



# REQUEST FOR CEO ENDORSEMENT

**PROJECT TYPE: Full-sized Project**

**TYPE OF TRUST FUND: GEF Trust Fund**

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## PART I: PROJECT INFORMATION

Project Title: Environmentally-sound development of the power sector with the final disposal of PCBs			
Country(ies):	the People's Republic of Bangladesh	GEF Project ID: <sup>1</sup>	4858
GEF Agency(ies):	UNIDO (select) (select)	GEF Agency Project ID:	100305 for PPG and 100310 for the implementation phase
Other Executing Partner(s):	<ul style="list-style-type: none"> <li>➤ Lead agency: Department of Environment (DoE) of the Ministry of Environment and Forests (MoEF), Ministry of Power, Energy and Mineral Resources (MoPEMR)</li> <li>Associated agencies: Bangladesh Power Development Board (BPDB), Power Grid Company Bangladesh (PGCB), Bangladesh Rural Electrification Board (BREB), Dhaka Power Distribution Company Limited (DPDC), Dhaka Electric Supply Company Limited (DESCO), Western Zone Power Distribution Company (WZPDCO)</li> </ul>	Submission Date:	12/21/2015 04/08/2016
GEF Focal Area (s):	Persistent Organic Pollutants	Project Duration(Months)	48
Name of Parent Program (if applicable):		Project Agency Fee (\$):	285,000
	<ul style="list-style-type: none"> <li>➤ For SFM/REDD+ <input type="checkbox"/></li> <li>➤ For SGP <input type="checkbox"/></li> <li>➤ For PPP <input type="checkbox"/></li> </ul>		

### A. FOCAL AREA STRATEGY FRAMEWORK<sup>2</sup>

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Grant Amount (\$)	Cofinancing (\$)
(select) CHEM-1	Outcome 1.4 POPs waste prevented, managed and disposed of, and POPs contaminated sites managed in an	Output 1.4.1 PCB management plans under development and implementation	GEF TF	3,000,000	27,145,080

<sup>1</sup> Project ID number will be assigned by GEFSEC.

<sup>2</sup> Refer to the [Focal Area Results Framework and LDCF/SCCF Framework](#) when completing Table A.

	environmentally sound manner				
(select)	(select)			(select)	
(select)	(select)			(select)	
(select)	(select)			(select)	
(select)	(select)			(select)	
(select)	(select)			(select)	
(select)	(select)			(select)	
<b>Total project costs</b>					3,000,000
					27,145,080

## B. PROJECT FRAMEWORK

**Project Objective: The objective of this project is to assist the power sector of the country in fulfilling its obligations under the Stockholm Convention by reducing the release of PCBs to the environment and disposing of 500tons of PCB-containing equipment, oil, and waste in an environmentally sound manner.**

Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Grant Amount (\$)	Confirmed Cofinancing (\$)
Legal and institutional framework	TA	1. Legal and institutional framework and capacities established and upgraded for POPs, particularly environmentally sound management (ESM) of PCB contaminated equipment, oil, and waste	1.1: Legal framework updated and established for the environmentally sound management of POPs  1.2: Implementation and inspection capacities for the key governmental institutes assessed and strengthened  1.3: Awareness and knowledge on POPs/PCBs issues and regulation among key stakeholders and general public enhanced	GEF TF	148,184	2,541,056
ESM and final disposal of PCBs	TA	2. Assisting the power sector to develop and implement the environmentally sound management and final disposal plan of PCBs	2.1: PCB management plans properly set up at the national level and by key PCB owners  2.2: Gender sensitive technical guidelines and tools developed and adopted by governmental institutions and concerned stakeholders  2.3: PCB inventory updated  2.4: (Please see below)  2.5: Final disposal of 500 tons of PCB equipment demonstrated	GEF TF	1,117,552	15,255,312
(same as above)	Inv	2. Assisting the power sector to develop and implement the environmentally sound management and final disposal plan of PCBs	2.4: Technical capacities and sustainable business plan established by the power sector	GEF TF	1,500,000	6,055,328

Monitoring and evaluations	TA	3. Impact monitoring and evaluation	3.1: Impact indicators measured 3.2: Project implementation and impacts evaluated	GEF TF	105,240	1,348,304
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
Subtotal					2,870,976	25,200,000
Project management Cost (PMC) <sup>3</sup>				GEF TF	129,024	1,945,080
<b>Total project costs</b>					<b>3,000,000</b>	<b>27,145,080</b>

### C. SOURCES OF CONFIRMED COFINANCING FOR THE PROJECT BY SOURCE AND BY NAME (\$)

Please include letters confirming cofinancing for the project with this form

Sources of Co-financing	Name of Co-financier (source)	Type of Cofinancing	Cofinancing Amount (\$)
(select)	Department of Environment	In-kind	500,000
(select)	Bangladesh Power Development Board	In-kind	15,852,320
(select)	Bangladesh Power Development Board	Cash	1,020,000
(select)	Power Grid Company of Bangladesh	In-kind	1,130,000
(select)	Power Grid Company of Bangladesh	Cash	516,000
(select)	Bangladesh Rural Electrification Board	In-kind	6,585,760
(select)	Bangladesh Rural Electrification Board	Cash	1,501,000
(select)	UNIDO	Cash	40,000
(select)		(select)	
<b>Total Co-financing</b>			<b>27,145,080</b>

### D. TRUST FUND RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY<sup>1</sup>

GEF Agency	Type of Trust Fund	Focal Area	Country Name/ Global	(in \$)		
				Grant Amount (a)	Agency Fee (b) <sup>2</sup>	Total c=a+b
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
<b>Total Grant Resources</b>				<b>0</b>	<b>0</b>	<b>0</b>

<sup>1</sup> In case of a single focal area, single country, single GEF Agency project, and single trust fund project, no need to provide information for this table. PMC amount from Table B should be included proportionately to the focal area amount in this table.

<sup>2</sup> Indicate fees related to this project.

<sup>3</sup> PMC should be charged proportionately to focal areas based on focal area project grant amount in Table D below.

**F. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:**

<b>Component</b>	<b>Grant Amount (\$)</b>	<b>Cofinancing (\$)</b>	<b>Project Total (\$)</b>
International Consultants	204,800	0	204,800
National/Local Consultants	260,172	2,852,626	3,112,798

**G. DOES THE PROJECT INCLUDE A “NON-GRANT” INSTRUMENT? No**

(If non-grant instruments are used, provide in Annex D an indicative calendar of expected reflows to your Agency and to the GEF/LDCF/SCCF/NPIF Trust Fund).

**PART II: PROJECT JUSTIFICATION****A. DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN OF THE ORIGINAL PIF<sup>4</sup>**

The major discrepancy from the original PIF is that the medical waste component has been removed from the proposal. The project preparation phase has been mainly disrupted by the security concerns that became deteriorated in 2013 in the country. Since then there has been some progress in the area of medical waste management in Bangladesh mainly led by the Asian Development Bank (ADB) under its Urban Public and Environmental Health Sector Development Program in Bangladesh. In Dhaka, Barisal, Chittagong, Rajshahi, and Sylhet, medical waste treatment facilities and landfills for the treated medical waste have been constructed / are planned. Considering this progress made by ADB as well as the lost timing and momentum of potential co-financing partners, it was agreed that the medical waste component of this project will be eliminated. Despite the change, the same level of the funding from GEF is requested due to the increasing commitment of the government which led to the project’s expanded geographical coverage in collaboration with the six power generation and transmission agencies supervised by the Ministry of Power, Energy, and Mineral Resources. Due to this change in project focus, a new endorsement letter with a new project title has been obtained.

A.1 National strategies and plans or reports and assessments under relevant conventions, if applicable, i.e. NAPAS, NAPs, NBSAPs, national communications, TNAs, NCSA, NIPs, PRSPs, NPFE, Biennial Update Reports, etc.

The People’s Republic of Bangladesh ratified the Stockholm Convention on March 12, 2007. The National Implementation Plan (NIP) was prepared and transmitted to the Stockholm Convention Secretariat on August 5, 2009. Unfortunately, the Government of Bangladesh has not updated the original NIP since then. The original NIP has identified PCBs in transformer oil as one of the most critical issues in the country. The PCB problem is one of the priorities identified in the original NIP and remains to be a priority today.

A.2. GEF focal area and/or fund(s) strategies, eligibility criteria and priorities.

The project is consistent with Chemicals Objective 1: Phase out POPs and reduce POPs releases, Outcome 1.4: POPs waste prevented, managed and disposed of and POPs contaminated sites managed in an environmentally sound manner. In addition, environmental friendly development is also set as one of the core targets in the seventh five year plan of the Government of Bangladesh (2016-2020). This project will contribute to the GEF-5 indicator 1.4.1: Amount of PCBs and PCB-related wastes disposed of, or decontaminated; measured in tons as recorded in the POPs tracking tool.

A.3 The GEF Agency’s comparative advantage:

UNIDO has been very active in implementing GEF projects under its POPs focal areas. In particular, UNIDO has accumulated extensive experiences in environmentally sound management of PCBs in the Asian region including India (GEF ID: 3775) and Nepal (GEF ID: 3573). UNIDO has successfully developed national technical capacities to treat

<sup>4</sup> For questions A.1 –A.7 in Part II, if there are no changes since PIF and if not specifically requested in the review sheet at PIF stage, then no need to respond, please enter “NA” after the respective question.

low-level PCB in those developing countries while properly disposing of high-level PCBs in designated advanced facilities in developed countries. The relevant region-specific experience of UNIDO on the PCB management will be applied to this project.

UNIDO is promoting inclusive and sustainable industrial development (ISID) in which the following objectives are set (1) Every country achieves a higher level of industrialization in their economies, and benefits from the globalization of markets for industrial goods and services; (2) No one is left behind in benefiting from industrial growth, and prosperity is shared among women and men in all countries; (3) Broader economic and social growth is supported within an environmentally sustainable framework; (4) Unique knowledge and resources are combined of all relevant development actors to maximize the development impact of ISID. This project jointly working with the power and infrastructure sectors will aim at delivering UNIDO's services to help the country achieve ISID.

#### A.4. The baseline project and the problem that it seeks to address:

##### Baseline information

At the time of the preliminary inventory for the original NIP in 2006, no facilities for the identification of PCB content in electrical equipment were available within the power sector or government laboratories in Bangladesh; hence, the PCB content for the original inventory was estimated based on the labels and original technical specifications of the equipment. No PCBs in the open systems were identified. The PCB inventory team conducted the inventory mainly relying on the information available on the oil drums or transformers. Some field screening test kits may have been used but very limited in number and the adopted method was not a quantitative (but colorimetric) analysis. Therefore the PCB inventory in the country needs to be updated as part of this project.

The NIP in 2007 provided the PCB preliminary inventory results as follows: PCBs have been used for many years and continue to be used within the electrical power-generating sector, mostly in closed systems as dielectrics in transformers and capacitors. The two main PCB chemicals which were suspected to be in the equipment were limited to "Askarel" and "Sovtol". PCBs may still be imported as oils within electrical equipment, as there is currently no law governing PCBs. There was an estimated 55.8 tons of PCBs used in-service electrical equipment. Additionally, 403 tons of oils contained in waste equipment were contaminated with an estimated 4.193 tons of PCBs and 519 tons of waste transformer oils were contaminated with an estimated 259 kilograms of PCBs. Hence, the total electrical sector PCBs requiring destruction was estimated at 55.8 tons. During the same inventory period, some transformer and capacitor oils from the central maintenance workshop of Power Development Board in Tongi and other places were found to contain PCBs. The ranges of PCBs were from 0.55 to 840,000 µg/g. According to the UNEP guideline, 50 µg/g is considered as free of PCB oil. In this study, out of 18 [(transformers (13) and capacitors (5))], 7 were free from PCBs.

Electrical power transformers, capacitors, lubricating oils, etc. have been imported to Bangladesh for an unknown period as records were not maintained. As manufacture of PCBs in other nations began in 1929, it is possible that their import dates back to this period although most equipment in use in Bangladesh today was fabricated after the 1970s. The widespread prohibition on manufacture, distribution and processing of PCBs from the 1980s onward means that older equipment, in general, is likely to have higher PCB content. However, some equipment imported as recently as 2000 was found during the survey labeled with PCB content. Additionally, the practice of "topping up" the level of transformer oil in electrical equipment with unlabelled or PCB transformer oils means that age of equipment is not, in itself, a reliable indication of PCB content. Therefore, all equipment will need to be sampled and analyzed to verify if PCB content or contamination has occurred.

As of 2015, the total number of power transformers possessed by BPDB and BREB is estimated as 2007.

Table 1: Number of transformers possessed by BPDB and BREB

Number of Transformers	Power Transformer		Distribution Transformer
	Power plant	Sub-station	
BPDB	181	344	19,442
BREB	1,482		360,500

Despite the fact that about 1,200 distribution transformers (240 kl of oil) are maintained every year in the BPDB's central equipment repairing workshop in Tongi, there is no PCB screening procedure in place. No oil check has been

performed due to insufficient analytical capability and, lack of knowledge on existing gas-chromatography (GC) methodologies for PCB oil tests.

Picture 1: Transformer acceptance area	Picture 2: Transformer draining and dismantling area
	
Picture 3: Dismantling of transformers	Picture 4: Phased-out transformer carcasses
	

During the original NIP preparation in 2006, the DoE laboratory was involved in the identification of the PCB containing transformers using Clor-N-Oil quick test kits (non-quantitative). The positive samples were not verified by Gas Chromatography to scientifically confirm the PCB presence, and therefore some of the positive samples could have contained other organochlorine additives which also give positive responses.

The cross-check of equipment produced before 1993 (the latest year of ban of the production of PCB transformers) was performed during the PPG phase. Subject to the inventory (sampling, screening, verification) were 150 transformers from the three largest stakeholders (Bangladesh Power Development Board, Rural Electrification Board and Power Grid

Company of Bangladesh). The remaining power equipment produced before that year were left for future regular cross-checks during the project implementation to understand the scope of potential equipment cross-contamination due to the maintenance practices. It is assumed that the total of 10,000 units of electrical equipment would need to be subject to the further investigation.

During the original NIP preparation in 2007, environmentally safe management standards for handling, storage and service of PCB equipment were found to be absent and require further elaboration and appropriate formulation meeting international practices. The UNIDO's delegation's visit in 2013 has confirmed a lack of proper maintenance practice and storage standards for phased-out or operational electrical equipment in some of the transformer maintenance workshops located in Tongi. The maintenance and repair of oil transformers is carried out without proper knowledge about PCB associated risks and potential cross-contamination of clean equipment with PCB. Given this baseline scenario, it is expected that the contamination of new equipment will commonly take place without this project's intervention.

Neither legal and regulatory framework on PCBs nor technical guidelines for the environmentally sound management of PCBs have been established. Additional baseline information is available in Annex O .

There is a private sector active in the area of transformer oil regeneration. Located at Jamur Muchipara, Hemayetpur, Savar, Dhaka, Min Oils Ltd has been re-refining used lubricants and transformer oil and serving the public as well as the private sector through its testing and re-refining operations for both public and private transformer oil users. Min Oils Ltd. is currently the only company in the country that is approved by both the Ministry of Energy and Mineral Resources and Bangladesh Petroleum Corporation. It is also licensed under the Bangladesh Energy Regulatory Commission. Min Oils Ltd. follows the process of fractional distillation for re-refining used lubricants, which is currently the minimum accepted process for refining of used oils. However, Min Oils has not adopted sound management PCB procedures at the time of the project development.

#### Baseline projects

##### Bangladesh Power Development Board (BPDB)

BPDB is a state-owned organization in charge of the generation and distribution of the electricity under the supervision of under the Power Division of the Ministry of Power, Energy and Mineral Resources (MoPEMR). BPDB now has a total capacity of 11.2 GW in 2015 to distribute. BPDB has taken a massive capacity expansion plan to add about 11.6 GW generation capacity in the next 5 years to achieve 24 GW by 2021 with the aim to provide quality and reliable electricity to all the people of the country. The power system is being expanded to keep pace with the fast growing demand.

The BPDB's regular budget for the repair and maintenance of the power distribution in the year 2013-2014 was BDT 1.25 billion (about USD 16 million). BPDB has five main repair and maintenance workshops (the central workshop in Tongi (Gazipur) and zonal workshops in Tongi, Bogra, Jessore, and Chittagong). It is highly expected that BPDB will need to expand its repair and maintenance operations to keep up with the increasing number of equipment needed for its growing power generation and distribution grids.

BPDB has committed itself to join this UNIDO/GEF project as co-financing partner by designating the director of the central workshop in Tongi as the main project focal point. BPDB will generate its PCB management plan including phase-out and final disposal of PCB contaminated equipment and its wastes to be identified during the project.

In addition, the regional repair and maintenance workshops as well as the warehouse of BPDB (In total 7 facilities) will adopt the best environmental practice (BEP) that will be introduced through this project in order to better avoid the environmental release and potential adverse impact of PCBs on the workers and residents. These facilities will be maintained / upgraded following the BPDB's annual maintenance plan of the facilities that will be finetuned to comply with the technical guidelines to be drafted during the project. The equipment such as oil regeneration units, oil quality testing equipment, winding machines, cranes, and trucks will be made available for the project's activities. The consumables such as new transformer oil will be provided by the BPDB for the project's activities as co-financing contributions. The technicians and engineers at the workshop will participate in the PCB management and safety training. For updating the PCB inventory BPDB will help collect oil samples according to the technical guidelines to be prepared during this project. BPDB will establish a separate PCB line to minimize the cross-contamination during the oil regeneration and recoiling process at the BPDB central maintenance workshops in Tongi.

**Pictures 5 and 6: Oil regeneration unit**



In case that the PCB decontamination equipment will be acquired by the project it is most likely that the equipment will be installed at the BPDB's Central Workshop in Tongi (this is subject to the official government's decision following its concession policy). More details of this scenario are described in the incremental cost reasoning part (A.5) of this document.

Bangladesh Rural Electrification Board (BREB) and other partner institutions

BREB has its regional maintenance workshops in Dhaka and Chittagong. Additionally there are 67 rural distribution regions where small distribution transformers are repaired as needed. REB will generate its PCB management plan including phase-out and final disposal of PCB contaminated equipment and its waste to be identified during the project.

BREB and the other partner institutions, namely, Power Grid Company Bangladesh (PGCB), Dhaka Power Distribution Company Limited (DPDC), Dhaka Electric Supply Company Limited (DESCO), Western Zone Power Distribution Company (WZPDCO) will appoint a project focal person who will attend the project committees as well as the inventory team in each agency. The national PCB management plan will be formed by consolidating each agency's PCB management plan that will be generated based on each agency's PCB inventory to be updated during this project. For updating the PCB inventory, each agency will also establish or designate its PCB laboratory with the PCB screening test kit to be purchased by the project funding. The training on how to sample and analyze the potentially PCB contaminated samples will be provided by this project.

All the co-financing partners will also adopt the PCB technical guidelines in their own maintenance workshops and introduce the best environmental practice (BEP) to prevent the oil leak and exposure to the workers. The PCB screening test will be performed at the time of the equipment arrival at a maintenance workshop, and the possibly PCB containing equipment will be dealt with separately. This will be the main co-financing activities of the co-financing partners.

The above baseline projects could be carried out even without this GEF project approved. However, without the incremental activities of this GEF project, the country will have neither domestic technical solution nor technical capacities for the final disposal of PCB contaminated equipment and its waste, and there would be no motivations given to the potential PCB owners to employ the best environmental practice and store identified PCB contaminated equipment, oil, and waste.

A. 5. Incremental /Additional cost reasoning: describe the incremental (GEF Trust Fund/NPIF) or additional (LDCF/SCCF) activities requested for GEF/LDCF/SCCF/NPIF financing and the associated global environmental benefits (GEF Trust Fund) or associated adaptation benefits (LDCF/SCCF) to be delivered by the project:

The global environmental benefit of the project is to protect human health and the environment from harmful impacts of PCBs as well as associated pollutants. The project will dispose of 500 tons of PCB-containing equipment and waste by environmentally sound containment, storage and final disposal in the country. In a short term this will have an immediate global impact through the elimination of historic sources of PCBs. Occupational health and safety of those



who are engaged in transformer maintenance is also in question. Protective gears are seldom used, thus exposure to PCBs could be high. As part of the ESM system, personal safety measures will be implemented, thus human exposure to PCBs will be minimized. Through training workshops, the project will significantly increase the knowledge and awareness of workers and managerial personnel.

In the GEF alternative scenario, the technical guidance supported by the updated legal framework would be incorporated in the day-to-day management practices among PCB holders as well as supporting private service providers (transformer maintenance companies, oil recyclers, etc.). Consequently under the scenario, release of PCBs to the environment as well as human exposure to PCBs during handling, maintenance, de-commissioning, storage as well as disposal operation will be diminished considerably. Moreover, leaks and other emergency incidents could be avoided or minimized by PCB management plans which will put in place leak containment and emergency response actions.

Outcome 1. Legal and institutional framework and capacities established and upgraded for POPs, particularly ESM of PCB contaminated equipment, oil, and waste

This outcome will result in the formulation and establishment of proper regulatory acts covering environmentally sound PCB management, that are in compliance with the Stockholm Convention requirements. As part of the regulatory framework, detailed technical guidelines, protocols and procedures in accordance to international standards and practices for sound PCB management will be developed, as well as the threshold limit levels defined, i.e. maximum allowable concentrations of PCBs in different environmental media (air, soil and water).

Output 1.1 Legal framework updated and established for the environmentally sound management of POPs

Currently there is no legislation specific to PCBs (e.g., their production, export or use, including use in equipment; inventories of PCBs, handling, storage or their recovery and disposal/destruction etc.) except the technical specification of transformer oil banning the PCB oil. In order to fill the identified gap between the national legal framework and the Stockholm Convention mandates, new and/or revised laws to implement Stockholm Convention requirements will be drafted.

The responsible legislative bodies will prepare regulative acts for improvement of the policy framework through amendments of laws and regulations as well as Government decrees and rules as needed to enable proper PCB management for the country. A comprehensive regulatory system addressing PCBs issues at important stages of its lifecycle such as import, sales, inventory, usage, handling, storage, transportation and disposal, will be developed. The regulatory acts could include following prohibitions and obligations:

- i. prohibition of production, reuse, import, placement of PCBs on the market;
- ii. prohibition of topping up of transformers with PCBs;
- iii. prohibition of mixing or diluting any PCB with another substance;
- iv. prohibition of uncontrolled discharging, burning, incineration on ships and other unauthorized disposal;
- v. prohibition of metal scrapping of PCBs (equipment, ships);
- vi. obligation on acceptable usage of the PCB equipment during the limited period of time;
- vii. obligation on inventory (sampling, screening, verification), labeling, temporary central storage and temporary storage at generator site, record keeping and reporting, inspection, transportation and final disposal of PCB-containing equipment and waste;
- viii. obligation on development of PCB management plans including gradual PCB phase-out and replacement plans;
- ix. obligation on identification and remediation of PCB contaminated sites;

All these prohibitions and obligations, especially those related to the phasing-out, replacement and final disposal, will have a great financial impact on the PCB owners, and therefore when setting the terms for their completion, several factors should be taken into consideration:

- time taken to compile inventories (screening and laboratory capacities);
- treatment facilities in the country;
- amount of PCB equipment and waste as well as PCB concentration;

- service lifetimes of equipment of various types;
- replacing equipment;
- suitable alternative dielectric fluids.

While the overall legal structure for the sound management of POPs in general would be recommended, PCB-specific legal framework and technical guidelines will be established during this project. This legal framework is also crucial when the PCB decontamination starts to ensure the major PCB owners will be legally obliged to follow the national PCB management plan. The technical guidelines will need to be officially adopted by the co-financing and other agencies participating in the project. Such guidelines could include standard operating procedures for the oil sampling for the PCB inventory, screening testing, chemical analysis with gas chromatography, storage, and final disposal.

The activities include hosting three workshops meeting, targeting the managerial and technical officers of the 9 concerned organizations to discuss how to translate the legal gap to a legal framework from a national to the entity level. A national regulation will be drafted. Each concerned agency will also adopt its own version of the internal rule and regulations following the national regulation.

#### Output 1.2 Implementation and inspection capacities for the key governmental institutes assessed and strengthened

According to the initial assessment during the PPG phase, the technical specification adopted by the key stakeholders in purchasing dielectric oil specifies non-PCB oil. However, there is neither institutional mandate to monitor if such technical specification is met by the selected supplier nor technical capacities and best environmental practice that were adopted by the concerned institutions and monitored by governmental inspectors. This project will provide training on the environmentally sound management of PCBs to potential PCB owners and governmental inspectors including how to use the PCB screening tool kits. The concerned institutions are expected to adopt the institutional arrangement to address the PCB issues as part of their routine operation procedures. This requires each institution / agency to incorporate the relevant policies, rules, regulations, and procedures on PCBs into their administrative framework. Technical institutions dealing with equipment will also establish the emergency response procedure for PCBs as well. For inspection institutions, inspection procedures, data quality control, and procedures to designate the safe storage of possibly PCB contaminated equipment would need to be adopted.

The activities include the following. The inspection procedure will be discussed and agreed at the project implementation committee and technical sub-committee involving all participating power agencies. Regional concerned agencies will have decentralized analytical skill and equipment to ensure a swift and local option for monitoring. An assessment report on the inspection status will provide the basis to adjust the training levels, and the inspection results will be summarized including the screening data and the actions taken at each concerned agency.

#### Output 1.3 Awareness and knowledge on POPs/PCBs issues and regulation among key stakeholders and general public enhanced

The awareness on the adverse effects of POPs/PCBs on human health and the environment among policy makers, employees of the concerned institutions, potential buyers and users of possibly PCB contaminated oil, academic communities, civil society organizations (CSOs) as well as the general public with strong interests is critical to support the establishment and consequent enforcement of the legal framework. The awareness event also offers opportunities for both the government and other stakeholders, particularly all levels of officers of the co-financing institutes and other power agencies, to exchange the comments and receive feedback to deepen the mutual understanding. This will help the government absorb the knowledge and needs of different social actors and provide a check and balance function. The gender balance of the participants will be monitored. Appropriate organizations representing the vulnerable actors such as women and current artisanal users of the used transformer oil will be invited as well.

The activities include three awareness raising workshops targeting the above mentioned audience. Awareness raising materials and media programs (4 types) such as posters and programs will be prepared in a gender sensitive manner and distributed. The work, if endorsed by the project committee, will be delegated to NGOs following the due diligence of the government or UNIDO's procurement rules and regulations depending on the financial scale of the delegated tasks.

## Component 2 Assisting the power sector to develop and implement the environmentally sound management and final disposal plan of PCBs

Further building on the legal and institutional capacities that will be reinforced by Component 1, this technical component will guide all concerned technical institutions such as BPDB to ensure they will adopt the technical guidelines and procedures, and incorporate them into the daily maintenance procedures. The GEF fund will be made available for the establishment of ESM and final disposal of PCB contaminated equipment. The technical co-financing partners will contribute to the project by updating the PCB inventory, formulating the PCB phase-out plans, improving the working conditions in the equipment maintenance premises, and developing the project team and business plans to operate the PCB decontamination equipment which should be fully utilized even after the project period.

### Output 2.1 PCB management plans properly set up at the national level and by key PCB owners

The most challenging part of the sound management of PCB contaminated equipment is caused by the fact that the replacement of the identified PCB contaminated equipment takes a great deal of resources and time because the equipment are expensive properties and a long-term plan is absolutely needed to complete the replacement. As Party to the Stockholm Convention, the country is mandated to phase out PCB contaminated equipment by 2025 and dispose of them by 2028. In order to ensure that all the concerned institutions are prepared for the long-term commitment, the development of the national PCB management plan will lay out the roadmap of the country's actions to achieve the PCB management goal as Party to the Stockholm Convention. The national PCB management plan should be formulated by consolidating the plans of all power sector partners. Therefore the planning process should be a bottom-up approach. The government will be able to monitor the progress of the PCB management plan toward the 2025/2028 goals.

There should be several phase-out options to be considered depending on the types and sizes of the identified PCB contaminated equipment. The option to phase out all PCB contaminated equipment at the end of 2025 will not promise a feasible solution as the replacement of power equipment will need a mid-term plan. Therefore a priority should be given to the following equipment in order to accelerate a phase-out of all PCB equipment over a specific period of time that will allow the completion of the phase-out by 2025 and sound disposal by 2028.

- High volume and high PCB concentration equipment;
- Equipment in bad technical condition and waste;
- Equipment in sensitive locations (food or feed processing plants, equipment located in hospitals, schools, public buildings) given priority for phase-out, remainder of equipment phased-out by the end of 2025;
- Equipment in insecure indoor locations (not within any enclosure, e.g. vault, electrical room);

Other factors that positively influence decisions of PCB equipment owners to accelerate phase-out are:

- Intrinsic costs: PCB-containing equipment, liquids and wastes require specialized procedures for maintenance, handling, storage and containment that are generally not required or only required at a reduced level or under specialized circumstances for non-PCB equipment. These extra protective measures would incur additional cost to the PCB owner.
- Liability costs: liability costs would only be incurred in the event of a PCB release into the environment due to spills, catastrophic explosions, or fires. Depending on the circumstances, PCB releases may contaminate the natural environment, industrial and food products, and may represent a threat to human health, both real and perceived. PCB releases would incur costs for clean-up and disposal of contaminated materials, which in case when PCB equipment is involved in a fire in a building, the clean up cost may reach millions of U.S. dollars. In addition, environmental contamination from PCB releases may also result in prosecutions for violation of certain environmental statutes.
- Human relations: the public image of the company could be affected by any incident involving PCB, which may result in adverse publicity and unwanted press coverage.
- Waste Storage/Disposal Facilities: the availability of PCB waste storage/disposal facilities would accelerate the phase-out of the PCB equipment, especially equipment that is now out of operation, i.e. in storage. Companies removing PCB equipment from service probably base their decisions more on operational requirements, than on

environmental factors. Availability of disposal facilities would probably accelerate these management decisions. PCB disposal technology and the costs of disposal will determine both the pattern and rate of PCB phase-out.

The activities include the development of the national PCB management plan reflecting the current PCB status and the potential disposal options. The national plan has to be formulated in close consultation with the technical officers of the nine concerned agencies. Therefore three workshop events are planned to ensure the needs of the concerned agencies are properly reflected into the national PCB management plan. The project could provide the concerned agencies with financial incentives during the project period to bring identified PCB-containing equipment for a project-subsidized treatment cost.

#### Output 2.2 Gender sensitive technical guidelines and tools developed and adopted by governmental institutions and concerned stakeholders

The technical guidelines on the ESM and final disposal of PCBs that have been developed in other countries for UNIDO's PCB projects are available for reference. The main task in this output will be to fine-tune the technical part of the guidelines to be fit to the needs of each participating power sector agency, while keeping the safety measures intact and paying close attention to female workers' health concern, if relevant. The technical guideline draft group members should be chosen considering a gender balance. The technical guidelines cover PCB inventory sampling procedures, PCB screening at the time of the equipment's arrival, labeling, safety storage standard, transport standards, personal protective equipment requirement, etc. to be incorporated into the daily standard operating procedures at the equipment maintenance facilities of all concerned power sector agencies.

At present, there are neither equipment maintenance guidelines enforced in any of the power sector agencies nor property lists of equipment keeping track of maintenance records available in a centralized manner. All power participating agencies will adopt the best environmental practice particularly focusing on all precautionary measures to avoid oil leaks to the floor of the facilities and subsequently to the outside of the premises through drains and surface runoff. Raising awareness among the engineers and technicians of the concerned agencies is critical to design the best environmental practice aligned with the local working conditions and conventional work ethics.

Another important focus in this output is to avoid cross-contamination of new oil and equipment. The guidelines will highly encourage the use of PCB screening test kits at the time of equipment arrival, and treat equipment with positive results in a separate maintenance process by dedicating an oil regeneration unit and oil tanks only to the equipment with positive results. Due to the false-positive nature of the screening test kits, other chlorine-based additives than PCBs would be subject to the positive results. But this is what can be done to minimize the further cross-contamination of PCBs. In order to reduce false positive results, it may be necessary in a long-term to decide if any types of chlorine additives should not be allowed by reviewing the technical specification of equipment oil to be used in the country. This decision will help the screening using the test kits, affordable technical option, become more efficient and effective, because any positive results could most likely indicate the presence of chlorine in the oil and therefore reject the import of the identified oil.

Due to the limited resources and technical capacities of the power sectors, there has not been a PCB inventory carried out properly in the past. Therefore, a decision needs to be made if the project should establish a national technical hub(s) on ESM and final disposal of PCBs rather than diluting the limited project resources among all participating concerned institutions throughout the country. This decision will be made after the review of the technical capacities and committed resources of all potential maintenance workshops of the participating concerned institutions. The project could provide PCB screening test kits to all participating concerned power institutions and a gas-chromatograph with an electron capture detector to the laboratory of DOE which will confirm any concerned positive samples indicating higher PCB concentrations using the IEC 61619 method.

The activities include the development of the technical guideline on the environmentally sound management and disposal of PCBs including the sampling, inventory, and chemical analysis methods. This guideline will be adopted at the national level and then introduced to all the concerned agencies for the compliance. The gender-sensitive part of the technical guideline will focus on the health risks and measures to avoid the exposure from the PCB-contaminated oil and fumes at the PCB maintenance facility or in the vicinity of sub-stations. The adoption of the PCB management measures recommended by the technical guidelines will require some small investment by the concerned agencies, which will be provided as co-financing of the concerned co-financing agencies.

