

INDEPENDENT EVALUATION UNIT  
OFFICE OF EVALUATION AND INTERNAL OVERSIGHT

INDEPENDENT TERMINAL EVALUATION

Environmentally Sound Management and Final Disposal of PCBs in  
the Republic of Congo

UNIDO Project ID: 140160

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## LIST OF ACRONYMS AND ABBREVIATIONS

BAT	Best available techniques
BEP	Best environmental practices
DOE	Department of Environment
EEC	Energie Electrique du Congo
ESM	Environmental Sound Management
GEF	Global Environment Facility
IA	Implementing Agency
ISID	Inclusive and Sustainable Industrial Development
M&E	Monitoring and Evaluation
MOTE	Ministry of Tourism and Environment
MTE	Mid-term Evaluation
NEA	National Executing Agency
NEPAD	New Partnership for Africa's Development
NIP	National Implementation Plan
NPC	National Project Coordinator
NPD	National Project Director
NPM	National Project Manager
PCBs	Polychlorinated biphenyls
PPE	Personal Protective Equipment
PIF	Project Identification Form
PIR	Project Implementation Report
PM	Project Manager
PMU	Project Management Unit
POPs	Persistent Organic Pollutants
PRF	Project Results Framework
PSC	Project Steering Committee
SC	Stockholm Convention
SNE	Société Nationale d'Électricité
TE	Terminal Evaluation
TOC	Theory of Change
TOR	Terms of Reference
UNEP	United Nations Environment Program
UNIDO	United Nations Industrial Development Organization
USD	United States Dollar
WP	Work Plan

## Executive Summary

### A. Introduction

The medium-sized project “*Environmentally Sound Management and Final Disposal of PCBs*”, funded by the Global Environment Facility, was implemented from May 2015 to December 2022 by the United Nations Industrial Development Organization (UNIDO) in the Republic of Congo. The project was nationally co-executed by the Department of Environment of the Ministry of Tourism and Energie Electrique du Congo (EEC).

The main objective of the project was to establish an environmentally sound management system of PCBs and dispose of 200 tons of PCBs contaminated equipment and waste by strengthening the institutional capacities of power and oil sectors for sound management of chemicals in the Republic of Congo. The evaluation covered the whole duration of the project.

### B. Evaluation findings and conclusions

One main limitation of this evaluation was that a national consultant, who would have assisted in gathering information through interviews and carrying out field visits, could not be identified and recruited. Thus, the in-depth evaluation was carried out through remote interviews of key stakeholders and partners of the project and a review of project documents only, and no field visit was undertaken. Based on the information available and the findings of the discussions held, the evaluation made the following conclusions:

**Relevance:** The project is highly relevant as it is assisting the Republic of Congo to fulfill its obligations for the sound management of PCBs in the context of the Stockholm Convention. The project is aligned with GEF strategic priorities in the POPs focal area and with UNIDO’s priorities and mandates.

**Effectiveness:** Due to a serious weakness in the design, the project objective of eliminating 200 tons of PCB-contaminated equipment cannot be achieved at the onset. Indeed, the budget allocation for PCB destruction was underestimated at design. The project has nevertheless contributed to the drafting of three legal documents for the sound management of PCBs in the country. However, these documents have not yet been adopted by the government so far. The project provided the country with adequate training on PCB sound management and facilitated the inventory of PCB-contaminated equipment. Many PCB owners including EEC, the major PCB owner, have adopted best practices for PCB management. Some private companies have their own PCB elimination plan, one petroleum company has already shipped PCB-contaminated equipment for final destruction in Europe. Although an international company has been contracted for the treatment of 62 low PCB-contaminated transformers, the decontamination work has not started yet. As only one of the three intermediate states proposed in the theory of change is emerging, progress to the long-term progress impact is considered moderately satisfactory.

**Efficiency:** The project was not very effective in the delivery of outputs and products. The duration, which was originally designed for 3 years, was significantly extended (by four years) due to several unforeseen factors/circumstances such as changes at the level of the UNIDO Project Manager, changes at the level of the Ministry of Tourism, and Environment, dissolution of the ex-Société Nationale d’Electricité into EEC, the non-replacement of the former National Project Coordinator, who passed away, for more than a year, the failed first bid for the selection a service provider for PCB decontamination, and the long delays for shipping the decontamination equipment and consumables to Congo and their release from customs. Project closure was on 31 December, and yet the

government has not yet adopted the legal documents on sound management of PCBs, and the decontamination work of PCB-contaminated equipment has also not yet started. Although the project took some cost-effective measures such as applying the best options for the hiring of consultants and service providers and procurement, the non-materialization of significant co-financing contributed to decreased efficiency

**Sustainability:** As some moderate financial, socio-political, and governance risks that may jeopardize the project benefits have been identified, the sustainability of the project results is considered moderately likely. For example, EEC did not provide a temporary storage for hazardous wastes that was supposed to be part of its co-financing contribution.

**UNIDO Backstopping:** UNIDO has provided adequate technical backstopping by hiring high-quality international and national consultants. Procurements of goods and services for the project were according to internal procedures. However, the poor decision to launch a first bid for the treatment of all identified contaminated equipment caused a delay of one year to project implementation.

#### Cross-cutting issues:

The project made a good effort to mainstream the gender dimension in project activities during implementation. A satisfactory involvement and participation of women was seen in the project activities

Regarding M&E, the SMART indicators, proposed in the project results framework of the project document, were adequate to allow for proper monitoring and tracking progress at both output and results levels. Only three of the seven PSC meetings were undertaken, however, relevant reports such as project implementation review reports were submitted on time.

	<b>Evaluation criteria</b>	<b>Rating</b>
<b>A</b>	<b>Impact (progress toward impact)</b>	<b>MS</b>
<b>B</b>	<b>Project design</b>	<b>MS</b>
1	• Overall design	MU
2	• Logframe	S
<b>C</b>	<b>Project performance</b>	<b>MS</b>
1	• Relevance	HS
2	• Effectiveness	MS
3	• Coherence	S
4	• Efficiency	MU
5	• Sustainability of benefits	ML
<b>D</b>	<b>Cross-cutting performance criteria</b>	
1	• Gender mainstreaming	S
2	• M&E: ✓ M&E design ✓ M&E implementation	MS
3	• Results-based Management (RBM)	S
<b>E</b>	<b>Performance of partners</b>	
1	• UNIDO	MS
2	• National counterparts	MS
3	• Donor	S
<b>F</b>	<b>Overall assessment</b>	<b>MS</b>

### C. Recommendations

<b>To UNIDO</b>
1. A further extension of at least six months is recommended to allow for the proper monitoring of the decontamination work.
2. UNIDO could consider in the context of a follow-up initiative assisting the Republic of Congo in building its capacity for the final disposal of highly PCB contaminated equipment as well to support the country for the disposal of the remaining identified contaminated equipment.
<b>To UNIDO, the Ministry of Tourism and Environment, and EEC:</b>
3. The project could take advantage of regional available capacity for PCB decontamination / destruction (in case trial is successful). This option would not only be likely more cost-effective (lower PCB destruction costs including shipping), it would also promote the UNIDO led initiative and enhance south-south cooperation.
<b>To the Ministry of Tourism and Environment:</b>
4. It is recommended that the Ministry of Tourism and Environment take the necessary actions for these documents to be nationally adopted as early as possible so that the PCB are legally bound to soundly manage their PCB contaminated equipment and wastes until final disposal by 2028.
5. Noting that getting the approval of countries where the PCB contaminated waste would transit during the transport is a very lengthy process, it is recommended that the Ministry of Tourism and Environment take the necessary steps such as providing the notification number to FUERA so that they can start the notification of the transit countries as early as possible.
<b>To EEC:</b>
6. EEC should ensure that the ESM system is strictly applied across all its maintenance transformer workshops to reduce contamination and avoid risk exposures to PCBs. In particular, to avoid cross-contamination, it is recommended to put in place the appropriate procedures, such as chemical oil testing of suspected transformers to ensure they are PCB-free before their maintenance or repair.
7. It is recommended that EEC take the necessary actions to ensure that information about the PCB contaminated equipment are properly kept, and that they are adequately labelled and safeguarded.

### D. Lessons learned

Two key lessons emerged:
<ol style="list-style-type: none"><li>1. Planning for appropriate budgets at the design stage would ensure the delivery of outputs, products, and results during the implementation phase.</li><li>2. Had project management been aware of the current PCB destruction costs, they would have already limited the amount of PCB-contaminated equipment to be treated for the first bidding exercise and would have avoided the one-year delay.</li></ol>



# 1. Introduction

## 1.1 Evaluation rationale, purpose, objectives and scope

### Rationale and purpose of the evaluation

1. The project under evaluation *Environmentally Sound Management and Final Disposal of PCB* (GEF Project ID 5325) was implemented in the Republic of Congo from June 2015 to December 2022 (henceforth referred to as the Congo project). Given the number of PCB projects being implemented by UNIDO, many being in the last phase of implementation, and taken into account significant similarities at project design level, a cluster evaluation approach was adopted. This PCB cluster evaluation covered eight (8) projects, and included the Congo project (Table 1).
2. One of the main reasons of the cluster evaluation approach was to overcome some of the shortcomings present in traditional project evaluation, namely the inward-looking nature of the exercise, the timing and high transactional costs and administrative burden.
3. This cluster approach was also to produce synergies and increase the value added in the conduct of evaluations. The efficiency gains produced by this approach would be invested in additional learning and more strategic assessments to inform UNIDO management, Member States, donors and beneficiaries with further more relevant and useful evaluation findings, conclusions and recommendations, such as:
  - a. Inter-project comparisons (e.g. differences in implementation approaches, different strategies for broader adoption)
  - b. Incorporation of additional aspects normally not so well-covered (e.g. socio-economic and environmental impacts of projects, other aspects (e.g. global crisis such as the COVID 19 pandemic).
  - c. Aggregated information for cross-cutting and recurrent issues, such as management, systemic challenges and root causes based on several cases and therefore less anecdotal.

### Objectives and scope of the evaluation

4. The Cluster Evaluation, followed the UNIDO Evaluation Policy<sup>1</sup>, the UNIDO Guidelines for the Technical Cooperation Project and Project Cycle<sup>2</sup>, and UNIDO [Evaluation Manual](#). Furthermore, the GEF Guidelines for GEF Agencies in Conducting Terminal Evaluations, the GEF Monitoring and Evaluation Policy<sup>3</sup> and the GEF Minimum Fiduciary Standards for GEF Implementing and Executing Agencies will be applied. The evaluation was also built upon the findings and recommendations of the Cluster Evaluation on UNIDO POPs portfolio carried out in 2015<sup>4</sup>.

Table 1: List of projects for the PCB Cluster Evaluation\*

Region	Country	GEF ID	Project budget (USD)	Budget left (SAP 31.03.22 USD)
EUR	Serbia	4877	2,100,000	786,423
ASP	India	3775	14,100,000	107,230
ASP	Lao PDR	4782	1,400,000	271,414

<sup>1</sup> UNIDO. (2021). Director General's Bulletin: Evaluation Policy (UNIDO/DGB/2021/11)

<sup>2</sup> UNIDO. (2006). Director-General's Administrative Instruction No. 17/Rev.1: Guidelines for the Technical Cooperation Programme and Project Cycle (DGAI.17/Rev.1, 24 August 2006)

<sup>3</sup>[https://www.thegef.org/sites/default/files/council-meeting\\_documents/EN\\_GEF.ME\\_C56\\_02\\_GEF\\_Evaluation\\_Policy\\_May\\_2019\\_0.pdf](https://www.thegef.org/sites/default/files/council-meeting_documents/EN_GEF.ME_C56_02_GEF_Evaluation_Policy_May_2019_0.pdf)

<sup>4</sup>[https://www.unido.org/sites/default/files/2015-04/FINAL\\_report\\_NIPS\\_CLUSTER\\_EVAL\\_20150409\\_0.pdf#page=81&zoom=100,120,76](https://www.unido.org/sites/default/files/2015-04/FINAL_report_NIPS_CLUSTER_EVAL_20150409_0.pdf#page=81&zoom=100,120,76)

LAC	Bolivia	5646	2,000,000	278,300
LAC	Guatemala	5816	2,000,000	403,866
EUR	Russian Federation	4915	7,400,000	30,000
AFR	Republic of Congo	5325	975,000	25,000
AFR	Morocco	9916	1,826,484	621,734
<b><i>Total</i></b>			<b><u>31,801,484</u></b>	<b><u>1,902,233</u></b>

\*Table taken from the terms of reference for this evaluation

## 1.2 Project Context

5. The Republic of Congo prepared its National Implementation Plan (NIP) in the context of the Stockholm Convention. However, the implementation of the NIP remained a major challenge due to a lack of technical and financial resources. The country has adopted the Stockholm Convention regulations as is and has not established its domestic legal framework on POPs including PCBs management plan meeting the country's context and technical/institutional capacities. The country has not had any GEF projects to implement the actions identified in NIP and therefore the Department of Environment (DOE) under the Ministry of Tourism and Environment (MOTE) neither has any capacities nor has accumulated institutional policy execution experiences.

6. PCBs have not been likely manufactured in Africa. There is only sparse data on quantities of PCBs exported to Africa. However, it is generally understood that importing PCB containing equipment has been discontinued from Europe (or elsewhere) in the mid-eighties. This trend, although reflected in the statistics compiled from the preliminary inventories, does not take into account cases of illegal traffic of PCB contaminated equipment and oil (including retrofilled PCB containing transformers) to African countries since then. Like most of the African countries, the Republic of Congo has small power utilities, typically with a capacity of fewer than 1,000 megawatts. It is most likely that the country imported and used transformers and capacitors that contained PCBs.

7. The Republic of Congo has carried out pilot inventory projects through bilateral/multilateral cooperation in the context of the Basel Convention and the Stockholm Convention at the international cooperate levels. These preliminary or complementary inventories have greatly helped define further the national profiles on PCB management, i.e. amount, volume, concentration levels, electrical power repartition, location, economic sectors, transformers in use versus abandoned transformers, etc. Such data were collected mainly by the international petroleum sectors under the supervision of the Ministry of Hydrocarbons. However, it was found that the power sector did not have a good understanding of its PCB equipment portfolio. Therefore, an update of the PCB inventory on the locations of the potentially PCB contaminated equipment and their PCB concentrations covering the whole country would be required. The Société Nationale d'Electricité (SNE) is the key stakeholder regarding production and distribution of electricity and they own the majority of transformers in the country. In 2018, the government of Congo approved the reorganization of SNE into Energie Electrique du Congo (EEC).

8. The country has neither the infrastructure necessary to manage PCBs and PCB containing equipment in an environmentally sound manner nor facilities specialized for the oil/equipment treatment with both high and low PCB oil concentration. In this regard, there is a well-recognized need to train government officials on the criteria for environmentally sound management, including final disposal of POPs as waste in the context of the Basel Convention and the Stockholm Convention. Although. There is little attention paid to a need for building the technical and institutional capacities

of the local transformer maintenance service providers. In addition, the lack of government's basic knowledge on the technical matters related to the ESM of PCBs and the lack of facilities for the decontamination of PCB oil and PCB containing equipment has prevented the government from taking action in its public power sector, EEC (ex-SNE).

### 1.3 Overview of the Project

9. The project was funded through a GEF grant, amounting to USD 975,000 (and PPG Grant of USD 200,000), a UNIDO co-financing of USD 30,000 (cash), and a total counterparts' co-financing of USD 4,979,220 (cash and in-kind) which amount to a total project budget of USD 5,984,220.

10. The main objective of the project was to establish an environmentally sound management system of PCBs and dispose of 200 tons of PCBs contaminated equipment and waste by strengthening the institutional capacities of power and oil sectors for sound management of chemicals. To achieve this objective, the project design proposed two components on legislation improvement and environmentally sound management of PCBs, which were expected to achieve the following two substantive Outcomes:

- Legal and institutional framework for sound management of PCBs put in place ;
- Sound management and final disposal of PCBs contaminated equipment and its wastes.

