirements which are relevant and realistic in a Moldovan context in order to ensure implementation in practice.

By the end of November, 2007, the MOE and the consultant completed a gap analysis of pertinent national legislation in the run-up to the preparation of a Legal Development Plan. A table of concordance was prepared which put the analysis of Moldovan legislation in the context of international legal practices in the field of POPs. A participatory consultative process involving key stakeholders was organized to debate and finalize the Legal

Development Plan. A final version of the plan was presented and approved at the Project's National Coordination Committee (NCC) meeting on February 22, 2008.

b. *Activity 2. Assistance in Drafting of Relevant Regulations and Instructions* Outputs are summarized along with Activity 3 below.

c. *Activity 3. Development of Regulatory Mechanisms*

The Regulation on Polychlorinated Biphenyls was developed and approved by Government on February 02, 2009.

Three handbooks were developed and published:

1) Environmental Sound PCB Management in Electrical Equipment
2) Inventory and mapping of POPs contaminated sites; and
3) Guide on remediation of POPs polluted sites.

All other packages of draft legal and regulatory documents, completed by the four local consultants based on materials developed by the international consultant company, were submitted to the Ministry of Environment. This includes:

1) Draft Law on Chemicals;
2) Draft Law on Waste;
3) Draft Regulation on classification, labeling and packaging of substances and mixtures;
4) Draft Regulation of the Agency for Chemicals;
5) Amendments to the Law on Environmental Protection, with regard to POPs and other hazardous chemicals and chemical waste;
6) Concept of Strategy on waste management to reduce and/or eliminate emissions of dioxins and furans;
7) Draft Regulation on waste incineration;
8) Draft Instruction on issuing the permit for waste management activities;
9) Draft Instruction on management of chemicals warehouses;
10) Draft Instruction on inventory of polychlorinated biphenyls in dielectric oils from electrical equipment;
11) Draft Instruction on management of PCB contaminated electrical equipment and their wastes;
12) Proposals to improve national legal and regulatory framework in the management of pesticides, fertilizers and plant protection products.

(ii) Sub-component 2.2. Capacity Building This sub-component was to strengthen government and laboratory capacity through the following three activities:

a. *Activity 1. Strengthening of Inspectorates for Enforcement of POPs Regulations and Prevention of Further Accumulation of POPs Stockpiles* This activity increased the skills of 280 key inspectors in government agencies who will be dealing with the enforcement of regulations.

b. *Activity 2. Upgrading and Strengthening of Existing Laboratories for POPs Analysis* This activity upgraded the laboratories of the Hydrometeorological Service for POPs detection in different media. Other equipment was supported by NATO's "NATO Science for Peace:

Development of Modern Analytical Approaches for POPs Investigation Project." Over 100 items were purchased under the Project and below is a list of some of the major equipment:

The main laboratory equipment which have been procured within the POPs Project and delivered to SHS:

1. Gas chromatograph-mass spectrometer (GC-MS) and Gases for GC-MS, with electron capture detector (ECD), large volume injection, positive/negative chemical ionization option, capable to carry out comprehensive two dimensional gas chromatography, US$210,062.56;

2. Solvents, chemicals, standard analytes, glassware, methods and safety items EURO 28,783;

3. Sample preparation and general laboratory equipment and accessories (20 items) US$106,745;

4. Equipment for analysis of volatile compounds (VOCs) and processing of water, sediment, soil and air US$38,205;

5. Glassware and Miscellaneous Supplies Euro 9,614;

6. Reagents: MDL 271,595;

7. Sample handling equipment, Sample preparation equipment, Sample filtration and extraction equipment US$70,602.

c. *Activity 3. Prevention of Accumulation of New Stockpiles of Obsolete Pesticides* This activity promoted best practices in pest management in crop production, including integrated pest management (IPM). The project trained 110 farmers in IPM.

Component 3. Institution Strengthening and Project Management Support

(i) ***Sub-component 3.1. Institutional Strengthening*** This sub-component was to strengthen the MOE's capacity for POPs management and raise public awareness through the following 4 activities:

a. *Activity 1. POPs Information Management and Reporting System* The output is described together with Activity 2 below.

b. *Activity 2. POPs Monitoring Network*

A concept design of the POPs Information Management and Reporting System (POPs IM&RS) and monitoring Network was completed. It will capture information about POPs and contains relevant procedures for environmental management. The POPs monitoring network will also help develop an interlinked monitoring network for POPs across national laboratories and create a data management and exchange platform. The unified POPs information reporting and monitoring system, including for new POPs, will be used by relevant national authorities for further decision making on POPs' management. Taken in this context, the assignment will contribute to a better coordination and implementation of NIP,

will improve data management and will help MOE and other responsible national agencies including local authorities in POPs management.

c. *Activity 3. Identification of POPs Residuals and Mapping of Polluted Areas* This activity was to support a research effort by local institutes to identify, characterize and perform a risk assessment of these sites for decisions on future management options.The main output of this activity contains a POPs pesticides polluted sites database containing more than 1,600 objects and it is functional and available on the website: http://pops.mediu.gov.md.

This tool is used by the local authorities in monitoring of all POPs contaminated sites as well as helping them in taking the decisions on future management options.

d. *Activity 4. POPs Awareness and Educational Activities* Activities completed under this task included:

- An information, awareness and education campaign in the field of POPs in Moldova and organization of conferences and workshops at the international, national and local level;
- Implementation of an educational process for the target groups with higher exposure to POPs impact (women, children, farmers, employees of the energy sector etc);
- Assistance to MENR/MOE in strengthening of the Environmental Information Centre (CIM) in the field of POPs information;
- Implementation of a nation-wide public opinion survey aimed at evaluating current levels of POPs awareness and knowledge;
- Delivery of three regional POPs workshops with participation of 180 persons from the civil society, local public authorities, environmental and health organizations;
- Organization of the 9th International HCH and Pesticides Forum in Chisinau;
- Establishment of Initiative Groups in the Rayons where the project conducted repackaging of POPs pesticides: Stefan-Voda, Hîncesti, Cimislia, Orhei (Pelivan), Rîscani, Floresti, Soldanesti, Briceni, Comrat and Dubasari (Cosnita);
- Evaluation of the capacities and needs of the Center for Information Management of the MOE;
- Development and publication of 4 posters, 4 leaflets, and 5 calendars;
- Development of 2 training brochures (for women and farmers);
- Publication of articles (monthly) on POPs issues in the "Natura" Magazine (6500 copies);
- Development and broadcasting of 3 video and 3 audio spots on national TV and radio about the POPs agenda in Moldova;
- Handbook Environmental Sound PCB Management in Electrical Equipment, 120 pages including cover pages in the following format A4 format, color covers pages, Romanian version (100 copies);
- Handbook on mapping of POPs polluted sites, 120 pages including cover pages in the following format A4 format, color covers pages, Romanian version (200 copies);
- Guide on clean-up/remediation of POPs polluted sites, 50 pages including cover pages in the following format A5 format, and color covers pages, Romanian version (350 copies);
- POPs Office calendar for 2011 (300 copies, color, with three months layer);
- Calendar for 2011 (A3, selected picture, 2000 copies);
- POPs Office Agenda for 2011 (Eng, Rom, Rus, 200 ex);
- Book signs for children with POPs activities images (Rom, 3000 color copies);
- Final National Workshop on the POPs Project results;
- Development and upgrade of the Web site of the Project: www.moldovapops.md.