#### Output 2.3 PCB inventory updated

This project will assist the country to conduct the first PCB inventory with proper chemical analysis equipment and capacities by collecting samples from all over the country. This will be made possible by the six power sector agencies which will participate in the project with the focal point of each agency appointed who will monitor the progress of the project activities assigned to each agency. In particular, the sample collection will be heavily relied on each agency's cooperation. The work plan of each agency will be agreed at the level of the project steering committee which is the inter-ministry coordination body comprised of the high-level governmental officials. The agreed work plan will be executed by the project implementation committee and followed up by the technical sub-committee for daily coordination. All sampling and chemical analysis will be conducted by following the technical guidelines put in place as a result of Output 2.2. Training events for the sampling and chemical analysis will be provided by the project for engineers and technicians involved in the PCB inventory particularly for the co-financing partners and other participating power agencies. Female trainees will be highly encouraged and the training events will be scheduled considering the convenience of female participants. The PCB inventory will particularly pay close attention to the equipment with high-level PCBs and PCBs higher than 500 ppm for low-level PCB equipment. The high-level PCB results will be checked by the GC-ECD installed in the DOE laboratory or a third-party laboratory. A PCB inventory report will be prepared referring to the PCB analytical data for review by the committees and UNIDO. The identified PCB equipment will be temporarily stored in a safe manner with proper labels following the technical guidelines. Through the power network of the participating power agencies, the inventory plans to cover all the country's key power stations and power grids. The inventory report will be produced by consolidating all the PCB inventory data submitted to the project committees by the participating power agencies.

The activities include the identification of target equipment, oil sampling, chemical analysis, and reporting the data following the technical guideline to be developed in Output 2.2. Some temporary secured storage facilities will be also constructed as decided by the project committee. The identified PCB containing equipment will be stored there until the disposal option will be made available. Three training workshops will be held targeting the management and technical officers of the concerned agencies. The identified PCB equipment will need to be labeled properly following the technical guideline. The project will aim at identifying 500 tons of the PCB-containing equipment (either phased out or on line equipment).

#### Output 2.4 Technical capacities and sustainable business plan established by the power sector (Investment)

The PCB inventory to be completed in Output 2.3 will help clarify the required technical specification of the PCB decontamination technology including the equipment's treatment capacity, the maximum concentration of PCBs that can be treated by the equipment, energy and utility requirement, waste amount to be generated, treatment cost, and other requirements.

Another significant aspect of the technology choice is the technical capacities needed to operate equipment to be selected. The sustainability of the PCB decontamination capacity to be nurtured by this project will be heavily relied on the local operator's commitment and engineers' competency. The operator's commitment could be further strengthened by looking into the business opportunities utilizing the equipment during and after the project. The operator will be chosen based on many criteria including the willingness to operate the equipment beyond the project's period. This criteria could also encourage the potential operators to propose their own investments on a competitive basis. The PCB decontamination during the project period could be subsidized but a part of PCB decontamination fees should be paid by beneficiaries. This will initiate the financial flow between the concerned institutions with identified PCB equipment and the selected operator of the PCB decontamination unit.

A technical vendor workshop will be held which provides a great opportunity for the project to present the technical issues including the results of the PCB inventory to the potential bidders with international experience to decontaminate PCBs. At the same time the project stakeholders could learn from the potential bidders about their technologies and technical specifications. A bidding document including Terms of Reference will be finalized reflecting the information collected at this technical vendor workshop, and UNIDO will carry out the international bidding to select an operator which will provide the PCB decontamination technology and its service.

A local operator, in case a technology is acquired, will need to be chosen as well. The criteria includes engaging competent engineers in the training provided by the selected international technology provider as well as investing own resources to realize its business plan with the technology. A potential local operator also needs to be committed in writing to working to operate the equipment for a certain number of years to ensure the knowledge and technical capacities will be transferred to other engineers and technicians of the selected operator. At the end of the project

period, the title of the equipment will be transferred from UNIDO to the government which will further transfer to the selected operator following the memorandum of understanding exchanged between the government and selected operator by following the governmental concession procedure. This will help the country sustain the PCB final disposal option in the country for low-level PCB equipment.

The activities include the development and finalization of the Terms of Reference to select the PCB disposal technologies through the UNIDO's international bidding to conclude the technical and commercial evaluation following the UNIDO's procurement rules and regulations. This process will involve the selection of a national operator, if the technology is acquired, which will be requested to express its co-financing commitment. The national operator will need to be committed, technically capable, and financially secured. The selection of the national operator will follow the government's existing public private partnership policy and its concession rules. The requirement of the national operator to be selected will also include its co-financing commitment and business plan particularly after the project's period. The sustainability of the PCB decontamination and oil regeneration capacity would be determined partially depending on the business interests in maximizing the value of the PCB decontamination equipment the project will acquire.

## 2.5 Final disposal of 500 tons of PCB equipment demonstrated (Technical Assistance)

In order to reduce the project cost, the final disposal option will be divided into at least two phases. The first phase will be committed to disposing of at least 100 tons of low-level PCB contaminated equipment (focusing on the higher end of the low-level PCB concentration range) operated by the international service provider's own operators. This first phase will involve the trained engineers as well as other local operator's technicians in the treatment operation as part of on the job training under the condition that such operators will be allowed in terms of liability insurance's requirement.

The second phase will treat the remaining amount of PCB contaminated equipment to achieve final disposal of 500 tons of PCB contaminated equipment including 100 tons to be treated in the first phase. The responsibility of the second phase will be handed over to the national operator including taking out the insurance policy of accidents in case the technology is acquired by the project (not leased). The chemical analysis results to be produced by the DOE laboratory, if equipped with GC-ECD by the project, will be checked by the third party laboratory at the onset of the final disposal operation to ensure the quality of the DOE-generated data. The project members, concerned agency's management, enforcement institutions, and UNIDO will review the PCB analysis data to confirm the completion of 500 tons of PCB equipment in total.

The baseline of the PCB level will be established by conducting an environmental analysis before the PCB decontamination process will begin, while another environmental monitoring will follow the completion of the PCB decontamination to ensure the PCB decontamination operation will not have contaminated the project site.

Other activities include the coordination between all concerned agencies to ensure that the PCB treatment schedule will be planned considering the power grid maintenance schedule, and that all the PCB-containing equipment will be brought to the PCB treatment facility in time. The PCB treatment fees are collected in case that a financial mechanism set for the project will require the collection of the PCB treatment fees during the project period. The project will monitor the amount of PCBs treated and materials recovered for reuse and recycling from this PCB treatment process, which include regenerated oil, cleaned equipment, cleaned metal materials, etc.

## Outcome 3 Impact monitoring and evaluation

### Output 3.1 Project results monitored and reported including the gender dimensions

The project monitoring will be carried out by updating the work plan, budget, and indicators. Following the UNIDO's technical cooperation policy, the project progress reports are to be submitted every 6 month. GEF also has annual reporting to be conducted in the project implementation report (PIR) format. In these project reports, not only the updated work plan and budget but also risk and mitigation measures will be described to be followed by the project members. In this project, the project operation will be delegated to the national execution agency with a management contract issued to the national execution agency. The daily project monitoring will fall under the responsibility of the national execution agency which will send all the documents as regular reporting every 6 month.

In the logframe attached as the annex of this document, most of the indicators and goals are articulated. There are some indicators of which the goals need to be finalized after the operator is selected by the government following its concession procedure. There may be some other indicators to be proposed during the project or at the time of the mid-term review. Most of the current indicators are chosen from those aligned with the UNIDO's institutional indicators and yet some project-specific indicators will be chosen to monitor the project's progress as needed.

**Output 3.2: Project evaluated meeting the GEF's evaluation criteria**

There are two evaluations to be carried out during the project: mid-term review and terminal evaluation. The UNIDO's independent evaluation office will lead drafting the Terms of Reference for the two evaluations and independent evaluators will be engaged to complete the evaluation reports. The evaluators will be asked to present the findings, and the project managers will be mandated to take follow up actions recommended as a result of evaluations.

**Table 2: Activities funded by GEF grant and co-financing resources**

<b>Activities</b>	<b>GEF-funded activities</b>	<b>Co-financing contributions</b>
Outcome 1. Legal and institutional framework and capacities established and upgraded for POPs, particularly ESM of PCB contaminated equipment, oil, and waste		
Output 1.1 Legal framework updated and established for the environmentally sound management of POPs	International consultants National project staff and consultants Project travel for NEA and project staff International and National Workshops and training costs Miscellaneous related to the project execution by NEA	Government of Bangladesh  Under the Ministry of Environment and Forests (MoEF)  1. Department of Environment (DoE)  Under the Ministry of Power, Energy and Mineral Resources (MoPEMR)  2. Other concerned agencies: Bangladesh Power Development Board (BPDB), Power Grid Company Bangladesh (PGCB), Bangladesh Rural Electrification Board (BREB), Dhaka Power Distribution Company Limited (DPDC), Dhaka Electric Supply Company Limited (DESCO), Western Zone Power Distribution Company (WZPDCO)
Output 1.2 Implementation and inspection capacities for the key	International consultants providing workshops and training on legal	Project furnished office with electricity, internet and phone (1) Governmental and agency officials work time for the project issues (1,2) Some national travel by Ministry officials (1) Organization of meetings (1,2) Legislation review, draft, approval support process (1,2) Expertise provided (1, 2)

governmental institutes assessed and strengthened	<p>framework, ESM, BAT/BEP in sound waste management according to international standards by international consultants</p> <p>Project travel for NEA and project staff</p> <p>National project staff and consultants designing and executing the inspection schemes</p> <p>Meeting costs related to the project</p>	<p>Government and agency officials work time (1,2)</p> <p>Some national travel by Ministry officials (1)</p> <p>Use of cars with gasoline and drivers (1,2)</p> <p>Organization of meetings (1,2)</p> <p>Co-financing partners provide inputs/feedback on the legal framework and institutional tools developed (1,2)</p> <p>Ministry and its partners officially initiate the process to design, execute, and report the inspection scheme on PCBs (1,2)</p>
Output 1.3 Awareness and knowledge on POPs/PCBs issues and regulation among key stakeholders and general public enhanced	<p>International consultants</p> <p>National project staff and consultants</p> <p>Project travel for NEA and project staff</p> <p>Meeting and training costs</p> <p>Subcontract to create awareness raising materials and media programs</p>	<p>Project furnished office with electricity, internet and phone (1)</p> <p>Government and agency officials work time (1,2)</p> <p>Some national travel by Ministry officials (1)</p> <p>Use of cars with gasoline and drivers (1,2)</p> <p>Participation in the design and distribution of the awareness raising materials (2)</p> <p>Co-financing partners' time to participate in meetings (2)</p>
Component 2 Assisting the power sector to develop and implement the environmentally sound management and final disposal plan of PCBs		
Output 2.1 PCB management plans properly set up at the national level and by key PCB owners	<p>International consultants</p> <p>National project staff and consultants</p> <p>Project travel for NEA and project staff</p> <p>National meeting and training costs related to PCB management plan and gender dimension</p> <p>Office supplies for the project office</p>	<p>Project furnished office with electricity, internet and phone (1)</p> <p>Work time of the Government and agency officials (1,2)</p> <p>Some national travel by Ministry officials (1)</p> <p>Use of cars with gasoline and drivers (1,2)</p> <p>Organization of national meetings (1,2)</p> <p>Co-financing partners' time and expertise in designing and drafting the national PCB management plan (1,2)</p>
Output 2.2 Gender sensitive technical guidelines and tools developed and adopted by governmental institutions and concerned stakeholders	<p>International consultants</p> <p>National project staff and consultants</p> <p>Project travel for NEA and project staff</p> <p>Subcontract to develop and draft the guidelines</p>	<p>Project furnished office with electricity, internet and phone (1)</p> <p>Work time of the Government officials and agency officials (1,2)</p> <p>Some national travel by Ministry officials (1)</p> <p>Use of a car with gasoline and a driver</p>



	<p>National and international workshops and training costs related to PCB management and gender dimension</p> <p>Printing and delivery cost of the guidelines</p>	<p>(1,2)</p> <p>Co-financing partners' time and expertise to participate in the drafting the guidelines (1, 2)</p> <p>Organization of national meetings (1,2)</p>
Output 2.3 PCB inventory updated	<p>International consultants</p> <p>National project staff and consultants</p> <p>Project travel for NEA and project staff</p> <p>National and international workshops and training costs related to PCB inventory</p> <p>Purchasing PCB screening test kits</p> <p>Publication cost of the PCB inventory report</p>	<p>Project furnished office with electricity, internet and phone (1,2)</p> <p>Work time of the Government officials and agency officials (1,2)</p> <p>Some national travel by Ministry officials (1)</p> <p>Use of a car with gasoline and a driver (1)</p> <p>Work time and expertise of the Government officials and agency officials to collect and analyze data, summarize the results and draft the PCB inventory report (1,2)</p> <p>Organization of national meetings (1,2)</p> <p>Use of oil regeneration units, oil quality testing equipment, winding machines, cranes, and trucks for project activities (2)</p>
Output 2.4 Technical capacities and sustainable business plan established by the power sector (Investment)	<p>International consultants</p> <p>National project staff and consultants</p> <p>National travel for NEA and project staff</p> <p>Cost to assess the local capacities to choose the national operator, if relevant</p> <p>Cost to draft the Terms of Reference for choosing the technology for PCB decontamination</p> <p>Cost to organize the technical vendor workshop before the international bidding is announced</p> <p>Cost for NEA and relevant stakeholders to travel for the technical and commercial evaluations of the international bidding as well as co-financing assessment of all the stakeholders</p> <p>Cost to acquire/lease the PCB decontamination equipment</p> <p>Cost to purchase consumables, protective gears, and other items</p>	<p>Project furnished office with electricity, internet and phone (1,2)</p> <p>Work time of the Government officials and agency officials (1,2)</p> <p>Some national travel by Ministry officials (1)</p> <p>Use of a car with gasoline and a driver (1,2)</p> <p>Co-financing partners' time and expertise to formulate, draft, and select the international bidding's Terms of Reference and evaluate the received proposals (1,2)</p> <p>Organization of national meetings (1,2)</p> <p>Investment by the co-financing partners/operators of the acquired/leased equipment to ensure that all the required facilities are in place and that the PCB decontamination operation skill is learned by the co-financing partners' employees (1,2)</p> <p>Use of oil regeneration units, oil quality testing equipment, winding machines, cranes, and trucks for project activities</p>

	<p>needed for the PCB treatment that cannot be purchased by the co-financing partners, if needed, as agreed</p> <p>National meeting to discuss the technical strategy of the PCB management</p> <p>Office supplies and miscellaneous cost</p>	(2)
2.5 Final disposal of 500 tons of PCB equipment demonstrated (Technical Assistance)	<p>International consultant</p> <p>National project staff and consultants</p> <p>National travel for NEA and project staff</p> <p>National workshop and training costs related to PCB management</p> <p>Cost to purchase protective gears and consumables</p> <p>Awareness raising materials printing cost related to PCB treatment</p>	<p>Project furnished office with electricity, internet and phone (1,2)</p> <p>Work time of the Government officials and agency officials (1,2)</p> <p>Some national travel by Ministry officials (1.)</p> <p>Use of a car with gasoline and a driver (1,2)</p> <p>Co-financing partners' time and expertise to operate the PCB treatment (1,2)</p> <p>Organization of national meetings (1,2)</p> <p>Investment by the co-financing partners/operators of the acquired/leased equipment to ensure that all the required facilities are in place and that the PCB decontamination operation skill is learned by the co-financing partners' employees (1,2)</p> <p>Use of oil regeneration units, oil quality testing equipment, winding machines, cranes, and trucks for project activities (2)</p>
Outcome 3 Impact monitoring and evaluation		
Output 3.1 Project results monitored and reported including the gender dimensions	<p>National project staff and consultants</p> <p>Project travel for NEA and project staff</p> <p>National meeting costs mainly for Project Steering Committees</p> <p>Office equipment additionally needed to those provided by NEA, if relevant</p> <p>Office supplies</p>	<p>Project furnished office with electricity, internet and phone (1)</p> <p>Work time of the Government officials and agency officials (1,2)</p> <p>Some national travel by Ministry officials (1)</p> <p>Use of a car with gasoline and a driver (1,2)</p> <p>Organization of national meetings (1,2)</p>
Output 3.2: Project evaluated meeting the GEF's evaluation criteria	<p>International consultants</p> <p>National project staff and consultants</p> <p>National meeting for the evaluation</p>	<p>Project furnished office with electricity, internet and phone (1,2)</p> <p>Work time of the Government officials and agency officials (1,2)</p> <p>Some national travel by Ministry officials</p>

	Miscellaneous for the evaluation activities	(1) Use of a car with gasoline and a driver (1,2) Co-financing partners' time and expertise to participate in the evaluation meeting (1,2) Organization of national meetings (1,2)
Project Management	National project staff and consultants Project travel for NEA and project staff National workshops and meeting costs Office supplies and communication costs	Project furnished office with electricity, internet and phone (1,2) Government officials and agency officials work time (1,2) Some national travel by Ministry officials (1.) Communication costs (1,2)

### Global Environmental Benefit

With the above outputs achieved, the project will identify, safely store, and dispose of 500 tons of PCB contaminated equipment, oil, and waste. Without this project, this PCB would be released to the environment some of which would be accumulated in the human bodies and ecosystems posing some health risks. The technology employed in this project would help the country to meet the mandate of the Stockholm Convention in terms of PCB management, as a national PCB management plan is expected as a result of the project. Any possible PCB containing equipment over 500 tons could be further treated by the equipment to be acquired/leased by the project under the condition that the local operator would be greatly committed and a demand to continue the PCB treatment would exist even after the project. The project is expected to generate such a momentum by establishing a business model, technical capacities, and legislative framework.

A.6 Risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and measures that address these risks:

Table 3: Risks and mitigation measures

Assumptions and Risks	Risk Level	Mitigation Measures
Delays in development and adoption of proposed laws, regulations and guidelines due to complexity of amendments in associated laws, disagreement of the stakeholders on the proposed ESM measures or changes in government	Low	Ensure recommended laws and regulations are practical and enforceable; stakeholders will be included in the development process; institutional capacity building and training will be provided; additional awareness raising on the Government plans through PCB workshops and direct contacts with the stakeholders
A sustainable financial mechanism may not be agreed among the key stakeholders	Medium	The selection of the local technology operator will be carried out through competitive or semi-competitive basis including criteria on the business interests after the project period ends

Assumptions and Risks	Risk Level	Mitigation Measures
Government will not have the necessary capacity to maintain the effective enforcement of the POPs-related legislations after project completion	Medium	The sustainability of the mechanisms created by the project will be ensured by integrating all project components in existing power agencies' daily operations, while the equipment needed for the enforcement will be provided under such conditions
The Government will not have the necessary resources to maintain the laboratory standards	Low	The provision of the equipment to the power agencies will be made under the condition that the agencies will be committed to the maintenance of the laboratory and enforcement of the capacity. Some business operations could be incorporate where relevant to safeguard some revenues
Climate change impact may hamper the project activities (temperature, rain, wind, vulnerability to storms etc.)	Low	The selection of the project site will be finalized taking into consideration the disaster history and future potentials
Accidents and environmental releases during storage operations, handling, packaging and transportation of PCB wastes	Low	The project will ensure the application safety standards accepted internationally. The use of such standards will be ensured throughout the whole duration of the project. The supervision over the application of such safety rules will be entrusted with the respective Government bodies. Emergency contingency measures will be developed as part of the ESM system
Non-acceptance of new safety gears by workers and their continuous exposure to PCBs	Low	Specific training will be provided to project staff and experts before they start their field work. Some Personal Protective Equipment will also be provided as part of the project contribution.  Certificate of training on handling, clean-up, packaging and transportation of POPs containing materials will be a prerequisite requirement for undertaking such duties.
Lack of interest of the PCB owners to replace, phase-out and dispose the PCB equipment due to high costs	Medium	Local decontamination is cost effective relative to treatment abroad/replacement

#### A.7. Coordination with other relevant GEF financed initiatives

In the People's Republic of Bangladesh there is a number of GEF financed projects under implementation (direct link

[https://www.thegef.org/gef/project\\_list?keyword=&countryCode=BD&focalAreaCode=all&agencyCode=all&proj](https://www.thegef.org/gef/project_list?keyword=&countryCode=BD&focalAreaCode=all&agencyCode=all&proj)

[ectType=all&fundingSource=GET&approvalFYFrom=all&approvalFYTo=all&ltgt=lt&ltgtAmt=&op=Search&form\\_buuld\\_id=form-LRHhIMJU6K4Ngbun1cngyamGBHecBw8C0n8C6wsHjhE&form\\_id=prjsearch\\_searchfrm\).](#)

The government of Bangladesh is currently conducting the UNDP/GEF project #6959 “Strengthen national decision making towards ratification of the Minamata Convention and build capacity towards implementation of future provisions” to undertake a Mercury Initial Assessment to enable the Governments of Bangladesh, Mauritania, Mozambique, and Samoa to determine the national requirements and needs for the ratification of the Minamata Convention and establish a national foundation to undertake future work towards the implementation of the Convention. The same office of DOE is in charge of this project, and therefore the technical capacity on sound management of chemicals will be shared between the two projects through DOE as the national execution agency of this PCB project.

Another GEF project implemented by UNDP is the project #1595 “Preparation of the POPs National Implementation Plan under the Stockholm Convention”. The objective of the project was to create sustainable capacity and ownership in Bangladesh to meet its obligations under the Stockholm Convention, including preparation of a POPs National Implementation Plan, and broader issues of chemicals safety and management as articulated in Chapter 19 of Agenda 21. The project enabled Bangladesh to ratify the Stockholm Convention and became a Party to the same. This project provided the original PCB inventory information described in the original NIP.

## **B. ADDITIONAL INFORMATION NOT ADDRESSED AT PIF STAGE:**

B.1 Describe how the stakeholders will be engaged in project implementation.

The Ministry of Environment & Forests (MoEF): MoEF is the nodal agency in the administrative structure of the Central Government of Bangladesh, for the planning, promotion, co-ordination and overseeing the implementation of environmental and forestry programmes. MoEF oversees all environmental matters in the country and is a permanent member of the Executive Committee of the National Economic Council. The principal activities undertaken by Ministry of Environment & Forests consist of conservation & survey of flora, fauna, forests and wildlife, prevention & control of pollution, forestation & regeneration of degraded areas and protection of environment, in the framework of legislations. The main tools utilized for this include surveys, impact assessment, control of pollution, regeneration programmes, support to organizations, research to solve solutions and training to augment the requisite manpower, collection and dissemination of environmental information and creation of environmental awareness among all sectors of the country's population. The organizational structure of the ministry covers a number of divisions, directorate, board, subordinate offices, autonomous institutions and public sector undertakings.

The Project Steering Committee to be held twice a year will be chaired by MoEF and the Ministry of Power, Energy & Mineral Resources Affair, respectively, every other time. As the chair of the Project Steering Committee, MoEF will be consulted on all the milestone decision points for endorsement.

DOE: Since its establishment, the Department of Environment (DOE) has been working for conserving and improving the environment of the country and controlling environmental pollution. Many programs including raising public awareness on the environment, environmental management and its monitoring, implementation of the international conventions and protocols signed by the government and programs to implement existing environmental laws of the country are undertaken by DOE. DOE as technical arm of Ministry of Environment and Forests has been surveying different industries in the country to identify polluting ones, carrying out river water quality survey of different rivers at 30 different points; conducting vehicle surveys in major cities to penalize defective vehicles, emitting black smoke, carrying out ambient air quality survey in city areas, reviewing environmental impact assesment study-documents furnished by proposed industrial enterprises and resolving environmental complaints as received from the public.

DOE, the National Execution Agency, will appoint the National Project Director (NPD) who will represent the government as the head of the Project Management Unit (PMU) which will be established in the premise of the DOE's facility. The Director General of DOE will lead the Project Implementation Committee to be held quarterly with the representatives from concerned agencies/departments as members. The additional Director General of DOE

will lead the Technical sub-committee every month to monitor the project progress. The Terms of Reference of these committees and proposed members are articulated in the Annex.

The Power Division of the Ministry of Power, Energy & Mineral Resources Affairs is responsible for all activities related to power generation, transmission and distribution. It manages all matters and policies related to the power sector including the expansion, rehabilitation and modernization of power generation, transmission and distribution services in line with increasing national demand and prepares action plans and programs accordingly. It also plays a role to encourage private and joint venture investment in the power sector in addition to the government investment. The Division is also tasked to monitor revenue earnings and commercial activities of the utilities, while promoting renewable energy and energy efficiency through formulation of policy/regulation, different incentive mechanism and R&D. The Division will coordinate the participation of all the associated power agencies listed below in this project.

**Bangladesh Power Development Board (BPDB):** BPDB is responsible for major portion of generation and distribution of electricity mainly in urban areas except Dhaka and the western part of the country. The Board is under the Power Division of the Ministry of Power, Energy and Mineral Resources. BPDB has taken a massive capacity expansion plan to add about 11,600 MW generation capacity in next 5 years to achieve 24,000 MW capacity according to PSMP-2010 by 2021 with the aim to provide quality and reliable electricity to all the people of the country for desired economic and social development. The power system has been expanded to keep pace with the fast growing demand.

BPDB will be a leading technical beneficiary agency and is expected to ensure the environmentally sound management (ESM) of PCB will be adopted in the institution for knowledge depository purposes. Its central transformer maintenance facility in Tongi where transformer oil is physically regenerated using centrifuges will be one of the most potential project sites where the PCB decontamination process should be operated.

**Bangladesh Rural Electrification Board (BREB)** — responsible for distribution of electricity in rural areas through a system of co-operatives known as Palli Bidyut Samities (PBS). It purchases power from BPDB. Its retail sales account for about 21% of its total sales. BREB will disseminate the knowledge on the environmentally sound management of PCBs through its 70 power supply cooperatives under its management throughout the country. BREB will join the project as one of the major power sectors and contribute to the project for the PCB inventory as well as the adoption of the ESM of PCBs in its equipment maintenance facility throughout the rural area of the country.

**Dhaka Electric Supply Company (DESCO):** DESCO incorporated under the Companies Act 1994 with its own Memorandum and Articles of Association. The company as a whole owned by Government of Bangladesh and DESA representing government by acquiring 100% shares. DESCO will join the project as one of the major power sector stakeholders and contribute to the PCB inventory as well as the adoption of the ESM of PCBs in its equipment maintenance premise.

**Power Grid Company of Bangladesh (PGCB):** Power Grid Company of Bangladesh Ltd. (PGCB) was formed under the restructuring process of the power sector in Bangladesh aiming at bringing about commercial environment including increase in efficiency, establishment of accountability and dynamism in accomplishing its objectives. PGCB was incorporated in November 1996 with an authorized capital of BDT10 billion. It was entrusted with the responsibility to own the national power grid to operate and expand the same with efficiency. Pursuant to Government decision to transfer transmission assets to PGCB from Bangladesh Power Development Board (BPDB) and Dhaka Electric Supply Authority (DESA), PGCB completed taking over of all the transmission assets in 2002. PGCB will join the project as one of the major power sector stakeholders, and contribute to the PCB inventory as well as the adoption of the ESM of PCBs in the equipment maintenance premise for the transmission facilities.

**West Zone Power Distribution Co. Ltd (WZPDCL):** As a part of an ongoing power sector reforms program by the way of unbundling the power sector and increasing efficiency in the area of generation, transmission and distribution, West Zone Power Distribution Co. Ltd. (WZPDCL) was constituted as an electricity distribution company in November 2002 under the Companies Act 1994 as a Public Limited Company by taking over the distribution system of the then Distribution Western Zone of BPDB. WZPDCL will join the project as one of the major power sectors and contribute to the project for the PCB inventory as well as the adoption of ESM of PCBs in its equipment facility premise in the western part of the country.

**Min Oil:** Min Oil is a used lubricants and transformer oil refinery. It was first set up in 1985 and currently located at

Jamur Muchipara, Hemayetpur, Savar, Dhaka. Min Oils Ltd has been re-refining used lubricants and transformer oil and serving the public as well as the private sector through its testing and re-refining operations for both public and private transformer oil users. Min Oils Ltd. is currently the only company in the country that is approved by both the Ministry of Energy and Mineral Resources and Bangladesh Petroleum Corporation. It is also licensed under the Bangladesh Energy Regulatory Commission. Min Oils Ltd. follows the process of fractional distillation for re-refining used lubricants, which is currently the minimum accepted process for refining of used oils. The company is responsible for regeneration of transformer and other types of oil. Acts as one of the main beneficiaries of the project by receiving trainings of PCB analysis in their transformer oil regeneration processes. This company will be invited to the training on BAT/BEP and ESM of PCBs as well as the project meetings as observers. It is expected that valuable perspectives and inputs from the private sectors will be provided by the company.

<http://www.minoilsbd.com/index.php?area=page&&action=about>

#### Civil Society Organizations (CSOs) and Non-Governmental Organizations (NGOs):

Relevant CSOs and NGOs, including those focusing on gender equality issues and advocating women's empowerment, such as women's associations, will be invited to participate in the implementation phase of the project, and consultations will be held to confirm their roles in project execution. Regular consultations with both female and male stakeholders and local beneficiaries will ensure that the project's impact on and appropriation by the local communities can be assessed throughout project implementation.

#### Environment and Social Development Organization (ESDO)

ESDO, since 1988, has been active in the area of environment and social development particularly working closely with the Ministry of Environment and Forests. As a member of the International POPs Elimination Network, among many other environmental issues, ESDO has summarized the country's status on the status of the persistent organic pollutants in 2005. This project will invite this NGO to project steering committees and project events as a contributor wherever relevant. The awareness raising events and publications will be designed, printed, and distributed by delegating the work to the NGO if relevant.

<http://www.esdo-bangladesh.org/>

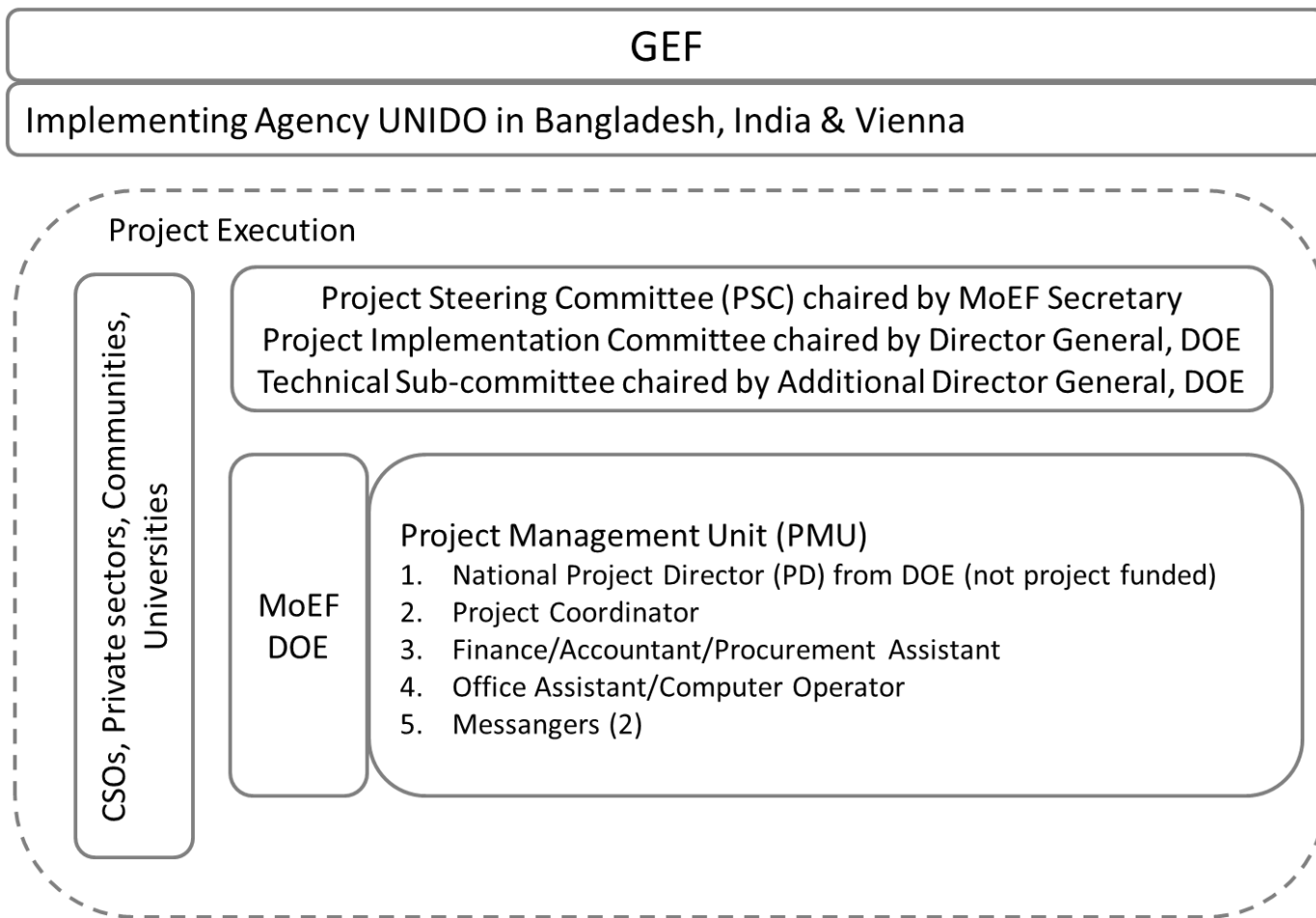
Bangladesh Women's Foundation evolved as an independent body of Women's Fund in Bangladesh since 2003 to invest in women's leadership and empowerment to bring positive change in their livelihood. It has been working towards mobilizing, networking and institutional capacity building to support leadership amongst the local women's NGOs that working in the grassroots level and lacks of access to external or local financial resources. At present approximately 8189 NGOs that have been registered by the Ministry of Women and Children Affairs, are smaller in size, remoteness, lack of skill to develop project proposal, language barriers, sophistication and lack of access in to informational and professional approach. BWF has mobilized and established a network with 1300 Local Women Organization in 64 districts since 1995 and since 2003 it has been started its fundraising and grants making with the initial fund from Global Fund for Women. Subsequently, raised fund from other sources and so far supported the leadership and capacity building to some 500 local Women organization and grants to 34 women organizations and groups. This project will invite this network of NGOs to project steering committees and project events as a contributor wherever relevant. The gender analysis could be also delegated to an expert in consultation with an NGO in this network.

