Integrated Persistent Organic Pollutants (POPs) Management Project (IPOPs Project)

Government of the Philippines
Department of Environment and Natural Resources

World Bank Global Environment Facility (WB-GEF)
GEF Grant No. P106885
Project Preparation Grant Number TF092354

ENVIRONMENTAL AND SOCIAL ASSESSMENT (ESA)
Draft Final

14 September 2009

TABLE OF CONTENTS

LIST OF TABLES

Page

ACRONYMS

AI	Additional Information
AO	Administrative Order
APO	Agricultural Productivity Office
BAS	Bureau of Agriculture Statistics
BAT	Best Available Technology
BEP	Best Environmental Practice
BP	Bank Procedure
CABCOM	Clark Air Base Command
CAO	City Agriculture Office
CARL	Comprehensive Agrarian Reform Law
CCO	Chemical Control Order
CDC	Clark Development Corporation
CEO	City Engineering Office
CH	Case Handler
CLENRO	City Local Environment Office
CNC	Certificate of Non-Coverage
CO	Central Office
CPDO	City Planning Development Office
EIAMD	Environmental Impact Assessment and Management Division
EIARC	Environmental Impact Assessment Review Committee
EIS	Environmental Impact System
EMB	Environmental Management Bureau
EMF	Environmental Monitoring Fund
EMMoP	Environmental Management and Monitoring Plan
EMoP	Environmental Monitoring Plan
EMP	Environmental Management Plan
ENRO	Environmental and Natural Resources Office
EO	Executive Order
EPRMP	Environmental Performance Report and Management Plan
EQS	Environmental Quality Study
ERA	Environmental Risk Assessment
ESA	Environmental and Social Assessment
ESAF	Environmental and Social Assessment Framework
FPA	Fertilizer and Pesticides Authority
GA	Government Agency
GEF	Global Environment Facility
GNP	Gross National Product
GOP	Government of the Philippines
HCB	Hexachlorobenzene
ICUPAO	Iloilo City Urban Poor Affairs Office
CPSO	City Public Services Office
CRC	Clearwater Revival Company
CSW	City Social Work
DAO	DENR Administrative Order
DDT	Dichloro-diphenyl-trichloroethane
D/F	Dioxin/Furan
DENR	Department of Environment and Natural Resources
DOST	Department of Science and Technology
DPWH	Department of Public Works and Highways
EA	Environmental Assessment
EAS	
EBS	Environmental Baseline Study
EC	Environmental Certificate
ECA	Environmentally-Critical Area
ECC	Environmental Compliance Certificate
ECP	Environmentally-Critical Project
EGF	Environmental Guarantee Fund
EIA	Environmental Impact Assessment
LGU	Local Government Unit
MC	Memorandum Circular
MMT	Multi-sectoral Monitoring Team
MOA	Memorandum of Agreement
MOO	Manual of Operations
MRF	Material Recovery Facility
MT	Metric ton
MW	Megawatt
NCR	National Capital Region
NEA	National Electrification Administration
NECA	Non-Environmentally Critical Area
NEPC	National Environmental Protection Council
NGO	Non-Government Organization
NIP	National Implementation Plan
NPC	National Power Corporation
NPCC	National Pollution Control Commission
NSWMC	National Solid Waste Management Commission
OGCC	Office of Government Corporate Counsel
OP	Operational Policies
PAB	Pollution Adjudication Board
PAH	Polycyclic aromatic hydrocarbon
PAP	Potentially-affected person

IEC	Information, Education, Communication
IEE	Initial Environmental Examination
IEEC	Initial Environmental Examination Checklist
IEER	Initial Environmental Examination Report
IMP	Impacts Management Plan
IPCT	Integrated Program for Clean Technologies
IPOPs	Integrated POPs
IRR	Implementing Rules and Regulations
ITDI	Industrial Technology Development Institute
JICA	Japan International Cooperation Agency
KII	Key Informant Interview
LARP	Land Acquisition and Resettlement Plan
PMO	Project Management Office
PNOC	Philippine National Oil Company
PNRI	Philippine Nuclear Research Institute
POPs	Persistent Organic Pollutants
PPAH	Pollution Prevention and Abatement Handbook
PPE	Personal Protective Equipment
PSY	Philippine Statistical Yearbook
PWC	
QSP	Quick Start Programme
RA	Republic Act
RO	Regional Office
RP	Resource Person
RPM	Revised Procedural Manual
RPR	Review Process Report
RT	Review Team
SA	Social Assessment
SAICM	Strategic Approach on International Chemical Management
PC	Public Consultation
PCB	Polychlorinated Biphenyls
PCDD	Polychlorinated dibenzo-p-dioxins
PCDF	Polychlorinated dibenzofurans
PCO	Pollution Control Officer
PD	Presidential Decree
PDEC	
PDR	Project Description Report
PEISS	Philippine Environmental Impact Statement System
PEPRMP	Programmatic Environmental Performance Report and Management Plan
PFAC	
PH	Public Hearing
SBMA	Subic Bay Metropolitan Authority
SDP	Social Development Program
SMR	Self-Monitoring Report
SPSC	Scoping and Procedural Screening Checklist
SV	Site Visit
TEQ	Toxic Equivalent
TOR	Terms of Reference
TPH	Total Petroleum Hydrocarbons
TSD	Treatment, Storage, Disposal
UNDP	United Nations Development Programme
UNEP	United Nations Environment Plan
UNIDO	United Nations Industrial Development Organization
UPOPs	Unintentionally-produced Persistent Organic Pollutants
UV	Ultra Violet
WAG	Wagner Aviation
WB	World Bank
WMP	Waste Management Plan

1.0 SECTOR BACKGROUND

The Government of the Philippines (GOP) ratified the Stockholm Convention on POPs in February 2004, thus, committing itself to the reduction and elimination of POPs in the country. In June 2006, the GOP submitted The Philippine National Implementation Plan (NIP), which contains an assessment of the POPs issues in the country, the institutional, policy and regulatory framework, and the strategy and action plan elements of the national implementation plan.

The most important POPs issues are the following[1]:

- Completion of the inventory of POPS including stockpiles and wastes
- Lack of understanding and knowledge on POPs
- Screening, enforcement, and monitoring of present and potential POPs chemicals
- Monitoring and surveillance of health status relevant to potential impacts of POPs
- Limited capacity to monitor dioxins and furans releases
- Enforcement of existing laws relative to dioxin and furan emissions
- Management and disposal of POPs-contaminated equipment (PCBs)
- Identification and management of POPs-contaminated sites
- The manner in addressing these issues at the national

These are discussed under the following sub-sections below:

- Production, Emissions, Stockpiles and Contamination of POPs
- POPs Management Practices
- Analysis of Regulatory Framework for Philippine POPs Management and Monitoring

1.1 Production, Emissions, Stockpiles and Contamination of POPs

The POPs. The Stockholm Convention on POPs identified twelve (12) initial POPs, categorized into pesticides POPs, industrial POPs and Unintended by-products (UPOPs) as follows:

Pesticides POPs:	aldrin, dieldrin, endrin, chlordane, heptachlor, 1,1,1-trichloro-2,2-bis (4-chlorophenyl) ethane (DDT), toxaphene, and mirex
Industrial POPs:	hexachlorobenzene (HCB)*, polychlorinated biphenyls (PCBs), polychlorinated dibenzo-p-dioxins (PCDD or dioxins), and polychlorinated dibenzofurans (PCDF or furans); * also a pesticide
Unintended by-products:	polychlorinated dibenzo-p-dioxins (PCDD or dioxins), polychlorinated dibenzofurans (PCDF or furans) , polychlorinated biphenyls (PCBs), hexachlorobenzene (HCB)

POPs Sources. In the Philippines, the sources of POPs have been surveyed, as shown in **Table 1-1**. The POPs sources are as follow: (1) POPs pesticides reformulations; (2) POPs pesticides use, and dioxins and furan releases from open burning in agricultural farms; (3) dioxins and furans from pulp and paper mills, fuel burning facilities, iron and steel industry, cement manufacturing industry, and waste processing facilities; (4) PCB from transformer servicing facilities; and (5) PCBs, dioxins and furans from electric utilities, and hospitals. There is no accounting on backyard burning

Table 1-1. Economic Profiles of Affected Sectors

[1] Source: NIP page 1-5

Relevant POPs Chemicals	Affected Sector	Economic Profiles
POPs pesticides	Reformulators	No. of facilities: 10 – household pesticide formulators and repackers 15 – agricultural pesticide formulators and repackers Location: Region 4, 6, 10
POPs pesticides Dioxins and furans (open burning)	Farms	• Based on the 1991 data provided by the Bureau of Agricultural Statistics (BAS) there are 4,610,000 farm lands all over the country. Breaking it down according to land size, the numbers are as follows: Under 1.00 ha. – 1,680,000 1.00 to 2.99 ha. – 1,960,000 3.00 to 4.99 ha. – 520,000 5.00 to 9.99 ha. – 320,000 10.00 ha. and over – 100,000 • Gross agricultural crop production for 2003 was reported to be at 71,610,000 MT with an equivalent value around PhP 330 Billion • The 2003 data from the BAS reports that there are 11,220,000 persons employed in the agricultural sector • Farms are scattered through the Regions of Luzon, Visayas, and Mindanao
Dioxins and furans	Pulp and paper mills	• The 2004 Philippine Statistical Yearbook reports that in 1999, there are a total of 203 paper and paper products manufacturing facilities. • The same source reports a total number of 24,043 employees in this sector. • The volume of sales reported is PhP 33.793 Billion
Dioxins and furans	Fuel burning facilities	• As reported in the Environmental Management Bureau 2001 Source Emission Inventory, there are 2,821 fuel burning facilities, 99% of which are industrial manufacturing facilities
Dioxins and furans	Iron and steel industry	• The 2004 Philippine Statistical Yearbook reports that there are 253 iron and steel industry facilities in the country. • This industry employs 28,040 personnel • The reported volume of sales, based on the 2004 PSY, is PhP 49.876 Billion
Dioxins and furans	Cement manufacturing industry	• No. of facilities: 23 • Volume of production: 24,893 Billion Pesos • No. of employees: 6,722
Dioxins and furans	Wastes Processing Facilities (wastes facilities)	• As of January 2005, there are 68 registered hazardous wastes processing facilities nationwide. Most of these are medium size industries. • Based on January 2005 data from the National Solid Wastes Commission, there are 734 open dumps and 262 controlled dumps nationwide
PCB	Transformer Servicing facilities	These are non-formal sectors in the country. Most are not even registered in any of the corresponding appropriate government agencies
PCBs Dioxins and furans	Electric utilities (electric cooperatives, power	• There are 139 electric utilities in the country, identified as follows: 119 – Electric Cooperatives 19 – Private Electric Utilities

Relevant POPs Chemicals	Affected Sector	Economic Profiles
	transmission, and distribution)	
PCB Dioxins and furans	Hospitals	• As of 2002, there are a total of 661 government and 1,077 private hospitals registered with the Department of Health. • The 2004 Philippine Statistical Yearbook reports that in October 2003, there were 307,000 persons employed under the health and social work sector. • The reported health expenditure in 2002 was PhP 115.448 Million • Share to GNP is 2.7% (based on 2004 PSY)

Source: Adapted from DENR (2006). National Implementation Plan from Stockholm Convention

Production and Stockpiles. A survey on stockpiles was included in the "Inventory of Persistent Organic Pollutants" as part of the Philippine Enabling Activity Project of the DENR-EMB. This is one of the bases of selecting the POPs and sources to be considered in the IPOPs Project.

POPs Pesticides. Through various regulations, POPs pesticides stock has been claimed to have dropped to insignificant level as of today, leaving POPs issues to those of dioxins, furans and PCB.

Dioxins and Furans. **Table 1-2** shows the 1999 Philippine inventory of dioxins and furans using the emission factors of the UNEP Toolkit, in the absence of Philippine-specific emission factors. Uncontrolled combustion processes releases the highest level of dioxins and furans with 187.05 TEQ/a or 35% of the total annual releases, emitting 135.46 TEQ/a to air medium. This is followed by power generation and cooking with 157.23 TEQ/a. Releases to air has the highest contribution that totaled 327.67g TEQ/a with 35 percent attributed to uncontrolled combustion of agricultural residues, 30 percent from firewood cooking, and 18 percent from biomass fired boilers sub-categories.

Table 1-2. Philippine National Source Inventory of Dioxins and Furans, 1999

Sector	Source Category	Annual Releases (g TEQ/a)					Total/Sector
		Air	Water	Land	Product	Residue	
1	Waste Incineration	37.8320	0.0000	0.0000	0.0000	3.7188	41.5508
2	Ferrous and Non-ferrous Metal Production	8.6640	0.0000	0.0000	0.0000	1.8884	10.5524
3	Power Generating and Cooking	142.8408	0.0000	0.0000	0.0000	14.3892	157.2300
4	Production of Mineral Products	2.5345	0.0000	0.0000	0.0000	0.0377	2.5722
5	Transportation	0.1158	0.0000	0.0000	0.0000	0.0000	0.1158
6	Uncontrolled Combustion Processes	135.4576	0.0000	46.8578	0.0000	4.7303	187.0457
7	Production if Chemicals and Consumer Goods	0.0000	0.5995	0.0000	77.6398	13.3225	91.5618
8	Miscellaneous (*Drying of biomass, green fodder, wood chips, smoke houses, dry cleaning residues, tobacco smoking*)	0.2301	0.0000	0.0000	0.0000	0.0007	0.2308
9	Disposal/Landfilling	0.0000	43.2016	0.0000	0.0000	0.0000	43.2016
	Total	**327.6748**	**43.8011**	**46.8578**	**77.6398**	**38.0876**	**534.0611**

Source: Inventory of Dioxins, Furans, and Dioxin-Like PCBs in the Philippines, January 2003 in NIP 2006

The Philippines may have to develop its own emission factors to establish a more accurate estimate. For instance, the Philippines Second National Inventory of PCDD/PCDF in 2004 showed a lower total emissions of 457.73 gTEQ/a. However, a higher estimate of 143.55 gTEQ/a (from 43.2 TEQ/a) was obtained in dumpsite/landfill leachate (excluding dumpsite/landfill fires), the second largest source of PCDD/PCDF emissions after open burning of agricultural residues.

PCBs. The EMB/DENR has established a PCB inventory database supported by the CIDA Trust Fund, but it is not complete as not all PCBs have been identified yet. As of June 2009, about 657 PCB owners have been identified / registered. However, only 69 PCB inventory reports and PCB management plans were submitted.

The "Inventory of POPs in the Philippines" reported that significant amount of PCBs in use mainly come from transformers and capacitors totaling to 99.73% of the inventoried equipment. The remaining 0.27% comes from oil circuit breakers. Based on telephone directory listing, 36 electrical companies are involved in the sale and manufacture of transformers in Metro Manila.

In the same report, of the total 8,027 equipment covered, 143 or 1.78% were "positively identified as containing PCB oil while about 98.22% are assumed to contain PCB oil and should be subject to further validation and sampling **(Table 1-3).** The equipment include transformers of about 7,854 units, around 98% are still in use while the rest are in retrofilling shops (**Table 1-4**). Electric utilities have the most number of transformers at 84%,

An account of 2,401 tons of PCB oil and 4,479 tons of PCB equipment (dry weight) were recorded, of which the bulk of 1,209 tons of PCB oil and 2,788 tons of equipment (dry weight) come from the electric utilities (**Table 1-5**). However, only about 5.0% was positively detected with PCBs. The UNIDO project will aim at dispose around 1,350 tons of the total estimated 7,000 tons of PCB waste.

Table 1-3. Summary of Equipment Surveyed in 2004

Source Category	No. of Equipment Containing PCB Oil		No. of Equipment Assumed to Contain PCB Oil		Total	
	Units	%	Units	%	Units	%
Electric Utilities	61	42.7	6,650	84.3	6,711	83.6
Commercial Buildings	11	7.7	14	0.2	25	0.3
Industrial Establishments and Manufacturing Plants	49	34.3	200	2.5	249	3.1
Military Camps and Bases	8	5.6	3	0.1	11	0.1
Servicing Facilities	0	0.0	1,017	12.9	1,017	12.7
Hospitals	14	9.8	0	0.0	12	0.2
TOTAL	143	100.0	7,884	100.0	8,027	100.0

Source: Inventory of POPs, Environmental Management Bureau, April 2004

Table 1-4. Status of Transformer Equipment

Source Category	In Use		Out of Service		For Retrofilling		TOTAL	
	Units	%	Units	%	Units	%	Units	%
Electric Utilities	6,484	97.4	118	66.0	-	-	6,602	84.1
Commercial Buildings	13	0.2	12	6.7	-	-	25	0.3
Industrial Establishments and Manufacturing Plants	150	2.3	35	19.6	-	-	185	2.4
Military Camps and Bases	6	0.1	5	2.8	-	-	11	0.1
Servicing facilities	-	-	-	-	1,017	100.0	1,017	12.9
Hospitals	5	0.1	9	5.0	-	-	14	0.2
TOTAL	6,658	100.0	179	100.0	1,017	100.0	7,854	100.0

Source: NIP

Table 1-5. Summary of PCB Stockpile

Industry Category	PCB Oil (MT)	Equipment Dry Weight (MT)	Total Weight (MT)
Electrical Utilities and Cooperatives	1,620.3	2,788.0	4,408.4
Commercial Buildings	34.7	83.5	118.2
Industrial Establishments and Manufacturing Plants	525.4	1,098.7	1,624.1
Military Camps and Bases	3.5	8.2	11.7
Servicing Facilities	191.4	445.1	636.5
Hospitals	25.3	55.2	80.4
Total	2,400.5	4,478.8	6,879.3

Contaminated Sites. For various reasons, the production, use and disposal of POPs resulted in contaminating sites. Of particular interest are the PCB-contaminated sites. The Philippine inventory identified the locations of electrical utilities, old industrial plants, and transformer servicing facilities as potential hot spots of PCBs contamination. The top three (3) PCB hotspots are National Capital Region (NCR), having the highest accounted quantity of PCBs; Region 4 ranking second with most numbers of electric cooperative respondents; and, Region 3 where the former US military bases (Subic and Clark) are found. Site assessments had been conducted in Clark and Subic.

Other sites with PCB and PCB-contaminated materials include old urban and industrial areas of Cebu and Davao City and the Meralco warehouse at Barangay San Joaquin, Pasig City where PCB-contaminated equipment and materials excavated from the decommissioning of the former Rockwell Power Plant in Makati City were encapsulated.

The Philippines has identified several heavily contaminated sites; yet it has, very limited experience on identification, characterization, and remediation, and little financial resources for this course. Some of the identified sites are heavily contaminated with PCB wastes and obsolete POP pesticides.

Clark. The Clark Field in Pampanga was once a US military base and as a normal operation, there had been an enormous use of toxic and hazardous chemicals and substances. Hazardous waste and by-products have been generated and contaminating the environment as a result of unregulated and improper use, handling, storage and disposal of these wastes.

Upon the withdrawal of the US troops in 1991 triggered by the eruption of Mt. Pinatubo, the Clark Air Force Base has been hastily "looted" and left with no traces of records. The Clark Air Base Command (CABCOM) area was used as an evacuation center for those affected by the volcano eruption. This has started reports of severe illnesses and even death cases which prompted the CDC to implement programs and conduct studies made to public to prove the allegations that the Clark premises are contaminated with toxic substances causing the sicknesses and deaths.

Based on one of the reports of the Clark Development Corporation (CDC), the results of their Soil Baseline Study revealed the following identified contaminants[2]:

- Polychlorinated biphenyls
- Pesticides – DDT, Adlrin, Dieldrin, Chlordane, Heptachlor
- Volatile Organic Compounds

[2] Environmental Planning and Management Department. Clark Development Corporation. Hazardous Waste Contamination in Clark.

- Total Petroleum Hydrocarbons
- Lead

The PCB Status Report on 18 March 1991 further disclosed that there were found 180 transformers surveyed found containing PCBs of which 120 have already been replaced. The rest of the 60 transformers are awaiting replacement.