(ii) ***Sub-component 3.2. Project Management Support*** The PMT was fully operational before Project effectiveness and the staff composition remained unchanged throughout Project implementation. The PMT demonstrated effective technical leadership and efficient Project administration resulting in near full achievement of Project objectives.

Annex 3. Economic and Financial Analysis

An incremental cost analysis (ICA) was conducted at appraisal as per GEF requirements. This Annex reviews the ICA against Project implementation results.

Incremental Cost Analysis

a) ICA at Appraisal

The ICA compared the baseline scenario with the GEF-Alternative scenario. The baseline included a single activity of repackaging obsolete pesticides – an initiative that the Government had been pursuing at the time of appraisal through the MOD. Its anticipated cost was US$0.82 million. The EA confirmed substantial cross contamination of POPs and non-POPs hence the GEF-Alternative included re-packaging these contents in specialized containers.

Table 1. Incremental cost matrix as of Project Appraisal and Completion (US$ million)*

Component	At Appraisal				At Completion **			
	Baseline Cost	Incremental Cost		Total	Baseline Cost	Incremental Cost		Total
		GEF grant	Other			GEF grant	Other	
Destruction of Stockpiles of POPs containing and Contaminated Obsolete Pesticides	0.82	1.21	3.34	5.37	0.78	3.56	4.99	9.33
Management of PCBs and Destruction of Obsolete Capacitor Stockpiles	0	2.34	0.23	2.57				
Feasibility Study of Site Clean-up at Vulcanesti Substation	0	0.24	0.05	0.29				
Strengthening the Regulatory Framework and Capacity Building for POPs Management	0	1.27	1.05	2.32	0	1.76	0.83	2.59
Institution Strengthening	0	0.74	0.68	1.42	0	0.33	0.25	0.58
Project Management	0	0.55	0.09	0.64	0	0.70	0.22	0.91
Total	0.82	6.35	5.44	12.61	0.78	6.35	6.28	13.41

Source: PAD, Annex 15.

* Including physical and price contingencies.

** The first three activities comprise Component 1 costs and were summed.

The GEF-Alternative scenario, at an incremental cost of US$11.8 million of which the GEF would finance US$6.35 million, would support:

1) The repackaging, transport and destruction of 1,150 tons of POPs-containing obsolete pesticides held in 10 storage sites (of which the GEF would finance the destruction of about 500 tons);
2) Dismantle 17,300 obsolete capacitors and excavate 2,000 capacitors (about 1,060 tons) buried in two pits, package, transport and incinerate along with about 50 tons of highly polluted soil from the Vulcanesti substation;
3) Carry out a feasibility study to determine the least-cost method of decontaminating PCB-contaminated soil at the Vulcanesti substation;

4) Upgrade the regulatory system for POPs management and control as well as for other toxic substance according to the Stockholm Convention; inventory all PCB-contaminated equipment with the provision of test kits and upgrading laboratories for accurate analysis of PCBs;
5) Strengthen MOE capacity for monitoring and control of POPs with modern MIS capabilities linked to other government agencies, private and public enterprises and institutes and through the internet for public access; provide training in ministries and departments responsible for the monitoring and control of POPs; and
6) Project management through the PMT in the MOE to meet the fiduciary requirements of the GEF/ World Bank.

Assumptions on the precise amounts in the first two activities were based on surveillance during the EA and consolidation activities conducted by the MOD. Final targets were later refined after excavation and accurate weighing for transport and incineration.

b) ICA at Completion

Project results were achieved, and exceeded in some cases; with an incremental cost of US$12.63 million including the GEF Grant of US$6.35 million. From a cost-efficiency standpoint the Project can be rated highly satisfactory.

c) Cost-effectiveness Analysis

Although POPs destruction projects have more than a decade of history in implementation, cost comparisons are problematic due to vastly different transport, storage and incineration costs – especially across different POP substances. However what is more alarming is the lack of reporting using some measure of effectiveness such as cost/ton. In this Project, it is also a challenge to derive such a measure due to: 1) cross contamination of POP and non-POP pesticides, and 2) separating the PCB weight from the capacitor weight. Crudely speaking, the cost/ton of POPs eliminated was approximately US$4,183/ton (calculated as: (US$9.33 million for Component 1)/(1,293 tons of obsolete pesticides + 937.5 tons of PCB-containing capacitors). This cost includes repackaging, transport, and incineration (plus inventorying). While it is not possible to benchmark this result with other projects - prices for high temperature incineration of high-halogen solids (e.g. pesticides) using commercially available technologies average US$1,000-1500/metric ton.[2] If approximately one-quarter of total costs is for incineration – this appears to be cost-effective for a nation-wide program.

[2] Hartenstein, H-U. Incineration Technologies (Including Costs), World Bank Workshop Series: Issues on Waste Disposal Workshop 1 – Hazardous Wastes Washington D.C., 24 June 2004. Available at: http://siteresources.worldbank.org/INTPOPS/889500-1115715500217/20486126/Hartenstein_IncinerationTechs.pdf.

