

Final Terminal Evaluation Report

of the

GEF/UNDP/UNITAR/EPA-Ghana Project [PIMS 3527] on Capacity Building for the Elimination of PCBs in Ghana

By

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© December 2015

Acknowledgements

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Professor Samuel S. Banda and Team, Termínal Evaluator, 18th September 2015

Project Summary Table

Draft Evaluation Report

Final Report

EVALUATOR DETAILS

Project Title: PCBs Management in Ghana, from Capacity Building to Elimination

Project Objectives: General objective of strengthening the capacities and capabilities of government officials and stakeholders outside of government to address problems related to PCBs identification, management of existing sources of PCBs, disposal of PCBs oil/PCB contaminated equipment and their final elimination from the country. The project was in line with identified priorities of the National Implementation Plan for Persistent Organic Pollutants for the Republic of Ghana.

GEF Project ID	PIMS 3527	GEF Focal Area	Chemicals and Waste (POPs)		
UNDP Project ID	00058965	GEF Operational Area/Strategic Program	Reduction in the exposure to POPs of humans and wildlife.		
Executing Agency	UNITAR	Implementing Partner and other project partners (PSC: Name & Organization, Sector)	Government of Ghana through Ghana Environmental Protection Agency		
Countries included in the project	Ghana (Gh)	Region	West Africa		
PROJECT FINANCING IN US\$ DOLLARS					
	At Endorsement of Project	At Completion of Project			
Total GEF Grant	US\$ 2, 945,700	US\$ 2, 945,700			
Co-Funding Government and Private Sector	US\$ 3, 571, 180	US\$ 3, 571, 180			
Total Project Cost	US\$ 6, 516, 880	US\$ 6, 516, 880			
PROJECT TIMEFRAME					
GEF Approval	Project Commencement	Original Closure Date	Revised Closure Date		
12/03/2009	12/03/2009	December 31, 2013	July 31, 2015		
E	VALUATION AND EV	ALUATOR PROFILE			
Preparation	5 days	7.09.15-11.09.15			
Evaluation Mission	7 days	14.11.15 – 18.09.15			
1	1				

15 days

2 days

Kudu (Mr.)

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21.09.15 to 5.10.15

Samuel F. Banda (Prof.), Maxwell M. Nkoya (Mr.) and Isaac B.

12.10.15-13.10.15

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Acronyms and Abbreviations

COP	Conference of Parties
EPA	Environmental Protection Agency of Ghana
ESM	Environmentally Sound Management
GAEA	Ghana Atomic Energy Agency
GEF	Global Environmental Facility
IA	Implementing Agency
MDGs	Millennium Development Goals
M & E	Monitoring and Evaluation
MTE	Mid-Term Evaluation
NIP	National Implementation Plans
PCBs	Polychlorinated biphenyls
POPs	Persistent Organic Pollutants
PSC	Project Steering Committee
SDGs	Sustainable Development Goals
ST	Stockholm Convention
TE	Terminal Evaluation
TORs	Terms of Reference
UNDP	United Nations Development Program
UNDP CO	United Nations Development Program Country Office
UNDP Istan	UNDP Istanbul Regional Hub for Europe and the CIS
UNEP	United Nations Environmental Programme
UNITAR	United Nations Institute for Training and Research
VRA	Volta River Authority

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Executive Summary

This report consists of findings from the Terminal Evaluation of the project entitled "*PCBs Management in Ghana, from Capacity Building to Elimination"*. The project was undertaken in line with the Terms of Reference (ToRs) provided by UNITAR/UNDP and international practices for terminal evaluations.

An analysis of the extent of completion of the various activities as set out in the project document indicates that most project objectives were completed. Table E1 present the project details.

Project Title:	Capacity Building for PCB Elimination in Ghana			
GEF Project ID:	PIMS 3527		At endorsement (US\$)	At Completion (US\$)
UNDP Project ID:	00058965	GEF Financing:	2,945,700	2,945,700
Country:	Ghana	IA/EA own:	200,000	200,000
Region:	West Africa	Government:	700,000	700,000
Focal Area	POPs	Others:	2,671,180	2,671,180
FA Objective, (OP/SP):		Total Co-financing:	3,571,180	3,571,180
Executing Agency:	UNITAR	Total Project Cost:	6,516,880	6,516,880
Other Partners Ghana EPA Involved:		Project Document	Signature (Date project began):	12/03/2009
		(Operational) Closing Date:	Proposed: 31/12/13	Actual: 31/07/2015

Table E1.1: Project Summary Table

The project was anchored on the following outcomes;

- (i) Strengthening of the legal framework, administrative and technical preparedness for sound PCB management;
- (ii) Infrastructure for environmentally sound management of PCBs developed and in place;
- (iii) Environmentally sound replacement and disposal of PCB waste and equipment, and
- (iv) Monitoring, learning, adaptive feedback, outreach, and evaluation.

Evaluation Rating and Results;

The Terminal Evaluation Team used the rating criteria set out in the Terms of Reference. The assessment included among others aspects on project expectations as set out in the Project Logical Framework. Evidence of performance and impact indicators for project implementation were also analysed along with their corresponding means of verification. The evaluation criteria also included aspects of the project's relevance, effectiveness, efficiency, sustainability and impact. The details of Evaluation Ratings performance criteria are presented in Table E1.2.

Ratings for Outcomes, Effectiveness, Efficiency, M&F, I&F Execution	Sustainability Ratings:	Relevance Ratings
6: Highly Satisfactory (HS): no shortcomings	4= Likely (L): negligible risks to sustainability 3= Moderately Likely	2=Relevant (R) 1=Not relevant (NR)
5: Satisfactory (S): minor shortcomings	(ML):moderate risks 2=Moderately Unlikely (MU):	
4: Moderately Satisfactory (MS)	significant risks	
3. Moderately Unsatisfactory (MU): significant shortcomings	1=Unlikely (U): severe risks	
2. Unsatisfactory (U): major problems		
1. Highly Unsatisfactory (HU): severe problems		
Impact Ratings:	Additional ratings where relevant:	
3. Significant (S)	Not Applicable (N/A)	
2. Minimal (M)	Unable to Assess (U/A)	
1. Negligible (N)		

Table E1.2: Evaluation Ratings performance criteria

The Terminal Evaluation Team used the rating criteria set out in Table E1.2. The findings and their corresponding ratings are presented in Table E1.3 as required by the Terms of reference.

Criterion	Concluding Summary	Rating
Attainment of project outcomes and results	The attainment of project outcomes and results is satisfactory. The project is highly relevant in the context of its intended purpose nationally and according to GEF:	Satisfactory (S)
	Outcome 1: At the time of the Terminal Evaluation it was revealed that the first component of this output although had reached an advanced stage it was still delayed. The legislation is at an advanced stage i.e. awaiting parliamentary approval.	
	Outcome 2: this outcome included the development and implementation of Infrastructure for environmentally sound management of PCBs. Given that the original project objectives and outcomes had been realigned during the mid-term review i.e. the project was no longer expected to establish dechlorination units for its future use since there was no interest both from the private sector and the government to manage these	

	units. The preference was to ship out all identified stocks and put in place measures to prevent any future accumulations. Therefore, given these re-aligned objectives and deliverables, the project had effectively delivered all the aspects including among others training, awareness creation, stakeholder involvement, PCBs analytical capacity and provision of equipment. Outcome 3: at the time of the evaluation the project had already shipped all the PCBs waste out of the country for environmentally disposal. A total of 46,900kg of PCBs waste was disposed shipped out of the country for final disposal. The composition included; Capacitors (with pure PCBs), PCBs Contaminated oils and PCBs contaminated solid wastes. The shipment and disposal was confirmed by copies of Basel Convention Movement forms, the Disposal certificates and the Disposal Reports from Veolia ES Field Services Limited i.e. the company contracted by the project to disposal off the PCBs waste. Other wastes included 97,353kg of pesticides, 5,200 methyl bromide and 1,200 of Ozone Depleting Substances. Total tonnage of waste disposed amounted to 154, 293 kg. Outcome 4: There were very limited reports for the internal project M&E which made it very difficult for the external TE to make accurate rating on its effectiveness. However, the effectiveness of internal M&E which namely the Subcommittee on Education and Awareness Creation could be considered as effective since their reports form an integral part of PSC Quarterly meeting's Agenda. Adaptive feedback and outreach/awareness creation was found to be	
Effectiveness	The effectiveness of the Ghanaian PCBs capacity building project as demonstrated by its deliverables could be rated as Satisfactory (S) . The effectiveness of implementation was assessed by reviewing the quality of delivery of its expected outcomes in the project log-frame. The Logframe provided the basic planning and management framework for the project. It had also set out information about the key components of the project – the activities, outputs, and outcomes - in a clear, concise and systematic way, thereby describing the logic by which the project will deliver its objectives effectively as planned. Two of the outcomes were rated Highly Satisfactory while the other two were rated Satisfactory.	Satisfactory (S)
Relevance	The PCBs elimination project was highly relevant within the context of the Stockholm Convention both for the Government of Ghana (which is a Party to the Stockholm Convention) and the GEF as a financier under its POPs focal area. The project was developed on the premises that PCBs are due for elimination as	Relevant (R)

	required by the Stockholm Convention and that old stock of transformers and capacitors containing PCBs were found across Ghana. A modus-operandi to contain their existence and eventual elimination had to be postponed until the countrywide project i.e. GEF/UNITAR/UNDP supported project was endorsed in 2009.	
Efficiency	The efficiency of the project is Satisfactory (S). The project was well managed following UNITAR/UNDP and GEF procedures for project implementation. Overall the project has been cost-effective especially with regards to aspects of related to delivery of key outcomes, including but not limited to the final disposal of PCBs waste with other hazardous waste, preparation and publication of PCBs awareness materials, the PCBs national communication strategy. Nevertheless, it appears that the timing was not adequately calculated and there were delays in certain areas of the project from the initial closure date of December 31, 2013 to July 31, 2015. Following the granting of the No-Cost extension, project implementation and supervision by both UNITAR and UNDP increased resulting in efficient and cost effective delivery of project outputs.	Satisfactory (S)
Sustainability of Project outcomes	The evaluation for sustainability during the TE focused on the country's capacity to sustain the PCBs activities on identification, elimination and eventual phasing-out leading to disposal. The result shows that the project has established effective sustainability principles and systems in a number of PSC participating organizations. Examples include the PCBs analytical capacity built at GAEC, and through the provision of L-2000 PCBs Analysers to ECG, GRIDCo, VRA, GRA and EPA. PCBs training and management has been mainstreamed into the safety, health and environmental departments that constitute PSC. Another potential sustainability approach is the enactment the PCBs Bill is law. PCBs awareness workshops are planned both by individual institutions and across sectors by EPA, ECG, VRA and GRIDCo with the support of the Ministry responsible for environment.	Moderately Likely (ML)
Project Financing	The project documents stipulated the sources of financial resources (both cash and In-kind contributions) The total budgeted cost of the project was USD 6,516,880 based on a co-financing agreement. Of this amount, USD 2, 945,700 was provided by GEF while the remainder of USD 3,571,180 was co-financed by the government of Ghana, EPA and the private sector. The government of Ghana and EPA supported the project in-kind while the ECG supported with funds from a World Bank sponsored project that involved the replacement of transformers for the ECG.	Satisfactory (S)

funding from GEF had been received and disbursed.		
Financial Management	An analysis of key project financial documents and external Audit reports lead the TE to conclude that financial management was satisfactory. There was an acceptable level of co-relation between project deliverables and resource utilizations.	Satisfactory (S)
	the three audit reports undertaken by an external auditor. All the three audit reports dated April 4, 2011, November 11, 2012 and May 16, 2014) concluded that internal controls set up by the implementing agency were considered appropriate and provide a reasonable assurance of an adequate management of project funds. Receipts and payments audited were properly incurred and in accordance with the contractual basis as well as the terms of project funding as per project agreement. The final audit will be executed once all funds have been received and properly receipted.	
Institutional framework and governance	There is a strong inter dependence and team work among PSC members. The composition of the PSC was representative of key PCBs stakeholders in the country.	Satisfactory (S)
Awareness and outreach	Public awareness was undertaken throughout the life span of the project and are planned to go beyond the official project closure.	Satisfactory (S)
	Terminal Evaluation was availed documentary evidence of public awareness in the form of printed Information Education and Communication tools such as posters, brochures including TV documentaries. The project also prepared, published and implemented the PCBs National Communication Strategy.	
	Samples of the posters and brochures are in Appendix 5 to this report.	
Monitoring and Evaluation	Terminal Evaluation revealed that the Monitoring and Evaluation was undertaken via a two tier approach namely; External and Internal persons.	Moderately Unsatisfactory (MU)
	The external M&E was reported to have been executed by a contracted institution which was not part of the project. However, signed contract was not availed and only one report was available and provided. This made it difficult for the TE to assess the actual effectiveness and efficiency of the external M&E.	
	The internal M&E provided by Project's Sub-Committee on Education and Awareness Creation. The reports from the Internal M&E formed an integral part of the PSC quarterly meetings agenda as revealed by an assessment of its Minutes.	
	The feedback by the Internal M&E was used for corrective actions and also as a basis of adaptive management by the PSC.	