<http://www.bdwf.org/>

#### Project execution modality

DOE will act as National Executing Agency (NEA) and will deliver specific inputs (services, expertise and procurement of equipment) to the project and produce specific outputs through a cooperation agreement between NEA and UNIDO. NEA will be responsible for monitoring the implementation of the activities contributed by co-financing partners. NEA is accountable to UNIDO for the proper use of funds provided to it and for the quality, timeliness and effectiveness of the services it provides and the activities it carries out related to the project. The

MoEF/DoE will be designated as the National Executing Agency (NEA) for this project. NEA will be responsible for the day-to-day project implementation and the timely and verifiable attainment of project objectives.



NEA will establish a Project Management Unit (PMU) consisting of NPD, Project Coordinator, Project Assistants in full time and other technical assistance as needed (such as legal expert and PCB inventory engineers) in consultation with UNIDO will nominate respective persons. The Terms of Reference of the project positions are described in the Annex.

The Project Coordinator will be engaged on a full-time basis, who reports to NPD, the Director General of DOE, Project Steering Committee (PSC), Project Implementation Committee, and Technical Sub-Committee, NEA and UNIDO. S/he will assume overall responsibility under the supervision of NPD for the successful implementation of project activities and the achievement of planned project outputs. The Project Coordinator will coordinate the day-to-day management of the project and will ensure adherence to the work plan, which will be finalized during the first phase of the project implementation. His/her main responsibilities will include advising on, and monitoring of, all technical aspects of the project implementation, as well as the financial control over the project execution. The Project Coordinator will work in close cooperation with the POP's focal point and UNIDO's project manager. The Project Coordinator will be responsible for facilitating UNIDO's project monitoring duties, which include preparing technical and financial reports to UNIDO and GEF, organizing meetings and appointments during field evaluations, and confirming the quality of the project's outputs.

Finance/Accountant/Procurement Assistant will assist the Project Coordinator to handle the project's daily operations particularly focusing on administrative procedures related to bookkeeping, accounting, banking, procurement and other financial tasks to be performed. S/he is also expected to assist the supervisors to monitor the project progress updating the indicators, workplans, and project budget as well as draft the project monitoring reports. S/he is responsible for filing both on paper and electronically.

Office Assistant will assist the Project Coordinator to draft the project related documents and ensure the project



office is properly manned for good coordination. S/he is expected to prepare for all administrative official documents to be submitted within the government in DOE and for MoEF.

Messengers will assist the project management office to communicate all original official documents and letters to be delivered to all concerned institutions. They are also expected to keep the office properly maintained.

Project Steering Committee (PSC) will be established and will act as the coordinating committee for the execution of this project. This entity will be the decision endorsement body of the project. Relevant ministries, representatives of the PCB owners, representatives from hazardous wastes management companies, and the NGOs will also be members of the committee. The PSC will decide on the frequency of the meetings and its working procedures. The PSC will hold its regular sessions throughout the implementation, but additional meetings can be held if necessary. The PSC will oversee the project-related work of the PM and the implementation team. The PSC will review, comment on and approve the work plan. All decisions of the committee, such as respective responsibilities, timelines and the budget will be clearly communicated to those concerned. Activities will be implemented through sub-contracts. Submitted tenders, contracts and Memorandums of Understanding will be reviewed and evaluated by the PSC according to existing national procedures. Any major changes in the project plans or programmes will require approval from the PSC to take effect. PSC members will facilitate the implementation of project activities in their respective organizations, ensure that cooperative activities are implemented in a timely manner, and facilitate the integration of project-inspired activities into existing programmes and practices. Representatives of partner and co-funding organizations not represented in the PSC will be invited to attend the PSC meetings as needed. To ensure a gender balance, the participation of both male and female will be promoted in the PSC and attention will also be paid to ensure a gender balance of all participants.

Two additional committees will be established. The Project Implementation Committee (PIC) will oversee the project implementation issues at the NEA level. The Director General of DOE will chair the Project Implementation Committee (quarterly or as needed) which will review the completed project activities and ensure the foreseen project activities will be smoothly carried out. The Technical Sub-committee (monthly or as needed) will coordinate more on technical issues. More details on the composition of the committees and responsibilities are described in the Annex of this document.

Any changes to the work plan will be done in accordance with the approved project document and GEF document C 39.Inf 04.

B.2 Describe the socioeconomic benefits to be delivered by the Project at the national and local levels, including consideration of gender dimensions, and how these will support the achievement of global environment benefits (GEF Trust Fund/NPIF) or adaptation benefits (LDCF/SCCF):

#### The socioeconomic benefits

The awareness raised by this project will improve the safety working environment of the workers in all concerned power sector institutions. The socioeconomic benefits of this improvement in safety concern of the workers will spill over through and beyond the power sector's concerned agencies. The control over oil spills at some equipment maintenance workshop facilities would lead to the reduction in not only emission of PCBs to the global environment but also release of equipment oil to the neighboring environment and drain causing the pollution of surface water and soil in general. Women will especially be sensitized and trained on the effects of POPs/PCBs of their living and working environment. Those who are currently using second hand transformer oil will better handle the risk posed by such oil.

The installation of the PCB decontamination process, if such a technical option is chosen, will allow the country to sustain the final disposal option of PCB contaminated equipment, oil, and waste. With this the country will have an affordable resource efficiency option to dispose of 500 tons of the PCB contaminated equipment while keeping all the resources in the country for reuse and recycling of oil and metal parts. The domestic final disposal option will help the country to deliver the global environmental benefits by engaging it for final disposal of all identified PCB contaminated equipment by 2028.

#### Gender mainstreaming

The process of gender mainstreaming will be reflected into all stages of the project from design to implementation. Considering and utilizing the women's and men's distinct capacities and skills, ensuring equal voice among them in the decision-making processes, this project will develop and improve faced gender disparities following the UNIDO's policy on gender mainstreaming for its environmental management project. The project has set the gender balanced goal

for the recruitment of project personnel and gender balanced representation in project committees. It also encourages women to participate in a number of awareness raising events and training workshops on technical issues such as equipment maintenance, PCB equipment inventory conducting procedures, sampling and analysis. Consequently, the visibility and understanding of gender-specific needs and priorities related to PCBs will be improved, and knowledge and skills of both women and men will be considered equally critical.

In particular, the project aims at increasing the number of female beneficiaries. For this purpose, some NGOs active in the women's participation such as Bangladesh Women's Foundation will be invited to the project committees and events as contributors wherever relevant.

During the project execution, the relevant data will be collected following the guidance given by the gender analysis as part of the socio-economic assessment and utilizing the gender disaggregated project-level indicators. The progress of the project will be evaluated with the proper gender indicators following the UNIDO's gender mainstreaming guideline.

UNIDO recognizes that gender equality and the empowerment of women have a significant positive impact on sustained economic growth and inclusive industrial development, which are key drivers of poverty alleviation and social progress. Commitment of UNIDO towards gender equality and women's empowerment is demonstrated in its policy on Gender Equality and the Empowerment of Women (2015), which provides overall guidelines for establishing a gender mainstreaming strategy that:

- Ensures that a gender perspective is reflected in its programmes, policies and organizational practices;
- Advances the overall goal of gender equality and the empowerment of women, particularly the economic empowerment of women;
- Benefits from the diversity of experiences and expertise within the United Nations system to advance the internationally agreed development goals related to gender equality and the empowerment of women;
- Accelerates the Organization's efforts to achieve the goal of gender balance, in particular at decision-making levels.

At the operational level, UNIDO has developed an environment-gender guide to support gender mainstreaming of its environmental programmes and initiatives at all stages of the project cycle. In addition to introduction of basic concepts and strategic approaches, it also includes tools that can be used at relevant points of the project cycle to guide the thought processes and activities. These tools include:

- \_gender categorization tool, which assesses how much direct impact the project will have on gender dimensions;
- gender mainstreaming check list, which summarizes key considerations which must be considered during project development;
- gender analysis tool which provides specific questions that can guide the project developer in considering gender dimensions of a project, before full gender analysis is conducted by an expert;
- gender mainstreaming the project cycle tool, which lists key activities to be considered at each step of the project cycle;
- gender indicator framework that encourages results based management by indicating potential gender dimensions and quantitative indicators for specific energy interventions.

To ensure that all projects consider gender dimensions from inception, UNIDO has also integrated a robust gender review as part of the project appraisal process both at technical and organizational level.

#### Gender dimensions of the project

This intervention in Bangladesh is expected to have limited direct influence over gender equality and/or women's empowerment in the country. Nevertheless, UNIDO recognizes that all environment interventions are expected to have an impact on people and are, therefore, not gender-neutral. In fact, due to diverging needs and rights regarding disposal of PCB contaminated and containing equipment, oils and waste in an environmentally sound manner, women and men are expected to be affected differently by the project (in terms of their rights, needs, roles, opportunities, etc.).

Therefore, regardless of the project's gender category, the project aims to demonstrate good practices in mainstreaming

gender aspects into POPs (Persistent Organic Pollutants) / PCBs (Polychlorinated Biphenils) projects, wherever possible, and avoid negative impacts on women or men due to their gender, ethnicity, social status or age.

During the inception phase, a preliminary gender analysis of the country context will be conducted, based on which potential gender dimensions of project outcomes and outputs, as well as potential entry points for gender equality and women's empowerment will be developed and incorporated into the project logical framework. Key gender dimensions of the project outcomes and outputs as well as potential gender-relevant indicators will be additionally provided in the project results framework. Basic gender analysis of Bangladesh is given in the Annex. These proposed gender dimensions will be used as a guide during the implementation of the project as well as during M&E.

#### Project gender mainstreaming strategy

Guiding principle of the project will be to ensure that both women and men are provided equal opportunities to access, participate in, and benefit from the project, without compromising the technical quality of the project results.

□ Gender-sensitive recruitment will be practiced at all levels where possible, especially in selection of project staff. Gender responsive TORs will be used to mainstream gender in the activities of consultants and experts. In cases where the project does not have direct influence, gender-sensitive recruitment will be encouraged. Furthermore, whenever possible existing staff will be trained and their awareness raised regarding gender issues.

□ All decision-making processes will consider gender dimensions. At project management level, Project Steering Committee meetings will invite observers to ensure that gender dimensions are represented. Also at the level of project activity implementation, effort will be made to consult with stakeholders focusing on gender equality and women's empowerment issues. This is especially relevant in policy review and formulation.

□ To the extent possible, efforts will be made to promote participation of women in training activities, both at managerial and technical levels, as participants and trainers. This can include advertising of the events to women's technical associations, encouraging companies to send women employees, adjusting TORs for selection of the trainers, etc..

□ When data-collection or assessments are conducted as part of project implementation, gender dimensions will be considered.

The involvement workers, women, vulnerable community groups, and NGOs will help sustain the project intervention, as they will be the proponents of the environmentally sound management of environmental pollutants.

#### B.3. Explain how cost-effectiveness is reflected in the project design:

At a general level, the cost-effectiveness is linked to the experience and materials accumulated in other PCB management projects implemented by UNIDO. All such materials (whether awareness raising or technical) will be recommended for use in this project without the need to develop new materials of the same content.

At the project-specific level, PCB inventory, PCB contaminated equipment handling, and the PCB decontamination equipment operation will be heavily contributed by the co-financing partners and selected equipment local operator. While the project will subsidize the PCB decontamination fee during the project phase, the PCB owners will be expected to bear a financial contribution agreed at the project steering committee level to ensure the government will initiate the financial flow which will support the PCB decontamination process without the subsidy after the project period ends.

In addition, the UNIDO's experience in the region will be applied to this project when relevant. UNIDO completed the PCB decontamination operation in Nepal (GEF ID: 3573) and there is another on-going PCB project in the region (GEF ID: 3775).

The elimination of 500 tons of PCB equipment for the PCB component cost of USD 3.0 million corresponds to USD 6.0/kg. This includes not only the final disposal cost of PCB equipment, but also the PCB inventory as well as the establishment of the ESM of PCBs in the selected facility in the country as investment.

### **C. DESCRIBE THE BUDGETED M & E PLAN:**

Monitoring and evaluation will facilitate tracking execution progress toward the objectives and outcome. Likewise, it will facilitate learning, feedback, and knowledge sharing on results and lessons among the primary stakeholders to improve knowledge and performance.

Project monitoring and evaluation will be conducted in accordance with established UNIDO and GEF procedures and will be provided by the project team and UNIDO. The Project Results Framework provides performance and impact indicators for project execution along with their corresponding means of verification. This section of the project document presents a concrete and fully budgeted monitoring and evaluation plan of the project. Initial activities under this component include the organization of an inception workshop, the definition of progress and impact indicators and the design of a detailed monitoring plan and methodology. Particular attention will be paid to gender aspects and it is anticipated that a gender analysis will be carried out during the inception phase to facilitate gender mainstreaming throughout project implementation.

Table: Monitoring and evaluation plan

M&E activity	Responsible Parties	Budget US\$	Time frame
Regular monitoring and analysis of performance indicators and budget	PMU, PSC, UNIDO	Charged to PMC	Daily
Prepare Annual Project Reports	PMU	24,000	Annually
Carry out mid-term review	Independent evaluator	30,000	At mid-point of the project implementation
Organize project Closure Workshop	PMU, UNIDO, MoEF/DOE	4,000	At the project end
Complete Project Terminal Report	PMU	5,000	Within 3 months after the completion of the project implementation
Carry out final external evaluation	Independent evaluator	42,240	Within 3 months of completion of external evaluation
Total budget		105,240	

The project steering committee and project monitoring report will be managed under the project management cost.

### Inception Workshop

The project will need to host the inception workshop. After setting up the Project Steering Committee, the inception workshop will be organized to notify other stakeholders and potential owners of PCB about the project and its expected outcome. The main objective of the inception workshop will be to assist the project team to disseminate the project objectives and identify the stakeholders as well as to finalize the preparation of the project's first annual work plan incorporating the stakeholder's co-financing activities. The inception workshop will also provide an opportunity for all parties to understand their roles, functions, and responsibilities within the project's decision-making structures, including reporting and communicating lines and conflict-resolution mechanisms. The Terms of Reference (TOR) for project staff and decision-making structures will be discussed, as needed, in order to clarify each party's responsibilities during the project's execution phase for the first year of project execution, including measurable performance indicators.

An inception workshop report will be prepared after the inception workshop. It will include a detailed first year's annual work plan divided into quarterly time frames, which articulates the activities and progress indicators that will guide the execution during the first year phase of the project. The work plan will include the dates of specific field visits, support missions from UNIDO and/or UNIDO consultants as well as timeframes for meetings of the project's decision-making structures. The report will also include the detailed project budget for the first full year of execution, prepared on the basis of the work plan, including any monitoring and evaluation requirements to effectively measure project performance during the targeted 12 month timeframe.

### **Project Execution, Monitoring and Reporting**

#### Annual work plan

One month before the beginning of each execution year, PMU will draft an annual work plan and formulate the project budget, complying with requirements and formats established for the first annual work plan, which will be submitted to UNIDO for approval as part of a project progress report. The annual work plan will set the target against which project performance shall be measured at the end of each execution year.

#### Measure project indicators

Day to day monitoring of project execution progress will be the responsibility of PMU based on the project's annual work plan and its indicators. PMU will keep abreast of the project progress and performance/impact indicators for the project in consultation with the full project team. These will be used to assess whether execution is proceeding at the intended pace and in the right direction, and will form a part of the annual work plan. Targets and indicators for the subsequent years will be reviewed annually as part of the internal evaluation and planning process undertaken by PMU. All the impact indicators will be monitored annually by PMU with effective means of verification against the outcomes to be achieved for the project. PMU will inform UNIDO of any delays or difficulties faced during the execution phase so that an appropriate support or corrective measures can be adopted in a timely manner.

#### Biannual Progress Reports

The biannual progress report is a part of UNIDO's regular monitoring and project management requirements. It is a self-assessment report by PMU to UNIDO. The biannual report will be prepared on a biannual basis to reflect the progress achieved and assess the performance of the project. The format of the biannual report will be given to the National Execution Agency as part of the contractual agreement.

#### Preparation of Project Implementation Review (PIR) (not funded by the monitoring & evaluation budget)

The Project Implementation Review (PIR) is an annual monitoring process mandated by GEF. It is an essential management and monitoring tool and offers the main vehicle for extracting lessons from on-going projects. Once the project is under execution for a year, the project team shall complete PIR. PIR can be prepared normally during the 3<sup>rd</sup> quarter of the year.

#### Preparation of Periodic Thematic Reports (upon request by UNIDO)

As and when called for by UNIDO, the project team will prepare specific thematic reports, focusing on specific issues or areas of activity. The request for a thematic report will be provided to the project team in written form by UNIDO and will clearly state the issue or activities that need to be reported on. These reports will be used as a form of lessons learned exercise, specific oversight in key areas, or as troubleshooting exercises to evaluate and overcome obstacles and difficulties encountered.

#### Preparation of Project Terminal Report

During the last three months of the project, the project team will prepare the Project Terminal Report. This comprehensive report will summarize all activities, achievements and outcomes of the project, lessons learned, objectives met (or not met), and structures and systems implemented. The Project Terminal Report will be the definitive statement of the project's activities. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the project's activities.

#### Project Closure Workshop

The project closure workshop will summarize the achieved results, obstacles during the project execution, lessons learned, sustainability of the established business operation and recommended activities for further improvement.

#### Independent Evaluations

The project will be subjected to two independent external evaluations as follows:

##### Mid-Term Review (MTR)

An independent Mid-Term Review (MTR) will be undertaken at the end of the second year of project execution. MTR will measure progress made towards the achievement of outcomes and will identify corrections if needed. The evaluation will focus on the effectiveness, efficiency, and timeliness of project execution; highlight issues requiring decisions and actions; and present initial lessons learned on project design, execution and management. Findings of this review will be incorporated as recommendations for enhanced execution during the second half of the project's term. The terms of reference will be finalized after consultation between the key stakeholders in accordance by UNIDO.

##### Terminal Evaluation

An independent Terminal Evaluation will take place within 12 months after the completion of the project execution, and will focus on the same issues as MTR. The final evaluation will also review impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits. The Terminal Evaluation should also provide recommendations for follow-up activities. The terms of reference for this evaluation will be prepared by UNIDO.

#### Project financial audit

NEA will provide UNIDO with certified periodic financial statements with an audit of financial statements relating to the status of the GEF funds according to the established procedures set out in the Programming and Finance manuals.

The audit will be conducted by a legally recognized government auditor or commercial auditor engaged by the government.

### Legal Context

“The Government of the People’s Republic of Bangladesh agrees to apply to the present project, mutatis mutandis, the provisions of the Standard Basic Assistance Agreement between the United Nations Development Programme and the Government, signed and entered into force on 25 November 1986.”

### Monitoring and Evaluation

According to the Monitoring and Evaluation policy of the GEF and UNIDO, follow-up studies including Country Portfolio Evaluations and Thematic Evaluations can be initiated and conducted. All project partners and contractors are obliged to (i) make available studies, reports and other documentation related to the project and (ii) facilitate interviews with staff involved in the project activities. All monitoring and evaluation documents, such as periodic progress reports and terminal evaluation reports, as well as learning and knowledge sharing products, will include gender dimensions wherever adequate.



**PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)**

- A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT(S) ON BEHALF OF THE GOVERNMENT(S):**  
 (Please attach the [Operational Focal Point endorsement letter\(s\)](#) with this form. For SGP, use this [OFP endorsement letter](#)).

NAME	POSITION	MINISTRY	DATE (MM/dd/yyyy)
Kamal Uddin Ahmed	Secretary	MINISTRY OF ENVIRONMENT AND FORESTS	05/28/2015

**B. GEF AGENCY(IES) CERTIFICATION**

This request has been prepared in accordance with GEF/LDCF/SCCF/NPIF policies and procedures and meets the GEF/LDCF/SCCF/NPIF criteria for CEO endorsement/approval of project.

Agency Coordinator, Agency Name	Signature	Date (Month, day, year)	Project Contact Person	Telephone	Email Address
Philippe R. Scholtès Managing Director Programme Development and Technical Cooperation Division UNIDO GEF Focal Point		04/08/2016	Fukuya IINO 	+43-1-26026-5218	f.iino@unido.org



**ANNEX A: PROJECT RESULTS FRAMEWORK** (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

Interventions	Objectively Verifiable Indicators	Targets		Means of Verification	Assumptions	Mitigation Measures
		Mid-term	End of project			
<p><b><u>Project Goal:</u></b></p> <p>Government and the power sector partners capable of reducing the release of PCBs to the environment and disposing of PCB contaminated equipment, oil, and waste</p>	<ul style="list-style-type: none"> <li>➤ Number of environmental policies, strategies, laws, regulations approved/enacted (at least 9 in DOE, MOEF, MOPEMR: BPDB, PGCB, BREB, DPDC, DESCO, WZPDCO)</li> <li>➤ Number of companies adopting best practices (9)</li> <li>➤ Amount of incremental investment by key stakeholders for sound management of chemicals (10%)</li> <li>➤ Number of new business (1)</li> <li>➤ Amount of PCB-containing equipment and waste environmentally sound disposed (500 tons)</li> </ul>	<ul style="list-style-type: none"> <li>➤ 4</li> <li>➤ 4</li> <li>➤ 0%</li> <li>➤ 0</li> <li>➤ 0</li> </ul>	<ul style="list-style-type: none"> <li>➤ 9</li> <li>➤ 9</li> <li>➤ 10%</li> <li>➤ 1</li> <li>➤ 500</li> </ul>	<ul style="list-style-type: none"> <li>➤ Draft regulations, laws, guidelines and procedures</li> <li>➤ Standard operation procedures adopted by companies</li> <li>➤ Site visits</li> <li>➤ Log record of the PCB decontamination operation/exporting</li> <li>➤ Evaluation Reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ Government management and enforcement structure are dedicated to sound PCBs management</li> <li>➤ PCB owners are committed to financially contribute to sustaining the established ESM system and disposal technology on PCB;</li> </ul>	<ul style="list-style-type: none"> <li>➤ Major governmental institutes are invited as the project steering committee to encourage them to proactively be involved in the project's decisions</li> <li>➤ Raise awareness among private sectors and general public through project workshops and information dissemination including incentives and benefits for partner companies</li> </ul>
<p><b><u>Outcome 1:</u></b></p> <p>Legal and institutional framework and capacities established and upgraded for POPs, particularly ESM of PCB contaminated</p>	<ul style="list-style-type: none"> <li>➤ Number of environmental policies, strategies, laws, regulations approved/enacted (at least 9 in DOE, MOEF, MOPEMR: BPDB, PGCB, BREB, DPDC, DESCO, WZPDCO)</li> <li>➤ Number of workshop events with gender-segregated participants (male/female) (3, 72/18)</li> </ul>	<ul style="list-style-type: none"> <li>➤ 4</li> <li>➤ 2, 48/12 (male/female);</li> </ul>	<ul style="list-style-type: none"> <li>➤ 9</li> <li>➤ 3, 72/18 (male/female);</li> </ul>	<ul style="list-style-type: none"> <li>➤ Copies of regulations, laws, guidelines and procedures</li> <li>➤ Memorandum of Understanding signed with partners</li> <li>➤ Project progress reports and Project</li> </ul>	<ul style="list-style-type: none"> <li>➤ Government is committed to timely processing the new regulations and amendments</li> </ul>	<ul style="list-style-type: none"> <li>➤ Ensure recommended laws and regulations are practical and enforceable</li> <li>➤ Raise awareness of the government through PCB workshops and</li> </ul>

equipment, oil, and waste				Steering Committee meeting minutes  ➤ Workshop and training reports with materials		direct contact with stakeholders
<b><u>Output 1.1:</u></b>  Legal framework updated and established for the environmentally sound management of PCBs	<ul style="list-style-type: none"> <li>➤ Number of environmental policies, strategies, laws, regulations approved/enacted (at least 9 in DOE, MOEF, MOPEMR: BPDB, PGCB, BREB, DPDC, DESCO, WZPDCO)</li> <li>➤ Number of workshop and participants with a gender-segregated participant list (3, 72/18), (male/female)</li> </ul>	<ul style="list-style-type: none"> <li>➤ 4</li> <li>➤ 2, 48/12 (male/female);</li> </ul>	<ul style="list-style-type: none"> <li>➤ 9</li> <li>➤ 3, 72/18 (male/female);</li> </ul>	<ul style="list-style-type: none"> <li>➤ Copies of environmental policies, regulations, laws, guidelines, and procedures</li> <li>➤ Workshop and training reports and materials</li> <li>➤ Project progress reports and project steering committee meeting minutes</li> </ul>	<ul style="list-style-type: none"> <li>➤ Government is committed to timely processing the new regulations and amendments;</li> <li>➤ International standards and practices will be accepted by national counterparts</li> </ul>	<ul style="list-style-type: none"> <li>➤ Additional awareness raising of the government will be promoted through PCB workshops and direct contact with stakeholders</li> <li>➤ Ensure recommended laws and regulations are practical and enforceable</li> </ul>
<b><u>Output 1.2:</u></b>  Implementation and inspection capacities for the key governmental institutes assessed and strengthened	<ul style="list-style-type: none"> <li>➤ Number of assessment report on the implementation and inspection capacities (1 for 9 agencies)</li> <li>➤ Number of PCB screening test kits (9 kits)</li> <li>➤ Number of visits for the inspection activities on PCBs (9)</li> <li>➤ Number of inspection report (1)</li> </ul>	<ul style="list-style-type: none"> <li>➤ 1</li> <li>➤ 4</li> <li>➤ 4</li> <li>➤ 0</li> </ul>	<ul style="list-style-type: none"> <li>➤ 1</li> <li>➤ 9</li> <li>➤ 9</li> <li>➤ 1</li> </ul>	<ul style="list-style-type: none"> <li>➤ Assessment report on the implementation and inspection capacities;</li> <li>➤ Visit to and interview with the participating governmental institutes</li> <li>➤ Project progress reports Meeting reports and Project Steering Committee meeting minutes</li> </ul>	<ul style="list-style-type: none"> <li>➤ International standards and practices will be accepted by national counterpart</li> <li>➤ Governmental institutes will release the staff for the training and promote the inspection activities</li> </ul>	<ul style="list-style-type: none"> <li>➤ Adoption and implementation by the government institutions timely.</li> <li>➤ Ensure recommended laws and regulations are practical and enforceable</li> <li>➤ Raise awareness raising of the government through PCB workshops and direct contact with stakeholders</li> </ul>

<p><b><u>Output 1.3:</u></b> Awareness and knowledge on POPs/PCBs issues and regulation among key stakeholders and general public enhanced</p>	<ul style="list-style-type: none"> <li>➤ Number of awareness raising workshops and seminars (3 workshops for Senior, mid-level, and working officers, 96/24)</li> <li>➤ Number of types of leaflets, TV ad, posters, newspaper ad in a gender sensitive manner (4 types)</li> <li>➤ Number of NGOs engaged</li> </ul>	<ul style="list-style-type: none"> <li>➤ 2 (64/16)</li> <li>➤ 2</li> <li>➤ 2</li> </ul>	<ul style="list-style-type: none"> <li>➤ 3 (96/24)</li> <li>➤ 4</li> <li>➤ 3</li> </ul>	<ul style="list-style-type: none"> <li>➤ Workshops' reports with the gender-segregated participant list</li> <li>➤ Copies of publications and awareness campaigns materials (brochures, pamphlets, leaflets) prepared and published</li> <li>➤ Project Progress Report</li> <li>➤ ToRs and contracts issued to the engaged NGOs, if relevant</li> <li>➤ Interview with the engaged NGOs</li> </ul>	<ul style="list-style-type: none"> <li>➤ Active participation and partnership with NGOs, media and community</li> <li>➤ Widely accessible information on PCB related safety and management issues can be posted on the internet and public media</li> </ul>	<ul style="list-style-type: none"> <li>➤ The government and NGOs must carry out advocacy work with the community.</li> <li>➤ Partners key to the awareness raising will be invited to the Project Steering Committee</li> <li>➤ Awareness campaigns and reports will adopt simple and local language and the most appropriate tools for the target groups;</li> <li>➤ Visualization/visual effect of the main messages of the campaigns will assist comprehending the information</li> </ul>
<p><b><u>Outcome 2</u></b> Assisting the power sector to develop and implement the environmentally sound management and final disposal plan of PCBs</p>	<ul style="list-style-type: none"> <li>➤ Number of PCB management guidelines, protocols and procedures developed, upgraded and adopted (1 PCB National Management Plan prepared by MoEF adopted by MoPEMR/Power Division and key stakeholders)</li> <li>➤ Number of phase out and replacement plans for the identified PCB in-service equipment prepared in cooperation with stakeholders ()</li> </ul>	<ul style="list-style-type: none"> <li>➤ 0</li> <li>➤ 4</li> </ul>	<ul style="list-style-type: none"> <li>➤ 1</li> <li>➤ 9</li> </ul>	<ul style="list-style-type: none"> <li>➤ PCB management guidelines, protocols, and procedures developed, upgraded and adopted</li> <li>➤ PCB phase out and management plans developed by the PCB owners</li> <li>➤ Interviews with the</li> </ul>	<ul style="list-style-type: none"> <li>➤ Private sectors and PCB owners will be cooperative in establishing the sound management and final disposal of PCBs</li> <li>➤ PCB owners can afford to replacing the PCB equipment following the PCB</li> </ul>	<ul style="list-style-type: none"> <li>➤ Private sectors and PCB owners will be invited to the Project Steering Committee and involved in the project implementation</li> <li>➤ The major PCB owners which are state-owned companies will</li> </ul>

	<ul style="list-style-type: none"> <li>➤ Number of companies adopting best practices (9)</li> <li>➤ Number of new businesses()</li> <li>➤ Amount of PCB-containing equipment and waste environmentally sound disposed (500 tons)</li> <li>➤ Number of meeting/training events (3) and technical personnel (male/female) of potential owners of PCB equipment trained ( )</li> <li>➤ Number of technical personnel (male/female) of potential owners of PCB equipment trained on inventory conducting procedures (3, 40/5)</li> </ul>	<ul style="list-style-type: none"> <li>➤ 3</li> <li>➤ 0</li> <li>➤ 0</li> <li>➤ 2, (48/12)</li> <li>➤ 3 (20/3)</li> </ul>	<ul style="list-style-type: none"> <li>➤ 9</li> <li>➤ 1</li> <li>➤ 500</li> <li>➤ 3, (72/18)</li> <li>➤ 6 (40/5)</li> </ul>	<p>PCB owners</p> <ul style="list-style-type: none"> <li>➤ Project Steering Committee meeting minutes</li> <li>➤ Progress Reports</li> <li>➤ Performance records of the PCB decontamination equipment</li> <li>➤ TOR and contract for PCB decontamination equipment and service providers</li> <li>➤ Site visits</li> </ul>	<p>phase out plan</p> <ul style="list-style-type: none"> <li>➤ The stakeholders have good technical and institutional capacities to handle the PCB decontamination equipment operations</li> </ul>	<p>have political support from the government to collaborate with the project</p> <ul style="list-style-type: none"> <li>➤ Key stakeholders will be provided with the technical and awareness training to meet the highest safety standards and operate respecting the best working practices and procedures</li> <li>➤ Technical assessment will be carried out before the selection of disposal technology</li> </ul>
<p><b><u>Output 2.1:</u></b> PCB management plans properly set up at the national level and by key PCB owners</p>	<ul style="list-style-type: none"> <li>➤ Number of PCB management guidelines, protocols, procedures developed, upgraded and adopted (1 PCB National Management Plan prepared by MoEF adopted by MoPEMR/Power Division and key stakeholders)</li> <li>➤ Number of meeting/training events (3) and technical personnel (male/female) of potential owners of PCB equipment trained ( )</li> </ul>	<ul style="list-style-type: none"> <li>➤ 0</li> <li>➤ 2, (48/12)</li> </ul>	<ul style="list-style-type: none"> <li>➤ 1</li> <li>➤ 3, (72/18)</li> </ul>	<ul style="list-style-type: none"> <li>➤ PCB management guidelines, protocols, and procedures developed, upgraded and adopted</li> <li>➤ Training workshop report with gender-segregated participant lists</li> <li>➤ Copies of database</li> <li>➤ Project progress reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ Private sectors and PCB owners will be cooperative in establishing the sound management and final disposal of PCBs</li> <li>➤ Detailed inventory on equipment, stockpiles and waste accurately estimates the disposal needs;</li> </ul>	<ul style="list-style-type: none"> <li>➤ Private sectors and the concern stakeholders will be invited to the Project Steering Committee and involved in the project implementation</li> <li>➤ The major stakeholders which are under the government supervision will have support from the government to</li> </ul>

