Annex V.3: Guatemala TE report

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

Cluster evaluation of 8 projects – Polychlorinated Biphenyls (PCB)

Final Evaluation Project:
"Environmentally sound management and disposal of polychlorinated biphenyl (PCB)-containing equipment and disposal of DDT wastes, and upgrade of technical expertise in Guatemala"

UNIDO ID: 140298
GEF Project ID: 5816

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External Evaluator

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GLOSSARY

Term	Definition
Results-Based Management (RBM)	A management strategy focusing on performance and achievement of outputs, outcomes and impacts.
Monitoring	A continuing function that uses systematic collection of data on specified indicators to provide management and the main stakeholders of an ongoing development intervention with indications of the extent of progress and achievement of objectives and progress in the use of allocated funds.
External evaluation/review	The evaluation/review of a development intervention conducted by entities and/or individuals outside the donor and implementing organizations.
Formative evaluation/review	Evaluation/review intended to improve performance, most often conducted during the implementation phase of programmes or projects.
Project	A development intervention, which is designed to achieve specific objectives (outputs/outcomes) contributing to a higher objective (impact) within a given budget and a specific period of time, i.e., it has a beginning and an end.
Relevance	The extent to which the objectives of a development intervention are consistent with beneficiaries' requirements, country needs, global priorities, and partners' and donors' policies. Note: Retrospectively, the question of relevance often becomes a question as to whether the objectives of an intervention or its design are still appropriate given changed circumstances.
Effectiveness	The extent to which the development intervention's objectives were achieved, or are expected to be achieved, taking into account their relative importance.
Efficiency	A measure of how economically resources/inputs (funds, expertise, time, etc.) are converted to results.
Sustainability	The continuation of benefits from a development intervention after major development assistance has been completed. The probability of continued long-term benefits. The resilience to risk of the net benefit flows over time.

Logical framework	Management tool used to improve the design of interventions, most often at the project level. It involves identifying strategic elements (inputs, outputs, outcomes, impact) and their causal relationships, indicators and means of verification, and the assumptions or risks that may influence success and failure. It thus facilitates planning, execution, monitoring and evaluation of a development intervention.
Results	The output, outcome or impact (intended or unintended, positive and/or negative) of a development intervention.
Impacts	Positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended.
Outcome	The likely or achieved short-term and medium-term effects of an intervention's outputs.
Outputs	The products, capital goods and services, which result from a development intervention within UNIDO's sphere of control; may also include changes resulting from the intervention which are relevant to the achievement of outcomes.
Indicator	Quantitative or qualitative factor or variable that provides simple and reliable means to measure achievement, to reflect the changes connected to an intervention, or to help assess the performance of a development actor. Means by which a change will be measured. Example: Total wastewater in t/yr.
Target	Definite ends to be achieved. Specifies a particular value that an indicator should reach by a specific date in the future. Example: Reduce by 50% the amount of wastewater in t/yr, between 2015 and 2020.
Milestones	Interim targets; points in the lifetime of a project by which certain progress should have been made. They provide an early warning system and are the basis for monitoring the trajectory of change during the lifetime of the project.
Baseline	The situation prior to a development intervention against which progress can be assessed or comparisons made.

Assumptions	Hypotheses about factors or risks, which could affect the progress or success of a development intervention. Necessary conditions for the achievement of results at different levels. These are conditions that must exist if the project is to succeed but which are outside the direct control of the project management. This is called the external logic of the project because these conditions lie outside the project's accountability and can be related to laws, political commitments, political situation, financing, etc.
Risk analysis	An analysis or an assessment of factors (called assumptions in the logical framework) that affect or are likely to affect the successful achievement of an intervention's objectives. A detailed examination of the potential unwanted and negative consequences to human life, health, property, or the environment posed by development interventions; a systematic process to provide information regarding such undesirable consequences; the process of quantification of the probabilities and expected impacts for identified risks.
Environmental and Social Safeguards	The UNIDO Environmental and Social Safeguards Policies and Procedures (ESSPP) identifies a total of 12 operational safeguards pertaining to environmental social risks. Every UNIDO project needs to undergo an E&S screening to determine its level of risk and the appropriate mitigating action (if any) to be elaborated.
Theory of change	Theory of change, or project theory, is similar to a logic model, but includes key assumptions behind the causal relationships and sometimes the major factors (internal and external to the intervention) likely to influence the outcomes.
Conclusions	Conclusions point out the factors of success and failure of the evaluated intervention, with special attention paid to the intended and unintended results and impacts, and more generally to any other strength or weakness. A conclusion draws on data collection and analyses undertaken, through a transparent chain of arguments.
Lessons learnt	Generalizations based on evaluation experience with projects, or policies that abstract from the specific circumstances to broader situations. Frequently, lessons highlight strengths or weaknesses in preparation, design, and implementation that affect performance, outcome, and impact.
Recommendations	Proposals aimed at enhancing the effectiveness, quality, or efficiency of a development intervention; at redesigning the objectives; and/or at the reallocation of resources. Recommendations should be linked to conclusions.