However, the TE conclusion was in line with the MTE	
that for M&E to be effective and objective an External	
person should have been engaged.	

Lessons Learned

The following are specific lessons learned as deduced by the TE;

- 1 **Outcome 1;** The PCBs Bill has taken close to five years this was due to the fact that development and enactment of laws is a long and bureaucratic process. Future project should consider developing Statutory Instrument(s) are a quicker and does not need parliamentary approval. Further, the decision and policy makers should be engaged early on from the very beginning of the project implementation.
- 2 **Outcome 3:** Provision of an External Monitoring and Evaluation services by an external person is more objective and effective than use of an internal Monitoring and Evaluation which in most cases is subjective and lacks independence and objectivity.
- **3. Project Management-Executing Agency:** Due to the novelty of the project management arrangement (agency execution by UNITAR), it was not always easy to determine the respective roles of the Country Office, of UNITAR and of the UNDP Regional technical team, particularly as regards the responsibility in terms of delivery and technical oversight. This was compounded by an important turnover of personnel in the first years of implementation and became an issue during the first part of the project, and a solution was found in 2013 to simplify the structure, as part of adaptive management. This experience should be built upon in defining future project's management arrangements, which will benefit from clearly defined roles and responsibilities in this regard.
- **4. Project Management Implementing Agency:** Effective Secretariat services for project management are more effective where there are sufficient human resources. Ghana EPA (which served a project secretariat) was over stretched due to limited staff. If a project Assistant was employed the day-to-day running of the project would have been more effective that was experienced.
- **5. Replicable aspects:** South to South Cooperation should be encouraged in all future projects. Lessons learnt from the study tour of Zambia's PCBs management and elimination program was useful to PSC. The PSC used the lessons learned to modify some activities to ensure effective and efficient utilization of resources such as use of central PCBs temporary storage site as opposed to multiple temporally storage sites.

Recommendations

Based on the findings of this final evaluation, the following are the recommendations:

- 1. **Outcome 1, Legal Framework:** Future projects should consider developing Statutory Instrument(s) which are a quicker, deeper subject coverage, clear and do not require parliamentary approval. This will also avoid the risk of POPs being overshadowed by more prominent issues like Electronic Waste as may be the case with the current Bill in Ghana.
- 2. **Project Management, Implementing Agency:** To ensure effective project management at Secretariat level, employing a Project Assistant should be considered a norm.
- 3. **Project Management Executing Agency:** To ensure optimal benefits are derived from UNDP Country Office's comparative advantage, future projects should consider finding an optimised definition of responsibilities between UNDP Country Office, Execution agency (UNITAR or other) and the UNDP technical team (Montreal Protocol and Chemicals Unit in this case). **Project Design:** Future projects should clearly define responsibilities and accountabilities between UNDP Country Office and UNDP Istanbul Regional Hub for Europe and the CIS.
- 4. **Monitoring and Evaluation**. The Subcommittee on Education and Awareness Creation was an internal component of the PSC, therefore was not independent in its M&E functions. To this effect it recommended that to avoid subjectivity and to ensure independence of the M&E only external persons/institutions should be contracted to undertake Monitoring and Evaluation.
- 5. **PCBs elimination Sustainability:** To ensure sustainability especially on PCBs awareness, the initiatives such as the In-house Training Program and Safety Talks by ECG, VRA, GRIDCo as well as the incorporation of PCBs into the Technicians curriculum at Tema College should all be formalised and documented.
- 6. **Replicable Aspects:** Future projects should consider the utilization of South to South Cooperation as a norm. This will facilitate both capacity building and promotion of regional solutions to common environmental challenges.

1.0 Introductory Background

The Republic Ghana is located on the West African coast of the Gulf of Guinea. The country is bordered by Burkina Faso to the north, Togo to the east, Côte d'Ivoire to the west and the Atlantic Ocean to the south. The population of Ghana was estimated to be about 26.44 Million in 2014 Census. About 70 percent of the total population lives in the southern half of the country. The most densely populated parts of the country are the coastal areas, the Ashanti region, and the two principal cities, Accra and Kumasi. The official language is English.

Ghana is governed under a republican multi-party constitutional democracy with executive powers vested in the President while legislative powers rests with unicameral legislature of 275 members serving a four year term at the national level. The country has ten administrative regions; these are Ashanti, Brong-Ahafo, Central, Eastern, Western, Greater Accra, Northern, Volta, Upper East and Upper West regions. In addition, the country operates a local government system comprising Regional Coordinating Councils, Metropolitan, Municipal and District Assemblies.

Ghana's economy is dominated by agriculture, which employs about 50.9 percent of the working population. Ghana is the second leading exporter of cocoa and also a significant exporter of commodities such as gold and lumber. Ghana is endowed with many water resources, one of these is the manmade Volta Lake which extends from the Akosombo Dam in south-eastern Ghana to the town of Yapei, 520km to the north. The Lake generates electricity, provides inland transportation, and is a potentially valuable resource for irrigation and fish farming. The Volta River Authority (VRA) owns and operates the Akosombo hydro power Dam. Ghana generates about 67.5 percent of electricity from hydroelectric sources with the remainder coming from thermal plants burning Natural Gas (NG), Light Crude Oil (LCO), or diesel.

Until 2006, VRA had played the role of generation and transmission in the power sector. As a result of power sector reforms the transmission functions of VRA was transferred to the Ghana Grid Company which was incorporated on December 15, 2006 as a private limited liability company. GRIDCo is responsible for the operation and maintenance (O&M) of all transmission lines throughout Ghana. The Electricity Company of Ghana (ECG) and the Northern Electricity Distribution Company (NEDCo) a wholly owned subsidiary of VRA are responsible for the distribution of electricity to consumers. The ECG is in charge of distribution for the southern part of Ghana which includes Ashanti, Central, Eastern, Greater Accra, Volta, and Western regions while NEDCo is in charge of distribution in the Northern, Upper West, Upper East, Brong-Ahafo.

1.1 Purpose of the Terminal Evaluation

The Terminal Evaluation (TE) was commissioned by UNITAR in line with UNDP and GEF M&E policies and procedures which require that all full and mediumsized UNDP supported GEF financed projects be required to undergo a terminal evaluation upon completion of implementation. The **objective of the TE is to assess the achievement of project results,** and to **draw lessons** that can both improve the sustainability of benefits from this project, and **aid in the overall enhancement** of UNDP programming.

The purposes of the TE are to:

- a) Assess the overall performance against the project objective and outcomes as set out in the project Document;
- b) Assess the effectiveness and efficiency, and timelines of project implementation;
- c) Assess the extent to which gender considerations were mainstreamed into project interventions;
- d) Assess the information outreach materials developed, dissemination plan and impacts;
- e) Present lessons learned that can help to improve the selection, design and implementation of future GEF financed UNDP activities.
- f) Measure the extent of project convergence with other UN and UNDP priorities, including harmonization with other UN Development Assistance Framework;
- g) Recommend actions for follow up and consolidating the project outcomes and impacts.

In developing this report the evaluation team worked with key project stakeholders, including UNDP Ghana Country Offices, project's beneficiaries and partners in Ghana and EPA-Ghana. The stakeholders include:

- Volta River Authority (VRA),
- Electricity Company of Ghana (ECG)
- Ghana Grid Company Limited (GridCo)
- Ghana Atomic Energy Commission
- Ecological Restorations
- Environmental Protection Agency of Ghana (EPA-Ghana)

1.2 Scope and Methodology

The methodology of this TE consisted of desk review of project documents and interviews with key project steering committee members and key stakeholders, project staffs/Secretariat and field visits during a five day field mission to Ghana. The TE Consultant developed an evaluation questionnaire targeted at the project steering committee members to guide the entire data gathering and analysis process. The information obtained was then used to carry out a project performance assessment based on the performance and impact indicators outlined in the Project Logical Framework/Results Framework. An overall rating of the project was done based on the following five main performance criteria of relevance, effectiveness, efficiency, sustainability and impact provided in the ToR.

1.3 Structure of the evaluation report

This Terminal Evaluation Report will take the structure specified in the Terms of Reference as outlined below:

- i. Opening page:
 - Title of UNDP supported GEF financed project
 - UNDP and GEF project ID#s.
 - Evaluation time frame and date of evaluation report
 - Region and countries included in the project
 - GEF Operational Program/Strategic Program
 - Implementing Partner and other project partners
 - Evaluation team members
 - Acknowledgements

ii. Executive Summary

- Project Summary Table
- Project Description (brief)
- Evaluation Rating Table
- Summary of conclusions, recommendations and lessons
- iii. Acronyms and Abbreviations

1. Introduction

- Purpose of the evaluation
- Scope & Methodology
- Structure of the evaluation report
- **2.** Project description and development context
 - Project start and duration
 - Problems that the project sought to address
 - Immediate and development objectives of the project
 - Baseline Indicators established
 - Main stakeholders
 - Expected Results
- 3. Findings

3.1 Project Design / Formulation

- Analysis of LFA/Results Framework (Project logic /strategy; Indicators)
- Assumptions and Risks
- Lessons from other relevant projects (e.g., same focal area) incorporated into project design
- Planned stakeholder participation
- Replication approach
- UNDP comparative advantage
- Linkages between project and other interventions within the sector
- Management arrangements

3.2 Project Implementation

- Adaptive management (changes to the project design and project outputs during implementation)
- Partnership arrangements (with relevant stakeholders involved in the country/region)
- Feedback from M&E activities used for adaptive management
- Project Finance:
- Monitoring and evaluation: design at entry and implementation
- UNDP and Implementing Partner implementation / execution coordination, and operational issues
- 3.3 Project Results
 - Overall results (attainment of objectives)
 - Relevance
 - Effectiveness
 - Efficiency
 - Country ownership
 - Mainstreaming
 - Sustainability
 - Impact
- **4.** Conclusions, Recommendations & Lessons
 - Corrective actions for the design, implementation, monitoring and evaluation of the project

- Actions to follow up or reinforce initial benefits from the project
- Proposals for future directions underlining main objectives
- Best and worst practices in addressing issues relating to relevance, performance and success
- 5. Annexes
 - ToR
 - Itinerary
 - List of persons interviewed
 - Summary of field visits
 - List of documents reviewed
 - Evaluation Question Matrix
 - Questionnaire used and summary of results
 - Evaluation Consultant Agreement Form
 - Annexed in a separate file: TE report audit trail

2.0 The Project and Its Development Context

The UNITAR/GEF/EPA-Ghana project on capacity building for elimination of PCBs in Ghana had a principal objective of strengthening the capacities and capabilities of government officials and stakeholders outside of government to address problems related to PCBs identification, management of existing sources of PCBs, disposal of PCBs oil/PCB contaminated equipment and their final elimination from the country. The project is in line with identified priorities of the National Implementation Plan for Persistent Organic Pollutants for the Republic of Ghana.