Annex 4. Bank Lending and Implementation Support/Supervision Processes

(a) Task Team members

Names	Title	Unit
Lending		
Elmas Arisoy	Lead Procurement Specialist	ECSO2
Arcadie Capcelea	Sr Environmental Spec.	ECSS3
Bogdan Constantin Constantinescu	Sr Financial Management Specialist	ECSO3
Valencia M. Copeland	Program Assistant	ECSSD
Ruxandra Maria Floroiu	Sr Environmental Engr.	ECSS3
Rita Klees	Sr Environmental Spec.	ENV
Zoe Kolovou	Lead Counsel	LEGOP
Supervision/ICR		
Anatol Gobjila	Senior Operations Officer	ECSS3
Irina Babich	Financial Management Specialist	ECSO3
Andrei Busuioc	Financial Management Specialist	ECCAT
Arcadie Capcelea	Sr Environmental Spec.	ECSS3
Natalia Cherevatova	Operations Analyst	SEGOM
Oxana Druta	E T Consultant	ECSO3
Ahmet Gokce	Consultant	ECSO2
Yingwei Wu	Senior Procurement Specialist	LCSPT
Kashmira Daruwalla	Senior Procurement Specialist	ECSO2
Elena Corman	Procurement Assistant	ECCMD
Craig Meisner	Environmental Economist	ECSS3

(b) Staff Time and Cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD Thousands (including travel and consultant costs)
Lending		
FY05	11.28	76.28
FY06	11.01	78.82
FY07	0.00	0.00
FY08	0.00	0.00
Total:	22.29	155.10
Supervision/ICR		
FY05	0.00	0.00
FY06	6.12	30.88
FY07	15.96	52.89
FY08	17.23	53.62
FY09	27.02	69.46
FY10	16.59	32.06
FY11	25.53	60.14

Total:	108.45	299.05

Annex 5. Beneficiary Survey Results

Not applicable.

Annex 6. Stakeholder Workshop Report and Results

The Project held several stakeholder workshops to strengthen project implementation and to report on the experience. Participation in other regional and international conferences and training events also acted to support Project implementation. Below is a summary of these events attended and/or sponsored:

1. Second Conference of the Parties to the Stockholm Convention, Geneva; May1-5, 2006;
2. Draft National Implementation Plan for the Stockholm Convention on POPs" Workshop (June 29, 2006, Kiev, Ukraine);
3. Workshop "Technologies for POPs destruction and instruments for their evaluation and selection" (Mahmudia, Tulcea, Romania, August 28-29, 2006), organized ICS UNIDO and ICIM Bucharest;
4. The Conference launching NATO/PpP-OSCE/ENVSEC Project on destruction of pesticides and other dangerous chemicals in Moldova, implemented by the Ministry of Defense (November 7, 2006);
5. Workshop "Presenting the National Implementation Plans of the Stockholm Convention on POPs of Belarus Republic for 2007-2010 and up to 2028";
6. Workshop "TAIEX Multi-Country Workshop on the Inventory, Collection, Safe storage and Disposal of Obsolete Pesticides in Central and Eastern European countries" (INFRA 2398); 29-30 March 2007, Sofia, Bulgaria;
7. Training workshop for young ecologists organized by "Glasul Tinerilor" Association, April 21, 2007;
8. Working event "FAO Code-known and unknown rules for pesticides use", Ternopol, Ukraine, April 23, 2007, organized by Sustainable Development and Ecological Education from Kiev;
9. Third Conference of the Parties to the Stockholm Convention, Dakar; April 24- May 4, 2007;
10. NATO advanced research workshop "Application of Phytotechnologies for Cleanup of Industrial, Agricultural and Wastewater Contamination" (June 4 - 6, 2007, Kamenetz- Podilsky, Ukraine);
11. WB Meeting "POPs Elimination and national capacity building in EECCA countries" (September 6, 2007, Washington DC);
12. 9th HCH and Pesticides Forum (September 20-22, 2007, Chisinau, Moldova);
13. 6th "Environment for Europe" Ministerial Conference (October10-12, 2007, Belgrade)
14. International Exhibition "MoldEco 2007" (October 24-28, 2007, MoldExpo, Chisinau, Moldova) and "MoldEco 2008" (October 22-26, 2007, MoldExpo, Chisinau, Moldova);
15. Round table "Import, export and transit of wastes; Illegal traffic of wastes" organized by National Agency for Environment Protection from Romania (June 5, 2008, Vaslui, Romania);
16. International Conference "Obsolete pesticides - a "burning" question", organized by Milieukontakt International and IHPA (September 26, 2008, Utrecht, The Netherlands);

17. Second Central and Eastern European Regional meeting on the Strategic Approach to International Chemicals Management (SAICM), and associated regional consultations on Stockholm and Rotterdam Convention and mercury issues (8-11 September 2008, Bucharest, Romania);
18. Seminar on exchange of experi[illegible] of Obsolete Pesticides High Risks Project in Ukraine, organized [illegible]nternational (November 11, 2008; Chisinau);
19. National Workshop "POPs and other hazardous chemicals management in Moldova: problems, solutions, perspectives" (December 2, 2008; Chisinau);
20. The 2nd Consultation meeting of the Regional BAT/BEP Forum for Central and Eastern Europe, Caucasus, and Central Asia (January 27-28, 2009; Bucharest, Romania);
21. The 10th International HCH and Pesticides Forum (6-10 September 2009, Brno, Czech Republic);
22. Inception Workshop within the GEF/FAO Regional Project "Capacity Building on Obsolete and POPs Pesticides in Eastern European, Caucasus and Central Asian (EECCA) countries" (Tirana, Albania, 22-24 September 2009);
23. Regional Training Workshop on PCBs and POPs wastes for the Central and Eastern European Region (Bratislava, Slovakia, 1-4 December 2009);
24. Workshop on Case Studies in the Sound Management of Chemicals, organized by the UNDESA, Secretariat of the Stockholm Convention and UNEP (Geneva, Switzerland 3-4 December 2009);
25. First Meeting of the Advisory Committee of PCBs elimination network (PEN), Geneva, 18-20 January 2010;
26. Mini Hearing on Obsolete Pesticides in Eastern European countries, Caucasus and Central Asia Countries, in the European Parliament (Brussels, 29 June 2010).

Annex 7. Summary of Borrower's ICR and/or Comments on Draft ICR

This Annex includes a) a summary of the Borrower's ICR, and b) Government of Moldova's comments on the draft ICR.

a) Summary of Borrower's ICR

1.1 Project Objectives

The *main development objective* of the project would be to protect the environment and human health by safely managing and disposing of stockpiles of POPs contaminated pesticides and PCBs.

The *global objective* of the project is to protect the environment and human health by safely managing and disposing of stockpiles of POPs contaminated pesticides and PCBs and strengthening the regulatory and institutional arrangements for 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 Moldova.