Gender mainstreaming	The process of assessing and supporting overcoming different implications for women and men of any planned action, including legislation, policies or projects, in all areas and at all levels. It is a strategy for making women's as well as men's concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of policies and projects in all political, economic and societal spheres so that women and men participate and benefit equally and inequality is not perpetuated. The ultimate goal is to achieve gender equality.

For more related terms and definitions see also:

- UNIDO Quality Assurance Framework (QAF), DGB/2019/11
- IRPF Guide, AI/2020/02
- OECD-DAC Glossary of Key Terms in Evaluation and Results Based Management (2010)
- UNDG Results-based management handbook
- UNIDO e-learning course on: Results-based Management and the Logical Framework Approach
- UNIDO 2019 Policy on Gender Equality and the Empowerment of Women and Strategy for Gender Equality and the Empowerment of Women, 2020-2023

The above resources are also accessible for download on the intranet page of the Quality Monitoring Division.

ABBREVIATIONS AND ACRONYMS

Best Available Techniques / Best Environmental Practices	BAT/BET
Department of Chemical Products and Hazardous Waste	DCP
Dichloro-diphenyl-trichloroethane	DDT
Environmentally Sound Management	ESM / GAR
Fundación Defensores de la Naturaleza - NGO	FDN
Global Environment Facility	GEF
Inclusive and Sustainable Industrial Development	ISID
Ministry of Environment and Natural Resources	MENR
Monitoring and Evaluation	M&E
The National Implementation Plan	NIP
Persistent Organic Pollutants	POPs
Polychlorinated Biphenyls	PCBs
Project Management Unit	PMU
Persistent Organic Pollutants	POP
Project Preparation Grant	PPG
Project Steering Committee	PSC
Stockholm Convention	SC
Technical Advisory Committee	TAC
United Nations Industrial Development Organization	UNIDO

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EXECUTIVE SUMMARY

The project's main contribution was to standardize PCB management knowledge and practices in the country and provide a legal and technical framework for its implementation. This project was designed according to the country's reality, covering all PCB issues and challenges; its level of relevance is still valid. The intervention was implemented effectively by stakeholders in their different roles.

The project shows visible signs of impact as stakeholders know how to implement the ESM of PCBs; the companies identified the scope, times and resources to fulfil the national regulation and contribute to SC goals. In addition, an unintentional positive effect of the project was that in the MENR, the intervention catalyzed the triangulation of information and cooperation between the two departments.

Due to some externalities, the project requested two extensions; other issues delayed the finalization date. The delays were related to the project start-up date change, COVID restrictions, additional time for importing and adapting the equipment for PCB dechlorination, exportation sector barriers and bureaucracy for obtaining the exportation authorizations. Although the delays, thanks to adjustments and stakeholders' support, the project completed all its activities efficiently without requiring an additional UNIDO budget. Stakeholders had to invest human resources time; the stakeholders' satisfaction level is high; generally, the project fulfilled stakeholders' expectations. 364.85 Tons of PCB and 19.32 Tons of DDT were disposed of.

The project executed USD 1.774.673, 89% of the total budget (Dec-2022). The partners invested USD 10,017,440 in samples analysis, updating inventory, building or repairing PCB storages, purchasing new equipment, personnel, etc.

The evaluation identified two sustainability risks (Moderately likely) related to the available resources - MENR and small PCB owners- and institutional preparedness status for future actions. The ministry and PCB owners have all the necessary tools for the continuity of project results, especially the long-term strategy; and the work plan for strengthening the Ministry.

The project complies with the gender indicators target related to awareness-raising activities with a gender focus and women's participation; the materials include women's information, for example, PCB risks during pregnancy and breastfeeding.

