 

**PCB MANAGEMENT IN ETHIOPIA TO MEET THE 2025 STOCKHOLM CONVENTION DEADLINE – PHASE 1**

**MID-TERM EVALUATION REPORT**



 Dalibor Kysela Feyera Abdissa

International Consultant National Consultant

December 2021

**Abbreviations**

|  |  |
| --- | --- |
| CEO | Chief Executive Officer |
| CO | Country Office |
| CPAP | Country Programme Action Plan |
| ECAE | Ethiopian Conformity Assessment Enterprise |
| EEFRI | Ethiopian Environment and Forest Research Institute |
| EEP | Ethiopian Electric Power |
| EEPCO | Ethiopian Electric Power Corporation |
| EEU | Ethiopian Electric Utility |
| EFCCC | Environment, Forest and Climate Change Commission |
| ESM | Environmentally Sound Management |
| GoE | Government of Ethiopia |
| GEF | Global Environment Facility |
| MEA | Multilateral Environmental Agreement |
| METEC | Metals and Engineering Corporation |
| MSP | Medium Sized Project |
| MTR | Mid-Term Review |
| NGO | Non-governmental Organization |
| NIP | National Implementation Plan |
| PB | Project Board |
| PCBs | Polychlorinated biphenyls |
| PIF | Project Identification Form |
| PIR | Project Implementation Report |
| POPs | Persistent Organic Pollutants |
| PMC | Project Management Cost |
| PMU | Project Management Unit |
| PPG | Project Preparation Grant |
| SESP | Social and Environmental Screening Procedure |
| TOR | Terms of Reference |
| UNDP | United Nations Development Programme |

**Acknowledgement**

The authors of the Mid-Term Review Report wish to express their appreciation to all project stakeholders whom they have interviewed during the data collection phase for who generously provided us with their open views on progress in project implementation and candid opinions on achievement of the planned targets.

Special thanks are extended to the National Project Director at the EFCCC and staff of the UNDP Country Office in Ethiopia who, as the project implementing partners, provided all necessary information and contributed thus to effective and timely completion of the review.

**TABLE OF CONTENTS**

[Executive Summary i](#_Toc90413966)

[Introduction 1](#_Toc90413967)

[MTR Purpose and Objective 1](#_Toc90413968)

[MTR Scope and Methodology 1](#_Toc90413969)

[MTR Approach and Data Collection Methods 2](#_Toc90413970)

[Structure of the MTR Report 3](#_Toc90413971)

[Constraints and Limitations 3](#_Toc90413972)

[Project Description and Background Context 4](#_Toc90413973)

[Project Context 4](#_Toc90413974)

[Problems that the project will address 5](#_Toc90413975)

[Project description and strategy 7](#_Toc90413976)

[Expected project results 8](#_Toc90413977)

[Project implementation arrangements 9](#_Toc90413978)

[Project timing and milestones 9](#_Toc90413979)

[Main project stakeholders 10](#_Toc90413980)

[Findings 11](#_Toc90413981)

[Project Strategy 11](#_Toc90413982)

[Project Design 11](#_Toc90413983)

[Results Framework/Logframe 12](#_Toc90413984)

[Progress towards Results 14](#_Toc90413985)

[Progress towards outcomes analysis 14](#_Toc90413986)

[Remaining barriers to achieving the project objective 29](#_Toc90413987)

[Project Implementation and Adaptive Management Arrangements 29](#_Toc90413988)

[Management arrangements 30](#_Toc90413989)

[Work planning 31](#_Toc90413990)

[Monitoring and evaluation 31](#_Toc90413991)

[Identification and management of risks 32](#_Toc90413992)

[Finance and co-finance 33](#_Toc90413993)

[Stakeholder engagement 35](#_Toc90413994)

[Reporting and communication 36](#_Toc90413995)

[Mainstreaming 37](#_Toc90413996)

[Sustainability 39](#_Toc90413997)

[Institutional framework and governance sustainability 39](#_Toc90413998)

[Financial sustainability 39](#_Toc90413999)

[Socio-economic sustainability 41](#_Toc90414000)

[Environmental sustainability 41](#_Toc90414001)

[Conclusions and Recommendations 42](#_Toc90414002)

[Lessons learned 45](#_Toc90414003)

[Annexes A-1](#_Toc90414004)

[Annex 1: UNDP-GEF Midterm Review Terms of Reference A-1](#_Toc90414005)

[Annex 2: Evaluation Matrix A-2](#_Toc90414006)

[Annex 3: List of Persons Interviewed A-7](#_Toc90414007)

[Annex 4: List of Documents Consulted A-8](#_Toc90414008)

[Annex 5: Project Stakeholder Map A-9](#_Toc90414009)

[Annex 6: MTR Rating Scales A-10](#_Toc90414010)

[Annex 7: Project Results Matrix A-11](#_Toc90414011)

[Annex 8: Consultants’ Agreement Forms A-17](#_Toc90414012)

[Annex 9: Audit Trail (submitted as separate annex)](#_Toc90414013)

[Annex 10: Core Indicators (annexed as a separate file)](#_Toc90414014)

# Executive Summary

**Project Information Table**

|  |  |
| --- | --- |
| Project Title | PCB Management in Ethiopia to Meet the 2025 Stockholm Convention Deadline - Phase 1 |
| UNDP Project ID (PIMS #): | 5861 | PIF Approval Date: | 1 February 2017 |
| GEF Project ID (PMIS #): | 9669 | CEO Endorsement Date: | 10 April 2018 |
| Country(ies): | Ethiopia | ProDoc Signature Date: | 1 May 2019 |
| Region: | Africa | Date project manager hired: | 22 July 2019 |
| Focal Area: | Chemicals and Waste | Inception Workshop date: | 14 May 2019 |
| GEF Focal Area Strategic Objective: | CW-2 Programme 3 | Midterm Review Date: | October 2021 |
| Trust Fund:  | GEF TF | Planned closing date: | 1 May 2023 |
| Executing Agency/ Implementing Partner | Ministry of Environment, Forest, and Climate Change |
| Other execution partners: |  |
| Project Financing | at CEO endorsement (US$) | at Midterm Review (US$) |
| [1] GEF financing: | 1,990,000 | 273,903 |
| [2] UNDP contribution (cash) | 150,000 | 156,717 |
| [3] Government (in-kind) | 1,400,000 | 111,207 |
| [4] Other partners (in-kind) | 6,800,00 | 408,045 |
| [5] Total co-financing [2 + 3+ 4]: | 8,350,00 | 675,969 |
| PROJECT TOTAL COSTS [1 + 5] | 10,340,000 | 949,872 |

**Project Description**

The project was designed to assist Ethiopia in developing and implementing a sound national PCB management programme for increased commitment of the PCB owners to comply with the new or amended legislation on PCBs and to get some PCB-contaminated equipment treated or disposed of under the project.

The project fulfils the above goal through addressing the following aspects:

1) Increase national PCB management capacities including development and enforcement of legislation;

2) Strengthen the reliability of information through updating of the PCB;

3) Provide expertise and financial support on the technologies for the disposal of PCB equipment;

4) Increase levels of awareness to fulfil the need to inform the key stakeholders and the general public about the benefits brought by the project so that the Government and other PCB owners are encouraged to undertake necessary actions.

5) Engage stakeholders and promote major change in current practices through stakeholders’ active participation for addressing the PCB management issue.

The Project Objective is therefore strengthening the capacity of national stakeholders to manage PCBs as well as to achieve PCBs elimination, as identified as a priority in Ethiopia’s National Implementation Plan— to achieve environmentally sound management of PCBs by 2025.

It is planned to effectively dispose of 150 tonnes of PCB waste (transformer carcasses, capacitors, transformer oil, and contaminated soils) through irreversible destruction. Therefore, the project contributes to the implementation of Ethiopia’s obligations under the Stockholm Convention.

**Project Progress Summary**

Strengthening national legislation: The project supported thorough analysis of the existing legislation. This analysis proved that the baseline legislation addressed PCBs only in general terms through broad regulation of polluting substances and hazardous waste and can’t properly address numerous specific issues of management, temporary storage, and ultimate disposal of PCBs.

In order to amend the baseline legislation, the project assisted in development of a new Directive Issued to Phase-Out the Use of Polychlorinated Biphenyl Materials and Polychlorinated Biphenyl Contaminated Materials.

The Directive is based on universally recognized principles and on provisions of the Stockholm and Basel Conventions. It addresses number of aspects related to PCB management, including specific provisions on:

* Elaboration phase-out plans and conduct of PCB inventories;
* Testing, classification and labeling of PCB wastes;
* Decontamination and cross contamination of PCB materials and PCB-contaminated materials;
* Handling of PCB equipment, removal from service, recycling, transportation, storage, disposal;
* Remediation of contaminated sites, reporting and emergency preparedness;
* Institutional mandates and responsibilities in relation to the management, disposal and elimination of PCBs.

The draft Directive on PCB Phase-out It establishes adequate measures necessary to regulate PCBs in Ethiopia with the aim of ensuring safe handling of PCBs, PCB contaminated equipment and PCB waste and achieving ultimate disposal of PCBs. At the MTR stage, the process for approval of the Directive was in progress.

Strengthening national capacity for PCB management: A comprehensive training on PCB inventory and systematic register of the articles and equipment with PCB content was organized in cooperation with UNITAR for more than 100 technicians from the three main PCB holders, EFCCC and staff employed in regional branches. The trained technicians formed PCB inventory task forces that started mapping the total more than 5,000 transformers that had been filtered out from the EEU database as potentially contaminated by PCBs. The task forces also conducted sampling and analysis of the suspected PCB transformers in the field by a fast-screening technique.

At the time of the MTR, the inventory and sampling campaign was still in progress with completed analysis of almost 800 transformers. The progress in the inventory was slowed down by some logistical issues and recently by the unstable political situation in the country.

The inventory is conducted in the framework of works on establishment of a national PCB tracking system as part of the ongoing development of a wider chemical registry database. The project also provided assistance to acquire software for establishment of the chemical database.

Furthermore, the project provided training on development of PCB management plans and supported drafting of a National Plan for PCB Management and provided guidance for preparation of PCB management plans at the level of the major holders of PCB waste. Ethiopia Electric Utilities (EEU) has already prepared the company PCB management plan as an integral part of the operation plan of the company.

A series of training workshops on various aspects of PCB management was organized under facilitation by UNITAR. The workshops included modules on PCB handling & maintenance, packaging & transportation, temporary storage, and PCB equipment treatment/disposal planning, on occupational health, safety and emergency response to PCB accidents. In some beneficiary institutions the trainings enhanced knowledge and skills of the management for planning of activities on PCB control and elimination. However, there is no systematic monitoring and evaluation of effectiveness of the training outcomes at the level of PCB operators and beneficiary communities.

The project also supported building national capacity for rapid screening of PCB levels in transformer oil through procurement of 8 sets of the L2000 DX analyser and their deployment with the PCB inventory teams. In addition, the project is procuring of materials necessary for confirmatory analysis of PCBs in the chemical laboratory of the Ethiopia Conformity Assessment Enterprise (ECEA).

The project organized a training workshop on sustainable management of PCB contaminated sites for senior managers and experts from EFCCC, the three PCB holder companies, and representatives of the national research establishments. The workshop was facilitated on-site by the Ethiopia Environment, Forest Research Institute with on-line support from UNITAR. The workshop curriculum included practical training on preparation of a management plan for the PCB contaminated sites. The training is followed by assessment of potential storage sites for the main PCB holders and a plan for remediation of the Kotebe storage site of PCB transformers in the premises of Ethiopia Electric Power (EEP).

For raising awareness of the PCB issues in general population, the project organized two awareness raising meetings on PCB and other chemicals and supported preparation of the Communication Strategy for the Control and Management of Polychlorinated Biphenyls (PCBs) and other Hazardous Chemicals in Ethiopia, (2020-2025). Also, arrangements were made for use of the EFCCC website to disseminate information about the project.

Environmentally sustainable management of PCBs: Due to slow progress in the PCB inventory, implementation of this component did not progress as it is pending on the results of the inventory.

MTR Ratings & Achievement Summary

|  |  |  |
| --- | --- | --- |
| **Measure** | **MTR Rating[[1]](#footnote-2)** | **Achievement Description[[2]](#footnote-3)** |
| Progress Towards Results | Project Objective:Moderately Unsatisfactory (MU) | Small progress on determination of safe temporary storageSlow progress in PCB inventoryNo progress on assessment of treatment/disposal options for PCB waste |
| Outcome 1:Satisfactory (S) | Comprehensive review of baseline legislation Draft new Directive on PCB phase-out  |
| Outcome 2Satisfactory (S) | Slow progress on PCB inventoryDraft National PCB Management Plan One facility-level PCB management plan Foundation for establishment of the national chemicals registryNumber of training workshops on a wide range of topicsCommunication strategy on PCB management |
| Outcome 3Moderately Unsatisfactory (U)  | Preparatory work on determination of temporary storage site and facilityNo progress on assessment of treatment/disposal options for PCB waste |
| Project Implementation & Adaptive Management | Moderately Satisfactory (MS) | Management Arrangements – Satisfactory (S)Work Planning - Satisfactory (S)Monitoring & Evaluation - Satisfactory (S)Risk Management – Moderately Unsatisfactory (MU)Finance and Co-finance – Moderately Satisfactory (MS)Stakeholder Engagement - Satisfactory (S)Reporting and Communication - Satisfactory (S) |
| Sustainability | Moderately Likely (ML) | Institutional/Governance Sustainability – Likely (L)Financial Sustainability - Moderately Likely (ML)Socio-Economic Sustainability - Moderately Likely (ML)Environmental Sustainability - Moderately Likely (ML) |

Recommendation Summary Table

|  |  |
| --- | --- |
| **No.** | **Recommendation** |
| 1 | The project partners should **consider requesting extension of the project** by 12 months |
| 2 | The project partners should **immediately start implementation of activities related to development/upgrade of temporary storage facilities** for decommissioned PCB equipment |
| 3 | EFCCC should **actively follow the legislative approval process of the Directive on PCB Phase-out** and allocate sufficient human, technical and financial resources to maximise the benefits from the project assistance on enforcement of the amended legislation. Upon promulgation of the new Directive, a practical training workshop should be organized, preferably involving field modules, supported by guidelines on implementation and enforcement of the Directive |
| 4 | EFCCC should **consider development of specific guidelines on mitigation of cross contamination of PCB oil** during the power transformer servicing/maintenance and provide training to responsible authorities on monitoring of performance of the companies involved in the servicing/maintenance of transformers |
| 5 | EFFCC with assistance of the UNDP CO should **actively seek involvement high-level officials** relevant for preparation of the trans-boundary movement of PCB waste from this project |
| 6 | The project partners should make preparationfor **timely and effective procurement of services for shipment and ultimate disposal of PCB waste** at a certified hazardous waste disposal facility abroad |
| 7 | PMU should **initiate the analysis of the feasibility of disposal of low-concentration PCB waste** as a matter of priority and investigate the legislative requirements and timelines necessary for securing relevant permits for dechlorination |
| 8 | UNDP should assist the PMU and relevant project stakeholders to **obtain information about the experience gained with co-processing of PCB waste** in cement plants in Africa |
| 9 | EFCCC should establish a mechanism for **effective monitoring of progress in implementation of the facility-level PCB management plans** |
| 10 | EFCCC should make information on the **progress of PCB elimination in the country for sharing via the project website**. This could include provision and regular update of information from the PCB inventory, information on quantities of PCB waste moved to safe temporary storage, information on the selected technologies/routes for PCB waste disposal and quantities of PCB waste prepared for disposal |
| 11 | The PMU in collaboration with UNITAR should **monitor the effectiveness of the training outcomes** (replication and dissemination, application good practices, etc.) in order to assess the real impact of the trainings. It is also important to evaluate the effect of the trainings on the beneficiary institutions’ top management, workers and the communities. |
| 12 | The project partners should **consider strengthening of the Project Management Unit** in order to ensure timely processing of the project-related administrative actions |
| 13 | The PMU should follow the relevant GEF guidelines and **systematically track the co-financing by the project partners and stakeholders** and report the results in annual PIRs. |

# Introduction

This report presents the findings of the Mid-Term Review (MTR) of the UNDP/GEF project “PCB Management in Ethiopia to Meet the 2025 Stockholm Convention Deadline - Phase 1”.

## MTR Purpose and Objective

As outlined in the GEF Monitoring and Evaluation Policy, Mid-Term Evaluations (also known as Mid-Term Reviews, MTRs) are a mandatory requirement for all GEF-financed full-sized projects and constitute an important part of the GEF projects’ monitoring and evaluation plan. MTRs are primarily a monitoring tool to identify challenges and outline corrective actions to ensure that a project is on track to achieve maximum results by its completion. In order to fulfil the above purpose, MTRs are conducted in order to assess the projects’ progress towards results, implementation and adaptive management for improvement of outcomes, facilitate early identification of risks to sustainability and provide supportive recommendations.

The objective of this MTR is to provide the project partners i.e., GEF, UNDP, key stakeholders/ private institutions and the Government of Ethiopia (GoE) with an independent assessment of progress towards achievement of the project objectives and outcomes as specified in the Project Document. MTR also provides independent assessment of early signs of project success or failure with the goal of identifying the necessary changes to be made in order to set the project on-track to achieve its intended results. Finally, the MTR also reviews the project’s strategy and its risks to sustainability.

As a standard requirement for all projects financed by GEF, this MTR has been initiated by the project Implementing Agency, in this case UNDP CO in Ethiopia. This MTR has been conducted according to the guidance, rules and procedures established by UNDP and GEF as reflected in the UNDP Evaluation Guidance for GEF Financed Projects[[3]](#footnote-4).

## MTR Scope and Methodology

This MTR covers all activities undertaken in the framework of the project. The time scope of MTR is the implementation period of the PCB project from May 2019 up to October 2021. The geographic scope of the evaluation is Ethiopia.

The MTR has been carried out using a participatory approach that seeks to inform and consult with key stakeholders associated with the project using the primary criteria for UNDP-supported, GEF-financed projects that are listed in the Terms of Reference for the evaluation, i.e. Project Strategy, Progress towards Results, Project Implementation & Adaptive Management, and Sustainability.

In addition to assessing the main evaluation criteria (relevance, effectiveness, efficiency and sustainability), the MTR provides ratings for key elements of the project implementation, presents recommendations for the remaining project implementation period, and draws relevant lessons for other similar project in the future.

Below is presented a summary of the elements covered in the MTR based on the Terms of Reference (TOR) that is provided as Annex 1.

Project Strategy

• Project design

• Results framework/logframe

Progress towards Results

• Progress towards outcomes analysis

• Remaining barriers to achieving the project objective

Project Implementation and Adaptive Management

• Management arrangements

• Work planning

• Finance and co-finance

• Project-level monitoring and evaluation systems

• Stakeholder engagement

• Social and Environmental Standards (Safeguards)

• Reporting

• Communication & knowledge management

Sustainability

• Financial risks to sustainability

• Socio-economic risks to sustainability

• Institutional framework and governance risks to sustainability

• Environmental risks to sustainability

## MTR Approach and Data Collection Methods

The MTR used the following evaluation instruments:

*Evaluation matrix:* An evaluation matrix was constructed based on the evaluation scope presented in the TOR. The matrix is structured along the four GEF evaluation criteria for MTRs and includes principal evaluation questions. The matrix provided overall direction for the evaluation and was used as a basis for interviewing stakeholders and reviewing project documents. The evaluation matrix is provided as Annex 2.