						<p>collaborate with the project</p> <ul style="list-style-type: none"> <li>➤ MoU between the government and the concern stakeholders could be exchanged to encourage the concern stakeholders to establish their PCB management phase out plan</li> <li>➤ Compliance and cooperation mechanism should be established for the private sector</li> </ul>
<p><b><u>Output 2.2:</u></b> Gender sensitive technical guidelines and tools developed and adopted by governmental institutions and concerned stakeholders</p>	<ul style="list-style-type: none"> <li>➤ Number of best practices and standard operating procedures developed and adopted (1 Technical guideline adopted by the MoPEMR/Power Division and key stakeholders)</li> <li>➤ Number of agencies/companies adopting best practices (9)</li> <li>➤ Number of designated laboratories with enhanced capacities for sampling and analysis of PCBs in oil (10)</li> <li>➤ Number of training (3 for technical guidelines with 10 from each agency and 3 for laboratories with 5 from each agency) and participants (male/female) at trainings on sampling and analyses standards and protocols for PCBs;</li> </ul>	<ul style="list-style-type: none"> <li>➤ 0</li> <li>➤ 4</li> <li>➤ 5</li> <li>➤ 3 (20/3)</li> </ul>	<ul style="list-style-type: none"> <li>➤ 1</li> <li>➤ 5</li> <li>➤ 10</li> <li>➤ 6 (40/5)</li> </ul>	<ul style="list-style-type: none"> <li>➤ Copies of standard operating procedures and related documents</li> <li>➤ Interviews with the companies and site visit;</li> <li>➤ Analytical standard procedures adopted by the designated and other laboratories;</li> <li>➤ Training report with gender-segregated participant lists</li> <li>➤ Project progress reports</li> </ul>	<ul style="list-style-type: none"> <li>➤ Private sectors and PCB owners will be cooperative in establishing the sound management and final disposal of PCBs</li> <li>➤ Internationally accepted standards and practices will be accepted by the PCB owners</li> <li>➤ There is sufficient laboratory capacity available in the country</li> <li>➤ The participating institutions will</li> </ul>	<ul style="list-style-type: none"> <li>➤ Private sectors and PCB owners will be invited to the Project Steering Committee and involved in the project implementation</li> <li>➤ Key stakeholders will be provided with the technical and awareness training to meet the highest safety standards and operate respecting the best working practices and procedures</li> </ul>

	<ul style="list-style-type: none"> <li>➤ Amount of investment by PCB owners (10% of the project investment)</li> </ul>	<ul style="list-style-type: none"> <li>➤ 0%</li> </ul>	<ul style="list-style-type: none"> <li>➤ 10%</li> </ul>		<ul style="list-style-type: none"> <li>➤ have the necessary resources to maintain the laboratory standards</li> </ul>	
<p><b><u>Output 2.3:</u></b> PCB inventory updated</p>	<ul style="list-style-type: none"> <li>➤ Number of PCB inventory Report (PCB equipment owned also by the private sector)</li> <li>➤ Number of temporary secured storage facility for PCB-containing equipment and waste in place (1)</li> <li>➤ Amount of PCB equipment and waste temporarily stored in a safe manner (200 tons)</li> <li>➤ Number of technical personnel (male/female) of potential owners of PCB equipment trained on inventory conducting procedures (3, 40/5)</li> <li>➤ Number of transformers and amount of waste selected, sampled, screened, verified and labeled (500 tons)</li> </ul>	<ul style="list-style-type: none"> <li>➤ 0</li> <li>➤ 0</li> <li>➤ 0 tons</li> <li>➤ 3, 40/5</li> <li>➤ 200 tons</li> </ul>	<ul style="list-style-type: none"> <li>➤ 1</li> <li>➤ 1</li> <li>➤ 200 tons</li> <li>➤ 3, 40/5</li> <li>➤ 500 tons</li> </ul>	<ul style="list-style-type: none"> <li>➤ Inventory reports on sampling, identification and labeling of PCB-containing equipment, waste, and stockpiles</li> <li>➤ Procurement documents for the construction / renovation of the temporary storage site and safety equipment</li> <li>➤ Local authorities permits for operation of the storage</li> <li>➤ Project progress report</li> <li>➤ Environmental media monitoring reports during operation of the storage/treatment facility</li> <li>➤ Training reports with gender segregated participant lists</li> </ul>	<ul style="list-style-type: none"> <li>➤ There is a location to be designated for a safe storage in the country</li> <li>➤ The entity with the designated storage place will be committed to safeguard the storage place</li> <li>➤ PCB owners will be cooperative to follow their PCB phase out plans that will allow the project to store PCB equipment in quantities enough for international tenders</li> <li>➤ Transformer maintenance and oil regeneration shops' acceptance to follow the internationally accepted inventory and storage procedures</li> </ul>	<ul style="list-style-type: none"> <li>➤ Private sectors and concern stakeholders will be invited to the Project Steering Committee and involved in the project implementation</li> <li>➤ The major concern stakeholders which are under the supervision of the government will have support from the government to collaborate with the project</li> <li>➤ Government will encourage the concern stakeholders to follow their PCB management and phase out plan</li> </ul>
<p><b><u>Output 2.4:</u></b> Technical capacities and</p>	<ul style="list-style-type: none"> <li>➤ Number of reports on BAT/BEP on PCB disposal technologies and economic feasibility ( )</li> </ul>	<ul style="list-style-type: none"> <li>➤ 0</li> </ul>	<ul style="list-style-type: none"> <li>➤ 1</li> </ul>	<ul style="list-style-type: none"> <li>➤ Reports on BAT/BEP as well as the economic feasibility assessment</li> </ul>	<ul style="list-style-type: none"> <li>➤ Private sectors and concern stakeholders will</li> </ul>	<ul style="list-style-type: none"> <li>➤ The co-benefits of the PCB decontamination,</li> </ul>

<p>sustainable business plan established by the power sector</p>	<ul style="list-style-type: none"> <li>➤ Number of revenue earning plans by the PCB decontamination equipment operator (1)</li> <li>➤ Number of jobs created (5)</li> <li>➤ Amount of incremental investment (10%)</li> </ul>	<ul style="list-style-type: none"> <li>➤ 0</li> <li>➤ 0</li> <li>➤ 0%</li> </ul>	<ul style="list-style-type: none"> <li>➤ 1</li> <li>➤ 5</li> <li>➤ 10%</li> </ul>	<ul style="list-style-type: none"> <li>on available disposal options</li> <li>➤ Business plan for the PCB decontamination operation</li> <li>➤ ToR for the disposal of PCB equipment and waste</li> <li>➤ Contract signed with the selected bidder</li> </ul>	<ul style="list-style-type: none"> <li>be cooperative in establishing the sound management and final disposal of PCBs</li> <li>➤ The stakeholders have good technical and institutional capacities to handle the PCB decontamination equipment operations</li> <li>➤ Local community will accept the PCB decontamination treatment installation</li> </ul>	<ul style="list-style-type: none"> <li>mainly oil regeneration, will be well explained to the concern stakeholders</li> <li>➤ Key stakeholders will be provided with the technical and awareness training to meet the highest safety standards and operate respecting the best working practices and procedures</li> </ul>
<p><b><u>Output 2.5:</u></b> Final disposal of 500 tons of PCB equipment demonstrated</p>	<ul style="list-style-type: none"> <li>➤ Amount of PCB-containing equipment and waste that are disposed (either export or disposal in the country) (500 tons)</li> <li>➤ Materials (oil and metal) reused (400 tons)</li> <li>➤ Materials (metal) recycled (15 tons)</li> <li>➤ Commercial value of materials recycled (TBD)</li> </ul>	<ul style="list-style-type: none"> <li>➤ 0</li> <li>➤ 0</li> <li>➤ 0</li> <li>➤ TBD</li> </ul>	<ul style="list-style-type: none"> <li>➤ 500 tons</li> <li>➤ 400 tons</li> <li>➤ 15 tons</li> <li>➤ TBD</li> </ul>	<ul style="list-style-type: none"> <li>➤ Log records of treated/exported PCB equipment and oil by the selected PCB decontamination/export service provider</li> <li>➤ Acceptance report of the equipment, export related documents</li> <li>➤ Disposal/destruction reports including laboratory results confirming the successfulness of the treatment (in case of export, accompanying notification documents)</li> </ul>	<ul style="list-style-type: none"> <li>➤ The stakeholders have good technical and institutional capacities to handle the PCB decontamination equipment operations</li> </ul>	<ul style="list-style-type: none"> <li>➤ Key stakeholders will be provided with the technical and awareness training to meet the highest safety standards and operate respecting the best working practices and procedures</li> <li>➤ Emergency response plans will be made available</li> </ul>

				and consents)		
				➤ Project reports progress		
<b>Outcome 3:</b>  Impact monitoring and evaluation	<ul style="list-style-type: none"> <li>➤ Project progress monitored</li> <li>➤ A Project Steering Committee established and members recruited taking into account gender dimension</li> <li>➤ A project office established with each member's responsibility clearly described in job descriptions</li> <li>➤ Evaluations adequately conducted according to the GEF's standard</li> </ul>	<ul style="list-style-type: none"> <li>➤ 4</li> <li>➤ 1 (16/4)</li> <li>➤ 1</li> <li>➤ 1</li> </ul>	<ul style="list-style-type: none"> <li>➤ 8</li> <li>➤ 1 (16/4)</li> <li>➤ 1</li> <li>➤ 2</li> </ul>	<ul style="list-style-type: none"> <li>➤ Project reports progress</li> <li>➤ Project Steering Committee announcement and meeting minutes</li> <li>➤ Project office announcement and contract and ToR for the project staff</li> <li>➤ Mid-term external evaluation report</li> <li>➤ Terminal external evaluation report</li> </ul>	<ul style="list-style-type: none"> <li>➤ The government is committed to host the project steering committee at least twice a year or as and when required</li> <li>➤ The stakeholders staff will stay with the project and contribute to absorbing the technical knowledge and institutional memories</li> <li>➤ Government is committed to the establishment, management and enforcement of the sound PCBs management and final disposal</li> <li>➤ Concerned stakeholders are devoted to sustaining the established ESM system and disposal technology for PCB</li> </ul>	<ul style="list-style-type: none"> <li>➤ Major governmental institutes organizations are invited to the project steering committee to encourage them to proactively be involved in the project's decisions</li> <li>➤ The national execution agency with the administrative and technical capacities to carry out the project management tasks will be selected</li> <li>➤ The project monitoring indicators will be shared at the national counterpart and so they can keep abreast of the project progress</li> <li>➤ Qualified project staff will be selected and provided with proper supervision</li> </ul>



						<ul style="list-style-type: none"> <li>➤ PSC meetings will track and evaluate project progress and make necessary arrangement to avoid delays</li> </ul>
<p><b>Output 3.1:</b> Impact indicators measured</p>	<ul style="list-style-type: none"> <li>➤ A Project Steering Committee established and members recruited taking into account gender dimension</li> <li>➤ Project Implementation Committee established</li> <li>➤ Technical Sub-committee established</li> <li>➤ A project office established with each member's responsibility clearly described in job descriptions</li> <li>➤ Project progress monitored with project progress reports</li> <li>➤ Project Implementation Review submitted to GEF SEC</li> <li>➤ Project Terminal Report completed</li> </ul>	<ul style="list-style-type: none"> <li>➤ 1 (16/4)</li> <li>➤ 1 (9/2)</li> <li>➤ 1 (7/2)</li> <li>➤ 1</li> <li>➤ 4</li> <li>➤ 2</li> <li>➤ 0</li> </ul>	<ul style="list-style-type: none"> <li>➤ 1 (16/4)</li> <li>➤ 1 (9/2)</li> <li>➤ 1 (7/2)</li> <li>➤ 1</li> <li>➤ 8</li> <li>➤ 4</li> <li>➤ 1</li> </ul>	<ul style="list-style-type: none"> <li>➤ Annual work plans updated</li> <li>➤ Logframe with indicators updated</li> <li>➤ Copies of contract and ToR</li> <li>➤ Project Steering Committee announcement and meeting minutes</li> <li>➤ Project office announcement and contract and ToR for the project staff</li> <li>➤ Progress reports</li> <li>➤ Project Implementation Review</li> </ul>	<ul style="list-style-type: none"> <li>➤ The project activities will be smoothly executed</li> <li>➤ All deliverables are submitted in time and the payment from UNIDO will be processed without delays</li> <li>➤ Indicators are comprehensive and designed to be properly measured</li> <li>➤ The government is committed to host the project steering committee at least twice a year or as and when required</li> <li>➤ The stakeholders staff will remain with the project during most of the project period</li> </ul>	<ul style="list-style-type: none"> <li>➤ Major governmental <del>institutes</del> organizations are invited to the project steering committee to encourage them to proactively be involved in the project's decisions</li> <li>➤ The national execution agency with the administrative and technical capacities to carry out the project management tasks will be selected</li> <li>➤ The project monitoring indicators will be shared at the national counterpart and so they can keep abreast of the project progress</li> </ul>

				➤ Project terminal report		➤ Qualified project staff will be selected and provided with proper supervision
<b>Output 3.2:</b> Project implementation and impacts evaluated	➤ Evaluations adequately conducted according to the GEF's standard (2)	➤ 1	➤ 2	➤ Mid-term review report  ➤ Terminal external evaluation report	➤ Government and key stakeholders are willing to share the information data with the evaluators  ➤ Concern stakeholders are devoted to sustaining the established ESM system and disposal technology for PCB	➤ Major governmental institutes organizations—are invited as the project steering committee to encourage them to proactively be involved in the project's decisions  ➤ Raise awareness about the revenue earning business opportunities among private sectors and general public through discussions and technical training including incentives and benefits for partner companies

**ANNEX B: RESPONSES TO PROJECT REVIEWS** (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

UNIDO received the STAP comments as below, and respond to the comment as found at the end of the STAP comment. All the comments given on the medical waste are not considered as valid any longer, as this project document does not contain the medical waste component as explained at the beginning of Part II/Section A of this CEO Endorsement Document.

-----STAP Comment on the PCB component-----

Date of screening: March 01, 2013 Screener: Christine Wellington-Moore

**III. Further guidance from STAP**

PIF Information extract: The objective of this project is to assist Bangladesh in fulfilling its obligations under the Stockholm Convention by (1) reducing the release of PCBs to the environment, and (2) improving healthcare waste management in the country to reduce the emission of dioxins/furans from disposal activities (reducing current annual emissions of 119 g TEQ by 2.1 g TEQ). There is intention to strengthen the policy and regulatory framework regulating PCB contaminated equipment, and to implement the BAT/BEP technology options for the destruction of at least 500 tonnes of PCB oil and PCB-containing equipment (current inventory uncertain). The uPOPs control work is to be effected through the harmonization of health care waste (HCW) management, implementation of Environmentally Safe Management (ESM) of medical waste by policy enforcers, medical waste generators and service providers, as well as encouragement of Public-Private Partnerships (PPP) mode of delivery for implementation and demonstration of pilot BAT/BEP.

**Further guidance from STAP:**

Overall the PIF proposes a feasible approach to improving management of PCBs and HCW. However, the STAP does wish to provide some recommendations that should be noted in the course of developing the project document:  
Comments on PCB Disposal component

The PIF outlines the low level of awareness and capacity as concerns safe handling of PCBs and PCB equipment in Bangladesh. With respect to the PCB disposal aspects of the project, as a reminder, the STAP trusts that the eventual project document will also consider all of the elements that constitute environmentally sound disposal. The STAP Advisory document on POPs Disposal Technology in GEF Projects, focuses on what exactly constitutes environmentally sound disposal of POPs, and what disposal technologies can achieve it. This guidance includes disposal requirements and listings of technologies that may be applicable. To date, these guidelines have been generally adopted by the Stockholm Convention as the standard reference. There have also been comprehensive reviews of technologies which are periodically published, and on-line libraries of technology data sheets are maintained by the Basel Convention and supporting organizations. The Fifth Conference of the Parties (COP-5) to the Stockholm Convention invited the Basel Convention to continue this work, specifically with respect to establishing the levels of destruction and irreversible transformation of chemicals to ensure POPs characteristics are not exhibited; considering methods that constitute environmentally sound disposal; defining low POP-content in wastes; and updating general technical guidelines as well as preparing or updating specific technical guidelines for environmentally sound waste management (SC-5/9). Likewise, in its decision SC-5/20, COP-5 further encourages the GEF and parties in a position to do so to facilitate the transfer of appropriate technologies to developing countries and countries with economies in transition (CEITs).

The findings of the document state, inter alia, that:

"... the destruction or irreversible transformation of POPs in an environmentally sound manner is not limited by the availability of appropriate technology" there are a number of such technologies. Rather, it is limited by the practical ability to assemble and apply them--particularly in developing countries and CEIT's - in a manner that is environmentally effective, timely, and cost effective..... Destruction cannot be addressed in isolation. The application of POPs disposal technology should be viewed as one part of an overall POPs management process or system. This system includes steps taken in advance of the actual disposal or destruction to identify, capture, secure, and prepare POPs stockpiles and wastes for disposal. It also includes post-destruction steps to manage emissions, by-products and

residuals. The management process depends upon high-quality information regarding POPs stockpiles and waste, and the effectiveness of the institutional and regulatory framework under which POPs management is undertaken."

Therefore based on the aforementioned background:

a) In developing the project document and determining disposal options, action should be taken to incorporate the Stockholm/Basel and GEF guidance on technology selection for POPs disposal and the overall development of the ESM system for PCBs. This would ensure that a comprehensive set of parameters be used to select technologies for GEF investment (e.g. environmental performance, ability to manage residuals and transformation products of the destruction and decontamination processes, full assessment of pre-treatment steps required and attendant associated risks, and required resources and capacities to manage them). Explicitly following of the aforementioned scientific guidelines would be desirable in the course of project development, implementation, and monitoring and evaluation. This would also ensure that the true costs of a technology are brought to light since pre-destruction steps (eg. characterization of the PCB congeners to be handled, prioritization, capture and transport, containment and pretreatment) can carry their own significant resource and capacity burdens, and can often be the barrier to implementation of technologies in developing countries and CEITs. Definition of environmentally safe low POPs concentrations would also be clearer and kept consistent with best practices.

b) The dangers of informal, repurposed use of POPs containing containers should be included in any targeted awareness in stakeholder communities. There may be a large gender component to this (eg if women do water collection and other gathering of food etc using repurposed containers). But this may or may not be a problem in Bangladesh.

c) The document does not take into account the Climate Vulnerability risks, and the role Climate can play in prioritising sites for operations and storage of PCBs ahead of disposal. Apart from their high log KOW values which permit strong adsorption to nonpolar surfaces (eg organic carbon) and lipophilic matrices in food chains (both aquatic and terrestrial, PCBs are marked by a number of chemical and physical characteristics, not the least of which are:- a) the myriad of congeners in existence, with attendant different levels of chlorination, b) the difference in behaviours and break down products of these congeners when released to the environment, c) the difference in their degree to be metabolised and non-uniform break down products within organisms, d) their readiness to volatilise when spread over soil and water surfaces, e) their short atmospheric residence times (in the order of months), allowing them to vaporize and be re-deposited, cycling back between land and waters surfaces and air. Given these characteristics alone, it is hardly surprising that site-specific uniqueness has played a role in the recorded behaviour of PCBs in contamination cases around the globe. When one further considers that Climate Change is impacting, inter alia, on atmospheric temperature, rainfall regime, storm frequency and attendant drought/flood cycles, it is clear that in considering the potential impacts of PCB releases, it is equally important to look at the physical-chemical characteristics of the congener along with the natural geological and hydrological features of the area of contamination, and the fluctuating atmospheric conditions (temperature, rain, wind, vulnerability to storms etc) of the sites eventually selected.

-----End of STAP Comment-----

UNIDO's responses to the above STAP comments

As suggested, UNIDO will refer to the STAP Advisory Document on POPs Disposal Technology in GEF Projects when formulating the Terms of Reference to acquire/lease the PCB decontamination equipment. UNIDO has completed such disposal projects in several countries in the South East Asia, South Asia, and Balkan region. In addition to the STAP resources, UNIDO will also reflect lessons learned from its previous projects in carefully making the disposal plan of the PCBs in this project.

Responses to the above specific comments

a) The above mentioned guidelines will be referred to in developing the Terms of Reference for the international bidding to select the technology for PCB decontamination. UNIDO will also reflect the lessons learned from the previous projects which completed the PCB treatment for the pledged amounts. The concentration levels of PCBs considered are 500ppm, 50pm (in Macedonia, Nepal, etc.), and 20pm (in Mongolia) so far. These levels are reachable with the technologies employed in the UNIDO's previous projects.

b) The awareness raising information will include the risks of using the PCB contaminated equipment as suggested. The gender aspect has been greatly emphasized by recruiting an gender expert and following the UNIDO's gender mainstreaming guidelines for its environmental management project,

[https://www.google.at/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwiW1ICox9PJAhWLaxQKHdOfDrEQFggfMAA&url=https%3A%2F%2Fwww.unido.org%2Ffileadmin%2Fuser\\_media\\_upgrade%2FWhat\\_we\\_do%2FTopics%2FWomen\\_and\\_Youth%2FGender\\_Environmental\\_Management\\_Projects.pdf&usg=AFQjCNE2qTiV8XaLHHaYIwfdD2MxGIrRoPQ&sig2=IHNrGUKLKqW2-9P1jehSA](https://www.google.at/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwiW1ICox9PJAhWLaxQKHdOfDrEQFggfMAA&url=https%3A%2F%2Fwww.unido.org%2Ffileadmin%2Fuser_media_upgrade%2FWhat_we_do%2FTopics%2FWomen_and_Youth%2FGender_Environmental_Management_Projects.pdf&usg=AFQjCNE2qTiV8XaLHHaYIwfdD2MxGIrRoPQ&sig2=IHNrGUKLKqW2-9P1jehSA)

c) The project site selection for the safe storage and PCB decontamination will be done also considering the previous flood history as well as other climate and disaster risks. The physico-chemical behavior of PCBs in a country like Bangladesh would be clearly different as pointed out by the above STAP comment. More precipitation and frequent flood events would mean more surface run-off of the deposited PCB on the top soil around the emission sources. Higher atmospheric temperature would mean deposited PCB would be more easily evaporated posing more local human and ecological risks. These aspects would be included in the project site selection as suggested.

**ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS<sup>5</sup>**

A. PROVIDE DETAILED FUNDING AMOUNT OF THE PPG ACTIVITIES FINANCING STATUS IN THE TABLE BELOW:

<b>PPG Grant Approved at PIF: USD 45,000</b>			
<b><i>Project Preparation Activities Implemented</i></b>	<b><i>GEF/LDCF/SCCF/NPIF Amount (\$)</i></b>		
	<b><i>Budgeted Amount</i></b>	<b><i>Amount Spent To date</i></b>	<b><i>Amount Committed</i></b>
International consultant	18,000	13,340	
Project travel	4,000	12,110	
National consultant	12,000	10,060	
Subcontract		7,000	
Equipment	10,000		
Miscellaneous	1,000	2,000	490
<b>Total</b>	<b>45,000</b>	<b>44,510</b>	<b>490</b>

<sup>5</sup> If at CEO Endorsement, the PPG activities have not been completed and there is a balance of unspent fund, Agencies can continue undertake the activities up to one year of project start. No later than one year from start of project implementation, Agencies should report this table to the GEF Secretariat on the completion of PPG activities and the amount spent for the activities.

**ANNEX D: CALENDAR OF EXPECTED REFLOWS (if non-grant instrument is used)**

Provide a calendar of expected reflows to the GEF/LDCF/SCCF/NPIF Trust Fund or to your Agency (and/or revolving fund that will be set up)

## Annex E Budget

Interventions	Description	GEF contribution (in USD)																	
		TOTAL	w/m	NEA	UNIDO	Year 1	w/m	NEA	UNIDO	Year 2	w/m	NEA	UNIDO	Year 3	w/m	NEA	UNIDO	Year 4	w/m
Project Total	International Consultant	204,800	14.0	0	58,050	58,050	5	0	39,350	39,350	3	0	32,250	32,250	3	0	75,150	75,150	5
	Project travel	206,000	0.0	52,000	60,000	112,000	0	46,000	0	46,000	0	34,000	0	34,000	0	14,000	0	14,000	0
	National consultant	260,172	365.0	81,972	0	81,972	115	74,844	0	74,844	105	53,460	0	53,460	75	49,896	0	49,896	70
	Subcontracts	1,518,300	0.0	0	28,300	28,300	0	0	630,000	630,000	0	0	600,000	600,000	0	0	260,000	260,000	0
	National meeting	108,000	0.0	34,000	0	34,000	0	38,000	0	38,000	0	22,000	0	22,000	0	14,000	0	14,000	0
	International Workshops	46,000	0.0	12,000	10,000	22,000	0	4,000	10,000	14,000	0	0	10,000	10,000	0	0	0	0	0
	Equipment	551,000	0.0	5,000	70,000	75,000	0	2,000	130,000	132,000	0	2,000	210,000	212,000	0	2,000	130,000	132,000	0
	Miscellaneous	105,728	0.0	36,000	0	36,000	0	39,000	0	39,000	0	16,000	0	16,000	0	15,000	0	14,728	0
		<b>3,000,000</b>	<b>379.0</b>	<b>220,972</b>	<b>226,350</b>	<b>447,322</b>	<b>119.5</b>	<b>203,844</b>	<b>809,350</b>	<b>1,013,194</b>	<b>107.5</b>	<b>127,460</b>	<b>852,250</b>	<b>979,710</b>	<b>77.5</b>	<b>94,896</b>	<b>465,150</b>	<b>559,774</b>	<b>74.5</b>

647,172 (NEA TOTAL)

Interventions	Description	Grant US\$	w/m	Year 1		Year 2		Year 3		Year 4		
					w/m		w/m		w/m		w/m	
Outcome 1: Legal and institutional framework and capacities established and upgraded for POPs, particularly ESM of PCB contaminated equipment, oil, and waste	International Consultant	25,800	2.0	0	25,800	25,800	2	0	0	0	0	0
	Project travel	8,000	0.0	6,000	0	6,000	0	2,000	0	2,000	0	0
	National consultant	21,384	30.0	10,692	0	10,692	15	10,692	0	10,692	15	0
	Subcontracts	30,000	0.0	0	10,000	10,000	0	0	20,000	20,000	0	0
	National meeting	8,000	0.0	8,000	0	8,000	0	0	0	0	0	0
	International Workshops	8,000	0.0	8,000	0	8,000	0	0	0	0	0	0
	Equipment	0	0.0	0	0	0	0	0	0	0	0	0
	Miscellaneous	47,000	0.0	23,500	0	23,500	0	23,500	0	23,500	0	0
		<b>148,184</b>	<b>32.0</b>	<b>56,192</b>	<b>35,800</b>	<b>91,992</b>	<b>17</b>	<b>36,192</b>	<b>20,000</b>	<b>56,192</b>	<b>15</b>	<b>0</b>
Output 1.1: Legal framework updated and established for the environmentally sound management of PCBs	International Consultant	6,450	0.5		6,450	6,450	0.5					
	Project travel	2,000	0.0	2,000		2,000						
	National consultant	7,128	10.0	3,564		3,564	5	3,564		3,564	5	
	Subcontracts	10,000	0.0	0	10,000	10,000						
	National meeting	4,000	0.0	4,000		4,000						
	International	0	0.0	0		0						



	Workshops																		
	Equipment	0	0.0	0	0														
	Miscellaneous	5,000	0.0	2,500	2,500		2,500	2,500											
Output 1.2: Implementation and inspection capacities for the key governmental institutes assessed and strengthened	International Consultant	12,900	1.0	12,900	12,900	1													
	Project travel	2,000	0.0	2,000	2,000														
	National consultant	7,128	10.0	3,564	3,564	5	3,564	3,564	5										
	Subcontracts	0	0.0																
	National meeting	4,000	0.0	4,000	4,000														
	International Workshops	0	0.0																
	Equipment	0	0.0																
	Miscellaneous	2,000	0.0	1,000	1,000		1,000	1,000											
Output 1.3: Awareness and knowledge on POPs/PCBs issues and regulation among key stakeholders and general public enhanced	International Consultant	6,450	0.5	6,450	6,450	0.5													
	Project travel	4,000	0.0	2,000	2,000		2,000	2,000											
	National consultant	7,128	10.0	3,564	3,564	5	3,564	3,564	5										
	Subcontracts	20,000	0.0	0	0		20,000	20,000											
	National meeting	0	0.0	0	0														
	International Workshops	8,000	0.0	8,000	8,000														
	Equipment	0	0.0	0	0														
	Miscellaneous	40,000	0.0	20,000	20,000		20,000	20,000											
<b>Outcome 2: Assisting the power sector to develop and implement the environmentally sound management and final disposal plan of PCBs</b>	International Consultant	129,000	10.0	0	32,250	32,250	3	0	19,350	19,350	2	0	32,250	32,250	3	0	45,150	45,150	4
	Project travel	166,000	0.0	38,000	60,000	98,000	0	36,000	0	36,000	0	26,000	0	26,000	0	6,000	0	6,000	0
	National consultant	153,252	215.0	49,896	0	49,896	70	42,768	0	42,768	60	32,076	0	32,076	45	28,512	0	28,512	40
	Subcontracts	1,488,300	0.0	0	18,300	18,300	0	0	610,000	610,000	0	0	600,000	600,000	0	0	260,000	260,000	0
	National meeting	68,000	0.0	20,000	0	20,000	0	28,000	0	28,000	0	16,000	0	16,000	0	4,000	0	4,000	0
	International Workshops	38,000	0.0	4,000	10,000	14,000	0	4,000	10,000	14,000	0	0	10,000	10,000	0	0	0	0	0
	Equipment	540,000	0.0	0	70,000	70,000	0	0	130,000	130,000	0	0	210,000	210,000	0	0	130,000	130,000	0
	Miscellaneous	35,000	0.0	6,500	0	6,500	0	9,500	0	9,500	0	10,000	0	10,000	0	9,000	0	9,000	0
		<b>2,617,552</b>	<b>225.0</b>	<b>118,396</b>	<b>190,550</b>	<b>308,946</b>	<b>72.5</b>	<b>120,268</b>	<b>769,350</b>	<b>889,618</b>	<b>61.5</b>	<b>84,076</b>	<b>852,250</b>	<b>936,326</b>	<b>47.5</b>	<b>47,512</b>	<b>435,150</b>	<b>482,662</b>	<b>43.5</b>
Output 2.1: PCB management plans properly set up at the national level and by key PCB owners	International Consultant	6,450	0.5		6,450	6,450	0.5												
	Project travel	62,000	0.0	2,000	60,000	62,000													
	National consultant	21,384	30.0	14,256	14,256	20	7,128	7,128	10										
	Subcontracts	0	0.0	0	0														
	National meeting	8,000	0.0	4,000	4,000		4,000	4,000											
	International Workshops	0	0.0	0	0														
	Equipment	0	0.0	0	0														