11. With regard to implementation arrangements, UNIDO was the Implementing Agency (IA) for the project. The Department of Environment (DOE) of the Ministry of Tourism & Environment (MOTE) of the Republic of Congo was designated as the National Execution Agency (NEA).

12. A Project Steering Committee (PSC) was established by NEA with the members officially nominated in writing. PSC acted as the coordinating committee for the execution of this project. PSC was responsible for setting the project strategy, making recommendations to UNIDO, reviewing/updating the work plan, and monitoring/endorsing the delivered results. Relevant ministries, representatives working in the power sectors, representatives from oil sectors, and NGOs were members of PSC.

13. A Project Management Unit (PMU) was established by NEA, and was responsible for the overall coordination of the project and day-to-day operations and monitoring activities including updating indicators to measure progress and addressing potential barriers in advance to meet the milestones of the project on schedule. PMU consisted of a National Project Director (NPD) (not a project position), a National Project Coordinator (NPC) instead of a National Project Manager (NPM), National Expert in PCBs and Project Assistant.

14. The NPD was appointed by NEA, and represented the project in DOE and the government, and ensured the smooth execution of the project at a high political level. He chaired the Project Steering Committee (PSC) and provided institutional support and strategic direction of the project.

15. A NPC instead of NPM was recruited, on a full-time basis, and reported to NPD, the POPs Focal Point, PSC and UNIDO through project biannual monitoring reports and other means of communication. NPC assumed the overall responsibility for the successful execution of project activities and the achievement of planned project outputs. He was also responsible to coordinate the day-to-day management of the project and ensure adherence to the work plan.

Project factsheet\*

<b>Project Title:</b>	<b>Environmentally Sound Management and Final Disposal of PCBs</b>
<b>GEF ID:</b>	5325
<b>UNIDO ID:</b>	140160
<b>GEF Replenishment Cycle:</b>	GEF-5
<b>Country(ies):</b>	Congo
<b>Region:</b>	AFR - Africa
<b>GEF Focal Area:</b>	Persistent Organic Pollutants (POPs)
<b>Integrated Approach Pilot (IAP) Programs<sup>5</sup>:</b>	NA
<b>Stand-alone / Child Project:</b>	Stand-alone project
<b>Implementing Department/Division:</b>	ENV / IPM
<b>Co-Implementing Agency:</b>	NA
<b>Executing Agency(ies):</b>	Department of Environment, Ministry of Environment, sustainable development and of the Congo Basin (previously named « Ministry of Tourism and Environment »),
<b>Project Type:</b>	Medium-Sized Project (MSP)
<b>Project Duration:</b>	36
<b>Extension(s):</b>	6
<b>GEF Project Financing:</b>	USD 975,000
<b>Agency Fee:</b>	USD 92,625
<b>Co-financing Amount:</b>	USD 5,009,220
<b>Date of CEO Endorsement/Approval:</b>	4/17/2015
<b>UNIDO Approval Date:</b>	5/26/2015
<b>Actual Implementation Start:</b>	6/17/2015
<b>Mid-term Review (MTR) Date:</b>	9/30/2020
<b>Original Project Completion Date:</b>	5/26/2018
<b>Project Completion Date as reported in FY21:</b>	12/31/2021
<b>Current SAP Completion Date:</b>	12/31/2022
<b>Expected Project Completion Date:</b>	12/31/2022
<b>Expected Terminal Evaluation (TE) Date:</b>	2/1/2023
<b>Expected Financial Closure Date:</b>	2/1/2024

\*Table taken from the Project Implementation Report for Financial Year ending June 2022

<sup>5</sup> Only for **GEF-6** projects, if applicable

## I.4 Theory of Change

16. As a GEF5 project, providing a theory of change (TOC) in the project document was not a requirement. However as per the terms of reference for this PCB Cluster evaluation, a common TOC<sup>6</sup> for the eight projects was developed by the evaluation team, and was shared with the UNIDO Project Managers of the eight projects and the UNIDO Evaluation Office during the inception phase. For the Congo project, the TOC was adapted to explain the process of change by outlining causal linkages in the initiative for its shorter-term, intermediate, and longer-term outcomes and impact (Figure 1).

17. The six outputs as well as the two outcomes included in the TOC (Figure 1) are those initially proposed in the project document. On the other hand, the evaluation team has proposed three intermediate states that indicate progress to longer-term impact. It is anticipated that once the legislation on PCBs has been strengthened, the relevant authorities in the countries would take actions for its enforcement to ensure full compliance of PCB owners, and that they are also implementing the PCB phase out and disposal plan (Intermediate State 1). This would trigger Intermediate State 2, whereby the PCB owners would engage in establishing ESM systems for the identification and sound management of PCBs at their facilities. Finally, with the assistance and support of the relevant authorities, it is foreseen that by 2028, the PCB owners would have soundly disposed all their PCBs (Intermediate State 3), and hence would reduce risk exposure of humans and the environment to the harmful effects of PCBs (Impact statement).

18. Two key assumptions have been identified for the intermediate states to happen for long-term impact. It is expected that the relevant enforcing authorities would undertake regular inspection (Assumption No. 3) to ensure that the PCB owners are complying with the national regulations on PCBs, in particular that the latter have established the ESM system at their premises. Furthermore, it is anticipated that the PCB owners would have the financial resources to soundly dispose of their PCB contaminated equipment and wastes (Assumption No. 4).

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<sup>6</sup> Refer to Figure 1 of the inception report for this PCB cluster evaluation.

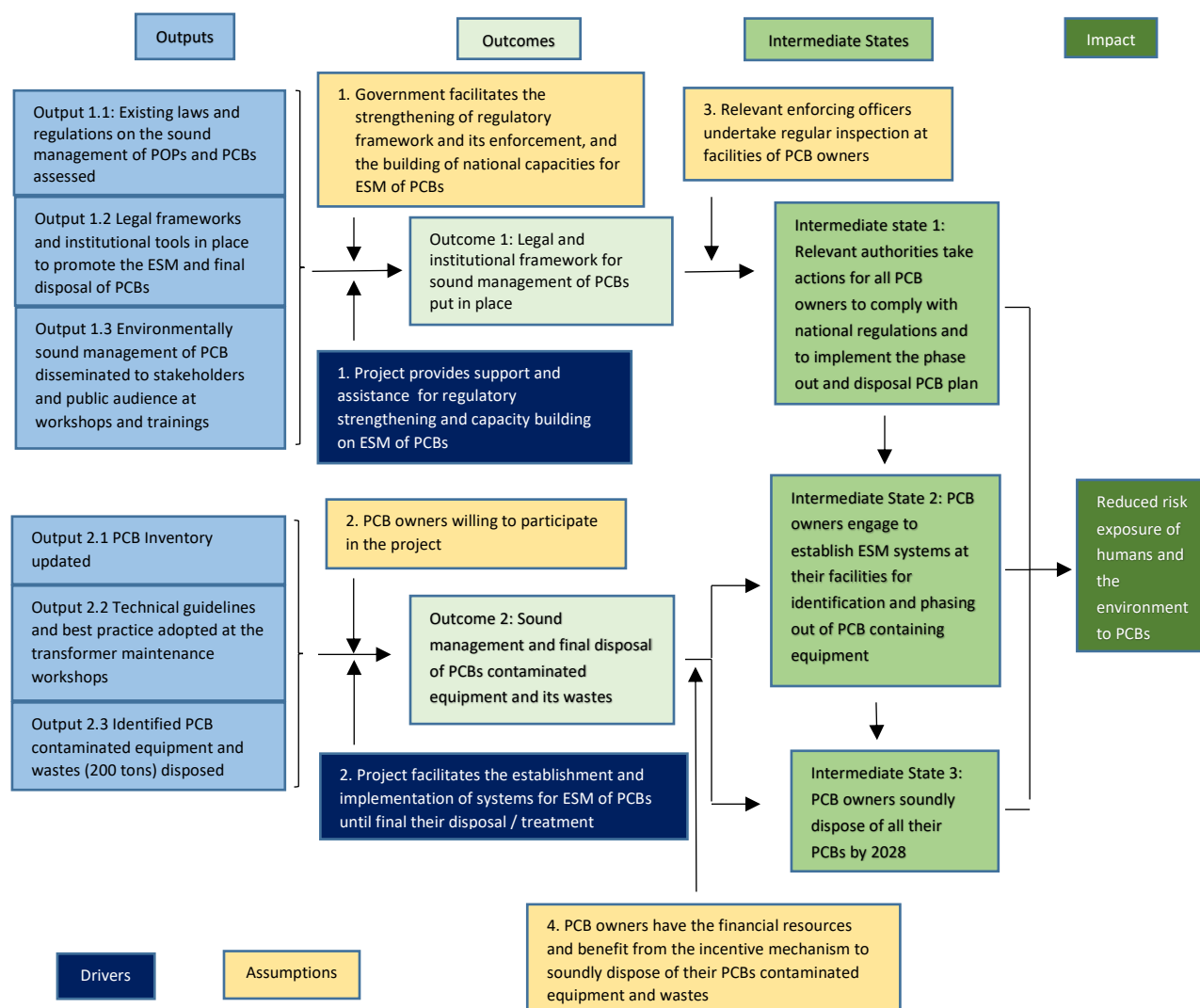


Figure 1: Theory of Change

## I.5 Evaluation approach and methodology

19. The cluster evaluation was carried out as an independent in-depth exercise using a participatory approach whereby all key parties associated with the eight projects (Table 1) to be evaluated were kept informed and consulted throughout the process. A team of three international consultants were involved in this cluster evaluation: Nee Sun CHOONG KWET YIVE (team leader and responsible for this report), Suman LEDERER, and Paulina LAVERDE. During the inception phase in August 2022, the team liaised with the UNIDO Independent Evaluation Division (ODG/EIO/IED) on the conduct of the evaluation and methodological issues. It was agreed that the team leader (French speaking) would be responsible for the evaluation of the Congo, Morocco and Russia projects; S. Lederer (Hindi speaking) for the India, Serbia and Lao PDR projects, and P. Laverde (Spanish speaking) for the Bolivia and Guatemala projects (Table 1).

20. Furthermore, it was agreed to undertake evaluation missions in India, Russia and Bolivia. For the other countries, it was decided to hire national consultants to assist the team in information

gathering and site visits. However, due the global political situation<sup>7</sup>, it was decided not undertake a mission to Russia but rather to rely on a national consultant for information gathering.

21. Unfortunately, despite efforts made, the UNIDO Evaluation Division could not identify a suitable national consultant for the Congo project, and the team was informed accordingly in November 2022. In this context, the evaluation methods used were mainly desk studies and remote individual interviews<sup>8</sup> with key stakeholders and partners of the project. The planning of the persons to be selected for interviews was done in close consultation with the UNIDO Evaluation Office and the UNIDO Project Manager (PM). A participatory approach that sought to keep informed and consult all key stakeholders of the project was used throughout the evaluation process. Where appropriate, both quantitative and qualitative evaluation methods were used to determine project achievements against the expected outputs, outcomes, and impacts.

22. The effective evaluation was carried out from October 2022 to January 2023. The remote interviews were carried out between mid-November and mid-December 2022. Prior to all the interviews, specific questionnaires<sup>9</sup> were developed (in French language) and emailed to all interviewees at least one week before the scheduled interview. They were requested to fill out these questionnaires and to email them back before the interview. As per the terms of reference for this evaluation, the evaluation team proposed a theory of change (TOC) (cf. Section 1.4) that was used to identify causal and transformational pathways from the project outputs to outcomes and longer-term impacts, drivers, and assumptions to achieve them. In particular, the evaluation assessed the extent to which the project contributed to put in place the conditions necessary to trigger the occurrence of the intermediate states proposed in the TOC in order to achieve long term impact.

23. In preparing for interviews, the evaluator reviewed the extensive documentation provided by the UNIDO Project Manager and the National Project Coordinator. These included the project document, the independent midterm evaluation report, minutes of Project Steering Committee (PSC) meetings, annual and progress reports, Project Implementation Reports (PIR), awareness and training workshop reports, as well as technical reports of national experts. The full list of documents consulted and persons interviewed during the evaluation are given in Annexes 2 and 3, respectively.

24. The use of the theory of change approach, remote interviews and desk review of the project documents allowed the evaluators to assess causality, explain why objectives were achieved or not, and to triangulate information.

## I.6 Limitations of the Evaluation

25. The NPC facilitated the evaluation process by individually contacting all the stakeholders to respond to our requests for interviews. However, the process was long. As mentioned in the previous section, it took more than one month to complete all the remote interviews. Many took time to respond to our requests for interviews, and a few did not respond at all. Nevertheless, the evaluation team was able to obtain the required information during the interviews. Otherwise, no major limitations in terms of access to information was encountered. As aforementioned, a very substantive set of documentation was submitted to the evaluation team upon request (Annex 2).

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<sup>7</sup> Conflict between Russia and Ukraine, and economic sanctions imposed on Russia

<sup>8</sup> Using Zoom mainly

<sup>9</sup> Annex 5 for set of questionnaires developed by the evaluation team



## 2. Project's contribution to Development Results - Effectiveness and Impact

### 2.1 Project's achieved results and overall effectiveness

26. Overall effectiveness is assessed on the extent to which the outputs have been successfully delivered and the outcomes achieved, and whether the objective of project has been met. To meet the objective of the project, the planned activities were designed to deliver six outputs that would contribute to two substantive outcomes. The assessment of the delivery of outputs as well as achievement of outcomes and project objective was based on whether their indicators proposed in the Project Results Framework (PRF)<sup>10</sup> are available. The scale used for rating ranges from **Highly Satisfactory (HS)** to **Highly Unsatisfactory (HU)**<sup>11</sup>.

#### 2.1.1 Delivery of outputs

27. The project has performed moderately satisfactorily in terms of delivery of outputs. As reported in Table 2, of the six outputs, three have been rated **Satisfactory (S)**, two **Moderately Satisfactory (MS)**, and the last one **Unsatisfactory (U)** respectively. The assessment, which is summarized below, was based on whether the target for indicators of the respective output has been achieved (Table 2).

28. The focus of **Component 1** was to put in place the necessary legal and institutional framework for sound management of PCBs. **Output 1.1** that concerned the assessment of existing laws and regulations on the sound management of POPs and PCBs was satisfactorily achieved by a team of four consultants, and is thus rated **S** (Table 2). On the other hand **Output 1.2** is rated **MS** as the two indicators for this output have not been fully achieved. Although three legal texts relative to the sound management of PCB have been drafted, they have not been adopted by the national government yet (Indicator 1). Similarly, one technical guideline report has been developed and validated since January 2019 (Indicator 2). But it has not been officially approved and adopted yet. **Output 1.3** on awareness raising was satisfactorily achieved. Four workshops on the environmentally sound management of PCB targeting key stakeholders were undertaken on 13 – 16 December 2016, Brazzaville; on 21 – 24 February 2017, Brazzaville; on 28 February 2019, Brazzaville; and on 17 January 2020, Pointe Noire, respectively (Indicator 1). A total of 170 participants (145 males and 25 females) attended these workshops. A brochure, a flyer and a CD containing dissemination materials were distributed during these workshops and other events organized by the project. The project also benefitted also from TV coverage - a flash news.