1.2 Project Components and Sub-components

The project consists of the following components:

Component 1 - Management and Destruction of POPs
- Sub-component 1.1. Destruction of Stockpiles of POPs Containing and Contaminated Obsolete Pesticides
- Sub-component 1.2. Management of PCBs and Destruction of Obsolete Capacitor Stockpiles

Component 2 - Development of a Regulatory Framework for PCB Management and Control
- Sub-component 2.1: Modification of the Regulatory Framework for POPs Management
- Sub-component 2.2: Capacity Building

Component 3 - Institution Strengthening and Project Management
- Sub-component 3.1.Institutional Strengthening
- Sub-component 3.2. Project Management Support

- ***Objectives and Expected Results***

To track the progress toward achieving the project development objective, the project had the following key expected results:

(i) Repackaging, transportation and final disposal of about 1150 tons of POPs contaminated obsolete pesticides held in 10 (of the total 37) storage sites in administrative districts throughout Moldova;
(ii) Dismantling of 17,300 obsolete capacitors and excavation of 2,000 capacitors buried in two pits, packing in closed containers, shipment and as well as up to 50 tons of highly polluted soil from Vulcanesti substation destruction (approximately 1060 tons of material);
(iii) Inventory, registration system, and national database for electrical equipment containing or contaminated with PCBs above a concentration of 50 ppm;
(iv) Strengthened institutional capacities for POPs sustainable management.

1.3 Organization and implementation within the Ministry of Environment, local government units and any other stakeholders involved in Project implementation.

The Ministry of Ecology and Natural Resources (MOE) is the central national environmental authority which has been designated as the Stockholm Convention competent authority and as such is responsible for coordinating the POPs related activities[3] among the following government bodies involved in chemical management issues: the Ministry of Health (MOH), the Ministry of Agriculture and Food Industry (MAFI), the Ministry of Economy and Trade, the Ministry of Internal Affairs and its subdivision, the Department for Emergency Situations, the Ministry of Defense, and the Customs Service. Local authorities have responsibilities for environmental protection and management in the limits of their territory. A National Coordination Committee (NCC) for the implementation of the Stockholm Convention, bringing together senior officials from the key ministries and leaded by the MOE, was established in July 2002 to provide overall guidance and coordination for POPs NIP development.

The MOE was designated as implementing agency for the project. Daily management of the project, including monitoring and evaluation of project implementation, financial management, procurement, audit, progress reporting, and dissemination of project results was carried out by the Project Management Team (PMT), created under MOE by Ordinance no. 79 from December 27, 2004 and amended by Ordinance 22 from March 22, 2006. During the reporting period the PMT implemented project activities in compliance with Operational Manual and actions to carry out measures stipulated in the minutes of NCC meeting and WB supervision missions. Other national and local government agencies involved in the project implementation are as follows: the National Coordination Committee for implementation of the Stockholm Convention; the POPs Convention Focal Point; the Ministry of Industry and Infrastructure; the Ministry of Economy and Trade; Moldelectrica; the Ministry of Agriculture and Food Industry; and the Ministry of Defense; the State Ecological Inspectorate; the State Hydrometeorological Service; the Department of Emergency Situations, the State Inspectorate for Plant Protection; local public administration; owners of electrical equipment; and environmental NGOs.

2. PROJECT DESIGN, IMPLEMENTATION AND IMPACT

2.1 Assessment of Project Design

The project was conceived and developed as a program of actions to achieve the tasks listed in the National Implementation Plan (NIP) of Stockholm Convention on POPs and to comply and enforce the national legal requirements and international obligations related to management of toxic and hazardous products and substances, especially persistent organic pollutants.

At the national level project activities supported implementation of the national development strategies, including the *Economic Growth and Poverty Reduction Strategy and National Development Strategy*, and provided many local benefits by reducing the impact of POPs on public health, the environment, and land degradation by preventing further soil pollution by various POPs.

Global benefits of the project are: (i) reduction of threats to biological diversity – the elimination

[3] Law Nr.40-XV from 19.02.2004 "Ratification of the Stockholm Convention by the Moldovan Parliament".

of POPs stockpiles and their sound management decreased both the global pollutant burden and possible impacts on wildlife, domestic animals and humans; and (ii) improved trans-boundary water quality by prevention of future contamination and threats to the quality of the global hydrological regime. It also contributed to the objectives of two other international environmental agreements – the Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and Their Disposal and the Rotterdam Convention on the Prior Informed Consent Procedures for Certain Hazardous Chemicals.

2.2 Main results achieved for each Project development objective (i.e., key performance indicators) and for each component/sub-component

The main results achieved for each Project development objective and for each component/sub-components are:

PDO	Outcome Indicators	Use of Outcome Information	Comments
The main *development objective* of the project would be to protect the environment and human health by safely managing and disposing of stockpiles of POPs contaminated pesticides and PCBs. The *global project objective* of the project is sustainable POPs Stockpiles management and strengthening of the regulatory and intuitional arrangements for 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 Moldova.	Reduced POPs environmental pollution and risks to human health by safely storing and disposing of stockpiles of POPs contaminated pesticides and PCBs. Destruction of 1,060 tons of PCB containing capacitors, and 1,150 tons of POPs containing and contaminated obsolete pesticides Modern regulatory system established within GRM for the management and control of POPs and other toxic and harmful chemicals and wastes for the protection of the environment and human health.	1. Demonstrate to the international community that Moldova meets its obligations under the Stockholm and other related conventions and protocols 2. Harmonize its policies and regulatory management systems for toxic chemicals and wastes with that of its neighbors in the EU.	Both PDO and GEF PO achieved. Currently Moldova has in place a modern POPs management system, harmonized with existing international policy and regulatory documents. The POPs risks to human health and the environment was significantly reduced.
Intermediate Results One per Component	**Results Indicators for Each Component**	**Use of Results Monitoring**	**Comments**
Component One:			
1. Repackaging and safe disposal of POPs contaminated pesticides.	1. Repackaging, transport and final destruction of 3,000 tons of POPs containing and contaminated obsolete pesticides held in 37 temporary storage sites in administrative districts throughout Moldova. 2. Dismantling of 17,300 obsolete capacitors and	1. Demonstration of safe packaging and labeling of toxic chemicals to international standards. Provide data on likely range of chemicals that were held in temporary storage for the eventual clean up of these sites. 2. As demonstration for	Under the component one all activities have been fully undertaken and successfully completed. The PCB inventory and data base to be completed by end of December 2010.