This principal objective was envisaged to be achieved through the following *four outcomes*: (i) Strengthening of the legal framework, administrative and technical preparedness for sound PCB management, (ii) Infrastructure for environmentally sound management of PCBs developed and in place, (iii) Environmentally sound replacement and disposal of PCB waste and equipment and (iv) Monitoring, learning, adaptive feedback, outreach, and evaluation.

There were six principal partners in the project namely;

- (i) United Nations Institute for Training and Research (UNITAR),
- (ii) United Nations Development Program (UNDP)-(Istanbul and Ghana),
- (iii) Government of the Republic of Ghana,
- (iv) Environmental Protection Agency of Ghana,
- (v) PCB-holders in Ghana and

(vi) The Global Environment Facility (GEF).

The project was approved by GEF on 12th March 2009 (was operationalised in the same year) and was scheduled to run until December 31, 2013. It had a total budget of US\$ 6,516,880 consisting of US\$ 2,945,700 cash from GEF while the remaining was co-financing by the Government of Ghana, UNITAR, SAICM and the Private sector in Ghana.

The project was developed in line with GEF's focal area namely Persistent Organic Pollutants under the broader focal area of Chemicals and Waste. The evaluation has revealed that the objective and outcomes of the project were designed to directly contribute towards the Strategic Objective of GEF-4 i.e. Operational Programme 14 which sets out long term interventions in the reduction of humans and wildlife exposure to POPs. Further, the project outcomes and activities also explicitly support Strategic Objective 1, namely Strengthening Capacity for NIP Development and Implementation as well as Strategic Objective 2: Partnering in Investments for NIP Implementation of POPs focal Area Strategy for Persistent Organic Pollutants.

3.0 Findings

The Terminal Evaluation Team used the rating criteria set out in the Terms of Reference. The assessment included among others aspects project expectations as set out in the Project Logical Framework. Evidence of performance and impact indicators for project implementation were also analysed along with their corresponding means of verification. The evaluation the criteria also included aspects of the project's relevance, effectiveness, efficiency, sustainability and impact. The details of Evaluation Ratings performance criteria are presented in Table 3.1.

Ratings for Outcomes, Effectiveness.	Sustainability Ratings:	Relevance Ratings
Efficiency, M&E, I&E Execution		
6: Highly Satisfactory (HS): no shortcomings	4= Likely (L): negligible risks to sustainability	2=Relevant (R) 1=Not relevant
5: Satisfactory (S): minor shortcomings	3= Moderately Likely (ML):moderate risks 2=Moderately Unlikely (MU):	(NR)
4: Moderately Satisfactory (MS)	significant risks	
3. Moderately Unsatisfactory (MU): significant shortcomings	1=Unlikely (U): severe risks	
2. Unsatisfactory (U): major problems		
1. Highly Unsatisfactory (HU): severe problems		
Impact Ratings:	Additional ratings where relevant:	
3. Significant (S)	Not Applicable (N/A)	

Table 3.1: Evaluation Ratings performance criteria

2. Minimal (M)	Unable to Assess (U/A)	
1. Negligible (N)		

3.1 Project Design/Formulation

The project design and formulations are discussed under the following headings.

3.1.1 Analysis of LFA/Results Framework (Project logic /strategy; Indicators)

systematic assessment of the project document for the А GEF/UNDP/UNITAR/EPA-Ghana Project on Capacity Building for the Elimination of PCBs in Ghana was undertaken and was found to be in *full compliance* with standard practices of project concept as well as project design. The former was found to have the internal logic and the rationale of the project as identified at design phase (conceptualization stage) were found to have fulfilled their respective roles during the terminal evaluation. The project document was also found to be comprehensive, coherent, clearly constructed with outcomes and impacts clearly outlined in line with GEF requirements (GEF, 2009).

Further, an analysis of the project design elements namely; project components, partners, project structure, delivery mechanisms, time, scope and budget reveals that they were consistent with the corresponding set of expected results (Log-Frame). Details are summarized in Table 3.1.1 outlining the project objectives, outcomes and activities. The project was well designed and the project document was a good master plan/blueprint for effective and efficient implementation of the project. Feedback from stakeholders interviewed also confirmed that the project document was a true reflection of their intentions as well as of the national agenda on PCBs elimination from Ghana.

MAIN OBJECTIVE(S): To strengthen the capacities and capabilities of government officials and stakeholders outside of government to address problems related to PCBs identification, management of existing sources of PCBs, disposal of PCBs oil/PCB contaminated equipment and their final elimination from the Ghana.						
OUTCOMES	OUTPUTS	ACTIVITIES				
Outcome 1: Strengthening of the legal framework, administrative and technical preparedness for sound PCB management	1.1 Review, develop, and adopt legislation and policies	 1.1.1 PCB regulation including: Identification, labelling, and inspection Controlling of PCB at the import and export points Licensing of PCB related activities, handling, transport, and storage Controlling of used mineral oil and metallic scraps, recycling Requirement for holders to develop a PCB management plan including control and tracking of PCB in use until the end-of-life 1.1.2 Developing technical guidance implementing PCB regulative framework 1.1.3 Developing PCB environmental and food quality guidelines 				

Table 3.1.1: Project Objectives, Outcomes and Activities

	 1.2. Capacity building for sound PCB management in the public sector (authorities) 1.3. Capacity building for sound PCB management (PCB holders) through a series of topic-specific training workshops 1.4. Update and further refine the existing PCB inventory to increase its comprehensiveness 1.5. Develop and implement administrative system for PCB related enforcement and inspection activities after inventory compilation 	 1.2.1 Disseminating the adopted PCB legislation and agreement on implementation arrangements and procedures 1.2.2 Capacity building of Customs for targeted identification and procedures at Customs entry points 1.3.1 Supporting PCB holders in the development of PCB management plans and their implementation 1.3.2 Training of personnel in the safe handling of PCBs and PCB-containing equipment, including for their temporary storage and transportation. 1.3.3 Technical support for development of phase-out and disposal management plans. 1.3.4 Ensuring identification and procedures for avoiding PCB handling at scrap metal recycling operations 1.3.5 Strengthening management capacity of PCB holders to manage PCB containing equipment during all phases of the life cycle 1.4.1 PCB field data collection and equipment Labeling 1.4.2 Tuning in X-ray fluorescence equipment for PCB analysis at Ghana Atomic Energy Commission and laboratory verification and Quantification 1.5.1 Industrial and import inspection 1.5.2 Tracking movements of PCBs and PCB containing equipment by PCB holders
Outcomes	Outputs	Activities
Outcome 2: Infrastructure for environmentally Sound management of PCBs developed and in place	2.1 Identify, construct or upgrade of a secure, temporary storage facilities)	2.1.1 Establishment of provincial PCB collection points 2.1.2 Planning, construction, and operation of a technically sound central storage site in Accra/Tema area
	2.2 Upgrading of transportation safety for PCB containing equipment and fluids	2.2.1 Ensuring appropriateness of road vehicles used for PCB transport
Outcomes	Outputs	Activities
Outcome 3: Environmentally sound replacement and disposal of PCB waste and	3. 1 Development of a five year phase-out plan and its implementation for the various waste streams	 3.1.1 Estimating yearly waste flows of pure PCB and PCB- contaminated transformers 3.1.2 Making province-wise replacement plans for minimizing disruption in power supply
		2.2.1 Descurrent of early concerns the Caution and

	pure PCB oil containing equipment and associated waste 3.3 Decommissioning, washing, and disposal of phased out PCB contaminated mineral oil and equipment in country	 3.2.2 Decommissioning of PCB containing transformers and in-country transport to temporary storage 3.2.3 Final disposal tendering and packaging and maritime stowing, transportation, and final disposal 3.3.1 Setting up and supervision of washing and dismantling at central storage site. 3.3.2 Decommissioning and in-country transport to temporary storage 3.3.3 Draining, dismantling, and washing of transformers (and material recuperation) Establishing environmental and health monitoring ensuring minimum releases and exposure during washing operations and its implementation during the project 3.3.4 Final disposal tendering of PCB contaminated oils, packaging, and maritime stowing
Outcome 4: Monitoring, learning, adaptive feedback, outreach, and evaluation	 4.1 Development and implementation of project monitoring and evaluation tools and systems 4.2 Information and outreach 4.3 External 	 4.1.1 Developing M&E system 4.1.2 Implementing M&E system 4.2.1 National awareness raised for effective capacity building strategies for ESM of PCBs 4.3.1 Mid-term evaluation
	evaluation	4.3.2 Final evaluation

These findings not only confirm the quality of the intellectual and scientific input, but also show the close cooperation between UNITAR/UNDP and EPA-Ghana in addition to the close adherence of the procedures for effective elimination of POPs as stipulated in Articles No 7 and 12 of the Stockholm Convention.

In view of the foregoing facts, the Terminal Evaluation is satisfied to conclude that the **Project concept/design** of the GEF/UNDP/UNITAR/EPA-Ghana Project on Capacity Building for the Elimination of PCBs in Ghana has scored an evaluation rank of **Highly Satisfactory (HS)**.

3.1.2 Assumptions and Risks

An analysis of the project document revealed that at project design stage detailed project Risks and Assumptions were identified as presented in Table 3.1.2.

However, a further analysis of the project quarterly reports, the PCBs Inventory Report and the Mid-Term evaluation revealed that a number of original indicators had to be realigned to conform to bankable data thus obtained. For this reason original indicators have not been included in this report and the four key Outcomes shall be considered as the major project indicators.

The majority of assumptions made were accurate; however, some assumptions made especially the ones related to Outcome 2 were based on overestimated

quantities of PCBs that were assumed to be present in Ghana. These assumptions and related risks were found to have been off target.

It can be concluded though that generally the assumptions made and associated risks were within accepted marginal error.

Outcomes	Assumption	Risks
Outcome 1: Strengthening of the legal framework, administrative	Inter-ministerial agreement on need and contents assumed. Development of quality guidelines assumed to prioritize monitoring efforts.	Risk 1: Capacity constraints postpone adoption of quality guidelines Risk 2: Adopted procedures will not be properly documented and integrated.
and technical preparedness for sound PCB management.	Assumption: All companies willing for change. Assumption: Training on equipment identification and labelling reaches all corners of the country. Assumption: Sample preparation and equipment easily re-tuned for PCB analysis.	Risk 3: Unsafe oil/equipment disposal continued due to economic benefit to some workers. Risk 4: GAEC's analysis capacity not able to cater for all samples Participation of industrial inspectors in PCB workshops assumed. Risk 5: rate of inspected equipment at some customs points too low for becoming integrated as a part of routine checks.
Outcome 2: Infrastructure for Environ- mentally Sound Management of PCBs Developed and in Place	Assumption: 3 collection points can cater for whole country. Assumption: 5 persons able to both manage ware house and washing operations. Assumption: Trained safety practices expected to be incorporated even if new drivers are recruited.	Risk: Financial implications for PCB holders higher than calculated. Risk: collection points too few in case of uneven equipment flow
Outcome 3: Environmen- tally sound replacement and disposal of PCB waste and equipment	Assumption: Smaller holders (mines) are well integrated in the project No sharp price increases on transformers or disposal assumed	Risks: Exchange rate risk increasing disposal prices Risk: Resistance to change among people benefitting from current oil sales.
Outcome 4: Monitoring Learning Adaptive Feedback and Evaluation	Draw-up monitoring scheme based on project outcomes and output and measured risk reduction Validation of M&E system	Risk: External M&E not effective or is delayed.

Table 3.1.2: Identified Projects Assumptions and Risks

3.1.3 Lessons from other relevant projects (e.g., same focal area) incorporated into project design

The Terminal Evaluation revealed that the project design incorporated to a greater extent all the necessary elements required for a POPs elimination project under the GEF's Chemical and Waste focal area. Ghana utilised lessons learnt from projects such as National Implementation Plans for the management of POPs (under the Stockholm Convention for the first 12 POPs). Further, the project design also drew on lessons learnt from the Africa Stockpile project. Evidence of this was observed in the composition of the Project Steering Committee among others. The project design was also flexible enabling adaptable management possible.