29. **Component 2** was about the sound management and final disposal of PCB contaminated equipment and wastes and three outputs were designed to achieve the goals for this component. **Output 2.1** on PCB inventory was satisfactorily delivered. This activity was done in close collaboration with EEC, owner of more than 80% of all the transformers in Congo. Two complementary inventories were carried out, and standard sampling and analytical methods were adopted for both exercises (Indicator 1). It should be pointed out that some companies (mainly petroleum ones) have put in place their own system for identification (through testing) of PCB contaminated equipment. For these equipment, the project did not undertake any testing but relied on the results obtained by the companies. A first inventory exercise was carried out in 2017. During this exercise, the inventory revealed the existence of 1181 transformers, most of which (about 820)

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<sup>10</sup> Annex A of the project document

<sup>11</sup> **HS**: highly satisfactory; **S**: satisfactory; **MS**: moderately satisfactory; **MU**: moderately unsatisfactory; **U**: unsatisfactory; and **HU**: highly unsatisfactory



belong to E2C. Of the 223 transformers that were tested for PCB using the portable L2000DXT PCB/Chloride Analyzer, 54 were found to be contaminated by PCB (levels greater than 50 ppm) and 10 were found to contain pure PCB. The total mass was found to be about 125 tons (PCB contaminated and pure PCB). Noting that the objective of the project was to eliminate 200 tons of PCB, it was decided to undertake a second complementary inventory in 2019. Taking in account the findings of the first inventory, the updated total number of transformers existing in Congo was found to be 1482. After further testing, a total of 1068 tests done including tests done during first exercise (Indicator 2, see Table 2), the total number of PCB contaminated transformers and transformers containing pure PCB was found to be 111 (108 still in service) and 12 (5 still in service) respectively, amounting to a total mass of about 265 tons (Indicator 3). According to available information, a petroleum company, owner of 4 of the 12 transformers containing pure PCB, has already shipped these to Europe for final disposal. It was also reported that nine PCB contaminated transformers identified during the 2017 inventory could not be traced back, which indicates a major deficiency in the sound management and safeguarding of out of service PCB contaminated equipment. It is recommended that appropriate actions are taken in order to ensure that in service identified PCB contaminated equipment are properly labeled and soundly managed, and their locations adequately kept to facilitate their future ESM. For out of service contaminated equipment, it is recommended that they are properly labeled, secured and safeguarded until their final elimination.

30. **Output 2.2** concerned technical guidelines and best practices adopted at transformer maintenance workshops. A stakeholder training workshop on technical guidelines for the environmentally sound management of PCBs was organized on 17 January 2019, attended by a total of 66 participants (57 males and 9 females). Furthermore, three practical on-site trainings are projected to be delivered by FUERA International S.V to the beneficiaries (PCB owners) in 2023 during the decontamination of transformers (see next paragraph on **Output 2.3**) (Indicator 1, Table 2). During this training workshop, the technical guidelines were adopted with amendments by the stakeholders (Indicator 2). While eleven companies have adopted the best practices (Indicator 3), no investment has been done yet (Indicator 4). This output has thus been rated **MS**.

31. **Output 2.3** was about the disposal of 200 tons of PCB contaminated equipment and wastes. At the onset, the target of disposing 200 tons of contaminated equipment could never be reached as the budget allocated for this output at design (\$450,000) was much too low. This is considered a serious weakness of the project design. Indeed, the project document of a PCB project implemented in 2007 mentioned a destruction cost contaminated between \$5000 and \$10,000 per ton<sup>12</sup>. This cost included the packing, shipping and destruction of the contaminated equipment and other associated costs. Furthermore, had the implementers known about these rates for PCB destruction, they would not have lost time, about a year, through a failed bid. A first bidding exercise launched in 2020, inviting 10 companies to submit an offer for the treatment / disposal of decontamination of 157 tons PCB low to medium contaminated equipment (of equipment) and the elimination abroad of high contaminated material and oil, 14 and 50 tons respectively. This exercise resulted in a failed bid as the only one offer from FUERA International S.V, for an amount of \$1,475,000, which was much higher than the available budget (\$450,000). After reviewing and modifying the TORs and by restricting the total amount of the bid to \$450,000, a second call for bids was launched on 15 April 2021. Again only responded FUERA, and made an offer for the elimination of 12 highly contaminated transformers for 450,000 USD. As the highly contaminated transformers could not be traced back

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<sup>12</sup> *Global programme to demonstrate the viability and removal of barriers that impede the adoption and successful implementation of available Non-Combustion Technologies for destroying persistent organic pollutants – Philippines Project – GEF ID 2329*

(see earlier paragraph on **Output 2.1**), and after negotiations, FUERA made a revised offer to decontaminate 62 low-contaminated transformers (below 250ppm) across Congo within the available budget. According to available information, this would correspond to the treatment of about 100 tons of PCB contaminated equipment. As part of the contract signed with the project, the retrofilling unit used by FUERA to decontaminate the 62 transformers would be left in Congo for further use by the authorities, and training would be provided to PCB owners during the decontamination. EEC was supposed to establish a temporary storage facility for hazardous wastes and PCB contaminated equipment, but they did not provide such a facility. As it is anticipated that PCB wastes would be generated beyond the project life through retrofilling by PCB owners, FUERA partnered with a local entity Hydrotech to strengthen local storage facility for hazardous waste in Congo.

32. The implementation suffered further delays since the signature of the contract with FUERA during the second quarter of 2022. The retrofilling unit and the oil (from FUERA) was only received in Congo in November 2022. Furthermore, the equipment, oil and other consumables have still not been released yet as FUERA is waiting for a tax exemption to be granted by the authorities. Finally, authorities in Congo did not provide a notification number (Basel notification) for the export of PCB waste, stressing that the waste to be exported should be verified by the Ministry before completing this first step of the process. Since the decontamination has not started yet, no inspection can take place and the notification number for the Basel Convention is still not available. As decontamination activities have not started and the project closure was at 31 December 2022, it is recommended a no-cost extension of at least 6 months. This would be beneficial to the project as the remaining limited budget (about \$25,000) could be allocated to local monitoring missions at the decontamination sites by the NPC, thereby increasing control on FUERA's operations.

33. To rate the achievement of outputs, the ratings have been converted to scores. Then the average score for all the outputs have been calculated and reconverted to a rating again (see Table 3). Based on this approach, **Delivery of outputs** is rated **Moderately Satisfactory**.

Table 2: Delivery of outputs

Outputs	Target/Indicators	Comments	Rating
<b>Output 1.1:</b> Existing laws and regulations on the sound management of POPs and PCBs assessed	1. A report on the gaps between Stockholm Convention requirements and existing legal/regulatory framework identified	1. One report has been submitted	S
<b>Output 1.2:</b> Legal framework and institutional tools in place to promote the ESM and final disposal of PCBs	1. At least one environment policy, strategy, law, regulation approved/enacted 2. One set of new guidelines and tools adopted	1. 3 legal text have been drafted but not yet adopted by the national government 2. 1 technical guideline report has been developed and approved at national level on January 17 2019. It is in the process of official approval.	MS
<b>Output 1.3:</b> Environmentally sound management of PCB disseminated to stakeholders and public audience at workshops and trainings	1. 3 workshops and trainings undertaken. Total participants: 90 males / 30 females 2. Number of dissemination materials (flyers and posters) distributed	1. 4 workshops organized with a total of 170 participants (145 males, 25 females) 2. 1 brochure; 1 flyer and 1 CD with dissemination material and 1 Flash news on TV on the project	S
<b>Output 2.1:</b> PCB Inventory updated	1. Number of institutes and companies adopting standard sampling and analytical methods 2. Number of samples collected and analyzed 3. PCB and transformer inventory and maintenance record have been established and updated 4. Quantity of PCBs safeguarded	1. E2C adopted standard sampling and analytical methods 2. Two inventories done in 2017 and 2019: 1068 samples collected and analyzed from a total of 1482 transformers 3. Inventory established and updated 4. A total of 111 PCB contaminated transformers and 8 pure PCB transformers identified amounting to about 265 tons	S

<b>Output 2.2:</b> Technical guidelines and best practice adopted at transformer maintenance workshops.	1. Two training workshops undertaken with participation of at least 48 males and 12 females 2. 1 technical guideline adopted 3. 2 companies adopting best practice 4. Amount of incremental investment or 1 new business created	1. Three practical on-site trainings are projected to be delivered to the beneficiaries by FUERA, contracted to decontaminate transformers, but not yet done 2. A national technical guideline on PCB sound management and elimination approved by MOTE 3. 11 companies adopted best practice 4. No investment done yet	MS
<b>Output 2.3:</b> Identified PCB contaminated equipment and wastes (200 tons) disposed.	1. 200 tons of PCB eliminated / discontinued 2. Amount of materials sorted, decontaminated, recycled and sold (amount in USD) 3. Tons of equivalent CO <sub>2</sub> pollution prevented	Decontamination by FUERA not yet started	U

Table 3: Rating of components and overall rating for achievement of outputs

Component	Outputs	Rating	Score*	Average score	Component Rating
<b>Component 1</b>	Output 1.1	S	5	4.7	S
	Output 1.2	MS	4		
	Output 1.3	S	5		
<b>Component 2</b>	Output 2.1	S	5	3.7	MS
	Output 2.2	MS	4		
	Output 2.3	U	2		
<b>Overall</b>			25	4.2	MS

\*HS: 6; S: 5; MS: 4; MU: 3; U: 2; HU: 1; \*\*Total score and average score for outputs and overall rating for achievement of outputs

### 2.1.2 Achievement of outcomes and project objective

34. The assessment of project objective and outcomes was based on the availability of the indicators proposed in the PRF of the project document. Similar to outputs, the rating scale used was from **HS** to **HU**. Table 4 summarizes this assessment. The project objective has been rated **Moderately Satisfactory** given that two of four indicators have not been met by the time of the terminal evaluation. Furthermore, although FUERA has been contracted to decontaminate 62 lowly contaminated transformers, this would correspond to the treatment of about 100 tons of PCB, well below the target of 200 tons projected at design (cf. Section 2.1.1 under **Output 2.3**). Instead of a national PCB management, each PCB owner has to develop its own plan, according to the decree on technical guidelines for PCB sound management (Indicator 4). This decree has not yet been approved and enacted by the government. However, some companies have already put in place their PCB elimination plan. As reported earlier (cf. Section 2.1.1 under **Output 2.1**), a petroleum company shipped 4 transformers containing pure PCB for final disposal at a dedicated destruction facility in Europe. **Outcome 1** on legal and institutional framework for sound management of PCBs is rated **MS**. The indicator on best practices has been fully met. There is documented evidence that 11 companies, owners of PCB, have adopted best practices for the ESM of PCBs. On the other hand, although three relevant policies / law / regulations drafted and agreed by the stakeholders, they have not been approved and enacted by the national government.

35. **Outcome 2** concerned the sound management and final disposal of PCBs contaminated equipment and its waste. Although the technical guidelines on ESM and final disposal of PCBs developed in the context of the project have not yet been approved officially, there is strong evidence that many companies, owners of PCB, have already adopted them (Indicator 1). As discussed earlier,

the treatment of PCB contaminated equipment and wastes has not started yet, activities are planned to start early 2023. Based on the same approach used for the overall rating of outputs, **Achievement of Outcomes and Project Objective** has been rated **MU**<sup>13</sup>.

36. **Overall Effectiveness** is rated **Moderately Satisfactory**.

Table 4: Achievement of Outcomes and Project Objective

Project Objective	Indicators	Comments	Rating
To establish an environmentally sound management system of PCBs and dispose of 200 tons of PCBs contaminated equipment and waste by strengthening the institutional capacities of power and oil sectors for sound management of chemicals	<ol style="list-style-type: none"> <li>1 entity with new business</li> <li>200 tons of PCBs are disposed</li> <li>E2C and a private sector adopting best practices</li> <li>1 national PCB management plan has been adopted</li> </ol>	<ol style="list-style-type: none"> <li>No new business established yet</li> <li>100 tons of PCB instead of 200 not yet disposed</li> <li>11 companies including E2C adopted best practices</li> <li>Instead of a national PCB management plan, each PCB owner has to develop and implement its own plan according to the national guidelines on PCB management. Some has already in place their plan</li> </ol>	<b>MS</b>
Outcomes	Indicators	Comments	Rating
<b>Outcome 1:</b> Legal and institutional framework for sound management of PCBs put in place	<ol style="list-style-type: none"> <li>E2C and a private sector adopting ESM of chemicals</li> <li>1 relevant policy/law/regulation approved/enacted</li> </ol>	<ol style="list-style-type: none"> <li>11 companies including E2C adopted best practices.</li> <li>3 relevant policies / law / regulations drafted but not yet approved and enacted</li> </ol>	<b>MS</b>
<b>Outcome 2:</b> Sound management and final disposal of PCBs contaminated equipment and its waste	<ol style="list-style-type: none"> <li>2 companies adopting technical guidelines on ESM and final disposal of PCBs</li> <li>200 tons of PCB contaminated equipment and oil disposed of</li> </ol>	<ol style="list-style-type: none"> <li>Technical guidelines on ESM and final disposal of PCBs not yet approved officially</li> <li>Decontamination by FUERA not yet started</li> </ol>	<b>U</b>

## 2.2. Progress towards impact

37. Impact can be assessed through the extent to which the project interventions have brought about changes in the human condition or in the environment. Whether intended or unintended, changes can be positive or negative. For this project, there was no evidence of negative impacts on human health or on the environment. Progress towards this long term impact has been discussed at three levels: (i) Behavioral changes; (ii) Broader adoption; and, (iii) Emergence of the TOC intermediate states.

### 2.2.1. Behavioral changes

38. Behavioral changes have been discussed according to the following three aspects: (i) Economically competitive – Advancing economic competitiveness; (ii) Environmentally sound – Safeguarding environment; and, (iii) Socially inclusive – Creating shared prosperity; which are discussed below:

39. **Economically competitive** – EEC putting in place a ESM system at its transformer workshops, would help reduce releases of potentially PCB contaminated oil, and would also eliminate cross-contamination issues, and therefore would reduce decontamination cost that would otherwise be surely a financial and environmental burden for EEC and the government in the future. Although the evaluation has been informed that best practices for ESM of PCBs have been adopted, it is

<sup>13</sup> **MS** (4) + **MS** (4) + **U** (2) = 10. Average score = 10/3 = 3.3 , which corresponds to **MU**

nevertheless recommended that EEC ensure that best practices are indeed applied at the equipment workshop to prevent releases and the cross-contamination of equipment.

40. It was anticipated that the project would regenerate equipment oil that are contaminated with low PCB concentrations. This would be direct economic benefits for PCB owners such as EEC as the regenerated oil is reusable, and could possibly save as much as EUR 1 per litre of oil<sup>14</sup>. However, retrofilling, the technology selected by the implementers for the treatment of low level PCB contaminated equipment, would not allow such cost efficient saving.

41. **Environmentally sound** – The objective was to decontaminate a total 200 of tons of PCB-containing equipment and oil that would thus remove the risk of their release to the global environment. However, due a weakness in the design (see Section 2.1.1 **Output 2.3**), only about 100 tons would be treated. Nevertheless, the project interventions contributed to concrete behavioral changes at the facilities of PCB owners. The adoption the ESM plan for PCB management by the major transformer owners (e.g. EEC, petroleum companies, SARIS<sup>15</sup>) helped improve the awareness of the workers' occupational safety, and they were provided with appropriate personal protective equipment (PPE) when dealing with equipment containing PCBs<sup>16</sup>. However, as reported earlier, a deficiency was noted in the safeguarding of out of service contaminated equipment, nine PCB contaminated equipment could not be traced back (see Section 2.1.1 under **Output 2.1**). Through the recommendation made earlier (cf. Section 2.1.1), it anticipated that the identified PCB contaminated equipment would be better safeguarded and managed to prevent release to the environment. It is worthy to note that the petroleum companies adopted the best ESM practices before the project. Many of them had already put in place a system to identify (through testing), phase out and eliminate PCB containing transformers. As earlier mentioned, one petroleum company paid for the exportation and disposal of 4 transformers containing pure PCB.

42. **Socially inclusive** – It was anticipated that the best practices adopted for ESM of PCBs and awareness raised at EEC, would also spill over to promote clean work places in general. The improved safety and cleaner work environment would thus reduce risk exposure to PCBs and keep workers healthy in the longer term, which would bring down social costs. Although the workers have been provided with PPE and their awareness raised, there is no evidence whether EEC has put in place the conditions for these anticipated changes to occur.

43. The project document reports that the exposure of African populations to PCBs is of particular concern. It mentions that there are some reported potential cases of direct exposure of women and children to PCBs because of the re-use of potentially PCB containing oils sold in the informal sector / local markets. There is also strong suspicion of cases of these re-used oils being used for cooking purposes. Although the project has undertaken numerous awareness raising activities (cf. Section 2.1.1 **Output 1.3**) and best practices adopted, there is no evidence whether the sale of out of service transformers to recyclers / informal sector has stopped, and whether behavioral changes have occurred in the communities of the informal sector.