2. Packaging and safe disposal of obsolete capacitors containing PCBs.	excavation of 2,000 capacitors buried in two pits, packing in closed containers, shipment and destruction (approximately 1060 tons of capacitors) as well as up to 50 tons highly polluted soil from the Vulcanesti substation. 3. Inventory registration system and national database for electrical equipment containing or contaminated with PCBs above a concentration of 50 ppm.	other holders of obsolete capacitors and transformers containing PCBs and for their eventual safe disposal. Raise awareness of dangers of PCBs to human health and the environment and pave the way for the adoption of a modern system of toxic chemical management in the country.	
Component Two:			
Regulations requiring holders of PCB contaminated equipment to inventory their holdings and register them with the relevant regulatory body.	1. New, revised or supplemental national policies, regulations and guidelines issued on: (i) POPs contaminated site management issues; (ii) define responsibility for POPs contaminated sites; (iii) incorporate POPs monitoring and reporting; (iv) regulate assessment of new chemicals meeting POPs criteria; (v) promote BAT and BEP for new and existing sources; as well as (vi) specify requirements for modified materials, products and processes. 2. Development o f new regulatory mechanisms on various aspects of POPs management. 3. Training provided for (i) inspectors in enforcement and compliance with the POPs convention requirements; (ii) farmers on integrated pest management; (iii) technicians from Moldelectrica on PCBs management and disposal of obsolete PCBs 4. SEI, MOH, and Hydrometeorological laboratories upgraded and training provided for technicians in conducting POPs analyses.	1. The information will be used internationally for reporting under the Stockholm Convention, and nationally for tracking hazardous wastes and developing and resourcing management systems for their eventual safe disposal. 2. Developed Regulatory Mechanisms will be used as legal framework for implementation of Stockholm Convention. -Development of PCBs regulations - Development of POPs provisions in the field of Management of POPs stockpiles 3. Trained staff of State Ecological Inspectorate will implement in the practice accumulated knowledge in order to improve Moldovan capacity in the field of POPs monitoring network 4. Annually: Review if the pest management is implemented by the	The Moldovan Government approved PCB regulation in 2009 which is applied at the National Level. Other draft legal documents on POPs management have been developed are to be approved. Within the GEF Project a modern laboratory have been equipped with high resolution equipment which is used for monitoring and identification of POPs in environment components.

	5. Supply of PCBs screening kits for detection o f PCB levels in transformer oil	trained farmers 5. Upgraded Laboratory will apply international standards and methods in the field of POPs detection and analyses. 6. Annually: Update the National PCBs inventory. This database will document progress in the field of PCBs inventory.	
Component Three:			
Institution Strengthening	1. Training completed for the PMT staff in project management 2. Information management and reporting system in place 3. POPs Monitoring network created 4. POPs polluted areas digital map created 5. System in place for the evaluation and monitoring of project implementation 6. Specific monitoring strategies Developed 7. Workshops at the national and international level conducted 8. Public awareness activities including seminars, workshops, conference TV and radio programs conducted, POPs environmental information center strengthened	Consolidation of management of dangerous substances under one umbrella organization for more effective management and less duplication of effort and better reporting of results to the national government and international organizations under various conventions and protocols. Semi-annually and annually: PIU will report to the World Bank and MERN about project progress and implementation of the work plans Quarterly or semi-annually: Public awareness will be assessed by special tests and interviews in order to monitoring the rise of public information in the field of POPs	The Information management and reporting system has not been developed to due the lack of legal framework in place. At the same time it has been decided that this will be replaced with a National Concept of IMRS and further on the Ministry of Environment will promote this. The Public Awareness component was fully implemented.

Outcome Indicators	**Results**
Destruction of 2,210 tons of POPs containing and contaminated obsolete pesticides & PCBs	Completed

Results Indicators for Each Component	
Component One :	
1. Repackaging, transport and final destruction of 1,150 tons of POPs containing and contaminated obsolete pesticides held in 10 temporary storage sites in administrative districts throughout Moldova.	Completed
2. Repacking, transport, and final destruction of up to 1,060 tons of PCBs from capacitors (including up to 50 tons highly polluted soil from the Vulcanesti substation).	Completed. Additional remediation works at the Vulcanesti station are being carried out.
3. Inventory registration system and national database for electrical equipment containing or contaminated with PCBs above a concentration of 50 ppm.	Completed. The initial task of inventory was extended from 6,400 to about 33,500 units of equipment.
Component Two:	
1. New, revised or supplemental national policies, regulations and guidelines issued on: (i) POPs contaminated site management issues; (ii) define responsibility for POPs contaminated sites; (iii) incorporate POPs monitoring and reporting; (iv) regulate assessment of new chemicals meeting POPs criteria; (v) promote BAT and BEP for new and existing sources; as well as (vi) specify requirements for modified materials, products and processes.	Partially completed The Regulation on polychlorinated biphenyls was developed and approved by the Government in February 2009. Three handbooks (Environmental Sound PCB Management in Electrical Equipment, The inventory and mapping of POPs contaminated sites and Guide on remediation of POPs polluted sites) were developed and published. All other packages of drafts legal and regulatory documents, completed by the four local consultants based on materials developed by the international consultant and submitted to the Ministry of Environment. This includes: 1. Draft Law on Chemicals; 2. Draft Law on Waste 3. Draft Regulation on classification, labeling and packaging of substances and mixtures; 4. Draft Regulation of the Agency for Chemicals; 5. Amendments to the Law on Environmental Protection, with regard to POPs and other hazardous chemicals and chemical waste; 6. Concept of Strategy on waste management to reduce and/or eliminate emissions of dioxins and furans; 7. Draft Regulation on waste incineration; 8. Draft Instruction on issuing the permit for waste management activities; 9. Draft Instruction on management of chemicals warehouses; 10. Draft Instruction on inventory of polychlorinated biphenyls in dielectric oils from electrical equipment; 11. Draft Instruction on management of PCB contaminated electrical equipment and their wastes; 12. Proposals to improve national legal and regulatory framework in the management of pesticides, fertilizers and plant protection products.
2. New Regulatory Mechanisms on various aspects of the POPs management developed. - Number of laws amended/ number of provisions on POPs included in the existing legislation and number of developed new regulations and instructions developed.	
3. Number of inspectors trained in enforcement and compliance with the POPs convention requirements.	Partially completed. Inspectors were trained based on the draft legislation.
4. Number of farmers trained on Integrated Pest Management.	Partially completed. Inspectors were trained based on the draft legislation.