The support from GEF, UNIDO, NGO (Defensore de la Naturaleza) and NC and the participation of MERN and key stakeholders were commensurate with their available resources. The project's overall assessment is rated as "Satisfactory".

RECOMMENDATIONS

To UNIDO

1. Develop a participatory methodology for the products related to long-term strategies and ministry strengthening (outputs 2.5 and 2.6) to ensure empowerment and reduce sustainability risks. To design these products during a workshop three to six months before closing is recommended.
2. To include a participatory self-evaluation process when the project cannot execute the Mid-term review. During the self-evaluations, the efficiency and effectiveness of the inputs and outcomes are analyzed, and a roadmap and action plan are developed to achieve the expected results; this exercise reinforces stakeholder cooperation and catalyzes commitment and participation.
3. Annex the country's technical specifications (voltage difference, frequency, etc.) in the TDR for the final elimination contract because sometimes the firms do not consider this constraint when they design their work plan; in the end, this could evolve into a project delay. For example, in Guatemala and Bolivia, the contracted companies extended the implementation from six to nine months because their equipment could not work in the country; they needed to adapt the de-chlorinator and acquire/import materials.
4. Add in the Project Implementation Reports co-financing funds execution information to ensure the availability of this information for the final evaluation and to know how effective the participating partners are in investing resources.

To National Government - MENR

5. Implement the long-term strategies (output 2.5 and 2.6) and strengthen the DCP to give continuity to the project results.
6. Continue identifying and implementing internal collaborative processes between departments to triangulate information, strengthen the regulation monitoring compliance, and decentralize responsibility for the national implementation of ESM for PCBs.
7. Identify improvement opportunities for reducing the time of processes required for giving the licenses for PCB transportation, storage, local treatment and POPs exportations through internal operative analysis following the new law for government services digitalisation and automatisation.

LESSONS LEARNED AND GOOD PRACTICES

1. Hire a national organisation (as an NGO) plus an NC for the implementation strengthened the government interaction and added more legitimacy because the NGO was perceived as a private firm and not as a person who should be responsible for all execution; at the same time, the NGO was tracking more carefully the day-to-day implementation and monitoring process. UNIDO transferred issues, monitoring and reports from the operational level to the NGO through a contract establishing periodic reports and justification of expenses.
2. In Guatemala, PCB owners learned the project's benefits and scope for public and private PCB owners; this provoked proactive participation and allowed all stakeholders to know what to expect; For example, some private companies knew they would receive capacity building and qualitative

analysis, they had enough time for fundraising to PCB disposal. In Bolivia, PCB owners' expectations were sometimes unmet because the benefits information needed to be disseminated clearly and on time.

3. TOR for the final disposal services should be included as a requirement that at least one person from the field team and one from the management team speak Spanish (or at least English). Knowledge of the local language ensures effective communication, generates a good work synergy and allows knowledge transfer. For example, in Guatemala, at the SETCAR company, the technicians in charge of local dechlorination only spoke Romanian. In the team that worked at the managerial level, only one person spoke English. On the other hand, in Bolivia, the stakeholders worked effectively and comfortably with TREDI-Argentina.
4. To share with stakeholders clearly since the beginning the project's objective and benefits contribute to their participation and satisfaction level
5. Including a product with a long-term PCB inventory and disposal strategy where a financial analysis is included based on the project results strengthens the sustainability benefits because it provides the public and private stakeholders with a route map.

1. EVALUATION OBJECTIVES, METHODOLOGY AND PROCESS

The United Nations Industrial Development Organization (UNIDO), in coordination with the Global Environment Facility (GEF) and various countries, is implementing a project portfolio to meet the objectives and agreements of the Stockholm Convention (SC).

Given the number of projects focused on the Environmentally Sound Management (ESM) of Polychlorinated biphenyls (PCBs) currently in the final phase of implementation and considering the significant similarities at the project design level, a cluster evaluation approach will be used in eight countries, Guatemala is one of these countries[1]. The cluster approach aims to produce synergies and increase the value added in evaluations. The efficiency gains from this approach will be invested in additional learning and strategic assessments to inform UNIDO management, the Member States, donors and beneficiaries about relevant evaluation findings, conclusions and recommendations.

1.1 Objectives

The Final Evaluation has three main specific objectives:

a) Assess project performance in terms of relevance, effectiveness, efficiency, sustainability, coherence, and progress to impact; and
b) Develop a series of findings, lessons and recommendations for enhancing the design and implementation of ongoing projects by UNIDO.
c) Contribute to organizational learning by UNIDO and its counterparts while being forward-looking, thus also guiding the development of new similar projects.