Subic. Similar to Clark Field, the Subic Bay Freeport Zone was formerly a US Naval Facility, the biggest US base outside continental USA. But unlike Clark Air Base, the Subic Naval Base was reportedly secured for turn over and there were less looting and vandalism. The Subic Bay Metropolitan Authority (SBMA) currently oversees all business operations around the Zone in compliance to the Sec. 13 of the Philippine Republic Act No. 7227.

Speculations of contaminations have spread until the commissioning of the Environmental Baseline Study in 1995 by Woodward-Clyde International. One of the components of the study is the survey of soil, water and sediment contamination and results showed that metals (arsenic, lead) and organic compounds (TPH, PCB, PAH, pesticides) are the dominating contaminants in soil but in low concentration. Groundwater analysis indicated the exceedances in lead, arsenic and manganese and traces of petroleum hydrocarbons, benzene, chloro-benzene and vinyl chloride. Sediments were also found positive of arsenic, barium, copper, lead, mercury and zinc and organic compounds like TPH, tributylin oxide and PCB.

The study concluded that "there was no widespread severe contamination due to:
- most areas are paved;
- effective sewerage and storm water system;
- US Navy generally practiced good housekeeping and strict inventory control;
- Wet tropical climate favors biodegradation of organics; and
- US Navy undertook some clean-up before leaving the Base."

Efforts had been made in the areas where contaminations are evaluated. Among these includes:
- Site assessment in 1 out of 5 areas in PWC
- Rehabilitation and upgrading of Subic landfill
- ERA for industries conducted by ITDI-DOST
- PNRI conducted radiological surveillance and survey

SBMA is continuously implementing strategies and action plans with the assistance from government and foreign counterparts to address the issues on toxic waste contamination, including the regular monitoring and regulatory activities being done by the concerned Freeport zone entities.

The strategies formulated include:

- coordination with other national government agencies and non-government organizations on:
  - Hazard survey and mapping
  - Contaminant migration assessment
  - Environmental Risk Assessment
  - Health Risk Assessment
- Encourage academic institutions/research foundations to conduct studies on site remediation measures
- Encourage business activities that does not involve extensive site disturbance

POPs Monitoring. With limited technical infrastructure for POPs monitoring in the Philippines, the conduct of related activities are done only on limited basis. Other national government agencies and the academe perform research and monitoring on POPs depending on existing

foreign-funded monitoring activities. Some government agencies that have the capacity and mandate to conduct research and development work related to POPs are as follows:

- Research and Development Division of the Environmental and Management Bureau/Department of Environment and Natural Resources
- Ecosystems Research and Development Bureau of the Department of Environment and Natural Resources
- Industrial Technology Development Institute of the Department of Science and Technology
- Bureau of Food and Drug Administration of the Department of Health
- Bureau of Plant Industry of the Department of Agriculture
- Occupational Health and Safety Center of the Department of Labor and Employment

The Fertilizer and Pesticides Authority during their conduct of licensing and registration of pesticides to ensure that standards are met based on their regulatory policies and implementing guidelines is not able to perform authentic laboratory evaluation of these products due to inadequate facilities. For pesticides monitoring, the FPA designates laboratories to conduct analysis on pesticides residues in fresh agricultural crops and the environment on a quarterly basis.

Technical infrastructure for POPs monitoring, existing government and private laboratories do not have the ability to monitor UPOPs in the Philippines particularly dioxins and furans emissions and thus depend on foreign laboratories based in Singapore, Australia, Japan, and Belgium for collection and analysis. Although institutions such as universities and colleges, government organizations and agencies may have academic backgrounds, experience and training on research and development works, they lack laboratory equipments to measure and analyze POPs in the Philippines.

In addition, there are no available ground data on the human health and environmental effects due to exposure to dioxins and furans.

Thus, one of the objectives of the Action Plan in addressing unintentional POPs is the preparation of "an updated inventory of dioxin and furan releases for all significant sources by obtaining best-estimate nationwide activity data and most appropriate emission factors within three years from the approval of the National Implementation Plan" that would require a "comprehensive and institutionalized data collection and monitoring system."

Reports apparently showed the presence of PCBs in the country but there was no full account on the amount, types and location due to absence of proper records. Monitoring of PCBs is limited due to lack of equipment and the high cost of PCB concentration analysis and PCB test kits. Thus, conduct of monitoring activities are done only as part of research or foreign-funded projects as in the case of a UNDP-GEF assistance that provided the EMB with training and PCB test kits that can determine the levels of PCB in oil at a certain detection limit. There are laboratories capable of analyzing PCBs located mostly in the industrial regions like Metro Manila but were not identified and properly recorded.

1.2 POPs Management Practices

Dioxin and Furans. In the waste management sector, several issues on PCDD/PCDF exist in the Philippines. They include (1) the continued emission of PCDD/PCDF from dumpsites and landfill fires (which could not be quantified in the 2006 Second National Inventory of PCDD/PCDF due to lack of in-country capacity); (2) the collection rate of household waste in all regions except the National Capital Region is still low indicating that it is burned in the open where cost, convenience or local custom and social acceptability make that option attractive; and (3) no efficient

mechanical sorting systems for mixed waste, source separation and collection of recyclable goods. The latter poses significant risk in terms of the production of leachate.

Dumpsite operations have not been described in the NIP but rather the "uncontrolled burning" as observed to be the dominant sources of dioxins and furans emissions. This includes activities such as biomass burning, waste incineration and accidental fires. Backyard burning continues to be unregulated in rural areas.

In September 2006, DENR issued "General Guidelines in the Closure and Rehabilitation of Open Dumpsites and Controlled Dump Facilities". Pre-closure assessment, assessment parameters, and components of closure/rehabilitation plans are regulated in the guidelines. However, the guidelines will not be able to be effectively implemented without technical assistance to the LGUs and operators on the best technical and sound approach to implementing these components.

The Action Plan in the NIP addresses the unintentional POPs as follows:

- develop and implement BAT/BEP promotion, adoption and monitoring programmes within three years across the most significant dioxin and furan source categories (based on updated inventory;
- formulate by the end of year 3 (from the approval of NIP) and continuously enforce thereafter appropriate policies and regulations to control dioxins and furans releases; and
- develop and implement a programme for information on the prevention of environmental and health effects of dioxin and furan by the end of year 2.

PCB. As described in the NIP, electrical and industrial companies contract out PCB transformers servicing facilities for repair and maintenance of transformers and other equipment. Servicing activities include retrofilling of transformers on-site, which involves removing of existing oil and refilling of dielectric fluid, which is either be the same oil removed but filtered, or other alternative dielectric oil such as silicones, synthetic hydrocarbons, and ester-based materials.[3] Moreover, these servicing facilities also carry out decommissioning of equipment for processing into second hand transformer units.

Those servicing facilities visited during the inventory do not properly decontaminate equipment, and as disclosed, the filtering machines used for PCB oil were also used in filtering mineral oil resulting to the spread of contamination. The oil removed from transformers is tested for its dielectric strength to determine if it is still possible for reuse. Otherwise, these are discarded on ground or disposed on-site into drains and canals.

The study also revealed that an electric utility company "buried and immobilized PCB contaminated soil in one of their compounds" while the contaminated equipments were being exported. However, there are few companies, like one beer brewery and an electric utility company export to Europe their PCB wastes for disposal, in spite of its high cost.

The main issues associated with PCB management include:

- low level of knowledge and awareness on PCBs and its threat to the environment and the public;
- lack of available information and data inventory on PCB use, types, volume and location;
- lack of technical infrastructure for the conduct of regular monitoring resulting to improper waste management of PCBs by the industries

[3] Environmental Management Bureau/Department of Environment and Natural Resources with support from GEF and UNIDO. Code of Practice on the Management of Polychlorinated Biphenyls. DENR-EMB.

Above issues can be addressed by realizing the objectives of the Action Plan in the NIP, as follow:

- prepare a comprehensive and complete national inventory of PCBs, PCB containing materials, and PCB wastes from year 0 to year 2 of the National Implementation Plan;
- establish and implement a program on safe handling, storage, and transport of PCBs, PCB-containing materials and PCB wastes from year 1 to year 3;
- develop and implement continuous integrated environmental and health monitoring program from year 1 onwards; and
- eliminate and destroy all PCBs, PCB-containing materials, and PCB wastes not later than 2025.

The current motivating factor in the elimination of the PCB involves Canadian Kinectrics' sodium-based chemical destruction process for PCB oil and equipment, which was recently selected over a number of other competing technologies for the construction of PCB Destruction Facilities under the UNIDO project. The Philippine National Oil Company will house the facilities at a 4,000 m^2 site and operate them with a license issued by DENR for handling PCB waste. The facilities will remove PCB-contaminated insulating oil from electrical equipment, destroy the PCBs and return clean oil to equipment. The capacity of the UNIDO PCB Destruction Facilities is 1,000 tons per year. The facilities will destroy 1,500 metric tons PCB oil and equipment during a two-year demonstration period expected from December 2009 to December 2011.

1.3 Analysis of Regulatory Framework for Philippine POPs Management and Monitoring

The regulatory framework for the Philippine POPs management and monitoring involves fulfillment of international commitments **(Table 1-6)** and the enforcement of environmental national laws **(Table 1-7).**

Table 1-6. International Environmental Regulations Applicable to Philippine POPs Management and Monitoring

International Convention	Date Ratified by GOP
• Montreal Protocol on Substances that Deplete the Ozone Layer	July 17, 1991
• Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	October 21, 1993
• Stockholm Convention on Persistent Organic Pollutants	May 17, 2004
• Kyoto Protocol	February 16, 2005
• Rotterdam Convention on Prior Informed Consent Procedure	presently working for the ratification

Several existing laws already touch on the regulation of POPs such as The Philippine Clean Air Act, (RA 9275), The Ecological Solid Waste Management Act (RA 9003), and The Toxic Substances, Clean Water Act and Hazardous and Nuclear Wastes Act (RA 6969). There are gaps identified in the implementation of these laws. There is a pending bill filed in the House of Representatives dealing with the revision of RA 6969.

UPOPs. There is no existing mechanism to enforce the provisions of the Clean Air Act and the Solid Waste Management Act, pertaining to the control of unintentional POPs releases. However, there are relevant on-going government initiatives on cleaner production that avoids burning. , which includes encouraging the adoption of best environmental practice in industrial facilities and providing guidelines for best available technologies or techniques. – [NIP page 2-34]

PCB. Pursuant to the provisions of Republic Act No. 6969, otherwise known as the "Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990 (RA "6969"), DENR Administrative Order No. 29, Series of 1992, otherwise known as the "Implementing Rules and Regulations of RA 6969" ("IRR"), and other applicable laws, rules and regulations, a Chemical Control Order (CCO) for PCBs was promulgated on February 19, 2004 (took effect on March 19, 2004). The CCO states that by March 19, 2014, 10 years after the effective date of this Order, the use or storage for reuse of any PCBs, PCB equipment, PCB-contaminated equipment, or PCB article, including those in totally enclosed applications, shall no longer be allowed. Likewise, on the same date, the storage of PCB packaging and PCB wastes shall no longer be allowed.

The scope of this CCO applies to the importation, manufacture, sale, transfer, distribution and the use of PCBs, PCB equipment, PCB contaminated equipment, non-PCB equipment, PCB articles and PCB packaging in commercial buildings and industrial facilities, including the use and possession by electric utilities and suppliers.

This Chemical Control Order provides guidelines for the phase out of the use, sale, and importation of PCB electrical equipment. Under the same order, responsibilities and liabilities for the improper management and handling of PCBs and its wastes have been established. Furthermore, the Chemical Control Order provides specific requirements for annual reporting, inventory, phase-out, storage, treatment, and disposal. To operationalize the ideas, PCB owners or holders are required to submit a PCB management plan which has the following outline:

a. General Description
   i. Name of owner and operator;
   ii. Location of the facility or the PCBs, PCB equipment, PCB contaminated equipment, non PCB equipment, PCB article, PCB packaging or PCB wastes (site specific);
   iii. Industrial activities at the premises; and
   iv. Number of employees.

b. Uses of PCBs at the Premise
   i. Description of the uses of PCBs at the premises;
   ii. Listing of PCB equipment, PCB contaminated equipment, non-PCB equipment and PCB articles;
   iii. Listing of PCB wastes generated at the premises;
   iv. Mass balance of PCBs through the premises;
   v. Description of pollution control devices in use at the premises;
   vi. Description of compliance with the environmental laws and regulations; and
   vii: Description of emergency procedures and contingency plan in case of accidents.

c. Pollution Prevention Program
   i. Pollution prevention/control devices;
   ii. Inspection schedule and checklist; and
   iii. Equipment and/or materials to be used during spills and/or emergencies.

d. Training Program
   i. Scope or coverage of training or a copy of the Training Manual.
   ii. List of personnel trained, particularly those workers in contact with PCBs; PCB equipment, PCB contaminated equipment, non-PCB equipment, PCB wastes, PCB articles or PCB packaging

e. A copy of the PCB Spill Prevention and Clean-up Plan as described in Section IV - 7.
f. A copy of the PCB Storage Facility Closure Plan as described in Section IV - 8.

During the first year of implementation of the CCO for PCBs, the World Bank, as the trustee of the CIDA Trust Fund, helped the EMB/DENR to develop a *Guidance Document on PCB Management for Electric Cooperatives*. This document is to assist rural electric cooperatives across the country to manage their PCB equipment and/or PCB-contaminated equipment, in order to enhance the compliance of rural electric cooperatives to applicable provisions of the CCO for PCBs.

2.0 PROJECT DESCRIPTION

The IPOPs project in its integrated form provides for the following thematic activities under a co-financing scheme of either investment or technical assistance:

- Improving the regulatory framework
- Improving the knowledge to Inventory and monitoring
- Performing physical activities to mitigate, prevent, and remedy
- Introduction or adoption of BAT/BEP
- Training
- IEC

2.1 Project Components

The Philippines has requested the Bank to focus as a priority on three critical areas which require immediate action and that are complementary to other planned and ongoing activities: reduction of PCDD/PCDF release, PCB management, and contaminated sites.[4]. To bolster the country's capacity for POPs management in the three areas, the proposed project will also include a component to review, strengthen and further develop the regulatory framework and to build technical capacity for POPs monitoring with appropriate training activities. Thus, the proposed project has been composed of the following components, which center on capacity building and demonstration: The activities for each component are described in the sub-sections to follow:

2.1 Component 1: Strengthening the regulatory framework and capacity building for POPs management and monitoring

The objective of this component is to strengthen the regulatory and monitoring capacity for phasing out the use, reducing exposure and reducing releases of persistent organic pollutants. While the Philippines has established much of the legislative framework necessary for chemicals management and other activities related to management of persistent organic pollutants (POPs), significant gaps remain, and in many cases existing legal mechanisms are not fully consistent with or do not specifically support the implementation of the Stockholm Convention. Additionally, the country as yet lacks the ability to monitor all POPs and has not established a system for monitoring these pollutants' health effects. Component 1 will help address these issues through the three activities described below

Activity 1.1: Modification of the Regulatory Framework for POPs Management and Monitoring. This activity will enhance the legal basis for POPs management according to the Stockholm Convention requirements and the overall chemical safety system for handling dangerous chemical substances and hazardous waste. It will include preparation of legal and regulatory instruments (laws and implementing rules, administrative orders, and amendments); support for the adoption of these instruments; and creation of appropriate legal documentation for the adoption of technical guidelines and standards. This activity will coordinate with the outputs

[4] The proposed project will not cover POPs pesticides per se as this area is targeted for the second phase of the long-term program. However, with the inventory of POPs contaminated sites collected in the proposed project, the GOP will gain a better understanding of the scope and magnitude of pesticide stocks.

under components 2 to 4 by providing the legal basis for adopting the policies, standards and guidelines developed and updated under these components.

Activity 1.2: Upgrades to an Existing Laboratory for UPOPs Monitoring. This activity will enhance the capacity of the country to monitor POPs by establishing the first lab in the country that can measure dioxins and furans. Specifically it will: (i) upgrade an existing laboratory for dioxin and furan detection in different media (including laboratory equipment procurement); (ii) develop standard protocols for sampling and analysis of dioxins and furans; and (3) train lab staff on dioxin and furan sampling and analysis and the handling of the lab waste generated. The upgraded laboratory is expected gradually to take over sampling and dioxin and furan analysis in the Philippines on a charge-base according to the regulatory system.

Activity 1.3: Development and Demonstration of an Integrated POPs Environmental and Health Monitoring Program. This activity will finance development of an interlinked environmental and health monitoring network. The network will create a platform for data management and exchange. The specific monitoring strategies will be tailored for different POPs groups (i.e., pesticides, PCBs, and PCDD/PCDF), for different purposes (e.g., source, ambient, and impacts monitoring), and for various media and components (i.e., water, soil, sediments, biota, agricultural and food production, and humans). The proposed monitoring program will be tailored to the needs identified above for reporting at national and international levels and will be tested in a pilot region or area and scaled up to the national level as appropriate. An important aspect of this activity will be supplying the analytical needs for developing and maintaining an inventory of POPs sources.

2.2 Component 2: Reduction of Releases of Unintentionally Produced Persistent of Organic Pollutants.

Unintentional POPs, dioxins and furans most significantly, are produced unintentionally by industrial processes or incomplete burning. In the Philippines, the largest sources are agricultural burning and solid waste management. The objective of this component is to better understand and demonstrate the reduction of the releases of unintentional persistent organic pollutants. This will be done through improving the understanding of emissions from targeted sources and nationally; demonstration of implementation of best available technologies (BAT) and best environmental practices (BEP) to reduce emissions from the waste management sector; and establishing BAT/BEP for other sources. This component will be implemented by DOST and supported by the DENR National Solid Waste Management Commission through guideline development, training, and dissemination. These component activities are described below.

Activity 2.1: Establishment of Emissions Factors and Verification of Environmental Technology for Selected Sources in the Philippines. This subactivity, to be led by DOST, will provide technical assistance to better quantify the various sources of PCDD/PCDF emissions in the Philippines. The data provided will be used as a basis for more accurate estimates of emissions factors for use in the inventory, and to help verify the performance of technologies introduced to reduce dioxin and furan emissions. The activity would fund studies to measure emissions factors, develop environmental technology verification guidelines, and conduct environmental technology verification.

Activity 2.2: Updates in PCDD/PCDF Inventory. This activity, led by DOST, will undertake the Philippines' third inventory of dioxins and furans. It will undertake improved data collection to better quantify sources and also utilize the information developed from activity 2.1 to improve the estimates of emissions nationally and from individual sources.

Activity 2.3: Investments in BAT/BEP Demonstration for the Solid Waste Sector. This activity, to be managed by DENR-NSWMC and implemented by approximately 10 local governments, is designed to reduce this major source of dioxins and furan emissions by stopping or preventing solid waste burning in disposal sites and at households. It will be done in parallel

with investments at the local government level in solid waste management systems. Technical assistance and investments will be provided to develop and implement interventions. The interventions will include those at disposal sites that would extinguish current burning (using soil, fire suppression foams, and equipment) and prevent future burning (using soil cover, compactors, dumpsite closure, and improved administration, security, and safety and waste inspections). It would also include interventions to reduce burning at the household level would include advocacy programs, enforcement of burning ordinances, and improvements to infrastructure (collection trucks, bins, vehicle repair, and maintenance facilities). Initially, three local governments will demonstrate the processes; the remaining phases will be undertaken yearly, based on readiness criteria applied to the remaining LGUs.

Activity 2.4: Technical Assistance for Preparation of BAT/BEP for the Solid Waste Sector. This activity will provide technical assistance for the preparation of interim BAT/BEP guidelines for solid waste management and for updating them based on their successful implementation in a few demonstration projects. It will also fund the preparation of action plans for investments and provide TA for the plans' implementation and for monitoring intervention outcomes.

Activity 2.5: Technical Assistance for Preparation of BAT/BEP for Other Sources. This activity will prepare interim BAT/BEP guidelines for other sources based on experience in the country and the results of activity 2.1.