### 2.2.2. Broader adoption

44. This section addresses the catalytic effect of the project and describes the extent to which the project's interventions have been adopted within the country or beyond the domains and scales

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<sup>14</sup> Section B.2 of the Project document.

<sup>15</sup> SARIS Congo: Société Agricole de Raffinage Industriel du Sucre du Congo

<sup>16</sup> Interview data

originally targeted. The three mechanisms, namely mainstreaming, replication, and scaling-up, and which are frequently used to promote the broader adoption of project interventions and innovations, are discussed below.

45. **Mainstreaming** occurs when information, lessons or specific results generated by the project are incorporated into broader institutional mandates and operations, such as laws, policies, regulations, and programs. It is projected that the three legal texts as well as the national guidelines for the sound management of PCBs would be adopted and enacted by the government. However, given that these instruments have been drafted, reviewed, and approved by the project stakeholders since more than two years, it is recommended that the MOET take the necessary steps for them to be nationally adopted and enacted. The PCB owners would thus be legally bound to soundly manage their PCB contaminated equipment until final disposal by 2028. This would ensure that the contaminated equipment would no longer be sold to recyclers or the informal sector, and the local communities and the environment would thus be no longer exposed to PCBs.

46. **Replication** occurs when the initiatives, technologies or innovations supported by the project are reproduced or adopted on a comparable scale. The key intervention of this project was the sound disposal of PCB contaminated equipment. As discussed earlier (Section 2.1.1 under Output 2.3) FUERA was contracted to treat 62 lowly contaminated transformers (containing less than 250ppm) using the retrofilling technique. The retrofilling unit would be left in Congo and the PCB owners would be provided training on its use. It is anticipated that these PCB owners would take advantage of this unit to retrofill their lowly contaminated transformers not yet treated.

47. **Scaling-up** takes place when the project-supported interventions are implemented at a larger scale, which can be administrative, geopolitical, ecological or business scales. While replication of retrofilling of lowly contaminated equipment is anticipated (see previous paragraph), no scaling-up of project interventions is foreseen for this project.

### 2.2.3 Emergence of TOC intermediate states

48. Project progress to long-term impact was also assessed based on the extent to which the three Intermediate States proposed in the TOC (Figure 1) were seen to be emerging in Congo. The likelihood of impact was supported by the assessment of whether the proposed necessary assumptions and drivers in the TOC have shown to hold. The assessment is reported in Table 5.

49. Legal texts for the sound management have already been drafted, reviewed, and accepted by the project partners. But they have not yet been adopted and enacted nationally. Thus Intermediate State 1 related to relevant authorities taking actions for all PCB owners to comply with national regulations and to implement the phase out and disposal PCB plan has not emerged yet. As discussed earlier (Sections 2.1.2 and 2.2.1), there are indications that Intermediate State 2 is already emerging and has been rated **Satisfactory** (Table 5). The eleven biggest PCB owners have adopted best practices, and have established ESM systems for identification and phasing out PCB containing equipment. Some have already put in place their own PCB management/elimination plan, whereby they carry out systematic oil testing to identify PCB contaminated equipment. The project benefitted from these data generated that were included in the two inventories carried out (see Section 2.1.1 under **Output 2.1**). For the Intermediate State 3 however, many of the PCB owners including EEC were relying on the project to have their PCB contaminated equipment soundly disposed of. Given the delays encountered (see Section 2.1.1 under **Output 2.3**), the decontamination activities have not started yet. Furthermore, as only lowly contaminated equipment (less than 250 ppm) would be treated, EEC, although they are committed to have their contaminated transformers soundly

managed until final disposal<sup>17</sup>, has raised concerns regarding the project not including the disposal of moderately to highly contaminated equipment (above 250 ppm up to 4910 ppm) and also those containing pure PCB. They highlighted that initially it was agreed that the project would dispose of all types of contaminated equipment including the highly contaminated equipment and pure PCB (planned to be exported for disposal). It is therefore recommended that the project should initiate discussions to assist EEC in finding solutions (in the context of other bilateral cooperation for example or by providing technical assistance) for the sound management and final disposal of their highly contaminated equipment (above 250 ppm). On the other hand, as aforementioned, some PCB owners have their own elimination plan. Intermediate State 3 is rated **MS**.

50. Although legal texts have been drafted and approved by project stakeholders, they have not yet been nationally adopted and enacted. Thus Assumption 1 is rated **MS**. As there is strong evidence that PCB owners were fully engaged in the project, Assumption 2 has been rated **HS**. The legal texts on PCB sound management have not yet been adopted nationally, so the assumption that relevant enforcing officers undertake regular inspection at facilities of PCB owners does not hold, and Assumption 3 has been rated **Unsatisfactory**. Assumption 4 is rated **Satisfactory** as there is strong evidence that the PCB owners are committed to soundly manage their PCB equipment until final disposal. EEC, which owns more than 80% of transformers in Congo, indicated that they are planning to dispose of their PCB contaminated equipment by phase<sup>18</sup>. The first phase would be the treatment of 54 lowly contaminated transformers (less than 250 ppm) by the project. A de-energization plan for lowly contaminated in-service equipment to be treated has been established in cooperation with FUERA, the service provider contracted for decontamination. The decommissioning of highly contaminated in-service transformers has also been planned. These equipment would be removed, transported, and treated at three sites (located at Pointe Noire, Loudima and Brazzaville) provided by EEC. The environmental impact assessment, including a flood risk assessment of the three sites has started in 2021. EEC has also created a special committee on environment, social impact and corporate responsibilities. However, EEC was supposed to establish a temporary storage facility for hazardous wastes and PCB contaminated equipment, but they did not provide such a facility. Once the first phase would be completed in 2023, EEC would build on the experience gained to phase out and dispose of the remaining contaminated equipment. As already mentioned earlier, many of the private companies have their own elimination plan.

51. The two drivers were in place during project implementation and contributed to the successful regulatory strengthening and capacity building on ESM of PCBs. The two drivers have been satisfactorily rated (Table 5). Given the status of intermediates, assumptions, and drivers, **Progress towards impact** is considered **Moderately Satisfactory**.

Table 5: Status of intermediate states, assumptions and drivers

Intermediate State	Observation/findings	Rating*
<b>Intermediate state 1:</b> Relevant authorities take actions for all PCB owners to comply with national regulations and to implement the phase out and disposal PCB plan	Legal texts for the sound management have already been drafted, reviewed, and accepted by the project partners. But they have not yet been adopted and enacted nationally. Thus this intermediate state has not emerged yet.	<b>MU</b>
<b>Intermediate State 2:</b> PCB owners engage to establish ESM systems at their facilities for identification and phasing out of PCB containing equipment	11 PCB owners have adopted best practices, and have established ESM systems for identification and phasing out PCB containing equipment	<b>S</b>
<b>Intermediate State 3:</b> PCB owners soundly dispose of all their PCBs by 2028	Majority of the PCB owners were relying on the project to have their PCB soundly disposed of. However, some have their own elimination plan. A petroleum company has already paid for the	<b>MS</b>

<sup>17</sup> Interview data

<sup>18</sup> Interview data



Intermediate State	Observation/findings	Rating*
	disposal of 4 pure PCB transformers. EEC, the biggest PCB owner is committed to have their contaminated transformers soundly managed until final disposal	
Assumptions	Observations/findings	Rating
1. Government facilitates the strengthening of regulatory framework and its enforcement, and the building of national capacities for ESM of PCBs	Despite that legal texts have been drafted and approved by project stakeholders, they have not yet been nationally adopted and enacted	MS
2. PCB owners willing to participate in the project	All major PCB owners were fully engaged in the project	S
3. Relevant enforcing officers undertake regular inspection at facilities of PCB owners	Legal texts on PCB management not yet approved, so this assumption does not hold	U
4. PCB owners have the financial resources and benefit from the incentive mechanism to soundly dispose of their PCBs contaminated equipment and wastes	PCB owners are committed to soundly manage their PCB contaminated equipment until final disposal.	S
Drivers	Observations/findings	Rating
1. Project provides support and assistance for regulatory strengthening and capacity building on ESM of PCBs	The project satisfactorily facilitated the regulatory strengthening through the recruitment of national consultants to draft and update the national legislation and technical guidelines for ESM of PCBs. Training and awareness raising workshops undertaken satisfactorily	S
2. Project facilitates the establishment and implementation of systems for ESM of PCBs until final their disposal / treatment	Training on ESM of PCBs targeting PCB owners satisfactorily undertaken. Further training to be undertaken by FUERA, the service provider for PCB treatment	S

\*HS: Highly Satisfactory, S: Satisfactory, MS: Moderately Satisfactory, MU: Moderately Unsatisfactory, U: Unsatisfactory, HU: Highly Unsatisfactory

52. The project reached its closure date on 31 December 2022, and yet the legal documents on ESM of PCBs have not yet been adopted and enacted by the government. Also, the treatment of PCB contaminated equipment has not started. For these reasons, the rating for overall **Effectiveness** is **Moderately Satisfactory**.

### 3. Project's quality and performance

#### 3.1. Project design and results framework (logframe)

53. The evaluation acknowledges several strengths in the design of the project. In particular the logical framework approach was used to develop the project that led to the establishment of a Project Results Framework (PRF)<sup>19</sup> and the main elements of the project, i.e., the overall objective, outcomes, outputs, as well as indicators, their means of verification, and the assumptions.

54. The evaluation concurs with the midterm evaluation (MTE) that found the project design to be adequate to address the problems at hand such lack of knowledge on technical issues related to the ESM of PCBs and non-existence of PCB decontamination facilities in the country. Based on the situational analyses and the needs assessment done, a clear thematically-focused development objective has been proposed, and the causal pathways from project outputs through outcomes towards impacts have been clearly described in the PRF. The evaluation also concurs with the MTE regarding the expected results are realistic and measurable. Moreover, the proposed set of SMART<sup>20</sup> indicators as well as their means of verification therein are considered adequate to monitor progress at both output and results levels.

55. The project document provided a detailed budget per component and per output for GEF funds<sup>21</sup> as well as for co-financing. In general, the allocation of GEF funds was adequate except for **Output 2.3** where the cost for PCB destruction was well underestimated. Only \$435,900 was budgeted for the disposal of 200 tons of PCB contaminated equipment, corresponding to about

<sup>19</sup> Annex A of the project document

<sup>20</sup> SMART: specific, measurable, achievable, relevant and time-bound indicators

<sup>21</sup> Annex E of the project document



\$2,170 per ton. As discussed earlier (See Section 2.1.1 under **Output 2.3**), in 2007 the cost for exportation and treatment/destruction was already in the range \$5 to \$10 per kg. At the onset, the objective of destroying 200 tons of PCB contaminated could not be never be achieved. The evaluation considers that this constitutes a serious weakness in the design. Another weakness of the design, the project document did not include a detailed timeframe for the implementation of activities.

56. Relevant socioeconomic benefits to be delivered by the project as well as consideration of gender dimensions have been adequately described in the project document<sup>22</sup>. In particular, the gender dimensions have been incorporated into the project design and logframe with proper indicators selected following the UNIDO's policy on Gender Equality and the Empowerment of Women. As rightly highlighted by the MTE, in terms of risk, political risk could have been considered because of the likelihood of socio-political unrest in sub-Saharan countries, especially during electoral periods.

57. Adequate institutional arrangement has been proposed for project implementation at UNIDO level, and for coordination and execution at national level. Relevant national stakeholders, such ministries, PCB owners, and the private sector been identified and their foreseen involvement described<sup>23</sup>.

58. Given the serious weakness identified for the underestimation of PCB destruction cost, **Project Design and results framework** is rated **Moderately Satisfactory**.

### 3.2. Relevance

59. The project is highly relevant as it is assisting Congo, which is a party to the Stockholm Convention, to fulfill its obligations towards the Convention. In particular, it is assisting the country to soundly manage its PCB contaminated equipment and wastes, one of the priority action plan highlighted in the NIP. Furthermore, this project is perfectly aligned with the National Development Plan 2018-2022 and the National Sustainable Development Strategy 2016-2025 of the country.

60. The project is in line with the Focal Area Objective CHEM-I of the GEF-5 Strategy, which is: Phase out POPs and reduce POPs releases. The outcomes of the project are consistent with the corresponding Focal Area Outcome 1.4: POPs waste prevented, managed, and disposed of, and POPs contaminated sites managed in an environmentally sound manner.

61. The project is aligned with UNIDO priorities and mandates, and the renewed mandate on Inclusive and Sustainable Industrial Development (ISID). In particular, the project is very relevant to one of the pillars of ISID: Safeguarding the Environment - environmentally sustainable growth, via cleaner industrial technologies and production methods, including in the fields of waste management and recycling; the promotion, adaptation, and transfer of environmentally sound technologies, under which UNIDO aims to assist countries in reaching compliance with the Stockholm Convention and aims at developing capacities in developing countries to protect their populations and their environmental resources from POPs-related pollution. Also, UNIDO has the comparative advantage of having implemented GEF projects in various regions in the Chemicals Focal Area including environmentally sound management of PCBs.

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<sup>22</sup> Section B.2 of the project document

<sup>23</sup> Section B.1 of the project document

62. As the project is responding to the needs of the country for the sound management of PCBs, and it is in line with GEF Chemicals Focal area and UNIDO mandates, rating on **Relevance** is **Highly Satisfactory**.

#### 4.3 Coherence

63. The Republic of Congo has carried out pilot inventory projects through bilateral/multilateral cooperation in the context of the Basel Convention and the Stockholm Convention at the international cooperate levels. These preliminary or complementary inventories have greatly helped define the national profiles on PCB management, i.e. amount, volume, concentration levels, electrical power repartition, location, economic sectors, and transformers in use versus abandoned transformers. This information, although preliminary, was useful in development of the project. Such data were collected mainly by the international petroleum sectors under the supervision of the Ministry of Hydrocarbons. The project succeeded in getting their engagement and commitment. The engagement of the Ministry of Energy and Water as well as that of EEC (formerly SNE) was also secured during the preparatory phase.

64. Law N°30-2006, which ratified the Stockholm Convention, and which has been published in the official legislative publication of the government in 2006 is the only official document and legislation in the area of Stockholm Convention. In strengthening all other relevant legislative documents such as environmental laws, waste management laws, custom's list of banned chemicals, and chemicals management laws, the project planned to include PCBs as well as all the other POPs.

65. The project is consistent with a number of regional or international agreements such as the New Partnership for Africa's Development (NEPAD) Environmental Action Plan that was adopted by African Heads of State and Government of the Organization of African Unity in 2001. It is consistent also with the Rabat Declaration on the Environmentally Sound Management of Hazardous Wastes (2001), the Programme of Action for Africa for Environmentally Sound Management of Unwanted Stocks of Pesticides, PCB and Used Oils (2001) or the Bamako Convention (1991).

66. In view of the above, **Coherence** is rated **Satisfactory**.

#### 4.4 Efficiency

67. The CEO endorsement date of the project was 17 April 2015 and administrative project implementation started officially at UNIDO on 17 June 2015. The project was planned for a duration of 3 years and to end on 26 May 2018. However, due to challenges faced, project implementation was considerably delayed, and 6 extensions were granted and the actual closure date was 31 December 2022. The reasons for these delays were due to (i) late launch of project (ii) changes of UNIDO PM as well as international consultants (iii) passing away of NPC (iv) changes at the level of MOET (v) reorganization of SNE into EEC (vi) delays in validation of technical reports by UNIDO (vii) Covid19. These reasons are discussed under Section 6.1. In addition, the poor decision to launch a first bid under **Output 2.3** (see Section 2.1.1), and the long delays for FUERA to ship the retolling unit and the consumables to Congo and getting them released from the customs further delayed implementation. A Basel Convention notification number is required to export the retrofilled contaminated oil for treatment in Europe. The authorities in Congo have refused to provide a notification number to FUERA as the retrofilling work has not started yet. Noting that getting the approval of countries where the PCB contaminated wastes would transit during the transport is a very lengthy process, it is recommended that the MOTE take the necessary steps such that the notification number is provided to FUERA so that they can start notifying the transit countries as early as possible.