3.1.4 Planned stakeholder participation

A review of the project design and project reports confirmed that stakeholder participation was very high. From the design side it was evident that stakeholder participation was planned and not left to chance. The Project Steering Committee consisted of all relevant government ministries (Ministries responsible for Environment, Energy) and agencies (EPG Ghana), United Nations agencies (UNITAR and UNDP) major private companies such as the three electricity companies (VRA, GRIDCo and ECG) Mines and processing industries, and a Non-Governmental Organization. The reports also confirmed that besides the quarterly meetings of the PSC, the project undertook public awareness activities as part of stakeholder participation and it also undertook targeted stakeholder involved such as Decision Makers workshops.

3.1.5 Replication Approach

Many parts of the project activities can be replicated in different country contexts. For example the PCBs related regulatory framework, institutional and administrative arrangements and PCBs inventory as well as the mitigation measures were not unique to Ghana but could be replicated in any developing and country with economy in transition. However, being the first GEF sponsored single country PCB project in sub-Saharan Africa important lessons could also be gathered for replication in other countries.

The project was the first to implement an approach where all PCB containing waste, low to high concentration, was disposed abroad (as opposed to decontamination). No PCB decontamination technology was established but low PCB contaminated equipment was cleaned within the country and cleaned metals recycled by local actors. However, it remains to be seen whether at regional level PCB decontamination technology could be introduced and replicated elsewhere.

The approach preferred by Ghana (although was not implemented as designed) was presumed to decrease PCB management costs particularly in countries with high quantities of lightly contaminated transformers and long (or expensive) transports to safe disposal facilities. The actual cleaning and recycling operation is self-sustaining and could be widely replicated.

One of the issues which may indeed be most interesting to follow and replicate in other countries in the region was the way PCB replacement may be financed as a part of further electrification and energy efficiency efforts. The project used financing from the regional development bank for energy efficiency to replace also PCB equipment.

3.1.6 UNDP Comparative Advantage

There are several factors that have given UNDP/UNITAR a unique comparative advantage as a GEF implementing partner in the Ghana PCBs project. Key advantages are:

- UNDP CO has been in Ghana for a very long period and has developed effective local partnerships with major stakeholders relevant to the programme. The said partnerships ranging from top policy-decision makers to local communities have ensured that UNDP has a very good understanding of the needs and expectations of the various stakeholders;
- (ii) The partnership of UNDP-Istanbul and UNITAR provided a dual advantage in that the two agencies created a pool of technical experts in PCBs/POPs on one hand and project management on the other hand. The result was effective implementation and oversight of the project;
- (iii) UNDP's Country Programme Document covers aspects of environment and sustainable development which complemented the GEF objective of reducing and eliminating adverse effects on POPs on human health and the wild life and Ghana's Policy on Environment; and
- (iv) UNDP is an experienced and effective implementing partner of the GEF. This relationship ensured efficient and effective management of project funds and other resources. The project has also enhanced the partnership between UNDP and GEF.

3.1.7 Linkages between project and other interventions within the Sector

The evaluation revealed that there are a number of other on-going programmes, interventions and projects which have linkages PCBs project. Two of these were the Africa Stockpiles Programme (ASP) and the National Implementation Plans (NIPs) for POPs under the Stockholm Convention.

The World Bank and other donors had approved a sub-programme under the Africa Stockpiles Programme (ASP) for the disposal of not only obsolete pesticides but also POPs waste like PCBs. This programme's aim was to clear and dispose of stocks of obsolete pesticides and POPs with the objective of preventing future stockpiles and contamination of the environment. The

linkages came in the form that the PCBs Elimination project will complement the ASP project by identifying potential contamination of the environment from PCB releases. On the other hand the Stockholm Convention Project (a GEF funded project) included among other activities reviewing and updating the Ghanaian NIPs with latest data old POPs such as PCBs and new POPs.

3.1.8 Management arrangements

According to the approved Project Document (GEF/UNITAR/UNDP/EPA-Ghana, 2008) management arrangements were provided as follows;

(i) Project Steering Committee (PSC); The project established a Project Steering Committee whose main role was to provide for the overall oversight of the project. It also functioned to ensure that all activities undertaken were relevant and contributed towards project objectives and aims. The PSC also facilitated project implementation by solving issues relating to stakeholder responsibilities. Meetings of the Steering Committee were held quarterly.

Members of the PSC were drawn from all relevant government ministries, private sector, United nations Agencies and NGOs. The Ministry responsible for Environment served as the Chairperson while Ghana EPA served as the project secretariat. Even though the Project Document lists 22 PSC member institutions, the final PSC as confirmed by the minutes was made up of only 11 institutions as presented below;

- 1. Ministry responsible for Environment (Chairperson)
- 2. Ministry responsible for Justice (Attorney General's Department)
- 3. Customs, Excise and Preventive Service
- 4. Ghana Atomic Energy Commission
- 5. Ghana Water Company Limited
- 6. Volta River Authority
- 7. Ghana Grid Company Limited
- 8. Electric Company Ghana
- 9. United Nations Institute for Training and Research
- 10. United Nations Development Program (Accra and Istanbul)
- 11. Environmental Protection Agency of Ghana (Secretary).
- (ii) Executing Agency: the function of executing agency was co-shared by UNITAR and UNDP (Accra and Istanbul) who also participated as full member of PSC. The two agencies also provided technical expertise and project management services.
- (iii) **Implementing Agency**: EPA Ghana was assigned as the national implementing agency and as the project secretariat. The secretariat was responsible for the day-to-day management of the project and was headed by a National Project Director (NPD) provided as an in-kind contribution from Government side. Ghana EPA was also responsible for

providing financial management including routine auditing of the projects accounts. EPA Ghana provided a Project Manager and were required to have recruited a Project Assistant.

Financially, the project was implemented by UNDP and executed UNITAR according to its internal operational and financial guidelines and was to receive an administrative operational support (AOS) cost to offset expenses.

- (iv) **Monitoring and Evaluation:** Monitoring and Evaluation (M&E) was to be provided external Project M & E Expert.
- (v) **Midterm and Terminal Evaluations:** UNITAR/UNDP were tasked to engage both the external mid-term and terminal evaluations experts.

3.2 **Project Implementation**

3.2.1 Adaptive management

A number of adaptive management actions were implemented by the project as a result of realities encountered during the implementation process. Examples of this include the provision of PCBs temporary collection/storage sites. Upon realising significant environmental and human health risks associated with having multiple provincial sites (remotely located with inadequate security) the project design was adapted to establishing a one temporary central storage site in Tema. The result was the establishment of one secure site which was also close to the seaport.

Administrative changes had to be made to ensure efficient Secretariat services, instead of continued dependence on the limited staff in the chemicals control unit the MTE recommended the recruitment of a temporarily Project Assistant. This recommended worked well in relieving pressure on the Project Coordinator.

Another example of adaptive management was the request for a No-Cost extension to the project which was necessitated by delay in full operationalizing of the management arrangements at the start of the project. The extension facilitated for the majority of the project objectives to be achieved after realignments.

3.2.2 Partnership arrangements (with relevant stakeholders involved in the country/region)

The project formed both in-country and regional partnerships for efficient implementations. The major local partnerships were created between the Government through the Ministry responsible for environment (and Ghana EPA) and holders of PCBs especially the electricity and mining companies. The partnerships created were very effective and sustainability of both PCBs phase-

out and prevention of entry of new PCBs have been mainstreamed in their routine operations. Examples of incorporation of PCBs issues include: in the weekly Safety Health and Environmental Talks, incorporation of PCBs into the curriculum for Technicians at Tema, provision of PCBs Analysers (L-2000) Equipment to ECG, VRA, GRIDCo, GAEC and Ghana Revenue Authority.

Regional partnerships were created by the project. The first key partnership created was in the form of technical and financial support with UNDP and UNITAR. Another significant partnership created was in a form of a South-South partnership. This was a by-product of the study tour undertaken by the PSC to the Zambian success story in PCBs reduction and elimination. The study tour resulted not only in experience sharing but also in the creation of partnerships between the electrical companies and the environmental protection agencies for the two countries.

3.2.3 Feedback from M&E activities used for adaptive management

Adaptive management was also evident in that besides the monitoring and evaluation provided by external assessors, the ToRs of a Subcommittee of the PSC (namely the Education and Awareness Creation) was modified to also include functions of serving as an internal M & E for the project.

Feedback provided by both the External and Internal M&E formed part of the Agenda for the PSC's Quarterly meetings. The Minutes indicates that the M&E reports were used to review project deliverables and to re-align delayed activities and to re-assign resources to resource intensive objectives within the realms of the project design.

3.3 Project Finance:

The Terminal Evaluation analysed a number of financial documents. Key among them were the original project documents, the quarterly financial statements and the external auditors reports.

The project documents stipulated the sources of financial resources (both cash and In-kind contributions) as detailed in Table 3.1.3 and Table 3.1.4. The total budgeted cost of the project was USD 6,516,880 based on a co-financing agreement. Of this amount, USD 2, 945,700 was provided by GEF while the remainder of USD 3,571,180 was co-financed by the government of Ghana, EPA and the private sector. The government of Ghana and EPA supported the project in-kind while the ECG supported with funds from a World Bank sponsored project that involved the replacement of transformers for the ECG. This arrangement ensured the availability of adequate funds for the replacement of ECG owned transformers that contained oil with PCB concentrations above the accepted limit.

At the time of the evaluation more that 90% of the cash funding from GEF had been received and disbursed. This was a good indicator of the matching of the project deliverables to resource utilizations.

The foregoing conclusion by the TE was supported by the three audit reports undertaken by an external auditing. The external auditing services were provided by a firm called Kufuor and Associates Chartered Accountants of Accra Ghana. All the three audit reports (the latest dated 16th May 2014) concluded that internal controls set up by the implementing agency were considered appropriate and provided a reasonable assurance of an adequate management of project funds. Receipts and payments audited were properly incurred and in accordance with the contractual basis as well as the terms of project funding as per the project agreement. The final audit will be executed once all funds have been received and properly receipted.

Table 3.1	3: Summary	/ of Pro	ject	Co-Financing

Co-financing (type/source)	UNITAR/U	NDP own	Government		Partner Agency		Total	
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
Grants								
Loans/Concessions								
In-kind Support	50,000	50,000	700,000	700,000			750,000	750,000
Others/Cash	150,000	150,000			2,671,180	2,671,180	2,821,180	2,821,180
Totals	200,000	200,000	700,000	700,000	2,671,180	2,671,180	3,571,180	3,571,180

Table 3.1.4: Summary of Project financing

Source	Amount (US\$)
GEF	2,945,700
Ghana Govt. in-kind	700,000
UNITAR in Kind	50,000
UNITAR in cash	150,000
SAICM in cash	50,000
Private sector in cash	950,000
Private sector in kind	1,671,180
TOTAL	6,516,880

An analysis of key project financial documents and external Audit reports lead the TE to conclude that financial management was **Satisfactory.** There was an acceptable level of co-relation between project deliverables and resource utilizations.

3.3.1 Monitoring and Evaluation: design at entry and implementation

Analysis of the Ghana Capacity Building Project revealed that an external person was to provide periodic Monitoring and Evaluation. During the project implementation phase feedback from Monitoring and Evaluation was availed to

the PSC for corrective action. The availed M&E plan for 2012 an 2013 was based on the Log frame approach as a standard method.

Further it is worth mentioning that additional feedback (Monitoring and Evaluation) was provided by an internal system using the Education and Awareness Creation subcommittee.

From all the PSC Quarterly Minutes availed, M & E always formed part of the agenda item and business of the meeting. The Minutes indicates that the M&E reports were used to review project deliverables and to re-align delayed activities and to re-assign resources to resource intensive objectives within the realms of the project design. However, despite abundant evidence of the Internal M&E, the Secretariat did not avail the TE team a single copy of the External M&E. This scenario makes it difficult to rate the aspect with absolute certainty. From the available evidence the TE rates this aspect as **Moderately Unsatisfactory (MU)**.