6. Number of technicians from Moldelectrica trained in PCBs management and disposal of obsolete PCBs stockpiles	Completed
7. Supply of PCBs screening kits for detection of PCBs level in the transformers oil from Energy sector	Completed. The initial task of inventory was extended from 6,400 to about 33,500 units of equipment.
Component Three:	
1. Training completed for the PMT staff in project management.	Completed
2. Information Management and Reporting system in place	Completed. The initial task was modified to developing the concept of MIS and RS
3. POPs Monitoring network created	Under implementation. The initial task was modified to developing the concept of a POPs Monitoring Network
4. POPs polluted areas digital map created	Partially completed. The POPs pesticides polluted sites database is functional. The PCB contaminated equipment database is being populated.
5. Evaluation and Monitoring of Project Implementation in place	Completed
6. Specific monitoring strategies developed	
7. National and international seminars, workshops and conferences, TV and Radio programs conducted	Completed
8. Books, brochures and leaflets published	Completed

2.3 Project Coordination and Management

- ***Responsibilities of Project Management Team (PMT)***

The *Project Management Team* carried out the usual project management functions of financial management, procurement, auditing, managing, monitoring and evaluating project implementation, and dissemination of project results.

- ***Relationship between PMT, national and international implementing agencies, local governments responsible for implementation of activities, and other stakeholders***

National Implementing Agency. MOE has been designated as the national implementing agency for the project. Its responsibilities included (1) assignment and supervision of project activities; (2) providing direction to the PMT; and (3) coordination with stakeholders, including GEF, donors, IAs, and relevant domestic ministries and agencies.

A *National Coordinating Committee*, with MOE (VE) as the lead agency, was established to provide overall guidance and coordination for the POPs National Implementation Plan development. The NCC provided overall guidance to: (i) review significant policies related to POPs; (ii) oversee implementation of the NIP; and (iii) act as steering committee for implementation of this GEF project. The NCC consists of representatives of the following agencies:

- Ministry of Environment and Natural Resources;
- Ministry of Finance;
- Ministry of Agriculture and Food Industry;
- Industry and Infrastructure (Ministry of Economy);
- Ministry of Health;

- Academy of Sciences;
- NGOs.

Inter-ministerial Group for the repackaging, collection and centralized storage of obsolete pesticides. This group was created based on Government Decision Nr.1543 dated on November 29, 2002. The Inter-ministerial Group is composed from the following agencies:

- Ministry of Defense;
- Ministry of Agriculture and Food Industry;
- Plant Protection Inspectorate;
- Ministry of Health and Social Protection;
- Department of Emergency Situation;
- State Ecological Inspectorate;
- Ministry of Ecology and Natural Resources.

The responsibilities of this group include: (1) coordination at the national level the activities concerning the repackaging, collection and centralized storage of the obsolete pesticides, (2) coordination at the international level for the support in the field of repackaging and final destruction of obsolete pesticides.

International Implementing Agency. The World Bank was invited as the international implementing agency for the project and responsible for supervising implementation of all project activities along the following lines:

a. Supervising overall project progress;
b. Carrying out supervision missions;
c. Helping Moldova set up an operating mechanism to allow effective and transparent implementation of the project;
d. Ensure that disbursements made to Moldova are based on agreed disbursement procedures;
e. Vetting the project financial management system to ensure compliance with international standards of accounting;
f. Ensuring procurement arrangements are carried out based on agreed procurement procedures;
g. Providing Moldova with the necessary policy, management and technical support; and
h. Reporting to GEF on the project progress.

3. CRITICAL ANALYSIS OF ACTIONS TAKEN BY THE WORLD BANK, GOVERNMENT AND TECHNICAL ASSISTANCE

3.1 Assessment of World Bank performance and Government's actions during preparation and implementation:

- ***Key decisions that facilitated Project implementation***

The project was preceded by the Project on capacity building activities in the sustainable management of POPs in Moldova through the implementation of provisions of the Stockholm Convention on POPs which was signed by the Government on 23 May 2001.

Once ratified the Stockholm Convention became binding, and thus on 20 October 2004 by Decision no. 1155 the Moldovan Government approved the National Implementation Plan under the Stockholm Convention in Moldova. Thus the project funded by the Global Environment

Facility through the World Bank focused on the priorities aimed at reducing the impact of POPs on the environment and human health.

Equally important was the awareness and perception of the problem at the national and local levels. A constructive cooperation was facilitated between local partners and in particular government institutions in the territory of the Ecological Inspectorate, the State Energy Inspectorate, Ministry of Defense, and Ministry of Agriculture as well as the civil society.

No less important was the establishment of an early stage a good cooperation with the World Bank and World Bank local office as an implementing agency of the Global Environment Fund. Advantages included greater transparency and better planning of project activities in terms of finance and procurement. Procurement and financial procedures of the World Bank played a crucial role in the safety and success of project implementation. This relationship fostered further cooperation in solving POPs issues with other international donors such as the Canadian POPs Trust Fund.

Implementation also benefitted from MENR's (MOE's) decision in 2004 to establish and maintain the Project Management Team – which continues to work until today. This unit was responsible for fiduciary activities of POPs projects and other projects funded by foreign donors, national public budget and funds. As this Team works under the MENR/MOE it was granted permanent technical assistance to the Ministry upon successful implementation of the GEF-financed project.

Contracting and the selection of qualified consultants both local and internationally facilitated the successful implementation by transferring knowledge to employees of institutions involved in project implementation.

- ***Counterpart funds timely availability***

Another important issue which facilitated project implementation was compliance and contribution of the Government and partners who agreed to support project implementation. Counterpart financing of US$ 1.14 million from the State Budget and US$ 0.36 million from the National Ecological Fund contributed to the project in meeting its objectives.

- ***Key decisions that hindered Project implementation***

In terms of decisions that negatively affected project implementation initial planning stage activities related to review/change the legal framework on POPs should have been grouped into a single consulting contract instead of smaller contracts and for specific assignments. Tissue was exacerbated by the inadequate cooperation of the Ministry of Environment's staff with hired consultants on revising and drafting the legal framework on POPs. Draft laws and regulations related to POPs failed to be passed through all the necessary procedures and started to be implemented as planned under project objectives. These activities are priorities for the Ministry of Environment in 2011-2012.

- ***Assessment of World Bank supervision***

As implementing agency of the Global Environment Fund in accordance with the Grant Agreement between the Moldovan Government and the World Bank, implementation progress was assessed every 6 months.