68. A full agency mode of execution was applied with UNIDO managing the GEF funds. The procurement of equipment and goods as well as the recruitment of consultants and the organization of regional meetings and workshops was done by UNIDO. The management of GEF funds was done according to the UNIDO internal procedures. For payments and disbursements of funds disbursement, for example, the UNIDO PM ensured that all relevant documents and approvals were obtained before making requests<sup>24</sup>. The DOE, the NEA, was sub-contracted to execute activities at national level. According to the project team, generally funds were mobilized in accordance with the annual work plans and overall within deadlines, although it was noted a few times some difficulties in obtaining funds for the execution of some activities such as project monitoring. This was due to non-availability of cash co-financing of the national counterpart.

69. There is a clear evidence that the project has used the most efficient options for the recruitment of consultants, for sub-contracting service providers, and for project execution. As highlighted by the MTE, generally, the project team was satisfied with the expertise provided by the national and international experts, who produced quality reports<sup>25</sup>. Making use of NIP data and also benefiting from inventory data generated by private PCB owners increased efficiency to some extent.

70. In terms of the use of financial resources, expenditures for each output were within the allocated budget (Table 6). This tend to indicate that the considerable delays the project encountered did not affect cost effectiveness very much as all the substantive outputs have been successfully delivered within the total approved budget. Noting however that the target of 200 tons of PCB contaminated equipment treated would not be achieved due to an underestimation of disposal cost at design (see Section 2.1.1 under **Output 2.3**). Instead only about 100 tons would be treated by FUERA, which would correspond to a reasonable and competitive destruction cost of about \$4,300 per ton<sup>26</sup>.

71. A total co-financing amount of \$5,009,220 (cash and in-kind) was pledged. The main co-financiers were MOTE and EEC (Table 7). Despite numerous requests, no co-financing reports were submitted to the evaluation. Nevertheless, the MOTE has, within the framework of its co-financing commitment in kind, made premises available to the project to serve as an office and covered the costs of electricity, water and the salaries of some officers who supported the project. However, it was reported MOTE did not provide cash co-financing, which limited project monitoring activities. EEC, for its part, provided the project with premises to house the laboratory and covered the costs for consumables and the costs of its staff (salaries and travel) during the PCB inventory missions. EEC would also provide three sites for the decontamination activities planned in 2023. However, as mentioned earlier (Section 2.1.1 under **Output 2.3**), EEC did not provide for a temporary storage facility for hazardous wastes. Instead, FUERA, the international company subcontracted by UNIDO had to offer a turnkey solution by partnering with Hydrotec to offer such a facility, and which probably resulted in higher decontamination pricing being applied.

72. Given the considerable delays encountered and the non-materialization of significant amount of co-financing efficiency is rated **Moderately Unsatisfactory**.

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<sup>24</sup> Interview data

<sup>25</sup> Feedback gathered during interviews and confirmed by the MTE

<sup>26</sup> Allocated budget for Output 2.3 is \$435,900 and about 100 tons treated. Cost per ton is about \$ 4,300

Table 6: Budget allocation and budget left per output as at 30 June 2022

	Allocation at approval	Unspent balance*
Output	USD	USD
Output 1.1	11,600	11.47
Output 1.2	38,300	86.32
Output 1.3	63,600	88.71
Output 2.1	160,600	388.08
Output 2.2	116,800	319.89
Output 2.3	435,900	936.67
Output 3.1	19,800	4,081.36
Output 3.2	49,800	30,004.06
<b>Total</b>	<b>896,400</b>	<b>35,916.56</b>

Source: Project document and PIR FY22\*

Table 9: Co-financing at design and materialized

Co-financier	Type	Total Pledged (\$)	Total materialized (\$)
MOTE	Cash	200,000	FNA*
	In-kind	1,000,000	FNA
EEC	Cash	2,645,454	FNA
	In-kind	1,133,766	FNA
UNIDO	Cash	30,000	30.000
<b>Total</b>		<b>5,009,220</b>	

\*FNA: figures not available

## 4.5 Sustainability

73. Sustainability is understood as the likelihood of continued benefits after the project ends. Sustainability is assessed in terms of the risks confronting the project; the higher the risks, the lower the likelihood of sustenance of project benefits. The four dimensions or aspects of risks to sustainability (as mentioned in the TOR, namely, sociopolitical, financial, environmental, and institutional frameworks and governance risks) are discussed below.

74. **Sociopolitical Sustainability** – The Republic of Congo has signed and ratified the Stockholm Convention, and it has also transmitted its NIP on POPs to the Stockholm Convention Secretariat. By taking legal provisions in relation to its obligations under the agreement and by implementing them, Congo is committed to fulfill its obligations towards the Convention<sup>27</sup>. The presence of the Minister of Tourism and Environment at the workshop on the national technical directives, in Brazzaville in January 2019, clearly indicates the importance given to project by the national government. During her speech, she greatly thanked UNIDO and GEF for supporting Congo to build capacity for the ESM of PCBs. However, the MTE noted that the stakeholder awareness raising activities did not appear to be sufficient to engage some stakeholders in supporting the long-term objectives of the project. During the formulation phase of the project, the petroleum companies had given their commitments to eliminate their PCB waste. However, during the 2017 inventory, all refused access to their facilities, arguing that they did not own PCB waste. During the 2019 inventory, they did concede that they had

<sup>27</sup> Interview data

PCB contaminated equipment. In light of the above, **Sociopolitical sustainability** is rated **Moderately Likely**.

75. **Financial Sustainability** – For this aspect of risk, the key point is whether the PCB owners would likely mobilize the necessary resources to soundly dispose the remaining PCB wastes that have not been decontaminated by the project. Some petroleum companies have already implemented in-house ESM plans for PCB containing equipment, and whenever contaminated equipment are identified, these are exported to Europe for final elimination. At the level of EEC, the owner of about 90% of transformers in Congo, according to the initial agreement, the project would pay for the elimination of all their 103 identified PCB contaminated transformers (lowly and highly contaminated). However, given that only 62 lowly contaminated transformers (54 owned by EEC) would be treated by the project (cf. Section 2.1.1 under **Output 2.3**), EEC would thus have to pay for the sound disposal of the remaining contaminated transformers, noting that the highly contaminated ones cannot be retrofilled but have to be shipped for elimination at a dedicated destruction facility. EEC does not agree with this situation as they have fulfilled their part of the agreement by replacing many of the identified PCB contaminated transformers. They did not also confirm whether they could mobilize or not the necessary funds for the elimination of the remaining PCB contaminated transformers<sup>28</sup>. As some risks have been identified, **Financial Sustainability** is rated **Moderately Likely**.

76. **Institutional framework and governance sustainability** – The DOE confirmed that the law for the ESM of PCBs in Congo would soon be adopted and enacted by the government<sup>29</sup>. And they would ensure that the PCB owners are compliant with the law. Furthermore, at the level of EEC, an Environment and Corporate Social Responsibility Committee has been established, which among others, is to ensure the implementation of the PCB project. This technical committee will continue to exist after project closure<sup>30</sup>. Furthermore, during the environment day in Congo, EEC formally stated that they would continue to sensitize all its staff on the ESM of PCBs. As mentioned earlier, the petroleum industries have already their own PCB elimination plan. However, the low involvement of the Ministry of Hydrocarbons, the non-signature of the PCB law yet, and the non-materialization of national counterpart cash co-financing are some risks that have been identified and that could compromise the long term sustainability of the project results. In that regard, **Sustainability of institutional framework and governance** is considered **Moderately Likely**.

77. **Environmental risks** – The project is considered ecologically sustainable as it was designed to build the capacity of Congo for the sound management of PCB contaminated equipment until their final disposal. However, the MTE identified some environmental risks that could compromise the sustainability of the project results. For example, the EEC maintenance workshops, which are located in the heart of Brazzaville City, have no systems for recovering oil spills or filters for waste waters, which might constitute a serious risk for the nearby population in the case of accidental spills of PCB contaminated oil. Nevertheless, as it is anticipated that all identified PCB contaminated transformers would be properly labeled and secured, and awareness having been raised among the EEC staff, **Environmental Sustainability** is therefore rated **Likely**.

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<sup>28</sup> Interview with EEC

<sup>29</sup> Interview with DOE

<sup>30</sup> Interview data

78. Since some risks have been identified, **Sustainability** of the project is rated **Moderately Likely**.

#### 4.6 Gender mainstreaming

79. The project design and the logical framework included gender dimensions in its interventions in line with UNIDO's policy on gender equality and women's empowerment. During the formulation of the project, it was noted that there were no female technicians working in the EEC maintenance transformer workshops although there were female office managers. To integrate the gender dimension, the project planned to monitor and measure gender-specific indicators in order to encourage the main stakeholders to become aware of the need for gender balance. This awareness would encourage them to develop gender-sensitive technical guidelines and awareness-raising activities and to favor female candidates in the implementation of project-related tasks. Furthermore, some gender-disaggregated indicators and targets have already been included, while other key gender-related dimensions of project outcomes and outputs as well as potential gender-related indicators were provided in the logframe. However, the gender analysis provided for in the document was not conducted. This analysis would have made it possible to ensure that the gender mainstreaming approach was applied within the framework of the project. However, it should be noted that participation of women in the project activities has been quite satisfactory: 30 women out of a total of 219 participants. In addition, four women were directly involved in the implementation of the project, namely the project manager, her project assistant and the international consultant, all based in Vienna, and a national consultant on PCBs, based in Brazzaville. During the PSC meetings, some representatives were women. Despite the very limited number of women in the PCB management sector, it should be recognized that the project has made a commendable effort in involving women. **Gender mainstreaming** is therefore rated Satisfactory.

### 5. Performance of Partners

#### 5.1 UNIDO

80. The change of UNIDO PM during the early phase caused some delay to implementation due to the time required for a proper taking over by the incoming PM. The PM changed again in November 2021, but did not cause any disruption as most activities were completed except the selection of a service provider for PCB decontamination. The two changes of the international consultants also caused delays to project implementation as it required time to hire a new one, and once recruited, each consultant took some time to properly handle the project. Despite these challenges, solutions were very often found to the reported problems and even if sometimes this could take a few weeks. Follow-up missions were carried out by the UNIDO PM and the international consultant providing support and advice that was appreciated by the national counterparts and stakeholders, who rated them satisfactorily (Table 10)<sup>31</sup>. However, the decision to launch a bid for the final disposal of all the identified PCB contaminated, amounting to 217 tons, is considered a poor one, as the allocated budget at design was much underestimated (See Section 2.1.1 under **Output 2.3**). This decision further delayed implementation by about one year. In light of the above, the performance of UNIDO is rated **Moderately Satisfactory**.

#### 5.2 National counterparts

81. The engagement of national counterparts and partners was quite different. While the MOTE and the ECC tried somehow to fulfill their roles and commitment in the implementation of the project, other stakeholders such as the Ministry of Hydrocarbons and the petroleum companies were much

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<sup>31</sup> The stakeholders interviewed were asked to rate the UNIDO PM, the international consultant and the NPC. Not all of them gave ratings.

less involved. The government through the MOTE supported the project and took the necessary decisions to facilitate implementation. However, the reluctance of the public administration in the disbursement of financial resources (cash co-financing) for the implementation of project activities was reported. For its part, EEC provided human resources and transport during the inventories, and three sites for the decontamination of equipment. They did not however provide a temporary facility for the storage of hazardous wastes. Performance of national counterparts is rated **Moderately Satisfactory**.

Table 10: Rating of UNIDO PM, IC and NPC by stakeholders

Entity	n*	Stakeholder ratings**			Average score	Overall rating***
		MS: 4	S: 5	HS: 6		
UNIDO PM	5	1	3	1	5.0	<b>S</b>
International Consultant (IC)	5	1	4	0	4.8	<b>S</b>
NPC	5	1	2	2	5.2	<b>S</b>

\*n is the number of stakeholders having rated the entity; \*\*Ratings given by stakeholders to each entity, \*\*\*HS = 6; S = 5; MS = 4; MU = 3; U = 2; HU = 1

### 5.3 Donor

82. GEF was the main donor for the project. The funds were available, and fund transfers were timely and adequate. Rating is **Satisfactory**.

## 6. Factors facilitating or limiting the achievement of results

### 6.1 Project management and Results-based management

83. **Project Management.** At UNIDO level, the project was managed by a PM supported by a project assistant. They provided the necessary support, through the recruitment of international and national consultants, and adequate guidance, well appreciated by the national counterparts (see Table 10). However, as earlier discussed, the change in PMs at the start of the project, the time taken to validate technical reports, and launching a bid for the destruction of all identified PCB contaminated equipment contributed to significant delays in project execution.

84. At national level the management system proposed in the design was established at the start. All the members of the PMU (NPC, national expert on PCB, and project assistant) were recruited on December 28, 2015, one month before the launch of the project. The team was hosted in an office at the DOE. Instead of a project assistant whose role was to deal with communication, logistics, support for the organization of activities such as workshops, a financial assistant was recruited who, in addition to its communication and logistics tasks, provided substantial support in financial management. The PMU was able to benefit from the guidance and support of the PSC and to rely on high-quality national and international expertise, and the UNIDO project team in Vienna, who provided timely support and guidance to the national team. There is documented evidence that there was good communication between the national project team, in particular the NPC, with the stakeholders and partners of the project. The NPC was satisfactorily rated by the stakeholders (see Table 10).

85. However, the project faced numerous challenges, some due to external factors, and implementation was considerably delayed requiring 6 extensions amounting to a further project duration of 4 years. Planned to start in June 2015, the project was finally launched on January 28, 2016. In addition to this delay, a few months after the first NPC took office in December 2015, he fell seriously ill and passed away the following year. He was only replaced in July 2019 by the national expert on PCBs, who was requested to act as NPC as well. Furthermore, since the start of the project, there have been several changes at the level of the MOTE, three ministers succeeded each other,



which required time for each new minister to take ownership of the project before granting the necessary authorizations. The Director General for the Environment also changed during that period, four succeeded each other. This also added to the hassle faced by officers involved in the project to get authorizations or official letters. The dissolution of the SNE into EEC (the key partner of the project) in 2018 also contributed to delays in execution.

86. In light of the above, and particularly the poor decision to launch the first bid for PCB disposal and the allocated budget being insufficient, **Project Management** is rated **Moderately Satisfactory**.

87. **Results-based Management.** The findings clearly indicate that a RBM approach was adopted to implement the project. As per the Project Implementation Reports (PIR) provided to the evaluation, it is evidenced that implementation was based on the PRF, and the indicators mentioned therein were used to track progress at both output and outcome levels. The PCB inventory was a clear case of results-based management. The first inventory carried out in 2017, revealed that the amount of identified PCB contaminated equipment was much lower than the targeted amount of 200 tons, thus the project decided to carry out a complementary inventory in 2019. Rating on **Results-Based Management** is **Satisfactory**.

88. Overall rating for **Project Management & RBM** is **Moderately Satisfactory**.

## 6.2 Monitoring & evaluation and reporting

89. **M&E Design.** The project document proposed a detailed the monitoring and evaluation (M&E) plan. This plan, with a total budget of US\$69,600, included all the monitoring and evaluation activities to be implemented within the project. It involved the measurement of impact indicators on a half-yearly basis, the preparation of annual project reports, the holding of annual meetings of the PSC, the conduct of the external mid-term review, the conduct of a final external evaluation and preparation of a final project report. The MOTE, the DOE, the PMU, UNIDO and the consultants were supposed to be responsible for the implementation of this M&E plan. The Project Management Unit and the UNIDO Office in Congo and the Headquarters in Vienna were responsible to implement the M&E plan.

90. The PSC was responsible to ensure that the M&E system was in place. This committee, chaired by the Director General for the Environment, would be responsible to assess work plans, progress reports and M&E reports and make recommendations to guide the project team. Based on the above, the **Monitoring and Evaluation Design** is rated **Satisfactory**.