Activity 2.6: Training, Demonstration and Dissemination. This activity will use the results of the component demonstrations and studies to develop materials, case studies, training courses, and dissemination workshops.

2.3 Component 3: Environmentally Sound Management of Polychlorinated Biphenyls (PCBs)

The objective this component is to assist in phasing out of the use of PCB and minimizing the risk of exposure to humans and the environment by strengthening DENR oversight and improving the on-site management practices of PCB owners. PCBs were never produced in the Philippines, but they are used or stored in electrical equipment in the electric utility and manufacturing sectors, old commercial buildings, and transformer servicing facilities. DENR is implementing a policy requiring complete phase out, by 2014, of the use or storage of PCBs. A partial PCB inventory has been completed, and standards for PCB management have been established; however, only a small percentage of operators has developed or implemented a PCB management plan. This component will support the DENR through the completion of the national PCB inventory, will offer technical assistance and training for PCB owners and DENR inspectors, and will facilitate demonstration of good on-site PCB management through implementation of PCB management plans.

Activity 3.1: Completion of the National Inventory of PCBs. The following subactivities have been designed to help complete the national PCB inventory.

Subactivity 3.1.1: PCB Identification and Public Awareness. The first step in the process of updating the inventory is identifying potential PCB owners. This will be done through targeted national workshops and information dissemination implemented by a newly established PCB monitoring network. This effort will disseminate the technical guidelines for PCB management and identify new potential owners of equipment containing PCBs. Activities include establishing a PCB Monitoring Network, to be led by EMB; producing IEC materials; and holding public awareness seminars and other activities to disseminate the Revised Technical Guidelines on PCB Management and IEC materials useful in identifying new potential owners of PCB equipment.

Subactivity 3.1.2: PCB Testing and Registration. After potential PCB owners have been identified, they will be required to register with DENR; their equipment and oil will then be tested for PCBs

and labeled accordingly. This subactivity will support this work by reviewing and approving registration forms, annual reports, inventory reports, and PCB management plans; by providing test kits to be used in screening for contamination; and by completing the labeling of PCB equipment.

Activity 3.2: PCB Management. PCB owners will implement PCB management activities using the Revised Technical Guidelines on PCB Management.

Subactivity 3.2.1: Implementation of PCB Management. PCB owners will be required to prepare and submit to EMB site-specific PCB management plans; EMB will review and endorse the plans within six months after registration. Under the Project, PCB owners will be trained using a template PCB management plan, revised during the PPG stage. PCB owners and registrants will be responsible for all costs of managing PCBs. Technical assistance to PCB owners on PCB management will be provided by the Project.

Subactivity 3.2.2: Training and Technical Assistance to PCB Owners on PCB Management. This activity will provide (1) training for the trainers selected from major PCB owning organizations and corporations; and (2) training for PCB owners, provided by the trainers, on preparation of PCB management plans and PCB management. The trainers will also provide on-site technical assistance to PCB owners for sound PCB management and technical support to local EMBs charged with validating the PCB management practices of each PCB owner.

Activity 3.3: Monitoring and Enforcement. The PCB owners have the obligation to report the presence of PCBs to EMBs. To effectively enforce this obligation, however, independent inspections by a competent authority (such as EMB, NEA, or other PMN members) will be necessary. It will also support training EMB/DENR, NEA, and regional EMB inspectors to conduct inspections verifying effective PCB management, including site visits for validation and sampling.

This activity will address longer term PCB management issues not currently addressed in the Philippines. In particular it will develop a proposal to address PCB waste that cannot be handled by non-combustion facilities and the development of a PCB management and disposal plan in the event the March 2014 deadline for phasing out PCBs cannot be met.

2.4 Component 4: Identification, Prioritization, and Pilot Remediation of POPs Contaminated Sites

The objective of this component is to strengthen the enabling capacity of the country to reduce risks posed by environmental contamination of POPs by identifying contaminated sites; establishing a strategic framework, technical guidelines and professional capacity to help address them and building public knowledge and awareness. Within the Philippines there are sites that have been confirmed to be contaminated with POPs, including areas that have housed electrical transformers; old dumpsites; former production facilities; and pesticide storage sites. There are others sites that are suspected to be contaminated and many others that have not been identified. The cleanup of these sites is not mandatory or otherwise regulated under Philippine law. Activities include the development of a national inventory of sites and a national remediation strategy including legislative and regulatory strengthening; establishment of site cleanup standards; national training and dissemination; demonstration of site control to reduce exposure; and the demonstration of contaminated site cleanup.

Activity 4.1: Identification and Prioritization of POPs- Contaminated Sites and Development of a National Priority Site List. Activity 4.1 will establish a methodology for the systematic identification of contaminated sites. A Hazard Ranking System (HRS) will be developed to establish a National Priority List (NPL) of sites. Consultations between environmental agencies

and local government units (LGUs) will help ensure that the inventory and NPL are both accurate and complete.

Subactivity 4.1.1: Methodology for Developing an Inventory of Contaminated Sites. A methodology for the identification and classification of contaminated sites throughout the Philippines will be developed based on relevant national and international experiences. This methodology will provide the procedures, requirements and a toolkit for developing and updating a national list of contaminated sites. The identification methodology and guidelines will include: (i) collection of secondary data and survey information to identify potentially contaminated sites; (ii) undertaking site inspections; (iii) screening guideline to categorize sites based on potential hazards; (ii) site assessment of potentially high risk sites and assessing them based on the relative health risk; and (iv) recommending management options for these sites.

Subactivity 4.1.2: Development of a National Inventory/Registry of Contaminated Sites. This subactivity will develop a list of contaminated sites using the guidelines provided. It will identify a list of potentially contaminated sites, undertake site inspection for verification and undertake site assessments, hazard ranking and recommending management options for between 10 and 25 high risk sites. The sub-activity will also undertake communication and disclosure to support the inventory activities and training for DENR to update the inventory to include other contaminated sites.

Activity 4.2: National Strategy for POPs- Contaminated Sites. This activity will analyze options and develop an overall strategy for the proper management of contaminated sites in the Philippines based on experiences elsewhere and the context of the Philippines. The activity will finance the technical and consultation process regarding an assessment of the existing legal, regulatory, and other incentives for cleanup and site control; institutional mandates and capacities; economic and financial viability and efficiency of different options; and finalization of the strategy.

Activity 4.3: Demonstration of Site Remediation and Site Control. This component will demonstrate the process and implement site control and site remediation for use both in training personnel and in developing and revising guidelines for these activities. It will include the following sub-activities:

Subactivity 4.3.1: Site Remediation Demonstration. Demonstrations of site remediation will take place at three sites: (i) the fire training area of Subic Bay Freeport (owned by Subic Bay Metropolitan Authority); (ii) the PCB transformer site at Clark Freeport (owned by Clark Development Corporation); and (iii) the former Manila Thermal Power Plant (owned by the Power Sector Assets and Liabilities Management Corporation). The demonstrations will have four major phases: (1) site assessment, environmental assessment, and technology choice; (2) remedial design; (3) remedial action; and (4) operation and maintenance (including site closeout). Remediation activities will be funded by the GOP or by the project partners. Training will be provided during the activity as part of GEF grant financing.

Subactivity 4.3.2: Site Control Measures for Potentially Highly Contaminated Sites. Based on the output of activity 4.1, this activity will demonstrate the use of site control strategies to reduce exposure to contaminated sites with a high health risk. It will fund the development and implementation of site control measures in one to three sites, including institutional and physical measures to limit access and exposure to these contaminated sites. Training for this intensified site control will be provided to the site owners during this process.

Activity 4.4: Guidelines and Standards Development. This activity will establish and update guidelines and standards based on the work under the strategy and demonstration projects. It will cover all technical standards and guidelines related to site remediation, site control and inventory

development including site cleanup standards, site remediation and site control guidelines. These guidelines will be finalized for adoption as part of component 1.

Activity 4.5: Training, Capacity Building, and Information Education Campaigns. This activity will help build awareness of issues surrounding contaminated sites; develop professional capacity for site cleanup; and disseminate the results of the demonstration.

Subactivity 4.4.1: Development of IEC Materials for Site Inventory, Contaminated Sites, and Training Materials for Site Remediation and Site Control. This subactivity will support the communication needs of DENR and of the project partners with regard to site remediation and site control, including necessary websites, brochures, workshop materials, and materials for and in other media.

Subactivity 4.4.2: Training on Site Inventory, Site Remediation, and Site Control. This subactivity will support training on the national level regarding the national inventory, site remediation, and site control. It will target consulting firms, academe, land owners, real estate developers and other chemicals users and include the following elements: (i) training on site remediation guidelines using demonstration sites; (ii) training on site control guidelines using demonstrations; and (iii) training on communication and consultation as part of site remediation and control.

Subactivity 4.4.3: Training for enforcement. This subactivity will support training and capacity building of DENR in their mandate under contaminated sites. It will cover: (i) training on site inspections; (ii) training on dissemination and enforcement of guidelines and standards; (iii) hands on training on review of documents (site assessments, remediation plans etc) submitted for regulatory review and approval.

2.5 Component 5: Project Management

This component will support DENR in its management of the Project. The following descriptions outline component activities.

Activity 5.1: Project Management and Coordination. This activity will assist DENR-EMB in its overall management and coordination of the Project, including work and financial plan development, coordination, secretariat support to the interagency steering committee, technical advice, meeting organization, documentation support, and procurement management support.

Activity 5.2: Institutional Strengthening and Information, Education, and Communication. Activity 5.2 will support the preparation and coordination of training; organization and assistance in the implementation of project consultations and conferences; and coordination and integration of IEC materials preparation and programs for different components.

Activity 5.3: Project Monitoring and Evaluation. This activity will support the implementation of the results-based project monitoring and evaluation plan, manual, and MIS; review of management and evaluation results; and preparation of associated reporting documentation.

Activity 5.4: Project Financial Management and Monitoring. Activity 5.4 will support DENR in project financial management, including expenditure reporting responsibilities, financial plans, and the financial reports required by the World Bank and GoP.

3.0 APPROACH TO ENVIRONMENTAL AND SOCIAL ASSESSMENT

This section describes the procedures done for the entire project as well as the intended procedure for the component activities. The information provided in this material is a product of data gathering from PPG team meetings, consultations (stakeholder agencies, local officials, local

residents, NGO, EMB-EIAMD), field survey, PPG team meetings, and integration of the results of the WB Mission. As part of the planning process, two sets of consultations were conducted; one is the scoping consultation for the drafting of the ESA, and another on the Draft. The topics covered the relevant GOP and WB safeguards requirements.

3.1 Environment and Social Safeguards Policies

The triggered WB policies for these projects are: Environmental Assessment (OP 4.01); OP 4.10 (Indigenous Peoples, July 2005); and OP 4.12. (Involuntary Resettlement, 2001). Environmental Assessment takes into account the natural environment (air, water, and land); human health and safety; and social aspects (Involuntary Resettlement, Indigenous Peoples). These can be supported by the: Philippine EIS System (PD 1586), which is supported by environment and social laws of the Philippines like RA 9003 Ecological Solid Waste Management Act, RA 6969 Hazardous Waste Management Act, RA 8749 Clean Water Act of 1999, RA 9275 Clean Water Act of 2004, and RA 7160 Local Government Code of 1991.

The project is considered Category A due to Component 4 activities on demonstrating contaminated site remediation. EA Sourcebook Update (1993 Number 2) shows hazardous waste management and disposal is listed under Category A. However, Philippine EIS System would classify this type project of improving the environment or of doing a pilot study, as either Category C and as exempted, respectively.

On social safeguards, OP 4.10 and OP 4.12 are triggered but taken as contingent and applied only in specific sites with confirmed requirement to address resettlement or IP issue. Under the IPOPs project, involuntary resettlement and land acquisition is not expected to be large scale but rather is only expected to occur under some certain circumstances, and in particular, Components 2 and 4.

As far as Component 2 is concerned, the WB Involuntary Resettlement Policy is triggered when there are structures (normally of waste pickers) to be removed.[5] It is possible that the structures have already been removed prior to the project. In any case, the impact being considered may include restriction of access to livelihood, which may reasult in increased cost or of loss of livelihood. Other specific situations are also considered.[6]

For Component 4, involuntary resettlement may by triggered through different scenarios, e.g., (i) where structures and improvements are to be dismantled to facilitate remediation; and (ii) where occupants have to temporarily vacate the land and the resulting loss of income or increase in expenditures entailed by the displacement, and (iii) where contaminated sites are expropriated prior to remediation by the government; The demonstration site will be selected to avoid, as possible, such scenarios. In addition, controls for contaminated site, which may include limiting or

[5] In contrast, one may argue that OP 4.12 should not be triggered in Component 2 because the dumpsites will anyway be closed or maybe converted to sanitary landfill, as required by RA 9003. The impact of the IPOPs project may be stated as accelerating the process of restricting the access to waste pickers. OP 4.12 qualifies that involuntary resettlement premised on the involuntary restriction of access applies only to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons. Nevertheless, it has been a tradition [?] for the local government, within the limits of its capacity, to provide assistance to affected persons. Thus, the dumpsite closure is taken as a linked activity with the application of due diligence under the Philippine laws.

[6] In contrast, one may argue that OP 4.12 should not be triggered in Component 2 because the dumpsites will anyway be closed or maybe converted to sanitary landfill, as required by RA 9003. The impact of the IPOPs project may be stated as accelerating the process of restricting the access to waste pickers. OP 4.12 qualifies that involuntary resettlement premised on the involuntary restriction of access applies only to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons. Nevertheless, it has been a tradition [?] for the local government, within the limits of its capacity, to provide assistance to affected persons. Thus, the dumpsite closure is taken as a linked activity with the application of due diligence under the Philippine laws.

prohibiting access to the sites. This may involve permanent land acquisition depending on the extent and location of the contamination.

The policy on IP may be triggered for some dumpsite areas and contaminated sites where IPs are present or have collective attachment to the selected site. The three priority dumpsites in Cabanatuan City, Iloilo City, and Cagayan de Oro not described as such. The candidate remediation site in Clark and Subic qualify to such description inasmuch as there are MOUs existing with the GOP National Commission Indigenous People (NCIP) created by virtue of RA 7341.

3.2 Covered Activities

The environmental and social assessment for the IPOPs Project focused on those activities requiring physical disturbance at a site. The physical activities involve the application of technologies, which may directly alter the site or cause pollution. The other activities, which are non-physical activities, involve strengthening regulatory framework, monitoring, training, and IEC.

While only part of an activity will be financed by the project, the environmental and social assessment covered the entire physical activities. The project involves co-financing, technical assistance, and training. In particular the activities are as follows:

Component	Title of Activity	Reference Number
Component 1	Upgrading of an Existing Laboratory for PCDD/PCDF Monitoring	Activity 1.2
Component 2	Investments in BAT/BEP demonstration for the solid waste sector • Works to stop burning at dumpsites. • Prevent Burning through Soil Cover, Security and Improved Operation of Disposal Sites. • Dumpsite closure.	Activity 2.3
Component 3	Implementation of PCB Management	Subactivity 3.2.1
Component 4	• Site Remediation Demonstration • Site Control Measures for Site Potentially Highly Contaminated Sites	Subactivity 4.3.1 Subactivity 4.3.2

3.3 ESA Instruments

One of the requirements for the appraisal of the project and subprojects is the submission of appropriate environmental assessment (EA) document. The level of effort applied in environmental assessment was set given the following categories of the component physical activities:

Component	Activity	WB Project Category	WB EA Instrument
Component 1	Upgrading of an Existing Laboratory for PCDD/PCDF Monitoring	Category B	Draft EA [1]
Component 2	Investments in BAT/BEP demonstration for the solid waste sector		
	• Works to stop burning at dumpsites.	Category B	EMP [2]
	• Prevent Burning through Soil	Category B	EMP [3]

Component	Activity	WB Project Category	WB EA Instrument
	Cover, Security and Improved Operation of Disposal Sites.		
	• Dumpsite closure.	Category B	EMP [4]
Component 3	Implementation of PCB Management	Category B	EMP [5]
Component 4	• Site Remediation Demonstration	Category A	Full EA[6]
	• Site Control Measures for Site Potentially Highly Contaminated Sites	Category A	Full EA[6]

[1] The Draft EA has been prepared (See Annex) and relevant items were discussed in relevant sections (e.g. Sections 4 and 5)

[2] EMPs were developed for the first year's activities consisting of three dumpsites in Cabanatuan City (Luzon), Iloilo City (Visayas), and Cagayan de Oro (Mindanao).where WB Policies on Involuntary Resettlement and Indigenous Peoples would not be triggered. For other sites that will be later identified, after the first year, the policies may apply. If present, the issues on involuntary resettlement will be treated in the EMP through a Resettlement Policy Framework. If there is an IP issue, the document shall contain an IP framework.

[3] If present, the issues on involuntary resettlement will be treated in the EMP through a Resettlement Policy Framework. If there is an IP issue, the document shall contain an IP framework.

[4] The EMP will be an Updated Dumpsite Closure and Rehabilitation Plan. The dumpsite closure activity will be required a Social Development Plan for Waste Pickers for long-term presence of waste pickers in the area, or an equivalent plan for the waste pickers on a shorter term. If present, the issues on involuntary resettlement will be treated in the EMP through a Resettlement Framework. If there is an IP issue, the document shall contain an IP policy framework.

[5] For those PCB owners who have submitted years back a PCB Management Plan., the EMP is an Updated PCB Management Plan, using an Upgraded PCB Management Plan Outline. For those who are newly registered, a PCB Management Plan will be submitted using the Upgraded PCB Management Plan Outline.

[5] EAs will be prepared for during the first year. If present, the issues on involuntary resettlement will be treated in the EMP through a Resettlement Policy Framework. If there is an IP issue, the document shall contain an IP framework.

[6] EAs will be prepared for during the first year with guidance on the framework in Section 7. If present, the issues on involuntary resettlement will be

[7] EAs will be prepared after site identification (year 3) with guidance under a framework in Section 7. for during the first year. If present, the issues on involuntary resettlement will be

From the above list, the entire IPOPs project fall under Category A due to Component 4, which deals directly of treating hazardous and toxic substances. WB Category A project is expected to have significant adverse environmental impacts that are sensitive, diverse or unprecedented. A full EA is needed in accordance with the specific requirements of the Bank's EA policy and procedure for Category A projects, including in areas such as public disclosure, public consultation, and the timing for submitting the EA report to the Bank. A full EA contains the following information (OP 4.01)

1. Project Description
2. Baseline Environment
3. Analysis of Alternatives
4. Impact Assessment
5. Mitigation Measures
6. Institution Arrangements
    a. Schedule of Implementation
    b. Roles and Responsibilities
    c. Capacity Development and Training
    d. Cost of Implementation

e. Sources of Funds

Mitigation, monitoring and institutional arrangements constitute the Environmental Management Plan (EMP) and largely an appropriate EA instrument for Category B projects of which issues are less diverse. As a formal report though, the EMP contains upfront a brief statements on the description and location of the project.

A project falls under Category B project if its potential adverse environmental impacts on human population or environmentally important areas – including wetlands, forest, grasslands and other natural habitat are less adverse than those of category A projects. EA is required, but its scope corresponds to the limited environmental impacts of the project.

The variation in the types and relatively small scale of IPOPs Project activities entailed different EA documents prepared, maintaining the essential components of the WB EA requirements, which center on impact assessment, mitigation, monitoring and institutional arrangements.

For the efficiency in preparing EA documents, the current environmental instruments institutionalized of the GOP like in the Philippine EIS System (PEISS) or PD 1586 and sector laws were be utilized.