[1] Annex 1: List of projects for Cluster Evaluation and general information

1.2 Methodology and process

The Final Evaluation is conducted in accordance with the UNIDO Evaluation Policy2, the UNIDO Guidelines for the Technical Cooperation Project and Project Cycle3, and UNIDO Evaluation Manual Findings from this evaluation will be included in the Cluster Evaluation synthesis report.

The Final Evaluation is based on a combination of desk review of documents and available data, exploratory interviews with the project key stakeholders, semi-structured interviews with key stakeholders with responsibilities under the project and an electronic survey. The Final Evaluation uses a participatory approach, whereby key stakeholders are kept informed and consulted throughout the review process. Both quantitative and qualitative evaluation methods are used, as appropriate, to determine project achievements against the expected outputs, outcomes, and impacts. Additionally, triangulation of findings and data are carried out to reduce information gaps that would contribute to ensuring the robustness and validity of the assessment. [4] Emerging findings, initial conclusions, and potential recommendations are presented to and discussed and validated with key project stakeholders, within the framework of a presentation, the final step is submission of the final version of the report.

1.3 Information sources and availability of information

The Project National Coordinator (NC), PMU staff and project stakeholders provided the information required for the Final Evaluation during the implementation of the final evaluation activities: documentation review, email survey and interviews.

1.4 Limitations of the Evaluation

The data collection process was executed between December 2022 and January 2023; many stakeholders were unavailable for this activity due to holidays or owing to their responsibilities related to internal operational closures. Also, the interview with the firm contracted for final disposal was unclear due to language constraints. Unfortunately, as the Final Evaluation was carried out following the finalization of fieldwork, it was not possible to implement data collection during the fieldwork phase with stakeholders, such as PCB owners and REPELSA. This is seen as a disadvantage for the Final Evaluation as the fieldwork data collection methodology generally supports a more effective and efficient process as it aids understanding of participants' reactions and helps evaluators to collect unexpected data.

2. COUNTRY AND PROJECT BACKGROUND

2.1 Project Factsheet

[2] UNIDO (2018). Director General's Bulletin: Evaluation Policy (UNIDO/DGB/2018/08)
[3] 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)
[4] Annex 2: List of documents reviewed and stakeholders involved.

Project Title:	*"Environmentally sound management and disposal of polychlorinated biphenyl (PCB) - containing equipment and DDT wastes and upgrade of technical expertise in Guatemala"*
GEF ID:	5816
UNIDO ID:	140298
GEF Replenishment Cycle:	*GEF-5*
Country(ies):	*Guatemala*
Region:	*LAC – Latin America and Caribbean*
GEF Focal Area:	*Persistent Organic Pollutants (POPs)*
Integrated Approach Pilot (IAP) Programs[5]:	*N/A*
Stand-alone / Child Project:	*N/A*
Implementing Department/Division:	*ENV/IPM*
Co-Implementing Agency:	*Fundación Defensores de la Naturaleza (FDN)*
Executing Agency(ies):	*Ministry of Environment and Natural Resources,*
Project Type:	*Medium-Sized Project (MSP)*
Project Duration:	*36 months*
Extension(s):	*2*
GEF Project Financing:	*USD 2,000,000*
Agency Fee:	*USD 190,000*
Co-financing Amount:	*USD 13,771,100*
Date of CEO Endorsement/Approval:	*10-07-2015*
UNIDO Approval Date:	*11-18-2015*
Actual Implementation Start:	*01-01-2016*
Cumulative disbursement as December 2022:	*1.774.673*
Mid-term Review (MTR) Date:	Click or tap to enter a date. *Not executed*
Original Project Completion Date:	10/7/2018
Project Completion Date as reported in FY21:	3/31/2022
Current SAP Completion Date:	12/31/2022
Expected Project Completion Date:	12/31/2022
Expected Terminal Evaluation (TE) Date:	12/31/2023

[5] Only for **GEF-6 projects**, if applicable

Expected Financial Closure Date:	12/31/2023
UNIDO Project Manager	*Alfredo Cueva*

Source: GEF6 CEO Endorsement.