*Preliminary documentation review:* The evaluators conducted a review of documents that were made available by the UNDP CO as well as other documents found from various other sources. The documents served as the main source of information and for preparation for the data collection phase of the MTR.

Due to the continued travel restrictions, the International Consultant was not able to undertake evaluation field mission to Ethiopia. In order to perform consultations with selected project stakeholders, a series of virtual and remote meetings with selected project stakeholders were conducted using on-line meeting platforms (Zoom, Skype, etc.) The preparation of the virtual meetings was done in close coordination with the project implementing team and the UNDP CO.

*Interviews:* The Evaluators conducted a number of virtual consultations with a representative selection of project stakeholders using semi-structured interview questions. Through the interviews, the Consultants obtained information about the key informants’ impressions and experiences from implementation of the project. Triangulation of results, i.e. comparing information from different sources, such as documentation and interviews, or interviews on the same subject with different stakeholders, was used to corroborate or check the reliability of evidence. The list of people interviewed is provided as Annex 3.

*Information Analysis:* In parallel with the interviews, the Evaluators conducted systematic and extensive review of available project-related documents. Data analysis involved organizing and classifying the information collected, summarizing it, and comparing the project achievements with other appropriate information in order to address the evaluation questions and fulfil thus the purpose of the MTR. In this process, the Evaluators took care of checking factual evidence, ensuring its accuracy, and translating the data into usable formats or units of analysis related to the evaluation questions. The list of documents consulted is provided as Annex 4.

## Structure of the MTR Report

This report closely follows the structure of the MTR report outlined in the Terms of Reference that was prepared by UNDP Country Office in Ethiopia as the commissioning unit for this MTR.

The first part of the report describes the project background and summarizes factual information that was assembled during the initial data collection phase. The second part contains information that was collected through consultations with the key stakeholders before, during and after the interviews with the keys project stakeholders. The third part provides evidence-based conclusions connected to the findings from the second part and recommendations in the form of corrective actions for the design, implementation, management arrangements as well as for monitoring and evaluation of the project.

## Constraints and Limitations

Since visit of the International Consultant was not possible due to the COVID-19 travel restrictions, interviews with selected project stakeholders were conducted remotely through digital platforms. This limited the ability of the evaluation team to use direct observation at the stakeholder and beneficiary institutions for gathering additional information, triangulating previously obtained information, and getting a broader picture of the stakeholders’ activities.

# Project Description and Background Context

## Project Context

It is well known that the exposure to Persistent Organic Pollutants (POPs) can lead to serious health effects including certain cancers, birth defects, dysfunctional immune and reproductive systems, greater susceptibility to disease and damages to the central and peripheral nervous systems. The Stockholm Convention on POPs has been established based on the consideration that, given the long-range transportation of POPs, no one government acting alone can protect its citizens or its environment from POPs.

PCBs are among the most toxic and persistent POPs listed in the Stockholm Convention. Although PCBs were mostly used in closed systems, such as transformers and capacitors, very often such equipment is recycled at the end of their operational life and the PCB oil contained therein can be either directly wasted in the environment, recycled, or even sold as fuel oil.

Ethiopia signed the Stockholm Convention on 17 May 1997 and ratified the instrument on 2 July 2002. Subsequent to the ratification of the Stockholm Convention, Ethiopia, in response to Article 7 of the Convention, developed its National Implementation Plan (NIP) and submitted the NIP in March 2007. The PCB management issue is one of the top priorities for the country according to the NIP and corresponds to the Stockholm Convention target of safe management of PCBs by 2025.

Ethiopia has also been a Party to the Basel Convention since 2000. This is an important Multilateral Environmental Agreement (MEA) as regards the transboundary transportation (import and export) of waste, its disposal and relevant international rules, standards and guidelines on POPs.

In addition to the Stockholm and Basel Conventions, Ethiopia has been a party to the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (since 2003).

The result of the preliminary PCB inventory conducted in 2003 indicates the need to conduct a comprehensive inventory of all potentially PCB-containing electrical equipment in the Ethiopian Electric Power Corporation (EEPCO)[[4]](#footnote-5). The 2003 inventory found 2,505 PCB-containing transformers and 40 PCB capacitors and established corresponding quantities of PCB-containing dielectric fluids at 1,181 t for transformers and 1.2 t for capacitors. The highest number of suspected PCB-containing transformers was found in the Central Region of Ethiopia (674 units), followed by 309 transformers in the Western Region.

Due to absence of data either on the nameplate or equipment manual, PCB concentrations had not been determined or characterized. Therefore, lack of adequate national data on PCBs, the potential for significant PCB releases from their use, stockpiles and wastes, and the need to phase out and dispose of PCBs and equipment were the major problems that have been prioritized for action.

The 2015-2016 NIP update included a revised PCB inventory that identified small changes from the initial 2003 baseline, namely 2,435 suspected PCB-contaminated transformers identified (of which 2,242 in use) and 33 operational suspected PCB-contaminated capacitors. Some of the transformers were found dated as far back as 1957. More than 150,000 l (225 t) of used transformer oil were stored in barrels, which may be PCB-contaminated.

While the initial 2003 preliminary PCB inventory covered only PCB-containing electrical equipment, operational within the former EEPCO, the updated PCB inventory covered not only the two successor companies of EEPCO (EEP and EEU) but also equipment in possession of the Metals and Engineering Corporation (METEC)[[5]](#footnote-6) that had been established for the purpose of refurbishing and manufacturing transformers in possession of other holders. Similar to the initial 2003 inventory, the inventory update only addressed the electrical equipment imported prior to 1989.

METEC/EEG is one of the key stakeholders of activities dealing with PCB materials. Apart from power transformers, the 2015 inventory also found considerable amounts of suspected PCB containing dielectric fluids in Kotobe maintenance workshops and in two METEC/EEG power engineering factories at Tatek and Saris. The total amount of the dielectric fluids saved for top-up/replacement purposes and stored for disposal was estimated at 281 tonnes.

The fact-finding mission conducted for the GEF project preparation in September 2017 identified additional 5,000 transformers that had been added to the network since the completion of the updated inventory (bringing the total to 32,000 transformers), as well as approximately 4,000 out-of-service transformers in scrapyards that had not been included in the inventories. There were also some 1,400 capacitors in operation in the network in Ethiopia.

In addition, some suspected PCB-containing transformers and capacitors that had been identified in the 2003 preliminary PCB inventory were no longer traceable during the inventory update. As outlined in the 2016 inventory update, old transformers taken by METEC were refurbished and redistributed to different regions with new nameplates. The reuse of the oil from damaged transformers to the refurbished ones was one of the reasons of cross-contamination among the various transformers.

## Problems that the project will address

The barriers to the sustainable management of PCBs at the project inception can be summarized as follows:

Legislative barriers: Preliminary assessment of the legal and institutional frameworks to manage POPs chemicals in Ethiopia identified several gaps and limitations to legislation and implementation of regulation on POPs. While management of pesticides was addressed in various pieces of legislation, there was no legislation specifically addressing PCB management. Since the 2003 preliminary inventory signalled presence of significant amounts of PCB-contaminated equipment throughout the country, there was a pressing need to incorporate specific issues related to PCB management into the existing or new legislation.

Information barriers: Article 6 of the Stockholm Convention requires a Party to develop appropriate strategies for identifying sites contaminated by POPs chemicals and to undertake their remediation in an environmentally sound manner. Though not conclusive, the preliminary inventory on contaminated sites identified 77 sites heavily contaminated by POPs chemicals including PCBs. Therefore, it was deemed necessary to undertake a comprehensive inventory and assessment of contaminated sites, determination of the extent and severity of the environmental and socio-economic impacts of these sites, as well as development of corresponding strategies for the management of the contaminated sites.

Financial barriers: There were considerable challenges related to the high cost of replacing transformers and capacitors, as well as the complexity of sampling and analysis of the in-use equipment that also requires coordination effort on harmonization with the maintenance schedule of the electric equipment. In addition, PCB management and disposal is often considered to be a low priority by the relevant authorities as there is low awareness on the issue.

There were no specific regulations in Ethiopia applicable for control of import of dielectric fluids, particularly insulating oils for transformers and capacitors, or for export of PCB-contaminated materials. In the absence of appropriate and enforced legislation and regulations, the commitment of PCB-owners to address the issue of PCBs is low, especially considering the high costs related to the decontamination or disposal (with subsequent replacement) of contaminated equipment. In addition, there is high possibility of reuse of the contaminated materials at the individual level to save money.

Technology barriers: Similar to many countries, there was lack of PCB treatment technologies within Ethiopia. This usually results in PCB-owners undertaking substantial investment for shipping PCB-containing equipment abroad, typically to the EU, for disposal. In the case of Ethiopia, there were no technologies for treatment of low PCB-containing equipment or disposal facilities available for high PCB-containing equipment or waste.

Awareness barriers: Despite the efforts deployed during the NIP development, awareness and knowledge on the existence and effects of PCBs in the country was almost non-existent. The PCB holders, including top-level management and workers, as well as the public were generally not aware of the health and environmental adverse effects of PCBs. Low levels of awareness contributed to perpetual mismanagement of PCB-containing equipment. There was a need for development of a comprehensive awareness raising strategy by sector and by stakeholder groups, including the interested and affected parties, especially women and children.

Laboratory analytical barriers: At the project inception, there was no laboratory with experience in PCB analysis in Ethiopia. However, several laboratories equipped with instrumentation for gas chromatography (GC) and high-performance liquid chromatography (HPLC) analysis were capacitated through participation in two Global Monitoring Plan (GMP) projects. It was considered necessary to further strengthen the analytical capacities of selected laboratories for PCB analysis in several environmental matrices by providing appropriate technical support including the standardized techniques for PCB analysis and support accreditation of the laboratories.

## Project description and strategy

The project was designed to address the important aspects outlined below:

1) Increase national PCB management capacities including development and enforcement of legislation: The legislative component of the project was designed to:

• Develop and implement practical guidance on the ESM of PCBs, provide assistance in the development and implementation of legislation;

• Provide support regarding the fulfillment of legal obligations towards recording and reporting PCB-related information;

• Conduct inspections at sites where electrical equipment (transformers, capacitors) are in operation or stored; and

• Train operators and officers from both governmental and non-governmental PCB-containing equipment/waste owners.

2) Strengthen the reliability of information through updating of the PCB inventory: At the Project Identification Form (PIF) stage, the only available information was based on the year of manufacture and other details displayed on the equipment nameplates. There were also a number of suspected PCB-contaminated sites and stored oil identified and visited during the PPG fact-finding mission. There was very little information available on the presence and concentration of PCBs in the electrical equipment (in-service as well as out of service). The information concerning the number, age, and level of contamination of PCB equipment is indeed essential both for the equipment management purposes and for identification of proper treatment/disposal technologies. While this situation was already evident at the PIF formulation stage, it was agreed, for practical reasons, that the Project Preparation Grant (PPG) and related mission should limit itself to verifying contaminated sites, checking nameplates for possible pure PCBs, verifying the total number of transformers, and substantiate the other unconfirmed information from the PIF. The project was therefore designed to advance consolidation of the PCB inventory by undertaking dielectric oil sampling and analytical determination of PCBs in equipment during the first two years of its implementation.

3) Provide expertise and financial support on the technologies for the disposal of PCB equipment:

One of the core issues for the ESM of PCB-containing equipment is related to availability of technical and financial resources for PCB disposal. In the absence of a sound know-how related to disposal operations of PCB-containing equipment, the cost-benefit ratio is always very high, for the following reasons:

• the options allowing the chemical destruction of the PCBs in the dielectric oil without destroying the oil itself are usually not considered, so that the dielectric oil, which is usually a very expensive asset, is lost;

• the planning for phasing out PCB equipment is not aligned with their residual value, so that very often a strategy aimed at minimizing the cost of disposal of PCB-containing equipment is not pursued; and

• the legal aspects related to the storage of PCB-containing equipment under maintenance versus PCB phased-out equipment (to be considered waste) are usually neglected, exposing owners of PCB-containing equipment to a severe liability risk.

The project was therefore designed to assist the country in developing and implementing a sound national PCB management programme that will increase commitment of the potential PCB owners to comply with the new or amended legislation on PCBs and to get some PCB-contaminated equipment treated or disposed of under the project.

4) Increase levels of awareness: The issue of PCBs is typically not a well-known environmental issue. Except for extremely high pollution levels that result in acute and immediate health impacts, the toxic effect of PCBs (such as the increase of cancer probability) is delayed in time and not associated with any “visible” pollution. Although the hazards associated with PCBs are usually not perceived as an immediate threat, unsafe disposal of PCBs results in the contamination of food chain and other environmental media (e.g. sediments and soil), which may last for years. Therefore, there is a need to inform the key stakeholders and the general public about the benefits brought by the project so that the Government and other PCB owners are encouraged to undertake necessary actions.

5) Engage stakeholders: The project’s goals can only be satisfactorily achieved with the buy-in of the key stakeholders. No major change in current practices can be achieved if there is little or no awareness of the risks posed by PCBs, and if stakeholders do not feel the need to address the PCB management issue. As previously described in more detail, the project had identified at PIF stage a number of important stakeholders that have to be involved during the project implementation.

## Expected project results

Project Objective: This project aims at strengthening the capacity of national stakeholders to manage PCBs as well as to achieve PCBs elimination, as identified as a priority in Ethiopia’s NIP—a first Phase to achieve ESM of PCBs by 2025.

Global Environmental Benefits: Under the project, 150 tonnes of PCB waste (transformer carcasses, capacitors, transformer oil, and contaminated soils will be effectively disposed of through irreversible destruction. Therefore, the project will contribute to the implementation of the Stockholm Convention’s requirements by Ethiopia.

Socio-Economic Benefits: The project will bring direct and indirect social and economic benefits. The direct and immediate benefits are those related to the implementation of the project itself, including employment of the project staff; possible establishment of a public-private partnership for the management of the PCB-contaminated equipment and waste; and financial incentive for the PCB owners for the sampling, analysis, and treatment of their PCB-contaminated equipment.

The removal of PCB waste (equipment, waste, contaminated soil) from the environment will translate into reduced mortality and morbidity of the population in the long-term, with specific reference to the pathologies associated with exposure to PCBs, resulting in reduced social and economic costs to the country. In addition, the technical capacity developed by the project partners (project staff, consultants, stakeholders) for management of PCB waste will result in the creation of skills and capabilities for the management of other hazardous substances and waste, and will thus contribute to creation of specialized jobs in the country.

Knowledge Management: The project is expected to generate a significant amount of knowledge which will be carefully managed during the project implementation, so that the project results will be properly communicated and disseminated during the whole project lifecycle, lessons learnt, and success stories will be shared among other countries/UN country offices.

## Project implementation arrangements

The project was designed for implementation according to the UNDP’s National Implementation Modality (NIM), in line with the Standard Basic Assistance Agreement between UNDP and the Government of Ethiopia, and the UNDP Country Programme Action Plan (CPAP).

The institutional arrangements for the project described in the Project Document present the Environment, Forest, and Climate Change Commission (EFCCC) as the national Implementing Partner, responsible and accountable for managing this project, including operational monitoring of the project interventions, achieving the project outcomes, and for the effective use of UNDP resources.

UNDP Country Office (CO) in Ethiopia was expected to assume responsibility for overall monitoring of the project implementation, timely reporting of the progress to the UNDP Regional and GEF as well as organizing mandatory and possible complementary reviews and evaluations. In line with the selected implementation modality, the Government of Ethiopia may request the UNDP CO to provide direct services for specific purposes, according to its policies, rules, and regulations. These services (and their costs) are specified in the Letter of Agreement (Annex K of the Project Document).

The UNDP assistance also includes a quality assurance function for the project, and assignment of the UNDP Regional Technical Advisor, based in the Istanbul Regional Hub, for technical oversight and backstopping.

The Project Document also outlines the essential project management and governance structure in the form of a Project Steering Committee (PSC) and the Project Management Unit (PMU). Under the chairmanship of the National Project Coordinator (NPC), the PSC is predestined to assume responsibility for provision of strategic guidance and oversight to the project, while the day-to-day management should be carried out by the PMU, that assumes overall responsibility for the successful implementation of all project activities and the achievement of planned project outputs. The PM works under supervision of the National Project Coordinator and in coordination with the UNDP CO.

## Project timing and milestones

The project was approved for implementation as a full-size GEF project on 10 April 2018 for the duration of 48 months. The approved GEF project grant amounts to US$ 1,990,000 with further US$ 8,350,000 as the co-financing commitment is composed of contributions from the EFCCC, the PCB holders, as well as UNDP and UNITAR. This makes the total resources committed at the project inception US$ 10,340,000.

The specific timeline of the project is summarized in Table 1 below.

**Table 1:** Key project dates

|  |  |
| --- | --- |
| **Milestone** | **Date** |
| PIF Approval Date | 1 February 2017 |
| CEO Endorsement Date | 10 April 2018 |
| Project Document Signature Date (project start date) | 1 May 2019 |
| Project Inception Workshop | 14 May 2019 |
| Date of the Mid-term Review | September – October 2021 |
| Expected Date of Terminal Evaluation | February 2023 |
| Planned Closing Date | 1 May 2023 |

## Main project stakeholders

The Project Document identifies an array of the project stakeholders and presents analysis of their potential involvement in the project. The list includes key institutional and utility stakeholders, i.e. the EFCCC, EEP, EEU, METEC, and other confirmed or potential holders of equipment contaminated by or containing PCBs.

The main stakeholders and their roles and responsibilities relevant for the project are summarized in Annex 5.

# Findings

This section brings a summary of empirical facts based on the data collected during the extended document review and interviews with selected project stakeholders. The MTR team paid particular attention to cross-verification of the evaluative evidence using multiple sources of information and, to the extent possible, avoid overreliance on opinions obtained during the interviews.

## Project Strategy

The MTR team conducted an analysis of the design of the project as outlined in the Project Document and assessed whether the project strategy is proving to be effective in reaching the desired results. In doing so, the evaluators judged the extent to which the project addresses country priorities and is country driven. Furthermore, the evaluators assessed the extent to which the project objectives are consistent with the priorities and objectives of the donor and implementing agencies.

### Project Design

The project is aligned with the Ethiopia 2030: The Pathway to Prosperity: Ten Years Perspective Development Plan (2021 – 2030) that represents a strategic framework for the transposition of the UN sustainable development goals (SDGs) and their indicators into the Ethiopia national context. Specifically, the project is linked with Strategic Priority 6: Climate resilient green economy that aims at intensified development efforts to fight land degradation and to reduce pollution.

The project is in line with Proclamation No.1090/2018 on Hazardous Waste Management and Disposal Control that provides for creation of a system for the environmentally sound management and disposal of hazardous waste, and for prevention of the damage to the human or animal health, the environment, biodiversity, and property due to the mismanagement of hazardous waste. Furthermore, the project is in line with Proclamation No. 1075/2018 on Registration and Administration of Industrial Chemicals that provides for establishing a national system for registration and administration of industrial chemicals, and for preventing and controlling the adverse effects from the mismanagement of chemicals to human health and environmental safety.