91. **M&E Implementation and reporting.** As per the M&E plan, the M&E system was operational. PMU regularly discussed with project stakeholders/partners on the progress of execution of activities according to the agreed work plan, then reported to the UNIDO project team in Vienna which, and if necessary, international expertise was mobilized to provide technical support to national counterparts. The PSC was established through a memorandum No. 055/MTE/CAB/DGE of August 28, 2015 of the MOTE. However, since the start of the project the PSC met only three times, in February 2016, the in February 2017 and in February 2019 respectively. On the other hands, all the PIR reports from 2017 to 2022 were produced. All the technical reports produced by national consultants, generally of good quality, were sent to UNIDO headquarters, to be reviewed and validated by international consultants before their validation at national level. It should be pointed out that no co-financial reports were available. Finally, with regard to evaluations, the MTE was very delayed (by 20 months) and the report was available in December 2020. The measurements of the impact indicators on a half-yearly basis in the M&E plan were not been carried out, and it was pointed



out that the PMU often experienced difficulties to carry out follow-up missions as national counterpart cash co-financing did not materialized. **M&E implementation and reporting** is rated **Moderately Satisfactory**.

92. Overall rating for **M&E and reporting** is rated **Moderately Satisfactory**.

### 6.3 Stakeholder engagement and communication

93. **Stakeholder engagement** – The key stakeholders and partners such the ministries of tourism and environment, health, energy, hydrocarbons, and finance and local municipalities, as well as the public and private sectors, including ex-SNE (now EEC) and petroleum companies were identified and contacted during the preparatory phase to ensure their commitment. Most of them were effectively involved in the PSC meetings, in training and awareness raising workshops and meetings for the validation of technical documents or during monitoring missions. As NEA, the DOE was directly involved in the supervision of the daily activities of the project across the country, even if the coordination with the project partners could have been better.

94. Some of the stakeholders and partners were not very active during the implementation phase. During the preparatory phase, the SNE's (former EEC) executive management showed strong commitment in recognizing the need for training and strengthening of its facilities through the improvement of the maintenance workshops of the appropriate transformers and the adoption of best available technologies and best environmental practices in the maintenance, storage and disposal of transformers containing PCB oils. However, this commitment seems to have faded to some extent with the new leadership at EEC. Although EEC provided the necessary human resources and space for sampling and analysis during the two inventories, they did not however provided the temporary storage facility for hazardous wastes. Also, the petroleum companies, which committed themselves during the preparatory phase became reluctant to get involved or participate in project activities, in particular in the inventories exercises. The Ministry of Hydrocarbons, which has the technical capacity to monitor POPs in the petroleum sector, and which should have coordinated the self-funded inventory exercise within the petroleum sector, was poorly involved in the project and did not fulfill its role. The rating on Stakeholder engagement is rated **Moderately Satisfactory**.

95. **Communication** – Communication at national level seems to have been quite satisfactory during the implementation of the project. Despite changes at the level of NPCs, MOTE and EEC, efforts have been made to ensure continuity in communication amongst stakeholders and partners. This was done during training and awareness raising workshops, field missions and at PSC meetings. In addition, to facilitate awareness on gender issues targeting a bigger audience, a flyer was designed and distributed and a TV news flash on the project. However, these communication efforts may not have been sufficient as it was not possible to fully engage the Ministry of Hydrocarbon. **Communication** is rated **Moderately Satisfactory**.

96. Rating on **Stakeholder engagement and Communication** is **Moderately Satisfactory**.

### 6.4. Overarching assessment and rating table

97. Table 13 below summarizes the assessment of the project.

Table 13: Summary of Assessment and Ratings for the project

	Evaluation criteria	Evaluator's summary comments	Rating
<b>A</b>	<b>Impact (progress toward impact)</b>	Only one of the three intermediate states proposed in the TOC emerged. Law on PCB not yet adopted and enforced in the country. Target of eliminating 200 tons of PCB contaminated equipment would not be achieved due to underestimation of PCB destruction cost	<b>MS</b>
<b>B</b>	<b>Project design</b>		<b>MS</b>
1	<ul style="list-style-type: none"> <li>Overall design</li> </ul>	Several strengths noted in the design, in particular logical framework approach adopted to develop project. However, one major weakness identified, underestimation of budget allocation for PCB destruction cost	MU
2	<ul style="list-style-type: none"> <li>Logframe</li> </ul>	Midterm and end of project target as well as well-defined SMART indicators for project objective, outputs and outcomes provided to monitor progress and track at output and result levels	S
<b>C</b>	<b>Project performance</b>	<b>All stated objectives achieved</b>	<b>MS</b>
1	<ul style="list-style-type: none"> <li>Relevance</li> </ul>	Project assisting the Republic of Congo to fulfill its obligations regarding sound management of PCBs in the context of the Stockholm Convention, and aligned with GEF Focal areas and UNIDO mandates	HS
2	<ul style="list-style-type: none"> <li>Effectiveness</li> </ul>	Project closure date already reached, and yet law on PCB not adopted and enforced, and treatment of PCB contaminated equipment not started yet	MS
3	<ul style="list-style-type: none"> <li>Coherence</li> </ul>	All key stakeholders and partners involved since the preparatory phase. Strengthening of law on chemicals management include PCBs as well as all POPs	S
4	<ul style="list-style-type: none"> <li>Efficiency</li> </ul>	Although some measures increasing efficiency adopted, not all outputs delivered, project delayed by more than 4 years, and significant co-financing not materialized	MU
5	<ul style="list-style-type: none"> <li>Sustainability of benefits</li> </ul>	Some moderate socio-political, institutional framework & governance, and financial risks identified that could jeopardized the sustainability of project benefits	ML
<b>D</b>	<b>Cross-cutting performance criteria</b>		
1	<ul style="list-style-type: none"> <li>Gender mainstreaming</li> </ul>	Satisfactory involvement and participation of women seen in project activities	S
2	<ul style="list-style-type: none"> <li>M&amp;E: <ul style="list-style-type: none"> <li>✓ M&amp;E design</li> <li>✓ M&amp;E implementation</li> </ul> </li> </ul>	Adequate budgeted M&E plan available. Proper project monitoring and tracking of results done using SMART proposed in the PRF. However, not all PSC meetings held, nevertheless relevant reports (e.g. PIRs) submitted	MS
3	<ul style="list-style-type: none"> <li>Results-based Management (RBM)</li> </ul>	RBM approach adopted and proper monitoring of project progress done involving all key stakeholders.	S
<b>E</b>	<b>Performance of partners</b>		
1	<ul style="list-style-type: none"> <li>UNIDO</li> </ul>	UNIDO provided timely and adequate support and technical back-stopping through hired quality international and national experts. However, poor decision taken to launch a first	MS

	Evaluation criteria	Evaluator's summary comments	Rating
		bid for the destruction of all identified PCB contaminated equipment given the limited budget available delayed implementation by at least one year	
2	<ul style="list-style-type: none"> <li>National counterparts</li> </ul>	While most of key stakeholders and partners (MOTE and EEC) actively engaged, others much less involved (Ministry of Hydrocarbon and some private PCB owners)	MS
3	<ul style="list-style-type: none"> <li>Donor</li> </ul>	GEF funds available and timely transferred	S
<b>F</b>	<b>Overall assessment</b>		<b>MS</b>

#### RATING OF PROJECT OBJECTIVES AND RESULTS

- Highly satisfactory (HS): The project had no shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.
- Satisfactory (S): The project had minor shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.
- Moderately satisfactory (fuera): The project had moderate shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.
- Moderately unsatisfactory (MU): The project had significant shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.
- Unsatisfactory (U) The project had major shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.
- Highly unsatisfactory (HU): The project had severe shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.
- Likely (L): There are no risks affecting this dimension of sustainability.
- Moderately likely (ML). There are moderate risks that affect this dimension of sustainability.
- Moderately unlikely (MU): There are significant risks that affect this dimension of sustainability.
- Unlikely (U): There are severe risks that affect this dimension of sustainability.

## 7. Conclusions, recommendations and lessons learned

### 7.1 Conclusions

98. Due to numerous challenges encountered such as changes at the level of the Ministry of Tourism and Environment, demise of the former NPC, and dissolution of SNE into EEC, the implementation of this highly-relevant project was considerably delayed by four years. Due to a serious weakness in the design, the cost of PCB destruction having been very much underestimated, the key objective of decontaminating 200 tons of PCB containing equipment would not be achieved at the onset. Efficiency is considered moderately unsatisfactory as at the date project closure, 31 December 2022, the decontamination of lowly PCB contaminated equipment by the international company FUERA has not started yet. It is for this reason that a further extension of at least six months is recommended to allow for the monitoring of the decontamination work. Some moderate financial, socio-political and governance risks have been identified that might jeopardize the sustainability of the project results. Progress to long term impact of the project is considered moderately satisfactory as only one of the three intermediate states proposed in the TOC has emerged at this point.

### 7.2 Recommendations

99. For continued relevance, sustainability of the project results and impact, the following recommendations are addressed various key stakeholders of the project.

To UNIDO
1. A further extension of at least six months is therefore recommended to allow for the proper monitoring of the decontamination work.

2. UNIDO could consider in the context of a follow-up initiative assisting the Republic of Congo in building its capacity for the final disposal of highly PCB contaminated equipment as well to support the country for the disposal of the remaining identified contaminated equipment.
<b>To UNIDO, the Ministry of Tourism and Environment, and EEC:</b>
3. The project could take advantage of regional available capacity for PCB decontamination / destruction (in case trial is successful). This option would not only be likely more cost-effective (lower PCB destruction costs including shipping), it would also promote the UNIDO led initiative and enhance south-south cooperation.
<b>To the Ministry of Tourism and Environment:</b>
4. It is recommended that the Ministry of Tourism and Environment take the necessary actions for these documents to be nationally adopted as early as possible so that the PCB are legally bound to soundly manage their PCB contaminated equipment and wastes until final disposal by 2028.
5. Noting that getting the approval of countries where the PCB contaminated waste would transit during the transport is a very lengthy process, it is recommended that the Ministry of Tourism and Environment take the necessary steps such as providing the notification number to FUERA so that they can start the notification of the transit countries as early as possible.
<b>To EEC:</b>
6. EEC should ensure that the ESM system is strictly applied across all its maintenance transformer workshops to reduce contamination and avoid risk exposures to PCBs. In particular, to avoid cross-contamination, it is recommended to put in place the appropriate procedures, such as chemical oil testing of suspected transformers to ensure they are PCB-free before their maintenance or repair.
7. It is recommended that EEC take the necessary actions to ensure that information about the PCB contaminated equipment are properly kept, and that they are adequately labelled and safeguarded.

### 7.3 Lessons learned

100. The following two lessons stemmed out

Two key lessons emerged:
<ol style="list-style-type: none"> <li>1. Planning for appropriate budgets at the design stage would ensure the delivery of outputs, products, and results during the implementation phase.</li> <li>2. Had project management been aware of the current PCB destruction costs, they would have already limited the amount of PCB-contaminated equipment to be treated for the first bidding exercise and would have avoided the one-year delay.</li> </ol>

## Annexes

**Annex 1: TOR of the evaluation**

**Annex 2: Evaluation framework**

**annex 1:** ToR of PCB cluster evaluation



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

### **TERMS OF REFERENCE**

#### **Cluster evaluation of UNIDO projects**

#### ***Polychlorinated biphenyls (PCBs)***

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## **1. UNIDO PCBs portfolio background**

The Stockholm Convention (SC) on persistent organic pollutants (POPs) recognizes that POPs including polychlorinated biphenyls (PCBs) “possess toxic properties, resist degradation, accumulate and are transported through air, water and migratory species, across international boundaries and deposited far from their places, where they accumulate in terrestrial and aquatic ecosystems”. Exposure to PCBs is of a major public health concern, in particular impacts upon women and, through them, upon future generations.

PCBs are industrial products or chemicals mainly used in the energy sector, widely deployed as dielectric and coolant fluids in electrical apparatus, carbonless copy paper and heat transfer fluids. Generally, PCBs are very stable, which explains their persistence in the environment.

UNIDO’s PCBs management and disposal strategy aims to create fundamental capacities within industries, governments, institutions and PCBs owners, in order to comply with the PCB-related obligations under the SC. The projects implemented by UNIDO enhance the critical regulatory and legislative framework and strengthen institutions at the national, regional and local level to manage equipment and waste that contain PCBs in an environmentally sound manner.

Compliance with legislation is ensured by building capacities in local laboratories for PCB sampling and analysis, transfer of technology know-how for local PCBs treatment and elimination and undertaking inspections at PCB-contaminated sites. Environmentally sound PCB management practices reduce PCB releases and risks to human health and the environment; best practices are then further disseminated through public awareness raising initiatives.

Furthermore, UNIDO’s PCB projects include the elimination and disposal of PCBs, often by leveraging interests of the project recipient countries in non-combustion technology, which, in many cases, offer technical and financial advantages. One is on-site PCB decontamination, which solves many technical and procedural barriers for very large transformers that cannot be transported on the road to transformer maintenance facilities. The other is the regeneration of oil. Because workers would usually need to drain and dismantle these transformers, this helps reducing the workers’ risk of exposure to PCBs.

## **2. Rationale and purpose of the evaluation**

Given the number of PCB projects in the last phase of implementation and taken into account significant similarities at project design level, a cluster evaluation approach will be used. The cluster will be tentatively composed of eight (8) projects selected from Table 1 below and the final list of projects included will be validated at Inception phase.

One of the main reasons of the Cluster evaluation would be to overcome some of the shortcomings present in traditional project evaluation, namely the inward-looking nature of the exercise, the timing and high transactional costs and administrative burden.

The purpose of the cluster approach is to produce synergies and increase the value added in the conduct of evaluations.

The efficiency gains produced by this approach will be invested in additional learning and more strategic assessments to inform UNIDO management, Member States, donors and beneficiaries with further more relevant and useful evaluation findings, conclusions and recommendations, such as:

- a) Inter-project comparisons (e.g. differences in implementation approaches, different strategies for broader adoption)
- b) Incorporation of additional aspects normally not so well-covered (e.g. socio-economic and environmental impacts of projects, other aspects (e.g., global crisis such as the COVID 19 pandemic).
- c) Aggregated information for cross-cutting and recurrent issues, such as management, systemic challenges and root causes based on several cases and therefore less anecdotal.

**Table 1. List of projects for Cluster Evaluation**

Region	Country	UNIDO project N.	GEF ID	Them area	Project budget(EUR )	Year of Eval	Budget left (SAP 31.03.22 USD)
EUR	SERBIA	<a href="#">100313</a>	4877	PCB	2,100,000	2022	786,423
ASP	INDIA	<a href="#">104044</a>	3775	PCB	14,100,000	2022	107,230
ASP	LAO PDR	<a href="#">140157</a>	4782	PCB	1,400,000	2022	271,414
LAC	BOLIVIA	<a href="#">140296</a>	5646	PCB	2,000,000	2022	278,300
LAC	GUATEMALA	<a href="#">140298</a>	5816	PCB	2,000,000	2022	403,866
EUR	RUSSIAN FEDERATION	<a href="#">140019</a>	4915	PCB	7,400,000	2022	30,000
AFR	CONGO	<a href="#">140160</a>	5325	PCB	975,000	2022	25,000
AFR	MOROCCO	<a href="#">170117</a>	9916	PCB	1,826,484	2022	621,734 (ex OpenData)



<b><i>tot</i></b>					<b><i>31,801,484</i></b>		<b><i>1,902,233</i></b>
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### 3. Scope and focus of the evaluation

The final cluster of projects will be decided upon in the Inception Report, based on the following criteria:

- *Thematic*: projects from same or similar programme, or within interrelated technical areas
- *Timing*: project which Terminal Evaluations are due within +/- 6 months

Projects will be selected based on the planned timing for the project end or operational completion and the respective thematic focal area. The final selection will be made in coordination with the respective project managers and the GEF coordination unit to ensure smooth implementation of the evaluation.