	Miscellaneous	2,500	0.0	500	500		2000	2,000										
Output 2.2: Gender sensitive technical guidelines and tools developed and adopted by governmental institutions and concerned stakeholders (including gender expert)	International Consultant	38,700	3.0	12,900	12,900	1	12,900	12,900	1	0	0	0	12,900	12,900				1
	Project travel	16,000	0.0	4,000	4,000		4000	4,000		4000	4,000		4000	4,000				
	National consultant	14,256	20.0	3,564	3,564	5	3,564	3,564	5	3,564	3,564	5	3,564	3,564				5
	Subcontracts	20,000	0.0	10,000	10,000		10000	10,000										
	National meeting	24,000	0.0	8,000	8,000		8000	8,000		8000	8,000							
	International Workshops	10,000	0.0	10,000	10,000													
	Equipment	0	0.0															
	Miscellaneous	7,000	0.0	3,000	3,000		3000	3,000		1000	1,000							
Output 2.3: PCB inventory updated	International Consultant	6,450	0.5	6,450	6,450	0.5												
	Project travel	80,000	0.0	30,000	30,000		30000	30,000		20000	20,000							
	National consultant	53,460	75.0	21,384	21,384	30	21,384	21,384	30	7,128	7,128	10	3,564	3,564				5
	Subcontracts	0	0.0															
	National meeting	12,000	0.0	4,000	4,000		8000	8,000										
	International Workshops	8,000	0.0	4,000	4,000		4000	4,000			0			0				
	Equipment	320,000	0.0	70,000	70,000		70000	70,000		130000	130,000		50000	50,000				
	Miscellaneous	12,000	0.0	3,000	3,000		3000	3,000		3000	3,000		3000	3,000				
Output 2.4: Technical capacities and sustainable business plan established by the power sector	International Consultant	64,500	5.0	6,450	6,450	0.5	6,450	6,450	0.5	25,800	25,800	2	25,800	25,800				2
	Project travel	8,000	0.0	2,000	2,000		2000	2,000		2000	2,000		2000	2,000				
	National consultant	28,512	40.0	7,128	7,128	10	7,128	7,128	10	7,128	7,128	10	7,128	7,128				10
	Subcontracts	1,468,300	0.0	8,300	8,300		600000	600,000		600000	600,000		260000	260,000				
	National meeting	12,000	0.0	4,000	4,000		4000	4,000		4000	4,000							
	International Workshops	20,000	0.0	0	0		10000	10,000		10000	10,000							
	Equipment	90,000	0.0				30000	30,000		30000	30,000		30000	30,000				
	Miscellaneous	10,500	0.0				500	500		5000	5,000		5000	5,000				
Output 2.5: Final disposal of 500 tons of PCB equipment demonstrated	International Consultant	12,900	1.0							6,450	6,450	0.5	6,450	6,450				0.5
	Project travel	0	0.0															
	National consultant	35,640	50.0	3,564	3,564	5	3,564	3,564	5	14,256	14,256	20	14,256	14,256				20
	Subcontracts	0	0.0															
	National meeting	12,000	0.0				4000	4,000		4000	4,000		4000	4,000				
	International Workshops	0	0.0															
	Equipment	130,000	0.0				30000	30,000		50000	50,000		50000	50,000				
	Miscellaneous	3,000	0.0				1000	1,000		1000	1,000		1000	1,000				
<b>Outcome 3: Project progress properly</b>	International Consultant	50,000	2.0	0	0	0	0	20,000	20,000	1	0	0	0	0	0	30,000	30,000	1
	Project travel	8,000	0.0	2,000	0	2,000	0	2,000	0	2,000	0	2,000	0	2,000	0	2,000	0	0

<b>monitored and evaluated</b>	National consultant	28,512	40.0	7,128	0	7,128	10	7,128	0	7,128	10	7,128	0	7,128	10	7,128	0	7,128	10
	Subcontracts	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	National meeting	12,000	0.0	1,000	0	1,000	0	5,000	0	5,000	0	1,000	0	1,000	0	5,000	0	5,000	0
	International Workshops	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Equipment	3,000	0.0	3,000	0	3,000	0	0	0	0	0	0	0	0	0	0	0	0	0
	Miscellaneous	3,728	0.0	1,000	0	1,000	0	1,000	0	1,000	0	1,000	0	1,000	0	1,000	0	728	0
		<b>105,240</b>	<b>42.0</b>	<b>14,128</b>	<b>0</b>	<b>14,128</b>	<b>10</b>	<b>15,128</b>	<b>20,000</b>	<b>35,128</b>	<b>11</b>	<b>11,128</b>	<b>0</b>	<b>11,128</b>	<b>10</b>	<b>15,128</b>	<b>30,000</b>	<b>44,856</b>	<b>11</b>
<b>Output 3.1:</b> Project results monitored and reported including the gender dimension	International Consultant	0	0.0																
	Project travel	8,000	0.0	2,000	2,000			2,000		2,000		2,000		2,000		2,000		2,000	
	National consultant	14,256	20.0	3,564	3,564	5		3,564	3,564	5		3,564	3,564	5		3,564	3,564	5	
	Subcontracts	0	0.0																
	National meeting	4,000	0.0	1,000	1,000			1,000	1,000			1,000	1,000			1,000	1,000		
	International Workshops	0	0.0																
	Equipment	3,000	0.0	3,000	3,000														
Miscellaneous	1,728	0.0	500	500			500	500			500	500			500	500		228	
<b>Output 3.2:</b> Project evaluated meeting the GEF's evaluation criteria	International Consultant	50,000	2.0					20,000	20,000	1						30,000	30,000	1	
	Project travel	0	0.0																
	National consultant	14,256	20.0	3,564	3,564	5		3,564	3,564	5		3,564	3,564	5		3,564	3,564	5	
	Subcontracts	0	0.0																
	National meeting	8,000	0.0					4,000	4,000			0	0			4,000	4,000		
	International Workshops	0	0.0																
	Equipment	0	0.0																
Miscellaneous	2,000	0.0	500	500			500	500			500	500			500	500		500	
<b>Project Management Costs</b>	International Consultant	0	0.0	0	0			0	0			0	0		0	0		0	
	Project travel	24,000	0.0	6,000	6,000			6,000	6,000			6,000	6,000		6,000	6,000		6,000	
	National consultant	57,024	80.0	14,256	14,256	20		14,256	14,256	20		14,256	14,256	20		14,256	14,256	20	
	Subcontracts	0	0.0	0	0			0	0			0	0		0	0		0	
	National meeting	20,000	0.0	5,000	5,000			5,000	5,000			5,000	5,000			5,000	5,000		
	International Workshops	0	0.0	0	0			0	0			0	0			0	0		
	Equipment	8,000	0.0	2,000	2,000			2,000	2,000			2,000	2,000			2,000	2,000		
	Miscellaneous	20,000	0.0	5,000	5,000			5,000	5,000			5,000	5,000			5,000	5,000		
	129,024	80.0	32,256	32,256	0		32,256	32,256	0		32,256	32,256	0		32,256	32,256	0	32,256	20

Annex F Co-financing

Interventions	Description	Co-financing contribution				Co-financing Total
		In-kind	w/m	Cash	w/m	
Project Total	International Consultant	0	0	0	0	0
	Project travel	790,000	0	380,000	0	1,170,000
	National consultant	2,702,938	3,792	149,688	210	2,852,626
	Subcontracts	0	0	0	0	0
	National meeting	814,000	0	112,000	0	926,000
	International Workshops	400,000	0	0	0	400,000
	Equipment	17,930,000	0	2,140,000	0	20,070,000
	Miscellaneous	1,431,142	0	255,312	0	1,686,454
	<b>TOTAL</b>	<b>24,068,080</b>	<b>3,792</b>	<b>3,037,000</b>	<b>210</b>	<b>27,105,080</b>

UNIDO's co-financing: USD  
40,000

Interventions	Description	In-kind	w/m	Cash	w/m	Co-financing Total
Outcome 1: Legal and institutional framework and capacities established and upgraded for POPs, particularly ESM of PCB contaminated equipment, oil, and waste	International Consultant	0	0	0	0	0
	Project travel	180,000	0	30,000	0	210,000
	National consultant	684,288	960	42,768	60	727,056
	Subcontracts	0	0	0	0	0
	National meeting	256,000	0	48,000	0	304,000
	International Workshops	0	0	0	0	0
	Equipment	1,020,000	0	30,000	0	1,050,000
	Miscellaneous	220,000	0	30,000	0	250,000
		<b>2,360,288</b>	<b>960</b>	<b>180,768</b>	<b>60</b>	<b>2,541,056</b>
Output 1.1: Legal framework	International Consultant					0
	Project travel	40,000		10,000		50,000

updated and established for the environmentally sound management of PCBs	National consultant	171,072	240	14,256	20	185,328
	Subcontracts					0
	National meeting	80,000		16,000		96,000
	International Workshops					0
	Equipment	10,000		10,000		20,000
	Miscellaneous	10,000		10,000		20,000
Output 1.2: Implementation and inspection capacities for the key governmental institutes assessed and strengthened	International Consultant					0
	Project travel	100,000		10,000		110,000
	National consultant	342,144	480	14,256	20	356,400
	Subcontracts					0
	National meeting	96,000		16,000		112,000
	International Workshops					0
	Equipment	1,000,000		10,000		1,010,000
	Miscellaneous	200,000		10,000		210,000
Output 1.3: Awareness and knowledge on POPs/PCBs issues and regulation among key stakeholders and general public enhanced	International Consultant					0
	Project travel	40,000		10,000		50,000
	National consultant	171,072	240	14,256	20	185,328
	Subcontracts					0
	National meeting	80,000		16,000		96,000
	International Workshops					0
	Equipment	10,000		10,000		20,000
	Miscellaneous	10,000		10,000		20,000
<b>Outcome 2: Assisting the power sector to develop and implement the environmentally sound management and final disposal plan of PCBs</b>	International Consultant	0	0	0	0	0
	Project travel	230,000	0	50,000	0	280,000
	National consultant	855,360	1200	71,280	100	926,640
	Subcontracts	0	0	0	0	0
	National meeting	320,000	0	64,000	0	384,000
	International Workshops	300,000	0	0	0	300,000
	Equipment	16,400,000	0	2,110,000	0	18,510,000
	Miscellaneous	800,000	0	110,000	0	910,000
		<b>18,905,360</b>	<b>1200</b>	<b>2,405,280</b>	<b>100</b>	<b>21,310,640</b>
Output 2.1: PCB management	International Consultant					0
	Project travel	40,000		10,000		50,000

plans properly set up at the national level and by key PCB owners	National consultant	171,072	240	14,256	20	185,328
	Subcontracts					0
	National meeting	64,000		16,000		80,000
	International Workshops					0
	Equipment	200,000		10,000		210,000
	Miscellaneous	100,000		10,000		110,000
Output 2.2: Gender sensitive technical guidelines and tools developed and adopted by governmental institutions and concerned stakeholders (including gender expert)	International Consultant					0
	Project travel	40,000		10,000		50,000
	National consultant	171,072	240	14,256	20	185,328
	Subcontracts					0
	National meeting	64,000		16,000		80,000
	International Workshops					0
	Equipment	200,000		300,000		500,000
	Miscellaneous	100,000		10,000		110,000
Output 2.3: PCB inventory updated	International Consultant					0
	Project travel	50,000		10,000		60,000
	National consultant	171,072	240	14,256	20	185,328
	Subcontracts					0
	National meeting	64,000		16,000		80,000
	International Workshops	100,000				100,000
	Equipment	4,000,000		400,000		4,400,000
	Miscellaneous	200,000		30,000		230,000
Output 2.4: Technical capacities and sustainable business plan established by the power sector	International Consultant					0
	Project travel	50,000		10,000		60,000
	National consultant	171,072	240	14,256	20	185,328
	Subcontracts					0
	National meeting	64,000		16,000		80,000
	International Workshops	100,000				100,000
	Equipment	5,000,000		400,000		5,400,000
	Miscellaneous	200,000		30,000		230,000
Output 2.5: Final	International Consultant					0

disposal of 500 tons of PCB equipment demonstrated	Project travel	50,000		10,000		60,000
	National consultant	171,072	240	14,256	20	185,328
	Subcontracts					0
	National meeting	64,000				64,000
	International Workshops	100,000				100,000
	Equipment	7,000,000		1,000,000		8,000,000
	Miscellaneous	200,000		30,000		230,000
<b>Outcome 3: Project progress properly monitored and evaluated</b>	International Consultant	0	0	0	0	0
	Project travel	80,000	0	200,000	0	280,000
	National consultant	479,002	672	28,512	40	507,514
	Subcontracts	0	0	0	0	0
	National meeting	128,000	0	0	0	128,000
	International Workshops	0	0	0	0	0
	Equipment	210,000	0	0	0	210,000
	Miscellaneous	207,478	0	15,312	0	222,790
	<b>1,104,480</b>	<b>672</b>	<b>243,824</b>	<b>40</b>	<b>1,348,304</b>	
<b>Output 3.1:</b> Project results monitored and reported including the gender dimension	International Consultant					0
	Project travel	40,000		100,000		140,000
	National consultant	307,930	432	14,256	20	322,186
	Subcontracts					0
	National meeting	64,000				64,000
	International Workshops					0
	Equipment	200,000				200,000
	Miscellaneous	108,000		10,000		118,000
<b>Output 3.2:</b> Project evaluated meeting the GEF's evaluation criteria	International Consultant					0
	Project travel	40,000		100,000		140,000
	National consultant	171,072	240	14,256	20	185,328
	Subcontracts					0
	National meeting	64,000				64,000
	International Workshops					0
	Equipment	10,000				10,000
	Miscellaneous	99,478		5,312		104,790

<b>Project Management Costs</b>	International Consultant					0
	Project travel	<b>300,000</b>		<b>100,000</b>		400,000
	National consultant	<b>684,288</b>	<b>960</b>	<b>7,128</b>	<b>10</b>	691,416
	Subcontracts					0
	National meeting	<b>110,000</b>				110,000
	International Workshops	<b>100,000</b>				100,000
	Equipment	<b>300,000</b>				300,000
	Miscellaneous	<b>203,664</b>		<b>100,000</b>		303,664
		<b>1,697,952</b>	<b>960</b>	<b>207,128</b>	<b>10</b>	1,905,080

Additional UNIDO's co-financing: USD 40,000 for PMC



Annex G Work Plan

	Year 1				Year 2				Year 3				Year 4			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Outcome 1: Legal and institutional framework and capacities established and upgraded for POPs, particularly ESM of PCB contaminated equipment, oil, and waste																
Output 1.1: Legal framework updated and established for the environmentally sound management of PCBs																
Output 1.2: Implementation and inspection capacities for the key governmental institutes assessed and strengthened																
Output 1.3: Awareness and knowledge on POPs/PCBs issues and regulation among key stakeholders and general public enhanced																
Outcome 2: Assisting the power sector to develop and implement the environmentally sound management and final disposal plan of PCBs																
Output 2.1: PCB management plans properly set up at the national level and by key PCB owners																
Output 2.2: Gender-sensitive technical guidelines and tools developed and adopted by governmental institutes and key PCB owners (including gender expert)																
Output 2.3: PCB inventory updated																
Output 2.4: Technical capacities and sustainable business plan established by the power sector																

Output 2.5: Final disposal of 500 tons of PCB equipment demonstrated																				
Outcome 3: Project progress properly monitored and evaluated																				
Output 3.1: Project results monitored and reported including the gender dimension																				
Output 3.2: Project evaluated meeting the GEF's evaluation criteria																				

## **ANNEX H: BASIC GENDER ANALYSIS OF BANGLADESH**

### **BANGLADESH GENDER PROFILE**

#### **CONTEXT:**

##### **History:**

Bangladesh became independent from Pakistan in 1971. Although the country restored democracy in 1990, the political scene is still unstable, and many military coups have happened, the latest being in 2007. Political violence is very important in Bangladesh. Bangladesh is one of the most densely populated countries in the world, and is affected by widespread poverty. It is also regularly affected by floods.

##### **Economy:**

Industrial development is a priority for Bangladesh. The country also faces major environmental issues that could affect its economy, such as regular floods, and the threat of a rising sea level. Education levels are different for boys and girls but here, the gender gap is in disfavor of boys, as more girls complete primary education than boys. Women, however, tend to participate less in the labor force than men, and have a worse literacy rate than men (55% vs. 62%).

##### **Gender in Society:**

Women's opportunities and public participation in Bangladesh have changed significantly in recent decades. For example, major progress has been made in closing the gender gap in school enrollments at both primary and secondary levels; girls currently outnumber boys in enrollments. The rapid growth of the garment industry has provided a large number of formal sector jobs for women, who comprise more than 90% of its labor force. Many women are now members of the local government councils that have important responsibilities for rural and urban development.

Changes in norms, practices, and opportunities that are reflected in these developments are the result of a range of forces, including leadership through government policy, advocacy, innovation by civil society organizations, and actions of individuals and households. [...] Bangladesh development organizations are widely admired for their success in using micro-credit to benefit women and have also made major contributions to increasing access by women and girls to schooling and health services.

### **SECTORS, INDUSTRIES, INFRASTRUCTURES**

##### **Agriculture:**

Women's economic activities in rural areas include postharvest processing, livestock and poultry rearing, household agriculture, horticulture, selecting and storing of seeds, food processing, garment making, coir (rope) production, and handicrafts. A large proportion of rural women are unpaid family workers

(almost half of men, by contrast, are own-account workers and another quarter are day laborers). Many women are also found in the customarily male areas of earthwork, construction, and agricultural field labor. [...]Experience from ADB projects also demonstrates that norms about women's roles are not static: middle-class women have increased their involvement in agricultural field work, women have set up shops in growth center markets, and women have taken up construction work.

#### Land ownership:

Access to and control over productive resources is unequal between women and men. This includes key productive resources, such as land, trees, housing, skills, and extension support. Women's access to land is an issue throughout Asia and as pointed out in one study, the issue is "not just land ownership but all that goes with it – access to institutional credit, training, and extension facilities." Often not considered "farmers," in part because they do not own land, women miss out on agricultural extension and information about new technologies, even when these relate to types of production in which women have typically predominated, such as vegetable growing. Earnings from wage employment also favor men, with average wages for rural women only 60% of those of men.

#### Environment:

Limitations on women's mobility and other socioeconomic factors place women at greater risk in weather disasters. Mobility restrictions mean women have more difficulty reaching safe places in times of floods or cyclones, which results in higher death rates among women. "Floods and cyclones in urban areas have particularly severe impacts on poor households, and further intensify women's work burdens as well as privacy and security concerns.

#### Preliminary assessment of POP pesticides related human and Environmental Risks Scientific Evidence of POP Pesticides in Environmental Samples<sup>6</sup>

The process of POP pesticides in environmental samples particularly in human milk, fish and water has been reported in many countries in the world. Thus in cognisance with the scope of inventory preparation, efforts were planned to have a preliminary assessment of POPs pesticides related human and environmental risks. But due to various limitations particularly due to constraints in terms of time, facilities and budget for sample analysis for the presence of POPs pesticide reduces in various samples collected at the time of the study could not be reported. Moreover, such studies in Bangladesh are very scanty, although some popular articles published in different dailies indicated hints on the possible hazards from contamination of food items and agricultural commodities.

#### Human milk samples:

No study is reported in relation to the assessment of POPs pesticides in human milk samples in Bangladesh. However, it is suspected that since POP pesticides particularly DDT, chlordane and heptachlor have been used for long time in Bangladesh, and both rural and urban women have been exposed to it, the milk samples of such exposed women are very likely to contain residues of these pesticides.

#### Fish Samples:

In Bangladesh both fresh water fish and sea fish are locally available and consumed by the people of Bangladesh. Although it is apprehended that those fish may contain POP pesticides residues, no comprehensive study has been conducted so far in this regard. However, very limited studies have been

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<sup>6</sup> International POPs Elimination Project, Fostering Active and Efficient Civil Society Participation in Preparation for Implementation of the Stockholm Convention; Country Situation Report on Persistent Organic Pollutants in Bangladesh; Environment and Social Development Organization (ESDO)

reported in some floodplain fish species and dried fish. Such studies reveal that the levels of total DDT (including DDE and DDD) was 0.025 mg/kg and 0.0171 mg/kg while those of dieldrin within the Codex Maximum Residue Limits (MRLs of 0.3 mg/kg) were found in the most contaminated fish (Matin et. al. 1996).

#### Water Samples:

Bangladesh is an intensively rice-growing area. Rice is grown in both rain-fed and irrigated habitats. Most of the pesticides are used in rice cultivation. Thus rice fields receive the highest amount of pesticides, and the water in rice fields as well as lakes and rivers, which receive run-off water, are apprehended to contain pesticides residues. But no comprehensive study has been so far conducted in this regard too. However, review of some sporadic studies conducted revealed that water of Meghna Dhonagoda Irrigation Project contained organochlorine at concentrations of 1.82, 1.91, and 2.39 ng/ml of water while the water samples from some other locations of the same habitat contained residues of DDT, DDE, aldrin, dieldrin, endrin and heptachlor at concentrations ranging from 0.20 to 6.75 ng/ml (Alam et al. 1999).

#### SMEs:

SMEs are the biggest contributor to Bangladesh's private sector growth. Women are currently a small proportion of entrepreneurs and many—although not all are on the smaller and informal side of the SME sector. There are also many women who produce goods and services in even smaller and home-based or microenterprises. Women working as employees tend to be clustered in lower-skilled and lower-paid sectors and occupations. Overall women's labor force participation rates remain considerably lower than those of men. [...]A 2008 situation analysis of women entrepreneurs by the Bangladesh Women Chamber of Commerce and Industry (BWCCI) concluded that most women-owned enterprises are owned by individuals and tend to cater to local and national, rather than export, markets.

#### Textile industry:

Enterprises producing ready-made garments are an important component of SMEs and the private sector in Bangladesh. The growth of this industry has been a major factor in expanding formal sector employment opportunities for women. The industry also depends on women, who supply about 90% of its labor force. Even so, women are under-represented in the more skilled and management levels and in the more technologically advanced segments of the industry. While working conditions have improved, there are many gaps in the enforcement of labor standards. Sexual harassment by male coworkers remains a major issue, despite legal prohibitions. Improving women's position in the sector will require investment in skills development, as well as an improved regulatory regime.

#### Self-employment:

Many women's enterprises are on the lower end of the SME spectrum, or are categorized as micro and cottage enterprises. These are very important to women because of limited employment opportunities, restricted mobility, and time constraints due to household and/or family responsibilities, and often provide limited income or scope for growth. In some cases, "business" or "enterprise" seems to misrepresent what is self-employment or subcontracting under potentially exploitive conditions. [...] Outside of agriculture, women are concentrated in craft-related manual occupations (spinning, weaving, tailoring, and garments) and in domestic services.

#### Access to credit:

Access to finance is a key issue for the SME sector and is particularly acute for women because they lack capital for start-up and lack collateral for loans due to a range of factors, including discriminatory inheritance laws. Also problematic are negative attitudes toward women entrepreneurs by bankers and demands that women entrepreneurs have male guarantors. In response, the Bangladesh Bank has included targets for allocations to women in its SME refinancing scheme (initially 10%, subsequently raised to 15%). However, implementation seems to have been disappointing, with limited dissemination of information to the bankers responsible for program administration or the women eligible to receive these funds.

#### Water:

Scarce or distant drinking water is another post-disaster occurrence with particular implications for women who generally carry the responsibility of ensuring adequate drinking and cooking water for their families. The stress on families and communities associated with disasters is often reflected in increased domestic violence and harassment that target women. In addition to all these risks is the impact on economic livelihoods through loss of crops, livestock, productivity, and market access.

#### Energy:

The energy sector is dominated by men – yet men and women have different patterns of use for energy. In the absence of improved technologies or power supply, women generally supply the human energy required to pump water, collect fuel for cooking, and undertake other household management tasks. The time and energy burden of these tasks result in diminished or lost opportunities for education, for earning income, for other family and community activities, and for leisure. [...] In short, labor-saving devices are an energy priority for rural and poor women. An improved energy supply could not only reduce household drudgery, but could also support increased productivity or reduced costs or expansion of women's productive enterprises. Many of women's informal sector activities are fuel-intensive and therefore affected by energy availability and price, such as food processing, rice parboiling, and soap making. The use of energy to improve street lighting is another way to enhance safety of movement for women and girls, which can expand economic opportunities as well as quality of life.

#### Manufacturing:

In 2000, women made up 38% of employment in manufacturing. Due to lack of sources, no further analysis is available.

#### Public health <sup>7</sup>

Polyethylene bags have many detrimental effects on human health. For example, food gets contaminated if stored in polyethylene for long periods of time. Some cases of illness due to the ingestion of polyethylene-contaminated food have been reported. Medical reports find polyethylene as an agent of cancer, skin diseases and other health problems. The users are more exposed to these types of health hazards when polyethylene is used to pack bread, Biscuits, potato chips and other similar items. In the developed countries, food is usually wrapped in food-graded plastic or polyethylene. However, to great surprise, food graded packaging is produced and used in Bangladesh. A project is recommended to take on the study of different packaging materials in Bangladesh.

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<sup>7</sup> South Asian Citizen Report of the activities of ESDO in Bangladesh; Environment and Social Development Organization ESDO)  
GEF5 CEO Endorsement Template-February 2013.doc

Polyethylene bags are collected by the poorer groups (tokais) and sold in old Dhaka. Used polyethylene bags are collected in bulk quantities in the Lalbagh area. These collectors (especially women and children) infection disease are vulnerable to contamination because they do not wear any protective clothing during collection and in dustbins or dumpsites usually different types of wastes, even hospital waste, are mixed with polyethylene bags. These bags contain tuberculosis, respiratory diseases, cholera, typhoid organisms as well as several other intestinal diseases. These diseases are transmitted by these people when they work in other places without properly washing their hands, especially women who are working in different houses as a part-time servant. These diseases are again transmitted to different parts of the city through unsanitary handling. The water bodies in old Dhaka, particularly those near Lalbagh, Hazaribagh and the Buriganga river are highly contaminated as the bulk of these used polyethylene bags are washed in the open waters. These semi-washed polythene bags are spread all owing for during in the sun. After drying these bags are burnt in open drums. During burning hydrogen cyanide gas is emitted along with carbon dioxide and carbon monoxide. Hydrogen cyanide gas is poisonous and may death to those who inhale it.

Source: Asian Development Bank, Country Gender Assessment Bangladesh, 2010  
Laborsta.ilo.org

#### STATISTICS:

World Bank: <http://datatopics.worldbank.org/gender/country/bangladesh>

Social Institutions and Gender Index: <http://genderindex.org/country/bangladesh>

#### UNIDO:

[http://www.unido.org/Data1/IndStatBrief/Basic\\_Information.cfm?print=no&ttype=C1&Country=BGD&Group=](http://www.unido.org/Data1/IndStatBrief/Basic_Information.cfm?print=no&ttype=C1&Country=BGD&Group=)

#### REPORTS:

Asian Development Bank:

<http://www.adb.org/sites/default/files/pub/2010/cga-women-bangladesh.pdf>

World Economic Forum: [http://www3.weforum.org/docs/WEF\\_GenderGap\\_Report\\_2013.pdf](http://www3.weforum.org/docs/WEF_GenderGap_Report_2013.pdf)



**UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION**  
**Project of the Government of the People's Republic of Bangladesh**  
**PROJECT DOCUMENT**

**Project number:** SAP ID: 100310

**Project title:** ENVIRONMENTALLY SOUND DEVELOPMENT OF THE POWER SECTOR WITH THE FINAL DISPOSAL OF PCBS

**GEFSEC Project ID:** 4858

**Starting date:** March 2016

**Duration:** 48 months

**Project site:** the People's Republic of Bangladesh

**Government**

**Executing partners:** Department of Environment (DoE) of the Ministry of Environment and Forests (MoEF), Ministry of Power, Energy and Mineral Resources (MoPEMR)

**Counterpart** Bangladesh Power Development Board (BPDB), Bangladesh Rural Electrification Board (BREB), Power Grid Company of Bangladesh (PGCB), Dhaka Power Distribution Company Limited (DPDC), Dhaka Electric Supply Company Limited (DESCO), Western Zone Power Distribution Company (WZPDCO) and UNIDO Bangladesh

**Implementing agency:** UNIDO

**Project Inputs:**

<i>GEF grant:</i>	US\$	3,000,000
<i>Support costs (9.5%):</i>	US\$	285,000
<b>Sub-total GEF</b>	US\$	3,285,000
Counterpart inputs (in-kind):	US\$	27,105,080



Ministry of Environment and  
Forest, Bangladesh Power  
Development Board, Power  
Grid Company of Bangladesh,  
Bangladesh Rural  
Electrification Board

UNIDO	US\$	40,000
<b>Total Co-finance:</b>	<b>US\$</b>	<b>27,145,080</b>
<b>TOTAL Project Costs:</b>	<b>US\$</b>	<b>30,145,080 excluding support costs</b>

### **Brief Description:**

The Stockholm Convention on Persistent Organic Pollutants (POPs) was adopted in May 2001 with the objective of protecting human health and the environment from toxic and hazardous POPs. It entered into force on 17 May 2004 initially listing twelve chemicals as POPs. At its 4th meeting of the Conference of Parties (COP) in May 2009, the Stockholm Convention was amended to include the following nine new POPs in Annex A (Alpha hexachlorocyclohexane, Beta hexachlorocyclohexane, Chlordane, Hexabromobiphenyl, Hexabromodiphenyl ether and heptabromodiphenyl ether, Lindane, Pentachlorobenzene (also listed in Annex C), Tetrabromodiphenyl ether and pentabromodiphenyl ether) and Annex B (Perfluorooctane sulfonic acid (PFOS), its salts and perfluorooctane sulfonyl fluoride).

The Government of Bangladesh has identified environmentally sound management (ESM) of PCBs in its National Implementation Plan as prioritized actions. This Full-Sized Project has been formulated with the project preparation grant (PPG) in close collaboration between UNIDO and the Government of Bangladesh, and this project will assist the government to achieve environmentally sound management and final disposal of PCBs.

### **Modalities:**

This Project Document shall be signed by UNIDO and Economic Relations Division of the Ministry of Finance with the understanding that the project will be conducted jointly by UNIDO and the Department of Environment of the Ministry of Environment and Forest designated as the National Execution Agency. A cooperation agreement will be signed by UNIDO and the Department of Environment separately.

As described in the Cooperation Agreement separately, UNIDO will delegate the project management and monitoring tasks of the project to the Department of Environment designated as the National Execution Agency by the Government of Bangladesh.

The project management and monitoring tasks include, but not limited to, recruitment, procurement, national travel. The operation modality will be described in details in the Terms of Reference of the Cooperation Agreement. In particular, the procurement less than EUR 5,000 will be processed by the Department of Environment, while UNIDO will deliver the goods and services higher than or equal to EUR 5,000 following the UNIDO's procurement rules and regulations.

### Prior Obligations and Prerequisites

GEF grant assistance will be provided subject to UNIDO being satisfied that obligations and pre-requisites listed below have been fulfilled or are likely to be fulfilled. When fulfillment of one or more of these prerequisites fails to materialize, UNIDO may, at its discretion, either suspend or terminate its assistance.

- **Prior to project effectiveness, financing by co-financiers other than the GEF and UNIDO specified in the project document is to be made available to the Project.**

### Legal Context

“The Government of the People’s Republic of Bangladesh agrees to apply to the present project, mutatis mutandis, the provisions of the Standard Basic Assistance Agreement between the United Nations Development Programme and the Government, signed and entered into force on 25 November 1986.”

**Monitoring and Evaluation**

According to the Monitoring and Evaluation policy of the GEF and UNIDO, follow-up studies including Country Portfolio Evaluations and Thematic Evaluations can be initiated and conducted. All project partners and contractors are obliged to (i) make available studies, reports and other documentation related to the project and (ii) facilitate interviews with staff involved in the project activities.

**Approved:**

**Name and title:**

**Signature:**

**Government of Bangladesh:**

Economic Relations Division

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**On behalf of UNIDO**  
**Philippe Scholtès**

Managing Director  
Programme Development and Technical Cooperation Division (PTC)  
UNIDO GEF Focal Point

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**FULL-SIZED PROJECT TO IMPLEMENT AN ENVIRONMENTALLY SOUND DEVELOPMENT  
OF THE POWER SECTOR WITH THE FINAL DISPOSAL OF PCBs IN THE PEOPLES'  
REPUBLIC OF BANGLADESH**

**TERMS OF REFERENCE FOR THE PROVISION OF SERVICES RELATED TO THE PROJECT  
OPERATIONS AND MONITORING**

**UNIDO Project ID: 100310**

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### **1. Background and Aim of the Project**

The Terms of Reference (ToR) describe the roles and responsibilities of the Project Management Unit (PMU) of the National Execution Agency (NEA) as executing partner of the UNIDO project “Environmentally sound development of the power sector with the final disposal of PCBs”(UNIDO ID: 100310 and GEF ID: 4858). The ToR are based on the project document approved by the Global Environmental Facility (GEF) and discussion between UNIDO, Department of Environment (DoE) of the Ministry of Environment and Forests (MoEF), and the representatives of the Bangladesh Power Development Board (BPDB).

The overall project outline and details were approved by GEF on **DD MM YYYY**. This project shall be in compliance with the regulations and policies of both UNIDO and GEF. The related documents including the project document, logframe, work plan, budget that are attached as Annex of the ToR shall serve as reference for PMU’s management and project staff in carrying out the tasks and preparing the reporting documents.

The overall objective of this Full-Sized Project (FSP) is to protect human health and the environment by reducing and eliminating the releases of and exposure to PCBs through establishment of an environmentally sound PCB management system and final disposal of 500 tons of PCB equipment. The power sector and other PCB equipment owners will be able to better manage their PCB contaminated equipment and implement the PCB disposal plan under which all PCB contaminated equipment shall be disposed of by 2028 at latest to meet the Stockholm Convention’s mandate. This project will contribute to strengthening the national capacity for the environmentally sound management of PCBs and setting up the in-country final disposal option for PCB contaminated equipment with low PCB concentrations.

The key partners who were identified during the project preparation phase are Department of Environment (DoE) of the Ministry of Environment and Forests (MoEF) and the Ministry of Power, Energy and Mineral Resources (MoPEMR) as lead agencies; Bangladesh Power Development Board (BPDB), Power Grid Company Bangladesh (PGCB), Bangladesh Rural Electrification Board (BREB), Dhaka Power Distribution Company Limited (DPDC), Dhaka Electric Supply Company Limited (DESCO) and Western Zone Power Distribution Company (WZPDCO) as associated agencies. The initial inventories reported in the original National Implementation Plan revealed the PCB profile of the country. Since then, however, no environmentally sound management system of PCBs has been established. The project will begin with updating the PCB inventory before finalizing the technical specification of the final disposal options suitable for the country’s PCB profile.