The Project Management Team prepared and submitted to the Bank for its review and approval, no later than March 31 and September 30 in each year of Project implementation (except on March 31, 2008), starting September 30, 2006, a bi-annual report reviewing the progress in Project implementation during the six (6) months preceding the report; monitoring indicators and containing measures proposed to ensure efficient implementation of the project and achievement of project objectives during the period. The bi-annual reports contained annual work plans, which were accepted by the Bank for the year following submission of the report; and following the submission and review of each bi-annual report, the PMT acts promptly and diligently to take any corrective action agreed with the Bank to remedy any shortcomings identified in project implementation.

All Bank mission reports have been discussed and disclosed to the Government and beneficiary in order to ensure that the Government will remedy those shortcomings identified in project implementation.

The cooperation during World Bank supervision missions and the Government were well prepared and culminated with an agreement with the Government on what should be done in order to solve those issues which were identified less adequate to project implementation.

Governmental changes and impact on Project monitoring and implementation

During project implementation from March 2006 - December 2010 the government reshuffled three times, including the Minister of Environment position three times. It is clearly recognized that these changes influenced project implementation progress since the National Project Coordinator is the Minister of Environment. Each incoming Minister needed time to examine and understand the purpose and objectives of the project and reforms that took place in Ministries partners in project implementation. For example, the fusion between the Ministry of Energy and Ministry of Economy led to changes in the NCC and its membership several times. Again, the constituency required additional time to assess and understand the purpose and objectives of the project. The latest changes of government influenced project progress in a particular way such that draft laws and regulations on amendments to the legislative framework on POPs was unable to be promoted on grounds that political instability in the past two years has led to early parliamentary elections and respectively the change of government.

- ***Monitoring by Ministry of Environment and PMT***

For the purposes of the project, the Ministry of Environment according to the Grant Agreement was responsible for overall project implementation and ensured coordination and cooperation with the appropriate departments of involved ministries and other public entities involved in the project.

Monitoring was provided through the MOE National Focal Point on the Stockholm Convention as long the project was implemented based on Convention grounds. This work was organized through weekly or monthly meetings depending on the issue to be resolved. Global problems were discussed and decided at meetings of the National Steering Committee. Fiduciary activities were conducted by PMT thus monitoring of financial and procurement activities were made quarterly by Project Management Team in accordance with Grant Agreement requirements.

- ***Key lessons learned***

One of the lessons learned is keeping the Project Management Team in the original composition significantly contributed to the success of this project and that this team remains involved in the implementation of other investment environment projects such as SAICM Project CIDA POPs Project and five national projects. Similar experience has been shown in other World Bank projects. Following the World Bank's procurement procedures ensure a better transparency, competition and quality of services, goods and technical services.

The involvement of Local Stakeholders in project implementation is considered good practice and in this case all partners had been consulted and involved in crucial decisions which resulted in project success. As a result the Moldovan experience has been considered and taken as an example by Ukrainian and Byelorussian governments which follow similar approaches as those applied in Moldova.

3.2 Assessment of the efficiency and quality of the relationship between the World Bank and Government during Project implementation

Successful completion of the GEF/WB Persistent Organic Pollutants (POPs) Stockpiles Management and Destruction project is the result of efficient joint communication and understanding of the problems which were to be solved and how to achieve the project's objective and scope between the World Bank and Government. High professionalism of the World Bank, understanding of political and economic situation in Moldova, competence of local partners and PMT staff has contributed to successful project implementation. Also a key factor was that the Project Task Team Leader was located in the World Bank country office in Moldova; this facilitated the communication process between the World Bank and Government as well as the resolution of different technical problems.

3.3 Assessment of the performance of various organizations, firms and technical assistance during Project implementation (costs vs benefits)

Companies' performance depended largely on the technical capabilities and experience in activities related to contracts for consulting services noting that most of international companies have resorted to hiring consultants who contributed to a better understanding of the problems of specific environmental issues along as well as national ones.

The same can be said for technical services relating to packing, transportation and destruction of stockpiles of POPs where the selected international company offered the lowest price (about U.S. $1 million difference over the second ranked company) but subsequently claimed this difference during implementation. This created artificial problem, which were ultimately resolved since WB contract procedures were strictly complied and that the company honor its contract obligations. Ultimately the contract value should not affect the quality of services (advisory services and technical) as long as contract terms are not met and that the customer is aware of the expectations and anticipated results. From these considerations the contracts' management should be a constant beneficiary's concern and that close monitoring of local and international companies who have an implicit incentive to minimize costs.

b) Government of Moldova comments on the draft ICR.

MINISTERUL MEDIULUI
AL REPUBLICII MOLDOVA

MINISTRY OF ENVIRONMENT
OF THE REPUBLIC OF MOLDOVA

Our Ref: 03-01/264 **Date**: 17 June 2011

Subject: *Moldova Persistent Organic Pollutants (POPs) Stockpiles Management and Destruction GEF Project Project Completion Report*

Dear Mr. Seck,

With regard to the GEF Persistent Organic Pollutants (POPs) Stockpiles Management and Destruction Project closed on December 31, 2010, the Ministry of Environment has examined the draft Implementation Completion Report (ICR) prepared by the Bank team and considers that it reflects fairly large project results in accordance with the tasks initially established. The results mentioned and conclusions presented demonstrate that the project has achieved its objectives. More specifically, the Government's position as a project beneficiary is reflected in Annex 7 of the document. Some corrections of facts and figures to reflect more accurately the situation were made in the document.

At the same time, considering the World Bank's policy to make Implementation Completion Reports available to the public, the Borrower found that the ICR does not contain any information or data of a confidential or sensitive nature that could not be made public.

Using this opportunity, I would like to express to the World Bank, the Global Environment Facility, the Canadian International Development Agency and other donors, the Moldovan Government sincere gratitude for their support to this and other projects in reducing and gradual elimination the impact of persistent organic pollutants and other hazardous chemicals and wastes on the environment and population. The results obtained in the last 10 years place Moldova at the forefront among the countries of the region in the progress in reducing the impact of POPs, and achieving the obligations under the Stockholm Convention.

I would also like to express sincere thanks to the World Bank team which by perseverance and daily work together with the local team made this project to be one of success.

We hope to continue a fruitful collaboration with the World Bank to ensure a healthy environment for today and future generations.