The Cluster Evaluation, as foreseen in the Independent Evaluation Division Work Plan (WP) 2018-19<sup>32</sup> and reiterated in WP 2020-21<sup>33</sup>, will follow the UNIDO Evaluation Policy<sup>34</sup>, the UNIDO Guidelines for the Technical Cooperation Project and Project Cycle<sup>35</sup>, and UNIDO [Evaluation Manual](#). Furthermore, the GEF Guidelines for GEF Agencies in Conducting Terminal Evaluations, the GEF Monitoring and Evaluation Policy<sup>36</sup> and the GEF Minimum Fiduciary Standards for GEF Implementing and Executing Agencies will be applied. The evaluation will also build upon the findings and recommendations of the Cluster Evaluation on UNIDO POPs portfolio carried out in 2015<sup>37</sup>.

The evaluation has three main specific objectives:

- i. Assess the projects` performance in terms of relevance, effectiveness, efficiency, sustainability, coherence, and progress to impact; and
- ii. Develop a series of findings, lessons and recommendations for enhancing the design of new and implementation of ongoing projects by UNIDO.

<sup>32</sup> [https://www.unido.org/sites/default/files/files/2018-11/IEV\\_WP\\_2018-19\\_final\\_180228.pdf](https://www.unido.org/sites/default/files/files/2018-11/IEV_WP_2018-19_final_180228.pdf)

<sup>33</sup> [https://www.unido.org/sites/default/files/files/2021-06/2021-04-21\\_EIO%20Evaluation%20work%20plan-budget%202020-21\\_Update%202021\\_EB%20Approved\\_F.pdf](https://www.unido.org/sites/default/files/files/2021-06/2021-04-21_EIO%20Evaluation%20work%20plan-budget%202020-21_Update%202021_EB%20Approved_F.pdf)

<sup>34</sup> UNIDO. (2018). Director General's Bulletin: Evaluation Policy (UNIDO/DGB/2018/08)

<sup>35</sup> UNIDO. (2006). Director-General's Administrative Instruction No. 17/Rev.1: Guidelines for the Technical Cooperation Programme and Project Cycle (DGAI.17/Rev.1, 24 August 2006)

<sup>36</sup> [https://www.thegef.org/sites/default/files/council-meeting\\_documents/EN\\_GEF.ME\\_C56\\_02\\_GEF\\_Evaluation\\_Policy\\_May\\_2019\\_0.pdf](https://www.thegef.org/sites/default/files/council-meeting_documents/EN_GEF.ME_C56_02_GEF_Evaluation_Policy_May_2019_0.pdf)

<sup>37</sup> [https://www.unido.org/sites/default/files/2015-04/FINAL\\_report\\_NIPS\\_CLUSTER\\_EVAL\\_20150409\\_0.pdf#page=81&zoom=100,120,76](https://www.unido.org/sites/default/files/2015-04/FINAL_report_NIPS_CLUSTER_EVAL_20150409_0.pdf#page=81&zoom=100,120,76)

- iii. Contribute to organizational learning, by UNIDO and its counterparts, while being forward looking, thus also guiding the development of new similar projects.

#### 4. Evaluation approach and methodology

The cluster evaluation will be carried out as an independent in-depth exercise using a participatory approach whereby all key parties associated with the projects to be evaluated will be informed and consulted throughout the process. The evaluation team leader will liaise with the UNIDO Independent Evaluation Division (ODG/EIO/IED) on the conduct of the evaluation and methodological issues.

The evaluation will use a theory of change (ToC) approach<sup>38</sup> and mixed methods to collect data and information from a range of sources and informants. It will pay attention to triangulating the data and information collected before forming its assessment. This is essential to ensure an evidence-based and credible evaluation, with robust analytical underpinning.

The theory of change will depict the causal and transformational pathways from project outputs to outcomes and longer-term impacts. It also identifies the drivers and barriers to achieving results. The learning from this analysis will be useful for the design of the future projects so that the management team can effectively use the theory of change to manage the project based on results.

#### 5. Data collection methods

The complete array of instruments for data collection will be finalized at Inception Report stage. Among the main methods foreseen to be used by the Evaluation Team:

- (a) **Desk and literature review** of documents related to the projects, including but not limited to:
  - The original project document, monitoring reports (such as progress and financial reports, mid-term review report, technical reports, back-to-office mission report(s), end-of-contract report(s) and relevant correspondence.
  - Notes from the meetings of steering committees involved in the project.
- (b) **Stakeholder consultations** will be conducted through structured and semi-structured interviews and focus group discussion. Key stakeholders to be interviewed include:
  - UNIDO Management and staff involved in the projects; and
  - Representatives of donors, counterparts and stakeholders.
- (c) Whenever possible, **field visits** to project sites in the involved countries.

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<sup>38</sup> For more information on Theory of Change, please see chapter 3.4 of UNIDO [Evaluation Manual](#)

Due to the persisting emergency caused by the virus Covid-19, it shall be noted that restrictions on international travels are still in place at the time this ToR is drafted, therefore the field visits should be carried out by the national consultants only.

- On-site observation of results achieved by the project, including interviews of actual and potential project beneficiaries.
  - Interviews with the relevant UNIDO Country Office(s) representative to the extent that he/she was involved in the project, and the project's management members and the various national [and sub-regional] authorities dealing with project activities as necessary.
- (d) **Online data collection** methods such as surveys will be used to the extent possible.

## 6. Evaluation key questions and criteria

The key evaluation questions, to be further refined at the level of Inception Report, are the following:

- 1) Have they done the right things in the context of PCB issues in the respective countries? How well have the projects fit with other policies and interventions that affect PCBs in the respective countries?
- 2) What are the projects' key results (outputs, outcome and impact)? To what extent have the expected results been achieved or are likely to be achieved? To what extent are the achieved results to be sustained after the completion of the projects?
- 3) What are the key drivers and barriers to achieve the long term objectives? To what extent have the projects helped put in place the conditions likely to address the drivers, overcome barriers and contribute to the long term objectives?
- 4) What are the key risks (e.g. in terms of financial, socio-political, institutional and environmental risks) and how these risks may affect the continuation of results after the projects end?
- 5) What lessons can be drawn from the successful and unsuccessful practices in designing, implementing and managing the analysed projects?
- 6) How far have the Mid-term reviews conducted on the cluster projects been used to ensure the success of the projects in the second phase of implementation?
- 7) Are there tangible differences with regard to the evaluation criteria between MSPs and FSPs?
- 8) Were lessons learned from previous projects in the countries and the POPs thematic area sufficiently taken into account while designing the cluster projects?
- 9) Was the gender dimension given sufficient attention at both project design and implementation?

The table below provides the key evaluation criteria to be assessed by the evaluation. The details questions to assess each evaluation criterion are in annex 2 of UNIDO [Evaluation Manual](#).

Table 2. Project evaluation criteria

#	Evaluation criteria	Mandatory rating
<b>A</b>	<b>Progress to impact</b>	<b>Yes</b>
<b>B</b>	<b>Project design</b>	<b>Yes</b>
1	• Overall design	Yes
2	• Logframe	Yes
<b>C</b>	<b>Project performance</b>	
1	• Relevance	Yes
2	• Effectiveness	Yes
3	• Coherence	Yes
4	• Efficiency	Yes
5	• Sustainability of benefits	Yes
<b>D</b>	<b>Cross-cutting performance criteria</b>	
1	• Gender mainstreaming	Yes
2	• M&E: ✓ M&E design ✓ M&E implementation	Yes Yes
3	• Results-based Management (RBM)	Yes
<b>E</b>	<b>Performance of partners</b>	
1	• UNIDO	Yes
2	• National counterparts	Yes
3	• Donor	Yes
<b>F</b>	<b>Overall assessment</b>	<b>Yes</b>

### **Performance of partners**

The assessment of performance of partners will **include** the quality of implementation and execution of the GEF Agencies and project executing entities in discharging their expected roles and responsibilities. The assessment will take into account the following:

- Quality of Implementation, e.g. the extent to which the agency delivered effectively, with focus on elements that were controllable from the given implementing agency's perspective and how well risks were identified and managed.
- Quality of Execution, e.g. the appropriate use of funds, procurement and contracting of goods and services.

The cluster evaluation will assess the following topics, for which **ratings are not required**:

- a. **Need for follow-up:** e.g. in instances financial mismanagement, unintended negative impacts or risks.
- b. **Materialization of co-financing:** e.g. the extent to which the expected co-financing materialized, whether co-financing was administered by the project management or by some other organization; whether and how shortfall or excess in co-financing affected project results.
- c. **Environmental and Social Safeguards**<sup>39</sup>: appropriate environmental and social safeguards were addressed in the projects` design and implementation, e.g. preventive or mitigation measures for any foreseeable adverse effects and/or harm to environment or to any stakeholder.

## 7. Rating system

In line with the practice adopted by many development agencies, the UNIDO Independent Evaluation Division uses a six-point rating system, where 6 is the highest score (highly satisfactory) and 1 is the lowest (highly unsatisfactory) as per table below.

**Table 3. Project rating criteria**

Score		Definition	Category
6	Highly satisfactory	Level of achievement presents no shortcomings (90% - 100% achievement rate of planned expectations and targets).	SATISFACTORY
5	Satisfactory	Level of achievement presents minor shortcomings (70% - 89% achievement rate of planned expectations and targets).	
4	Moderately satisfactory	Level of achievement presents moderate shortcomings (50% - 69% achievement rate of planned expectations and targets).	
3	Moderately unsatisfactory	Level of achievement presents some significant shortcomings (30% - 49% achievement rate of planned expectations and targets).	UNSATISFACTORY
2	Unsatisfactory	Level of achievement presents major shortcomings (10% - 29% achievement rate of planned expectations and targets).	

<sup>39</sup> Refer to GEF/C.41/10/Rev.1 available at: [http://www.thegef.org/sites/default/files/council-meetingdocuments/C.41.10.Rev\\_1.Policy\\_on\\_Environmental\\_and\\_Social\\_Safeguards.Final%20of%20Nov%2018.pdf](http://www.thegef.org/sites/default/files/council-meetingdocuments/C.41.10.Rev_1.Policy_on_Environmental_and_Social_Safeguards.Final%20of%20Nov%2018.pdf)

1	Highly unsatisfactory	Level of achievement presents severe shortcomings (0% - 9% achievement rate of planned expectations and targets).	
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## 8. Evaluation process

The cluster evaluation will be conducted from June 2022 to December 2022. The evaluation will be implemented in five phases which are not strictly sequential, but in many cases iterative, conducted in parallel and partly overlapping:

- 1) Inception phase: The evaluation team will prepare the inception report providing details on the evaluation methodology and include an evaluation matrix with specific issues for the evaluation to address; the specific site visits will be determined during the inception phase, taking into consideration the findings and recommendations of the mid-term reviews – whenever available – and the current limitations imposed by the Covid-10 pandemic.
- 2) Desk review and data analysis;
- 3) Interviews, survey and literature review;
- 4) Country visits (whenever possible) and debriefing to key relevant stakeholders in the field;
- 5) Data analysis, report writing and virtual debriefing to UNIDO staff at the Headquarters; and
- 6) Final report issuance and distribution, and publication of the final evaluation report in UNIDO website.

## 9. Time schedule and deliverables

The evaluation is scheduled to take place from April 2022 to August 2022. The data collection phase from the field is tentatively planned for May 2022 but will be tailored on the different stages of projects' implementation and specific requirements by the different countries. At the end of the data collection, the evaluation team will present the preliminary findings for key relevant stakeholders involved in the project in the country. The tentative timelines are provided in the table below.

After the debriefing to the national stakeholders, the evaluation team will debrief UNIDO Headquarters and the internal stakeholders involved for debriefing and presentation of the preliminary findings of the terminal evaluation. Online presentation is to be arranged in case the visit cannot take place.

After this phase and the factual validation, a synthesis aggregating the comparable findings from the different projects is expected to be produced by the team. The draft TE report will be submitted 4 to 6 weeks after the end of the mission. The draft TE report is to be shared with the UNIDO Project Managers (PMs), UNIDO Independent Evaluation Division, the

UNIDO GEF Coordinator and GEF OFP and other stakeholders for comments. The ET leader is expected to revise the draft TE report based on the comments received, edit the language and submit the final version of the TE report in accordance with UNIDO ODG/EIO/EID standards.

**Table 4. Tentative timelines**

<b>Timelines</b>	<b>Tasks</b>
June 2022	Desk review and writing of inception report
June 2022	Online briefing with UNIDO project manager and the project teams based in Vienna.
July-August 2022	Data collection from the Field
August 2022	Debriefing in Vienna Preparation of first draft evaluation report
September 2022	Internal peer review of the report by UNIDO's Independent Evaluation Division and other stakeholder comments to draft evaluation report
October 2022	Preparation of the synthesis of aggregated findings from the clustered evaluations
November 2022	Review of the Synthesis and the first draft
December 2022	Final evaluation report

## 10. Evaluation team composition

Given the number of projects included in the Evaluation and the current travel restrictions in place, the evaluation team will be composed of a mix of two international evaluation consultants - one acting as the team leader - and one national evaluation consultant per country, supported by a Cluster Evaluation coordinator from UNIDO IED. The evaluation team members will possess a mixed skill set and experience including evaluation, relevant technical expertise, social and environmental safeguards, and gender. All the consultants will be contracted by UNIDO pooling funds from the projects' evaluation budgets.

The tasks of each team member are specified in the job descriptions annexed to these terms of reference. The evaluation team is required to provide information relevant for follow-up studies, including terminal evaluation verification on request to the GEF partnership up to three years after completion of the terminal evaluation.

According to UNIDO Evaluation Policy, members of the evaluation team must not have been directly involved in the design and/or implementation of the project under evaluation.

The UNIDO Project Manager and the project management team in the different countries involved will support the evaluation team. The UNIDO GEF Coordinator and GEF

Operational Focal Point (OFP) will be briefed on the evaluation and provide support to its conduct. GEF OFP(s) will, where applicable and feasible, also be briefed and debriefed at the start and end of the evaluation mission.

An evaluation manager from UNIDO Independent Evaluation Division will provide technical backstopping to the evaluation team and ensure the quality of the evaluation. The UNIDO Project Managers and national project teams will act as resourced persons and provide support to the evaluation team and the evaluation manager.

## 11. Reporting

### **Inception report**

This Terms of Reference (ToR) provides some information on the evaluation methodology, but this should not be regarded as exhaustive. After reviewing the project documentation and initial interviews with the project manager, the Team Leader will prepare, in collaboration with the team member, a short inception report that will operationalize the ToR relating to the evaluation questions and provide information on what type and how the evidence will be collected (methodology). It will be discussed with and cleared by the responsible UNIDO Evaluation Manager.

The Inception Report will focus on the following elements: preliminary project theory model(s); elaboration of evaluation methodology including quantitative and qualitative approaches through an evaluation framework (“evaluation matrix”); division of work between the evaluation team members; field mission plan, including places to be visited, people to be interviewed and possible surveys to be conducted and a debriefing and reporting timetable<sup>40</sup>. The draft inception report will also include a suggested outline of the overall synthesis report (see below), including the specific evaluation questions for the cross-cutting analysis.

### **Evaluation report format and review procedures**

All selected projects will be evaluated meeting GEF minimum requirements (see Annex I).

In terms of final outputs, one short evaluation report per project will be produced, including project performance ratings according to OECD-DAC criteria.

In addition, a final synthesis report of the evaluation findings of the cluster projects, inter-project comparisons and additional evaluation aspects will also be produced.

The draft reports will be delivered to UNIDO Independent Evaluation Division (with a suggested report outline) and circulated to UNIDO staff and key stakeholders associated

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<sup>40</sup> The evaluator will be provided with a Guide on how to prepare an evaluation inception report prepared by UNIDO Independent Evaluation Division.



with the project for factual validation and comments. Any comments or responses, or feedback on any errors of fact to the draft report will be sent to UNIDO's Independent Evaluation Division for collation and onward transmission to the evaluation team who will be advised of any necessary revisions. On the basis of this feedback, and taking into consideration the comments received, the evaluation team will prepare the final version of the terminal evaluation report.

The evaluation team will present its preliminary findings to the local stakeholders at the end of the field visit and take into account their feed-back in preparing the evaluation report. A presentation of preliminary findings will take place at UNIDO HQ afterwards.