The activities of the proposed CEO Endorsement project document will have the following:

- (i) Strengthening legal, regulatory and policy framework as well as the institutional capacities for sound PCB management (Outcome 1);
- (ii) Enhancing technical capacities for sound PCB management and its disposal (Outcome 2)
- (iii) Establishing project management and monitoring and evaluation structure (Outcome 3)

**2. Scope of the Proposed Tasks**

The present ToR contain activities to be carried out by the Department of Environment (DoE) of the Ministry of Environment and Forests (MoEF) as described in the CEO Endorsement project document entitled: “Environmentally-sound development of the power sector with the final disposal of PCBs” (UNIDO ID: 100310 and GEF ID: 4858).

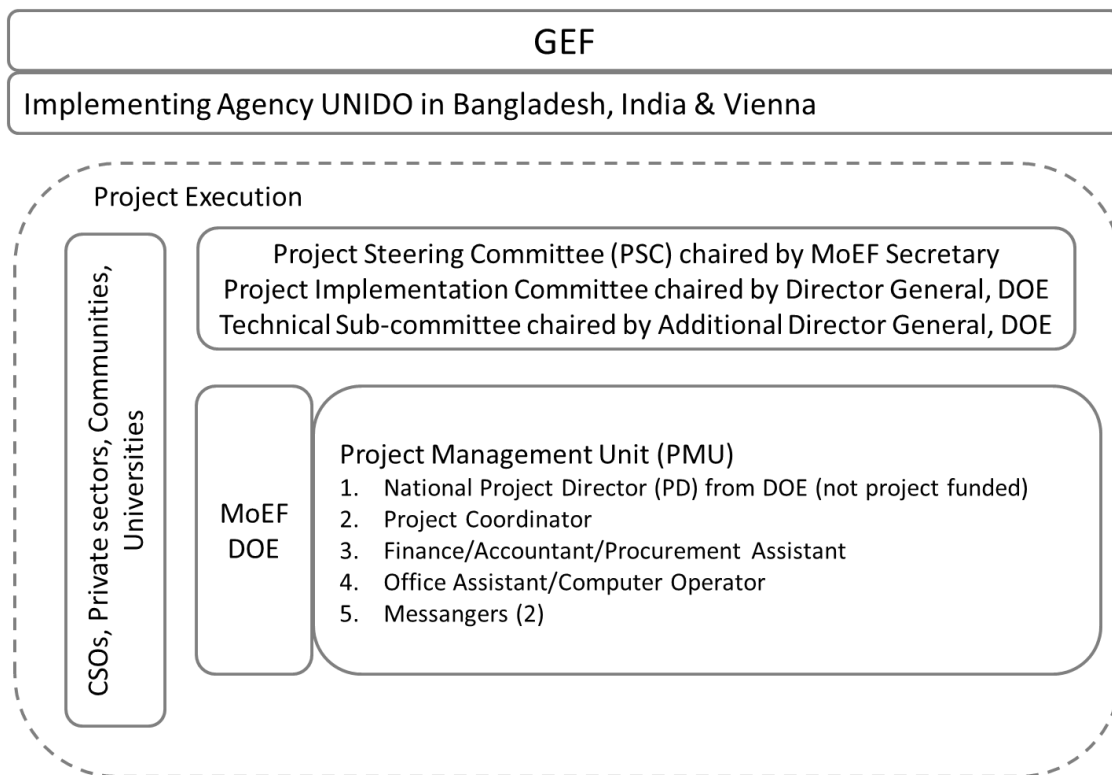
**2.1 Project Management and Monitoring**

**2.1.1 National Executing Agency and Project Management Unit**

Department of Environment (DoE) of the Ministry of Environment and Forests (MoEF) is designated as National Execution Agency (NEA). NEA established a Project Management Unit (PMU) consisting of NPD from DoE, Project Coordinator, Project Assistants in full time and other technical assistance as needed (such as legal expert and PCB inventory engineers) in consultation with UNIDO nominate respective persons.

The project staff of PMU will receive fees as project staff, except the National Project Director, according to the NEA’s fee setting which cannot however exceed the project budget. All project staff will be given office space and communication means (phone, internet connection, etc.) according to the NEA’s rule and regulations.

Fig. 1 Overall project management structure



**2.1.2. Overall Project Management Modality**

Under this UNIDO's contractual agreement, NEA will carry out (a) daily project operations, (b) monitor project results at the national level to ensure smooth delivery of the project results, and (c) assist evaluation assessment to be conducted by evaluators who will be directly recruited by UNIDO. UNIDO will be responsible for the recruitment of the international experts, international travel, as well as procurement larger than (including) EUR 5,000. The project funds for these activities will be retained by the UNIDO Headquarters in Austria. Attention should be given to the fact that there is a lead time of 3-4 weeks for the recruitment of project staff and a few months for a sizable procurement arrangement.

(a) Daily project operations include, but not limited to, recruitment and performance assessment of national project staff, meeting arrangement and reporting, travel arrangement in the country, procurement of service and goods (less than EUR 5,000), and other relevant tasks.

(b) Monitoring of project results should include gathering information on project activities to update the project indicators identified in the logframe. If necessary, new additional indicators should be also considered to be added if such indicators could significantly improve the measurement of the project's impact. Other monitoring activities include reporting in certain format such as GEF's Project Implementation Report (including indicators chosen by UNIDO), UNIDO's Progress Report, updated budget, and updated work plan. Project Steering Committee should be held regularly (at least once a year) to endorse the latest activities and review the planned activities, and the meeting minutes signed by the chair should be sent to UNIDO.

(c) Two evaluations are foreseen during the project period; mid-term review and terminal evaluations. The preparations of Terms of Reference for the evaluations will be led by UNIDO Evaluation Team. UNIDO will also select the candidates and recruit the selected evaluators in consultation with NEA.

Undertaking the tasks in the above (a), NEA shall follow the following procedure of recruitment of national project staff, procurement under EUR 5,000 per service and/or goods, and national travel.

- Recruitment of national project staff

Job descriptions shall be posted on publicly accessible media and other means following the NEA's recruitment process. At least three candidates shall be shortlisted after the application review. The shortlisted candidates will be interviewed by the NEA's recruitment committee following the NEA's recruitment process. At least one of three shortlisted candidates shall be female candidates unless there are no female candidates. The evaluation results shall be sent to UNIDO for endorsement before the final selection is concluded for offers. The gender ratio of PMU project staff shall be seriously considered when choosing the final candidates. The period of initial contract shall be 6 months maximum and 1 year from the second contract on. The fee levels of the project staff will follow the NEA's human resource rules and regulations but cannot exceed the total budgeted amount for the project staff described in the project document. A performance evaluation report for each project staff will be submitted to UNIDO in the evaluation format for consultants for UNIDO's review before the next contract is issued. Should any contract of the PMU members not be extended due to poor performance recorded on the performance evaluation format, the member will be replaced through the same recruitment procedure.

Other recruitment conditions shall be compliant with the NEA's human resource rules and regulations, unless specified in the project document. Job descriptions and copies of signed contracts shall be submitted to UNIDO as part of the NEA's regular reporting exercise. All original documents are to be kept until the terminal evaluation is completed and the project is closed in UNIDO.

- Procurement of service and goods (including meeting venues)

NEA shall undertake procurement for the project in a decentralized manner under EUR 5,000 per service and/or goods at the UN exchange rate of the month which can be obtained from the UNIDO's field office. Terms of Reference for services or technical specifications for goods shall be developed before seeking vendors. NEA shall collect three price quotes for each procurement item and carry out the technical/commercial evaluations. The evaluation results shall be certified by the NPD or the Director General of DoE under the government's existing procurement rules, and copies of the evaluation documents shall be submitted to UNIDO as part of the NEA's regular reporting exercise. The same vendor shall not be chosen exceeding EUR 20,000 per calendar year.

The equipment budget to be disbursed by NEA is for the office IT equipment (computers and printers) that cannot be provided by the co-financing contribution.

The miscellaneous budget code includes photocopying, translating, editing, printing, office suppliers, postage, communication charges less than EUR 2,000.

For procurement larger than (including) EUR 5,000 per service and/or goods, UNIDO will carry out the procurement following its procurement rules and regulations. UNIDO shall retain the project budget for all planned procurement beyond EUR 5,000 per service and/or goods. In cases where unexpected procurement needs arise, upon agreement between UNIDO and NEA, UNIDO will amend the contract and deduct the budget needed for the procurement from the immediately upcoming installment of this contractual agreement.

UNIDO will retain the right to review all the procurement actions at the end of each reporting period and reduce the upcoming installment by the amount equivalent to the total amount of unsolved procurement services or goods for which proper evidence or justifications cannot be given to UNIDO by NEA.

All original documents are to be kept until the terminal evaluation is completed and the project is closed in UNIDO.

- National travel (International travel to be processed by UNIDO)

The mode, class, and expense of national travel by train and airplane (both departure and destination in a travel leg are within the country where NEA is located) shall be determined by following the NEA's travel rules and regulations. Travel evidence (such as tickets and boarding passes), receipts, and mission reports signed by a traveler's direct supervisor will be submitted electronically to UNIDO as part of the NEA's regular reporting exercise. The originals of those travel evidence and receipts shall be kept in NEA until the project is officially terminated or closed and should be submitted upon request for audit and/or evaluation purposes.

The travel of NPD and Project Coordinator by vehicle with a driver will be arranged as needed to facilitate the monitoring and implementation of the project up to USD 1000 per month. Over USD 1,000 per month, the pre-approval of UNIDO for such an expense shall be needed with the purpose and justification of the travel.

The travel fund under the PCB inventory output is specifically allocated for the domestic travel needed to complete the PCB inventories by the participating power sector agencies.

- International travel to be processed by UNIDO

The international travels of the relevant government officials will be processed upon approval of UNIDO. The government will nominate the consent officials who are approved by UNIDO.

UNIDO will retain the right to review all the travel expenses at the end of each reporting period and reduce the upcoming installment by the amount equivalent to the total amount of unsolved travel expenses for which proper evidence or justifications cannot be given to UNIDO by NEA

### 2.1.3 Project Management Unit (PMU) and project staff

- A Project Management Unit (PMU) will be established and manned by a full-time National Project Director (NPD), Project Coordinator (PC), Project Assistants in full time and other technical assistance as needed (such as legal expert and PCB inventory engineers).
- A National Project Director (NPD), who will not receive fees from the project, will be nominated by DoE and will ensure that the project activities will be smoothly conducted within the government and will also provide overall supervision of the project.
- The Project Coordinator in consultation with NPD, the Director General of DOE, Project Steering Committee (PSC), NEA and UNIDO is expected to be responsible for the project deliverables.

- Finance/Accountant/Procurement Assistant will assist the Project Coordinator to handle the project's daily operations particularly focusing on administrative procedures related to bookkeeping, accounting, banking, procurement and other financial tasks to be performed.
- Office Assistant and Messengers will assist the Project Coordinator to ensure the project office operation is run smoothly including computer settings and communications including official inter-ministerial document deliveries.
- The details of the job descriptions of each project staff position are attached as Annex.

#### 2.1.4 Project Steering Committee (PSC)

As described in the project document, NEA will establish the Project Steering Committee (PSC) which plays a key coordination role within the government. The ToR and member list at the time of the project document drafting is attached as Annex.

NEA will:

- Establish PSC (chaired by the Secretary of MoEF) by identifying and inviting representatives from different key institutions dealing with manufacturing, importing, and maintaining electric equipment and dielectric oil;
- Provide the UNIDO Headquarters with an official communication on the composition and responsibilities of PSC;
- Ensure that an alternate chairperson will be nominated in her/his absence;
- Organize PSC at least once a year and more as needed and submit the meeting minutes signed by the Chair of the PSC as part of the regular reporting to UNIDO.

NPD will:

- Serve as the secretariat of PSC;
- Develop and update the work plan and budget for the project management activities, to be reviewed and endorsed by PSC.  
The work plan will:
  - Identify and assign responsibilities amongst relevant government departments and other relevant stakeholders
  - Determine responsibilities, timelines and budget, in order to articulate the timely, safe and effective execution of the project within the given resources. The parallel executable activities should be underlined for timely effective execution
- Build a strong working relationship with stakeholders to ensure their committed support to the project.

#### 2.1.5 Project Implementation Committee

NEA will establish the Project Implementation Committee which will be chaired by NPD. The ToR and member list at the time of the project document drafting is attached as Annex. The Project Implementation Committee should be held at least every 6 month. The meeting minutes signed by the chair will be submitted to UNIDO as part of the regular reporting.

#### 2.1.6 Technical Sub-Committee

NEA will establish the Technical Sub-Committee which will be chaired by DOE. The ToR and member list at the time of the project document drafting is attached as Annex. The meeting minutes signed by the chair will be submitted to UNIDO as needed or as part of the regular reporting.

## 2.2 Project tasks

### 2.2.1 Role and Responsibilities of NEA: the identification of other key stakeholders and sensitization of main stakeholders- Inception workshop

NEA will be responsible for raising the awareness of the project and organizing the inception workshop. NEA will:

- Prepare a preliminary directory of potential co-financing partners and stakeholders, and canvass their support and cooperation for project activities. This directory will form the basis for awareness raising and information change activities;
- Organize a one-day workshop to raise awareness of the activities of the project on establishing an environmentally sound management system of PCBs in Serbia by extending the invitations to stakeholders such as government institutions, industry, industrial associations, NGOs, universities, women groups, municipalities, etc;
- In the inception workshop, facilitate discussion amongst the project officials and stakeholder participants with support from an international consultant. The agenda will focus on the project workplan, planned activities, and assigning responsibilities and tasks among all relevant project participants and stakeholders. The principal output of the inception workshop is to have the high level participants and stakeholders at this meeting committed to the successful delivery of the project results;
- Ensure that the inception workshop report should include all the presentations, a list of participants with contact details, signatures and gender, workshop conclusions as well as a list of background documents (indicative size of 30 pages is acceptable);
- Organize the first steering committee to discuss the overall project objective, workplan, budget, and any issues to ensure the smooth project execution.

### **2.2.2 Outcome 1: Legal and institutional framework and capacities established and upgraded for POPs, particularly ESM of PCB contaminated equipment, oil, and waste.**

The outline of the project tasks is described in Outcome 1 of the CEO Endorsement Document. The deliverables and target can be found under objectively verifiable indicators and means for verification in the logframe. The tasks listed below are complementary to those described in the narrative Outcome 1 and logframe.

#### **Output 1.1: Legal framework updated and established for the environmentally sound management of PCBs**

- Collecting relevant existing laws and regulations;
- Proposing a revised legal framework based on a gap analysis evaluation report on legal mandates and institutional capacities which have recommendations on how to revise the legal framework to strengthen capacities on sound management of PCBs;
- Monitoring the progress of the consultant and evaluating his/her report before its submission to PSC;
- Organizing a national meeting to finalize the draft proposals.
- All 9 institutions (MoEF, DOE, MoPEMR, BPDB, PGCB, BREB, DPDC, DESCO, and WZPDCO) will adopt the legal framework tailored for each institution.

Deliverables: (1) Copies of existing laws and regulations, (2) Copies of environmental policies, regulations, laws, guidelines, and procedures, (3) Workshop reports with gender-segregated participant lists and presented materials

#### **Output 1.2 Implementation and inspection capacities for the key governmental institutes assessed and strengthened**

- Form a working group to implement the ESM of PCBs and inspect it once established in the 9 organizations;
- Complete the assessment report on the implementation and inspection capacities applicable for all 9 agencies to support the establishment of the ESM of PCBs;
- Organize the national meeting to review the draft proposal and finalize the draft with the support from an international consultant;
- Ensure the PCB screening test kits to be purchased by UNIDO will be delivered smoothly through the custom clearance

Deliverables: (1) Assessment report on the implementation and inspection capacities, (2) Acceptance certificate of the PCB screening test kits and photos evidence of the delivery, (3) Inspection visit photos and an inspection report



### **Output 1.3 Awareness and knowledge on POPs/PCBs issues and regulation among key stakeholders and general public enhanced**

- Design the awareness raising workshop agenda for senior, mid-level and working officers covering all 9 institutions;
- Organize the awareness raising workshops for the senior, mid-level and working officers inviting all 9 institutions;
- Involve NGOs in the awareness raising program's design and presentations through contractual agreements;
- Produce leaflets, TV awareness raising commercials, posters, and/or newspaper advertisements in a gender sensitive manner within the budget allocated to this activities.

Deliverables: (1) Workshops' reports with the gender-segregated participant list, (2) Copies of publications and awareness campaigns materials (leaflets, TV commercials, posters, newspaper advertisements) prepared and published, (3) ToRs and contracts issued to the engaged NGOs.

### **2.2.3 Outcome 2: Assisting the power sector to develop and implement the environmentally sound management and final disposal plan of PCBs**

This Outcome will help the government lay out a management plan and execute it by installing the PCB decontamination process and treat 500 tons of the PCB contaminated equipment.

#### **Output 2.1: PCB management plans properly set up at the national level and by key PCB owners**

- Define all relevant institutions' roles and responsibilities at the national level through the government official administrative procedure for the establishment of ESM of PCBs;
- Draft and agree on the national PCB management plan with governmental institutions including 9 key partner institutions;
- Host three workshop sessions for 9 key partner institutions.

Deliverables: (1) Official announcement of all relevant institutions' roles and responsibilities (2) 1 PCB National Management Plan prepared by MoEF adopted by MoPEMR/Power Division and other key institutions, (3) Reports on the three workshops with gender-segregated participant lists.

#### **Output 2.2: Gender sensitive technical guidelines and tools developed and adopted by governmental institutions and concerned stakeholders**

- In consultation with an international consultant to be arranged by UNIDO, draft the technical guidelines and tools;
- Consult with 9 key partner institutions and revise the technical guidelines to meet the partners' realities;
- Assist designated laboratories to acquire enhanced capacities for and adopt sampling and analysis of PCBs in oil officially;
- Organize the three training workshops for technical guidelines by making every effort to strike the gender balance (male/female) of the trainees equal;
- Organize the three training workshops for sampling and analysis standards and protocols of PCBs;
- Ensure all the co-financing contributions from each agency will be collected and summed up by PMU in order to report the co-financing contributions of the 9 key partner institutions.

Deliverables: (1) Copies of technical guidelines and tools with feedback collected from the key partner institutions, (2) Photos of the installed equipment in the designated laboratories, (3) Report on the three training workshops for technical guidelines with gender-segregated participant lists, (4) Report on the three training workshops for sampling and analytical procedures of PCBs, (5) Documents indicating the adoption of the analytical standard procedures by the designated and other laboratories, (6) List of co-financing contributions from each agency summarized.

#### **Output 2.3: PCB inventory updated**

- Plan the nation-wide PCB inventories prioritizing the power (larger) transformers and equipment in sub-stations as well as the distribution (smaller) transformers in the vicinity of schools and hospitals;
- Assist the 9 key partner institutions to formulate the PCB inventory team and make sampling plans;

- Ensure that the designated laboratories will acquire necessary consumables (through national or UNIDO procurements) such as bottles and personal protective equipment;
- Ensure that all key partner institutions will collect the oil samples and safely transport to their designated laboratories;
- Ensure that all data will be acquired through the chemical analysis following the standard operation procedures meeting the quality control/assurance standard;
- Ensure that all 9 key institutions will have storage constructed or renovated for the safe storage of possibly PCB containing equipment
- Assist that all 9 key institutions will store the identified possibly PCB contaminated equipment in secured designated locations with proper labels both on the equipment and storage facilities;
- Complete the inventory report by referring to the complete data given by all the 9 institutions and circulate the first draft to the 9 institutions for their review and comments;
- Submit the inventory report to UNIDO

Deliverables: (1) Sampling plan and list of equipment for sampling, (2) PCB inventory work group members in all key institutions, (3) Inventory reports on sampling, identification and labeling of PCB-containing equipment, waste, and stockpiles including the list of engineers of the inventory team in a gender-segregated manner, (4) Procurement documents for the construction / renovation of the temporary storage site and safety equipment, (5) Permits for the storages if relevant, (6) Procurement documents for laboratory consumables (7) Photos of the temporary storages with some identified and labeled transformers stored

#### **Output 2.4: Technical capacities and sustainable business plan established by the power sector**

- Help analyze the PCB inventory reports particularly locations and concentrations of PCB levels in identified PCB contaminated equipment;
- Agree with the 9 key institutions on the technical choice of the PCB decontamination;
- Agree with the 9 key institutions on the business plans as well as the operational and financial mechanisms of PCB decontamination process during and beyond the project's period;
- Process the governmental concession process to formalize the government decision on where the PCB decontamination process unit will be installed;
- Host a technical vendor workshop by inviting all potential bidders in Dhaka with tours to visit project related sites arranged;
- Help draft the Terms of Reference for the international bidding to select the international contractor which will install or operate the PCB decontamination process unit in the country;
- Release an agreed number of MoEF/DOE and project staff to participate in the technical and commercial evaluation meeting to be held in the UNIDO Headquarters in Austria;
- Carry out the follow up actions to complete the technical and commercial evaluations;
- Debrief the MoEF/DOE and project personnel who did not participate in the technical and commercial evaluation meeting with the results of technical and commercial evaluation meeting;
- Acquire the operational license and permit, if relevant, for the selected PCB decontamination equipment;
- Arrange the logistics of the PCB decontamination equipment to be imported to the country including the performance acceptance, custom clearance, and commissioning of the PCB decontamination equipment;
- Ensure the business plans for the key institutions and financial mechanism in place including the establishment of designated bank accounts and financial flows;
- Assist the selected local operator (if the purchase option is chosen) to select the qualified operation engineers through due diligence for the training programs at the international contractor, while ensuring that the selected operation engineers are legally obligated to work as operators in the local operating organization at least until the project period ends or beyond the period as agreed between the local operating organizations and selected operation engineers;
- Assist the selected operation engineers to receive training at the international contractor's facility as articulated in the contract signed between UNIDO and the selected international contractor.
- Ensure the local operator is ready to assist (in case that the lease option is chosen) or acquire the operational skills (in case that the purchase option is chosen) of the selected PCB decontamination equipment

- Issue official announcements on the location of interim storage as well as final disposal technology installation/operation sites

Deliverables: (1) Technical vendor workshop report, (2) Business plans with the technical strategies, financial mechanism, for local operators agreed with the 9 key institutions (3) Terms of reference draft for the international bidding to acquire/lease the PCB decontamination process unit including lists of vendor-specific potential co-financing requirement by PCB owners and key stakeholders, (4) meeting minutes with the 9 key institutions on the technical strategies as well as financial mechanisms/business plans (5) Official documents on the governmental concession process to finalize by which organization, where and how the PCB decontamination equipment will be operated, (6) Mission reports of the participants of the technical and commercial evaluation meeting, (7) Operational license and/or permit issued for the PCB decontamination equipment, (8) Official communication to MoEF on the contract signed with the selected bidder, (9) Performance acceptance document as well as commissioning documents signed by relevant stakeholders, (10) Official documents indicating the establishment of the financial mechanism for PCB decontamination treatment, (11) Official document of the local operators indicating the readiness of accepting the PCB decontamination equipment including the qualifications of the operation staff and photos of the installed equipment, (12) Official announcements on the location of interim storage as well as final disposal technology installation/operation sites

### **Output 2.5: Final disposal of 500 tons of PCB equipment demonstrated**

- Arrange an environmental monitoring assessment (PCB levels, oil spills, etc.) as baseline before the PCB decontamination starts
- Ensure that the 9 key institutions will make available the possibly PCB contaminated equipment identified during the PCB inventory and arrange the logistics of the equipment delivery at the PCB decontamination facility;
- Ensure that the selected international contractor will be able to operate the equipment for the demonstration phase smoothly;
- Ensure that the selected local operator has qualified employees appointed officially and in full operation to assist (for the lease option) or acquire the operation skill (for the purchase option) by the time when the international contractor starts its operation;
- Ensure that the selected local operator / installation site will adopt the emergency prevention and response plan;
- Keep the log of arrival/departure of the PCB contaminated equipment with the PCB decontamination process data including weather, individual information of each PCB contaminated equipment, process temperature, PCB contamination level before and after the treatment in a way that quality control and quality assurance (QA/QC) standards are met;
- In case pure PCB equipment is identified, arrange the export process of the equipment with UNIDO;
- Ensure that a report signed by all relevant stakeholders will be sent to UNIDO at the end of each phase of the PCB decontamination;
- Arrange another environmental monitoring assessment (PCB levels, oil spills, etc.) after the PCB decontamination is completed;
- Prepare the operation completion report at the completion of PCB decontamination of 500 tons of PCB equipment and submit it to UNIDO;
- Monitor the co-financing activities provided by the 9 key institutions;

Deliverables: (1) Meeting minutes with the selected service provider including work plan and co-financing arrangement, (2) ToR for the environmental monitoring (PCB levels, oil spills, etc) before and after the PCB decontamination process, (3) List of local operator's engineers as key operators following the selection criteria set by the technology provider, (4) Training reports of the selected operation engineers of the local operator, (5) Copy of emergency prevention and response plan adopted by the technology installation site, (6) Log records and list of treated/exported PCB equipment and oil by the selected PCB decontamination/export service provider, (7) Acceptance report of the equipment and/or export related documents, (8) Disposal/destruction reports including laboratory results confirming the successfulness of the treatment (in case of export, accompanying notification documents and consents), (9) Financial record of the PCB decontamination fees paid by PCB owners

### **2.2.4 Outcome 3: Project progress properly monitored and evaluated**

#### **Output 3.1: Project results monitored and reported including the gender dimensions.**

- Collect the project result information and regularly update the indicators;
- Issue contracts to project staff members who are selected through due diligence of the NEA’s recruitment policy and in consultation with UNIDO
- Evaluate the project staff performance of the project members every 6 month in record and decide the extension/termination of the contracts
- Ensure that the project steering committee will be hosted by MoEF at least once a year with meeting minutes taken
- Host the project implementation committee every 6 month with meeting minutes taken
- Host the technical sub-committee every month with meeting minutes taken
- Liaise with the co-financing and other key partner institutions on the project updates
- Submit copies of all the documents including a progress report with the updated work plan/budget and evidence of the budget expenditure every 6 month to be cleared before the next payment will be processed
- Submit GEF required documents such as project implementation reports (PIR) every year or as required
- Ensure all other relevant issues are addressed so that the project will make progress smoothly

Deliverables: (1) Progress report with the updated work plan/budget, (2) updated Logframe indicators, (3) Copies of contracts and ToR, (4) Project Steering Committee establishment announcement and meeting minutes, (5) Project office announcement and contract and ToR for the project staff, (6) GEF’s Project Implementation Report, (7) Project Terminal Report, (8) copies of all the evidence of the budget expenditure, and (9) all other relevant documents needed to justify the progress of the project every 6 months as requested by UNIDO

**Output 3.2: Project evaluated meeting the GEF’s evaluation criteria**

- Review the Terms of Reference for mid-term review and terminal evaluations
- Assist the logistic and travel of the evaluators recruited by UNIDO
- Assist the evaluators to collect relevant information and arrange meetings with stakeholders suggested by the evaluators for interviews
- Assist the evaluators to complete the evaluation reports meeting the requirements of UNIDO and GEF
- Review the evaluation report drafts

Deliverables: (1) Mid-term review report, (2) Terminal external evaluation report.

**3. Time schedule**

Please see the attached work plan. This work plan needs to be updated at least every 6 months and submitted to UNIDO as part of the project progress reports.

**4. Reporting and Deliverables with Payment Schedule**

Reports serve as milestones and indicate that a step has been successfully completed. Successful completion of each step effects payment for the next step.

Due dates	Outcome/Outputs	Deliverables	Amount (US\$)
		Initial payment: Upon signature of contract Invoice	
6 <sup>th</sup> month	Inception phase	2 <sup>nd</sup> payment:  Official communication of the establishment of Project Steering Committee (PSC) and PSC member	

	<p>Output 1.1</p> <p>Output 1.3</p> <p>Output 2.1</p> <p>Output 2.3</p> <p>Monitoring and Evaluations</p>	<p>list with a gender-segregated participant list</p> <p>Inception report with gender-segregated participant lists including the presentation files</p> <p>Copies of relevant existing laws and regulations</p> <p>Awareness raising workshop agenda for senior, mid-level, and working officers covering all 9 institutions</p> <p>Government's official announcement defining the roles and responsibilities of the relevant institutions</p> <p>Plan the nation-wide PCB inventories prioritizing the power (larger) transformers and equipment in sub-stations as well as the distribution (smaller) transformers in the vicinity of schools and hospitals</p> <p>Project Steering Committee meeting minutes</p> <p>Project Implementation Committee meeting minutes</p> <p>Technical sub-committee meeting minutes</p> <p>Progress Reports with all recruitment (including contracts and project staff evaluation sheet, if any), procurement, and travel documents within the previous reporting periods (6 months)</p> <p>Invoice for the payment</p>	
12 <sup>th</sup> month	<p>Output 1.2</p>	<p>3<sup>rd</sup> payment:</p> <p>Assessment report on the implementation and inspection capacities</p> <p>Acceptance certificate of the PCB screening test kits and photo evidence of the delivery</p>	

	<p>Output 1.3</p> <p>Output 2.1</p> <p>Output 2.2</p> <p>Output 2.3</p> <p>Output 2.4</p> <p>Monitoring and Evaluations</p>	<p>Awareness raising workshop agenda</p> <p>Terms of reference for designing leaflets and posters</p> <p>Contract issued to produce two kinds of awareness raising material</p> <p>PCB National Management Plan draft for review</p> <p>Training workshop agenda and scheules</p> <p>ToR of the trainer</p> <p>List of consumables needed for the PCB screening including co-financing contributed list of consumables in all participating institutions</p> <p>List of consumables to be purchased by the project</p> <p>List of trainees appointed by all participating institutions to attend the PCB inventory training</p> <p>Photos of designated laboratories in all participating institutions where the PCB screening test kits are installed</p> <p>Sampling and analysis plans for PCB inventories</p> <p>Official decisions of temporary storage locations in all participating institutions including permits where relevant</p> <p>Business plan draft with the technical strategies, financial mechanism, local operators agreed with the 9 key institutions</p> <p>meeting minutes with the 9 key institutions on the technical strategies as well as financial mechanisms/business plans</p> <p>Project Implementation Committee meeting minutes</p>	
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		<p>Technical sub-committee meeting minutes</p> <p>Progress Reports with all recruitment (including contracts and project staff evaluation sheet, if any), procurement, and travel documents within the previous reporting periods (6 months)</p> <p>Project Implementation Report in the GEF format with UNIDO indicators</p> <p>Invoice for the payment</p>	
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18 <sup>th</sup> month	<p>Output 1.1</p> <p>Output 1.3</p> <p>Output 2.1</p> <p>Output 2.2</p>	<p>4<sup>th</sup> payment:</p> <p>Revised legal framework including draft proposals of revised regulations and laws</p> <p>Workshop reports with gender-segregated participant lists</p> <p>Copies of two kinds of awareness raising materials delivered</p> <p>ToR and contracts for the remaining awareness raising materials, if relevant</p> <p>Revised PCB National Management Plan reflecting the comments/feedback received from the review by key institutions</p> <p>Report on one workshop with gender-segregated participant list</p> <p>Reports on the three training workshops for sampling and analytical procedures</p> <p>Copies of technical guidelines and tools first version</p> <p>Documents indicating the adoption of the analytical standard procedures by the designated and other laboratories</p> <p>List of the PCB inventory work group members in all</p>	
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	<p>Output 2.3</p> <p>Output 2.4</p> <p>Monitoring and Evaluations</p>	<p>key institutions in a gender-segregated manner</p> <p>Photos of some sampled transformer oil and updated sampling plan</p> <p>Procurement related documents such as terms of reference and price quotes for the construction/renovation of the temporary storage site and personal protective equipment</p> <p>Permits for the storage, if relevant</p> <p>Official documents on the governmental concession process to finalize by which organization, where and how the PCB decontamination equipment will be operated</p> <p>Project Steering Committee meeting minutes</p> <p>Project Implementation Committee meeting minutes</p> <p>Technical sub-committee meeting minutes</p> <p>Progress Reports with all recruitment (including contracts and project staff evaluation sheet, if any), procurement, and travel documents within the previous reporting periods (6 months)</p> <p>Invoice for the payment</p>	
24 <sup>th</sup> months	<p>Output 1.3</p> <p>Output 2.1</p> <p>Output 2.2</p>	<p>5<sup>th</sup> payment:</p> <p>Copies of the last awareness raising materials</p> <p>Reports of the other two workshops with gender segregated participant lists</p> <p>Copies of technical guidelines and tools reflecting the comments/feedback given by the key institutions</p> <p>Report on one training workshop for technical guidelines with a gender segregated participant list</p>	



	<p>Output 2.3</p> <p>Output 2.4</p> <p>Monitoring and Evaluations</p>	<p>Photos of the temporary storages with some identified and labeled transformers stored</p> <p>First inventory report for review by the key institutions with photos of all identified transformers with labels</p> <p>Terms of reference draft for the international bidding to acquire/lease the PCB decontamination process unit including lists of vendor-specific potential co-financing requirement by PCB owners and key stakeholders</p> <p>Technical vendor workshop report with all the presentations and a gender-segregated participant list</p> <p>Comments given on the Terms of Reference for the mid-term review</p> <p>Project Implementation Committee meeting minutes</p> <p>Technical sub-committee meeting minutes</p> <p>Progress Reports with all recruitment (including contracts and project staff evaluation sheet, if any), procurement, and travel documents within the previous reporting periods (6 months)</p> <p>Project Implementation Report in the GEF format with UNIDO indicators</p> <p>Invoice for the payment</p>	
30 <sup>th</sup> month	<p>Output 2.2</p> <p>Output 2.3</p>	<p>6<sup>th</sup> payment:</p> <p>Report on the other two training workshops for technical guidelines with a gender segregated participant list</p> <p>PCB inventory report final version</p>	

	<p>Output 2.4</p> <p>Output 2.5</p> <p>Monitoring and Evaluations</p>	<p>Mission reports of the participants of the technical and commercial evaluation meeting</p> <p>Operational license and/or permit issued for the PCB decontamination equipment</p> <p>Official communication to MoEF on the contract signed with the selected bidder</p> <p>ToR for Environmental monitoring before the PCB decontamination process</p> <p>List of local operator's engineers as key operators following the selection criteria set by the technology provider</p> <p>Co-financing summary prepared for mid-term review</p> <p>Project Steering Committee meeting minutes</p> <p>Project Implementation Committee meeting minutes</p> <p>Technical sub-committee meeting minutes</p> <p>Progress Reports with all recruitment (including contracts and project staff evaluation sheet, if any), procurement, and travel documents within the previous reporting periods (6 months)</p> <p>Invoice for the payment</p>	
36 <sup>th</sup> month	Output 2.4	<p>7<sup>th</sup> payment:</p> <p>Performance acceptance document as well as commissioning documents signed by relevant stakeholders</p> <p>Official documents indicating the establishment of the financial mechanism for PCB decontamination treatment</p> <p>Official document of the local operators indicating the readiness of accepting the PCB decontamination equipment including the qualifications of the operation staff and photos of the installed equipment</p>	

	<p>Output 2.5</p> <p>Monitoring and Evaluations</p>	<p>Official announcements on the location of interim storage as well as final disposal technology installation/operation sites</p> <p>Training reports of the selected operation engineers of the local operator</p> <p>Meeting minutes with the selected service provider including work plan and co-financing arrangement</p> <p>Acceptance report of the equipment and/or export related documents</p> <p>Project Implementation Committee meeting minutes</p> <p>Technical sub-committee meeting minutes</p> <p>Progress Reports with all recruitment (including contracts and project staff evaluation sheet, if any), procurement, and travel documents within the previous reporting periods (6 months)</p> <p>Project Implementation Report in the GEF format with UNIDO indicators</p> <p>Invoice for the payment</p>	
42th month	<p>Output 2.5</p> <p>Monitoring and Evaluations</p>	<p>8<sup>th</sup> payment</p> <p>Log records of treated/exported PCB equipment and oil by the selected PCB decontamination/export service provider</p> <p>Copy of emergency prevention and response plan adopted by the technology installation site</p> <p>Updated financial record of the PCB decontamination fees paid by PCB owners</p> <p>Updated list of the identified and treated PCB equipment</p> <p>Project Steering Committee meeting minutes</p> <p>Project Implementation Committee meeting</p>	

		minutes Technical sub-committee meeting minutes Progress Reports with all recruitment (including contracts and project staff evaluation sheet, if any), procurement, and travel documents within the previous reporting periods (6 months) Invoice for the payment	
48 <sup>th</sup> month	Output 2.5  Monitoring and Evaluations	9 <sup>th</sup> payment: Updated list of treated PCB contaminated equipment Completion report of all 200 tons of PCB equipment treated  Project Implementation Committee meeting minutes Technical sub-committee meeting minutes Progress Reports with all recruitment (including contracts and project staff evaluation sheet, if any), procurement, and travel documents within the previous reporting periods (6 months) Project Implementation Report in the GEF format with UNIDO indicators Invoice for the payment	
		<b>TOTAL</b>	<b>USD</b>

\* The Initial Budget (US\$ 3,000,000) to be reduced due to direct payments made by UNIDO, expected for:

International consultants	US\$	204,800
Procurement and Equipment	US\$	2,069,300
Monitoring and Evaluation	US\$	100,000
<b>Total:</b>	<b>US\$</b>	<b>2,374,100</b>

## 5. Language Requirements

The working language of the Contract and reports will be English unless specifically requested

Annex  
Acronyms  
GEF Approval

Logframe

Project Budget

Format for UNIDO progress report

Format for GEF Project Implementation Report including UNIDO/Stockholm Convention Unit's indicators as example (this form will be often updated by the GEF Secretariat)

Evaluation form for consultant

## ANNEX K: TERMS OF REFERENCE FOR CONSULTANTS/EXPERTS

### I. Position: National Project Director (NPD)

Duration: This position is not under the project's pay roll.