Component 1. According to the Revised Procedural Manual of DAO 2003-30 of PD 1586, a laboratory using hazardous and toxic chemical is required an ECC regardless of size. Since the laboratory will use such kind of chemical the laboratory will be required an ECC through the submission of an Initial Environmental Examination Checklist or Report. **Annex 3.1** presents a draft EA for use as a reference in the acquisition of an ECC. **.**

Component 2. Dumpsite closure is a Category B mitigation activity and is only required an EMP. is not covered under the PEISS. However, the candidate dumpsites are those with Dumpsite Closure and Rehabilitation Plans submitted to the National Solid Waste Management Commission (NSWMC) and DENR, and granted Authority-to-Close by the DENR. The reference regulation is DENR AO 2006-09. The plan is considered an EMP and its outline was reviewed for its sufficiency in meeting the WB EA requirement. Closure plans of three identified dumpsite line up for the project were also reviewed with respect to the DENR outline and WB EMP requirement (in **Section 5)**. A guide for the Preparation of Social Development Plan for Waste Pickers was prepared as reference in the preparation of closure plans.

Component 3. PCB management is not also covered under the PEISS except when a new construction of PCB storage facility will be constructed, as required by DAO 2004-36 of RA 6969. Nevertheless, a PCB owner is required to submit to DENR a PCB Management Plan (as required in DAO 2004-01). The PCB Management Plan Outline was reviewed for adequacy with reference to the WB EMP requirement (in **Section 5**).

Component 4. The Philippine EIS System does not require an Environmental Compliance Certificate (ECC) for the demonstration subprojects. Nevertheless, each subproject are subject to the requirements of pollution control laws like RA 6969 (Toxic Substances and Hazardous and Nuclear Wastes control Act of 1990), RA 9275 (Clean Water Act of 2004), RA 8749 (Clean Air Act of 1999)). Under RA 6969, licenses are issued to waste transporters, treaters and disposers after they pass certain requirements. Nevertheless, the EA instrument for a specific site under this component will require a separate full EA report in accordance with the requirements for the WB Category A projects.

The environmental and social assessment process for each site will include two consultations: one is for scoping before drafting the EA report and another for the review of the Draft EA. The

component communication strategy developed in the preparation of this project will support the consultations.

3.4 Social Safeguards

Documents prepared for the social safeguards and became the reference materials for this report are the Social Assessment Report, Guidance for the Preparation of the Social Development Plan for the Waste Pickers (Component 2), Resettlement and Compensation Framework (Components 2 and 4) , IP Framework (Components 2 and 4), and Communication Strategy (for all components).

3.5 Consultations with Stakeholders

As part of the planning process, two consultations were conducted; one is the inception consultation for the drafting of the ESA on May 29 2009 and another on the Draft ESA on September 4, 2009. Key informant interviews and small group discussions were also done as possible with the partner government agencies, activity implementers, and the local community The significant results are presented in **Section 6.**

3.6 Safeguards Management

Section 7, the Environmental and Social Assessment Framework (ESAF) presents key topics in the management of safeguards from inception of an proposed activity proposal until its completion. These topics are roles and responsibilities, step by step procedures for EA/SA development and approval, public consultation and disclosure, monitoring and supervision of project. Section 8 presents the capacity building and training for EA/SA implementation, and Section 9 for the cost and budgeting for the EA/SA implementation.

4.0 PROJECT-RELATED ENVIRONMENTAL/SOCIAL IMPACTS AND RISKS

4.1 Upgrading of a Laboratory for PCDD/PCDF Monitoring

The laboratory will be located inside the compound of the Philippine Department of Science and Technology (DOST) at General Santos Avenue, Bicutan, Taguig City, Metro Manila. It will specifically occupy the laboratory building of the Integrated Program for Clean Technologies (IPCT), east of the Environmental Office of the ITDI. The laboratory surrounded by other DOST buildings to the eastern southern and western part. On the north side is an open lot and a fence of about 20-30 that separates the compound with residential area.

There will be renovation works, such as the following:

a) Construction of laboratory drainage and sewage
b) Construction of lab sinks and installation of activated carbon trap in the plumbing system
c) Construction of a dressing room
d) Replacement of windows for better seal in the clean-room area
e) Renovation of restroom areas
f) Repair of leaking extension roof
g) Sealing of laboratory walls
h) Installation of electrical system
i) Installation of communication network between the laboratory and the office
j) Room partitioning
k) Repainting
l) Provision of a storage area outside the laboratory building for solvent-contaminated liquid wastes; a chemical shed away from the residential area, where irradiation

After the renovation, the laboratory will operate core laboratory processes as follows: sample receipt, pre-treatment, equipment preparation, analysis, reporting, sample disposal and cleaning up. Among the listed processes, those that may be possible sources of these discharges are sample receipt, sample analysis and sample disposal.

a) Sample receipt involves logging off by the laboratory secretary of analytical requests of clients, sample inspection by the laboratory aide for proper labels as well as registration of the sample laboratory code, and then, validation/double checking by the lab chemist of the correctness of the request and labels prior to conducting the analysis.

b) Sample analysis involves extraction with solvent, drying in a rotary evaporator, clean-up in glass columns or solid phase extraction columns, drying with nitrogen gas, and transferring the samples to the HRGC-HRMS vials for analysis. The HRGC-HRMS is necessary to eliminate co-eluting fragment ions from other compounds such as PCBs and chlorinated diphenyl ethers. It also eliminates the need for even more extreme cleanup procedures to remove matrix effects and interfering compounds.

c) Sample disposal involves managing both the analyzed samples and any excess sample so as not to pose any threat to the surrounding biophysical environment or any health threat to either laboratory staff and to the local community.

The impacts from the above-mentioned activities were identified, as follows

a) The renovation of the existing laboratory would cause short-term, temporary noise emissions due to carpentry and masonry works but would not cause significant increase in the ambient level within the 20-30 m distance neighboring residential areas due to low scale of construction works and the building wall and concrete fence serving as noise barriers.

b) The renovation would cause temporary insignificant increase in the local solid waste.

c) The potential area of influence on air quality will be inherently confined within the laboratory area, by scale of laboratory operation and the inherent recovery procedures of solvents in the extraction and concentration of samples. However, accumulation of recovered solvents in large amounts and placed outside the building in open containers may cause odor in residential areas.

d) About 2 m^3 of health hazards solvents (e.g. toluene, benzene, methylene chloride) as wastes may be generated per year assuming a 1-2 liters solvent per analysis per sample and given an estimate of 1000 samples (excluding yet the analysis of liquid and solid waste as well as ambient samples for monitoring around the lab).

f) Laboratory operation poses health and safety hazards and risks to laboratory workers.
g) Extensive use of solvents poses fire hazard.
h) Toxic-substances-containing solid wastes may pose health risk to garbage collectors.
e) Laboratory wastewater might cause water and ground water pollution.
i) Apprehensions of the neighboring residents of the perceived health effects of the laboratory operations.

4.2 Investments in BAT/BEP demonstration for the solid waste sector

Open and Controlled dumpsites are known to cause various environmental impacts like dioxin and furans emissions from burning events, water pollution due to leachate production, air pollution due

to dust and gas emissions, mal odor, unsanitary conditions, nuisance noise due to heavy equipment operation, and the like leading to complex social issues.

Burning at dumpsite is most prevalent at the dump slope where loose or uncompacted materials are found. Deliberate burning is done to conveniently scavenge valuable metals like copper. Workers observe that fire may start when a broken clear glass is exposed to hot sunny conditions. Years back, the DENR has set deadline to close such dumpsite or convert them to sanitary landfill.

4.2.1 Works to Stop Burning at Dumpsites

The activities will include a combination of fire suppression (excavation, applying foam, injecting inert gas, targeted water application) and dumpsite rehabilitation (applying soil cover, restructuring areas of the dumpsite, slope stabilization). Local techniques involve cautious immediate excavation of a smoking portion and compacting the place and the removed waste using bulldozer or front-end loader. It is assumed in this case that the site continues to receive solid waste routinely. The activities or techniques applied results to negative residual impacts, as follows:

- exposure of workers to fumes and natural explosions due to gas build up
- risk of slope collapse to nearby settlers during major waste movement activity
- land disfiguration, soil erosion, water ponding and safety risk to children due to excavation of soil for dumpsite cover.
- increase in airborne dust from soil excavation and on-site transfers especially during summer
- accumulation of mud along transport route wet offsite soil to dumpsite.
- restricted access of waste picker to dumpsite and their consequent inability to generate their day's income from the dumpsite

4.2.2 Prevent Burning

This activity aims to prevent burning by improving landfill operation both technically and environmentally using simple measures like improved screening and accounting of wastes, provision of security in preventing unauthorized burning, monitoring of portions to spot susceptible areas to spontaneous combustion, reconfiguration of the dump to allow immediate compaction of loosening areas., slope stabilization, and application of soil cover The menu of impacts and risks are the following:

- exposure of workers to fumes and natural explosions due to gas build up
- risk of slope collapse to nearby settlers during major waste movement activity
- land disfiguration, soil erosion, water ponding and safety risk to children due to excavation of soil for dumpsite cover.
- increase in airborne dust from soil excavation and on-site transfers especially during summer
- accumulation of mud along transport route wet offsite soil to dumpsite.
- restricted access of waste picker to dumpsite and their consequent inability to generate their day's income from the dumpsite

4.2.3 Dumpsite Closure

The safe closure activities according to DENR 2006-09 includes the following:

- site assessment
- site clearing
- site grading and site stabilization of critical slopes
- application and maintenance of soil cover and capping
- provision of drainage control system
- leachate management

- gas management
- fencing and security
- putting up of signage
- future land use

Potential residual impacts have been identified, as follows

- exposure of workers to fumes and natural explosions due to gas build up
- risk of slope collapse to nearby settlers during major waste movement activity
- land disfiguration, soil erosion, water ponding and safety risk to children due to excavation of soil for dumpsite cover.
- increase in airborne dust from soil excavation and on-site transfers especially during summer
- accumulation of mud along transport route wet offsite soil to dumpsite.
- chances of an increase in uncollected garbage without provisions for alternative receiving facility of garbage
- restricted access of waste pickers to dumpsite and eventual economic displacement (removal of shelters, reduced or loss in the volume of waste picked).

4.2.4 Prevent Backyard Burning

The provisional investment on BAT/BEP to prevent backyard burning are as follows:

- Advocacy (advocacy materials and dissemination campaigns to reduce burning and explain health and environmental issues);

- Enforcement (logistical, technical supporting equipment and other goods for improved monitoring and enforcement);

- Technical (provision of collection trucks; collection bins, community collection stations; repair and maintenance equipment and facilities)

The residual impacts include land contamination due to improper disposal of waste oil from collection trucks and inequitable provision of services.

4.3 Implementation of PCB Management

PCB Management toward phase out in 2014 may entail the following physical activities: identification of PCB-containing equipment, testing of transformer liquids for PCB, labeling of equipment, inventory, decommissioning and decontamination of equipment, storage of PCB and equipment, transport, and final disposal. The key issues are the safety and health risk to workers, risk of water pollution due to suspected lack of best practices in the prevention of spillages, and disposal of contaminated articles, tools, equipment, and washing. The upcoming Revised Guideline on PCB Management is supposed to avoid such impact and only residual safety and health risk and accidental spillages can be are assumed.

4.4 Site Remediation Demonstration

Physical activities identified for site remediation include soil coring for site assessment, the clean-up, rehabilitation works, and post-clean up site control.

Soil coring activities, as part of site assessment, will entail site entry protocol, actual coring, and exit protocols. The issues are restricted use of the area, disposal of the excess contaminated soil, generation of solid waste, generation of waste water in case water is used, cross-contamination between two aquifer layers for deep boreholes, exposure of site worker to site contaminants

especially with the vapors, and apprehension of the IP community on the activity without proper entry protocols.

After site assessment, the activities may follow any of the three tracks:

Track 1 - no treatment allowing natural attenuation process, with site control measures
Track 2 - in-situ treatment or immobilization of the contaminated soil
Track 3 - ex-situ treatment by removing the soil, extracting the contaminant onsite or offsite, destruction or immobilization of the contaminant onsite or offsite

In other words, the contaminant is immobilized or destroyed onsite or offsite, depending on the feasible options with the technology and other decision factors. Whatever option is chosen, site remediation should logically not cause significant environmental impact at the demonstration level over a small parcel of land.

The treatment process groups (physical, chemical, and biological) include the following 14 treatment categories:

1. In situ biological treatment for soil, sediment, bedrock, and sludge.
2. In situ physical/chemical treatment for soil, sediment, bedrock, and sludge.
3. In situ thermal treatment for soil, sediment, bedrock, and sludge.
4. Ex situ biological treatment for soil, sediment, bedrock, and sludge.
5. Ex situ physical/chemical treatment for soil, sediment, bedrock, and sludge.
6. Ex situ thermal treatment for soil, sediment, bedrock, and sludge.

7. Containment for soil, sediment, bedrock, and sludge.
8. Other treatments for soil, sediment, bedrock, and sludge.
9. In situ biological treatment for ground water, surface water, and leachate.
10. In situ physical/chemical treatment for ground water, surface water, and leachate.
11. Ex situ biological treatment for ground water, surface water, and leachate.
12. Ex situ physical/chemical treatment for ground water, surface water, and leachate.
13. Containment for ground water, surface water, and leachate.
14. Air emissions/off-gas treatment.

Technologies to clean the site were explored, as listed below:

Remediation Technology of Pesticides and PCBs

- Physicochemical Technologies
- Combustion Systems
- Bioremediation Processes
- Phytoremediation
- Emerging and Innovative Technologies – physicochemical technologies
- Emerging/Innovative Thermal Technologies

Technologies for Dioxins and Furans Remediation

- Radiolytic Degradation
- Base Catalyzed Dechlorination
- Subcritical Water Treatment
- Thermal Desorption
- In-situ Photolysis
- Solvent and Liquefied Gas Extraction
- Steam Distillation

- Mechanochemical (MC)
- Biodegradation Process

Four remediation technologies for POPs sites in developing countries were assessed and most promising and practical, as follows: incineration, landfill, cement kiln co-processing, and in-situ thermal desorption.

Given that for each of the candidate sites, the clean up technologies has not been selected or firm up and clean up design has not been prepared, the stages in the clean up would involve the following:

1. Site staging
2. Site surface clearing
3. Soil removal (for ex-site remediation)
4. Treatment of soil whether in-situ, or ex-situ (on-site or off-site) using physical, chemical, or biological means
5. Site Rehabilitation

.
The area of influence of such activities is largely confined within the remediation site and neighbors. Low or insignificant impacts are associated in the small demonstration sites, and in general as follows:

1. Small land disfiguration or removal of aesthetics elements at the site
2. Removal of useful structures including the heritage structures
3. Removal of important trees, ornamental plants, crops
4. Temporary increase in the local solid waste generation rate
5. Muddying of pathways due to run-off from soil stockpile
6. Structural impacts due to vibration, dewatering and groundwater pumping
7. Cross contamination of neighboring soil due to run-off of stockpile of soil excavated
8. Temporary surface water pollution due to run-off of stockpile of excavated soil
9. Cross contamination of groundwater due to leaching of contaminants from contaminated excavated soil, and chemicals used for on-site treatment of soil
10. Temporary elevated levels of odorous gases released from excavation (e.g. petroleum hydrocarbons, gasworks wastes, organic solvents or putrescible wastes) or released from using chemical (solvents, strong acids, strong bases) for on-site treatment like
11. Temporary increase in ambient total suspended particulates in air due to dust emission from excavation of dry soil and from dry stockpile of soil during windy situations
12. Temporary increase in the ambient noise level due to equipment operation like heavy equipment and motors used in the on-site treatment of soil
13. Short-term exposure of workers to physical, chemical or biological hazards depending on the technology to be applied
14. Risk to public (especially children) and visitor safety and health
15. Temporary restriction of access to the current site use leading to loss of livelihood and economic loss
16. Encroachment in an IP area
17. General apprehension of the activity due to lack of local courtesies, timely information dissemination, and timely updates to local key stakeholders

While the specific technology has not been identified or firmed up for each site, the approach in determining their potential impact is to use the remediation process groups (i.e. physical, chemical, and biological). The impacts from the physical process come from the introduction of agents (like heat, and negative pressure) to separate the viscous contaminant from the soil. For chemical process, the impact comes from the use of solvents or chemical reactants or products of reaction

with the risk of chemical pollution at the site. The biological process, say using microorganism, may cause uncontrolled spread of microorganism.

4.5 Contaminated Site Control

Site control aims to separate the public from the contaminated site, requiring engineering works, for example:

1) ***Fences*****:** with warning or prohibiting signs for any unauthorized access;
2) ***Caps***: Caps may be constructed of clay or chemically resistant geosynthetic materials.
3) **Engineered bottom barriers**: This is a recent development in which an impervious horizontal stratum is created below an existing contaminated site (i.e., landfill), when no aquitard exists, by grouting or other techniques.
4) ***Immobilization processes.*** These processes involve the binding of contaminants into a solid that is resistant to leaching. The following three processes are examples used for immobilizing contaminants in soil:
    a) ***In-situ solidification***. In this process contaminants are physically bound or enclosed within a stabilized mass.
    b) ***In-situ stabilization.*** Stabilization is accomplished by inducing chemical reactions between a stabilizing agent and the contaminated soil to reduce contaminant mobility.
    c) **Encapsulation**. Encapsulation involves the complete coating or enclosure of a toxic particle or waste agglomerate with a new substance, e.g., the additive or binder.
5) ***Vertical barriers.*** This type of barrier is used to prevent horizontal migration of groundwater. Vertical barriers are typically used to control sources of contaminants are soil-bentonite, soil-cement-bentonite, cement-bentonite, sheet pile (steel or high-density polyethylene [HDPE]), and clay barriers.

Basically, the activities resemble short-tem construction works, which the locals may be familiar with, and would cause impact generally similar to site remediation, as follows:

1. Small land disfiguration or removal of aesthetics elements at the site
2. Removal of useful structures including the heritage structures
3. Temporary increase in the local solid waste generation rate
4. Cross contamination of neighboring soil due to run-off of stockpile of soil excavated
5. Temporary surface water pollution due to run-off of stockpile of soil excavated
6. Muddying of pathways due to run-off from soil stockpile
7. Temporary increase in ambient total suspended particulates in air due to dust emission from excavation of dry soil and from dry stockpile of soil during windy situations
8. Temporary increase in the ambient noise level due to equipment operation like heavy equipment and motors used
9. Olfactory impacts due to gaseous emissions released from excavation or using chemical for on-site treatment
10. Removal of valuable trees, ornamental plants, and crops
11. Short-term exposure of workers to physical and chemical hazards depending on the technology to be applied
12. Risk to public (especially children) and visitor safety and health
13. Long term restriction of access to the current site use leading to loss of livelihood and economic loss which may also lead land acquisition and resettlement issue
14. Encroachment in an IP area
15. General apprehension of the activity due to lack of local courtesies, timely information dissemination, and timely updates to local key stakeholders

5.0 PROJECT-RELATED MITIGATION STRATEGY

This section presents the recommended mitigation strategy by component and the social safeguards, taking into consideration the impacts and risks presented in the preceding section .

5.1 Component 1: PCDD/PCDF Laboratory

The following management strategies will apply for the UPOPs laboratory:

a. Waste minimization through reduction at source, reuse and recycle principles of waste management. Samples will be received at a quantity just enough for the analysis.
b. Waste segregation systems both for liquid and solid for systematic handling.
c. Consideration for alternative less hazardous solvents.
d. Provision of waste storage receptacles with adequate cover to prevent the escape of volatile substances.
e. Provision of enclosed but well ventilated waste treatment area with adequate ventilation, impervious floor linings and spill collection system (as provided in RA 6969 and best practices).
f. Use of in-house waste treatment technology.
g. Disposal of toxic chemicals containing waste thru commercial waste treaters and disposers.
h. Implementation of personnel health and safety protocol, and benefit packages.
i. Implementation contingent IEC program for the employees and neighboring residents
j. Implementation plans against the incidence of fire.
k. Acquisition of ISO-17025 accreditation, while which directly pertains to general requirements for the competence of testing and calibration laboratories, indirectly inculcates discipline to workers in following laboratory environmental, safety and health protocols.