The project also links to the National Implementation Plan (NIP) of Ethiopia under the Stockholm Convention on Persistent Organic Pollutants and its following objectives:

* Make available comprehensive and accurate information on past and existing, use, import, stockpiles and wastes of PCBs in the country;
* Prohibit the import and use of PCBs and PCB containing equipment and materials;
* Promote measures to reduce exposure to human health and the environment from PCBs releases;
* Identify and remove from use damaged equipment containing PCBs;
* Ensure safe management of PCBs containing equipment;
* Monitor and assess impact of PCBs in human and environmental media;
* Build facilities for safe disposal of all PCB and PCB containing equipment;
* Build the capacity of institution to handle PCBs and PCB containing equipment

The project also responds to the needs and priorities of the wider public of Ethiopia to address health and environmental risks of PCBs to the communities in general and workers in PCB holder companies in particular. By this token, the project is aligned with Article 92 of the Constitution of the Federal Democratic Republic of Ethiopia as it supports the GoE in its endeavour to ensure that all Ethiopians live in a clean and healthy environment and to fulfil the duty to protect the environment.

Furthermore, the current project aligns with the GEF-6 Chemicals and Waste (CW) Focal Area where GEF continues to play a catalytic role in leveraging budgetary resources from national governments and incentivizing the private sector to contribute more to the achievement of elimination and reduction of harmful chemicals and waste.

Specifically, the PCB project addresses Programme 1 of the CW area that requires the countries to “*Develop the enabling conditions, tools and environment for the sound management of harmful chemicals and wastes”,* and Programme 3 of the same that calls for “*Reduction and elimination of POPs”.*

The project is also in line with the UNDP Country Programme for 2016-2020, namely with the following CP Outcome: *C. To sustain development gains and increase resilience, UNDP will promote leapfrogging to a green economy and faster adaptation to climate change.*

The MTR team concludes that the current project is highly relevant for the needs and priorities of Ethiopia and consistent with the strategic and programmatic priorities of the donor and implementing agencies.

### Results Framework/Logframe

The evaluators performed critical analysis of the project results framework in order to establish whether it has the necessary elements and whether it enables measurement of success and progress to success.

The conceptualisation of the current project started with preparation and approval of the Project Identification Form (PIF) that served as a basis for formulation of the Project Document (PD), approved by the GEF CEO in April 2018. The project results framework comprises 4 components/outcomes, but no outputs are defined under the individual project components. For measurement of progress towards the planned results, there are 3 indicators at the level of the Project Objective and further 11 indicators at the level of the outcomes.

The Project Document contains a Theory of Change diagram shown on Display 1 below.

**Display 1:** The project Theory of Change map (from the Project Document)

****

The above displayed Theory of Change (ToC) map is supposed to summarize and depict the project strategy. The evaluators found the presented ToC map as a simplified model that is not fully plausible. In particular, the ToC determines activities supposed to lead to the project outcomes but does not comprise project outputs as the results immediately linked to the activities for which the project is fully accountable.

The evaluators conclude that the incomplete ToC does not present sufficiently clear causal pathways leading to outcomes and the Project Objective. Furthermore, the outcomes do not comprise information about other actors (outside the project) that are expected to contribute and eventually become key drivers for achievement of the planned outcomes. Also, the ToC map makes reference to the UNDP Strategic Plan Output instead of the GEF Project Objective.

While the evaluators consider the definition of the project outcomes enough explicit and clear, the outcomes are not mapped into a sequence that should imply prioritization of their implementation. In this case, improved legal framework and enhanced data collection (Outcomes 1 and 2) are necessary preconditions for achievement of sound management of PCBs (Outcome 3). The assumptions and risks in the ToC were defined in a comprehensive and valid manner but there was no follow-up monitoring of the critical risks during the project implementation (more details in the section ‘Risks and assumptions’).

Recently, GEF Secretariat developed a comprehensive guidance specifically aimed at carrying out the ToC processes during the preparatory stage of the GEF projects[[6]](#footnote-7).

The indicators in the project results framework constitute a mixture of quantitative and qualitative indicators complemented by a number of indicator targets both for the mid-term stage and end-of-the project.

Some of the indicators are in fact formulated as a mixture of indicators and targets as shown in Table 2 below.

**Table 2:** Assessment of the objective/outcome indicators and targets in the project logframe

|  |  |
| --- | --- |
| **Original indicator** | **Suggested modified indicator** |
| 50 tonnes of pure PCBs and 100 tonnes of low-concentrated PCBs/related waste are safely managed and disposed of/decontaminated by the end of the project, thus reducing global and local environment from exposure to these hazardous wastes | Amounts of pure PCBs and low-concentrated PCBs/related waste safely managed and disposed of/decontaminated by the end of the project |
| One consolidated country-wide PCB inventory updated and completed, with appropriate data including sampling dates and analysis results of phased-out and in-use equipment | Number of records in the country-wide PCB inventory database |
| National PCB management plan is drafted and approved | Status and number of updates of the National PCB management plan  |
| Temporary storage facilities are upgraded and monitored under the project for the safe storage of PCB equipment/oils/waste pending final disposal or decontamination procedures | Number of Temporary storage facilities are upgraded and monitored under the project for the safe storage of PCB |
| Documentary and direct evidence that environmentally sound technologies or services for PCBs disposal/dechlorination have been identified, assessed, and procured | Status of selection of environmentally sound technologies or services for PCBs disposal/dechlorination |
| Documentary evidence that the project’s results sustained and replicated through proper M&E and knowledge management actions | Number of knowledge products delivered and shared with the wider public for replication |

Apart from the few inconsistencies highlighted above, the evaluators found the other indicators and targets to be in line with the SMART criteria, i.e. specific (S), measurable (M), attainable (A), realistic (R) and time-bound (T). No rating of the project design is provided, as it is not requested by the GEF MTR guidelines.

## Progress towards Results

### Progress towards outcomes analysis

The information presented in this section has been sourced from the annual Project Implementation Reports (PIR) for 2020 and 2021, supplemented with information compiled from the stakeholder interviews.

The progress towards the four project outcomes is presented for each outcome in separate Tables 3-7 and the overall progress towards the project objective is summarized in Table 8. The columns “Midterm Targets”, and “End-of-project Targets” are populated with information from the project results framework. Using that data, the MTR team completed the column “Midterm Level & Assessment” and concluded whether: the end-of-project targets have already been achieved (colour of the “Midterm Level & Assessment” item green); is partially achieved or on target to be achieved by the end of the project (colour yellow); or is at high risk of not being achieved by the end of the project and needs attention (colour red).

**Table 3:** Achievements at MTR for Outcome 1: Legal frameworks, administrative processes and technical preparedness for the sound management of PCBs in Ethiopia strengthened

| **Outcome Indicators** | **Mid-term Targets** | **End of Project Targets** | **Midterm Level & Assessment** |
| --- | --- | --- | --- |
| 1.1 Legal framework for PCBs drafted and adopted1.2 Institutional capacity and arrangements for the management of PCBs reviewed, and gaps and overlaps identified and addressed through consultation and coordination processes | Comprehensive assessment of the national legal and institutional framework completedTechnical assistance to the environmental authorities on the enforcement of the new or amended legislation and technical regulations related to PCBs delivered through specialized trainings and joint participation of project staff and government representativesProject management unit and PSC established and meeting regularly | New or amended legislation and regulations which includes specific PCB provisions adopted and disseminated to key national stakeholdersAdvisory support and required technical assistance in the implementation of the national legislation and regulations and guidance on PCBs delivered through continuous project support Technical assistance to the environmental authorities on the enforcement of the law and regulation related to PCBs delivered through joint participation of project staff and government representatives Institutions effectively coordinating implementation of the project | Assessment of the legal framework on PCBsNew Directive on PCB management (pending approval)No progress reportedPMU established (2019)PSC established and met 2019, (2020). 2021 |

*Indicator 1.1: Legal framework for PCBs drafted and adopted*

Implementation of the outcome started with analysis of the existing legislative and regulatory frameworks (the baseline legislation) that was conducted by the Legal Department of the Environment, Forest, and Climate Change Commission (EFCCC). According to the analysis, Ethiopia has the following legislation related to chemical and hazardous waste.

Environmental Policy of Ethiopia (1997) as a standalone legislative act was formulated to guide the environmental governance system in Ethiopia with the overall goal to improve and enhance the health and quality of life of the citizens in a sustainable manner.

Environmental Pollution Control Proclamation 300/2002 introduced rules that regulate pollution. Pollution of the environment by violating relevant environmental standard is prohibited (Article 3(1)). The EFCCC and regional authority can require the installation of technology to avoid or reduce the generation of waste and when feasible, recycle the waste.

Hazardous Waste Management and Disposal Control Proclamation 1090/2018 contains several provisions related to PCBs. It defines hazardous waste as wastes that belong to the categories contained in Annex 1 that includes substances and articles containing or contaminated with polychlorinated biphenyls (PCBs), polychlorinated terphenyls (PCTs) or polybrominated biphenyls (PBBs) and has any of the characteristics contained in Annex 2, including wastes that might be categorized as hazardous by a Directive to be issued by the EFCCC.

The proclamation further defines the scope of application to any person, who generates, reuses, recycles, stores, transports, or disposes hazardous waste in all parts of Ethiopia, and puts obligations on the hazardous waste generator to create conditions necessary for collection, reuse or recycling of the product after its expiry period.

Industrial Chemical Registration and Administration Proclamation 1075/2018 defines industrial chemical as any chemical that is used for industrial, educational, and training, research and knowledge transfer purposes, with the exclusion of pharmaceutical and medical, food and food additives, agricultural, chemical weapons, and radioactive chemicals. The proclamation also requires the establishment of a national chemical database and registry.

In order to complement the above baseline legislation, it was decided to prepare a new Directive on PCB Phase-out. The drafting was done by the legal department of the EFCCC with technical support from UNITAR. At the time of the MTR, a draft “Directive Issued to Phase-Out the Use of Polychlorinated Biphenyl Materials and Polychlorinated Biphenyl Contaminated Materials” was available in both Amharic and English languages in compliance with the standard requirements of the legislative approval. Both versions were destined for review and clearance by the Ministry of Justice (MoJ) before final approval by the Environmental Protection Authority (EPA). There was no information about the expected duration of the review process. As the MoJ had actively participated in the drafting process, it was hoped that the MoJ clearance would not take too long. However, as the duration of the approval process at EPA is also unknown, it could take considerable time to get to the official promulgation of the new Directive.

*Indicator 1.2: Institutional capacity and arrangements for the management of PCBs reviewed, and gaps and overlaps identified and addressed through consultation and coordination processes*

The Project Management Unit was established shortly after the project official signature by the GoE and the Project Steering Committee was established at the project Inception Workshop. More details are provided under the Management Arrangement section below.

Provision of technical assistance on enforcement of the amended legislation is planned only once the new Directive is approved and comes into effect through official promulgation by the EFCCC.

**Summary Assessment of Outcome 1:**

The analysis of the relevant existing legislative acts proved that the baseline legislation addressed PCBs only in general terms through broad regulation of polluting substances and hazardous waste. Although prohibiting unsafe management and disposal of hazardous waste including PCB waste, such broad regulation can’t properly address numerous specific issues of management, temporary storage, and ultimate disposal of PCBs.

The Directive addresses number of aspects related to PCB management, including specific provisions on:

* Elaboration phase-out plans and conduct of PCB inventories;
* Testing, classification and labeling of PCB wastes;
* Decontamination and cross contamination of PCB materials and PCB-contaminated materials;
* Handling of PCB equipment, removal from service, recycling, transportation, storage, disposal;
* Remediation of contaminated sites, reporting and emergency preparedness;
* Institutional mandates and responsibilities in relation to the management, disposal and elimination of PCBs.

The draft Directive on PCB Phase-out is based on universally recognized principles and on provisions of the Stockholm and Basel Conventions. It establishes adequate measures necessary to regulate PCBs in Ethiopia with the aim of ensuring safe handling of PCBs, PCB contaminated equipment and PCB waste and achieving ultimate disposal of PCBs.

While the baseline has been amended and relevant institutional capacity for PCB management at the national level has been established, there are uncertainties about the date of promulgation of the new Directive and about ability of the competent authorities for its enforcement.

Based on the above summary, the implementation of Outcome 1 is rated **Satisfactory (S).**

**Table 4:** Achievements at MTR for Outcome 2: National capacity for PCB management strengthened throughout the lifecycle

| **Outcome Indicators** | **Mid-term Targets** | **End of Project Targets** | **Midterm Level & Assessment** |
| --- | --- | --- | --- |
| 2.1 One consolidated country-wide PCB inventory updated and completed, with appropriate data including sampling dates and analysis results of phased-out and in-use equipment | Inventory sampling activity plan for 10,000 equipment is well Services for the sampling and analysis of this equipment and establishment of PCB inventory procured, if applicableSampling and analysis of 6,000 pieces of PCB- suspected equipment carried out, if applicablePCB-containing equipment labelled and entered in the national database | 10,000 equipment oil samples have been taken and analysed for quantifying PCB concentration, if applicablePCB inventory database established and made available to authorities and PCB holders through a dedicated website with access policies | 5,231 transformers owned by EEU identified as potentially contaminated 8 PCB analysers procured Task force for inventory of PCB transformers established800 transformers analysed in the field, and 275 samples taken for confirmatory analysisData entered into PCB database |
| 2.2 National PCB management plan is drafted and approved | National PCB management plan draftedFirst update of the National PCB management plan based on inventory dataFacility-level PCB management plans drafted where appropriateAt least 10 contaminated sites management plans developed | National PCB management plan reviewed and adoptedSecond update of the National PCB Management Plan based on updated inventory data | Training on preparation of PCB management plans and the chemical registry databaseNational Management Plan for PCBs 2019-2022 drafted and distributedEEU PCB management plan drafted and promulgatedTraining workshop on the preparation of facility-level PCB management plans Training workshop on sustainable management of PCB contaminated sites |
| 2.3 Number of operators/technical staff in the electric sector and in MEFCC trained on and confident in practically applying the ESM system for PCBs2.4 Number of technical and procedural guidance documents compliant with Stockholm Convention and national regulations completed and endorsed | Guidance drafted for sampling of online and offline equipment, operation and maintenance of PCB-contaminated equipment, identification and labelling procedures, handling, transportation, temporary storage, and disposal discussed in 5 dedicated workshopsUsing the guidance material, at least 8 training sessions covering 80 operators/technical staff of the electric sector implementedProcedural and guidance documents drafted for environmental authorities on Stockholm and Basel Conventions, and BAT and BEP for PCB treatment and disposal operations and discussed in a dedicated workshop5 training sessions covering at least 25 officers from the relevant ministries and research institutions carried outTraining on chemical (PCB) response procedures and mechanisms undertaken and piloted at one site | Guidance for sampling of online and offline equipment, operation and maintenance of PCB-contaminated equipment, identification and labelling procedures, handling, transportation, temporary storage, and disposal adopted25 training sessions covering at least 340 equipment operators (engineers and technicians) in the electric power sectorProcedural and guidance documents for environmental authorities on Stockholm and Basel Conventions, and BAT and BEP for PCB treatment and disposal operations adopted7 training sessions for at least 50 officers from the relevant ministries and institutions carried out | Guidance on identification, sampling and labelling of PCB equipment in the PCB management plan drafted and distributedTrain-the-trainers workshop on inventories, sampling and screening of PCB transformers3 follow-up training workshops for total 126 operators/ technicians from the main PCB transformer owners Training sessions on PCB treatment and disposal for 25 officers from the relevant ministries and research institutionsAwareness raising meeting on PCB and other chemicals in regions (September 2020)Document on chemical response procedures and mechanisms |
| 2.5 National PCB tracking system developed and operational | Terms of reference for national PCB tracking system to prevent illegal importation of equipment likely to contain PCBs operational | Periodic technical visits to the PCB holders undertaken and technical support and advice provided to purchase PCB- free transformers, capacitors, and related equipment | 4 back-to-back workshops on software for the national chemicals database systemPCB management database for inventory of transformers |
| 2.6 Awareness raising strategy developed and implemented, which targets government, public and private sector, civil society, local communities and community leaders2.7 Gender Action Plan in the context of PCB issues in Ethiopia implemented for better gender mainstreaming in POPs-related activities identified | An awareness raising strategy developed, and awareness materials such as brochures, project cards, meeting banners and posters, for different target groups, developed and disseminatedImplementation and monitoring of Gender Action Plan completedDissemination of project objectives and midterm results through establishment of a website, broadcasting, and workshops, and enhancement of gender related issues | Awareness materials disseminated at different levels: communities, technicians, and policy- makersMedia briefing events both at mid-level managers (facility managers) and high-level (ministers, members of parliament and chief executives planned and executedLocal communities have access to awareness raising materials in their own local languages and trainings for the community leaders are organisedDissemination of project objectives and midterm results through establishment of a website, broadcasting, and workshops, and enhancement of gender related issues | Awareness raising meeting for regionsCommunication Strategy for the Control and Management of Polychlorinated Biphenyls (PCBs) and other Hazardous Chemicals in Ethiopia (2020-2025)Gender dimension study for the project completed EEU specific structure to address women adoptedEnvironment Forests and Climate Change Commission (EFCCC) website with PCB portal |

*Indicator 2.1: One consolidated country-wide PCB inventory updated and completed, with appropriate data including sampling dates and analysis results of phased-out and in-use equipment*

Ethiopia conducted a preliminary PCB inventory during the preparation of the National Implementation Plan (NIP) for the SC in 2003, as a foundation for future detailed inventories. Although it was updated in 2015, the inventory was incomplete and not sufficient for making informed decisions about PCB management.

The work on the PCB inventory under this project benefited from the concurrent inventory of fixed assets of the Ethiopia Electric Utility (EEU) under the Ethiopia Electrification Programme (ELEAP) funded by the World Bank. The EEU inventory established records of about 40,000 transformers throughout the country that include information specifically relevant to PCBs (such as type, origin, year of manufacture, status, GPS coordinates, etc.) in the EEU internal database.

The PCB inventory was designed to include transformers manufactured before 1993 and those with unclear maintenance records, in order to identify and locate PCB-containing equipment and PCB-contaminated oil with PCB concentrations greater than 50 ppm through screening tests and eventually confirmatory laboratory analysis.

As a preparation for the inventory, the EFCCC concluded a Contractual Agreement (CA) with the Ethiopia Conformity Assessment Enterprise (ECAE). The latter is the major conformity assessment organization in the country that provides accredited laboratory testing, inspection, and certification services to industry and the public. The ECAE has a chemical laboratory equipped with necessary analytical instrumentation, in particular gas chromatographs (GC) in various configurations, such as GC coupled with electron capture detector (ECD), GC with mass spectrometric (MS) detector, as well as the GC/MS/MS (triple quad) configuration.

The CA was signed in October 2020 and contains provision for organization of an initial training in Training-of-Trainers (ToT) format on PCB inventory and systematic register of the articles and equipment with PCB content. The ToT workshop was organized in collaboration with UNITAR on 11-14 December 2020. A basic group of professionals from different institutions including ECEA received theoretical and practical training on PCB equipment inventories, as well as on sampling and field screening analysis of PCB in transformer oil.

In line with the CA, the ToT workshop was immediately cascaded down by ECEA that organized three follow-up training workshops for total 126 technicians (119 males and 7 females) from the three main PCB holders, EFCCC and staff of employed in regional branches that were predestined to conduct the inventory of PCB equipment in the field sites. The follow-up trainings were organized in the period 18-31 December 2020.

The trained technicians formed PCB transformers inventory task forces that started mapping the transformers in early 2021. Using the above criteria (year of manufacture and maintenance records), total 5,231 transformers were filtered out from the EEU database as potentially contaminated by PCBs. The task forces also conducted sampling and analysis of the suspected PCB transformers in the field by a fast-screening technique. For assessment of the PCB-contaminated transformers, total 8 sets of L2000 DXT Analysers were procured including reagents for analysis of PCBs in transformer oil.