3.3.2 UNDP and Implementing Partner Implementation/Execution Coordination, and Operational issues

The TE sent a questionnaire to both UNDP Country Office and UNDP Istanbul Regional Hub for Europe and the CIS, Turkey (a Regional Hub for Europe/CIS, Arab States and Africa as regards Chemicals and Waste GEF projects) for feedback as part of the evaluation exercise in addition to the face to face interview with UNDP CO. The interview with UNDP CO revealed that there were both successes and challenges in the UNDP CO during the execution of the project. Key benefits for UNDP CO included but were not limited to some level of capacity built, creation of synergies with activities under the Montreal Protocol and awareness creation on PCBs and POPs chemicals in general.

However, the involvement of UNDP CO created some complications since they had limited control over project fund expenditure and activity execution by EPA Ghana. Further, the annual project budgets were reflected on the UNDP CO expenditure dashboard. Since UNDP in general follows expenditure based management systems, this created a challenge for UNDP CO because the unspent annual programmed funds from the project reflected as low performance on them. It has to be noted that this particularly peaked in 2013: for that year, it was agreed that a high budget would be set to allow launching of the procurement of services of PCB (and other chemicals') disposal, as UNITAR needed the budget to reflect this potential expenditure for its own internal requirements. However, the procurement process took longer than expected and the impact of this delay was not anticipated early enough in the year – thus leaving the budget very high and the disbursement rate very low, reflecting negatively on the Ghana Country Office performance. Following this particular episode, a different management arrangement was found with the involvement of the UNDP headquarters, which avoided repeats of such occurrences in the last two years of implementation.

Funds were also released to UNITAR - throughout the project – by UNDP Headquarters, as for any agency-executed projects. This was not always a fast process and sometimes required lengthy exchanges between the teams. A possible simplification of the process, in the limits of each organisation's financial rules and regulations, could be considered in future projects' implementation modalities.

A critical analysis of this scenario leaves the TE to recommend that in future, there should be clear definition of roles and responsibilities between UNITAR, UNDP CO and UNDP Istanbul Regional Hub for Europe and the CIS. It will be appropriate that UNDP CO be granted sufficient rights not only to monitor project implementation but to be closely involved in the setting of the yearly budget and the control of the release of project resources to ensure their effective utilization – leading to adaptation of the budget early enough in a year of implementation.

However, project management and technical oversight from UNITAR were assessed to have been very satisfactory and timely. Feedback from PSC members interviewed and records in the PSC Minutes confirms their presence during all the quarterly meetings. Despite the afore mentioned challenges, the TE has confirmed that UNDP was also always present during the PSC Quarterly meetings. The Terminal Evaluation therefore rates this aspect as **Satisfactory (S)**.

3.4 Project Results

This section presents in details, all the project results per outcome.

3.4.1 Overall results (attainment of objectives)

3.4.1.1 Outcome 1: Strengthening of the legal framework, administrative and technical preparedness for sound PCB management.

Details of planned activities with corresponding outputs are presented in Table 3.4.1

3.4.1.1.1 Status of Strengthening Legal framework

The evaluation revealed that significant progress has been made toward strengthening the legal framework despite the delayed final enactment of the Bill covering PCBs among other hazardous substances. This draft Bill has since the Mid-Term Evaluation (April 2012) undergone further modification and is now called Hazardous and Electronic waste Control and Management Bill. At the time of the Terminal Evaluation (14th - 18th September 2015) the Bill was at Cabinet approval in preparation for presentation to Parliament in October 2015. **Appendix 1** is a copy of the letter from Attorney General's formal request to Minister responsible for Environment to have the Bill get Cabinet and Parliamentary approval as well as final Presidential accession.

Further, with regard to the progress made on strengthening of the policy, evidence obtained shows that environmental protection in general and sound chemicals management (SCM) in particular had Presidential support as can be seen in Appendix 2 (His Excellence President John Dramani Hamaha launching the National Environmental Policy and National Climate Change Policy both of which covers SCM)

Further, the project has also since drafted technical Guidelines for implementing PCBs regulative framework. However, Guidelines on food quality were scheduled to be completed once the new Bill is enacted into law.

Challenges encountered include the bureaucratic procedure for enactment of the drafted Bill.

The Terminal Evaluation has rated the first component of outcome 1 to be Moderately Satisfactory.

It is therefore recommended that the Cabinet and the Ministry responsible for Environment as well as that responsible for Justice expedite the enactment of the drafted PCBs specific Bill to facilitate the management and final elimination of PCBs from Ghana. It is also recommended that the possibility of developing PCBs Regulations (Statutory Instrument) as a quicker option be pursued. Once enacted, this law will also empower Customs Officers to prevent Hazardous substances like PCBs from entering Ghana.

3.4.1.1.2 Status of Strengthening Administrative framework for Sound Management of PCBs

Administrative systems for management of PCB related to enforcement and inspection activities have since been developed and implemented. Project Steering Committee minutes and training workshops reports confirms that significant capacity building activities for key stakeholders namely government enforcement agencies, PCBs holders such as electricity companies and the private sector were undertaken through a series of workshops.

The major holders of transformers (i.e. Volta River Authority, Ghana Grid Company and Electricity Company Ghana) have developed and implemented systems for prevention of reintroduction of PCBs, detection and management potential PCBs containing electrical equipment. For detection all key stakeholders have been provided with a Chlorinated Organic analyser with the Trade Name L-2000. Technicians and relevant staff handling electrical equipment have all been trained on the use of the Analyser. Fig 3.3.1 shows an ECG Engineer demonstrating the use of the L-2000 PCBs Analyser.

Key outcomes includes but are not limited to: (a) mainstreaming of PCBs management into the curriculum of the ECG Training college (b) Mainstreaming of PCBs Management as a distinct topic during the Safety, Health and Environmental Weekly Meetings of ECG, VRA and GridCo.



Fig 3.3.1: Electrical Engineer at ECG demonstrating the use of L-2000 PCBs Analyser, as part of capacity building under the project.

During the inventory nearly all the transformers were Geo-coded and name labels inserted, however, a small but significant number of transformers still in service located in the northern part of the country were yet to be labelled under the NIPs project. This is an example of the linkages between this project and other Stockholm Convention's implementation activities in Ghana. Success rate for this sub-outcome has been rated **satisfactory**.

3.4.1.1.3 Status of Strengthening Technical Preparedness for Sound Management of PCBs

This component of Outcome 1 is covered by outputs 2, 3 and 4. The project has recorded significant success by undertaking a robust national training exercise for a good number of Customs officers from the government agency responsible for point of entry. Further, the project managed to execute topic specific workshops for nearly all major PCB holders especially the three power utility companies.

The three important sub-activities under output 3 that were reported delayed during the MTE were found to have been completed during the Terminal Evaluation, these are; (i) Technical support for developing of phase-out and disposal management plans, (ii) Ensuring identification and procedures for avoiding PCB handling at scrap metal recycling operations and (iii) Strengthening management capacity of PCBs holders to manage PCB containing equipment during all phases of life cycle.

The forth output was successfully implemented. The PCBs inventory has since being updated and the X-Ray Fluorescence equipment for PCBs analysis at Ghana Atomic Energy Commission (GAEC) and Laboratory has also been upgraded to be able to perform quantitative analysis of PCBs samples. Further, the provision of L 2000 PCBs Analyser has resulted in increased analytical capacity especially for screening and rapid quantification of total organochlorines. A total of 15 officers (including one for a Masters with research on PCBs analysis) from GAEC have been trained in PCBs sampling and analysis. Part of the equipment and staff whose analytical capacity has been built are depicted in Fig. 3.3.2.



Fig 3.3.2: Laboratory at GAEC showing L-2000 and GC and some of the trained staff in PCBs sampling and analysis as part of project's capacity building outputs.

The project has finalized and published the development of PCBs phase-out and disposal management plans. The management plan has also been implemented.

The evaluation revealed that all activities under these Outputs 2, 3 and 4 of Outcome 1 have being undertaken hence are rated **satisfactory**.

Table 3.3.1: Status of Implementation of Outcome 1

Outcome1: Strengthening of the legal framework, administrative and technical preparedness for sound PCB management STATUS **OUTPUTS ACTIVITIES ACHIEVEMENTS** REMARKS AS OF JULY 31, 2015 (END OF PROJECT) 1.1.1 PCB Regulation Evidence to show Legislation Dartially

	including:	Completed	include PCBs	PSC stakeholders
	- Identification, labelling, and inspection	pieted	New law called	have fulfilled their roles on this
1.1. Review, develop and adopt legislation and policies	 Controlling of PCB at the import and export points Licensing of PCB related activities, handling, transport, and storage 		Hazardous and Electronic Waste Control and Management Bill has been drafted and is at Cabinet approval stage in preparation for	Appendix 1. The remaining Bill enactment processes are beyond the control of EPA and PSC.
	 Controlling of used mineral oil and metallic scraps, 		submission to Parliament in	

	recycling		October 2015.	
	- Requirement for holders to develop a PCB management plan including control and tracking of PCB in use until the end- of-life			
	1.1.2 Developing technical guidelines for implementing PCB regulative framework	Completed	Technical guidelines for implementing PCB regulative framework were drafted their endorsement awaiting enactment of the new Bill.	
	1.1.3 Developing of PCBs environmental and food quality guidelines	Partially completed	Environmental Guidelines developed while the Food Quality Guidelines are yet to be completed.	
1.2 Capacity building for sound management of PCBs in the public sector (authorities)	1.2.1 Dissemination the adopted PCB legislation & agreement on implementations and procedures	On-going	Customs Officers training successfully executed	
	1.2.2 Capacity building of customs for targeted identification and procedures at Customs entry points	Completed	Customs Officers training successfully executed	
1.3 Capacity Building for Sound PCBs management (PCB holders) though a series of	1.3.1 Supporting PCB holders in the developing of PCB management plans and their implementation	Completed	Training of PCBs holders successfully executed	
topic-specific training workshops	1.3.2 Training of personnel in the safe handling of PCBs and PCB containing equipment , including for their temporary storage and transportation	Completed	All Trainings planned under the project were successfully executed.	
	1.3.3 Technical support for developing of	Completed	Management plan developed,	EPA Ghana advised to revise the

	phase-out and disposal management plans		published and disposal exercise executed accordingly.	published Management Plan in line with international publications practices to include among others; copyright, Acknowledgements, Foreword and logos for UNITAR, UNDP and GEF.
	1.3.4 Ensuring identification and procedures for avoiding PCB handling at scrap metal recycling operations	Completed	Procedures developed and implemented.	
	1.3.5 Strengthening management capacity of PCBs holders to manage PCB containing equipment during all phases of life cycle	Completed	PCBs Management trainings executed, PCBs handling procedures developed, L- 2000 PCBs Analysers provided.	VRA, GridCo and ECG advised to develop MoUs with Atomic Energy Commission for detailed PCBs sampling and analysis.
1.4 Update and further refine the existing PCB Inventory to increase its comprehensiveness	1.4.1 PCBs field data collection and Equipment labelling	Completed	Inventory updated	A small but significant number of equipment in the northern part of the country are yet to be labelled under the NIPs budget line during the 4 th Quarter of 2015.
	1.4.2 Turning in X-Ray Fluorescence equipment for PCBs analysis at Ghana Atomic Energy Commission and Laboratory verification and Quantification	Completed	X-Ray Fluorescence equipment upgraded and analysis commences	GAEC also received and L-2000 PCBs Analyser. They are also using their Gas Chromatography for further analysis beyond the L-2000 detection limit. 15 officers at GAEC trained in PCPs
				trained in PCBs sampling and analysis.
1.5 Develop and Implement administrative	1.5.1 Industrial and Import inspections	On-going	Capacity built in industry, Ghana Revenue	Ghana Revenue Authority was also provided with an L-

system for PCB related enforcement & inspection activities			Authority and EPA	2000 for use at points of entry to prevent PCBs inflow.
after Inventory compilation	1.5.2 Tracking Movements of PCBs and PCB-Containing equipment by PCB holders	On-going	Provision of L- 2000 PCBs analyser and labelling of equipment done	Need for continued mainstreaming tracking of a few remaining PCBs containing equipment.

3.4.1.2Outcome 2: Infrastructure for environmentally sound management of PCBs developed and in place.