5.2 Investments in BAT/BEP demonstration for the solid waste sector

The following measures per activity will be implemented by LGU particularly the dumpsite management in coordination with the City Environment and Natural Resources (CENRO) office, City Social Work and Community Development Office, DENR attached agencies such as NSWMC, barangay officials, scavengers and other local communities

A. Works to Stop Burning at Dumpsites

a. Minimize exposure of workers to smoke and gases by providing them personal protective equipment (PPE), working upwind or during wet conditions, and working at an hourly rotation
b. Check collapse prone areas by undertaking confirmatory tests on stability of compacted site to prevent dump slides, and advance notice to nearby settlers of the work to be done
c. Obtain cover soil in areas consistent with the intended land use including those from existing land development works
d. Minimize dust emission by regular watering of areas with high dust emission or avoiding earthmoving activities during windy situations
e. Prevent soil spillage along soil transport route by filling trucks to the brim, cover soil with tarpaulin, and remove soil on its side and tires before the trucks are allowed to travel.
f. Notify waste pickers in advance for them to find alternative source of income

B. Prevent Burning Activities

a. Minimize exposure of workers to smoke and gases by providing them personal protective equipment (PPE), working upwind or during wet conditions, and working at an hourly rotation

b. Check collapse prone areas by undertaking confirmatory tests on stability of compacted site to prevent dump slides, and advance notice to nearby settlers of the work to be done
c. Obtain cover soil in areas consistent with the intended land use including those from existing land development works
d. Minimize dust emission by regular watering of areas with high dust emission or avoiding earthmoving activities during windy situations
e. Prevent soil spillage along soil transport route by filling trucks to the brim, cover soil with tarpaulin, and remove soil on its side and tires before the trucks are allowed to travel.
f. Notify waste pickers in advance for them to find alternative source of income

C. Dumpsite Closure

a. Minimize exposure of workers to smoke and gases by providing them personal protective equipment (PPE), working upwind or during wet conditions, and working at an hourly rotation
b. Check collapse prone areas by undertaking confirmatory tests on stability of compacted site to prevent dump slides, and advance notice to nearby settlers of the work to be done
c. Apply terracing method in slope stabilization
d. Obtain cover soil in areas consistent with the intended land use including those from existing land development works
e. Minimize dust emission by regular watering of areas with high dust emission or avoiding earthmoving activities during windy situations
f. Prevent soil spillage along soil transport route by filling trucks to the brim, cover soil with tarpaulin, and remove soil on its side and tires before the trucks are allowed to travel.
g. Provide security measures against intentional burning
h. Fast track implementation of the local solid waste minimization and diversion plan at source (e.g. MRF, composting)
i. Identify temporary receiving facility for wastes during closure activity/construction of alternative disposal technology
j. Implement social development plan for waste pickers
k. Implement an IP plan if the site in confirmed in an IP area
l. Implement an IR Plan
m. Implement communication strategy

Dumpsite Closure and Rehabilitation Plan. The review of the current dumpsite closure plan outline showed the need for the dumpsite closure plans to be updated filling up the gaps with the WB EA requirement**.** The plans were found strong in the technical aspect of the closure, however weak or lacking in the different aspects of the EMP, in particular, the presentation of impacts, monitoring, roles and responsibilities, cost, and sources of fund. The social impact like impact on waste pickers and measures, though being addressed by the LGU, are not presented in the plans. Thus, an Updated Dumpsite Closure Plan using an upgraded outline is a recommended operative document for safeguard clearing purposes.

An updated closure plan provides the following benefits and is doable.

1. As the plans were drafted in 2006, an updated plan encourages the LGU to document its milestones performance over the past years and its balance of work in order IPOPs financing would be situated and the impact of financing to the success of the closure.

2. The updated plan may present gas collection proposals, which may provide information for the entry of counterpart funding under the Clean Development Mechanism.

3. The updated plan completes the basic components of environmental assessment of the WB. In the light of the WB EA/EMP requirement, the closure plans are strong in the technical aspects but lacking or weak in documenting briefly the profile of the dumpsite immediate environment, impact assessment (as required in DAO 2006-09) safety and health protocols for personnel, consultation with and package for the waste pickers and other affected persons, monitoring, roles and responsibilities, cost, and sources of funds.

4. The updated closure plan provides speedy review compared with the review of separate documents (like additional information). LGUs presented their closure plans in different ways so that a standard format has to be adopted for speedy information analysis and project monitoring.

5. Chances are, the LGUs are capable of electronic preparation of their documents through the use of computers, therefore can readily prepare an updated plan. Any LGU which lacks the capability may be provided for such as a form of incentive

Social Development Plan for Waste Pickers. Even without the IPOPs Project, dumpsite closure will be undertaken by the LGU, as required by virtue of RA 9003, and will displace anyway the waste pickers. The impact of the IPOPs, in a way, will hasten such displacement.

In different approaches within their capacities and other considerations, the LGU would normally have plans and instituted measures to address the concerns of waste pickers. For standardization under the IPOPs Project and to aid also the LGU, a guidance in preparing a Social Development Plan will be provided for use by the LGU. Beyond the WB policy requirements, the guidance document provides a comprehensive methodology for the design and implementation of participatory livelihoods restoration and social inclusion plans for informal sector waste workers, through a participatory process.

The document provides guidelines for the screening of subprojects and, where such screening reveals the presence of waste pickers in the affected area, guidelines for: (1) assessing their situation; (2) determining the costs and benefits of their existing activities; (3) gauging the potential impacts of the planned intervention upon them; and (4) developing, with their active involvement, a targeted Social Development Plan, to ensure that: (i) any negative impacts on their professional activities are avoided, minimized, mitigated or compensated; (ii) they share equitably in subproject benefits; and (iii) they are either integrated into the new SWM system or otherwise assisted in improving their incomes, working and living conditions, and access to social services and protections.

The guide provides for designing and implementing a waste picker social development plan, as follows: (1) objectives of the plan, (2) characteristics of the plan, (3) core principles, (4) roles and responsibilities, (5) participation, and (6) design and execution of a plan (screening, staffing, diagnostics, eligibility criteria and the cut-off date, design phase, coordination with subproject technical stages and communication plan, implementation, monitoring and evaluation) . Key steps in plan preparation and implementation are also outlined

The guide also contains general information on waste picking such as definition and categories, waste picker organization, risks and benefits (economic, environmental, social) of waste picking. Core principles are contained in the guide rationalizing and describing the participation of the waste pickers, community institutions, and private sector coming up with broad partnerships, comprehensive strategy, upgrading and integration of existing activities, viable alternatives, benefits from experiences and experiments with new approaches.

A social assessment data checklist in questionnaire form is also provided for socio-demographic and cultural data, organizational structure, occupational characteristics, income and job satisfaction, education, health and living conditions

The guide list of possible modes of waste pickers upgrading and integration, such as working condition and access to materials, housing, health and living conditions, organization, institutions and capacity, policy, legal and institutional reforms, and efficiency, productivity and profitability

Finally, the Social Development Plan must specify the following:
1. Institutional roles and responsibilities with regard to monitoring;
2. Types of indicators to be used;
3. Arrangements and timelines for measuring them;
4. Types of data to be collected and collection methodology to be employed;
5. Means by which and timeline according to which results will be reported to stakeholders;
6. Specific monitoring and evaluation procedures; and
7. Agreed reporting arrangements

Involuntary Resettlement Plan. In the necessity to displace structures and settlers to give way for the dumpsite closure, the Involuntary Resettlement Framework will be activated, but with an initial review of the screening such displacement for appropriate action. The framework, containing the following management topics**:**

1. Institutional and legal framework (WB polices and GOP laws and regulations)
2. Assessment on the nature and scale of displacement and the resettlement
3. Criteria for eligibility for compensation and other entitlements
4. Options and standards for compensation
5. Modes of acquiring private assets
6. Grievance redress mechanisms (indigenous and non-indigenous people)
7. Administrative and legal procedures
8. Monitoring arrangements

The activity proponent will attach to the dumpsite closure plan a resettle plan of which content would depend on the nature and scale of resettlement. Efforts must be exercised to ensure that all adverse impacts of acquisition of assets and properties are fully mitigated and that displaced persons (DPs) are benefited and are not worse off If 200 persons will be displaced an abbreviated plan is required. For 200 or more persons to be displaced a full resettlement plan will be submitted.

An abbreviated plan covers the following minimum elements:

A. Census survey of displaced persons and valuation of assets
B. Description of compensation and assistance
C. Consultations with displaced people about acceptable alternatives)
D. Institutional responsibility for implementation and procedures for grievance redress
E. Arrangements for monitoring and implementation
F. Timetable and budget

A full resettlement plan covers the elements listed below:

A. Project Description
B. Potential Impacts
C. Objectives
D. Socio-Economic Studies
E. Legal Framework
F. Institutional Framework

G Eligibility
H. Valuation of, and Compensation for, Losses
I. Resettlement Measures
J. Site Selection, Site Preparation, and Relocation
K. Housing, Infrastructure, and Social Services
L. Environmental Protection and Management
M. Community Participation
N. Integration With Host Populations
O. Grievance Procedures
P. Organizational Responsibilities
Q. Implementation Schedule
R. Costs and Budget
S. Monitoring and Evaluation

Indigenous People (IP) Plan. The IP Framework applies when the dumpsite site is located in an ancestral domain or located in an area with recognized official participation of the IP. The IP Framework is based on OP 4.10 and RA 8371 (The Indigenous Peoples Rights Act). The framework contains the following topics:

- Subproject screening for beneficial and adverse Impacts
- Conduct of social assessment
- Free and Prior Informed Consultation (consultations, securing Certificate Precondition)
- Institutional arrangements
- Grievance redress
- Monitoring and reporting (Monitoring Mechanisms, Monitoring and Reporting Arrangements
- Disclosure arrangements

With respect to IP participation, and specifically in regard to IPOPs screening of Project-supported activities, impact assessment, and IP Plan formulation, the IPOPs management defers to the NCIP. Nevertheless, the level of discussion in IP Plan will depend on the nature and scale of the needed participation of the IPs. The IP Plan will include the following elements, as needed:

1. Summary of policy review and generated baseline information. Baseline information shall incorporate data on the demographic, social, cultural, and political characteristics of the affected ICC, the land and territories that they have traditionally owned or customarily used or occupied, and the natural resources on which they depend.
2. Summary of the social assessment
3. Summary of results of the FPIC (Free and Prior Informed Consultation)
4. Framework for ensuring FPIC specifically to include (a) appropriate gender and intergenerationally inclusive framework that provides opportunities for consultation at each stage of project preparation and implementation, (b) use of consultation methods appropriate to the social and cultural values of the affected IPs and their local conditions and, in designing these methods, gives special attention to the concerns of IP women, youth, and children and their access to development opportunities and benefits; and (c) Provides the affected IPs with all relevant information about the project (including an assessment of potential adverse effects of the project on the affected Indigenous Peoples' communities) in a culturally appropriate manner at each stage of project preparation and implementation.
5. Action plan of measures to ensure that IPs receive social and economic benefits that are culturally appropriate, including, if necessary, measures to enhance the capacity of the project implementing agencies.
6. Mitigating measures should potential adverse effects on Indigenous Peoples are identified.
7. Cost estimates and financing plan for the IPP.
8. Grievance redress procedures with options for judicial recourse and customary dispute settlement mechanisms among the IPs.

9. Mechanisms and benchmarks appropriate to the project for monitoring, evaluating, and reporting on the implementation of the IPP.

5.3 Component 3: Sound PCB Management

The mitigation strategy to address the risk in managing PCB at the premises involves the upgrading and updating the PCB management plans. This is based on a review of the DENR PCB Management Plan Outline which showed the outline is weak or lacking in some EMP aspects like monitoring, personnel safety and health, roles and responsibilities, and costing. The recommended upgraded outline addresses the gaps with reference to the WB EA requirement. Thus the mitigation strategy is the preparation and submission of an updated and upgraded PCB Management Plans from PCB owners. This recommendation will support the upcoming Revised Technical Guidelines for PCB Management, and updating the national inventory.

5.4 Component 4: Site Remediation Demonstration

Identification of strategies for mitigation for the impact of site remediation involve a thorough knowledge of the site natural and human environment as well as the applicable technology which would not pose greater environment and social impact than the untouched contaminated site. A Site Remediation Plan at the level of full EA will be submitted prepared incorporating the applicable social safeguards.

The impacts of site assessments are addressed through the following means:

- cement plug the boreholes after sample collection to avoid surface contaminants intrusion to the groundwater
- return of soil and excess clean water to the borehole
- provide the boring equipment water recycler to minimize the use of water
- treat used water prior to disposal
- provide the work area with solid waste receptacle for later proper disposal of the waste
- observe safety and health protocols by providing medically pre-qualified workers with personal protective equipment (PPE) such as boots, gloves, masks and goggles., as well as with gas concentration measuring instrument
- deploy service provider with proven experience in environmentally and socially sound with environmental, safety, and health provisions in the contract
- coordinate the activity with the local IP community in the form of notice and, if required documented clearance to perform the site assessment

The impact the clean up technology is initially addressed by developing a process of selection of the technologies, participated by various independent parties like the DOST, environmental engineering groups, biological scientist, environmental technologies specializing in site remediation. The selection of service contractors, which normally goes with the technology, would form part in the activity.

To assure of the public safety, the lot owners, and neighbors including the IP will be consulted and regularly be informed of the progress of work. Important signs in the demonstration sites would be in place.

Certain technical measures such as for soils management, surface water protection, groundwater protection, odor and gaseous (volatile) emissions, dust emissions, noise emission, flora and fauna, dangerous hazardous substances, structural damage, and heritage

Soil management

- Establish a material tracking system that tracks materials from 'cradle to grave'.l
- Track mud on vehicle tyres is both an on-site and off-site cause of contaminant transport, so tyre washing facilities may be appropriate. Procedures should be set in place for handling and disposing of potentially polluted water from wheel-wash operations.
- Cover exposed soil to prevent losses from wind or water erosion and vertical migration of chemical substances in the soil from rainfall events.
- Locate and manage stockpiles appropriately.
- Provide an impermeable groundcover to protect clean or sensitive areas.
- Carefully delineate areas on site and manage contaminated soils.
- Design and operate effective surface water control measures.
- Isolate treated and validated areas and ensure they are not re-contaminated by site works.
- Dispose off contaminated soil to an appropriately licensed facility.

Surface water protection

- Use of temporary rainproof covers
- Temporary bund around stockpiles, or location of stockpiles on waterproof surfaces such as asphalt or concrete, or under cover where available
- Minimize the area being treated at any one time
- Install temporary barriers (e.g. hay bales, geo-fabric or similar)
- Excavate drainage or run-off water diversion trenches, collection or absorption pits, ponds to capture and treat the run-off (e.g. remove sediment)
- Designate an area within which all run-off and infiltration is to be controlled with strict performance objectives (e.g. no uncontrolled run-off).

Potential recycling measures include:

- Respray polluted water onto stockpiles of excavated soil as a means of effectively managing the water and suppressing dust, although this may not be acceptable if the water contains volatile substance
- Use collected surface water to stabilize dry soil and avoid dust
- Direct stormwater to landscaped areas
- Use collected surface water at nearby processing industries.

Treatment and disposal of collected polluted run-off should be considered as a final option..

Potential treatment and disposal options to consider include:

- Treatment on site to appropriate criteria
- Diversion to sewer
- Removal to a treatment facility by means of road-tanker (this is likely to be an expensive option).

Groundwater protection

- Ensure tanks, pipes, bunds, dams and leachate ponds are all constructed so as not to affect groundwater.
- Use contaminant fate and transport modeling to understand the likely movement of, and potential changes to, groundwater contamination.
- Ensure correct management of contaminated soil.
- Implement groundwater remediation plan(s) appropriately and properly.
- Identify potential off-site sources of contamination and manage on-site impacts.

- Carry out the design, construction, installation and decommissioning of groundwater monitoring bores in accordance with regulations, if any
- Properly decommission bores before starting work

Odor and gaseous (volatile) emissions.

- Minimize exposed surface area of odorous/noxious materials (eg use a staged remediation strategy rather than a broad-scale approach)
- Time excavation activities to minimize off-site nuisance
- Undertake work in favorable weather conditions (eg lower temperatures, favorable winds)
- Cover exposed surfaces overnight or during periods of low excavation activity not stockpiling odorous materials unless closely contained or covered
- Completely cover the area of excavation (eg with a large tent) during all activities
- Treat(e.g. using adsorption, thermal or filtration methods) all controlled emissions (e.g. during bioremediation, air sparging or product recovery)
- Immediately and completely remove offensive odorous material offsite.
- Monitor of airborne chemical substances in the working zone of the worker, and
- Consult with an occupational hygienist and supported by an air quality risk assessor for off-site impacts.

Dust (particulate) emissions

- Maintain good housekeeping—minimize traffic and its speed on exposed soils, minimize exposed working areas during remediation, and minimize loose soil
- Light apply water spray to dampen the soil but not saturate it.
- Avoid potentially polluted runoff from saturated soils entering adjacent sites, stormwater systems, or local waterways
- Periodically apply water to provide persistent effects, although in clayey soils a crust may form which will reduce dust generation.
- Spray binders and a hydro-mulch, a continuous cover of mulch, coarse sand and dolomite (effective even if used very thinly) rolling the site, particularly when the soil is moist, to compact the surface
- Apply vegetative cover—grassing (with native or introduced species) to effectively stop dust generation, but this will incur costs for maintenance. However, even if the grass is allowed to die, the dust reduction effect will persist for some time.
- Use groundcovers, such as tarps or geo-fabrics
- Install screens to act as windbreaks
- Install fence as wind barrier

Stockpiles

- Limit the maximum height of about 3 m, or equal to or lower than the average height of surrounding structures.
- Reduce stockpile height as it approaches the site boundary. Stockpile heights should be below fence lines when within about 5 m of the boundary.
- Cover stockpile with an effective covering.
- Wet the stockpile just enough to control dust, without flooding it
- Determine presence and quantity of asbestos fibers and take precautionary measures, accordingly

Noise emission

- Restrict hours of operation for site beside a residential area
- Do not operate noisy machines before 9 am.

- Use noise suppression on machinery or equipment with low sound outputs.
- Properly maintain all equipment, with special attention to mufflers and other noise control devices.
- Provide hearing protection for workers.
- Do not use loud radios where neighbors can be disturbed.
- Install screens or noise baffles.
- Between work periods, workers should shut down, or throttle to a minimum, machines such as backhoes, cranes, bobcats, loaders and generators.
- Place noisy equipment on the site at maximum distance from neighboring houses

Flora and fauna

- Dedicate or zone areas of high environmental value as part of the master plan for the site.
- Restrict or alter access to areas of high environmental value.
- Use alternative remediation methods that minimise the impacts from the remediation work on high-value or threatened species (see above; eg natural attenuation may be an acceptable approach in certain circumstances in preference to methods involving excavation and habitat destruction).

Structural damage to adjacent structures : Vibration, dewatering and groundwater pumping

- To ensure that damage caused by vibration is accurately identified and compensated, if appropriate,, undertake dilapidation surveys and reports (before and after remediation) thru qualified independent person and in consultation with the residents, before remediation activities commence, during work and following completion.,
- Use of alternative compaction options to mitigate damage—eg non-vibrating rollers, sheepsfoot roller
- Completion of a suitable geotechnical study before any site works
- Consideration of engineering solutions that require low levels of compaction, taking into account the subsequent land use
- Use of excavation measures that minimize vibration levels
- Use of saw cuts to isolate areas of rock to be broken out

Heritage

- Engage a heritage consultant or heritage architect to assess the heritage significance of a structure or artefact
- Decontaminate of the structure
- Contain or encapsulate of the contaminated materials
- Prepare a detailed historical record of the structure before its complete or partial demolition

when significant artifacts are found:

- Stop the work and notify the site manager and appropriate authority
- Seek advice from an appropriately qualified heritage consultant.
- Resume work only under direction of the heritage consultant.
- Undertake appropriate studies before work resumes if items of significance are likely to exist on the site

Dangerous/hazardous substances

Potential mitigation measures:

- If hazardous substances are to be stored on site, check the regulatory requirement
- Ensure adequate on-site security.
- Ensure safe work practices—in particular that there are no potential ignition sources in the vicinity of flammable or explosive substances (including the use of intrinsically safe machines).
- Document emergency procedures in the site-specific safety plan to cover the transport and onsite storage

Security and visitors

- Secure fencing to restrict access to the site and provide protection from physical hazards. In particular, unsupervised excavations (including boreholes) should never be left open or unfenced as they present a hazard to site personnel, visitors and animals.
- Requirement for all visitors to report to the site office to receive further instructions
- Site induction for all workers and visitors to the site
- Records of those who attend site

Occupational Safety and Health

Remediation site service providers should be able to do the following::

- Provide a health and safety policy
- Provide and maintain a safe working environment and safe systems of work
- Provide plant and substances in safe condition
- Provide adequate facilities for the welfare of employees
- Provide information, instruction, training and supervision necessary to ensure the health and safety of employees
- Monitor working conditions at any work place.