After some delay in the procurement process, the 8 sets of the L2000 DX analysers were delivered in autumn 2020. However, testing of the equipment in the laboratory of the Ethiopian Environment and Forest Research Institute (EEFRI) revealed that two analysers had faulty electrodes that had to be returned to the supplier.

At the time of the MTR, the inventory and sampling campaign was still in progress with completed analysis of almost 800 transformers. The samples from the PCB equipment were taken to interim screening sites where ECEA technicians performed analysis with the L2000 DX analyser. Positive samples (i.e. those that gave PCB concentration above 50 ppm) were taken to the central laboratory of ECEA. At the time of the MTR, about 275 samples were saved for confirmatory analysis. Data for all collected PCB samples were entered into the PCB database in the format of an Excel sheet.

In the frame of the above CA, the ECEA initiated procurement of materials necessary for confirmatory analysis of PCBs in the ECEA laboratories, namely chromatographic capillary columns, individual and mixed PCB congeners and Aroclors[[7]](#footnote-8) as standards, manifold for solid phase extraction, solvents, and consumables. The procurement notice was published in January 2021 and evaluation of bids was still in progress at the time of the MTR.

*Indicator 2.2: National PCB management plan is drafted and approved*

The development of the national PCB Management Plan started with a training workshop for 40 participants in November 2019 organized by UNITAR. The training was composed of modules on Stockholm Convention, on PCB Management Plans and on Occupational Health, Safety and Accident Prevention & Response. Apart from facilitation of the training, UNITAR provided guidance for drafting the National Management Plan for Polychlorinated Biphenyls (PCBs) 2019-2022, as an overarching plan that outlines all key issues such as the legislative framework, inventory and database of PCBs, sampling and analysis, storage and disposal, as well as remediation of contaminated sites. The document was distributed to all stakeholders. Assistance to EEU for development of a facility PCB management plan was also provided.

It is planned to update the National PCB Management Plan based on the inventory data, together with plans for contaminated sites management plans. As the inventory was still in progress during the MTR, there was no information about any update of the Plan.

The training also included guidance on preparation of PCB management plans at PCB holders’ facility. In August 2021, EEU issued its PCB management plan with the following specific objectives:

* Identify sources of PCB, determining the degree of contamination,
* Assess the risks associated with PCB stocks and wastes within the facilities of the company, considering the life cycle of the equipment,
* Improve capacity to manage its PCB in an environmentally sound manner,
* Reduce stocks and wastes contaminated with PCB through the elimination of PCB (treatment and/or incineration).

The PCB management plan will become an integral part of the EEU operation plan.

The other two major PCB holders, namely Ethiopia Electric Power (EEP) and Ethio-Engineering Group (EEG) did not have their respective PCB management plans at the time of the MTR.

In October 2021, a 4-day training workshop on sustainable management of PCB contaminated sites was organized for 27 participants – senior managers and experts from EFCCC, the three PCB holder companies, and national research establishments. The workshop was facilitated on-site by ECEA with on-line support from UNITAR and two environmental consultants from Europe.

The first two days of the workshop agenda included lectures and presentations on PCB site investigation and assessment, site management and remediation, as well as site monitoring and aftercare. The remaining two days were dedicated to practical training on preparation of a management plan for the PCB contaminated site at Kotobe[[8]](#footnote-9).

As an immediate follow-up to the training, the PCU established a task force for drafting the management plan for the Kotobe transformer storage site. Before finalization, the draft plan will be subject to assessment by UNITAR.

*Indicator 2.3: Number of operators/technical staff in the electric sector and in MEFCC trained on and confident in practically applying the ESM system for PCBs*

*Indicator 2.4: Number of technical and procedural guidance documents compliant with Stockholm Convention and national regulations completed and endorsed*

A guidance document on identification, sampling and labelling of PCB equipment according to the PCB management plan drafted and distributed to the main PCB holders

On 1-2 November, UNITAR with an associated international expert facilitated a training workshop on management of PCB-contaminated equipment. Due to the COVID-19 pandemic restrictions, the originally planned separate training workshops had to be compressed into one workshop with the back-to-back modules on PCB-equipment handling & maintenance, packaging, transportation, and storage, as well as treatment and disposal planning. For security reasons, the trainers had to leave the country before completion of all training sessions and were not able to conduct a visit to one storage site with PCB transformers.

*Indicator 2.5: National PCB tracking system developed and operational*

The project received assistance from the WHO/UNITAR project “Establishment of key elements of national systems for sound chemicals management in selected countries in Eastern Europe, Caucasus and Central Asia in terms of obtaining the software for establishment of a chemical database software.

The software is a great assistance to responsible institutions for establishment of an interactive registry of chemicals. It enables any person who is producing, importing, exporting, distributing, storing, or using industrial chemicals to conduct online record keeping and reporting which has huge benefit in terms of time, cost and avoiding litigation by the law enforcing body.

To make the software functional, four workshops were conducted:

• Endorsement and launching ceremony in the presence of Ministries and Commissioners on 28 November 2020;

• Technical team training workshop on 30 November 2020- 2 December 2020 for 54 participants with a stake in deciding the registry system;

• Two days training workshop on 14-15 November for experts drawn from companies which produce and/or import chemical and apply the chemical registration software;

• Media briefing and orientations to chemical factory managers on the commencement of chemical registration and associated responsibility (1 day event)

Similarly, PCB management database was also developed that will be used for the inventory of transformers, keeps record of transformers with information about PCB content and physical location of transformers. The national PCB tracking system will be part of the ongoing chemical registry database system.

*Indicator 2.6: Awareness raising strategy developed and implemented, which targets government, public and private sector, civil society, local communities and community leaders*

In September 2020, an awareness raising meeting on PCB and other chemicals was given to 31 participants (28 males and 3 females) that included representatives from the regions and other stakeholders. Another meeting was dedicated to women.

A stakeholder meeting on preparation of the communication strategy on management of PCBs was held in November 2020 for 33 participants (28 male and 5 female). As a follow-up, a task force was established that prepared the Communication Strategy for the Control and Management of Polychlorinated Biphenyls (PCBs) and other Hazardous Chemicals in Ethiopia, (2020-2025).

The PMU made arrangements for use of the EFCCC website to disseminate information. To that end, the IT team of the Commission created a dedicated PCB portal on the EFCCC website to provide information on progress in the GEF project and dissemination of its knowledge products.

*Indicator 2.7: Gender Action Plan in the context of PCB issues in Ethiopia implemented for better gender mainstreaming in POPs-related activities identified*

A gender analysis related to PCB management in Ethiopia was conducted shortly before the GEF project inception. The report from this analysis (dated January 2018) contains a detailed Gender Action Plan (GAP) with 12 defined results and number of targets to measure progress. The document stipulates that the GAP will be reviewed annually and adjusted if deemed necessary.

In November 2020, a one-day meeting was organized for awareness raising of selected women employees and concerned male employees of EFCCC in collaboration with the Department of Women, Children and Youth of EFCCC. The meeting focussed on practical application of the national Women’s Economic Empowerment (WEE) policies and programmes.

The meeting agenda included discussion on impact of PCBs and other chemicals on women and health and safety PCB/chemicals management, based on expert presentations of the PCB project benefits for women and children and case studies of women exposure to harmful chemicals.

**Summary Assessment of Outcome 2:**

The progress of the PCB inventory was hampered by lack of transportation to the transformer field sites. At the time of the MTR, the inventory was far from being completed due to initial lack of transportation and later fears of insecurity of the inventory teams to travel to remote areas. Therefore, the mid-term target for number of fast screening tests in the field was not achieved. In response, the PMU ensured notable commitment of EEU as the principal PCB holder, but acceleration of the inventory fieldwork will depend on improvement of the political situation. Owing to the cooperation with UNITAR and its knowledge transfer programme, there has been good progress towards establishment of the national PCB tracking system, although the system was not yet operational at the time of the MTR.

Slower progress was noted with regard to the confirmatory analyses of transformer oil in the certified laboratory of ECAE. Institutional mechanism for such analyses has been established and further progress is pending on procurement of auxiliary laboratory equipment, PCB standards and consumables for the laboratory. It is expected that upon delivery of the procured items, the ECEA chemical laboratory will be able to proceed fast with the confirmatory analyses.

Completion of the National Plan for PCB Management as well a similar plan at the level of one of the three principal holders prove that the project successfully assisted to establish the required national capacity for preparation and implementation of PCB management plans. Development of facility-level plans for the other PCB holders (EEP and EEG) will depend on their commitment.

Through development of guidance and organization of training workshops for operators and technical staff of the PCB holders, the project was successful in strengthening national capacities for environmentally sound management of PCB waste. This was achieved despite the negative effect of COVID-19 meeting restrictions. Although the project organized several awareness-raising events, the level of awareness of the need for careful PCB management and of Ethiopia’s obligations under the Stockholm Convention remains to be relatively low.

The project was also instrumental for further strengthening of the national capacity in awareness and technical knowhow for management and remediation of contaminated sites through assistance for development of the plan for management of the PCB-contaminated site. Experience from this work will be used as a model for replication of this approach for preparation of similar management plans at other PCB-contaminated sites.

Owing to the cooperation with UNITAR, the project assisted with creation of a digital infrastructure for establishment of the national chemical registry system that enables collection, storage, and exchange of data on chemical substances used in Ethiopia. Setting up the registry is an important step in implementation of the Globally Harmonised System of Classification and Labelling of Chemicals and of international conventions on protection of environment and health in Ethiopia. Therefore, this intervention can be considered as a strategic one as it has a huge positive impact not only on management of PCBs but on tracking and sustainable management of a wide range of chemicals in the country.

Based on the above, the progress in implementation of Outcome 2 is rated **Satisfactory (S).**

**Table 5:** Achievements at MTR for Outcome 3: ESM of PCBs liquids and equipment in use or out of service implemented

| **Outcome Indicators** | **Mid-term Targets** | **End of Project Targets** | **Midterm Level & Assessment** |
| --- | --- | --- | --- |
| 3.1: Temporary storage facilities are upgraded and monitored under the project for the safe storage of PCB equipment/oils/waste pending final disposal or decontamination procedures | Storage facilities for the temporary storage of PCB- contaminated equipment are identifiedUpgrading of safety and emergency response in selected storage facilitiesPPE equipment for personnel is available to ensure safe operationsMonitoring of quality of storage over time is ensured by enforcement authorities | At least 2 storage facilities have been upgraded to ensure safe storage of PCB- contaminated equipment and waste in fulfilment of national and international rules on PCBs | Follow-up work in progress on identification and required size of PCB storage sites It is reported that site and facility for temporary storage for PCB waste will be determined after getting full inventory dataPPE for personnel of EEU, EEP and EEG provided  |
| 3.2: Documentary and direct evidence that environmentally sound technologies or services for PCBs disposal/dechlorination have been identified, assessed, and procured | Identification and technical- economic feasibility analysis of disposal options based on the amount of pure and low-concentration PCBs identifiedDrafting of TORs for the procurement of PCBs disposal/decontamination service and equipment | PCB dichlorination technology is rented/installed in the country to treat low- concentrated PCB oils, if applicable and appropriate | Initial discussion of available technologies for PCB elimination strategy It is reported that the type of technology will be determined upon completion of the inventory and establishment of concentrations of PCBs in the transformers |
| 3.3: Amount of equipment or waste containing or contaminated by PCB disposed in an environmentally sound manner | For pure PCBs, existing qualified service providers informed and invited and tender for hazardous waste handlingIf applicable, the selected PCB decontamination technologies demonstrated in action as part of procurement activity for their reliability, environmental performance, and compliance with national regulation, Stockholm and Basel Conventions’ requirementsAssociated sub-contracts for export of pure PCB waste and decontamination of low-concentrated in place (if applicable), and pre-bid conferences for interested bidders held to improve quality of received bids | Destruction/treatment of 150 tonnes of PCB-contaminated equipment in progress with disposal certificates obtained | No progress:It is reported that this part to be implemented in 2022 |

*Indicator 3:1: Temporary storage facilities are upgraded and monitored under the project for the safe storage of PCB equipment/oils/waste pending final disposal or decontamination procedures*

Participants of the training on management and remediation of PCB-contaminated sites (conducted under in October 2021) commenced follow-up work to identify location of potential storage facilities and calculate their required size based on the data from the training. Further progress hampered by lack of information about distribution of PCB transformers in the country that is to be provided upon completion of the PCB transformers inventory.

The representatives of the main PCB holders confirmed that PPE for their operators and technicians has been provided.

*Indicator 3.2: Documentary and direct evidence that environmentally sound technologies or services for PCBs disposal/dechlorination have been identified, assessed, and procured*

A training session was held at the beginning of November 2021 on PCB handling, transport, storage and the elimination that included initial discussion of available technologies for PCB disposal and feasibility of their use within this project. Further assessment of the technologies is planned upon completion of the inventory (Indicator 2.1).

*Indicator 3.3****:*** *Amount of equipment or waste containing or contaminated by PCB disposed in an environmentally sound manner*

Implementation of this part is expected to start upon completion of the inventory and selection of the technologies and services necessary for ultimate disposal of PCB waste.

**Summary assessment of Outcome 3:**

Implementation of this project component is planned after completion of the inventory part of Outcome 2. However, such sequential modality of implementation poses considerable risk that the planned activities will not have been completed and the respective targets will not have been achieved by the end of the project.

Firstly, the work on siting and specifications for the temporary storage facilities should have started from the beginning of the project implementation. According to the Project Document, it is envisaged that decommissioned transformers and capacitors will be collected and transported to four central temporary storage facilities. Therefore, the project will have to recruit services for development of Technical Specifications (TSs) for the required temporary storage facilities. Although the technical requirements for the PCB storage facilities were discussed during the trainings, it is doubtful whether sufficient technical expertise is available locally for development of the TSs. The project could assist through procurement of services of an international consultant that could work with the PCB holder companies and supervise the work on preparation of their respective TSs.

Furthermore, setting up a temporary storage for PCB wastes requires to choose an appropriate area and approval with possible actions of the regional and/or local authorities and the interim storage should be specifically designed for PCB containing equipment and wastes. This could potentially face the issue of land ownership and its resolution could also take some time. As the conduct of the inventory of transformers is in delay, the development of technical service (TS) for the temporary storage and its siting could add further delays.

The project is expected to use consolidated technologies for the disposal of PCBs. High concentration PCB waste (transformers and mineral oil contaminated with PCBs) will be pre-treated as necessary, packaged and shipped for destruction through high temperature incineration (HTI) or co-incineration in BAT/BEP compliant plants in compliance with the Basel Convention rules.

For transformer oil and equipment with low level of PCB contamination, the available option could be the technology for dehalogenation of PCB contaminated oil[[9]](#footnote-10) into the country (either procured or rented), or, again, export of the PCB waste abroad. The final choice will be based on technical as well as economic considerations.

The technical and economic assessment of PCB disposal options is a complex exercise that requires considerable time for completion. In case the dehalogenation technology is identified as the preferable option (as assumed in the Project Document), its deployment will require an additional time period for obtaining all necessary permits and making all necessary arrangements. Therefore, the postponement of implementation of this part of Outcome 3 poses a serious risk that it will not be completed in time to enable ultimate disposal of the planned quantities of PCB wastes within the remaining project duration.

During the project’s design phase, it was assumed that some PCB waste would be transported abroad. As Ethiopia is a landlocked country, the possibility of transboundary movement of PCB waste through Djibouti was confirmed with suggestion to start formal discussions early in the project implementation phase.

The transboundary movement of hazardous waste could become the main obstacle to the ultimate disposal abroad, as it often can’t be addressed within the framework of a GEF project only but needs to have inter-country agreements in place. Moreover, procedures for arrangement of the transportation are lengthy and come with additional risks. The national capacity in Ethiopia with respect to organization of such transport of hazardous waste is probably not yet developed and transport of PCB waste for disposal abroad could be the first of its kind in Ethiopia. A high-level involvement to address the trans-boundary movement is could therefore become critical to the success of this project,

Based on the above assessment, the implementation progress under Outcome 3 is rated **Moderately Unsatisfactory (MU).**

**Table 6:** Achievements at MTR for Outcome 4

| **Outcome Indicators** | **Mid-term Targets** | **End of Project Targets** | **Midterm Level & Assessment** |
| --- | --- | --- | --- |
| 4.1 Documentary evidence that the project’s results sustained and replicated through proper M&E and knowledge management actions | Inception activities carried out, project management structure implemented, knowledge management system including project website established (to be completed in the first year of project implementation) | N/A | Inception workshop organizedEnvironment Forests and Climate Change Commission (EFCCC) website with PCB portalInformation database developed  |
| Project reporting and planning established and implementedMidterm evaluation and auditing activities carried out | Project reporting and planning continued until project end | 2 PIRs prepared and submitted Annual work plans prepared MTR initiated and conducted |

Details on implementation and rating of this output are provided below under the respective paragraphs ‘Monitoring and Evaluation’, ‘Work Planning’ as well as ‘Reporting and Communication.

The progress in implementation of Outcome 4 is rated **Satisfactory (S).**

**Table 7:** Achievements related for assessment towards the Project Objective

| **Objective Indicators** | **Mid-term Targets** | **End of Project Targets** | **Status at MTR** |
| --- | --- | --- | --- |
|  National environmentally soundmanagement (ESM) system of PCB chemicals and waste drafted and implemented by 2020 | Comprehensive national PCB inventory is completedESM guidance materials drafted and an initial training of PCB holders undertakenThe risk for the population surrounding plant and storage facilities containing PCBs is minimized as a result of safety measures preventing PCB release in the environment | Existing storage facilities for transformers are assessed and upgraded to international standards to allow PCB removal and decontamination operationsThe risk for the population surrounding plant and storage facilities containing PCBs is minimized through the sound disposal of at least 150 tonnes of PCB-contaminated equipment and waste | Inventory of all transformers owned by EEUGuidance on handling and maintenance of PCB equipment, PCB chemical emergency response, and on the PCB inventory process supported by training workshopsNo visible risk reduction for the population surrounding plant and storage facilities containing PCBsAwareness limited to few workers at the PCB holder institutions |
| Amount of PCB equipment identified and listed in thenational PCB inventory and included in the national PCBmanagement plan | 6,000 pieces of equipment expected to be tested for PCB content, out of which PCB- containing equipment is identified and labelled for future treatment or disposal, if applicableNational PCB inventory database established and maintained to help with priority decision-making |  | 5,231 PCB suspected transformers identified and about 800 of them analysed by field screening method275 samples set aside for confirmatory analysisNational PCB inventory database established and run operational  |
| 50 tonnes of pure PCBs and 100 tonnes of low-concentratedPCBs/related waste are safely managed and disposed of/decontaminated by the end of the project, thus reducing globaland local environment from exposure to these hazardous wastes | Based on final inventory amounts, temporary storage locations identified and upgraded to meet international standardsPure PCB waste is prepared for export to HTI plants for final disposal, and PCB- contaminated oil is treated via rented or purchased dechlorination technology (if applicable) or also exported for disposalAppropriate procedures for making the rented/ procured technology operational are completed and location to host thetechnology selected and confirmed (if applicable) | At least 150 tonnes of equipment containing PCB (in pure and contaminated forms) are treated or disposed of in compliance with Stockholm Convention and Basel Convention requirementsDisposal/cleaning certificates obtained | Proposal on possible temporary storage drafted but final decisions pending on completion of the PCB inventory Selection of the methods for PCB equipment treatment and disposal pending on completion of the inventory and results of the assessment of technological and economic options  |

**Summary assessment of progress towards the Project Objective:**

With support from the project for revision and amendment of the existing legislation on chemicals and waste management, the project achieved the target of enhancing the baseline legislation to address specificities of PCB use and thus assisted with establishment of a solid legislative framework for management, phasing-out and disposal of PCB-contaminated transformers and used transformer oil. The project also achieved the targets related to establishment of a national PCB database and a national PCB tracking system.