The evaluation report should be brief, to the point and easy to understand. It must explain the purpose of the evaluation, what was evaluated, and the methods used. The report must highlight any methodological limitations, identify key concerns and present evidence-based findings, consequent conclusions, recommendations and lessons. The report should provide information on when the evaluation took place, the places visited, who was involved and be presented in a way that makes the information accessible and comprehensible. The report should include an executive summary that encapsulates the essence of the information contained in the report to facilitate dissemination and distillation of lessons.

Findings, conclusions and recommendations should be presented in a complete, logical and balanced manner. The evaluation report shall be written in English and follow the outline given by UNIDO Independent Evaluation Division.

## 12. Quality assurance

All UNIDO evaluations are subject to quality assessments by UNIDO Independent Evaluation Division. Quality assurance and control is exercised in different ways throughout the evaluation process (briefing of consultants on methodology and process of UNIDO Independent Evaluation Division, providing inputs regarding findings, lessons learned and recommendations from other UNIDO evaluations, review of inception report and evaluation report by UNIDO's Independent Evaluation Division).

The quality of the evaluation report will be assessed and rated against the criteria set forth in the Checklist on evaluation report quality. The applied evaluation quality assessment criteria are used as a tool to provide structured feedback. UNIDO Independent Evaluation Division should ensure that the evaluation report is useful for UNIDO in terms of organizational learning (recommendations and lessons learned) and is compliant with UNIDO's evaluation policy and these terms of reference. The draft and final evaluation report are reviewed by UNIDO Independent Evaluation Division, which will submit the final

report to the GEF Evaluation Office and circulate it within UNIDO together with a management response sheet.

## II. Annex II - Evaluation framework

Evaluation criteria	Evaluation indicators	Means of verification
<b>Project Design</b>		
<p>The evaluation will examine the extent to which:</p> <ul style="list-style-type: none"> <li>• The project's design is adequate to address the problems at hand.</li> <li>• The project has a clear thematically-focused development objective, the attainment of which can be determined by a set of verifiable indicators.</li> <li>• The project was formulated based on the logical framework (project results framework) approach.</li> <li>• Was there a need to reformulate the project design and the project results framework given changes in the countries and operational context?</li> <li>• Is inventory data (conducted during the preparatory phase) included in the project document based on remote inventory, physical inventory or estimates?</li> <li>• Are relevant environmental and social risk considerations included at the time of project design?</li> </ul>	<ul style="list-style-type: none"> <li>• Situational analysis</li> <li>• Project results framework</li> <li>• Risk assessment and management</li> <li>• Adjustments made due to operational context</li> <li>• Environmental and social safeguards</li> </ul>	<ul style="list-style-type: none"> <li>• Project document and annexes</li> <li>• Interviews with UNIDO, National Focal Points, key national partners, and other project stakeholders</li> </ul>
<b>Relevance and Coherence</b>		
<p>The evaluation will examine the extent to which the project is relevant or coherent to the:</p> <ul style="list-style-type: none"> <li>• National development and environmental priorities, national implementation plans and strategies of the national governments and their populations, as well as regional and international agreements.</li> <li>• Target groups: relevance of the project's objectives, outcomes, and outputs to the different target groups of the interventions (e.g., national governments, municipalities, NGOs, women's associations, waste pickers, etc.).</li> <li>• GEF's focal areas/operational program strategies: In retrospect, were the project's outcomes consistent with the GEF focal area(s)/ operational program strategies? Ascertain the likely nature and significance of the contribution of the</li> </ul>	<ul style="list-style-type: none"> <li>• Level of alignment with regional, sub-regional, and national environmental priorities, NIP, as well as with UNIDO and GEF strategic priorities at the time of design and implementation</li> </ul>	<ul style="list-style-type: none"> <li>• Pertinent project documents and annexes</li> <li>• Interviews with UNIDO, national project coordinators, key national stakeholders</li> </ul>

Evaluation criteria	Evaluation indicators	Means of verification
<p>project outcomes in the reduction or elimination of releases of uPOPs from open burning</p> <ul style="list-style-type: none"> <li>• Does the project remain relevant taking into account the changing environment?</li> <li>• To what extent was the project aligned with – and complementary to – other work being delivered within the participating countries?</li> </ul>		
<b>Effectiveness and Progress to impact</b>		
<p>The evaluation will assess the objectives and current results (results to date):</p> <ul style="list-style-type: none"> <li>• The evaluation will assess whether the results at various levels, including outcomes, have been achieved. In detail, the following issues will be assessed: Have the expected outputs and outcomes, been successfully achieved? What are the main reasons for the achievement/non-achievement of project objectives?</li> <li>• Are the project outcomes commensurate with the original or modified project objectives? If the original or modified expected results are merely outputs/inputs, were there any real outcomes of the project? If there were, are these commensurate with realistic expectations from the project?</li> <li>• Are the targeted beneficiary groups actually being reached? How do the stakeholders perceive the quality of outputs?</li> <li>• Has the project generated any results that could lead to changes of the assisted institutions? Have there been any unplanned effects?</li> <li>• Identify actual and/or potential longer-term impacts or at least indicate the steps taken to assess these.</li> <li>• Have the relevant authorities in the countries prepared and enforced the regulations on PCBs?</li> <li>• What is the geographical coverage of the project?</li> <li>• What quantity of PCBs have been identified? And disposed off?</li> <li>• Have any spillages been observed or reported?</li> <li>• Does a certified laboratory for testing of PCB-oil exist in the country?</li> <li>• Will the participating countries continue with PCB disposal?</li> </ul>	<ul style="list-style-type: none"> <li>• Target for outputs, outcomes, and objectives of Project Results Framework</li> <li>• Occurrence of intermediate states in the participating countries</li> <li>• Stated contribution of stakeholders in achievement of outputs</li> </ul>	<ul style="list-style-type: none"> <li>• Review of relevant documents such as PIRs, progress reports, meeting reports</li> <li>• Direct observation and discussion during evaluation mission</li> <li>• Interviews with UNIDO, NPCs, National Focal Points, key government representative</li> </ul>

Evaluation criteria	Evaluation indicators	Means of verification
<ul style="list-style-type: none"> <li>Has the project provided information on POPs, including PCBs, to educational institutions (schools, colleges, universities, ...)?</li> </ul>		es, consultants and other partners such as NGOs, academia, etc.
Efficiency at current stage of implementation		

Evaluation criteria	Evaluation indicators	Means of verification
<p>The extent to which:</p> <ul style="list-style-type: none"> <li>• The project cost is effective? Has the project used the most cost-efficient options?</li> <li>• Has the project produced results (outputs and outcomes) within the expected time frame? Has project implementation been delayed? If the project has been delayed, what were the reasons for the delay, and has it affected cost effectiveness or results?</li> <li>• Have the project's activities been in line with the schedule of activities as defined by the project team and annual work plans? Have the disbursements and project expenditures been in line with budgets?</li> <li>• Have the inputs from the donor, UNIDO, and government/ counterpart been provided as planned, and were they adequate to meet the requirements? Was the quality of UNIDO inputs and services as planned and timely?</li> <li>• Have the counterpart institutions spent co-finance as initially committed?</li> <li>• Was there coordination with other UNIDO and other donors' projects, and did possible synergy effects happen?</li> <li>• Give the reasons/justifications for the extension granted to the project.</li> <li>• Has a knowledge management system been established?</li> <li>• To what extent have the recommendations of the mid-term evaluation been taken into consideration?</li> <li>• What has been the impact of COVID-19 on project implementation?</li> </ul>	<ul style="list-style-type: none"> <li>• Level of compliance with expected milestones mentioned in logical framework and with respect to financial planning and annual plans</li> <li>• Level of co-finance mobilized</li> <li>• Document the delays that occurred</li> <li>• List of reasons, validated by project team</li> </ul>	<p>For all questions under Efficiency:</p> <ul style="list-style-type: none"> <li>• PIRs, PSC meeting reports, annual and progress reports, NPSC meeting reports, national reports</li> <li>• Interviews with UNIDO, NPC, National Focal Points, consultants and other project stakeholders</li> </ul>
<b>Assessment of risks to likelihood of sustainability of project outcomes</b>		
<p>Sustainability is understood as the likelihood of continued benefits after the GEF project ends. Assessment of sustainability of outcomes will be given special attention, but also technical, financial, and organizational sustainability will be reviewed. This assessment will explain how the risks to project outcomes will</p>	<p>UNIDO risk level indicators: Low, Moderate, High</p>	<ul style="list-style-type: none"> <li>• Review of relevant documents such as PIRs, progress</li> </ul>

Evaluation criteria	Evaluation indicators	Means of verification
<p>affect continuation of benefits after the GEF project ends. It will include both exogenous and endogenous risks.</p> <p>The following four dimensions or aspects of risks to sustainability will be addressed:</p> <ul style="list-style-type: none"> <li>• <b>Financial risks.</b> Are there any financial risks that may jeopardize sustainability of project outcomes? What is the likelihood of financial and economic resources not being available now that the GEF assistance has ended? (Such resources can be from multiple sources, such as the public and private sectors or income-generating activities; these can also include trends that indicate the likelihood that, in the future, there will be adequate financial resources for sustaining project outcomes.) Was the project successful in leveraging the co-financing pledged at design?</li> <li>• <b>Socio-political risks.</b> Are there any social or political risks that may jeopardize sustainability of project outcomes? 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? Do the various key stakeholders see that it is in their interest that project benefits continue to flow? Is there sufficient public/stakeholder awareness in support of the project's long-term objectives?</li> <li>• <b>Institutional framework and governance risks.</b> Do the legal frameworks, policies, and governance structures and processes within which the project operates pose risks that may jeopardize sustainability of project benefits? Are requisite systems for accountability and transparency and required technical know-how in place?</li> <li>• <b>Environmental risks.</b> Are there any environmental risks that may jeopardize sustainability of project outcomes? Are there any environmental factors, positive or negative, that can influence the future flow of project benefits? Are there any project outputs or higher-level results that are likely to have adverse</li> </ul>		<p>reports, meeting documents, progress reports</p> <ul style="list-style-type: none"> <li>• Interviews with UNIDO, NPCs, National Focal Points, and other national stakeholders and NGOs</li> </ul>

Evaluation criteria	Evaluation indicators	Means of verification
environmental impacts, which, in turn, might affect sustainability of project benefits? The evaluation will assess whether certain activities will pose a threat to the sustainability of the project outcomes.		
<b>Assessment of M&amp;E systems</b>		
<ul style="list-style-type: none"> <li>• <b>M&amp;E design.</b> Did the project have an M&amp;E plan to monitor results and track progress towards achieving project objectives? The evaluation will assess whether the project met the minimum requirements for the application of the project M&amp;E plan.</li> <li>• <b>M&amp;E plan implementation.</b> The evaluation should verify that an M&amp;E system was in place and facilitated timely tracking of progress towards project objectives by collecting information on chosen indicators continually throughout the project implementation period; annual project reports were complete and accurate, with well-justified ratings; the information provided by the M&amp;E system was used during the project to improve performance and to adapt to changing needs; and the project had an M&amp;E system in place with proper training for parties responsible for M&amp;E activities to ensure that data will continue to be collected and used after project closure. Was monitoring and self-evaluation carried out effectively at regional and national levels, based on indicators for outputs, outcomes, and impacts? Are there any annual work plans? Were the steering or advisory mechanisms put in place at national and regional levels? Did reporting and performance reviews take place regularly?</li> <li>• <b>Budgeting and funding for M&amp;E activities.</b> In addition to incorporating information on funding for M&amp;E while assessing M&amp;E design, the evaluators will determine whether M&amp;E was sufficiently budgeted for at the project planning stage and whether M&amp;E was adequately funded and in a timely manner during implementation.</li> </ul>	<ul style="list-style-type: none"> <li>• Availability of logframe, workplans, roles of overseeing bodies, budgeted M&amp;E plan</li> <li>• Level of implementation of M&amp;E system (execution of activities); changes in implementation approach to adapt to changing situations; compliance of the countries in the submission of relevant reports in a timely manner</li> <li>• Compliance with reporting requirements as mentioned in TORs and/or project document</li> </ul>	<ul style="list-style-type: none"> <li>• Project document</li> <li>• PIRs, meeting reports, progress and annual reports, financial and reports, audit and other relevant reports</li> <li>• Interviews with UNIDO, NPCs, and NPSC members, and other relevant stakeholders / partners</li> </ul>
<b>Monitoring of long-term changes</b>		



Evaluation criteria	Evaluation indicators	Means of verification
<p>The M&amp;E of long-term changes is often incorporated in GEF-supported projects as a separate component and may include determination of environmental baselines; specification of indicators; and provisioning of equipment and capacity building for data gathering, analysis, and use. This section of the evaluation report will describe project actions and accomplishments towards establishing a long-term monitoring system. The evaluation will address the following questions:</p> <ol style="list-style-type: none"> <li>Did the project contribute to the establishment of a long-term monitoring system? If it did not, should the project have included such a component?</li> <li>What were the accomplishments and shortcomings in establishment of this system?</li> <li>Is the system sustainable — that is, is it embedded in a proper institutional structure and does it have financing? How likely is it that this system will continue operating upon project completion?</li> <li>Is the information generated by this system being used as originally intended?</li> </ol>	<ul style="list-style-type: none"> <li>Evidence of initial efforts to establish a long-term monitoring system</li> </ul>	<ul style="list-style-type: none"> <li>Project reports, M&amp;E reports</li> <li>Interviews with UNIDO, NPCs, National Focal Points, and other relevant stakeholders</li> </ul>
<b>Project coordination and management</b>		
<p>The extent to which:</p> <ul style="list-style-type: none"> <li>The national management and overall coordination mechanisms have been established and been efficient and effective. Did each partner have assigned roles and responsibilities from the beginning? Did each partner fulfill its role and responsibilities (e.g., providing strategic support, monitoring and reviewing performance, allocating funds, providing technical support, following up agreed/corrective actions)?</li> <li>The UNIDO HQ-based management, coordination, monitoring, quality control, and technical inputs have been efficient, timely, and effective (e.g., problems identified timely and accurately; quality support provided timely and effectively; right staffing levels, continuity, skill mix, and frequency of field visits)?</li> <li>The UNIDO CO is involved in the project.</li> </ul>	<ul style="list-style-type: none"> <li>Level and quality of project coordination and management at regional and national level</li> </ul>	<ul style="list-style-type: none"> <li>PIRs, meeting reports, and project coordination and management reports</li> <li>Interviews with UNIDO, NPCs, National Focal Points,</li> </ul>

Evaluation criteria	Evaluation indicators	Means of verification
		and other relevant stakeholders
<b>Gender mainstreaming</b>		
<p>The evaluation will consider, but need not be limited to, the following issues that may have affected gender mainstreaming in the project:</p> <ul style="list-style-type: none"> <li>• Did the project design adequately consider the gender dimensions in its interventions? If so, how? (For GEF-4 take this point out?)</li> <li>• Was a gender analysis included in a baseline study or needs assessment (if any)? (For GEF-4 take this point out?)</li> <li>• How gender-balanced was the composition of the project management team at regional and national levels, the Regional and National Steering Committees, experts and consultants, and the beneficiaries?</li> <li>• Have women and men benefited equally from the project's interventions? Do the results affect women and men differently? If so, why and how? How are the results likely to affect gender relations (e.g., division of labour, decision-making authority)?</li> <li>• Are women/gender-focused groups, associations or gender units in partner organizations consulted/included in the project?</li> <li>• To what extent were socio-economic benefits delivered by the project at the regional, national, and local levels, including consideration of gender dimensions?</li> </ul>	<p>Incorporation of gender-responsive approaches and indicators, such as:</p> <ul style="list-style-type: none"> <li>• Women's participation</li> <li>• Gender balance</li> <li>• Integration of gender dimensions in project delivery</li> <li>• Equality, benefits, and results</li> </ul>	<ul style="list-style-type: none"> <li>• Project reports</li> <li>• Interviews with UNIDO, NPCs, National Focal Points, NGOs, Women's Associations involved, and other beneficiaries</li> </ul>