A site safety plan needs to be prepared before remediation activities begin to document health and safety procedures on a site. As a minimum, the plan should define the following:

- Responsible persons
- Nearest medical facilities
- Risks and the safety and emergency procedures associated with each operation
- Appropriate supervision
- Safe operating procedures
- Controls to be used
- Decontamination procedures (for personnel and equipment)
- Procedures for confined space entry
- Safety equipment and procedures for first aid
- Training and education of employees and supervisors.

The plan should consider the following:

- Types of chemical substances present, their nature and characteristics and their likely concentrations—should be known from the site environmental assessment report or material safety data sheets (MSDS)

- The toxicity and volatility of chemical substances (via all exposure routes) as well as other safety hazards (eg explosion from specific gases or vapour); this information can also be found in the MSDS
- The types of operations to be carried out on site—equipment to be used, the way in which the chemical substances are to be dealt with, specific tasks of workers on site.

Minimize exposure of the site workers by providing the following

- Type of equipment used on site to minimize airborne generation of chemical substances in particulate matter
- Dust suppression techniques
- Personal hygiene requirements
- Worker education and training
- Site-specific safety requirements (eg devices for testing vapors, gases)
- Personal protective equipment (as a least preferred option, but may be necessary in some instances)
- Regular medical surveillance by an occupational physician.

The site workers should be provided with the following

- Respiratory Protective Devices
- Protective Clothing and Accessories
- Eye and Hearing Protection
- Storage and Maintenance of Equipment
- Heat Stress from Wearing Protective Equipment

The systematic approach proposed in the guidance document involves the compilation of relevant site-specific information in a worksheet through the following steps (Health Canada):

- Determine what substances have been identified at the contaminated site.
- Determine the remediation technology or technologies selected for the site.
- Evaluate whether the proposed remediation technologies are compatible with the substances found on the site.
- Review the chemical-specific health concerns summarized in the guidance document for each
- Substance identified at the site.
- Identify any non-technology-specific health impacts associated with the remediation process and the proposed preventative and mitigative measures.
- Identify the specific health impacts of each proposed remediation technology and the proposed preventative and mitigative measures

.

5.5 Site Control

The technical measures for site control activities resemble that of the site remediation less the technology-based impact. Such measure will be like that of the construction works. The social safeguards may include public safety measures, just compensation for the removed structures and vegetation and even for the use of the lot, and on the IP and general public. A Site Control Plan will be prepared for each site containing the applicable social safeguards plans.

6.0 PUBLIC DISCLOSURE AND CONSULTATION

Two consultations were undertaken for the project: one is at the scoping stage and the other at the ESA draft stage.

6.1 Scoping Stage Consultation

A major scoping consultation was held in May 29, attended by 47 representatives of different agencies, as follows:

Grouping	Representatives
PPG Team	WB, PMO, PMS, EA, SA, Component 1, Component 2
DENR	DENR FASPO Office of the Undersecretary for Policy and Planning,
EMB Central	Air Quality Management Section Environmental Quality Division Chemical Management Section
EMB Region	Region 3, 4A, NCR
Partner Implementing Agencies for all the components	DOST-ITDI National Solid Waste Management Commission National Electric Administration Clark Development Corporation SBMA (Ecology Center) National Power Corporation EMD Power Sector Assets and Liabilities Management Corporation
Non-Government Organization	Innogy Solutions Int'l. POPs Elimination Network League of Municipalities of the Philippines
Other Government Agencies	Development Bank of the Philippines National Economic Development Authority DOF Bureau of Customs DOLE Occupational Safety and Health Center

Topics discussed were as follows:

- The IPOPs project
- EA safeguard policies likely to be triggered by the project based on World Bank and Philippine Government Policies, and; the environmental and social assessment activities per component for year one and beyond
- Social assessment framework and the proposed SA activities per component, clarifying that social assessment cuts across all the project components.

The issues raised, as presented below, dealt with the status of the PPG activities, coverage of mapping of dioxins and furan, sources of dioxins and furans, criteria for site assessment, proximity of the UPOPs laboratory to residential areas, compensation package for involuntary resettlement, and need for an IP framework. All the items raised within the EA and SA activities were addressed as incorporated in the report.

	Issue	Response
1.	If the activities and components in the PPG are final.	PPG activities are more or less final. It depends, but it has to be in before the WB mission.
2.	If mapping of dioxins and furans are included in the activities, not just at the	There is no actual analysis of dioxins and furans, just an estimation.

	Issue	Response
	site but in outlying areas.	Identification of dioxins and furans are dependent on ITDI-DOST. We have not included this but the toolkit identifies the specific areas.
3.	Will there be identification of other sources of dioxins and furans that would be contributory to the dumpsite? Instead of verifying there should be actual testing for PCB inventory.	It will be included in the comprehensive survey. As of now we do not have enough facilities for testing of PCB.
4.	In Component 4: Identification of contaminated sites should include criteria for site assessment.	Site assessment is not expected to be finished by July. Consultants will provide the standards for site assessment
5.	UPOPs facility should not be situated near any residential or that this is not feasible/acceptable. In Europe, even though PCB facilities are near residential areas, there are provisions for the handling of dioxins and furans.	Almost every data researched and there is no reason to fear proximity of UPOPs testing facility in residential areas. The testing is conducted in minimal amounts, i.e. parts per trillion/quadrillion. It is more of perception that UPOPs laboratories should not be located near residential areas. There should be a clean room facility that is isolated. There are requirements for this kind of laboratory. So far, DOST have not encountered any problems with all its laboratories and the surrounding communities. She noted that for this project we should more cautious. It was also explained that there should be another person/consultant hired for the criteria for site selection of the laboratory. This person will be on-board soon.
6.	Do we intend to come up with compensation packages for the involuntary resettlement? If intervention is needed while in the preparatory stage then a resettlement action plan should be included in the framework. Who will handle the funding for Resettlement Action Plans? Will this be grant-funded or to be funded by LGUs?	The project preparatory phase will cover only the framework for involuntary resettlement. The timeframe of project preparation is not feasible for the formulation of resettlement action plan. Formulation of resettlement action plan will be in the implementation phase of the full-blown project, if there is indeed involuntary resettlement. A resettlement action plan is context-specific and that it will be in the implementation phase. The framework will serve as a guideline should there be involuntary resettlement. It may not necessarily include compensation packages. There are no definite sites yet for IPOPs decontamination therefore we could not see yet if there is any direct effect to communities.

	Issue	Response
7.	Is there any way of simplifying the project? Why the need for IP framework?	Social assessment cuts across all the other components therefore the presentation was made to clearly specify proposed activities per component. There is an IP framework because it is important that all stakeholders know what and how information disclosure will be handled if there are IPs involved.

In addition, earlier small group consultations under the EA were also undertaken in May 19 – 27, 2009 with the following objectives, and tabulated in **Table 6-1**:

a) Secure a profile and status of the proposed components
b) Surface environmental and social issues which need to be addressed in the Environmental and Social Assessment (ESA) for Year 1 Project activities and in the Environmental and Social Assessment Framework (ESAF) for Project activities to be implemented beyond Year 1.
c) Screen and validate EA requirements
d) Validate options and approaches on residual waste management and monitoring

Table 6-1. List of Consultations in May 19-27, 2009

Component	Date of Meeting	Entity Interviewed/Consulted	Topics	Annex Number
1,2,3,4	19 May 2009	DENR-EMB: EIAMD	Coverage of the IPOPs activities under PD 1586	Annex 6.1
1	21 May 2009	DOST-ITDI	Understanding of then proposed plans for the UPOPs laboratory including environmental and social issues	Annex 6.2
3	26 May 2009	NEA Engineering Division	Understanding on the current situation of PCB management in electric utilities including the PCB management practices	Annex 6.3
3	26 May 2009	DENR-EMB UNIDO Representative	Update on the UNIDO Project for the destruction of PCB	Annex 6.4
4	27 May 2009	CDC Manager	Situation of the contaminated sites situations in Clark, and remediation plan	Annex 6.5

6.2 Consultation on Draft ESA

Consultation on the Draft ESA was conducted on September 4, 2009, attended by 42 participants from different agencies, as shown below

Grouping	Representatives
PPG Team	WB, PMO, PMS, EA, SA
DENR :	MIPD FASPO
EMB Central	Air Quality Management Section Chemical Management Section RDD
EMB Region	Region 4A
Partner Implementing Agencies for all the components	DOST-ITDI National Solid Waste Management Commission Clark Development Corporation National Power Corporation EMD Power Sector Assets and Liabilities Management Corporation
Non-Government Organization	Eco Waste Coalition League of Municipalities
Other Government Agencies	Development Bank of the Philippines National Economic Development Authority DOLE BUC DOLE Occupational Safety and Health Center
Business	Plantex Solution Corporation Jefcor Lab GAIA South

The comments covered the issues on exposure of the UPOPs laboratory personnel to radioactive isotope reference solution, the necessity of obtaining ISO 17025 for the UPOPs laboratory, regulated solvents used, enforcement of the Sections 1-30 of RA 9003 to avoid landfills, participation of LGU under the framework and expansion of the IPOPs project to more than 10 LGUs, complementation of IPOPs and the UNIDO PCB destruction facility in Bataan, selection of remediation technologies, if there is really a necessity of an IP framework in CDC and SBMA, and lack of site remediation regulations, empowerment of people for the health and safety of workers and post clean up activities, as follows:

	Comment	Response
	COMPONENT 1	
1.	Dioxins and Furans analysis is not difficult but it is difficult to manage the waste. These are the radioactive isotopes. It has to be taken cared of by PNRI. Not included are the international standards of managing waste. This would only be a small amount and therefore manageable for PNRI.	That will be included in the report.
2.	What are your examples of regulated solvents?	Benzene, toluene, methylene chloride which are in the Priority Chemical list
3.	Benzene is no longer being used as well as other solvents.	Benzene is mentioned in the US EPA method of determining dioxins and furans. However, the method also indicated that there is a proposal to replace benzene
4.	Risk to safety and health of personnel due to regulated substances. How about those solvents that are not regulated.	The regulated solvent is taken at the context of protecting the laboratory personnel from solvent

	Comment	Response
5.	Also, regarding ISO 17025, it will be a difficult process. Should also include safety for example the ISO 1800.	[participant] ISO 17025 is a must. If it is a specific parameter, then it will not take time provided that the steps will be followed. Method validation is needed. ITDI has attained ISO 9001. 2 labs of ITDI have already attained ISO 17025. Application for dioxins and furans would not be a problem.
	COMPONENT 2	
6.	Can we look into the provisions of sections 1-36 of the RA 9003 and avoid landfills?	Not only for landfills but the main focus is on the release of dioxin and furans through open burning.
7.	Suggestions: Include leachate management; excavation; critical areas; better clean up plans; post closure monitoring	It is part of dumpsite closure plan
8.	Where are the institutional linkages for us to see where the LGUs can help?	Can discuss institutional linkages to work on the details regarding the framework. It would be a great help if the LGUs could give out suggestions on how to move forward regarding the project. May it be technical, design, and LGU engagement.
9.	How about municipalities that cannot afford landfills?	The project is not only for landfills but the main focus is on the release of dioxin and furans through open burning.
10.	Also, some possible expansion of the project later, beyond the first 10 sites.	That might be possible depending on the outcomes of the project and other considerations; there have been previous cases of expansion/ extension
	COMPONENT 3	
11.	With respect of the equipment used in IPOPs, does the technology used in removing/managing PCB comply with the standards? How does this IPOPs Management Project complement UNIDO?	PCB Management will be handled by IPOPs and the UNIDO will handle the waste and decontamination.
	COMPONENT 4	
12.	What are the criteria in the selection of the recommended remediation technologies?	Part of the coverage is the output that should be delivered by the International Consultant. There will be a discussion on that regarding the standards. Output is not answerable by ESA. It can be made available to you and will be prepared. As of now, we need to finish ESA first then go on with the processes. It is rather proposed that a process of selecting technologies be developed, involving various parties

	Comment	Response
13.	Regarding the IP Framework in CDC and SBMA. I understand that this is a framework and that it will be applied to all possible sites. The contamination area in CDC will be in a limited area. The far flung communities about 2-3 kms away may have some "magical" thoughts regarding the issue.	Yes, as you've said this will be applied to all sites. It is very useful to do this especially for future use where there will be presence of IPs. Actually, that was my caveat a while ago because we need to be mindful of investments. We have to go with the process with the NCIP. If you want to be involved with the process, it will be very helpful.
14.	Manifestation • We have encountered lack of regulations regarding chemical clean-ups. There were no standards in protecting the people regarding clean-ups. • Empower people who will run the program in ensuring health and safety of workers. • Post clean up activities and follow up.	[No reply necessary for the manifestation]

7.0 ENVIRONMENTAL AND SOCIAL ASSESSMENT FRAMEWORK

7.1 Objectives of the Framework

For project administration, the framework establishes rules, procedures and institutional arrangement for developing, approving, and implementing proposed activities. The ESAF will form part of the operational manual of the IPOPs Project. In addition, the framework provides technical guidance in the process and documentation for screening an activity for potential impacts, preparation of suitable mitigation measures, institutional arrangements to implement those measures, budget, monitoring arrangements and others. The framework covers the following topics.

- Sub-Project Descriptions and Scope of EAs/SAs
- Overview of Environmental Assessment Process
- Roles and Responsibilities
- Step-by-step Procedures for EA/SA Development and Approval
- Public Consultation and Disclosure
- Monitoring and Supervision of Projects

The document is focusing on World Bank environment and social safeguards policies and use of Philippine laws, as appropriate. The financing requires compliance with the WB environmental and social assessment requirements and other safeguards. It will also require compliance with the GOP environmental regulations. While only part of an activity will be financed, the assessment covers the entire principal activities in order to put the assessment in an integrative manner for effectiveness of the environment and social safeguards to be adopted.

EA (OP 4.01), as environment safeguard, aims to help ensure that proposed projects for WB financing are environmentally sound and sustainable, and thus to improve decision making. The social safeguards aims to prevent and mitigate undue harm to people in the development process. They have often provided a platform for the participation of stakeholders in project design, and

have been an important instrument for building ownership among local populations. The policy on Involuntary Resettlement (OP 4.12) aims to to assist the efforts of the displaced persons to improve their livelihoods and standards, or at least to restore them to pre-displacement levels. The policy on Indigenous Peoples (OP 4.10) identify indigenous peoples, consult with them, ensure that they participate in and benefit from Bank-funded operations in a culturally appropriate way and that adverse impacts on them are avoided, or where not feasible, minimized or mitigated.

7.2 Subproject Descriptions and Scope of EAs/SAs

Environmental and social assessment will cover the following physical activities with the corresponding EA document to be submitted along with social safeguards document for the purpose of safeguards clearance:

Component	Activity	WB Project Category	WB EA Instrument
Component 1	Upgrading of an Existing Laboratory for PCDD/PCDF Monitoring	Category B	Draft EA [1]
Component 2	Investments in BAT/BEP demonstration for the solid waste sector		
	• Works to stop burning at dumpsites.	Category B	EMP [2]
	• Prevent Burning through Soil Cover, Security and Improved Operation of Disposal Sites.	Category B	EMP [3]
	• Dumpsite closure.	Category B	EMP [4]
Component 3	Implementation of PCB Management	Category B	EMP [5]
Component 4	• Site Remediation Demonstration	Category A	Full EA[6]
	• Site Control Measures for Site Potentially Highly Contaminated Sites	Category A	Full EA[6]

[1] The Draft EA has been prepared (See Annex) and relevant items were discussed in relevant sections (e.g. Sections 4 and 5)

[2] EMPs were developed for the first year's activities consisting of three dumpsites in Cabanatuan City (Luzon), Iloilo City (Visayas), and Cagayan de Oro (Mindanao).where WB Policies on Involuntary Resettlement and Indigenous Peoples would not be triggered. For other sites that will be later identified, after the first year, the policies may apply. If present, the issues on involuntary resettlement will be treated in the EMP through a Resettlement Policy Framework. If there is an IP issue, the document shall contain an IP framework.

[3] If present, the issues on involuntary resettlement will be treated in the EMP through a Resettlement Policy Framework. If there is an IP issue, the document shall contain an IP framework.

[4] The EMP will be an Updated Dumpsite Closure and Rehabilitation Plan. The dumpsite closure activity will be required a Social Development Plan for Waste Pickers for long-term presence of waste pickers in the area, or an equivalent plan for the waste pickers on a shorter term. If present, the issues on involuntary resettlement will be treated in the EMP through a Resettlement Framework. If there is an IP issue, the document shall contain an IP policy framework.

[5] For those PCB owners who have submitted years back a PCB Management Plan., the EMP is an Updated PCB Management Plan, using an Upgraded PCB Management Plan Outline. For those who are newly registered, a PCB Management Plan will be submitted using the Upgraded PCB Management Plan Outline.

[5] EAs will be prepared for during the first year. If present, the issues on involuntary resettlement will be treated in the EMP through a Resettlement Policy Framework. If there is an IP issue, the document shall contain an IP framework.

[6] EAs will be prepared for during the first year with guidance on the framework in Section 7. If present, the issues on involuntary resettlement will be

[7] EAs will be prepared after site identification (year 3) with guidance under a framework in Section 7. for during the first year. If present, the issues on involuntary resettlement will be

The IPOPs physical activities are considered environmental mitigation/enhancement activities which are operational mandates of or beneficial to project partners, primarily intended for demonstration or piloting purposes under investment or technical assistance, national in scope, small to medium scale of operation individual activities range from small to medium, and dealing with toxic and hazardous substances, and with physical impacts generally at short or neighborhood distance from proposed site of activity.

While the IPOPs Project will only finance a part of the activity, an environmental and social assessment will be done for the entire activity to situate the contribution of the IPOPs, Project and as part o the WB safeguards advocacy policy.

Investments in BAT/BEP demonstration for the solid waste sector. The target site for this activity are the dumpsites with Dumpsite Closure and Rehabilitation Plan submitted to DENR, granted an Authority-to-Close, under DAO 2006-09 of RA 9003. The plan contains the following components:

- site assessment
- site clearing
- site grading and site stabilization of critical slopes
- application and maintenance of soil cover
- provision of drainage control system
- gas management
- fencing and security
- putting up of signage

This component activity will support 15-20 LGUs for the following: The subactivities using BAT/BET are stop burning, prevent burning, and dumpsite closure
Key issues initially identified are the safety and health of workers, impacts on sourcing out soil cover, dust emissions due to soil application, physical and economic displacement of waste pickers, and post closure use and security of the dumpsite. Involuntary resettlement and stake of indigenous people may apply.

Intervention on Backyard Burning. The activity involves investments in collection trucks, collection bins, and repair and maintenance equipment. The activity does not involve any safeguards issues except potential temporary land acquisition. The social behavior aspects will become important in the monitoring of project, which suggest that performance standards will be developed for each site before clearance is issued.

PCB Management Plan. The activity will involve the implementation of the sound PCB Management using the Revised Technical Guideline for PCB Management. The EA coverage is contained in the recommended upgraded PCB Management Plan Outline.