Furthermore, the project achieved mid-term targets related to building of national capacities for inventory of PCB transformers through preparation of necessary forms and related methodological guidance and assisted with establishment of task forces that conducted the inventory. The work on the inventory was still in progress during the MTR data collection.

In addition, the project also created national capacity for field testing of PCB transformers by a rapid screening technique using L2000 DX analyser. With this technique, about 800 transformers were analysed up to the MTR stage and almost 300 samples were saved for confirmatory analysis in a certified laboratory. Also, assistance was extended to the national certified laboratory through procurement of consumables and reagents for the confirmatory analysis.

On the institutional side, the project has achieved the targets for building capacities and consciousness on environmentally sound management of PCBs of a number of professionals from relevant governmental agencies and PCB holder companies. The capacity was increased through elaboration and adoption of technical guidelines and provision of training on identification and labelling, handling and maintenance, as well as on transportation, temporary storage, and disposal of PCB waste. These guidelines incorporate requirements from the Stockholm and Basel conventions, as well as international guidance on Best Available Technology (BAT) and Best Environmental Practices (BEP).

The project also initiated academic and social interest among research and academic institutions to deal with the study of environmental and social aspects of PCBs.

Last but not least, the project also created awareness of Ethiopia’s commitments and obligations under the Stockholm Convention as well as awareness of negative health and environmental impacts of PCBs in the key project stakeholders and general public.

On the other hand, there was no progress towards achievement of the mid-term targets on establishment of safe temporary storage facilities for PCB waste and on selection of technologies and pathways for ultimate disposal of the identified and classified PCB waste.

Based on the above, the progress towards achievement of the Project Objective is rated **Moderately Unsatisfactory (MU).**

### Remaining barriers to achieving the project objective

Legislative barriers: The project was successful in amendment of the baseline legislation. However, the new Directive on PCB Phase-out has not been officially adopted and therefore enforcement of the new legislation could still pose a barrier to implementation of ESM.

Information barriers: Article 6 of the Stockholm Convention requires its Parties to develop appropriate strategies for identifying sites contaminated by PCBs and to undertake their remediation in an environmentally sound manner. While the work on inventory of the PCB transformers was in progress, there is still information missing on the assessment of the contaminated sites to determine the extent and severity of the environmental and socio-economic impacts of these sites, and for development of corresponding strategies for the management and remediation of the sites.

Technology barriers: Similar to many countries, there is lack of PCB treatment technologies in Ethiopia and absence of information necessary for technical and economic assessment of available options for PCB waste disposal, in particular with regard to treatment of low PCB-containing equipment and transformer oil.

Awareness barriers: Despite the efforts of the project so far, the levels of awareness on the adverse effects of PCBs low. The workers and in some cases also senior management of PCB holders are still not fully aware of the health and environmental adverse effects of PCBs. Low levels of awareness continue to cause continued mismanagement of PCB-containing equipment and contaminated transformer oil.

Financial barriers: There is no doubt about high cost of decommissioning and replacement of PCB transformers, as well as the complexity of sampling and analysis of the in-use equipment that also requires coordination effort on harmonization with the maintenance schedule of the PCB-contaminated electric equipment. In addition, PCB management and disposal is often considered to be a low priority by the PCB holders who have other competing priorities and low level of awareness on the PCB issue. Consequently, the financial commitment of holders of PCB waste to address the issue continues to be low, especially considering the high costs related to the decontamination or disposal (with subsequent replacement) of contaminated equipment. Lack of finances at the key PCB stakeholders also hindered accessibility of materials and equipment for sampling and analysis of the suspected PCB contaminated materials.

## Project Implementation and Adaptive Management Arrangements

This section of the MTR report provides assessment of the seven components of the project implementation and adaptive management, namely management arrangements, work planning, finance and co-finance, project-level monitoring and evaluation, management of risks, stakeholder engagement, as well as reporting and communications.

### Management arrangements

The project is being implemented under the National Implementation Modality (NIM) with UNDP support with the EFCCC as the National Implementing Partner that has the principal responsibility for the project execution.

The original project management arrangements are shown on Display 1 below.

**Display 2:** Project organizational structure (as in the Project Document)

****

The Project Management Unit (PMU) has been established and located within EFCCC with responsibilities for the day-to-day running of the project, including overall coordination, planning, management, implementation, monitoring & evaluation and reporting of all project activities. Contrary to the planned project organisational structure, the PMU consists only of the Project Manager (PM) that assumes responsibility for technical aspects of the project implementation. The PM receives support for administrative and financial matters by an assistant in the UNDP CO.

The Project Steering Committee (PSC) has been established with membership of the key project stakeholders, namely the EFCCC and the principal holders of PCB-contaminated equipment. The role of the PSC is to oversee the project implementation, provide overall strategic policy and management directions, review and make recommendations on the project progress, and approve annual project work and budget plans.

UNDP provides the project assurance function through the UNDP CO in Addis and technical supervision and backstopping through the UNDP Regional Technical Advisor located in the Istanbul Regional Hub (IRH). In addition, UNDP keeps a project oversight and monitoring function through organizing mandatory reviews and evaluations, as well as a direct support function in the procurement of the required goods and services.

The evaluators concluded that the actual management arrangements are in line with the planned project organizational structure with the exception of the low PMU staffing.

The standard requirement for GEF projects is to organize the Inception Workshop (IW) within few months after the project official start. In this particular case, the project was officially signed by the GoE on 1 May 2019 and followed with organization of the IW on 14 May.

The IW is normally considered as the 1st meeting of the PSC. However, for this project the 1st PSC meeting was held on 19 July 2019 There were two further PSC meetings, on 2 January 2020 and 11 August 2021, respectively. The postponement of the latter meeting to August 2021 was due to COVID-19 restrictions at the beginning of 2021. According to the minutes of the two meetings, the PSC fulfilled the expected tasks and functions, namely assessment of the project progress, discussion of project implementation issues and challenges, as well as approval of the annual work plans. However, the evaluators consider that UNITAR should be invited to participate in the PSC meetings as it is actively involved in the project and responsible for the capacity building component.

The MTR team considers that the established managerial arrangements and frequency of the PSC meetings are adequate for the size and level of complexity of the project, with only minor insufficiencies related to the staffing of the PMU. Therefore, the management arrangement component is rated **Satisfactory (S).**

### Work planning

In line with the standard UNDP format, the PMU prepares results-based Annual Work Plans (AWPs) with the planned activities, related indicative timeframe under each project output, as well as allocated financial inputs. The AWPs are presented to PSC meetings for discussion and approval.

The evaluators reviewed the AWPs for the years 2019, 2020 and 2021 and found them sufficiently detailed with narrative description of planned activities and corresponding budget apportionments. Systematic inclusion of allocated financial inputs in line with the standard UNDP AWP format gives the PSC members better insight into the project implementation and increases transparency of the annual work planning.

The MTR team rates the project work planning **Satisfactory (S).**

### Monitoring and evaluation

The Project Document states that the project performance monitoring and evaluation (M&E) will be conducted in line with the UNDP Programme and Operations Policies and Procedures (POPP) and the UNDP Evaluation Policy. The mandatory GEF-specific M&E requirements (as outlined below) are being undertaken in accordance with the GEF M&E policy.

The monitoring is provided in the first instance by the Project Manager (PM) that is responsible for regular monitoring of the project results and risks, including social and environmental risks. This is in line with the requirement to ensure project-level M&E is undertaken by national institutes (in this case EFCCC) and is aligned with national systems so that the monitoring data generated by the project supports relevant national institutions and systems. In the second instance, monitoring is also ensured by the annual PSC meetings.

The Project Manager, the UNDP CO and the UNDP-GEF Regional Technical Advisor compile annual GEF Project Implementation Reports (PIRs) that cover the reporting period from July (previous year) to June (current year) for each year of the project implementation. Two PIRs have been provided so far, covering the periods July 2019-June 2020 and July 2020-June 2021, respectively. The evaluators found both PIRs in line with the standard GEF PIR format containing adequate level of details in narrative descriptions of achievements during the reporting period as well as justified ratings of progress in project implementation and of overall progress towards the project development objective.

Mid-term Review (MTR): In line with the M&E plan outlined in the Project Document, the independent MTR was initiated in parallel with the submission of the 2nd PIR to the GEF Secretariat. The Terms of Reference, the MTR process and the required outline of the MTR report follow the standard templates and guidance for GEF-financed projects available on the UNDP Evaluation Resource Centre (ERC). The MTR team is composed of one International Consultant and one National Consultant. Both consultants appointed by the commissioning unit to undertake the MTR assignment are independent from the organizations that had been involved in the designing, executing or advising on the project.

Based on the above, the monitoring and evaluation of the project is rated **Satisfactory (S).**

### Identification and management of risks

As a standard requirement of UNDP projects, the Project Document should contain a risk matrix composed of description and type of risks identified during the project preparation, assessment of risk impacts and probability, related mitigation measures, as well as owners of each risk.

The Project Document in (Section V, paragraph ii) contains a risk matrix with description of 7 risks, their rating and proposed mitigation measures that are summarized in Table 8 below.

**Table 8:** Summary of project risks identified at the project inception

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Description** | **Type** | **Impact and Probability** | **Mitigation Measures** | **Owner** |
| 1.Delayed or incomplete PCB inventory due to the absence of coordination or technical and economic difficulties in carrying out sampling of dielectric oil | Organizational | I = 4P = 2 | Formation of trained national and regional inventory teams with representatives of main project stakeholders | PMU, MEFCC UNDP, UNITAR |
| 2.Development and adoption of legal framework delayed due to lack of interest and support from decision- and policymakers | Organizational Political Regulatory | I = 3P = 3 | Early engagement of relevant project stakeholders in specific awareness raising events Inclusion of PCB-specific provisions into the existing legislation | PMUMEFCC |
| 3.Project resources are not sufficient to ensure the disposal or decontamination of all of the PCB-containing equipment and related wastes | Financial | I = 3P = 2 | GEF grant adequate for 150 tonnes of PCB wasteExact quantities to be estimated to verify adequacy of the allocated resources  | PMU, MEFCC UNDP |
| 4.Delays or refusal of transit of PCBs for export through Djibouti due to national regulations | Political | I = 3P = 2 | Possibility of transboundary movement through Djibouti was initially confirmed formal discussions to be continued early in the project implementation  | PMUMEFCC |
| 5.PCB-contaminated equipment not secured for disposal during the project | EnvironmentalOrganizational | I = 4P = 2 | Commitment with the main PCB owners through co-financing | PMUMEFCC |
| 6.Chemical accidents or spillage of PCB-contaminated waste during sampling, transport, storage, or disposal | Environmental | I = 4P = 1 | Training in environmental best practices for each stage of the lifecycle of PCB management | PMU, MEFCC UNDP |
| 7.Exposure to PCBs of workers involved in the management of PCB-containing waste | EnvironmentalSocial | I = 4 P = 1 | Practical training for workers on the use of personal protective equipment (PPE)  | PMU, MEFCC UNDP |

However, Section XII (Risk Management) of the Project Document does not refer to the above risk matrix in Section V and comprises general provisions for mitigation of risks from misuse of the project funds, fraud or corruption, and makes reference to adherence to UNDP Environmental and Social Standards.

A periodic re-assessment of the initial risks is required as a standard part of the PIRs. Risks are reported as critical when the impact and probability are high (i.e. when impact is rated as 5, or 4 and probability is rated at 3 or higher). Critical risk management is a standard part of the annual PIRs and periodic re-assessment of a risk management plan by both PMU and RTA is fundamental to the project’s proper functioning and success.

The standard reporting of critical risks has not been followed throughout the project implementation. The 2020 PIR mentions the risk elated to the COVID-19 restrictions that create challenges for organization of trainings and delay procurement of kits for sampling and analysis of PCBs. As a response, the project established a temporary task force composed of the PM, the UNDP CO and RTA and UNITAR with the task to identify COVID-19 related challenges and develop mitigations measures to ensure continuity of the project implementation.

The 2021 PIR introduced three new critical risks, namely 1) risk of PCB spills and exposure from operations, 2) risk of PCB leakage from temporary PCB storage facilities, and 3) risk of insufficient participation of women and affected stakeholders in the project. Furthermore, another risk was identified related to lack of transportation to the field sites for conduct of physical inventory, sampling and screening analysis of PCB transformers.

The evaluators conclude that according to the definition of critical risks the risk No. 1 in the above table should have been reported as critical and further managed. Furthermore, the risks Nos. 5, 6 and 7 received lower ratings in terms of probability and the risks Nos. 3 and 4 were underrated on both risk criteria.

The evaluators consider the initial identification of risks reasonable in terms of description but imperfect in classification of critical risks for the project implementation. Consequently, the critical risk reporting and management did not follow the standard practice for UNDP/GEF projects.

Based on the above, the MTR team rates the identification and management of risks as **Moderately Unsatisfactory (MU).**

### Finance and co-finance

The tables below provide a summary of resources allocation for the project and of level of disbursement of the GEF grant funds as well as the estimated actual amount of co-finance up to MTR.

Table 9 below displays breakdown of the GEF project grant disbursements into the project components.

**Table 9:** Allocation and disbursement of GEF funds (as of 30 September 2021)

|  |  |
| --- | --- |
| **Project Component** | **Actual Expenditures (US$)** |
| **2019** | **2020** | **2021** | **2019-2021** |
| Outcome 1 | 49,155.10 | 56,553.85 | -15,076.84 | 90,632.11 |
| Outcome 2 | 10,982.58 | 67,595.04 | 26,678.70 | 105,256.32 |
| Outcome 3 | - | - | - | - |
| Outcome 4 | 8,424.61 | 16,932.85 | 12,743.02 | 38,100.48 |
| Project Management | 4,992.04 | 609.25 | 34,313.08 | 39,914.37 |
| **Total** | **73,554.33** | **141,690.99** | **58,657.96** | **273,903.28** |

The financial data in Table 9 shows that as of 30 September 2021 the total disbursement of GEF grant at the MTR stage stands at US$ 273,903.28 that gives the rate of implementation of the GEF grant 13.76%. The project has already entered the second half of its implementation period and the outstanding unobligated balance of US$ 1,716,027 represents a substantial budget available for the remaining 24 months of the project implementation period.

Table 10 below shows progress in implementation by individual project components.

**Table 10:** Implementation rates by project outcomes (as of September 2021)

|  |  |  |
| --- | --- | --- |
|  **Project Component** | **US$** |  |
| **Planned** | **Actual** | **%** |
| Outcome 1 | 186,011 | 90,632.11 | 48.72% |
| Outcome 2 | 641,093 | 105,256.32 | 16.42% |
| Outcome 3 | 852,896 | - | 0.00% |
| Outcome 4 | 130,000 | 38,100.48 | 29.31% |
| Project Management | 180,000 | 39,914.37 | 22.17% |
| **Total** | 1,990,000 | 273,903 | 13.76% |

The rates of implementation for the individual project components reflect the achieved progress towards the end-of-project targets described above (see Tables 3-6 and related text). The data in Table 9 shows that the implementation rate under Outcome 1 (48.72%) is adequate for the mid-term point of the project while the relatively low implementation rate under Outcome 2 reflects the slow progress in the inventory of PCB transformers.

No funds were spent from the budget allocation under Outcome 3 as the implementation was delayed until completion of the PCB inventory under Outcome 2. Relatively lower implementation rate under Outcome 4 (29.31%) is understandable as this component is dedicated to knowledge management and M&E activities that are expected to increase in the remaining project period.

The budget allocation for Project Management is 9.1% of the total GEF project grant that is in line with the GEF policy on budgeting of the Programme Management Costs (PMC)[[10]](#footnote-11). By the MTR stage, actual expenditures for PMC constituted only 22.17% of the total planned budget for this item. The low expenditure rate reflects the low level of the PMU staffing.

Overall, the project Combined Delivery Reports (CDRs) indicate strong control over the project budget.

The co-financing commitment that the key project stakeholders made at the project inception (confirmed by means of official co-financing letters provided to UNDP) is considered an important indicator to assess the country’s ownership of the project.

Table 11 below summarizes statis of the co-financing by source.

**Table 11:** Allocation of co-financing for the project by source

|  |  |  |
| --- | --- | --- |
| **Co-financing partner** | **At inception (US$)** | **At MTR (US$)** |
| UNDP (cash) | 150,000 | 156,717 |
| EFCCC (in-kind) | 1,400,000 | 111,207 |
| EPP (cash) | 1,250,000 | - |
| EEU (cash/in-kind) | 4,450,000 | 270,667 |
| METEC/EEG (cash) | 1,000,000 | - |
| UNITAR (in-kind) | 100,000 | 137,378 |
| **Total** | **8,350,000** | **675,969** |

It follows from Table 11 that the actual reported co-financing contributions at MTR reached US$ 675,969 that is 8.1% of the planned amount. Co-financing information for the EEP and EEG was not available for the MTR and the co-financing from the EEU was estimated on basis of the EEU budget for screening and analysis of transformers.

The relatively low level of co-financing is another reflection of delays in implementation of the inventory of PCB transformers. The evaluators conclude that it is realistic to expect substantial increase of the co-financing contributions in the remaining period of the project. For example, the EEU has budgeted total US$ 812,000 for screening and analysis of their transformers, US$ 301,640 for administrative cost, training and awareness raising, and further US$ 1,066,800 for treatment of PCB-contaminated equipment (refilling and de-chlorination of in-service transformers, and incineration of PCB waste). By this token, the budgeted in-cash expenditures of the EEU will exceed US$ 2 million.

However, it is desirable that the PMU monitors the co-financing contributions in the remaining period of the project in order to ensure availability of actual co-financing contributions of all project stakeholders at the Terminal Evaluation.

Based on the above, the finance/co-finance component is rated **Moderately Satisfactory (MS).**

### Stakeholder engagement

The Project Document presents a list of stakeholders with whom initial consultations had been held during the project development, including the stakeholders’ respective roles in relation to management of PCB waste. However, this list is rather generic and does not comprehend the differing positions of the stakeholders, namely the distinction between core (involved) and tangential or peripheral stakeholders.

There is no doubt about the support of the project objectives by the core stakeholders (relevant ministries of the GoE and PCB holders). Their extensive engagement in the preparation of the project has been continued during the implementation, mainly throughout the PSC meetings that served as the primary point of stakeholders’ engagement. The minutes of the 3 PSC meetings prove active participation of the direct stakeholders and thorough discussion on key topics related to the PCB management. It is through this that they exercised an active involvement in the project-related decision-making. Furthermore, the core stakeholders were also actively engaged through participation in the training events, revision of the baseline legislation and through participation on the PCB inventory task forces.

Engagement of tangential stakeholders (such as academia, NGOs, and the public at large) was realized mainly through organization of awareness-raising events.

The evaluators concluded that involvement of the core stakeholders in the project implementation has been strong as indicated by the knowledge and awareness by the interviewed stakeholders’ representatives of the project goals and objectives, the progress in implementation of the project, as well as the remaining challenges. However, weaker connections to tangential (supporting and peripheral stakeholders) that are indirectly affected by the project activities could limit the general support for the intervention, especially in cases advocacy or policy change are needed.