Details of the second outcome and corresponding activities are presented in Table 3.3.2.

3.4.1.2.1 Status of infrastructure for environmentally sound management of PCBs developed and in place

The evaluation revealed that both outputs of **Outcome 2 were successfully implemented, leading to a satisfactory** rating

Both the Tema central storage site and the various provincial sites had already been decommissioned at the time of the evaluation. This was due to the fact that by the time of the TE all the PCBs waste had already been shipped out of the country to Gdynia Poland by Veolia Es Field Services.

place					
Outputs	Activities	Status as of March 31, 2012	Achievement	Remarks	
2.1 Identify, construct or upgrading of a secure, temporary storage facility (ies)	2.1.1Establishment of provincial collection points.	Completed	Sites were established and decommissioned once PCBs were moved to Tema	To ensure sustainable sound PCBs management and in anticipation of future decommissioning of the current in-service transformers each potential holder of PCBs should establish within its premises a designated PCBs temporary storage site.	
	2.1.2 Planning, construction & operation of a technically sound	Completed	Site was refurbished to meet minimum PCBs storage	The site has since been decommissioned following the shipment of PCBs waste to Gdynia Poland	

Table 3 3 2. Status	of Im	nlementation	of	Outcome	2
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	central storage site in Accra/Tema area.		requirements.	by Veolia Es Field Services.
2.2 Upgrading of transportation safety for PCBs containing equipment and fluids	2.2.1 Ensuring appropriateness of road vehicles used for PCBs transport	Completed	All vehicles used during the transportation were in compliance with national and international standards for transportation of Dangerous Goods.	

3.4.1.3Outcome 3: Environmentally sound replacement and disposal of PCB waste and equipment.

Details of the third outcome and corresponding activities are presented in Table 3.3.3.

3.4.1.3.1 Status of environmentally sound replacement of PCB containing equipment

The evaluation revealed that the first Output was successfully executed. The Five Year National PCBs Phase-Out and Management Plan was developed and published. The Management Plan covers PCBs from the life cycle approach. It covers among other aspects; the objectives, situation analysis, labelling, steps needed for storage, financial management and disposal (EPA-Ghana, 2015). However, the TE recommended that the first edition be revised to include standard publisher details, Copyrights, Acknowledgements, Foreword and logos for major partners especially UNITAR, UNDP and GEF.

The TE also revealed that the second output namely replacement of PCB containing equipment by the PSC is one of the successfully stories. The electricity companies in collaboration with the project have developed mechanism in Tema whereby all new transformer and capacitors are tested for PCBs before distribution. This system is meant to ensure that no new replacement equipment contains PCBs.

The TE further established that the successful bidder for packaging, transportation and final shipment for disposal was Veolia Es Field Services. As per Contract between Environmental Protection Agency of Ghana and Veolia Es Field Services Limited (attached to this report as Appendix 3), the consignment has since been shipped out of the country for environmentally sound disposal. The shipment and final sound disposal was confirmed by availed copies of Basel Convention Movement Forms, the Disposal certificates and the Disposal Reports from Veolia ES Field Services Limited i.e. the company contracted by the project to dispose off the PCBs waste.

Success completion for this output rated Satisfactory

Details of the third outcome are presented in Table 3.3.3.

3.4.1.3.2 Status of environmentally sound disposal of PCB waste and equipment

At the time of terminal evaluation all the five activities under this Output were successfully executed.

A central temporary storage site was set up at Tema in Accra as a recipient of all PCBs waste from the provincial sites.



Fig. 3.3.3: Containers at Tema used as central PCBs temporary storage site during the **Mid-Term Evaluation.** All PCBs waste has since been shipped out for final disposal as shown in Fig 3.3.4.

At the time of the evaluation the Tema site and all the provincial temporary sites had already been decommissioned as depicted in Fig. 3.3.4.



Fig. 3.3.4: Decommissioned empty containers at Tema that were used as central PCBs temporary storage site during **Terminal Evaluation**. All PCBs waste has since been shipped out for final disposal.

In line with the project title, one of the major Outcomes of the project was phase out and final disposal of PCBs from Ghana. The terminal evaluation team have established beyond any reasonable doubt that this key output was accomplished with **more than 95% success rate**.

Further, the evaluation also established that synergies were also created with other multilateral environmental agreements such as Basel Convention and Montreal Protocol. This was evident in that other hazardous waste was also consolidated together with PCBs for final disposal resulting in enhanced environmental and human health protection.

A total of 50,540kg of PCBs waste was disposed, shipped out of the country for final disposal. The composition included; Capacitors (with pure PCBs), PCBs Contaminated oils and PCBs contaminated solid wastes. The shipment and disposal was confirmed by copies of Basel Convention Movement forms, the Disposal certificates and the Disposal Reports from Veolia ES Field Services Limited i.e. the company contracted by the project to disposal off the PCBs waste. Other wastes included 97,353kg of pesticides, 5,200kg methyl bromide and 1,200kg of other Ozone Depleting Substances. Total tonnage of waste disposed amounted to 154,293 kg (154,293 tonnes).

Table 3.3.3 presents the details of Outcome 3 and its related activities with corresponding outputs.

Outcome 3: Environmentally sound replacement and disposal of PCB waste and equipment				
OUTPUTS	ACTIVITIES	STATUS AS OF JULY 31, 2015 (PROJECT CLOSURE DATE)	ACHIEVEMENTS	REMARKS
3.1 Development of a phase-out plan and its implementation for the various waste streams	3.1.1 Developing of 5year phase-out plan	Completed	Management plan developed and published.	EPA Ghana advised to revise the published Management Plan in line with international publications practices to include among others; copyright, Acknowledgements, Foreword and logos for UNITAR, UNDP and GEF.
3.2 Replacement of pure PCB oil containing equipment and associated waste	3.2.1 Procurement of replacement equipment	Completed	Capacity on identification and management built. All the three electricity company have mainstreamed PCBs management into their operations and are now compliant.	Done
	3.2.2 Decommissioning of PCB containing transformers and in- country transport to temporary storage	Completed	Final database created updated and maintained by EPA	Done
	3.2.3 Final disposal tendering and packaging and marine stowing,	Completed	All PCBs waste, packed and transported out of the country for final disposal	Contact of successful bidder availed and now awaiting certificate of disposal.

Table 3.3.3: Status of Implementation of Outcome 3

	transportation and final disposal			
3.3 Decommissioning, washing and disposal of phased-out PCB- contaminated mineral oil and equipment in	3.3.1 Setting up and supervision of washing and dismantling at central storage site	Completed	Implemented and has since been decommissioned	
country	3.3.2 Decommissioning and in-country transport to temporary storage	Completed	Successfully decommissioned	
	3.3.3 Drainage, dismantling and washing of transformers	Completed	Successfully decommissioned	
	3.3.4 Final disposal tendering of PCB- containing oils, packaging and marine stowing	Completed	Veolia Es Field Services Limited was the success bidder who package and transported the PCBs waste for final Disposal.	
	3.3.5 Transportation and Final disposal	Completed	Veolia Es Field Services Limited package and transported the PCBs waste for final Disposal.	A total of 50,540kg consisting of Capacitors (pure PCBs), PCBs oils and PCBs contaminated solids waste were shipped. In addition about 97,353 kg of obsolete pesticides containing POPs and approximately 5,200kg of Methyl Bromide and 1,200kg of other Ozone Depleting Substances formed part of the final consignment shipped for disposal.

3.4.1.4 Outcome 4: Monitoring, Learning, adaptive feedback, outreach and evaluation

Table 3.3.4 presents the details of Outcome 4 and its related activities with corresponding outputs.

3.4.1.4.1 Status of the Monitoring, Learning, adaptive feedback, outreach and evaluation

As part of the project management requirement the Project Steering Committee delegated the function internal Monitoring and Evaluation (M&E) to the PCBs Education and Awareness Creation Sub-Committee. Detailed Terms of References were developed stipulating how and when M&E was to be conducted.

During the Terminal Evaluation reports of the M&E were availed and reviewed. Their review revealed that the project was monitored and evaluated every quarter from the last part of 2012. Findings and corrective actions were presented to the full PSC meetings for adaptive feedback and decision making.

However, for future projects, in order to yield the best and objective results of the M&E it is recommended that an Independent person not part of the project should be appointed to undertake functions of M&E.

The Mid-Term Evaluation (MTE) was undertaken in April 2012. The findings and subsequent recommendations of the MTE provided valuable insights resulting in major improvement and timely delivery of key project outputs with corresponding activities.

In accordance with the project objectives and to ensure effective and efficient communication of PCBs information to the public PSC developed and published 'The Communication Strategy for the Control and Management of Polychlorinated Biphenyls (PCBs) and Other Hazardous Chemicals in Ghana'.

The PSC met two other deliverables under awareness namely the development/publication of a Communication strategy and Information Education and Communication tools on PCBs in the form of Posters and brochures for public awareness and education. Samples of the posters and brochures are in Appendix 5 to this report.

The evaluation concluded that the project had scored **satisfactory** rate on this outcome. EPA was advised to revise the Communication Strategy to include standard publications elements such as Copyrights, Acknowledgements and logos for key partners especially UNITAR, UNDP and GEF.

Output 4: Monitoring, Learning, adaptive feedback, outreach and evaluation				
Outputs	Activities	Status as of July 31, 2015	Achievements	Remarks
4.1 Development and implementation of project monitoring and evaluation tools and system	Undertaking M and E activities including reporting	Completed	A subcommittee of the PSC was designated to undertake M&E on a quarterly basis from late 2012.	For purposes of ensuring objectivity and reliable M&E, an Independent Person or Entity who is not part of the project is required under the M&E code of practice.
4.2 Information and Outreach	4.2.1 National awareness raised for effective capacity building strategies for ESM of PCBs	On-going	The most significant activities under the project were undertaken including awareness workshops and publishing of PCBs Brochures and Posters	The labelling exercise of the few in-service transformers planned to be undertaken using NIPs resources should be expedited.
4.3 External	MTE and TE	Completed	Mid Term Evaluation	Done

Table 3.3.4: Status of Implementation of Outcome 4

Evaluation		was undertaken and	
		the Terminal Evaluation	
		is underway.	

3.4.2 Relevance

The PCBs elimination project was highly relevant within the context of the Stockholm Convention both for the Government of Ghana (which is a Party to the Stockholm Convention) and the GEF as a financier under its POPs focal area. The project was developed on the premise that PCBs are due for elimination as required by the Stockholm Convention and that old stock of transformers and capacitors containing PCBs were found across Ghana. A modus-operandi to contain their existence and eventual elimination had to be postponed until the countrywide project i.e. GEF/UNITAR/UNDP supported project was endorsed in 2009. The project was very relevant to the country especially that it would result in the protection of not only the environment and human health in general but also vulnerable groups of the communities from adverse effects of PCBs and other POPs. The project is therefore rated **Relevant (R)** to the country and GEF.

3.4.3 Effectiveness

The effectiveness of the Ghanaian PCBs capacity building project as demonstrated by its deliverables could be rated as **Satisfactory (S)**. There is good progress toward achieving its expected outcomes detailed in the project log-frame.

The Logframe provided the basic planning and management framework for the project. It also had sets out information about the key components of the project – the activities, outputs, and outcomes - in a clear, concise and systematic way, thereby describing the logic by which the project will deliver its objectives effectively as planned (GEF, 2009).

Outcome 1: At the time of the Terminal Evaluation it was revealed that the first component of this output was delayed. The new bill covering PCBs had not yet been signed into law but had reached a very advanced stage. It was at Cabinet level (in circulation) and was earmarked for presentation when parliament opens in October 2015. However, although the first component of this outcome was delayed, its second component namely administrative and technical preparedness for sound management of PCBs was effectively implemented.

Outcome 2: this outcome included the development and implementation of Infrastructure for environmentally sound management of PCBs. The project had effectively delivered all the aspects including among others training, awareness creation, stakeholder involvement, PCBs analytical capacity and provision of equipment.

Outcome 3: at the time of the evaluation the project had already shipped all the PCBs waste out of the country for environmentally disposal. All of-line transformers were replace with non-PCBs containing transformers and a few transformers which were still in service were marked and coded for future disposal. This aspect was very successful.