Demonstration Site Remediation. The activity entails cleaning of contaminated soil to a provisional standard developed in the project. Training will be provided during the activity as part of the GEF grant financing. Remediation activities will be funded by the GOP or by the project partners.

This will be undertaken in three sites: (i) Fire training area of Subic Bay Freeport (owned by Subic Bay Metropolitan Authority); (ii) PCB transformer site at Clark Freeport (owned by Clark Development Corporation); and (iii) Former Manila Thermal Power Plant (owned by Power Sector Assets and Liabilities Management Corporation) will be carried out through the four major phases:

(1) site assessment, environmental assessment and technology choice; (2) remedial design, (3) remedial action and (4) operation & maintenance (including site close-out). The clean-up proper entails the following activities site entry protocols, clearing and staging, application of technology, waste disposal, completion works, equipment pull-out, monitoring, and close-out.

The EA instrument for a specific site under this component will require a separate full EA report in accordance with the requirements for the WB Category A projects. The EA report will be named as Contaminated Site Remediation Plan. The Philippine EIS System does not require an Environmental Compliance Certificate (ECC) for the demonstration subprojects. Nevertheless, each subproject are subject to the requirements of pollution control laws like RA 6969 (Toxic Substances and Hazardous and Nuclear Wastes control Act of 1990), RA 9275 (Clean Water Act of 2004), RA 8749 (Clean Air Act of 1999)). Under RA 6969, licenses are issued to waste transporters, treaters and disposers after they pass certain requirements. .

A full EA consists of the following outline:

a. Basic Information
b. Project Description
c. Baseline Environment
d. Alternatives and the process of technology section
e. Impact Assessment
f. Mitigation
g. Monitoring
h. Implementation Schedule
i. Roles and Responsibilities
j. Training
k. Cost of Mitigation and Monitoring

As maybe applicable, an Involuntary Resettlement Plan and IP Plan will be attached to the EA.

The scale and nature of the activity depends on the results of the site assessment, which should yield the geometry of the contaminated site, the concentration of the pollutants and the extractable quantity. The coverage of the assessment would also include the selection of the clean up technology appropriate for the site. The technology is a basis for determining the impact and risk of the activity.

A portable extracting equipment is more likely employed. For demonstration purposes, the soil cannot be brought of the area unless there is no space for the equipment. Option to bring the soil out of the area would means additional control that is avoiding spillages and impact of the treatment and disposal facility.

The EIA process will include two consultations: one for the scoping of the study, and the other is on the draft EIA. A final EIA will be prepared for review. The component communication strategy developed in the preparation of this project will support the consultations.

The key issues are the restricted access of the current use of the site, the final disposal of the extracted contaminants, and the impacts of the clean up technology to be determined yet and applied. Involuntary resettlement and stake of indigenous may apply.

Contaminated Site Control.. Based on the National Priority List that will be derived for the IPOPs Project, a contaminated site will be selected for demonstrating the institutional and physical measures at the perspective of public health and environmental management. The key issues are the construction-like impacts, and restriction of the site for its current use, which may involve land acquisition and IP protocols.

7.3 Overview of Environmental Assessment Process

Every proposal will be subjected to environmental assessment process for clearing of the proposal for environment and social safeguards. Whatever EA document is required to submitted, its preparation would entail describing the activity to determine the sources of impacts, describing the environment to determine the baseline condition that may be subjected to changes, impact assessment, development of mitigation measures, development of monitoring program, and providing institutional arrangements such as roles and responsibilities, capacity building and training, schedule of implementation, cost of mitigation and monitoring, and sources of fund. The quality of the EA is enhanced through stakeholder consultation, preferably for scoping of the coverage of the assessment and another for the review of the draft EA. Both consultations are required for Category A project such as such remediation. One consultation particularly on the draft EA will suffice for Category B projects

7.4 Roles and Responsibilities

The key players in implementing the proposed activities are the DENR, partner agencies, and activity proponents (site owners and operators). They shall ensure that the IPOPs project implementation is in accordance with the WB safeguards policies, and GOP environmental and social laws and regulations, as follows, and expanded in **Table 7.1:**

- The activity proponent will be responsible in developing and implementing the environmental and social safeguards for its proposed activity in accordance with the WB and GOP requirements, using the forms and templates in a form provided by the PMO. The proponent shall be responsible for providing information on the progress of its work to PMO and local stakeholders.
- The PMO will serve as the administrative focal group in the administration of all activities. The PMO shall administer approvals for WB safeguards clearance, and monitoring of the progress of activities, in coordination with relevant partner government groups. The PMO may complement its personnel with outside services (like the pool of EIA reviewers under an honorarium arrangement) for the technical review of proposal and monitoring the implementation of activities. The PMO shall attend to oversights in environmental and social safeguards and recommend administrative solutions to WB and DENR. The PMO will maintain a chronology of events per proposal, and keeps and organize all printed and electronic records.
- The EMB Regional Offices will assist the PMO in the on-field monitoring of the sub-activities
- Other government partner agencies will provide technical assistance to their relevant component, as may be requested by the PMO.
- All of the above participants will be responsible in elevating to the PMO possible oversights identified from their end, with recommended solutions.

Table 7.1 Tasks of key players in the approval of the environment and social safeguards document

Component/ Activity Phase	Activity Proponent	PMO	Partner Government Entity
Component 2	[include screening process for IR, IP]		
Approval	• Depending on the proposed activity, the proponent prepares the EMP for stop burning activity, or EMP for prevent	• Orients the proponent on the safeguards requirements • Conducts Procedural Review of the Closure Plan	• NSWMC assists in the review, as necessary

Component/ Activity Phase	Activity Proponent	PMO	Partner Government Entity
	burning activities or Dumpsite Closure Plans and submits to PMO containing results of stakeholder consultation,	• Endorses the Closure Plan for Safeguards Clearing to WB • Notifies and provide copies of relevant documents the partner government entity	
Implementation and Monitoring	• Notifies all concerned stakeholders on the commissioning date of activity • Implement the proposed technical and safeguards activities • Submits progress report to PMO	• Monitors the progress of activity including site inspection	• EMB Regional Office conducts site inspection on the progress of implementation, feedbacks to the PMO
Completion	• Submits Completion Report to PMO • Notify stakeholder	• Review and verify on site the Completion Report	• Review and verify on site the Completion Report
Component 3			
Approval	• Updates or Prepare PCB Management Plan and submits to PMO	• Orients the proponent on the safeguards requirements • Conducts Procedural Review of PCB Management Plan • Endorses the Closure Plan for Safeguards Clearing to WB • Notifies and provide copies of relevant documents the partner government entity	• EMB EQD conducts substantive review
Implementation and Monitoring	• Implement the Plan • Submits progress report to PMO	• Monitors the progress of activity including site inspection	• EMB Regional Office conducts site inspection on the progress of implementation, feedbacks to the PMO
Completion	• Submits Completion Report to PMO	• Review and verify on site the Completion Report	• Review and verify on site the Completion Report
Component 4			

Component/ Activity Phase	Activity Proponent	PMO	Partner Government Entity
Approval	• Conduct site assessment • Select appropriate technology with consultation process • Forge an MOU with the DENR • For site remediation, prepares a Site Remediation Demonstration Plan (as full Category A EA Category) • For site control, prepares a Site Control Plan (as full Category A EA Category) • Submits the EA Document to PMO	• Orients the proponent on the safeguards requirements • Forge an MOU with the site owner/operator • Conducts Procedural Review of the Closure Plan • Endorses the Closure Plan for Safeguards Clearing to WB • Notifies and provide copies of relevant documents the partner government entity	• EMB EIAMD shall review the rehabilitation plan in the context of the environmental impact assessment
Implementation and Monitoring	• Integrate environmental and social safeguards in the Clean-up Service Contract • Notifies all concerned stakeholders on the commissioning date of activity • Implement the proposed activity • Implements EMP • Submits progress report to PMO	• Monitors the progress of activity including site inspection	• EMB Regional Office conducts site inspection on the progress of implementation, feedbacks to the PMO
Completion	• Submits Completion Report to PMO	• Review and verify on site the Completion Report	• Review and verify on site the Completion Report

7.5 Step by Step Procedures for EA/SA Development and Approval

The basic structure in the preparation and approval procedure of the EA document is as follows:

1. The activity proponent identifies the activity to engage in
2. Proponent attends orientation meeting with the PMO on the safeguards requirement
3. Prepares the component specific draft EA document
4. Conducts consultation and disclosure activities, as applicable
5. Finalize the draft EA document

6. Submits the draft EC document and other associated documents to PMO for review
7. In the review, the PMO may seek assistance from partner government agency
8. The PMO replies with acceptance, revision, or denial
9. For accepted activities, the PMO endorses the document to WB

The EA document and review criteria are shown in **Table 7.2.** The EA document contains the basic component of the WB EA such as project description, baseline environment, alternatives, impact assessment, mitigation, monitoring, and institutional arrangement, inclusive of the social safeguards documents, as applicable

Table 7.2 EA document, criteria and reviewers for each IPOPs project components.

Component	With Site-specific physical activities	EA Document to be submitted by project partners	EA Review Criteria
1	UPOPs Laboratory	EA	PEISS
2	Stop Burning	EMP	Completeness of the EMP
	Prevent Burning	EMP	Completeness of the EMP
	Dumpsite Closure	Updated Dumpsite Closure and Rehabilitation Plan	Completeness of Closure Plan Waste pickers and local residents consulted
3	Implementation of PCB Mgt Plan	Draft Updated PCB Management Plan	Completeness of PCB Management Plan
4	Demonstration of site remediation or site control	Site Remediation Plan or Site Control Plan (both at full EA, Category A project)	Completeness of EIA Report Local stakeholder consulted Inter-agency consultation on the selection of the technology

* that would cause direct environmental impact on land, water, air, people

7.5.1 Component 1

The activity proponent will finalize the Draft EA prepared and submit to PMO for review. The review will be done by EIAMD and may process, issue an ECC if required under PD 1586, or issue a CNC if not covered. The EIAMD will provide the certificate to PMO who will attach a photocopy to the endorsement documents to WB. The PMO will give the proponent the original copy of the clearance.

7.5.2 Component 2

A candidate participating LGU is assumed to have submitted a closure plan to the DENR and acquired an Authority-to-Close. The LGU will submit an updated closure plan following an improved outline derived from the project preparation phase.

1. The activity proponent identifies the activity to engage in
2. The proponent prepares draft EMP for stop burning activity and prevent burning activities, and Updated Dumpsite Closure Plan for closure activities
3. The proponent conducts public consultation and disclosure, as applicable
4. The proponent finalizes the draft EA document

5. The proponent submits the draft EC document and other associated documents to PMO for review
6. In the review, the PMO may seek assistance from partner government agency
7. The PMO replies with acceptance, revision, or denial
8. For accepted activities, the PMO endorses the document to WB

Interested LGUs shall approach the PMO for orientation on the IPOPs project obtaining information on the safeguards guidelines and approval documents to be submitted including the preparation of an Updated Dumpsite Closure and Rehabilitation Plan. The PMO will provide the proponent a checklist of requirements will be attached later in the cover letter of the application of the proponent

Guided by the upgraded outline, the proponent prepares updates in Dumpsite Closure and Rehabilitation Plans with consultation with the local stakeholders.. The proponent also will refer to the Social Development Plan Guidelines for Waste Pickers (menu of social safeguards like for waste pickers, Involuntary Resettlement, and IP.

If the plan includes dumpsite conversion into a sanitary landfill, then the proponent shall secure first an ECC from EMB Regional Office in compliance with PD 1586. Plans with gas recovery for power production need not be required an ECC during the closure, the recovery is considered outside the coverage of the IPOPs. This is also true for Materials Recovery Facilities (MRF) s and Composting Facilities.

The preparation of the resettlement plan, applicable will be guided by the following participatory process:

Step	Participatory Activities	Participants	Responsible Office/Institution
Action plan development	Preliminary meeting within LGU for the overview of the proposed subproject	Local Chief Executive (LCE) & Council, attached units, affected barangay captain/s	LGU &/or its Consultant, a Resettlement Specialist (RS)
	General orientation meeting, barangay level, preparatory to conduct of technical, social & environmental studies	PIU, concerned barangay officials, DPs, affected communities	LGU &/or its RS
	Conduct of Social Impact Assessment	PIU, DPs, affected communities	LGU &/or its RS
	RP preparation, census & socio-eco survey	Community heads, concerned barangay officials, DPs	LGU &/or its RS, Community heads
	Community consultation on draft RP	Community heads, DPs, affected communities	Affected barangay officials, LGU &/or its RS
Finalization of RP and	RP finalization	Community heads	LGU &/or its RS

Step	Participatory Activities	Participants	Responsible Office/Institution
Technical Design	Final RP orientation for project proponents, DPs & affected communities	LCE, LGU Council, attached units, affected barangay officials, community heads, DPs, affected communities	LGU &/or its RS

The proponent files its application with the updated plan and the checklist to PMO. The proponent shall submit 5 copies and an electronic file in CD. In cases of submissions in person in a working day, the PMO reviews the plan immediately for completeness and legibility using the submitted checklist, returns immediately incomplete or legible document, with annotations on the checklist. When the application is submitted through a courier, the procedural review should be completed within 24 hours upon receipt, and in cases of incomplete or illegible document, the PMO immediately advises the proponent thru electronic means (facsimile or electronic mails), as well as telephone call within 24 hours, and sending the hard copy document to the proponent.

Finding the document complete and legible, the PMO notifies the EMB Regional Office of the submission, and reviews substantively by the PMO within 5 working days using a set of substantive review criteria. The proponent provides a hard copy and an electronic copy to the EMB Regional Office for parallel review. The PMO may seek the assistance of the NSWC for the review. Within the 5 working day review, the PMO may request for additional information for clarification of the information presented in the plan. The feedback of PMO will be at the maximum of 5 days. Parallel to the review, the EMB Regional Office conducts site inspection for verification.

7.5.3 Component 3

The development of procedures for Component 3 considered several factors. All PCB owners are required to phase out their PCB in their premises come 2014. The sound PCB management component of the IPOPs Project would fund technical assistance and training to PCB owners on the different PCB physical activities. A Revised Technical Guidelines on PCB Management as well as a Revised PCB Management Plan Outline have been prepared for use in the phase out. These documents will be improved right after the WB appraisal through further consultation. A DENR administrative order will be issued for the adoption of these documents.

Thus, in order to avail of the funding package, the PCB owners will submit a Revised PCB Management Plan indicating its program for the phase-out. The submission also applies to those who will still register their PCB. The submitted document may come in a draft form since anyway the PCB owners will be trained prior to the provision of technical assistance.

Interested PCB owners will approach the PMO for orientation on the IPOPs project obtaining information on the safeguards guidelines and approval documents to be submitted including the preparation of Updated PCB Management Plan. The PMO will provide the proponent a checklist of requirements will be attached later in the cover letter of the application of the proponent

Guided by the upgraded outline, the proponent prepares the updated plan and the checklist, and submits them, along with other application document to PMO. The proponent shall submit 5 copies and an electronic file in CD. In cases of submissions in person in a working day, the PMO reviews the plan immediately for completeness and legibility using the submitted checklist, returns immediately incomplete or legible document, with annotations on the checklist. When the application is submitted through a courier, the procedural review should be completed within 24

hours upon receipt, and in cases of incomplete or illegible document, the PMO immediately advises the proponent thru electronic means (facsimile or electronic mails), as well as telephone call within 24 hours, and sending the hard copy document to the proponent.

Finding the document complete and legible, the PMO notifies the EMB Regional Office of the submission, and reviews substantively by the PMO within 5 working days using a set of substantive review criteria. The proponent provides a hard and an electronic copy to the EMB Regional Office. The PMO may seek the assistance of the EMB-EQD for the review. Within the 5 working day review, the PMO may request for additional information for clarification of the information presented in the plan. The feedback of PMO will be at the maximum of 5 days. Parallel to the review, the EMB Regional Office conducts site inspection for verification.

When the documents and information are complete, the PMO prepares and submits to the WB endorsement documents for safeguards clearing.

7.5.4 Component 4

The procedure for site remediation was based several factors. Demonstration projects are not required an ECC based on the Revised Procedural Manual of DA 2003-30 of PC 1586. The projects are not necessarily exempted from other environmental regulations. However, the under the IPOPs project, the remediation is a Category A project and will be subjected to full environmental assessment. The document is an EIA following outline found in OP 4.01 Annex B. In addition, the proponent is assumed to conduct a site assessment and clean-up technology selection.

The activity proponent approaches the PMO for orientation on the IPOPs project obtaining information on the safeguards guidelines and approval documents to be submitted including the Site Remediation Plan. The PMO will provide the proponent a checklist of requirements will be attached later in the cover letter of the application of the proponent

The proponent prepares the EA document (Site Remediation Plan or Site Control Plan) guided by the following procedure

1. prepares an environmental assessment plan identifying key stakeholders, and drafting a preliminary EA document
2. consults the stakeholders for coverage of the environmental assessment
3. conducts site assessment to determine the extent of contamination using international standard procedure of site assessment (e.g. ASTM)
4. through consultative process, the prepares set of criteria for the selection of technology inclusive of clean up targets
5. outsource a menu of clean up technologies
6. conducts feasibility studies on the clean up technologies
7. conducts consultation in the selection of clean up technology (or site control technology) among experts, NGO, environmental engineering academes, DOST, local community and other entities
8. Prepares the remedial (or site control) design
9. Prepares the draft EA document
10. Conducts consultation on the draft EA document
11. Finalize the EA document

The preparation of the resettlement plan, applicable will be guided by the following participatory process::

Step	Participatory Activities	Participants	Responsible Office/Institution
Site Assessment	Preliminary meeting with project proponent for the overview of the proposed subproject	DENR, project proponent.	Project proponent.
	General orientation with site users and neighboring locators to conduct of technical, social & environmental studies	Project proponent, concerned barangay officials, site users, neighboring land owners.	Project proponent & /or its RS.
	Conduct of Social Impact Assessment	Project proponent, site users, neighboring land owners.	Project proponent &/or its RS
	RP preparation, census & socio-eco survey	Concerned barangay officials, site users, neighboring land owners.	Project proponent &/or its RS, concerned barangay officials.
	Consultation on draft RP	Concerned barangay officials, site users, neighboring land owners.	Project proponent &/or its RS, concerned barangay officials.
Finalization of RP and Technical Design	RP finalization	Site users, neighboring land owners.	Project proponent &/or its RS
	Final RP orientation for project proponents, DPs & affected communities	Project proponent, affected barangay officials, site users, neighboring land owners.	Project proponent &/or its RS

The proponent will then submit to PMO five (5) copies and an electronic file in CD. In cases of submissions in person in a working day, the PMO reviews the plan immediately for completeness and legibility using the submitted checklist, returns immediately incomplete or legible document, with annotations on the checklist. When the application is submitted through a courier, the procedural review should be completed within 24 hours upon receipt, and in cases of incomplete or illegible document, the PMO immediately advises the proponent thru electronic means (facsimile or electronic mails), as well as telephone call within 24 hours, and sending the hard copy document to the proponent.

Finding the document complete and legible, the PMO notifies the EMB Regional Office of the submission, and reviews substantively by the PMO within five (5) working days using a set of substantive review criteria. The proponent provides a hard and an electronic copy to the EMB Regional Office. The PMO may seek the assistance of the EMB-EQD for the review. Within the five (5) working days of review, the PMO may request for additional information for clarification of the information presented in the plan. The feedback of PMO will be at the maximum of 5 days. Parallel to the review, the EMB Regional Office conducts site inspection for verification.

When the documents and information are complete, the PMO prepares and submits to the WB endorsement documents, with the checklist for safeguards clearing.

7.6 Public Consultation and Disclosure

The preparation of the EA documents will be required public consultation and consultation. The characteristics of public consultation and disclosure depend on the component and site-specific activity. Components 2 and 3 are required of one consultation, while Component 4, two consultations.

A draft communication strategy for the IPOPs activities consists of the objectives of the strategy, target audience and social issues by component, communication approaches and activities, and the procedure for public disclosure

The overall objective of the Communications Strategy is an effective information exchange on IPOPs among policy and decision-makers, industry and professional users and the general public, especially the women, children and the least educated.