The position of the National Project Director (NPD) will be assumed by the Director General of DOE. NPD as the capacity of DOE's DG will represent NEA which will have a cooperation agreement with UNIDO.

#### Main duties

1. Oversee the project activities and report to Project Steering Committee which will be chaired by the Secretary of the MoEF with members from other Ministries and key stakeholders;
2. Ensure the project will receive the political support among and beyond the government for smooth execution of the project meeting the work plan, budget, and other committed resources;
3. Chair the Project Implementation Committee and oversee the project activities quarterly or as needed;
4. Liaise with other stakeholders to monitor the co-financing commitment activities;
5. Act as the operational head of all operational and financial aspects of the project under the administrative control of MoEF;
6. Prepare and follow detailed implementation plan of the project;
7. Implement various activities of the project as per provision of the project document;
8. Supervise and monitoring all the activities of the project;
9. Maintain liaison or coordinate with other ministries/agencies/departments of Bangladesh, incl. Planning commission, ERD (Ministry of Finance) and all other concerned agencies including UNIDO.

### II. Post: Project Coordinator

Duration: 48 work months

The Project Coordinator reports to NPD, the Director General of DOE, the Project Steering Committee (PSC), NEA and UNIDO. The Project Coordinator will assume overall responsibility for the successful implementation of project activities and the achievement of planned project outputs.

#### Main duties

1. The day-to-day management and coordination of the project activities including preparation of terms of reference for subcontracts, task teams and national experts;
2. Facilitate their work in accordance to the ToRs;
3. To assist the National Project Director to prepare work and implementation plans in regard of accounting, finance and procurement;
4. To assist the National Project Director to timely implementation of the project;

- 5 Ensure adherence to the work plan, which will be finalized during the first phase of the project implementation;
- 6 Establish an office within the premises of the National Executing Agency for the successful implementation of the project;
- 7 Provide a secretariat function to the PSC and stakeholder workshops;
- 8 Report regularly to the PSC, NEA and IA on the progress of the implementation,
- 9 Advise on, and monitoring of, all technical aspects of the project implementation, as well as the financial control over the project execution;
- 10 Disburse funds and status of co-financing;
- 11 Organize workshops and meetings in order to introduce to all relevant agencies and local communities the goals of the project and secure local commitment and endorsement of these goals; assist the international experts during field visits;
- 12 Promote coordination and collaboration among all agencies including data and information sharing among these agencies;
- 13 Work closely with local governments and authorities as well as the private sector and liaise with national agencies to ensure that the GEF intervention is practical and appropriate in the social, economic and institutional context;
- 14 Secure government commitment to the project including the provision of government co-financing in the form of in-kind and cash contributions;
- 15 Facilitate UNIDO's project monitoring duties, which includes preparing technical and financial reports to UNIDO and GEF, organize meetings and appointments during field evaluations, and confirm the quality of the project's outputs; and
- 16 Perform any other related activities, if requested.

#### Qualifications and Requirements:

- Graduate degree in chemistry, electrical/mechanical engineering or environment or natural sciences or equivalent
- At least 10 years experience in the area of environment management or POPs
- Extensive experience in Bangladesh, including both field assessments and work on management policies
- Familiarity with UN/GEF procedures and documents
- Proficiency in English language.

#### III. Position: Finance /Accountant/Procurement Assistant

Duration : 48 work months

1. Conduct bookkeeping, accounting, banking, procurement and other financial tasks to be performed;
2. Assist the National Project Director/Project Coordinator to prepare work and implementation plans;
3. Assist the supervisors to monitor of project activities;
4. Assist to prepare annual development budget/revised annual development budget;
5. Assist to prepare different reports to be submitted to UNIDO,GEF and GOB (MOEF,IMED,ERD,MOF etc..) on monthly, quarterly, annual basis or as and when required ;
6. Support to National Project Director/Project Coordinator to maintaining reference and information materials;
7. Keep and preserve all the documents related to this project in proper manner as well as to meet requirements for annual audit; and
8. Carry out other tasks as assigned by the National Project Director/Project Coordinator.

Qualifications and requirements:

- Masters degree in accounting/finance/ economics/ management or in an area that is closely related to this position;
- At least 10years professional experience in a comparable position;
- Fluency in English (oral and written);
- Good working knowledge of ICT technologies and computer applications (e.g. MS excel, MS Office, MS Power point etc.);
- A proven track record in a related position.

IV. Position: Office Assistant /Computer Operator

- 1 All project matters related to preparing, typing, accounting, and other office related reports/tasks to be performed;
- 2 To assist the national project director/project coordinator to prepare and typing work/ implementation plans;
- 3 To assist the national project director/project coordinator to supervise and monitor of project activities;
- 4 To assist to prepare and typing annual development budget/revised annual development budget;
- 5 To assist to prepare different reports to be submitted to UNIDO,GEF and GOB (MOEF,IMED,ERD,MOF etc..) on monthly, quarterly, annual basis or as and when required ;
- 6 To support to the national project director/project coordinator to writing and editing of project documents, maintaining reference and information materials ;



- 7 To keep and preserve all the documents related to this project in proper manner as well as to meet requirements for annual audit; and
- 8 Other tasks as assigned by the National Project Director/project coordinator.

Qualifications and requirements:

- Minimum Bachelor's degree /Graduates in an area that is closely related to this position;
- At least 5 years professional experience in a comparable position;
- High computer typing speed in English and local language in Bangla;
- Good working knowledge of ICT technologies and computer applications (e.g. MS excel, MS Office, MS Power point etc);
- A proven track record in a related position.

V. Position: Messengers (2)

- 1 To assist and delivering the services to the project office including national project director/project coordinator and other personnel employed at PMU;
- 2 To assist the project office to deliver the official communication to concern office it includes official letters, mails etc;
- 3 To assist the project office to keep it clean and maintenance the office premises;
- 4 Other tasks as assigned by the PMU.

Qualifications and requirements:

- Minimum School Secondary Certificate (S.S.C.) degree;
- Professional experience in a comparable position;
- A proven track record and computer knowledge would be considered as added advantage in this position.

VI. Legal expert (part time as needed)

1. Formulate the legal concept on how to fill out the gap between the existing national regulatory framework and the mandates of the Stockholm Convention;
2. Draft the regulations (Laws, Acts, and Rules) in consultation with the Ministries and other concerned stakeholders;

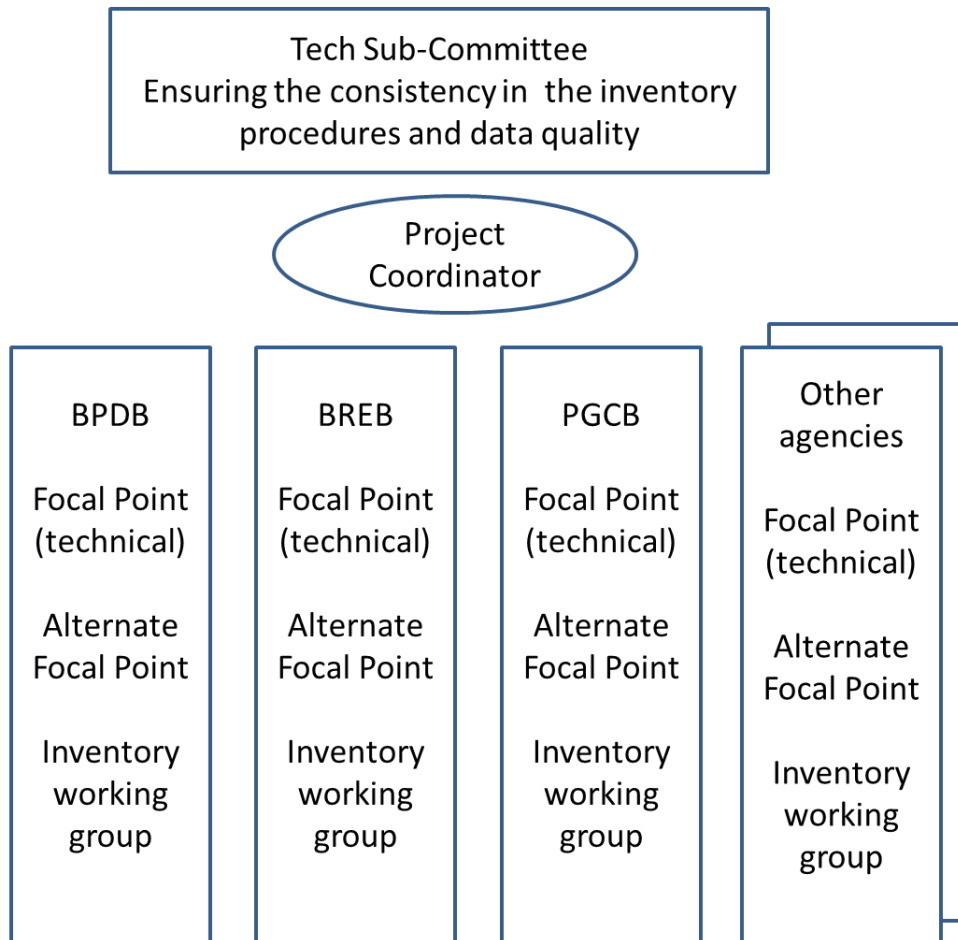
Qualifications and requirements:

- Advanced degree in law
- Qualified as a lawyer
- Practical experience in drafting laws, acts, and rules in the field of environmental management and other relevant areas for 10 years

VII. PCB inventory team members (part time as needed)

PCB inventory team members will be formulated as indicated in the following figure.

PCB Inventory Structure



## Annex L Committee TORs

A Project Steering Committee (PSC) will be formed for better coordination and monitoring of the project. The Secretary of MoEF will be the chairman of the committee and the National Project Director of DOE will act as the member secretary. The members of the steering committee are listed below. Additional members to the steering committee can be recruited as needed. The committee will convene as required, but at least once in a year. Steering Committee will be responsible for overall coordination, policy guidance, strategic directions and suggestions for timely implementation of the project. Apart from this, a Project Implementation Committee (PIC) headed by DG, DOE and a Technical sub-Committee headed by Additional Director General of this project will be formed.

### Project Steering Committee:

1. Secretary, Ministry of Environment and Forests	Chairperson
2. Representative, Agriculture Sector, Bangladesh Planning Commission	Member
3. Representative, IMED	Member
4. Representative, ERD	Member
5. Representative, Power Division, MoPEMR	Member
6. Representative, M/O Industries	Member
7. Representative, NBR	
8. Additional Secretary (Development), MoEF	Member
9. Chairman, BPDB	Member
10. Chairman, BREB	Member
11. Managing Director, PGCB	Member
12. Managing Director, DPDC	Member
13. Managing Director, WZPDCO	Member
14. Managing Director, DESCO	Member
15. Deputy Chief, MOEF	Member
16. Representative, Finance Division	Member
17. Representative, UNIDO	Member
18. Director General, Dept. of Environment	Member
19. National Project Director,	Member-Secretary

The TOR of the Project Steering Committee (PSC) will be as follows:

- Provide policy guidelines for proper implementation of the project;
- Review the implementation of the project;
- Monitoring project activities;
- Discussion on problems and provide guidelines for solutions;
- Sharing ideas of innovations;
- Enhance inter- ministry / inter-agency coordination;
- Approve annual work plan;
- This committee will convene as required, but at least once in a year;
- Miscellaneous.

Project Implementation Committee (PIC): The PIC committee will be headed by DG, DOE with representative from concerned agencies/departments. The National Project Director, DOE will act as a member secretary of the PIC committee.

1. Director General, Department of Environment	Convenor
2. Additional Director General, Department of Environment	Member
3. Deputy Chief, MOEF	Member
4. Focal Point, BPDB	Member
5. Focal Point, BREB	Member
6. Focal Point, PGCB	Member
7. Focal Point, DPDC	Member
8. Focal Point, WZPDCO	Member
9. Focal Point, DESCO	Member
10. Representative, UNIDO	Member
11. National Project Director, DOE	Member-Secretary

The TOR of the Project Implementation Committee (PIC) will be as follows:

- Review the implementation and monitoring of the project activities;
- Provide suggestions for the timely implementation of the project;
- Resolves disputes;
- Sharing ideas and provide guidelines;
- Provide recommendations to the Steering Committee;
- This committee will convene as required, but at least once in a quarter;
- Miscellaneous.

Technical sub-Committee (TC): This committee will be headed by ADG, DOE with representatives from concerned agencies/departments. The National Project Director, DOE will act as a member secretary of the TC committee.

1. Additional Director General, Department of Environment	Convenor
2. Focal Point, BPDB	Member
3. Focal Point, BREB	Member
4. Focal Point, PGCB	Member
5. Focal Point, DPDC	Member
6. Focal Point, WZPDCO	Member
7. Focal Point, DESCO	Member
8. Director(laboratory), DOE	Member
9. National Project Director, DOE	Member-Secretary

The TOR of the Technical Committee (TC) will be as follows:

- Review and establish methods for pre-treatment analysis;
- Survey laboratory facilities of concern agencies/institutes/universities for testing of PCBs;
- Survey of storage sites;
- Establish PCBs management practices;
- Prepare training plan;
- Review and implement PCBs survey program;
- Miscellaneous.



বাংলাদেশ বিদ্যুৎ উন্নয়ন বোর্ড

Central Secretariat, BPDB,  
WAPDA Building(1<sup>st</sup> floor),  
Motijheel C/A, Dhaka-1000.  
Phone: 9554209,9567350

## Bangladesh Power Development Board

Memo. No. 1407 BPDB(sectt.)/DEV-90

Date: 01.06.15

Philippe R. Scholtes  
Managing Director  
Programme and Technical Cooperation Division  
United Nations Industrial Development Organization (UNIDO)  
Vienna International Centre  
P.O. BOX 300  
A-1400 Vienna, Austria.

Subject: Bangladesh Power Development Board co-financing commitment to the UNIDO for GEF financed project entitled 'Environmentally Sound Development of the Power Sector with the Final Disposal of PCBs.'

Dear Sir,

The Bangladesh Power Development Board (BPDB) under Power Division of the Ministry of Power, Energy and Mineral Resources would like to confirm its continued support to the GEF-UNIDO and GEF financed project entitled 'Environmentally Sound Development of the Power Sector with the Final Disposal of PCBs and its commitment to provide in kind and cash co-financing to the estimated value of USD 16.87232 million (Cash USD 15.85232 million + In-Kind USD 1.02 million) over the lifespan of the project. This co-financing will be in the form of salaries/remuneration for one project Focal Point, Deputy Focal Point, -number of staff time/cost associate with the project implementation responsibilities, current assets, properties and operating budgets of the organization staff rent of office, Store and workshop space etc.

We are looking forward to your continued cooperation.

Howlader Md. Shirajul Islam  
Superintending Engineer  
CERS, Tongi, Gazipur.  
&  
Focal Point.

Yours sincerely,

01.06.2015  
Md. Zahirul Haque  
Secretary  
BPDB, Dhaka.

Memo. No. 1407 BPDB(sectt.)/DEV -  
Copy to:-

Date: 01.06.15

1. Director General, Dept. of Environment, Dhaka, Bangladesh.
2. Chief Engineer, Services, BPDB, Dhaka.
3. C S O to Chairman, BPDB, Dhaka.
4. Deputy Secretary, Finance/P&D, PDB, BDhaka.
5. PA to Secretary, Power Division, Ministry of Power, Energy and Mineral Resources, Government of the People's Republic Bangladesh, Bangladesh Secretariat, Dhaka, Bangladesh.
6. Head of UNIDO Operations in Bangladesh, UNIDO, IDB Bhaban, Dhaka, Bangladesh.

(Pranab Kumer Ghosh)  
Assistant Director(Development)  
Central Secretariat BPDB, Dhaka.



পাওয়ার গ্রীড কোম্পানী লিমিটেড বাংলাদেশ লিঃ  
POWER GRID COMPANY OF BANGLADESH LTD.  
(An Enterprise of Bangladesh Power Development Board)

QF-HRM-47

Memo No: PGCB/Sec-RTS/ 4646

Date: 23/6/2016

Mr. Philippe R. Scholtes  
Managing Director  
Program and Technical Co-Operation Division  
United Nations Industrial Development Organization (UNIDO)  
Vienna International Centre  
P.O. BOX 300  
A-1400 Viena, Austria

**Subject:** Co-financing commitment of Power Grid Company of Bangladesh Limited to the UNIDO for GEF financed project entitled 'Environmentally Sound Development of the Power Sector with the Final Disposal of PCBs'.

Dear Sir,

The Power Grid Company of Bangladesh Limited (PGCB) under Power Division of the Ministry of Power, Energy and Mineral Resources would like to confirm its continued support to the **GEF-UNIDO and GEF financed project** entitled '**Environmentally Sound Development of the Power Sector with the Final Disposal of PCBs**' and its commitment to provide in kind and cash co-financing to the estimated value of USD 1.646 million (Cash USD 1.13 million + In-kind USD 0.516 million) over the lifespan of the project. This co-financing will be in the form of salaries/remuneration for one focal point, deputy focal point, 23 number of staff time/cost associate with the project implementation responsibilities, current assets, properties and operating budgets of the organization's staff rent of office, stores and workshops space etc.

We are looking forward to your continued cooperation

  
(B.M. Mizanul Hasan)  
Superintending Engineer(I/C)  
Research and Technical Services  
&  
Focal Point Officer

Yours Sincerely,  
  
(Md. Ashraf Hossain)  
Company Secretary

Copy to:

1. Director General Dept. of Environment, Dhaka, Bangladesh  
Director (O&M), PGCB
2. PA to Secretary, Power Division, Ministry of Power, Energy and Mineral Resources,  
Government of the People's Republic of Bangladesh, Bangladesh Secretariat, Dhaka.
3. CSO to MD, PGCB/Executive Engineer(MIS) & Deputy focal point officer
4. Head of UNIDOI operations in Bangladesh, UNIDO, IDB Bhaban, Dhaka, Bangladesh
5. Office Copy



বাংলাদেশ পল্লী বিদ্যুতায়ন বোর্ড  
BANGLADESH RURAL ELECTRIFICATION BOARD

Secretariate  
Bangladesh Rural Electrification Board  
Head Office Building (1<sup>st</sup> Floor)  
Nikunju-2, Khilkhet, Dhaka-1229.  
Phone No: 02-8900315  
E-mail: sccyreb@gmail.com

Memo. No: 27.12.2637.030.34.001.15.07

Date: 07-07-2015

Director General  
Department of Environment,  
Paribesh Bhaban, E/16, Agargaon,  
Sher-E-Bangla Nagar, Dhaka-1207.

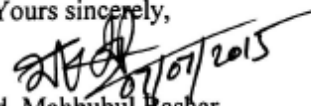
**Subject: Bangladesh Rural Electrification Board co-financing commitment to the UNIDO for GEF financed project entitled 'Environmentally Sound Development of the Power Sector with the Final Disposal of PCBs.'**

Dear Sir,

The Bangladesh Rural Electrification Board (BREB) under Power Division of the Ministry of Power, Energy and Mineral Resources would like to confirm its continued support to the GEF- UNIDO and GEF financed project entitled 'Environmentally Sound Development of the Power Sector with the Final Disposal of PCBs' and its commitment to provide in kind and cash co-financing to the estimated value of USD 8.08 million (Cash USD 6.585760 million + In-Kind USD 1.501 million) over the lifespan of the project. This co-financing will be in the form of salaries/remuneration for one project Focal Point, Deputy Focal Point, -number of staff time/cost associate with the project implementation responsibilities, current assets, properties and operating budgets of the organization staff rent of office, Store and workshop space etc.

We are looking forward to your continued cooperation.

Yours sincerely,

  
Md. Mahbubul Bashir  
Secretary  
BREB, Dhaka.

Copy to:-

1. Member Engineering/P&D, BREB, Dhaka.
2. Chief Engineer (Project)/(P&O), BREB, Dhaka.
3. Project Director, URED;DCSD Project, BREB, Dhaka.
4. Director (S/O), Central, BREB, Dhaka.
5. Superintending Engr. Environment and Social Unit, UREDS;DCSD project, BREB, Dhaka.
6. Mr. Md. Sohelur Rahman Khan, Sr. Asstt Chief, Planning-1 section, Power Division.
7. P.S to Chairman, BREB, Dhaka.
8. Deputy Director, central workshop, BREB, Dhaka.
9. Head of UNIDO operation in Bangladesh, UNIDIO, IDB Bhaban, Dhaka, Bangladesh.



Govt. of the People's Republic of Bangladesh  
Department of Environment  
'Poribesh Bhabon'  
E-16, Agargaon, Shere Bangla Nagar, Dhaka-1207  
www.doc.gov.bd

Memo No.22.02.0000.026.09.22(2).2015.101

Date: 30/04/2015


**Subject: Submission of Report as per clause - 3 of the Cooperation Agreement (Agreement No. 3000022293) signed between the Department of Environment (DoE) and UNIDO in November 2014).**

With respect to the subject mentioned above, I am hereby directed to sending herewith the report for your kind information and further necessary action.

If you have any queries please don't hesitate contact with us.

With Regards,

Attachment: 11 (Eleven) pages.

  
30/04/2015  
**Mahmood Hasan Khan**  
Director  
(Air Quality Management)  
Department of Environment  
& Focal Point for the Project on  
ESM of PCBs & Medical Waste

✓ **Mr. Zaki Uz Zman, PhD.**  
Head of UNIDO Operations in Bangladesh.  
Dhaka, Bangladesh.

**Copy: For kind information-**

1. PS to Secretary, Ministry of Environment and Forests, Bangladesh Secretariat, Dhaka, Bangladesh.
2. Assistant Director, Director General's Office, Department of Environment, Head office, Dhaka
3. PA to Additional Director General, Department of Environment, Head office, Dhaka

**Project Report**

(As per clause 3 of the Cooperation Agreement (Agreement No. 3000022293) signed between The Department of Environment (DoE) and UNIDO in November 2014).

**Project Title: 'Environmentally Sound Management and final disposal of PCBs and Medical Waste'**

**GEF agency Project ID: XXBDI11X04**

**1. Project Summary:**

**1.1 Objective:** The objective of this project is to assist Bangladesh in fulfilling its obligations under the Stockholm Convention by (1) reducing the release of PCBs to the environment, and (2) improving healthcare waste management in the country to reduce the emission of dioxin/furan from disposal activities.

**1.2. Project Component:**

**1.2.1. Component 1:** Institutional and regulatory framework and technical capacities for environmentally sound management of PCB-contaminated equipment and waste meeting BAT/BEP requirements

**a. Expected Outcomes:**

Strengthening of policy and regulatory framework strengthened to meet the mandates of the Stockholm Convention for phasing out of (all possible) PCB contaminated equipment by 2025 and dispose of the phased out equipment by 2028; improvement of capacity of power sectors and transformer maintenance companies for (environmentally) sound management of PCB and incorporation of legislation for final disposal of PCBs

**b) Expected Outputs:**

- i. Procedures, regulations and technical guidelines for ESM of PCBs drafted, approved, and updated
- ii. PCB inventory and labeling of electrical equipment updated and maintained in power sectors
- iii. Key stakeholders and the general public aware of risks associated with PCBs
- iv. Capacity of 2 designated laboratories including DoE laboratories for sampling and analysis of PCBs and National Standard laboratories for monitoring of PCBs analysis strengthened
- v. Phase out plans for PCB containing equipment and waste developed and incorporated into the power sector development plan
- vi. BAT/BEP technology options for the PCB destruction implemented, and at least 500 tons of PCB oil, PCB-contaminated equipment and wastes disposed of in an environmentally sound manner.

**1.2.2. Component 2:** Minimization / Elimination of uncontrolled POPs (i.e. PCDD and PCDF) generated from the medical waste through the introduction of BAT/BEP and Public-private partnership (PPP) as an alternative mode of service delivery.

**a. Expected Outcome:**

Harmonization of policies/guidelines on healthcare waste management including enhanced coordination among stakeholders; implementation of ESM of medical waste by policy enforcers, medical waste generators and service providers and encouragement of PPP mode of service delivery for implementation and demonstration of pilot BAT/BEP

**b. Expected Outputs:**

- i. Policy and/or guidelines on proper medical waste (from the point of generation to final disposal) drafted for govt. approval
- ii. Sources of UP-POPs from medical waste management stream assessed, evaluated and subsequent BAT/BEP implemented
- iii. Capacity of key stakeholders of PPP strengthened to adopt and deploy BAT/BEP for ESM of medical waste
- iv. At least 1 PPP project site for ESM of medical waste demonstrated (with focus on transport and disposal)
- v. Lessons learned from pilot project disseminated for replication in similar sites.

**2. Report Description:**

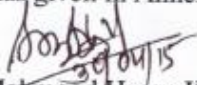
- I. According to the clause 3 of the Cooperation Agreement (Agreement No. 3000022293) signed between The Department of Environment (DoE) and UNIDO in November 2014, DoE conducted one workshop on Environmentally Sound Management and Disposal of PCB and Medical Wastes (UNIDO ID 100305 and GEF ID 4858) on January 26, 2015.
- II. Mr. Raisul Alam Mondal, Director General, Department of Environment (DoE) Chaired the workshop. The workshop was represented by all the Directors and Deputy Directors of DoE. The List of officers' participated in the workshop has been provided in Annex- 1.
- III. The major objectives of the workshop were to:
  - a) Discuss the relevance of the project in Bangladesh context, getting commitment letter from relevant government agencies;
  - b) Filling the log frame of the project; and
  - c) To decide whether the medical wastes component will remain as a part of the project.
- IV. After the Chair made welcome address Focal Point of the Project Mr. Mahmood Hasan Khan, Director (Air Quality Management) made a brief presentation on the project, its components, outputs, outcomes and detailed agenda items as well as the pending issues with respect to the PRODOC preparation.
- V. Co-financing Commitment: During the project document development process, it is necessary to obtain the co-financing commitment letters from the stakeholders. The workshop has been informed that the securing the co-financing commitment from the


government is time consuming, having in mind several instances that are involved in this approval process (DoE, MoEFs, MoPE&MR etc.). In the workshop this issue has been discussed and has been decided that DoE should enhance the process in this regard.

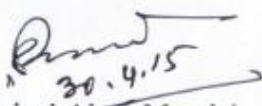
- VI. Delivery of the questionnaires and draft logical framework: The workshop discussed the delivery questionnaires to all the stakeholders and finalization of the draft logical framework. The participants opined that to finalize the draft logical framework UNIDO can appoint a consultant.
- VII. The participants also commented that Steps can be taken by Department of Environment on the issues of a. 'Co-financing commitment'; b. 'Delivery of the questionnaires; c. Finalization of the draft logical framework' from all the stakeholder; d. Organizing workshop(s) and final preparation of the PRODOC after the finalization of the project components by UNIDO and GEF.
- VIII. The workshop has been informed that earlier IFC was interested to be partnered in this project, particularly for the Public Private Partnership (PPP) activity under the medical wastes component. Due to the changes in staff setup in IFC, there was discontinuation of dialogue from them. The project estimated more than USD 800,000 as IFC contribution for PPP. Because there was discontinuation from IFC, there is a feeling that the project may not achieve the target of bringing one PPP business under the medical waste component, which may hamper the success of the project.
- IX. The discussion in the workshop revealed that although there are number of projects on medical wastes in Bangladesh, there is a demand for more medical wastes project in Bangladesh. There was a positive response towards keeping medical waste component.
- X. The session revealed that due to different issues within the country and also processing of the finalizing the components of this project by UNIDO hampers the completion the agreement by DoE and UNIDO. The workshop opined that there is need for an extension of time period of the Cooperation Agreement (Agreement No. 3000022293) and that will allow DoE to complete the remaining issues as per the cooperation agreement.

### **3. Financial Statement:**

The expenditure details till report date have given in the Annex-2 and the vouchers related expenditure has given in Annex-3.

  
Mahmood Hasan Khan  
Director  
(Air Quality Management)  
& Focal Point  
Department of Environment

  
Quazi Sarwar Hossain Hashmi  
Additional Director General  
Department of Environment

  
Md. Raisul Alam Mondal  
Director General  
(Additional Secretary)  
Department of Environment

3

Subject: Preparatory meeting to prepare the Prodoc for the 'Project on Environmentally Sound Management and Disposal of PCBs and Medical waste' meeting.

Place: 'Chamelly Conference Room'. Department of Environment, Dhaka.