Outcome 4: the effectiveness of the external Monitoring and evaluation was first rated marginally successful at the MTE and following the implementation of recommendations it was found to be acceptable but still had areas of improvement. There were very few reports for the external M&E which made it very difficult for the TE to make accurate rating on its effectiveness. However, effectiveness of internal M&E which namely the Subcommittee on Education and Awareness Creation could be considered as effective since their reports form an integral part of PSC Quarterly meeting's Agenda. Adaptive feedback and outreach/awareness creation was found to be acceptable.

3.4.4 Efficiency

The efficiency of the project is **Satisfactory (S).** The project was well managed following UNITAR/UNDP and GEF procedures for project implementation. Overall the project has been cost-effective especially with regards to aspects of related to delivery of key outcomes. Nevertheless, it is appears that the timing was not adequately calculated and there were delays in certain areas of the project which resulted in a No-Cost extension of the project from the initial closure date of December 31, 2013 to July 31, 2015. Following the granting of the No-Cost extension, project implementation and supervision by both UNITAR and UNDP increased resulting in efficient and cost effective delivery of project outputs.

3.4.5 Country Ownership

A review of MTE and key national development plans and policies for Ghana revealed that GEF/UNDP/UNITAR/EPA-Ghana Project on Capacity Building for the Elimination of PCBs in Ghana is a country driven project and is well anchored within Ghana's domesticated Sustainable Development Goals and their predecessors the MDGs programmes.

Ghana's Constitution of 1992 is the primary national document that shows that the project was both owned and country driven. Article 36 (9), on Economic Development states that; 'The State shall take appropriate measures needed to protect and safeguard the national environment for posterity; and shall seek co-operation with other states and bodies for the purposes of protecting the wider international environment for mankind'. Article 36 (10) states that: 'The State shall safeguard the health, safety and welfare of all persons in employment, and shall establish the basis for the full deployment of the creative potential of all Ghanaians' while Article 41 (k) on Duties of a Citizen states that: 'The exercise and enjoyment of rights and freedoms is inseparable from the performance of duties and obligations, and accordingly, it shall be the duty of every citizen to protect and safeguard the environment'. The second set of documents that re-affirms national ownership were the Environmental Action Plan (EAP) of 1980, the National Environmental Policies (NEP) of 1991 and 2012 respectively. The 2012 NEP lists chemicals and POPs specifically and the need for action to protect human health and the environment. Legal instruments developed such as the Environmental Protection Agency Act, (Act 490) of 1994 and Pesticides Control and Management Act, 1996 (Act 528) also lends support to Ghana's intentions to environmental protection.

The National Profile for Chemicals Management of Ghana (1997:39) is yet another key document that laid the foundation for elimination of PCBs from Ghana. The National Profile lists PCBs as a POP and a chemical requiring final regulatory action leading to its elimination. Further, this initiative was then finally activated by Ghana becoming a Party to the Stockholm Convention on 20th May 2003 and finally the preparation of the National Implementation Plans (NIPs) for management of Persistent Organic Pollutant (POPs) in 2007. As such it is clear that the outcomes of the project are directly contributing to the national development priorities and plans. The fact that the project was built on the platform created by the NIPs and other national policies was the reason why the project outcomes and strategies contributed to the achievement of results.

One weakness found on ownership or its drive towards the project was that Ghana does not yet have a POPs specific legislation. However, this weakness created an opportunity for formulation of such legislation; consequently, Outcome 1 states: "Strengthening of the legal framework, administrative and technical preparedness for sound PCB management."

Country ownership and driveness is further evidenced by all inclusiveness of key stakeholders on the Project Steering Committee (PSC). The PSC used to be chaired by the senior officer from the Ministry of Environment, Science and Technology. The electricity companies, such as Electricity Company of Ghana (ECG), Volta River Authority (VRA) and Ghana Grid Company Limited (GRIDCo), showed commitment to the extent of allocating funds in their budgets as either co-financing or in-kind support to the project. The government of Ghana showed commitment by fulfilling its pledges as a co-financier and in its unrelenting provision of support via EPA-Ghana, Ghana Atomic Energy agency, Ministries of Environment, Justice among others.

From the foregoing it is clear that the project had both significant country ownership and was nationally driven. It is therefore ranked **Highly Satisfactory (HS).**

3.4.6 Mainstreaming

PCBs management has been mainstreamed in a number of institutions that made up the Project Steering Committee. The following are key examples;

- (i) All three electricity companies namely VRA (and its subsidiary NedCo), GRIDCo and ECG have incorporated PCBs/POPs issues in their weekly Safety, Health and Environmental Talks. The ECG Tema Technician Training Center has incorporated PCBs elimination and management into the curriculum to insure continuity and sustainability.
- (ii) The chemistry laboratory of the Ghana Atomic Energy Commission (GAEC) has mainstreamed PCBs into both the analytical services their provide and also into the main research areas for under-graduate and post graduate. This has resulted in the training of total of 15 persons between 2009-2013 on PCBs and POPs analysis.
- (iii) The Ministry responsible for environment has mainstreamed POPs into both the National Policy on Environment and the draft Bill containing PCBs management and elimination.
- (iv) Environmental Protection Agency of Ghana being the secretariat demonstrated strong commitment and mainstreaming POPs/PCBs both into its annual work plans, National legislation and other chemicals projects such as the NIPs.
- (v) Other ministries such as those responsible for Health, Agriculture and Sanitation were also reported to have incorporated PCBs and other POPs into their annual plans and routine operations.

3.4.7 Sustainability

The evaluation for sustainability during the TE focused on continuation of PCBs elimination and phase-out beyond the project life. The result shows that the project has established effective sustainability principles and systems in a number of PSC participating organizations. The project's performance in terms of sustainability is therefore rated **Moderately Likely** Sustainable **(ML)**. The following are some of the key examples;

(i) Sustainability of POPs (including PCBs) Analytical Capacity: POPs analytical capacity has been built at the chemistry laboratory of the Ghana Atomic Energy Commission (GAEC). Between 2009 and 2013 a total of 15 persons were trained in POPs analysis including one Masters Student as part of the PCBs project. The majority of them being staffs of GAEC, who are also working on an array of POPs research as part of sustainability. The project provided POPs standards for PCBs analysis in addition to the L-2000 PCBs analyzer. To ensure financial sustainability, GAEC is in a process of entering into permanent contractual arrangements ECG, VRA and GRIDCo as the sole provider of PCBs sampling and analysis services.

- (ii) Further, the involvement of the Customs, Excise and Preventive Services is yet another sustainable way of ensuring PCBs are screened off from Ports of entry where officers from this government Agency are based. In addition to providing training for Customs officers, the project had also provided one unit of the L-2000 PCBs analyzer for use by Ghana Revenue Authority. Sustainability is also evident from the fact that the project did not create new or parallel structures but rather utilized already existing structures. This approach is sustainable in that the officers will be screening of entry of PCBs as they carry out their daily work assignment and the approach also eliminates duplication of duties.
- (iii) Further, the engagement of the three electricity firm right from the project concept phase was an effective way of ensuring ownership and sustainability. The three electricity companies are Volta River Authority a power generating firm; Ghana Grid Company an electricity transmission company and Electricity Company to Ghana whose mandate is to distribute electricity to end-users and apparently had the largest number of transformers in the country.

Sustainability has since been demonstrated by the electricity firms' incorporation of sound management of PCBs into their Weekly Safety Heath & Environmental Talks, incorporation of PCBs elimination and management in the Technician curriculum at ECG Training Center.

3.4.8 Impact

According to a GEF Handbook on performance evaluation (GEF, 2009) project impact is defined as: "a fundamental and durable change in the condition of people and their environment brought about by the project." The impacts are both immediate and future in some cases many years after project completion.

The Handbook further states that the primary aim of the GEF and of GEF projects, is to achieve a specific category of impacts that are often referred to as Global Environmental Benefits (GEBs). GEBs are defined as: "Lasting improvements in the status of an aspect of the global environment that safeguards environmental functioning and integrity as well as benefiting human society" (GEF, 2009).

GEF project-level strategies (i.e. the major types of intervention employed by a project in order to deliver the intended impacts) typically include capacity building, institutional strengthening, policy support, and the development, testing, dissemination, and/or scaling up of technical innovations. Project strategies can usually be discerned from the stated overall project objectives and the means employed to achieve those objectives. Because GEF projects are very often catalytic in nature and involve a range of partners, the strategy quite often refers to how the project will *contribute* to the eventual achievement of significant impacts.

The Terminal Evaluation of the Ghana PCBs Elimination and Capacity Building Project's impacts were based on the 3-stage impact evaluation framework of the new **Review of Outcomes to Impacts** (ROtI) methodology (GEF, 2009), as follows:

- 1. Identifying the project's intended impacts
- 2. Verifying the project logic
- 3. Analysing the project's outcomes-impacts pathways

The following is a summary of the Ghana PCBs project's Impacts;

- (a) The project was assessed to have been in fully relevant to GEF policies and related conventions/ protocols. The specific impact that this project achieved in line with the GEF Portfolios was that it reduced negative health effects for humans and animals due to exposure to POPs due to decreased manufacture and use and to successful elimination of existing stocks. The project removed PCBs from the environment and successfully disposing them off in an environmentally sound manner hence producing impacts (GEBs) that are not only local but global in nature.
- (b) Based on stages 2 and 3 of the ROtI evaluation system, it can be said that the project Logframe and Outcomes –impacts pathways analysis shows that the Ghana PCBs project impacted positively on capacity building for the PSC, public awareness on PCBs/POPs, institutional strengthening (e.g. PCBs analytical capacity for GAEC, provision of L-2000 PCBs Analysers), policy support (incorporation of POPs issues in the National Policy on Environment and development of new law on PCBs/POPs), and the development, testing, dissemination, and/or scaling up of PCBs/POPs technical innovations.

4.0 Conclusions, Recommendations and Lessons

In conclusion, a summary of the ratings is given in the table below for each evaluation criteria.

Criterion	Concluding Summary	Rating
Attainment of project outcomes and results	The attainment of project outcomes and results is satisfactory. The project is highly relevant in the context its intended purpose nationally and according to GEF;	Satisfactory (S)
	Outcome 1: At the time of the Terminal Evaluation it was revealed that the first component of this output although had reached an advanced stage it was delayed. The PCBs containing Bill was at an advanced stage i.e. awaiting parliamentary approval.	
	Outcome 2: this outcome included the development and implementation of Infrastructure for environmentally sound management of PCBs. The project had effectively delivered all the aspects including among others training, awareness creation, stakeholder involvement, PCBs analytical capacity and provision of equipment.	
	Outcome 3: at the time of the evaluation the project had already shipped all the PCBs waste out of the country for environmentally disposal. A total of 46,900kg of PCBs waste was disposed shipped out of the country for final disposal. The composition included; Capacitors (with pure PCBs), PCBs Contaminated oils and PCBs contaminated solid wastes. The shipment and disposal was confirmed by copies of Basel Convention Movement forms, the Disposal certificates and the Disposal Reports from Veolia ES Field Services Limited i.e. the company contracted by the project to disposal off the PCBs waste. Other wastes included 97,353kg of pesticides, 5,200 methyl bromide and 1,200 of Ozone Depleting Substances. Total tonnage of waste disposed amounted to 154, 293 kg.	
	Outcome 4: There were very limited reports for the external M&E which made it very difficult for the TE to made accurate rating on its effectiveness. However, effectiveness of internal M&E which namely the Subcommittee on Education and Awareness Creation could be consider as effective since their reports form an integral part of PSC Quarterly meeting's Agenda. Adaptive feedback and outreach/awareness creation was found to be acceptable.	
Effectiveness	The effectiveness of the Ghanaian PCBs capacity building project as demonstrated by its deliverables could be rated as Satisfactory (S) . The effectiveness of implementation was assessed by reviewing the quality of delivery of its expected outcomes in the project log-frame.	Satisfactory (S)