Specifically, this strategy aims to:

(i) Increase awareness and understanding of stakeholders on toxic chemicals such as IPOPs -- its health and environmental risks, its economic and social costs and the alternatives to IPOPs.
(ii) Mobilize policy and decision-makers to actualize government's commitments to the Stockholm Convention as specified in the National Implementation Plan on IPOPs management, reduction and elimination.
(iii) Define the process for conducting consultation and information disclosure for those involved in IPOPs management, reduction and elimination.
(iv) Promote public participation in addressing the health and environmental effects of IPOPs and in the reduction or elimination of the production, use and release of IPOPs

The target audience and issues by component are given below:

COMPONENT 1. Laboratory construction and operation.
Stakeholder/Target Audience Community in proximity to laboratory, Laboratory staff and personnel, NGOs and People's Organizations· Clients of the laboratory, DOST bureaucracy, DENR-ITDI
Social Issues • Health and safety concerns of communities in proximity to the laboratory • Ability of the institution to transport, handle samples and associated waste • Ability to manage and address health and risks • Information disclosure on the operations of the laboratory
COMPONENT 2. Demonstration of PCDD/PCDF release reduction from solid waste management.
Stakeholder/Target Audience • Households: waste generators, • Companies, • Waste pickers (men, women and children)/ segregators·, • Junk yard shops, • Consolidators: buyers within the site·,

- Wholesale junk buyers/ exporter

Social Issues

- Burning of the following: garden wastes; household, institutional and commercial wastes; garbage dumps/dumpsites (landfills); building materials from construction or demolition, including clean-up after a typhoon or other related calamities, and; other specific wastes such agricultural wastes, used tires, oil spills
- Technology shift and alternatives to burning
- Health problems due to uncollected waste
- Healthy and safety concerns of waste pickers and scavengers
- Involuntary resettlement
  - Restricting access to livelihood of waste pickers
  - Presence and activity of waste pickers may compromise application of BAT/BEP
  - Acceptability of dump closure plans. Dump closure may require relocation, displacement of dump dwellers and loss of livelihood/income
  - Acceptability of receiving communities if dumpsite is relocated
- Child labor
- Gender-related concerns
- Involuntary resettlement of Indigenous People (where applicable): land use before, during and after

COMPONENT 3. PCB management: oils, equipment, wastes transport and decontaminatio

Stakeholder/Target Audience

- Site owners/ affected on site locatees
- Communities in proximity
- Down stream water users/ firms
- Electric power cooperatives
- Importers of equipment with PCBs
- Buyers of second hand equipment
- Equipment / facility managers
- Inspectors
- Program implementers

Social Issues

- Health risk of toxics handlers, and communities (including during maintenance operations)
- Transport of PCBs from contaminated site;
- Perceptions on contamination in: ground water; food source; environment.
- Restriction of access

COMPONENT 4. Identification and safeguarding of potentially highly contaminated sites.

Stakeholder/Target Audience

- Site owners/Locators
- Project affected families
- Communities in proximity to contaminated sites
- Down stream water users/ firms
- Electric power cooperatives
- Procurers of equipment with PCBs
- Buyers of second hand equipment

- Equipment/ facility managers, inspectors
- Program implementers
- Clark Development Authority (CDA)
- Subic Bay Metropolitan Authority (SBMA)

Social Issues

- Disclosure of relevant information
- Lack of health and environmental monitoring
- Limited information on POPs contaminated sites, and
- Absence of a legal framework on soil contamination (land pollution management) and remediation
- Involuntary resettlement of Indigenous People (where applicable)
- Involuntary Resettlement (where applicable)
  - Access to the site
  - Loss of livelihood
  - Where contaminated sites are expropriated prior to remediation by the government
  - Where occupants have to temporarily vacate the land and the resulting loss of income or increase in expenditures entailed by the displacement;
- Capability of government agencies and service providers to undertake intervention
- Social acceptability of closure plans

A set of communication approaches and activities have been identified, as follows:

1. Public Information and Education Campaigns. Audience-specific activities to create and increase public understanding on the health and environmental risks of IPOPs and how IPOPs can be reduced and eliminated
2. Social Mobilization/Community Engagement. Activities to encourage public participation in the management, reduction and elimination of IPOPs
3. Advocacy. Activities to create an enabling environment in the implementation of laws and policies on IPOPs and generate support of policy and decision-makers across geopolitical units and national agency levels up to the municipal and barangay levels
4. Social Marketing. Activities aimed at influencing behavioral change on IPOPs and its alternatives
5. Risk Communication. Interactive process of exchanging information among stakeholders on IPOPs and its risks including social and economic impacts
6. Media Campaign. Media coverage on IPOPs issues and initiatives being undertaken to address IPOPs
7. Development Support Communication. Activities focused on delivering technologies and information to LGUs, service providers, contractors, PCB owners, laboratory staff and personnel on IPOPs management, reduction and elimination
8. Technical Communication. Technical and policy information dissemination between IPOPs experts and their counterparts in government, non-government organizations (NGOs) and research and academic institutions
9. Internal Communication. Protocols to enhance information sharing, quality of work and interaction among EMB/DENR, partner agencies/partners in the implementation of IPOPs management project.

Procedures for public disclosure will be guided by the process obtaining FPIC from NCIP, and on involuntary resettlement policy of the WB and Urban Development and Housing Act of 1992.

7.7 Communication Plan

A draft communication plan covers the component lists of target audience, objectives, activities, and responsible entity, as shown below

COMPONENT 1: Laboratory Construction and operation

Target Audience : Laboratory staff and personnel

Objectives

Increase knowledge and capacity in addressing and managing environmental and health risks of communities in proximity to laboratory; staff and clients of the laboratory. Increase knowledge in quality standards for construction/renovation, management and maintenance of existing laboratories

Activities

- Briefings and/or workshops led by specialists with technical expertise on specific areas of concern.
- Posters, signage, bulletin boards with reminders, instructions key messages on the transport; handling; storage; disposal; acquisition & custody; archival; processing; analysis; documentation and reporting of toxic chemicals.
- Internal protocols to improve information sharing and quality of work.

Responsible Entity : DOST

Target Audience: Communities in proximity to laboratory

Objectives

Develop and increase awareness on health and environmental risks of toxic chemicals such as IPOPs Increase understanding on the role of DOST in promoting public protection from the effects of toxic chemicals such as IPOPs.

Activities

- Community profiling as basis for appropriate and relevant information and education activities Conduct of consultation meetings and focus-group discussions with communities in proximity to laboratory
- Open house where immediate community, science educators, high school and college students, media people can get briefed and visit some of the laboratories, subject to safety and security precautions.
- Briefings and/or informal meetings with concerned local officials, NGOs and people key to public involvement process to apprise them on the status of laboratory construction/renovation.

Responsible Entity : DOST

COMPONENT 2. Demonstration of PCDD/PCDF release reduction from solid waste management

Target Audience:

- Local Government Units,
- National Solid Waste Management Commission
- Service Contractors

Objectives

- Increase understanding of the Stockholm Convention, National Implementation Plan and national policies and regulations for IPOPs management, reduction and elimination.
- Generate resource support and local policy for the implementation of: sanitary landfill; Materials Recovery Facility; Storage facility for non-hazardous materials; Making of compost/fertilizer; Non-hazardous industrial waste materials treatment facility.
- Increase readiness and capacity to mitigate negative effects of involuntary resettlement and marginalization of certain groups such as indigenous peoples.

Activities

- Development Support Communication Seminars on Solid Waste Management and IPOPsSocial Marketing Advocacy.
- Meetings with keylocal officials, people key to the public involvement process Development of Policy Briefs to review gaps in local legislations and policy implementation on IPOPs

Responsible Entity : DENR, NSWMLGU

Target Audience :

- Dumpsite dwellers; waste pickers,
- Receiving communities if dumpsite is relocated,
- Indigenous People, where applicable

Objectives

Develop and increase public awareness on health and environmental risks of toxic chemicals such as IPOPs.

Activities

Development and production of IEC materials Public information and education campaigns on solid waste management and IPOPsPublic consultationsTelevision AdsRadio Ads

Responsible Entity

EMB Central and Regional Offices, LGU

COMPONENT 3: PCB management: oils, equipment, wastes transport and decontamination

Target Audience:

- EMB Central and Regional Offices,
- National Electrification Administration
- Local Government Units Other regulatory agencies including
- TWG on the Stockholm Convention NGOs, PEPOA and PHILRECA

Objective:

Increase technical know-how to enforce, monitor and validate compliance to laws and regulations on IPOPs.

Activities

- Briefings and/or workshops led by technical experts on specific areas of concern.
- Meetings, panel discussion and brain-storming sessions to identify problems/concerns and possible solutions. Internet-based information sharing and exchanges.

Responsible Entity

EMB Central and Regional Offices, NEATWG on Stockholm Convention

Target Audience

- Electrical Cooperatives
- Registered and non-registered
- PCB ownersService Providers (retro-fillers, dismantlers, etc.)
- PCB Transporters/Treaters

Objectives

Phase 1. Encourage PCB owners to either submit their annual inventory, or update their initial inventory.

Phase 2. Get other PCB owners to register and submit Inventory of PCB equipment.

Activities

Information, education campaign on health, decontamination and destruction technologies for PCB management

Responsible Entity

EMB Central and Regional Offices, NEATWG on Stockholm Convention

COMPONENT 4. Identification and safeguarding of potentially highly contaminated sites and Pilot Remediation

Target Audience

- Clark Development Authority (CDA)
- Subic Bay Metropolitan Authority (SBMA)
- National Power Corporation
- Service providers, contractors hired for side remediation

Objectives

Improve capacity to undertake risk communication to address health and safety concerns of locators, communities and people working in and around the contaminated sites.

Activities

- Briefings and workshops led by technical experts on specific areas of concern.
- Training and orientation session on risk management and communication
- Meetings, panel discussion and brain-storming sessions to identify possible health, safety and environmental risk/concerns and how to communicate this to relevant stakeholders
- Web-based, information sharing and exchanges.

Responsible Entity: EMB/DENR, CDA, SBMA, NPC

Target Audience

- Locators and residents in CDA and SBMA, where applicable
- Communities in proximity of highly contaminated sites
- Indigenous People, where applicable

Objectives

Develop and increase awareness on health and environmental risks of toxic chemicals such as IPOPs

Activities

- Audience-specific information and education campaigns
- Public consultations
- Public notices and signage in contaminated sites
- Bulletin boards, fact sheets that summarize the status of contaminated sites and remediation measures being undertaken.

Responsible Entity

CDA, SBMA, NPC

COMPONENT 5. Project management support

- **Target Audience**
- EMB/DENR
- Other partners: CDA, SBMA, NEA, NPC, DOST, ITDI, NSWMC,
- EIA group

Objectives

Partner agencies/partners are informed and levelled-off on the IPOPs project, including WB social safeguards policies, relevant laws and policies guiding information disclosure of hazardous wastes.

Activities

- Communications protocols for information sharing, quality of work and interaction among partner agencies
- Issuance of memorandum/guidelines on roles and responsibilities
- Coordination meetings
- Training and orientation sessions

Responsible Entity : Project Management Office

7.8 Monitoring and Supervision of Projects

Approved activities will be subjected to periodic performance monitoring to ensure that the safeguards are implemented, guided by certain standards or criteria, schedule, staffing patterns, instruments and procedures.

Environmental Monitoring and Reporting: To ensure implementation of the EMPs and to monitor project impacts a set of monitoring parameters have been identified and will be included in each of the environmental management plans. DENR will have overall responsibility for gathering this data from the responsible entities on the project sites on a biannual basis.

8.0 CAPACITY BUILDING AND TRAINING FOR EA/SA IMPLEMENTATION

In general, capacity building applies to all the lead and cooperating partners, and comprises all the mitigation activities for the IPOPs targets as well as the residual environmental and social. The GEF funding will provide the following capacity building activities.

- Component 1. Development of standard protocols for sampling and analysis of PCDD/PCDF, and training for lab staff on PCDD/PCDF sampling and analysis, and handling of laboratpry waste generated.

- Component 2. Studies to measure emissions factors, development of environmental technology verification guidelines and undertaking environmental verification.

- Component 2. Technical assistance to prepare interim BAT/BEP guidelines for solid waste and update them based on the implementation success of a few demonstration projects. It will also fund preparation of action plans for the investments, provide TA for implementation and for the monitoring of outcomes of the interventions.

- Component 3. Upgrading of EMB laboratories and database management system.
- Component 3. Technical assistance to PCB owners on PCB management will be provided by the project.
- Component 4. Training will be provided during the remediation activity as part of the GEF grant financing.

For the DENR and PMO, capacity building will cover project management, orientation of activity proponents, improvement in the documents to be submitted by the activity proponents, review of submitted documents by activity proponents, and WB safeguards policies (OP 4.01, 4.10, 4.12), preparation of IEC materials for the project. The capacity building will extend to the regional offices with proposed activities.

For the UPOPs Laboratory, the small staff complement needs to receive very specialized training on the following:

- Environmental assessment for the laboratory
- Sampling and Analysis for Dioxins and Furans
- Quality Assurance Protocols in sampling and analysis
- Safety protocols in the laboratory
- Waste Management of samples, extracts, effluents
- IEC

The LGUs would need to be oriented and/or trained on the following
- BAT and BEP in putting out and preventing incidence of fires,
- Safety and health of personnel (with provision of PPE)
- Preparation of an updated Dumpsite Closure and Rehabilitation Plan
- Social safeguards development and implementation
- Preparation of proposal for funding like under the Clean Development Mechanism or carbon credit in the collection of gas and power generation in landfill

Capacity building for PCB owners would include the following
- Orientation on the Revised Technical Guidelines on PCB Management
- Assistance in the Preparation of the Updated PCB Management Plan
- Training on safety and health protocols
- Self-audit

Capacity building for contaminated site would include

- Preparation of an environmental assessment report
- Clean up technologies
- WB Social safeguards

9.0 COSTS AND BUDGETING FOR EA/SA IMPLEMENTATION

Most environmental management measures are an integral part of the sub-project design and operations, thus, budget for these responsibilities are allocated in the total sub-project cost for each component sub-project activities.

9.1 Cost Estimate for EMP Implementation for the PCDD/PCDF Laboratory

Except for the IEC costs, the implementation of the EMMoP and the Capacity Development Program are an integral part of the sub-project design and operations, thus, budget for these responsibilities are allocated in the total sub-project cost of US$1.91 million, breakdown of which has previously been presented under Section 1.6.

IEC costs need not be budgeted as a separate cost item. Considering the PCDD/PCDF Laboratory is only one of the many laboratories of the DOST-ITDI, it is only appropriate that the sub-project IEC be made a part of the department-wide external relations/community relations program of the DOST-ITDI. IEC can be simultaneously done with the other department activities, thus, no additional cost is incurred.

9.2 Cost Estimate for EMP Implementation for Cabanatuan City

No cost component is presented in the Dumpsite Closure and Rehabilitation Plan

9.3 Cost Estimate for EMP Implementation for the Cagayan de Oro City Dumpsite Closure and Rehabilitation

The budget cost for the dumpsite closure and rehabilitation is estimated to be PhP 12 million. These include the greening and beautification of the closed dumpsite areas and the vicinity of the sanitary landfill site; provision of fire hydrant facility; installation of drainage system, leachate pond and storm drainage facility; site compaction and laying out of clay liners; installation of gas collector, monitoring wells and gas vents.

Costs for IEC, economic and social management and capacity building will be add-on costs to the PhP12 million project cost.

The training program covering the four (4) areas above (Section 8.1) is estimated to be undertaken for a four (4) month period. The estimated cost per month for the salary and living expenses of an international expert-trainor is US$25000, or a total of US$100,000 for a four-month training program.

Fund sourcing options for this training budgetary requirement are as follows, based on the suggestion of the IPOPs Project International Consultant:

a) Apply for a grant from JICA. There are several Japanese experts who can train the staff in the laboratory, and there are some Japanese organizations which can provide a training course in Japan by dispatching the staff from the Philippines.

b) Apply for a grant from the United Nations Environment Plan / Strategic Approach on International Chemical Management / Quick Start Programme (UNEP/SAICM/QSP).

c) Explore cooperation with the United Nations University.

9.4 Cost Estimate for EMP Implementation for the Iloilo City Dumpsite Closure and Rehabilitation

The total estimated project cost for the PCDD/PCDF laboratory is approximately PhP 5.12 million. This includes the site clearing of structures, dwellers, animals in the dumpsite area, including site grading and slope stabilization and back mining of the old garbage mound (P190,000); perimeter fencing (trees only) with barbed wire (P200,000); Leachate collection system (P508,000), landfill gas monitoring (P20,000); drainage system (P120,000), soil cover (P3.4 million) – although the Iloilo Flood Control Project of DPWH advised they will give about 70,000 m3 of soil which is already almost 95% of the soil requirements; signages and greening (P70,000); monitoring wells (P40,000), lagoon construction (P500,000).

The cost for organizing and training of the waste pickers will still be derived by the LGU Social Component Team.

A training program covering the six (6) areas above (Section 8.2) may be undertaken for a four (4) month period. The estimated cost per month for the salary and living expenses of an international expert-trainor is US$25000, or a total of US$100,000 for a four-month training program.

Fund sourcing options for this training budgetary requirement may be as follows:

a) Apply for a grant from the German Government. Carl Duisberg Association has been recently active in promoting solid waste management training in the Philippines. Also, the first sanitary landfill in the Philippines at Clark Air Base is German-designed.

b) Apply for a grant from other financing institutions (JICA, WB).

REFERENCES:

Botengan, Mary Ann Pollisco. Proceeding on the Project Orientation on Project Preparation Grant for Integrated POPs Management Project held on 29 May 2009 at the Air Quality Training Center, EMB-DENR.

Draft Report on Environmental Assessment for the Proposed PCDD/PCDF Laboratory. Submitted on 30 June 2009.

Draft Report on Environmental Assessment for the Cagayan de Oro City Dumpsite Closure and Rehabilitation. Submitted on 30 June 2009.

Draft Report on Environmental Assessment for the Iloilo City Dumpsite Closure and Rehabilitation. Submitted on 30 June 2009.

Executive Order 192. Reorganization Act of the Department of Environment and Natural Resources

IFC-WB. Environmental, Health, and Safety (EHS) Guidelines on the following topics: Waste Management, Hazardous Materials Management, Contaminated Land, and Occupational Health and Safety. See: http://www.ifc.org/ifcext/sustainability.nsf/Content/EnvironmentalGuidelines

Health Canada and Santé Canada . Health Impacts of Site Remediation. An Approach to Identify and Mitigate Potential Health Impacts.. Contaminated Sites Division. 5th Floor, 269 Laurier Avenue West. Ottawa, Ontario K1A 0K9. e-mail: cs-sc@hc-sc.gc.ca

Presidential Decree No. 269. National Electrification Administration Decree

Republic Act No. 9003. Ecological Solid Waste Management Act of 2000

Republic Act No. 6038. National Electrification Administration Act

Republic Act No. 7160. Local Government Code

Report on Due Diligence on the UNIDO PCB-Destruction Facility. Submitted on 29 May 2009.

Report on the Draft Environmental and Social Assessment Framework. Submitted on 29 May 2009.

Report on EA Inception Consultations. Submitted on 29 May 2009.

Technical Reports from PPG Consultants for Components 1, 2, 3 and 4.

Sector Environmental (Gap) Analysis Report. Submitted on 15 June 2009.

Summary Report of Environmental Impacts and Mitigation Approaches for the Project Activities. Submitted on 29 May 2009.

Summary Report on the National Environmental Laws, Policies and Regulations of DENR and World Bank Safeguard Policies Applicable to Environmental Assessment. Submitted on 29 May 2009.

http://www.itdi.dost.gov.ph

http://www.emb.gov.ph

http://www.nea.gov.ph

US EPA. 2008. Guidelines for Environmental management of on-site remediation