Based on the above, the evaluators rate the stakeholder engagement in the project formulation and implementation as **Satisfactory (S).**

### Reporting and communication

Reporting during project implementation helps to identify potential issues that may endanger the project’s capacity to achieve its development objectives. Reporting also helps to make informed decisions, provides valuable information for project evaluation, and provides lessons to be learnt for future projects. Effective and timely communication between the PMU and the core stakeholders is a key element in that respect.

The project reporting is described under the section on monitoring & evaluation above. In regard to communication, the primary channel for communication to the core stakeholders are the PSC meetings. For communication with the general public, the project developed a PCB portal at the website of the EFCCC (reference to website to be included). Moreover, the project also prepared a Communication Strategy for the Control and Management of PCBs and other Hazardous Chemicals in Ethiopia, 2021-2025 as the basis for dissemination of information and knowledge products during the project implementation and beyond.

It appears that communication with the group of core stakeholders has been extensive. However, lack of effective communication with public at large could result in relatively low level of public awareness and understanding of the PCB management-related issues as well as of health and environmental impacts of PCBs.

The rating for the reporting and communication component **is Satisfactory (S).**

### Mainstreaming

The project has been assigned a gender marker 2 which indicates that gender equality and women’s empowerment is a significant objective of the project[[11]](#footnote-12).

The existing national policies that embrace or address gender issues include:

• The 1995 Constitution

• The Revised Federal Family Code (Proclamation 213/2000)

• The Labor and Public Service proclamations (Proclamation 377/2003, Art. 87)

• The Land Use Administration Laws (Proclamation 89/97, Art. 5 and 10)

• Laws on Violence against Women (enforced since July 2004)

A document “Mainstreaming Gender: Gender Analysis and Gender Action Plan” was developed during the project preparatory phase. The Gender Action Plan (GAP) contained in this document prioritises the following five areas expected contribute to achievement of the project outcomes:

(i) Inclusion and participation: Need for women and men to be equally represented, to the extent possible, throughout the entire project cycle,

(ii) Enabling environment: Numerous aspects such as funding, appropriate policy, decision-makers’ support, meaningful interest and participation of targeted stakeholders, capacity building for implementation and M&E activities, awareness creation as well as building national capacity on mainstreaming gender in order to improve related national data generation,

(iii) Technical support and synergies: Assistance of a consultant or partnership with gender-focused organizations and NGOs to facilitate delivery of the GAP, including exploring opportunities for partners in Ethiopia to contribute to this process,

(iv) Knowledge management: Effective communication and dissemination of awareness raising materials, results, lessons learned, etc., under the knowledge management component of the project (Component 4) with cross-reference to GAP for effective generation of knowledge on gender within the context of PCB management,

(v) Awareness creation: Awareness raising to decision-makers and other key stakeholders on the risks of exposure to PCBs and the need for gender equality and women empowerment for better understanding the role of women in achieving the environmentally sound management of PCBs.

During the implementation so far, the project team made a concerted effort for recording women's involvement and participation in the project capacity building activities.

 As for participation in the capacity building activities, the gender disaggregated data are as follows:

* Training workshops on inventories, sampling and screening of PCB transformers – 7 females out of total 126 participants (5.6%)
* Training on preparation of PCB management plan and chemical registry database – 10 females out of total 40 participants (25%)
* Technical team training for decision-makers on the chemical registry system - 9 females out of total 54 participants (16.7%)
* Endorsement and launching ceremony on the chemical database registration software - 2 females out of total 21 participants (9.5%)
* Stakeholder meeting on the communication strategy for management of chemicals – 5 females out of total 33 participants (15.2%)
* Training on maintenance of PCB-contaminated equipment, identification and labeling procedures, handling, transportation, temporary storage, and disposal *(to be inserted)*
* Awareness raising meeting on PCB and other chemicals to regions – 3 females out of total 31 participants (9.7%)
* One-day awareness-raising meeting for of selected women employees and concerned male employees of EFCCC

The implementation matrix for the Gender Action Plan comprises 12 specific activities and number of targets related to the GAP five priority areas. Good progress was reported on activities related to inclusion/participation of women, knowledge management, as well as on awareness raising of gender equality and empowerment. Also, one of the project key stakeholders, namely the EEU, has been leading by example and recently unveiled several gender equality initiatives that include establishment of the Women, Children and Youth Affairs Directorate, adoption of a Gender Mainstreaming Policy, launching a Gender and Citizen Engagement Work Programme, as well as introduction of Quotas for Recruitment[[12]](#footnote-13). In addition, the PCB focal point at EEU is woman.

It appears that not so much progress has been achieved under the other areas of GAP. No progress was reported for establishment of strategic partnerships and identification of synergies with organisations that focus on women’s empowerment. Also, more focus is expected on assessment of secondary and “informal” exposure of women related to workers exposed to PCBs and on prioritization for clean-up of contaminated sites that pose risk to women and other vulnerable groups.

Overall, the project enhanced visibility and awareness of gender-related issues related to PCB management, and in sound chemicals management in particular. Public awareness campaigns targeted both women and men equally. Social factors such as gender-determined occupational roles have a primary impact on the level and frequency of exposure to toxic chemicals. As the project focuses on the energy sector, its target beneficiaries are mostly males as the primary risk group working as operators of the electrical equipment, maintenance personnel in repair/maintenance shops, and scrap metal dealers. Women and children are mainly subject to indirect exposure from washing of contaminated laundry or contacts with family members directly exposed to PCB. These gender dimensions need to be reflected at both site- and policy-level interventions for environmentally sound PCB management. Reducing risks to PCB exposure will ultimately provide benefits for men, women and children. both in immediate and longer-term health impacts.

## Sustainability

The sustainability is defined as continuation of benefits from an intervention after the development assistance has been completed. The important aspect here is the sustainability of results, not necessarily sustainability of the activities that had produced the results. The assessment of sustainability requires evaluation of risks that may affect the continuation of the project results.

In general, the activities supported by the project have the potential to ensure long-term sustainability but with serious challenges described in the text below.

### Institutional framework and governance sustainability

The work under the project is aligned with the key governmental agencies and the PCB waste holders in the country. Training provided to representatives of the relevant national institutions and PCB holders has strengthened the already existing institutional base in the country. This together with the PCB inventory constitutes a robust foundation for good governance of the PCB management in the medium to long term.

Before the start of this project, Ethiopia enabled the respective legal frameworks on HW management/disposal and registration of chemicals, but the main risk to sustainability of this project’ results is related to potential delays in approval of the new specific Directive on PCB Management. Although technical guidelines on various aspects of PCB management were developed and disseminated to the PCB holders, a binding legal framework is necessary to establish a compulsory regime for the management of PCBs as well as inspection, monitoring and assessment of the effect of PCBs on environmental media. It is obvious that the guidelines serve only as support to the specific legal framework and without it the PCB holders would adopt the procedures and practices described in the guidelines only on a voluntary basis if at all.

This implies that until approval of the PCB Directive the phase-out dates have not yet been mandated and the PCB holders are not obliged to identify, report on and phase-out/dispose of PCB-containing equipment. As the Ministry of Justice was involved in the process of formulation of the PCB Directive, it is expected that approval of the latter will not take long. Only once the PCB Directive is adopted and promulgated, there is no further risk with regard to this aspect of sustainability, given the strong project alignment with key national and international priorities and the high degree of stakeholder ownership.

Institutional and governance sustainability of the project is rated **Likely (L).**

### Financial sustainability

The financial sustainability has to be examined in relation to the importance of compliance with the obligations of Ethiopia as the party to the Stockholm Convention. The identification as well as labelling of PCB transformers has been in progress although with slower pace than planned. Following the provisions of the Stockholm Convention, all equipment found to contain more than 50 ppm PCBs must be identified, labelled, and removed from service by 2025. It is therefore clear that future actions related to the decommissioning of PCB equipment will require substantive amounts of funding.

The main concerns here are twofold, namely i) costs of the replacement of in-service PCB-contaminated transformers, and ii) costs of PCB waste disposal. The phase-out of PCB equipment and replacement by non-PCB equipment can put considerable pressure on the respective budgets of the principal PCB holders.

The EEU, supposed to own a majority of the PCB transformers in Ethiopia, is currently implementing the Addis Ababa Transmission and Distribution System Rehabilitation and Upgrading Project (AATDRUP) funded by the African Development Bank, the Japanese International Cooperation Agency and the GoE. AATDRUP provides financing for modernization of the power grids through replacement and installation of 582 distribution transformers and 13 primary substations. The company is well aware of the need to replace the PCB transformers and apart from the company-level PCB management plan has also a financial plan for the PCB equipment decommissioning and replacement.

There is a different situation regarding the EEP that owns considerable number of transformers at its hydropower plants and power substations. The company does not have a company-level PCB management plan or even intention to elaborate it and awareness of the Ethiopia’s commitments under the Stockholm Convention appears to be low. The EEP’s priority task is to ensure production of enough power for increased access to on-grid electricity hence early replacement or immediate decontamination of in-service transformers before reaching end of their operational life seems to be highly unlikely.

The second concern is about the planned and actual costs of the final disposal of PCB equipment and PCB-contaminated transformer oil. The GEF project was designed for ultimate disposal of at least 150 metric tonnes of PCB equipment waste. Based on the experience from the region, the total cost of PCB disposal including transportation could be in the range of US$ 3,500-4,500/tonne. However, due to the fact that Ethiopia is a landlocked country, there are several factors that impact the cost such as location of the port of exit, that can make the transport for ultimate disposal more complex and costly. Considering the other factors, a total cost of USD 900,000 for 150 tonnes of PCB waste was estimated, which corresponds to US$ 6,000/tonne. However, the project budget has allocation of only 620,000 US$ for this component. Although the principal PCB holders made sizeable commitments for co-financing, these will cover primarily capital investments for replacement of the PCB equipment, expenditures associated with re-installation of new equipment, and rehabilitation of repair and storage facilities. It is therefore doubtful whether they will be able to contribute to the increased costs of the transportation and ultimate disposal of the originally planned 150 tonnes of PCB waste.

Financial sustainability of the project is rated **Moderately Likely (ML).**

### Socio-economic sustainability

Commitment to ultimate disposal of PCBs and OPs and prevention of adverse health impacts are the main issues of socio-economic sustainability. The institutional stakeholders (PCB holders and enforcement officers) are well aware of the main issues and committed to address them. Due to the awareness raising component of the current project, there is some level of awareness of the PCBs and their health and environmental impacts, however this level is not sufficient throughout the country.

The project should continue a proactive approach towards communication with the wider circle of stakeholders. Lack of awareness of environmental and health effects of PCBs by the public at large can cause challenges for successful completion of the project.

Socio-economic sustainability of the project is rated **Moderately Likely (ML).**

### Environmental sustainability

Raising awareness about PCB issues should enable to attract the attention of the PCB holders and their staff on the hazards associated with the handling of these substances, to advocate with their management to address the issue of PCB internally to implement PCB management procedures and/or to establish a plan and deadlines for replacing PCB equipment. However, feasibility of these changes heavily depends on willingness of the PCB holders to allocate necessary financial and human resources.

The main risk here is related to slow uptake and practical implementation of the technical guidelines for PCB transport, handling and storage by the PCB holders. There is risk of leakage of PCBs that could result if transport, handling and storage of PCB-contaminated oil and equipment is not conducted strictly in line with the recommended internationally recognized procedures and if leakage and spills are not contained according to the developed safeguards measures. This risk is associated with the lack of financial resources for auxiliary equipment and safety arrangements at the storage facilities.

Also, postponed phase-out of the PCB equipment in service could have negative environmental effects in case of leakages or even more severe accidents related to operation and maintenance of the in-service electrical equipment.

Environmental sustainability of the project is rated **Moderately Likely (ML).**

#

# Conclusions and Recommendations

Based on the previous section of the fact-findings, this section synthesizes and interprets the findings into conclusions that make judgments supported by one or more specific findings. Recommendations are then specific actions the MTR team proposes to be taken by various project stakeholders that are based on the findings and conclusions.

Conclusion 1: Implementation of the PCB inventory under Outcome 2 has been slow and several capacity building events were delayed as a result of COVID-19 restrictions during 2020. Moreover, the inventory of PCB equipment as the most critical part of the project was slowed down by logistical issues and escalated political situation in the last quarter of 2021. Due to the combined effect of the delays and postponed implementation of Outcome 3, it is unlikely that the project will achieve the planned targets within the remaining project timeframe. It is desirable to prolong the project implementation period.

*Recommendation 1: The project partners should consider requesting extension of the project by 12 months.*

Conclusion 2:Outcome 3 is critical for establishment of environmentally sound management of PCBs and achievement of the expected global environmental benefits of the project. Interventions for setting temporary storage facilities should have been started early in the project implementation as these activities are complex and require considerable time for implementation. If decommissioned transformers are not moved to safe and protected temporary storage sites, they could not be properly tracked down and prepared for ultimate disposal.

*Recommendation 2: The project partners should immediately start implementation of activities related to development/upgrade of temporary storage facilities for decommissioned PCB equipment.*

Conclusion 3: The project already contributed to strengthening of the baseline legislation for PCB management through preparation of a new Directive on PCB Phase-out. It is desirable that the amended legislation is implemented as soon as possible for achievement of timely decommissioning and disposal of PCB equipment and waste according to the provisions of the Stockholm Convention. In this regard, effective enforcement of the amended legislation will be the critical component.

*Recommendation 3: EFCCC should actively follow the legislative approval process of the Directive on PCB Phase-out and allocate sufficient human, technical and financial resources to maximise the benefits from the project assistance on enforcement of the amended legislation. Upon promulgation of the new Directive, a practical training workshop should be organized, preferably involving field modules, supported by guidelines on implementation and enforcement of the Directive.*

Conclusion : Management of PCB oils contained in power transformers that are still in service is a challenge. There is a high risk of cross-contamination during transformers servicing and maintenance, as well as of mishandling of used PCB oil from the servicing/maintenance operations.

*Recommendation 4: EFCCC should consider development of specific guidelines on mitigation of cross contamination of PCB oil during the power transformer servicing/maintenance and provide training to responsible authorities on monitoring of performance of the companies involved in the servicing/maintenance of transformers.*

Conclusion 5: Success of the project and sustainability of its results depend mostly on ultimate disposal of PCB waste that practical and would provide be a pilot example for all future waste related disposal activities), allowing for demonstration of really practical results. It is anticipated that the ultimate disposal option for high concentrated PCB waste will be transport of PCB equipment and waste for high temperature incineration abroad that include specialized political, technical, and legal procedures. Trans-boundary movement of waste could be one of the main hurdles in execution of the ultimate disposal abroad, as it can’t be fully addressed within the framework of the project only but has to be tackled through inter-country agreements.

*Recommendation 5: EFFCC with assistance of the UNDP CO should actively seek involvement high-level officials relevant for preparation of the trans-boundary movement of PCB waste from this project.*

Conclusion 6: Effective procurement of services for transport and ultimate disposal of PCB waste abroad will be critical for achievement of the planned global environmental benefits of the project. It is therefore necessary to prepare this procurement in a timely manner. As such services will have to be recruited internationally, UNDP could be better positioned to lead this procurement process.

*Recommendation 6: The project partners should make preparation for timely and effective procurement of services for shipment and ultimate disposal of PCB waste at a certified hazardous waste disposal facility abroad.*

Conclusion 7: Assessment of technology options and disposal routes for disposal of PCB equipment, oil and waste has been postponed due to slow progress in the PCB inventory. The main parameters for the assessment will be the level of PCB concentration and working condition of the equipment. It is anticipated that PCB transformers that are relatively new and in good working order might only require a dechlorination approach. However, after completion of the inventory there could not be enough time for securing the application of dechlorination within the project timeframe.

*Recommendation 7: PMU should initiate the analysis of the feasibility of disposal of low-concentration PCB waste as a matter of priority and investigate the legislative requirements and timelines necessary for securing relevant permits for dechlorination.*

Conclusion 8: Cement co-processing of selected PCB waste streams is one of the options to be assessed in the remaining part of the project. Although there has been some experience with cement co-processing in Africa, it proves difficult to obtain relevant information.

*Recommendation 8: UNDP should assist the PMU and relevant project stakeholders to obtain information about the experience gained with co-processing of PCB waste in cement plants in Africa.*

Conclusion 9: Facility-level plans for PCB management are important tools to ensure commitment of PCB holders for timely decommissioning and safe storage of PCB equipment. It is desirable to closely monitor progress in implementation of these plans.

*Recommendation 9: EFCCC should establish a mechanism for effective monitoring of progress in implementation of the facility-level PCB management plans.*

Conclusion 10: Availability of information about progress in the management of PCB waste will enhance transparency of the PCB management and ensure support from the PCB holders, other stakeholders, and general public.

*Recommendation 10: EFCCC should make information on the progress of PCB elimination in the country for sharing via the project website. This could include provision and regular update of information from the PCB inventory, information on quantities of PCB waste moved to safe temporary storage, information on the selected technologies/routes for PCB waste disposal and quantities of PCB waste prepared for disposal.*

Conclusion 11: The project supported organization of several training workshops for different audiences. However, there is no information on practical impact of the trainings.

*Recommendation 11: The PMU in collaboration with UNITAR should monitor the effectiveness of the training outcomes (replication and dissemination, application good practices, etc.) in order to assess the real impact of the trainings. It is also important to evaluate the effect of the trainings on the beneficiary institutions’ top management, workers and the communities.*

Conclusion 12: Introduction of the new UNDP administrative platform PIMS+ is intended to enable high-quality oversight services to the project. Understaffing of the Project Management Unit has a negative effect on processing some administrative actions (such as budget revisions) and prevents thus to reap full benefits of the PIMS+ platform.

*Recommendation 12: The project partners should consider strengthening of the Project Management Unit in order to ensure timely processing of the project-related administrative actions.*

Conclusion 13: Co-financing by the project key stakeholders is an important tool for securing ownership of GEF-financed activities. Information on actually provided co-financing amounts is required for mid-term review and terminal evaluation but is not readily available.

*Recommendation 13: The PMU should follow the relevant GEF guidelines and systematically track the co-financing by the project partners and stakeholders and report the results in annual PIRs.*

### Lessons learned

Building basic national capacities for ESM of PCBs and awareness is only one condition for sustainability and has to be complemented by demonstration of the PCB management as practicable and coherent approach. Uptake of ESM practices at the decision-making and management levels of the PCB holders as the critical aspect of sustainability that together with capacities built and awareness raised on the ground make return to the baseline practices highly unlikely.

Timing of interventions is essential to ensure success. Awareness raising activities, conducted in parallel with data collection for PCB inventories, contribute to increased attention of the relevant public agencies for protection of the workers and population and reduction of risk to health and environment posed by the PCB chemicals.

Revision and amendment of baseline legislation requires not only effective participation and a strong stakeholder commitment but also drafting the new legislative instruments at the level of the implementing ministry. Such approach helps to avoid complicated and therefore prolonged legislative approvals in the law-making body. However, timely action and effective approval of the new legislation requires well informed and committed decision makers.

For achievement of a strong stakeholder commitment, it is essential to propose solutions that are perceived as relevant, useful and achievable for the targeted sectors. By this token, planned interventions should include approaches that combine formal mechanisms for stakeholder participation (such as steering and technical committees) with direct involvement in project activities, effective coordination and information sharing.

The benefit of continued risk management is to identify potential problems before they occur therefore rigorous risk monitoring should be invoked throughout the life of the project. Proactive risk management enables less costly risk mitigation through prevention rather than reactive dealing with issues that arise if the risk does materialize. Risk management is therefore important not only during project preparation but also during execution and properly managed risks significantly increase the likelihood of project success.