Table 4.1: Overall Ratings Summary

	The Logframe provided the basic planning and management framework for the project. It also had sets out information about the key components of the project – the activities, outputs, and outcomes - in a clear, concise and systematic way, thereby describing the logic by which the project will deliver its objectives effectively as planned. Two of the outcomes were rated Highly Satisfactory while the other two were rated Satisfactory.	
Relevance	The PCBs elimination project was highly relevant within the context of the Stockholm Convention both for the Government of Ghana (which is a Party to the Stockholm Convention) and the GEF as a financier under its POPs focal area. The project was developed on the premises that PCBs are due for elimination as required by the Stockholm Convention and that old stock of transformers and capacitors containing PCBs were found across Ghana. A modus-operandi to contain their existence and eventual elimination had to be postponed until the countrywide project i.e. GEF/UNITAR/UNDP supported project was endorsed in 2009.	Relevant (R)
Efficiency	The efficiency of the project is Satisfactory (S). The project was well managed following UNITAR/UNDP and GEF procedures for project implementation. Overall the project has been cost-effective especially with regards to aspects of related to delivery of key outcomes, including but not limited to the final disposal of PCBs waste with other hazardous waste, preparation and publication of PCBs awareness materials, the PCBs national communication strategy. Nevertheless, it is appears that the timing was not adequately calculated and there were delays in certain areas of the project which resulted in a No-Cost extension of the project from the initial closure date of December 31, 2013 to July 31, 2015. Following the granting of the No-Cost extension, project implementation and supervision by both UNITAR and UNDP increased resulting in efficient and cost effective delivery of project outputs.	Satisfactory (S)
Sustainability of Project outcomes	The evaluation for sustainability during the TE focused on continuation of PCBs elimination and phase-out beyond the project life. The result shows that the project has established effective sustainability principles and systems in a number of PSC participating organizations. Examples include the PCBs analytical capacity built at GEAC, provision of L-2000 PCBs Analysers to ECG, GRIDCo, VRA, GRA and EPA. PCBs training and management has been mainstreamed into the safety, health and environmental departments of most PSC institutions. Another potential sustainability approach is the enactment the PCBs Bill is law.	Moderately Likely (ML)

Project Financing	The project documents stipulated the sources of financial resources (both cash and In-kind contributions) The total budgeted cost of the project was USD 6,516,880 based on a co-financing agreement. Of this amount, USD 2, 945,700 was provided by GEF while the remainder of USD 3,571,180 was co-financed by the government of Ghana, EPA and the private sector. The government of Ghana and EPA supported the project in- kind while the ECG supported with funds from a World Bank sponsored project that involved the replacement of transformers for the ECG.	Satisfactory (S)
Financial Management	An analysis of key project financial documents and external Audit reports lead the TE to conclude that financial management was satisfactory. There was an acceptable level of co-relation between project deliverables and resource utilizations. The foregoing conclusion by the TE was supported by the three audit reports undertaken by an external auditing. All the three audit reports (the latest dated 16 th May 2014) concluded that internal controls set up by the implementing agency were considered appropriate and provide a reasonable assurance of an adequate management of project funds. Receipts and payments audited were properly incurred and in accordance with the contractual basis as well as the terms of project funding as per project agreement. The final audit will be executed once all funds have been received and properly receipted.	Satisfactory (S)
Institutional framework and governance	There is a strong inter dependence and team work among PSC members. The composition of the PSC was representative of key PCBs stakeholders in the country.	Satisfactory (S)
Awareness and outreach	 Public awareness was undertaken throughout the life of the project and are planned to go beyond the official project closure. Terminal Evaluation was availed documentary evidence of public awareness in the form of printed Information Education and Communication tools such as posters, brochures. The project also prepared and published the PCBs National Communication Strategy. Samples of the posters and brochures are in Appendix 5 to this report. 	Satisfactory (S)
Monitoring and Evaluation	Terminal Evaluation revealed that the Monitoring and Evaluation was undertaken via a two tier approach namely; External and Internal persons. The external M&E was reported to have been executed	Moderately Unsatisfactory (MU)

by a contracted institution which was not part of the project. However, signed contract was not availed and only one report was available provided. This made it difficult for the TE to assess the actual effectiveness and efficiency of the external M&E.	
The internal M&E provided by Project's Sub-Committee on Education and Awareness Creation. The reports from the Internal M&E formed an integral part of the PSC quarterly meetings Agenda as revealed by an assessment of its Minutes.	
The feedback by the Internal M&E was used for corrective actions and also as a basis of adaptive management by the PSC.	
However, the TE conclusion was in line with the MTE that for M&E to be effective and objective an External person should have been engaged.	

Lessons Learned

The following are specific lessons learned as deduced by the TE;

- (i) **Outcome 1;** The PCBs Bill has taken close to five years this was due to the fact that development and enactment of laws is a long and bureaucratic process. Future project should consider developing Statutory Instrument(s) are a quicker and does not need parliamentary approval.
- (ii) **Outcome 3:** Provision of an External Monitoring and Evaluation services by an external person is more objective and effective than use of an internal Monitoring and Evaluation which in most cases is subjective and lacks independence.
- (iii) Project Management-Executing Agency: Future projects should ensure a clear definition of responsibilities at the start of the project, as regards in particular financial management. Future projects should ensure that responsibilities and accountabilities are clearly defined between the Executing Agency (UNITAR in this case), UNDP Country Office and the technical UNDP team (Montreal Protocol and Chemicals Unit).
- (iv)Project Management Implementing Agency: Effective Secretariat services for project management are more effective where there are sufficient human resources. Ghana EPA (which served a project secretariat) was over stretched due to limited staff. If a project Assistant was employed the day-today running of the project would have been more effective that was experienced.

(v) Replicable aspects: South to South Cooperation should be encouraged in all future projects. Lessons learnt from the study tour of Zambia's PCBs management and elimination program was useful to PSC. The PSC used the lessons learned to modify some activities to ensure effective and efficient utilization of resources such as use of central PCBs temporary storage site as opposed to multiple temporally storage sites.

Recommendations

Based on the findings of this final evaluation, the following recommendations are made:

- (i) Outcome 1, Legal Framework: Future projects should consider developing Statutory Instrument(s) which are a quicker, deeper subject coverage, clear and do require parliamentary approval. This will also avoid the risk of POPs being overshadowed by more prominent issues like Electronic Waste as may be the case with the current Bill.
- (ii) **Project Management, Implementing Agency:** To ensure effective project management at Secretariat level, employing a Project Assistant should be considered a norm.
- (iii)**Project Management Executing Agency:** To ensure optimal benefits are derived from UNDP Country Office's comparative advantage, future projects using the agency implementation modality should consider clarifying from the start the responsibilities in terms of financial management between the executing agency, the UNDP country office and the technical team of UNDP.
- (iv)**Project Design:** Future projects should clearly define responsibilities and accountabilities are between UNDP Country Office and UNDP Istanbul Regional Hub for Europe and the CIS.
- (v) Monitoring and Evaluation. The Subcommittee on Education and Awareness Creation was an internal component of the PSC, therefore was not independent in its M&E functions. To this effect it recommended that to avoid subjectivity and to ensure independence of the M&E only external persons/institutions should be contracted to undertake Monitoring and Evaluation.
- (vi)**PCBs elimination Sustainability:** To ensure sustainability especially on PCBs awareness, the initiates such as the In-house Training Program and Safety Talks by ECG, VRA, GRIDCo as well as the incorporation of PCBs into the Technicians curriculum at Tema College should all be formalised and documented.

(vii) **Replicable Aspects:** Future projects should consider the utilization of South to South Cooperation a norm. This will facilitate both capacity building and promotion of regional solutions to common environmental challenges.

4.1 Corrective actions for the design, implementation, monitoring and evaluation of the project

The design for Monitoring and Evaluation was adequately planned; however, it appears the implementation was deficient. Therefore to avoid subjectivity and ensure independence of the Monitoring and Evaluation, contracting an external firm/person shall be considered standard practice.

4.2 Actions to follow up or reinforce initial benefits from the project

To ensure sustainability of the analytical capacity build at Ghana Atomic Energy Commission, there is need for formalising the working relationships with the three electricity companies. GAEC should consider signing Service Contracts for PCBs sampling and analysis with ECG, VRA and GRIDCo.

4.3 **Proposals for future directions underlining main objectives**

POPs legal instruments developed should not be merged with other environmental issues such as Electrical and electronic which are likely to be prioritised at the expense of POPs.

4.4 Best and worst practices in addressing issues relating to relevance, performance and success.

- 1. Project's Secretariat would work efficiently and effectively where staffing is adequate rather than over stretching an already limited staff of the Executing Agency.
- 2. POPs legal instruments developed should not be merged with other environmental issues such as Electrical and electronic which are likely to be prioritised at the expense of POPs.

5.0 Annexes

In line with the Terms of Reference for the Terminal Evaluation the following documents are annexed to this report;

- i. Terms of Reference
- ii. Itinerary
- iii. List of persons interviewed
- iv. Summary of field visits
- v. List of documents reviewed
- vi. Evaluation Question Matrix
- vii. Questionnaire used and summary of results
- viii. Evaluation Consultant Agreement Form
- ix. Extracts Of Financial Reports And Audit Reports
- x. TE Report Audit Trail
- xi. Report on the status of the implementation of "Management Response to Independent Mid Term Evaluation Recommendations."
- xii. Report on the Sound Disposal of PCBs and Other Wastes from Ghana

Appendix 1: Letter obtained during the TE showing the status of the Bills containing PCBs managements elements among others.

AND In case of Reply the ATTORNEY GENERAL'S number and date of this DEPARTMENT letter should be quoted P.O. BOX MB-60 MINISTRIES ACCRA My Ref No. L.10/2008 2nd September, 2015 Your Ref No. **REPUBLIC OF GHANA** Fax No: 667609 Tel: 0302665051 HAZARDOUS AND ELECTRONIC WASTE CONTROL AND MANAGEMENT BILL Further to our letter dated 21st October, 2013 on the above subject-matter, you are kindly reminded to submit the Hazardous and Electronic Waste Control and Management Bill and its explanatory memorandum to the Cabinet to seek approval to lay the Bill in Parliament. Kindly find attached the Bill and its explanatory memorandum for your necessary action. and MARIETTA BREW APPIAH-OPONG (MRS.) ATTORNEY-GENERAL AND MINISTER FOR JUSTICE THE HON. MINISTER MINISTRY OF ENVIRONMENT, SCIENCE, TECHNOLOGY AND INNOVATION ACCRA cc: The Executive Director Environmental Protect ion Agency Accra (Attn: Mr. Daniel Amlalo) 1 Dast The Director for Legal Environmental Protect ion Agency Accra (Attn: Mr. Larsey) Mr. John Pwamang Environmental Protect ion Agency Accra Mar.



Appendix 2: EPA Calendar Showing with H.E. launching the National Environment Policy and the National Climate Change Policy

Appendix: PCBs Poster developed and published as part of Public Awareness

A B D

JOIN IN WORKING TOWARDS A PCB FREE GHANAI

Polychlorinated biphenyls (PCBs) are:

- industrial chemicals
- M odorless
- Lear to yellow in colour
- highly toxic to humans and the environment

How are PCBs released in the environment in Ghana?

- leaks from old and poorly maintained electrical ¥. transformers containing PCBs
- disposal of PCB-containing consumer products into municipal or other landfills not designed to handle 2 hazardous waste

What you need to do:

- ➤ get training
- K do not tamper with oil from capacitors and transformers
- M wear Personal Protective Equipment
- be cautious when handling any PCB labelled material R

lectricity Compan O Box 521 ocra, Chana R: 03024676260

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PCBs in Ghana may be found in?



For information contact:

Capacitors

of Control and Managemeth

ILA Protection Agency. IB M 305, Accta, Chara







Sampling transformer oil Checking sampled transformer oil





1 Non MIL 77

gef GLOBAL ENVIRONMENT FACILITY



Terminal Evaluation Report: UNITAR/UNDP/GEF/EPA-Ghana Project on Capacity Building for the Elimination of PCBs in Ghana

DP



Appendix: PCBs Brochures developed and published as part of Public Awareness