Sincerely,

Gheorghe SALARU
Minister

To: Mr. Abdoulaye SECK,
Country Manager for Moldova
Europe and Central Asia
World Bank

9, Cosmonautilor str., Chisinau MD 2005, Republic of Moldova
Tel (+ 373 22) 20 45 07 Fax (+ 373 22) 22 68 58 E-mail: egreta@mediu.gov.md

Annex 8. Comments of Cofinanciers and Other Partners/Stakeholders

See Section 7 (b).

Annex 9. List of Supporting Documents

World Bank documentation:

- Project Concept Note, November, 2004
- Quality Enhancement Review, October, 2005
- Aide-Memoires (2004-2011)
- Back-to-office reports and letters to Government (2004-2011)
- Project Appraisal Document. (Report No. 33862-MD)
- Signed Grant Agreement & Supplemental Letter No. 2, February 9, 2006
- Country Assistance Strategy FY05-08, November 12, 2004. (Report No. 28556-MD)
- Country Assistance Strategy FY09-12, December 23, 2008. (Report No. 46822-MD)
- Implementation Status Reports (2004-2011)
- Project Procurement Post Reviews, May 28, 2010 and November 24, 2010
- Project financial audits (2006-2011)

Other project-related documents:

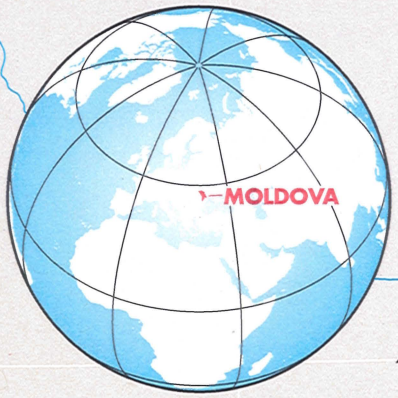
- Ministry of Industry and Trade: National Development Plan 2008-2011 Strategy Paper
- Ministry of Ecology and Natural Resources: Environmental Impact Assessment and Environmental Management Plan, Center for Strategic Environmental Studies, June 30, 2005

Background papers and workshops at preparation:

- National Implementation Plan (NIP), by the Project Manager, the Chief Technical Advisor and the Project Assistant served as focal point for the development of the NIP, (April 2004)
- Inception Workshop, by NCC, PMU and NFP on December 3, 2002
- Assessment of the Legal Framework on Persistent Organic Pollutants Management Report, *by Iurie Tugui, (April 2003)*
- Assessment of the current country's capacity to the Best Available Techniques (BAT) and the Best Environmental Practices (BEP) for POPs source categories Report, *by Ala Novac, (April 2003)*
- Evaluation report of existing control infi-astructure and its capacity to correspond to Stockholm Convention in Moldova, *by Constantin Mogoreanu, (April 2003)*
- Report on National Capacities and Institutions for Administrations of Persistent Organic Pollutants (POPs) in the Republic of Moldova, *by Victor Bujac, (April 2003)*
- Assessment of the POP'S Research and Development Capacity, *by Dr. Fliur Macaev, (April 2003)*
- National Monitoring, Research and Development Capacity Report, *by Gavril Gilca, (April 2003)*
- Report on Assessment o f the POPs Statistics Capacity in the Republic of Moldova, *by Dr. Jana Tafi, (April 2003)*
- Assessment of the relationship between the Stockholm Convention and other international agreements on chemicals, *by Ina Coseru, (May 2003)*
- Institutional Framework Related to Persistent Organic Pollutants (POPs) Report, *by Andrei Barannik, (May 2003)*
- Report - Social and Economic Assessment of POP'S Reduction and Elimination, *by Tatiana Belous, (June 2003)*

- Assessment of the POPs impacts on the Environmental Factors (water, air, soil, animals, vegetation), *by Vladimir Garaba, (June 2003)*
- Rapid Social and Economic Assessment (RSEA) Related to Persistent Organic Pollutants (POPs), *by Andrei Barannik, (June 2003)*
- Initial POPs Inventory Report, *by Adrain Tertea, (July 2003)*
- Inventory of potential Polychlorinated Biphenyl's-Containing electrical equipment in the Republic of Moldova, *by Dr. Valentin Arion, (July 2003)*
- National Inventory of Persistent Organic Pollutants of the Republic of Moldova, *by Dr. Valentin Ciubotaru, (July 2003)*
- Assessment of National Inventory of Persistent Organic Pollutants of the Republic of Moldova, *by Katarina Magulova, (August 2003)*
- Report on Priority Setting and Determination of Objectives for NIP Development *by Arion Valentin, Bivol Elena, Gladci Viorica, Melian Ruslan, Mosanu Valeriu, Opopol Nicolae, Romanciuc Lidia, Tarita Anatol Viktor Simoncic (October 2003)*
- National Implementation Plan elaboration, *by Valentin Arion, Andrei Barannik, Viktor Somincic, Ion Comendant, Ruslan Melian, Valeriu Mosanu, Nicolae Opopol, Constantin Mogoreanu, (April 2004)*
- Risk Assessment, Sectoral Environmental Strategy, and National Strategy for Economic Growth and Poverty Reduction, *by the Government of the Republic of Moldova, (February 2004)*
- National report on Children's Health and Environment, "The Future for Our Children," *by Ministry of Health and Ministry of Ecology and Natural Resources (May 2004)*
- Communication Strategy for the Stockholm Convention, *by Alecu Renita, Valentin Ciubotaru, Victoria Resetnic, Victor Strcitild, Elena Bivol (April 2004)*
- Strategy for Elimination of POPS in Moldova, *by the Ministry of Ecology and Natural Resources (September 2004)*
- National Workshop "Joint Actions for the Implementation of the Stockholm Convention on Persistent Organic Pollutants in the Republic of Moldova" October 29, 2004
- Workshop on Project Activities Implementation and Coordination, February 14, 2005
- Workshop on Public Consultation within preparation of an Environmental Impact Assessment, February 18, 2005.

IBRD 33448R



MOLDOVA

- SELECTED CITIES AND TOWNS
- AUTONOMOUS TERRITORIAL UNIT CAPITALS
- RAIONS OR MUNICIPALITIES CAPITALS*
- NATIONAL CAPITAL
- RIVERS
- MAIN ROADS
- RAILROADS
- AUTONOMOUS TERRITORIAL UNIT BOUNDARIES
- RAIONS OR MUNICIPALITIES BOUNDARIES
- INTERNATIONAL BOUNDARIES

Names of the raions or municipalities are identical to their capitals.

MAY 2007