Involvement of UNITAR increases effectiveness of the training component as it enables more systematic planning and timely execution of training activities in comparison with *ad-hoc* recruitment of training consultants. As there is currently no platform for knowledge and experience exchange between various PCB projects, such involvement also provides possibility for inter-regional exchange between projects implemented by different UN agencies.

# Annexes

## Annex 1: UNDP-GEF Midterm Review Terms of Reference

<https://procurement-notices.undp.org/view_file.cfm?doc_id=267654>

<https://procurement-notices.undp.org/view_file.cfm?doc_id=267650>

## Annex 2: Evaluation Matrix

| **Evaluation Criteria** | **Evaluation Questions** | **Indicators** | **Data Sources** | **Data Collection Methods** |
| --- | --- | --- | --- | --- |
| Project Strategy |  Are the project’s objectives and outcomes or components clear, practical, and feasible within its time frame?Does the progress so far indicate that the project could in the future catalyse beneficial development effects that could be included in the project results framework and monitored on an annual basis?Are broader development and gender aspects of the project being monitored effectively?Develop and recommend SMART ‘development’ indicators, including sex-disaggregated indicators and indicators that capture development benefits  How relevant is the project strategy to address the country priorities? Is the project in line with the national sector development priorities and plans?To what extent were perspectives of those affected by project decisions and of those who could affect the outcomes, taken into account during project design processes?Does the project strategy provide an effective route towards expected/intended results?To what extent were lessons learned from other relevant projects incorporated into the project design?Are the underlying assumptions for the problem addressed by the project still valid?  | Project activities in line with the country development and sectoral priorities and plansActivities produce outputs according to the project logframeLessons learned from previous projects taken into account for implementationAssumptions and risks identified are effectively managed  | UNDP programme/project documentsUNDP programme/project Annual Work PlansProgrammes/projects/ thematic areas evaluation reportsGovernment’s national planning documentsHuman Development ReportsMDG progress reports Government partnersprogress reportsInterviews with beneficiariesUNDP staff Development partners (UN agencies, bilateral development agencies) Government partners involved in specific results/thematic areas Concerned civil society partners Concerned associations and federations | Desk reviews of secondary data Interviews with government partners Interviews with NGOs partners/service providers Interviews with funding agencies and other UNCT Interviews with UNDP staff, development partners and government partners, civil society partners, associations, and federations |
| Progress Towards Results | Which are the aspects of the project that have already been successful and how the project can further expand these benefits?How does the GEF Tracking Tool at the Baseline compare with the GEF TT completed before the Midterm Review?How far has the regional context been taken into consideration while selecting the project/ programme?Was there any partnership strategy in place for implementation of the project and if so how effective was it? | GEF TT used as project management instrumentThe project has partnership strategy and actions taken to promote cooperation between partners  | Project/programme/thematic areas evaluation reports Progress reports on projects UNDP staffDevelopment partners Government partners Beneficiaries Progress reports on projects Programme documents Annual Work Plans/Progress ReportsEvaluation reportsMDG/Human Development Reports  | Desk reviews of secondary data Interviews with government partners, development partners, UNDP staff, civil society partners, associations, and federations  |
| Project Implementation & Adaptive Management | Has the project or programme been implemented within the original timeframe and budget?To what extent the work-planning processes are results-based?To what extent has the project’s results framework/logframe been used as a management tool and were there any changes to it since the project start?Have UNDP and the PMU taken prompt actions to solve implementation issues? Have there been any delays in project start-up and implementation and if so what were the causes and how they have been solved?What mechanisms does UNDP have in place to monitor implementation? Are these effective?Have there been any outside factors (e.g. political instability) affecting on implementation effectiveness? | Project implementation within the original timeframe and budgetAnnual workplans elaborated according to the logframeImplementation issues solved by PMU/UNDPImplementation monitoring tools in place and effectively used | Programme documents Annual Work Plans Annual Progress ReportsEvaluation reports Government partners Development partners UNDP staff (Programme Implementation Support Unit)  | Desk reviews of secondary data Interviews with government partners and development partners  |
| To what extent financial controls have been established that allow the project management to make informed decisions regarding the budget at any time and allow for the timely flow of funds?Has there been over-expenditure or under-expenditure on the project?Were the resources focused on the set of activities that were expected to produce significant results? Were the project resources concentrated on the most important initiatives or were they scattered/spread thinly across initiatives? | Financial controls established and used to provide feedback on implementationActivities prioritized for achievement of significant results | Programme documents Annual Work Plans Annual Progress ReportsEvaluation reports Government partners Development partners UNDP staff (Programme Implementation Support Unit)  | Desk reviews of secondary data Interviews with government partners and development partners  |
| Have changes been made and are they effective? Are the existing responsibilities and reporting lines clear? To what extent is decision-making in the project transparent and undertaken in a timely manner? | Decision-making on implementation transparent and timelyImplementation of components with multiple responsible partners clear and timely | Programme documents Annual Work Plans Annual Progress ReportsEvaluation reports Government partners Development partners UNDP staff (Programme Implementation Support Unit) | Desk reviews of secondary data Interviews with government partners and development partners |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Evaluation Criteria** | **Evaluation Questions** | **Indicators** | **Data Sources** | **Data Collection Methods** |
| Project Implementation & Adaptive Management(continued) | Has the project developed and leveraged partnerships with direct and tangential stakeholders?Do the stakeholders have roles in project decision-making that support efficient and effective project implementation?To which extent has stakeholder involvement and public awareness contributed to the progress towards achievement of project objectives and are there any limitations to stakeholder awareness of project outcomes/ participation in project activities? | Mechanisms for involvement of other stakeholders in placeOther stakeholders aware of the project and involved in implementation | Programme documents Annual Work Plans Annual Progress Reports | Desk reviews of secondary data  |
| How the Project Team and partners undertake and fulfill the GEF reporting requirements?To what extent have lessons derived from the adaptive management process been documented, shared with and internalized by key partners and incorporated into project implementation?Have the PIRs been shared with the Project Board and other key stakeholders? | Quality reporting according to GEF reporting requirements Lessons for adaptive management documented and taken into account for implementation | Evaluation reports Progress reports UNDP programme staff  | Desk reviews of secondary data Interview UNDP programme staff  |
| How regular and effective has been the internal project communication with project stakeholders?Are there any ways of external communication established to inform about the project progress the public?Are there any aspects of the project that might yield excellent communications material as additional project output? | Quality and effectiveness of internal communicationPossibilities for additional communication material identified  | Evaluation reports Progress reports UNDP programme staff  | Desk reviews of secondary data Interview UNDP programme staff  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Evaluation Criteria** | **Evaluation Questions** | **Indicators** | **Data Sources** | **Data Collection Methods** |
| Sustainability | What is the likelihood of financial and economic resources not being available once the GEF assistance ends?To what extent financial and economic instruments and mechanisms have been established or will be established to ensure the ongoing flow of benefits once the GEF assistance ends?What additional factors are needed to create an enabling environment for continued financing? | Existence of counterpart/stakeholder funding for the project outcomesAdditional factors for continued financing identified | Programme documents Annual Work Plans Annual Progress ReportsEvaluation reports Government partners Development partners UNDP staff (Programme Implementation Support Unit)  | Desk reviews of secondary data Interviews with government partners and development partners  |
| Has the project put in place frameworks, policies, governance structures and processes that will create mechanisms for institutional and technical knowledge transfer after the project’s closure?To what extent has the project been developing institutional capacity (systems, structures, staff, expertise,etc.) that will be self-sufficient after the project closure date?Has the project achieved stakeholders’ consensus regarding courses of action after the project’s closure? | Institutional frameworks for continuation of activities established Level of self-sufficiency of the established institutional frameworks | Programme documents Annual Work Plans Annual Progress ReportsEvaluation reports Government partners Development partners UNDP staff (Programme Implementation Support Unit) | Desk reviews of secondary data Interviews with government partners and development partners |
| Are there any social or political risks that may jeopardize sustainability of project outcomes?Are there any environmental factors that could undermine and reverse the project’s outcomes, including factors that have been identified by project stakeholders?What is the risk that the level of stakeholder ownership (including ownership by governments and other key stakeholders) will be insufficient to allow for the project outcomes/benefits to be sustained? Is there sufficient public/ stakeholder awareness in support of the objectives of the project? | Social, political and environmental risks identified and taken into accountLevel of stakeholder awareness and ownership of the project results | Programme documents Annual Work Plans Annual Progress ReportsEvaluation reports Government partners Development partners UNDP staff (Programme Implementation Support Unit)  | Desk reviews of secondary data Interviews with government partners and development partners  |

|  |
| --- |
| **SAMPLE QUESTIONS RELATING TO THE PROMOTION OF UN VALUES FROM A HUMAN DEVELOPMENT PERSPECTIVE** |
| **Evaluation Criteria** | **Evaluation Questions** | **Indicators** | **Data Sources** | **Data Collection Methods** |
| Supporting policy dialogue on human development issues  | To what extent does the initiative support the government in monitoring achievement of MDGs? What assistance has the initiative provided supported the government in promoting human development approach and monitoring MDGs? Comment on how effective this support has been. | Level of contribution of the project to the achievement of MDGs | Project documents Evaluation reports HDR reports MDG reports National Planning Commission Ministry of Finance  | Desk review of secondary data Interviews with government partners  |
| Contribution to gender equality  | To what extent was the UNDP initiative designed to appropriately incorporate in each outcome area contributions to attainment of gender equality? To what extent did UNDP support positive changes in terms of gender equality and were there any unintended effects? Provide example(s) of how the initiative contributes to gender equality. Can results of the programme be disaggregated by sex? | Level of monitoring of gender related issues  | Project documents Evaluation reports UNDP staff Government partners Beneficiaries  | Desk review of secondary data Interviews with UNDP staff and government partners Observations from field visits  |
| Addressing equity issues (social inclusion)  | To what extent does the project take into account the needs of vulnerable and disadvantaged to promote social equity, for example, women, youth, disabled persons? Provide example(s) of how the initiative takes into account the needs of vulnerable and dis- advantaged groups, for example, women, youth, disabled persons. How has UNDP programmed social inclusion into the initiative? | Level of monitoring of social inclusion related issues  | Project documents Evaluation reports UNDP staff Government partners Beneficiaries  | Desk review of secondary data Interviews with UNDP staff and government partners Observations from field visits  |

## Annex 3: List of Persons Interviewed

|  |  |  |
| --- | --- | --- |
| **Name** | **Organization** | **Position/Role** |
| Mehari Wondimagegne | EFCCC | Director PCB Project Manager |
| Kasahun Wakoya Nikusa  | EFCCC | Acting Director General, Resource Mobilization and Project Administration GEF Operational Focal Point |
| Etienne Gonin | UNDP MPU/Chemicals | Regional Technical Advisor (until April 2021) |
| Charlotte de Bruyne | UNDP MPU/Chemicals | Regional Technical Advisor (current) |
| Livia Buzova | UNDP MPU/Chemicals | Portfolio Support Consultant  |
| Yohannes Almaw | Ethiopian Electric Power | Manager |
| Dagimhiwot Fantahun | Ethiopian Electric Utility | PCB Focal Person |
| Tewedros Million | Ethio-Engineering Group | PCB Focal Person |
| Alemayehu Esayas | Ethiopia Environment, Forest Research Institute | Director of Environmental Laboratory  |
| Abel Anberbir | Ethiopian Conformity Assessment Enterprise | Deputy Director General |
| Dawit Alemu | Chemical and Construction Input Industry Development Institute | Environment Health and Safety Team Leader |
| Alina Koch | UNITAR | Project Coordinator |

## Annex 4: List of Documents Consulted

1. Local Project Appraisal Committee Meeting for endorsement of project ‘PCB Management in Ethiopia to meet the 2025 Stockholm Convention Deadline – Phase 1’, UNDP (2018)
2. PCB Management in Ethiopia to meet the 2025 Stockholm Convention Deadline – Phase 1, GEF-6 Project Identification Form (PIF), UNDP (2016)
3. PCB Management in Ethiopia to meet the 2025 Stockholm Convention Deadline – Phase 1, GEF-6 Project Document, UNDP (2018)
4. PCB Management in Ethiopia to meet the 2025 Stockholm Convention Deadline – Phase 1, Inception Workshop, EFCCC, (2019)
5. Project Implementation Reports (PIR) for 2020 and 2021, UNDP
6. Combined Delivery Reports for 2019, 2020 and 2021, UNDP
7. Minutes of the Project Steering Committee, 2019, 2020 and 2021, EFCCC
8. Annual Work Plans, for 2019, 2020 and 2021, EFCCC
9. Fast Facts: Polychlorinated Biphenyls Management in Ethiopia, UNDP (2018)
10. Minutes of the 1st PSC meeting, July 19, 2019.
11. Minutes of the 2nd PSC meeting, January 2, 2020.
12. Minutes of the 3rd PSC meeting, August 11,2021
13. Budget requirement for PCB project Implementation, Ethiopian Electric Utility (2021)
14. Proclamation No. 1075/2018 to Provide for the Registration and Administration of Industrial Chemical, Federal Negarit Gazette (2018)
15. Proclamation No. 1090/2018 to Provide for the Registration and Administration of Industrial Chemical, Federal Negarit Gazette (2018)
16. A Directive Issued to Phase-Out the Use of Polychlorinated Biphenyls Materials and Polychlorinated Biphenyl Contaminated Materials, (draft) EFCCC (2020)
17. National Management Plan for Polychlorinated Biphenyls (PCBs), 2019-2022, EFCCC, (2019)
18. PCB Management Plan, Ethiopian Electric Utility (2021)
19. List of Conducted Trainings – Ethiopia PCB project, UNITAR (2021)
20. Engendering Utilities Partner Profile EEU, USAID (2020)
21. Mainstreaming Gender: Gender Analysis and Gender Action Plan, EFCCC, 2018
22. Packing List for Invoice No.: 19-10-420, ETI Umwelttechnik AG (2020)
23. Assessment of Perceptions and Cancer Risks of Workers at a Polychlorinated Biphenyl-Contaminated Hotspot in Ethiopia, Sisay Abebe Debela et al., *J Health Pollution 30:* (2021)
24. Ecological Risk Assessment of Organochlorine Pesticides and Polychlorinated Biphenyls in Water and Surface Sediment Samples from Akaki River Catchment, Central Ethiopia, Alemnew Berhanu Kassegne et al., *Emerging Contaminants 6*: (2020)
25. Occurrences, Distribution of PCBs in Urban Soil and Management of Old Transformers Dumpsite in Addis Ababa, Ethiopia, Sisay Abebe Debela et al., *Scientific African 8:* (2020)

# Annex 5: Project Stakeholder Map

#

| **NAME** | **TYPE** | **SPECIALIZATION** | **ROLE IN THE PROJECT** |
| --- | --- | --- | --- |
| Ministry ofEnvironment, Forestand Climate Change (MEFCC) | Government | National environmental policy formulation | • Coordinates the project• Chairs the Project Steering Committee (PSC)• Hosts the project Secretariat and ensuresexecution of the national comprehensiveinventory exercise• Supports national training conducted under the project• Provides technical support to the legislation review |
| Ministry of Water,Irrigation andElectricity | Government | Undertake themanagement and regulation of water resources, medium and large-scale irrigation and electricity resources of Ethiopia | • Member of the PSC• Supports the regulatory aspects of the project.• Participates in the inventory and coordinates theutility sector |
| EEP | Government | Public utility enterprise.Ensures generation, transmitting,distributing and selling of electricity in accordance with economic and social development policies and priorities of the Government. | • Member of the PSC• Provide a dedicated officer to coordinate theinventory exercise at national level• Provide technicians for the inventory at regional level• Provide logistics for project related activities |
|  |
| EEU | Government | Public utility enterprise.Ensures generation, transmitting,distributing and selling of electricity inaccordance with economic and socialdevelopment policies and priorities of the Government. | • Member of the PSC• Provide a dedicated officer to coordinate theinventory exercise at national level• Provide technicians for the inventory at regional level• Provide logistics for project related activities |
| Metals andEngineeringCorporation (METEC) | Government | Transformer manufacturing company | • Member of the PSC• Participates in the inventory and provides technical details of the transformer management• Possibly supports the dechlorination process |
| Ministry of Health | Government | Focuses on national health issues | • Member of the PSC• Provides specialized knowledge on the effects of PCBs on human health• Participates in national awareness raising activities |
| Ministry of Justice | Government | Administers legislation, delivers justice services, and provides policy support and analysis on legal issues. | • Member of the PSC• Leads the legislation review |
| Laboratories at theECEA and EEFRI | Government | Laboratory analysis | • Support PCB analysis (with appropriate technical support from the project) |
| Ethiopian StandardAuthority | Government | Standard formulation, Training and Technical support, Disseminating standards, Conformity assessmentprocedures and Technical regulation for the customers. | •Supports inventory training• Supports the formulation of legislation |
| Ethiopian Revenueand CustomsAuthority (ERCA) | Government | Body responsible for collecting revenues from customs duties and domestic taxes.In addition to raising revenue, the ERCA is responsible to protect the society from adverse effects of smuggling. It seizes and takes legal action on the people and vehicles involved in the act of smuggling while it facilitates the legitimate movement of goods and people across the border. | • Member of the PSC• Leads the national PCB monitoring network• Leads the tracking of imports and illegal exportsof suspected PCB-containing equipment• Participates in the execution of the internal M&Eof the project |
| Ministry of Industry | Government | Promotes and expands the developmentof industry by creating conducive enablingenvironment for the development of investment and technological capacity of the industry sector by rendering efficient support and services to the development investor. | • Member of the PSC• Supports the regulatory aspects of the project• Participates in the inventory |
| Ethiopian Airlines | Government | Potential owner of transformers | • Participates in the inventory and participates in transformer/PCB management |
| Cement factories (and other private PCB owners) | Private sector | Potential owner of transformers | • Participates in the inventory and participates intransformer/PCB management |
| Pesticide ActionNetwork (PAN) Ethiopia | NGO | Supports activities: to eliminate hazardous pesticides, reduce dependence on pesticides, and promote ecologicallysound alternatives to chemical pest control. | • Member of the PSC• Coordinates with partners regarding community input and awareness raising activities |
| Local communities | Civil society | Knowledge of needs and interests of localcommunities | • Participates in awareness raising campaign; meetings, forums, seminars, etc. related to decision-making on the project’s implementation plans; training workshops, where appropriate; and moderated discussion forums on the project’s website |