Sr. No	Name and Disignation	Phone, Fax, and E-mail	Signature
1.	Quazi Sarwar Indira Hashmi Admin	quazisashmi@gmail.com	
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4.			
5.	মুহাম্মদ মেসবাহুল আলম অফিসার (এস) Muhammad Mesbahul Alam Director (Admin)	01712021544	
6.	ড. কে. এম. মিজানুর রহমান সাবেক A.K.M. Mizanur Rahman Director	01711807629 mizans442@yahoo.com	
7.	ড. ফৌজগুল আরিফ মিজানুর (সি.এ) Director সাবেক অফিসার	8181794	
8.	Syed Nazmul Akbar Director (E.C. C.C)	8181778	
9.	Md. Ziaul Haque DD	DOE 0187008703	

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10.				
11.	<del>27/01/15</del> Md. Abul Kalam Azad Program Coordinator	01552396242	DOE	AP 26.01.2015
12.	Mahbubur Rahman Khan Assistant Director	01615279393	/	 26.01.2015
13.	MD. Shah Alam S. collector	01711-145468	DOE	 26/01/2015
14.	Shah Md. Nur-E-Huda Assistant Director	01977291329	DOE	Sutaha 26/01/2015
15.	Md. Sliyas Mahmud Assistant Director	01557025301	DOE	 26/01/2015
16.	AKHTARUZZAMAN TUKU Research officer DOE	01715411666	DOE	 26/01/15
17.	MD. Hasan Hasibure Rahman Research officer	01712-304222	DOE	 26/01/2015
18.	Shaharoy Rahman AD	01719416609	/	Shah 26.01.2015
19.	শাহিন সুলতান Inspector Shahin sultana Inspector	01721790508	/	 26/01/15

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20.	MD. MUSTAFIZUR RAHMAN AKHAND DEPUTY DIRECTOR	DOE	01819411925	
21.	MD. KHALED HASAN Deputy Director Dhaka Region	DOE	0171173 -1500	 26.01.15
22.	AKM Rafiqul Islam Deputy Director (R&M)	DOE	0171144 6249	
23.	S.M. Tanzeem Deputy Director (EIA)	DOE	8181787	 26.01.15
24.	Farid Ahmed Deputy Director (Policy)	DOE	8181775	 26/1/15
25.	MIRZA SHAWKAT ALI, Deputy Director	DOE	8181797	
26.	Mohammed Solaiman Haider Deputy Director	DOE	8181779	
27.	Dr Sultan Ahmed Director (NRM & Research)	DOE	8181784	
28.	Raziana Begum Deputy Director	DOE	8181763	 26.1.15
29.	S.M. Ahsanul Aziz Deputy Director (Climate Change)	DOE	8181786	 26.01.15
30.	Support Staff	DOE - 5 persons		

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26/01/15

## Annex O Additional PCB Baseline Information

Workshops that repair, dismantle, overhaul and retrofill transformers and capacitors are probable contaminated sites. These include the following:

Central Equipment Repairing Shop, Bangladesh Power Development Board (BPDB), Tongi, Gazipur.

Zonal Workshop, BPDB, Tongi, Gazipur.

Zonal Workshop, BPDB, Bogra.

Zonal Workshop, BPDB, Jessore.

Zonal Workshop, BPDB, Chittagong.

Regional Workshop, Rural Electrification Board, Dhaka.

Regional Workshop, Rural Electrification Board, Chittagong.

Additionally, 67 Rural Distributional Regions (Palli Biddhut Samiti) in different districts in Bangladesh where small transformers are repaired, may be contaminated with PCBs.

Ship-breaking yards located in the coastal area of Sitakund, Chittagong and, possibly, coastal waters adjacent to the ship yards could be considered as probably contaminated sites.

1. Only one Bangladesh study was found —published in 2000 by Det Norske Veritas —in which PCBs in an environmental matrix were collected and analyzed. As part of the study, Det Norske Veritas sampled soil from a steel plate reprocessing site, cable sheathing, and marine sediment located near the Chittagong ship-dismantling facility for PCBs.
2. Soil samples collected from a steel plate re-processing site were found to contain PCBs at concentrations from 7 times to 48 times above the maximum background levels in Norway (used in the absence of an established background level for PCBs in Bangladesh);

**TABLE 1: PCBS ANALYSES OF SOIL FROM A STEEL RE-PROCESSING SITE**

Sample	PCB-28	PCB-52	PCB-101	PCB-118	PCB-153	PCB-138	PCB-180	Sum 7-dutch (ug/kg)
Sample 1 on steel plate re-processing site, (ug/kg, dry weight)	12	194	310	199	268	353	108	1.444
Sample 2 on steel plate re-processing site, (ug/kg, dry weight)	3.4	12	19	22	45	57	42	0.2
Level of quantification, (ug/kg, dry weight)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-
Background values from Norway <sup>1</sup> , /20/	-	-	-	-	-	-	-	0.003-0.03

<sup>1</sup>: No background value is available for the region. However PCB is not a natural existing substance and therefore background values from Norway is referred to /20/.

3. Concentrations of PCBs in a paint sample and in cable were reported to be low in contrast to those found in Norwegian ships. Concentrations of PCBs in cable resembled the PCB congener pattern for Aroclor 1260.

**TABLE 2: RESULTS OF ANALYSIS OF PCBS IN A CABLE**



Sample	PCB-28	PCB-52	PCB-101	PCB-118	PCB-153	PCB-138	PCB-180	Sum 7-dutch
Cable ( $\mu\text{g}/\text{kg}$ , dry weight)	<0.2	0.5	9	9.2	50	52	9	130
Level of quantification ( $\mu\text{g}/\text{kg}$ , dry weight)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	

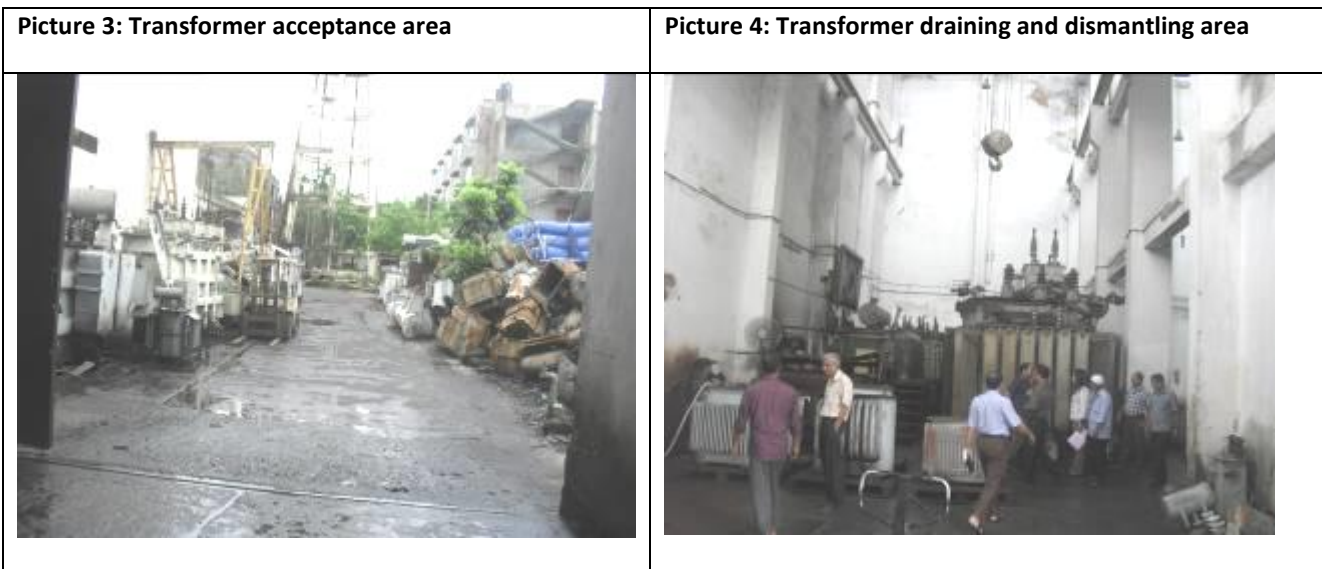
4. The study observed that the PCBs, together with the PVC in the cables, may result in dioxin pollution of the air and contamination of the ground if the insulation is not combusted sufficiently in a controlled and monitored manner.
5. Four marine sediment samples taken from the inter-tidal zone (up to 600 meters of the ship-breaking site) were analyzed for PCBs and none was found (Det Norske Veritas, 2000).
6. A total of 130 samples were collected from Cox's Bazar, Saint-Martin, Kishorganj and Kuakata, Chittagong, Dhaka City Markets, Gazipur and Syedpur. The categories of samples were dried fish (Silver pomfret, (*Stromateus cinereus*), Giant seaperch (*Lates calcarifer*, Bombay duck (*Harpodon nehereus*), Puntius (*Puntius puntio*)), fresh fish ((Silver pomfret, (*Stromateus cinereus*), Giant seaperch (*Lates calcarifer*, Bombay duck (*Harpodon nehereus*), Puntius (*Puntius puntio*)); fruits (mango, banana and papaya); vegetables (brinjal, potal and tomato); poultry, poultry eggs and poultry feed; transformer and capacitor oils; and environmental samples, such as soil, sediments, water and human blood. Collected samples were analyzed for DDT and PCBs and the results were within the acceptable ranges. All collected fried food samples from foot-path fry food shops in Dhaka City Markets were found to contain PCBs in different amounts which varied from 50 to 111 ng/g; but DDT content was below the limit of detection of the analyses. The sources of PCBs in the fried food samples might be mixed PCBs containing oils (due to some illegal trade) for frying tasty foods which cause harmful effects to human health.

The residual concentration of DDT and PCBs were found in soil, sediment and ponds water of Chittagong Chemical Complex and Bangladesh Forest Industrial Development Corporation area.

7. The PPG phase has allowed contacting and visiting several major owners of power equipment in the country and an oil regeneration facility. Among them were:
  - Central Equipment Repairing Shop at BPDB;
  - Central Maintenance shop at REB;
  - PGCB Headquarters;
  - Energy Pac- transformer production shop;
  - Min Oil- transformer and lubricant oil regeneration facility;
8. The management practices of these companies were evaluated for assessing the potential of PCB cross-contamination, workers' exposure to PCBs and their awareness about the PCB harmful effects. The findings from these visits could be generalized as usual management practices in the other companies, potential owners of PCB-containing equipment and wastes, and can be summarized as follows:
  - The awareness and knowledge of the workers about PCBs is very low, even in the managerial structure. Some of them know that "askarel" and "sovtol" are harmful, but anyway when such kind of transformers are received, they proceed with the maintenance operations without taking any precautions. They are not aware whether the received transformer for treatment contains PCB or not, nor do they have tools and knowledge for detection. Possible cross-contamination and exposure of the workers can be found practically in each stage of the maintenance procedure;
  - The transformers intended for repairing arrive in the facility by truck, which is not equipped with containment means, i.e. drip trays, plastic tarp, etc. in order to prevent any spillages from the transformer to be introduced

outside the truck. Having in mind that some of the received transformers were leaking and some were delivered empty, it can be assumed that in case of transportation of PCB-containing leaking transformers, the oil was spread all across the transport route. There is no licensing system in the country that permitted the vehicles to transport hazardous materials, which means that those kinds of materials are transported in vehicles and under conditions which don't satisfy the requirements for safe transportation.

- The oil from the received transformers is drained into tanks and then physically treated, i.e. filtered in centrifuge machine. After that, the oil is tested for gravity, acidity and breakdown voltage, and if results are satisfying the same is returned to the transformer, if not, the oil that cannot be regenerated by the transformer maintenance workshops is sent to oil regeneration companies for further regeneration. The saturated filters are burned in an open burning area. All quantities of the regenerated oil are used for refilling of the repaired transformers or for topping-up of the on-line transformers. Also, for refilling and topping-up of the transformers new mineral oil is used, which is previously filtered (due to uncertainty whether the oil gained moisture during the transportation) with the same filtration unit used for the regeneration of the used oil. Thus, the potential of cross-contamination of the repaired transformers and also of the on-line transformers is very high;





- The floor in both workshops was not protected and the same was covered with oil all around. Workers, by passing through this area, disseminate the eventual contamination all around the facility, even in their homes.



- The maintenance procedure of the transformers continues with the rewinding of the coil, changing of the isolation, changing of the gaskets, seals, isolators. Moreover, oxy-acetylene gas is used for welding of the cracks on the transformer body, which creates a possibility of forming dioxins and furans. During these activities, none of the workers wears personnel protective equipment, which indicates that the risk of exposure to PCB is very high;
- Those transformers that cannot be repaired are dismantled, the copper and metal carcasses are sold to a smeltery, and the porous materials (wood, paper) are also burned in an open burning area;

<b>Picture 7: Dismantling of transformers</b>	<b>Picture 8: Phased-out transformer carcasses</b>
	

- Many phased-out transformers were found in the maintenance workshops area, waiting to be sold. The site where these transformers are stored might be PCB contaminated, having in mind that the transformers are not completely drained, i.e. some quantities of oil still remains in the carcasses and leaked in the surrounding;
- There is no sampling plan for the on-line transformers, as well as the replacement plan for the end of life transformers. There are around 1.000.000 distributional and 3.000 power transformers within the power sector and there is no regular testing of the electrical and chemical parameters of the oil from the on-line transformers. The inspection of the condition of the online transformers by checking the temperature, pressure, oil level, etc. is performed occasionally, which increases the probability of some accidents to occur with the PCB-containing transformers;

<b>Picture 9: Oil regeneration unit and stored oil</b>	<b>Picture 10: Changing of the paper isolation</b>
	

- One sample from already regenerated oil was screened using

Clor-N-Oil test kit and the result was positive, and this information only supports the assumption of very high level of possibility for PCB cross-contamination. Also, one sample from new transformer oil purchased from India was screened and the result was negative;

- The Directors of the maintenance shops expressed their interest to participate in the project in order to enhance their capacity for sound PCB management. The possible option to install a PCB treatment facility in CERS/PDB was introduced by pointing the issue of previously upgrading of the building in order to meet the internationally accepted safety standards;
- There are 6 regional transformer maintenance workshops at BPDB and 67 at REB, with the same type of maintenance services as the central ones, but only for small, distributional transformers and with the same potential of the transformer cross-contamination, worker exposure to PCBs and environment pollution;
- For the new transformer oil that is purchased for the topping up of the transmission transformers, the providers do not submit a certificate that the oil is PCB free;
- For the on-site interventions, the power transmission company uses their own oil regeneration unit, but having in mind that the unit is also rented to smaller private companies, this leaves the possibility for contamination of the unit at those companies, which might result in cross-contamination of their own oil during filtration;
- The oil that cannot be regenerated is stored in containers and the phased-out transformers are kept in substations;
- For production of the transformers, all components (copper, magnetic sheets, metal sheets for the carcasses) are purchased new from abroad, i.e. there is no usage of these components from the phased-out transformers. The oil is purchased from abroad, also new, and a certificate indicating that the oil is PCB-free is requested from the salesperson when buying the oil. The oil that leaked during the filling of the transformers is collected and delivered to oil regeneration facility for regeneration, and after that filled in the transformer. In case oil regeneration company regenerates used, untested oil with the same regeneration unit used for the regeneration of this new oil, leaves possibility of cross-contamination of the new oil, i.e. of the new produced transformers;
- The oil regeneration company uses a chemical reagent for the oil regeneration, which after the sedimentation is collected, packed in drums and sold to brick producers as secondary fuel. The regenerated oil is tested for humidity, acidity, breakdown voltage, etc. and then returned back to the customer;
- The awareness and knowledge of the managers about the PCB issue was at a high level. There are no tools for PCB detection and testing of the oil prior regeneration and it is not requested from the customers to confirm that the delivered oil is PCB free, which leaves the option to contaminate the regeneration unit and therefore to contaminate the oil which is to be received for regeneration subsequently;

**Picture 11 and Picture 12: Oil regeneration unit**



- A sample of already regenerated oil was screened and the result was positive, which confirmed the suspicions for possible cross-contamination;
9. To date, the NIP has received limited follow-up implementation due to the need for international financial and technical assistance.
  10. At the Consultative Workshop held on July 1, 2013 organized for major stakeholders (potential owners of PCB equipment and the government representatives), the Director General of DoE stated that the forthcoming project is highly appreciated in order to go for a cleaner environment.

## **ANNEX P: ABSTRACTS FROM THE PRELIMINARY INVENTORIES ON PCBs**

According to available information, there are PCB-containing electrical units in various industries in use. Apparently, the responsible persons operating these equipments are not always aware of the problems of PCB cooling fluids. Due to the lack of legal regulations and procedures for maintenance and disposal, there is a serious risk of incidents causing cross-contamination and relevant hazard to the environment and human health.

The information mentioned in the Tables below should be regarded only as a preliminary inventory of potential PCB containing equipment.

PCBs (or PCB mixtures) were never manufactured in Bangladesh. However, PCB compounds are still in use in Bangladesh, mostly in closed systems as dielectrics in transformers and capacitors used in the electrical generating sector. At this time, the facilities for identification of PCB content in electrical equipment are not available within the power sector or government laboratories within Bangladesh; hence as discussed below, PCB content is estimated based on typical practice in Bangladesh and internationally with regard to suspected PCB content. The present inventory of the electrical sector does not include PCB-containing hydraulic fluids, which will be estimated as part of future activities.

The ship-breaking sector is another potential source of PCBs for which PCB content was estimated for the first time as part of this inventory.

During PCBs inventory process and collection of data about PCBs use, no PCBs in the open systems were identified.

Six entities comprise the Bangladesh generating sector: the Bangladesh Power Development Board (BPDB), the Dhaka Electric Supply Authority (DESA), the Dhaka Electric Supply Company (DESCO), the Power Grid Company of Bangladesh (PGCB), the Rural Electrification Board (REB) and the Independent Power Producers (IPP). Collectively, they have in service 2,353 power transformers, 374,260 distribution transformers, and 84 oil circuit breakers (OCB). These are utilized in 425 locations throughout the country. The type and location of in-service equipment is shown below in Table 9. The total volume of transformer oil within in-service transformers (power and distribution), capacitors and oil circuit breaks is estimated at 107,370 metric tons (Table 10).

**TABLE 3:  
NUMBER OF  
IN-SERVICE**

Sl. No.	Sector and Sub-sector	Category	No. of Companies	No. of Locations	Equipment (No.)						
					Transformer					OCB	Total
					Power Transformer			*Distribution Transformer	Total		
					Main	Auxiliary	Total				
1. BPDB											
		Power Station	1	19	156	2	158	128	286	0	286
		Distribution Sub-station	1	59	318	88	406	14682	15088	49	15137
		<i>Subtotal</i>	2	66	474	90	564	14810	15374	49	15423
2.	DESA	Distribution Sub-station	2	3	31	0	31	6556	6587	0	6587
3.	DESCO	Distribution Sub-station	1	1	27	11	38	2894	2932	4	2936
4.	PGCB	Grid sub-station	9	39	257	29	286		286	31	317
5.	IPP	Power Station	5	6	32		32	0	32		32
6.	*REB	PBS	67	308			1402	350000	351402		351402
<b>Grand Total</b>			<b>86</b>	<b>425</b>	<b>821</b>	<b>130</b>	<b>2,353</b>	<b>374,260</b>	<b>376,613</b>	<b>84</b>	<b>376,697</b>

Source: Field Survey

\* Data were collected from official sources

### **TRANSFORMERS AND OTHER EQUIPMENT BY SECTOR AND LOCATION**

**TABLE 4: QUANTITY OF TRANSFORMER OIL WITHIN THE BANGLADESH POWER SECTOR**

Sl. No.	Owners/companies	Quantity of Oil (kg)						
		Transformer					OCB	Total
		Power Transformer			*Distribution Transformer	Total		
		Main	Auxiliary	Total				
1.	BPDB (Power Station & Distribution sub-station)	3326052	47546	3373598	6370759	9744357	18335	9762692
2.	DESA (Grid sub-station & Distribution sub-station)	247949	0	247949	1639000	1886949	0	1886949
3.	DESCO	204834	4208	209042	607740	816782	1000	817782
4.	PGCB	4915772	29978	4945750		4945750	83604	5029354
5.	IPP	509373	0	509373		509373		509373
6.	REB*			1967025	87500000	89467025		89467025
<b>Grand total</b>		<b>9,203,980</b>	<b>81732</b>	<b>11,252,737</b>	<b>96,117,499</b>	<b>107,370,236</b>	<b>102,939</b>	<b>107,473,175</b>

Source: MoEF, Final PCB inventory, April 2005.

\* Data collected from official sources.

As there are no reliable facilities for analysis and identification of PCB content in this oil within the power sector in Bangladesh or via government laboratories, there is no capacity within Bangladesh at this time to determine the concentration of PCBs in this oil. However, trade names of transformer oil recorded from field observations and the common practice within the electrical industry (as was common practice in this sector globally) of “topping up” oil levels in transformers (i.e., to replace oil lost over time due to evaporation, leaking, spills, etc.) suggests that regardless of labels on transformers that may indicate no PCB content, most of the surveyed electrical equipment could have been, and indeed is likely to be, contaminated with PCB oils.

The widespread prohibition on manufacture, distribution and processing of PCBs from the 1980s onward means that older equipment, in general, is likely to have higher PCB content. However, some equipment imported as recently as 2000 was found during the survey labeled with PCB content. Additionally, the practice of “topping up” the level of transformer oil in electrical equipment with unlabelled or PCB transformer oils means that age of equipment is not, in itself, a reliable indication of PCB content. Therefore, all equipment will need to be sampled and analyzed to verify if PCB content or contamination has occurred.

**TABLE 5: BRAND NAME OF TRANSFORMER OILS USED IN TRANSFORMERS IN BANGLADESH**

Sl. No.	Liquid	Power Transformers			OCB	Total	Quantity of Oil (kg)	Distribution Transformer		Total Oil (kg)	PCB Content
		Main	Auxiliary	Total				No.	Oil (kg)		
<b>A. Survey Data</b>											
01.	ASKAREL	2	2	4	0	4	15690	0	0	15690	Not Known
02.	ASTMD3487	3	0	3	0	3	73800	0	0	73800	Not Known
03.	BP, ENERGOL, Singapore	46	0	46	0	46	622907	0	0	622907	Not Known
04.	BP, TRANSFO-2	4	0	4	0	4	27520	0	0	27520	Not Known
05.	BP-ENERGIL, USA	12	0	12	0	12	168187	0	0	168187	Not Known
06.	DONG NAM LTD, Korea	21	11	32	0	32	296190	0	0	296190	Not Known
07.	DONG NAM PETRO. LTD	5	3	8	0	8	51010	0	0	51010	Not Known
08.	EDISOL	1	0	1	0	1	6000	0	0	6000	Not Known
09.	ELECTROL, INDIA	0	2	2	0	2	576	0	0	576	Not Known
10.	EMCO, India	14	7	21	0	21	107272	0	0	107272	Not Known
11.	Hyrex, Malaysia	4	0	4	0	4	96450	0	0	96450	Not Known
12.	IEC-296	27	0	27	0	27	446095	0	0	446095	Not Known
13.	IEC-976	6	0	6	0	6	20614	0	0	20614	Not Known
14.	IKR -982-68	1	0	1	0	1	6400	0	0	6400	Not Known
15.	JIS-C-2320	6	0	6	0	6	99000	0	0	99000	Not Known
16.	Mineral Oil	15	0	15	0	15	55823	0	0	55823	Not Known
17.	Mobilect 35	2	0	2	0	2	17250	0	0	17250	Not Known
18.	NF-C-27-0	3	0	3	0	3	28700	0	0	28700	Not Known
22.	Nynas Nitro Lox	1	0	1	0	1	6070	0	0	6070	Not Known
23.	SHELL 4610	16	0	16	0	16	248150	0	0	248150	Not Known
24.	Shell, Diola-B	22	2	24	2	26	270629	0	0	270629	Not Known
25.	Sovtol-10	0	0	0	0	0	0	22	31982	31982	Not Known
26.	TKN-982-56	15	0	15	0	15	240280	0	0	240280	Not Known
27.	Transformer oil	111	0	111	0	111	853416	0	0	853416	Not Known
28.	TRANSOL	5	0	5	0	5	39572	0	0	39572	Not Known
29.	X- Former oil	5	0	5	0	5	27300	0	0	27300	Not Known
30.	YILONG, CHINA	23	12	35	0	35	504207	0	0	504207	Not Known
	<i>Total</i>	370	39	409	2	433	4329108	22	31982	4361090	Not Known
31.	Not known	451	91	542	82	730	5059543	106	231064	5290607	Not Known
<i>Sub-total</i>		821	130	951	84	1163	9388651	128	263046	9651697	Not Known
<b>B*. Not known (Distribution Transformer)</b>											
01.	BPDB, DESA & DESCO							24132	8354453	8354453	Not Known
02.	REB			1402		1402	1967025	350000	87500000	89467025	Not Known
<i>Sub-total</i>				1402		1402	1967025	374132	9.6E+07	97821478	Not Known
<b>Grand Total</b>		<b>821</b>	<b>130</b>	<b>2,353</b>	<b>84</b>	<b>2,565</b>	<b>11,355,676</b>	<b>374,260</b>	<b>96,117,499</b>	<b>107,473,175</b>	

Source: MoEF, Final PCB inventory, April 2005.



**TABLE 6: OIL IN ELECTRICAL EQUIPMENT BY YEAR OF EQUIPMENT FABRICATION, COUNTRY OF ORIGIN AND TRADE NAME OF OILS**

Year of Fabrication	No. of Equipment	Quantity of Oils by										
		Country of Origin			Manufacturer			Trade Name of Oils				
		Origin known by reference: (USA, Germany, USSR & Russia)	Others (No reference)	* Not known (Distribution Transformer)	Having ref. (General Electric Company, General Electric Ltd. GEC, GEC Subsidiaries, Westing House & AEG)	Others (No reference)	* Not known (Distribution Transformer)	Having ref. (Askaral, Sovtol-10)	Others (No reference)	Not known	* Not known (Distribution Transformer)	
A. Survey Data (BPDB, DESA, DESCO, PGCB and IPP)												
Old	Upto 1970	179	322569	937099		644538	615130		120	353890	905658	
	1971-1980	84	95820	683966		50575	721096		2640	273770	495261	
	1981-1990	478	784332	2260471		73180	2971623		8682	1559221	1476900	
	Sub-total	741	1202721	3881536		768293	4307849		11442	2186881	2877819	
New	1991-2000	267	164660	2611253		1480	2782548		20660	1121308	1570351	
	Above 2000	155	2300	1789460		492	1791268		15570	825352	1022547	
	Sub-total	422	166960	4400713		1972	4573816		36230	1946660	2592898	
	Total	1,163	1,369,681	8,282,249		770,265	8,881,665		47,672	4,133,541	5,470,717	
B. Distribution Transformer												
	BPDB	14682			6107480			6107480				6107480
	DESA	6556			1639000			1639000				1639000
	DESCO	2894			607740			607740				607740
	REB	351402			89467025			89467025				89467025
		375534			97821245			97821245				97821245
	<b>Grand Total</b>	<b>376,697</b>	<b>1,369,681</b>	<b>8,282,249</b>	<b>97,821,245</b>	<b>770,265</b>	<b>8,881,665</b>	<b>97,821,245</b>	<b>47,672</b>	<b>4,133,541</b>	<b>5,470,717</b>	<b>97,821,245</b>

Source: MoEF, Final PCB inventory, April 2005

**TABLE 7: ESTIMATED PCB CONTENT IN IN-SERVICE ELECTRICAL EQUIPMENT**

Type of Oils		Oil Contents (kg)			PCB Content (kg)		
		Old Equipment (before 1990)	New Equipment (after 1990)	Total	Old Equipment	New Equipment	Total
<b>A. Survey Data (BPDB, DESA, DESCO, PGCB and IPP)</b>							
<b>Ref. (Askarel, Sovtol-10)</b>	@ 490 ppm in old Equipment and @ 50 ppm in new Equipment	11442	36230	47672	5.61	1.81	7.42
<b>Others</b>	@ 490 ppm in old Equipment and @ 50 ppm in new Equipment	2186881	1946660	4133541	1071.57	97.33	1168.90
<b>Unknown</b>	@ 500 ppm in old Equipment and @ 50 ppm in new Equipment	2877819	2592898	5470717	1438.91	129.64	1568.55
<b>Total</b>		5,076,142	4,575,788	9,651,930	2,516.088	228.7894	2,744.877
<b>B. Distribution Transformer</b>							
BPDB	@ 500 ppm in old Equipment			6107480			3053.74
DESA	@ 500 ppm in old Equipment			1639000			819.50
DESCO	@ 500 ppm in old Equipment			607740			303.87
PGCB	@ 500 ppm in old Equipment						
REB	@ 500 ppm in old Equipment			89467025			44733.51
<b>Total</b>		0	0	97821245	0	0	48910.62
<b>Grand Total</b>		<b>5,076,142</b>	<b>4,575,788</b>	<b>195,542,490</b>	<b>2,516.088</b>	<b>228.7894</b>	<b>51,655.5</b>

Source: MoEF, Final PCB inventory, April 2005

- Data were collected from official sources

**TABLE 8: QUANTITY OF RESERVE AND WASTE OIL, AND WASTE TRANSFORMER EQUIPMENT OILS**

Name of Liquid	Quantity of Oil (kg)			Contaminated Waste Equipment					
	In Drums	In Reservoirs	Total	Power Transformer			OCB	Total	Quantity of Oil (kg)
				Main	Auxiliary	Total			
ASKAREL	0	0	0	2	2	4	0	4	15690
BP, ENERGOL, Singapore	20	0	20	51	0	51	0	51	665907
BP, TRANSFO-2	0	0	0	3	0	3	0	3	26650
BP-ENERGIL, USA	63520	0	63520	6	0	6	0	6	90816
DONG NAM LTD, Korea	0	14000	14000	21	11	32	0	32	296190
DONG NAM PETRO. LTD	0	2800	2800	5	3	8	0	8	51010
EDISOL	500	0	500	1	0	1	0	1	6000
ELECTROL, INDIA	0	0	0	0	2	2	0	2	576
EMCO, India	0	0	0	14	7	21	0	21	107272
Hyrex, Malaysia	0	0	0	1	0	1	0	1	7350
IEC-296	0	0	0	20	0	20	0	20	223775
IKR -982-68	0	0	0	1	0	1	0	1	6400
JIS-C-2320	0	0	0	3	0	3	0	3	49500
NF-C-27-0	0	0	0	9	0	9	0	9	106700
Nynas Nitro Lox	0	0	0	1	0	1	0	1	6070
SHELL 4610	0	19600	19600	13	0	13	0	13	200150
Shell, Diola-B	20400	0	20400	21	2	23	2	25	268729
Sovtol-10	0	0	0	0	22	22	0	22	31982
TKN-982-56	0	0	0	15	0	15	0	15	270280
Transformer oil	0	0	0	53	0	53	0	53	513378
TRANSOL	6000	0	6000	5	0	5	0	5	39572
YILONG, CHINA	24600	0	24600	23	12	35	0	35	495207
Total	115040	36400	151440	268	61	329	0	331	3479204
Not known	309640	58850	368490	509	89	598	82	680	4924188
<b>Grand Total</b>	<b>424680</b>	<b>95,250</b>	<b>519,930</b>	<b>777</b>	<b>150</b>	<b>927</b>	<b>84</b>	<b>1,011</b>	<b>8,403,392</b>

Source: MoEF, Final PCB inventory, April 2005

**Table 9: Estimated quantity of PCBs in waste oils and in oils in PCB-contaminated electrical waste equipment**

Oil Type	In Drums or Reservoirs		In Contaminated Equipment		Total	
	Quantity of Oils (kg)	Quantity of PCBs (kg)	Quantity of Oil (kg)	Quantity of PCBs (kg)	Oils (kg)	PCBs (kg) <sup>a</sup>
Ref. Known Oils (ASKAREL & Sovtol-10) PCB Content @ 499 pmm	0	0.00	47672	23.79	47672	24
Other known oils: PCB Content (@ 499 pmm)	151440	75.57	3431532	1712.33	3582972	1788
Unknown PCB Content (@ 500 ppm)	368490	183.88	4924188	2457.17	5292678	2641
<b>Total</b>	<b>519,930</b>	<b>259.45</b>	<b>8,403,392</b>	<b>4,193.29</b>	<b>8,923,322</b>	<b>4,453</b>

Source: MoEF, Final PCB inventory, April 2005

<sup>a</sup> Data collected from official sources.

**TABLE 10: BANGLADESH VESSELS IMPORTED FOR SHIP BREAKING BY NUMBER AND TYPE, 1999-2004**

Year of Import	Total Number of Ships Imported	Nature of Ship		
		Cargo	Container/ Tanker	Other
1999	72	20	39	13
2000	22	04	15	02
2001	135	75	46	14
2002	84	39	33	12
2003	87	36	41	10
2004	145	55	84	06
<b>Average</b>	<b>90.8</b>			

*Source:* GoB, MoEF, 2005e, citing Custom House, Chittagong, Government of the People's Republic of Bangladesh, 2005

For purposes of its preliminary PCB national inventory, Bangladesh estimated that each old ship contained 250 kg of PCBs, inclusive of transformer oil. Based on this estimate, the total quantity of PCBs estimated to be generated each year within the ship-breaking industry is 22,500 kg or 22.5 metric tons. (This estimate does not include the PCB contents of the ships dismantled in the past that may have already entered the environment but only PCB content of the average mercantile ship. To date, none of the PCB contents of ships has been recovered; hence there are no PCB waste stocks from such ships.).