## Annex 6: MTR Rating Scales

|  |
| --- |
| **Ratings for Progress Towards Results:** (one rating for each outcome and for the objective)  |
| 6  | Highly Satisfactory (HS)  | The objective/outcome is expected to achieve or exceed all its end-of-project targets, without major shortcomings. The progress towards the objective/outcome can be presented as “good practice”.  |
| 5  | Satisfactory (S)  | The objective/outcome is expected to achieve most of its end-of-project targets, with only minor shortcomings.  |
| 4  | Moderately Satisfactory (MS)  | The objective/outcome is expected to achieve most of its end-of-project targets but with significant shortcomings.  |
| 3  | Moderately Unsatisfactory (MU)  | The objective/outcome is expected to achieve its end-of-project targets with major shortcomings.  |
| 2  | Unsatisfactory (U)  | The objective/outcome is expected not to achieve most of its end-of-project targets.  |
| 1  | Highly Unsatisfactory (HU)  | The objective/outcome has failed to achieve its midterm targets and is not expected to achieve any of its end-of-project targets.  |
| Ratings for Project Implementation & Adaptive Management: (one overall rating)  |
| 6  | Highly Satisfactory (HS)  | Implementation of all seven components – management arrangements, work planning, finance and co-finance, project-level monitoring and evaluation systems, stakeholder engagement, reporting, and communications – is leading to efficient and effective project implementation and adaptive management. The project can be presented as “good practice”.  |
| 5  | Satisfactory (S)  | Implementation of most of the seven components is leading to efficient and effective project implementation and adaptive management except for only few that are subject to remedial action.  |
| 4  | Moderately Satisfactory (MS)  | Implementation of some of the seven components is leading to efficient and effective project implementation and adaptive management, with some components requiring remedial action.  |
| 3  | Moderately Unsatisfactory (MU)  | Implementation of some of the seven components is not leading to efficient and effective project implementation and adaptive, with most components requiring remedial action.  |
| 2  | Unsatisfactory (U)  | Implementation of most of the seven components is not leading to efficient and effective project implementation and adaptive management.  |
| 1  | Highly Unsatisfactory (HU)  | Implementation of none of the seven components is leading to efficient and effective project implementation and adaptive management.  |
| Ratings for Sustainability: (one overall rating)  |
| 4  | Likely (L)  | Negligible risks to sustainability, with key outcomes on track to be achieved by the project’s closure and expected to continue into the foreseeable future  |
| 3  | Moderately Likely (ML)  | Moderate risks, but expectations that at least some outcomes will be sustained due to the progress towards results on outcomes at the Midterm Review  |
| 2  | Moderately Unlikely (MU)  | Significant risk that key outcomes will not carry on after project closure, although some outputs and activities should carry on  |
| 1  | Unlikely (U)  | Severe risks that project outcomes as well as key outputs will not be sustained  |

## Annex 7: Project Results Matrix

|  | **Result** | **Objective and Outcome****Indicators** | **Baseline** | **Mid-term Target** | **End of Project Target** | **Assumptions** |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Project Objective:**This project aims atstrengthening the capacity of national stakeholders to manage PCBs as well as toachieve PCBs elimination,as identified as a priorityin the National Implementation Plan forPersistent Organic Pollutants for Ethiopia - afirst Phase | National environmentally soundmanagement (ESM) system ofPCB chemicals and waste draftedand implemented by 2020 | People and workers arecurrently exposed to the riskposed by PCB-containingequipment stored or in-useNo PCB management legislation or regulations and appropriate capacity and cooperation from PCB equipment/waste owners unavailableNo national PCB management plan prepared and comprehensively implementedNo comprehensive ESM system is in place to address the national PCB situation, and power equipment is exposed to continuous cross-contamination | Comprehensive nationalPCB inventory is completedESM guidance materialsdrafted and an initialtraining of PCB holdersundertakenThe risk for the populationsurrounding plant andstorage facilities containingPCBs is minimized as aresult of safety measurespreventing PCB release inthe environment | Existing storage facilities fortransformers are assessedand upgraded tointernational standards toallow PCB removal/decontamination operationsThe risk for the populationsurrounding plant andstorage facilities containingPCBs is minimized throughthe sound disposal of at least150 tonnes of PCB-contaminated equipment andwaste | Identified PCB-contaminatedequipment is under control andsecured for disposal untiltechnologies or servicedelivered by the project areavailableHandling of PCB equipment anddisposal activities are carriedout in an environmentally safeway without any harm to theenvironment and the health |  |
|  | Amount of PCB equipmentidentified and listed in thenational PCB inventory andincluded in the national PCBmanagement plan | A systematic PCB inventory,including PCB identificationand labelling is missing | 6,000 pieces of equipment expected to be tested for PCB content, out of which PCB- containing equipment is identified and labelled for future treatment or disposal, if applicableNational PCB inventory database established and maintained to help with priority decision-making |  |  |  |
|  |  | 50 tonnes of pure PCBs and 100tonnes of low-concentratedPCBs/related waste are safelymanaged and disposedof/decontaminated by the end ofthe project, thus reducing globaland local environment fromexposure to these hazardouswastes | No equipment/oil containingPCBs identified or sentabroad for disposalNo PCBs disposal/decontamination technologyavailable in the country | Based on final inventory amounts, temporary storage locations identifiedand upgraded to meet international standardsPure PCB waste is prepared for export to HTI plants for final disposal, and PCB- contaminated oil is treated via rented or purchased dechlorination technology (if applicable) or also exported for disposalAppropriate procedures for making the rented/ procured technology operational are completed and location to host the technology selected and confirmed (if applicable) | At least 150 tonnes ofequipment containing PCB (in pure and contaminatedforms) are treated ordisposed of in compliancewith Stockholm Convention and Basel ConventionrequirementsDisposal/cleaning certificatesobtained | Identified PCB-containingequipment and waste amountto at least 150 tonnes and isproperly stored for treatmentor disposal under the projectThe technology or service forthe disposal of PCB equipmentand waste (within the countryor abroad) will be selected andprocured/rented in a cost-effective manner to stay withinthe project’s budget and timingconstraintsDisposal of 150 tonnes of PCBequipment can be completed within project and budget constraints |  |
|  | **Outcome 1**Legal frameworks,administrative processesand technicalpreparedness for thesound management ofPCBs in Ethiopiastrengthened | Legal framework for PCBs draftedand adoptedInstitutional capacity andarrangements for themanagement of PCBs reviewed,and gaps and overlaps identifiedand addressed throughconsultation and coordinationprocesses | No PCB managementlegislation or regulations andappropriate capacity andcooperation from PCBequipment/waste ownersunavailableLack of coordinationregarding PCB management | Comprehensive assessmentof the national legal andinstitutional frameworkcompletedTechnical assistance to theenvironmental authoritieson the enforcement of thenew or amended legislationand technical regulationsrelated to PCBs deliveredthrough specialized trainings and joint participation of projectstaff and governmentrepresentativesProject management unit and PSC established and meeting regularly | New or amended legislationand regulations which includes specific PCB provisions adopted anddisseminated to key national stakeholdersAdvisory support and required technical assistance in the implementation of the national legislation and regulations and guidance on PCBs delivered through continuous project support Technical assistance to theenvironmental authorities onthe enforcement of the lawand regulation related toPCBs delivered through jointparticipation of project staffand government representatives Institutions effectively coordinating implementation of the project | A fruitful cooperation amongproject staff, government, andkey stakeholders on technical,legal, and financial matters isensured so that the new oramended regulatory package isimplementable, enforceable,and sustainable |  |
|  | **Outcome 2**National capacity for PCBmanagementstrengthened throughoutthe lifecycle | One consolidated country-widePCB inventory updated andcompleted, with appropriate dataincluding sampling dates andanalysis results of phased-outand in-use equipment | An incomplete inventoryreport developed by MEFCCwithout analytical data andmissing equipment fromsome storage sitesCentral consolidated PCBdatabase to track inventoryand PCB disposal process isnot available | Inventory sampling activityplan for 10,000 equipmentis well underway at mid-term point. Services for thesampling and analysis ofthis equipment andestablishment of PCBinventory procured, ifapplicableSampling and analysis of6,000 pieces of PCB-suspected equipmentcarried out, if applicablePCB-containing equipmentlabelled and entered in thenational database | 10,000 equipment oilsamples have been taken andanalysed for quantifying PCBconcentration, if applicablePCB inventory databaseestablished and madeavailable to authorities andPCB holders through adedicated website withaccess policies | Owners of PCB-contaminatedequipment and waste willfacilitate the access to theirfacilities and the samplingoperationsProper chain of custody andquality control procedures isestablished to ensure thereliability of sampling andanalysis operations |  |
|  |  | National PCB management plan isdrafted and approved | No national PCB managementplan developed or availableto guide action on addressingPCB matters in the countryNo industry-wide coordinatedaction is taken to address theESM of PCBs | National PCB managementplan draftedFirst update of the NationalPCB management plan atmidterm based oninventory dataFacility-level PCBmanagement plans draftedwhere appropriateAt least 10 contaminatedsites management plansdeveloped | National PCB managementplan reviewed and adoptedSecond update of theNational PCB ManagementPlan based on updatedinventory data | Government-ledcommunication strategy onnational PCB-related effort(legislation, technicalregulations, PCB equipmentinventory and phase-out/disposal/decontamination) is inplace and implemented toensure better support fromPCB equipment/waste ownersand other stakeholdersA fruitful cooperation amongproject staff, government, andkey stakeholders on technical,legal, and financial matter isensured so that the PCBmanagement plan isimplementable and sustainable |  |
|  |  | Number of operators/technicalstaff in the electric sector and inMEFCC trained on and confidentin practically applying the ESMsystem for PCBsNumber of technical andprocedural guidance documentscompliant with Stockholm Convention and national regulations completed and endorsed | No or insufficient technicallevel guidance materials existon ESM for PCB managementNo training on ESM of PCBsissued delivered tooperators/technical staff inthe electric sector countrywideLack of awareness and technical knowledge about POPs in general and PCBissues in particular | Guidance drafted forsampling of online andoffline equipment,operation and maintenanceof PCB-contaminatedequipment, identificationand labelling procedures,handling, transportation, temporary storage, and disposal discussed in 5 dedicated workshopsUsing the guidancematerial, at least 8 trainingsessions covering 80operators/technical staff ofthe electric sector implementedProcedural and guidancedocuments drafted forenvironmental authoritieson Stockholm and BaselConventions, and BAT andBEP for PCB treatment anddisposal operations anddiscussed in a dedicatedworkshop5 training sessions coveringat least 25 officers from therelevant ministries andresearch institutions carriedoutTraining on chemical (PCB)response procedures andmechanisms undertakenand piloted at one site | Guidance for sampling ofonline and offline equipment,operation and maintenanceof PCB-contaminatedequipment, identification andlabelling procedures,handling, transportation,temporary storage, and disposal adopted25 training sessions coveringat least 340 equipmentoperators (engineers andtechnicians) in the electricpower sectorProcedural and guidancedocuments for environmentalauthorities on Stockholm andBasel Conventions, and BATand BEP for PCB treatmentand disposal operationsadopted7 training sessions for at least50 officers from the relevantministries and institutionscarried out | Prospects for adoption oftechnical guidance are high,and related consultationsinitiated and ongoingEquipment operators willing toattend training and applyknowledge practically in joint work with the project work with the projectTrainers have extensiveexperience in the field of PCBmanagement |  |
|  |  |
|  |  | National PCB tracking systemdeveloped and operational | No effective mechanism in place to prevent illegal importation of equipment likely to contain PCBs | Terms of reference fornational PCB trackingsystem to prevent illegalimportation of equipmentlikely to contain PCBsoperational | Periodic technical visits to thePCB holders undertaken andtechnical support and adviceprovided to purchase PCB-free transformers, capacitors,and related equipment | Owners of transformers andcapacitors will facilitate accessto their facilities and records |  |
|  | Awareness raising strategydeveloped and implemented,which targets government, publicand private sector, civil society,local communities andcommunity leadersGender Action Plan in the contextof PCB issues in Ethiopiaimplemented for better gendermainstreaming in POPs-related activities identified | Low levels of awareness onthe adverse effects of POPs,especially PCBs, leading tomismanagement of PCB-containing equipmentNo Gender Action Plan onPOPs implemented inEthiopia | An awareness raising strategy developed, and awareness materials such as brochures, project cards,meeting banners andposters, for different targetgroups, developed and disseminatedImplementation and monitoring of Gender Action Plan completedDissemination of project objectives and midterm results throughestablishment of a website,broadcasting, and workshops, andenhancement of gender related issues | Awareness materialsdisseminated at differentlevels: communities,technicians, and policy- makersMedia briefing events both atmid-level managers (facilitymanagers) and high-level(ministers, members ofparliament and chief executives planned and executedLocal communities have access to awareness raising materials in their own local languages and trainings for the community leaders are organisedDissemination of project objectives and midterm results through establishmentof a website, broadcasting, and workshops, and enhancement of gender related issues | Trainings and dissemination ofawareness raising materialsconsidered as key tostrengthen the ESM of PCBs atnational level |  |
|  |  |
|  | **Outcome 3**ESM of PCBs liquids andequipment in use or outof service implemented | Temporary storage facilities areupgraded and monitored underthe project for the safe storage ofPCB equipment/oils/wastepending final disposal ordecontamination procedures | Storage facilities available inindustrial sites need checkingand upgrading and, in somecases, are contaminated byPCBs | Storage facilities for the temporary storage of PCB- contaminated equipment are identifiedUpgrading of safety and emergency response in selected storage facilitiesPPE equipment for personnel is available to ensure safe operationsMonitoring of quality of storage over time is ensured by enforcementauthorities | At least 2 storage facilities have been upgraded to ensure safe storage of PCB-contaminated equipment and waste in fulfilment of national and internationalrules on PCBs | Storage facilities needs onlylimited intervention to ensurethe increase of their safety upto the required standardsStorage facilities can beupgraded and permitted withinplanned budget and timeframe |  |
|  | Documentary and direct evidencethat environmentally soundtechnologies or services for PCBsdisposal/dechlorination havebeen identified, assessed, andprocured | No PCB disposal technologyavailable in the country toaddress pure PCB oils/wasteNo PCB dechlorinationtechnology is available in thecountry to address cross-contaminated PCB oilsNo PCB-contaminated soilremediation technology isavailable in the country | Identification and technical-economic feasibility analysis of disposal options based on the amount of pure and low-concentrationPCBs identifiedDrafting of TORs for theprocurement of PCBsdisposal/decontaminationservice and equipment | PCB dechlorinationtechnology is rented/installedin the country to treat low-concentrated PCB oils, ifapplicable and appropriate | UNDP and UNITAR experts andnational stakeholders establishcooperation so that thetechnical specification andidentification of propertechnologies are appropriatelysuited to the specific countrysituation and needsTechnologies for the safedisposal of waste with high PCBcontent (up to 60%) and for thetreatment of equipment withlow PCB content (up to a fewthousand ppm) are commercially available and vendors of these technologies will submit bids to UNDP tenders |  |
|  | Amount of equipment or wastecontaining or contaminated byPCB disposed in anenvironmentally sound manner | No equipment containingPCBs or PCB-contaminatedsoil disposed of | For pure PCBs, existingqualified service providersinformed and invited andtender for hazardous wastehandlingIf applicable, the selectedPCB decontaminationtechnologies demonstrated in action as part of procurement activity fortheir reliability, environmentalperformance, and compliance with national regulation, Stockholm andBasel Conventions’ requirementsAssociated sub-contracts for export of pure PCB waste and decontamination of low-concentrated in place (if applicable), and pre-bid conferences for interested bidders held to improve quality of received bids | Destruction/treatment of 150tonnes of PCB-contaminatedequipment in progress withdisposal certificates obtained | UNDP and UNITAR useexperience from other projectsto ensure the effectiveness andreliability of technology’schoice for both pure/high-concentrated and low-concentrated wastesSelected vendors alreadyfamiliar with the requirementsand activities related to testingof their technologiesPCB-contaminated equipmentand waste are identified, safelystored, and secured to theirdisposal under the projectNo PCB waste transitlimitations are in place to blockwaste export operationsAssessments are completed toallow PCB dechlorinationtechnology to be put intooperation for low-concentratedPCB-containing oils, ifapplicable and economicallyfeasible |  |
|  | **Outcome 4**Monitoring, evaluationand replication ensured | Documentary evidence that theproject’s results sustained andreplicated through proper M&Eand knowledge managementactions | N/A | Inception activities carriedout, project managementstructure implemented,knowledge managementsystem including projectwebsite established (to becompleted in the first yearof project implementation) | Project reporting andplanning continued untilproject end | All the relevant stakeholderswell aware of GEF/UNDP rulesas well as national obligationsunder the StockholmConvention, and willing tocooperate in the timelyestablishment of projectmanagement structures |  |
|  |  |  | N/A | Project reporting andplanning established andimplemented |  | Project reporting and planningmechanisms and templatescommunicated in a timelymanner and agreed with project management staff at all levels |  |
|  |  |  | N/A | Midterm evaluation andauditing activities carriedout | Terminal and auditingactivities carried out;terminal reporting completedand submitted toGovernment of Ethiopia,UNDP, and GEF | Project stakeholders activelycooperating in all evaluationand auditing activitiesEvaluation and auditing arecarried out in an independentand professional way, with thepurpose to enhance projectactivities and generaterecommendations for projectsuccess and sustainability afterproject closure |  |

## Annex 8: Consultants’ Agreement Forms

**Agreement to abide by the Code of Conduct for Evaluation in the UN System**

**Evaluators:**

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people’s right not to engage. Evaluators must respect people’s right to provide information in confidence and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals and must balance an evaluation of management functions with this general principle.
4. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders’ dignity and self-worth.
6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study imitations, findings and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

**Name of Consultant:**  Dalibor Kysela

**Name of Consultancy Organization** (where relevant)**:** \_\_\_\_\_\_N.A.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.**

Signed at Vienna Date: 21 September 2021

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Agreement to abide by the Code of Conduct for Evaluation in the UN System**

**Evaluators:**

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people’s right not to engage. Evaluators must respect people’s right to provide information in confidence and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals and must balance an evaluation of management functions with this general principle.
4. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders’ dignity and self-worth.
6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study imitations, findings and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

**Name of Consultant:**  Feyera Abdissa

**Name of Consultancy Organization** (where relevant)**:** \_\_\_\_\_\_N.A.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.**

Signed at Addis Ababa Date:

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## Annex 9: Audit Trail (submitted as separate annex)

## Annex 10: Core Indicators (annexed as a separate file)

1. MTR rating scores are explained in Annex 6 [↑](#footnote-ref-2)
2. Details on the achievement are given in the respective sections Progress towards results, Project implementation and Adaptive management and Sustainability [↑](#footnote-ref-3)
3. Guidance for Conducting Midterm Reviews of UNDP-supported, GEF-financed Projects UNDP-GEF, 2014

 The GEF Monitoring and Evaluation Policy, GEF Independent Evaluation Office, 2019

 UNDP Evaluation Guidelines, UNDP, 2019 [↑](#footnote-ref-4)
4. As part of the 2013 electricity sector reform, EEPCO was split into the Ethiopian Electric Power (EEP) and the Ethiopian Electric Utility (EEU). [↑](#footnote-ref-5)
5. In 2020, the Council of Ministers approved a regulation on restructuring of METEC allowing for the corporation to start anew under the name Ethio-Engineering Group (EEG). [↑](#footnote-ref-6)
6. Theory of Change Primer, GEF/STAP/C.57/Inf.04, December 2019 [↑](#footnote-ref-7)
7. PCBs generally occur as mixtures of congeners; the most common commercial mixtures are known as Aroclors. [↑](#footnote-ref-8)
8. Kotobe workshop and dumping site is an area that has been used as a maintenance and repairs workshop as well as a dump site of power transformers, capacitors, and oil tankers for over 40 years. [↑](#footnote-ref-9)
9. PCB dehalogenation technology developed and patented by Sea Marconi, Italy, classified as the best available technique (BAT) for PCB decontamination of transformers both in service and those at end of life (Italian Ministry of the Environment, Min. Decree 29/01/2007 - O.J. No. 133 of 06/07/2007) [↑](#footnote-ref-10)
10. GEF Guidelines on the Project and Programme Cycle Policy – Annex 8, GEF/C.59/Inf.03 [↑](#footnote-ref-11)
11. Coding Definitions for Gender Equality Markers: Guidance Note, UN CEB, 2018 [↑](#footnote-ref-12)
12. Engendering Utilities Partner Profile EEU, Ethiopia, USAID, 2020 [↑](#footnote-ref-13)