2.2 Country and Project Background

Guatemala is a developing country and a Party to the Stockholm Convention (SC). The National Implementation Plan (NIP) was prepared with grant assistance from the GEF and endorsed on May 6, 2010. The NIP identified that the current legislative framework for persistent organic pollutants (POPs) does not fully comply with the SC, especially regarding the import, management and disposal of PCBs and DDT. Guatemala's Government has made efforts to build internal capacity and expertise to ensure that PCBs and DDT are handled, transported, stored and disposed of in an environmentally sound manner, but this goal requires international cooperation to ensure that all steps of the process adhere to international standards. There is political willingness of Guatemala's National Government through the Ministry of Environment and Natural Resources (MENR) and the Ministry of Health. Guatemala is truly willing to provide, within its capabilities, financial support and incentives in respect of those national activities that are intended to achieve the objective of this Convention in accordance with its national plans, priorities and programs. The GEF, as financial mechanism for the SC would provide adequate and sustainable financial resources to assist Guatemala in its implementation of the Convention.

Guatemala is also part of the UNIDO-GEF project "Strengthening of National Initiatives and Enhancement of Regional Cooperation for the Environmentally Sound Management of POPs in Waste of Electronic or Electrical Equipment (WEEE) in Latin-American Countries", which is currently being implemented.

2.3 Project Description

2.3.1 Background and Objective

The project aims to enhance Inclusive and Sustainable Industrial Development (ISID) through the strengthening of national capacities for the environmentally sound management (ESM) of POPs, including disposal of 15 tons of DDT and up to 400 tons of PCBs and related wastes, and reduction/elimination of PCB releases from serviced equipment at workshops and interim locations to protect human health and the environment. The objective of the project is to establish an environmental management system (EMS) for PCB contaminated equipment, oil and waste in Guatemala and upgrade its technical expertise to develop a sustainable mechanism to complete the PCBs and DDTs disposal.

2.3.2 Project Key Stakeholders

The GEF, as financial mechanism for the SC would provide adequate and sustainable financial resources to assist Guatemala in its implementation of the Convention. This project is implemented by the United Nations Industrial Development Organization (UNIDO) in coordination with the country. The Ministry of Environment and Natural Resources (MENR) is an advisory body to the project headed by the National Project Director. The executing entity is the MENR assisted by NGO -Defensores de la Naturaleza- (FDN). A National Project Coordinator (NC) is recruited directly by UNIDO, in coordination with the MENR, to carry out project oversight activities in the field to ensure that project activities are fulfilled to achieve project objectives, outcomes and outputs.

The Project Steering Committee (PSC) is chaired by MENR. It reviews the arrangement with FDN for its efficiency. The National Project Director, provided as government contribution, is assisted by the National Project Coordinator as PSC Secretary. The PSC approves the Annual Work Plan and the Annual Budget.

A Technical Advisory Committee (TAC), chaired by the National Project Coordinator, is established for providing technical and practical input and coordination for project execution. The TAC is integrated by representatives of the electricity generation and distribution activities, and the Health Sector on DDT.

The Project Management Unit (PMU) is headed by National Project Coordinator and supported by national and international consultants as needed

The project includes PCB owners especially from the electricity sector. The National Electrification Institute (INDE), an autonomous and self-financing state entity, was created in 1959. It is divided into three companies coming from the sectors of electricity generation, transport and distribution. Currently the distribution of electricity is carried out by: EEGSA (1,177,726), ENERGUATE (1,435,747 users), 16 Municipal Electricity Companies (125, 908 users) and two private enterprises: Services of Southern Tiquisate and the Hydroelectric Patulul (serving 719 and 699 users, respectively). EEGSA and ENERGUATE serve 93.3% of the users. In total there are more than 72,000 km of distribution network in the country.

2.3.3 Project Logical Intervention

The project contributes to strengthening the national regulatory framework, the institutional capacity at the national and local level, and raising awareness among relevant stakeholders, especially workers dealing with PCB-contaminated equipment and women and children living near sites with PCB-contaminated equipment. Improving the PCB inventory and strengthening the national laboratory capacity as well as promoting an ESM and environmentally sound disposal of PCBs are essential for the ESM of POPs throughout their lifecycle. The project has four components: Component 1. Legal, regulatory and institutional capacity for the ESM of PCBs within the strengthened and appropriate framework of POPs, Component 2. Environmentally sound management (ESM) of PCB-containing electrical equipment and waste, and disposal of DDT, Component 3. Knowledge management and awareness raising and Component 4. Monitoring and evaluation.[6]

[6] For full detail check: Annex 3. Project Logical Framework

2.4 Theory of Change

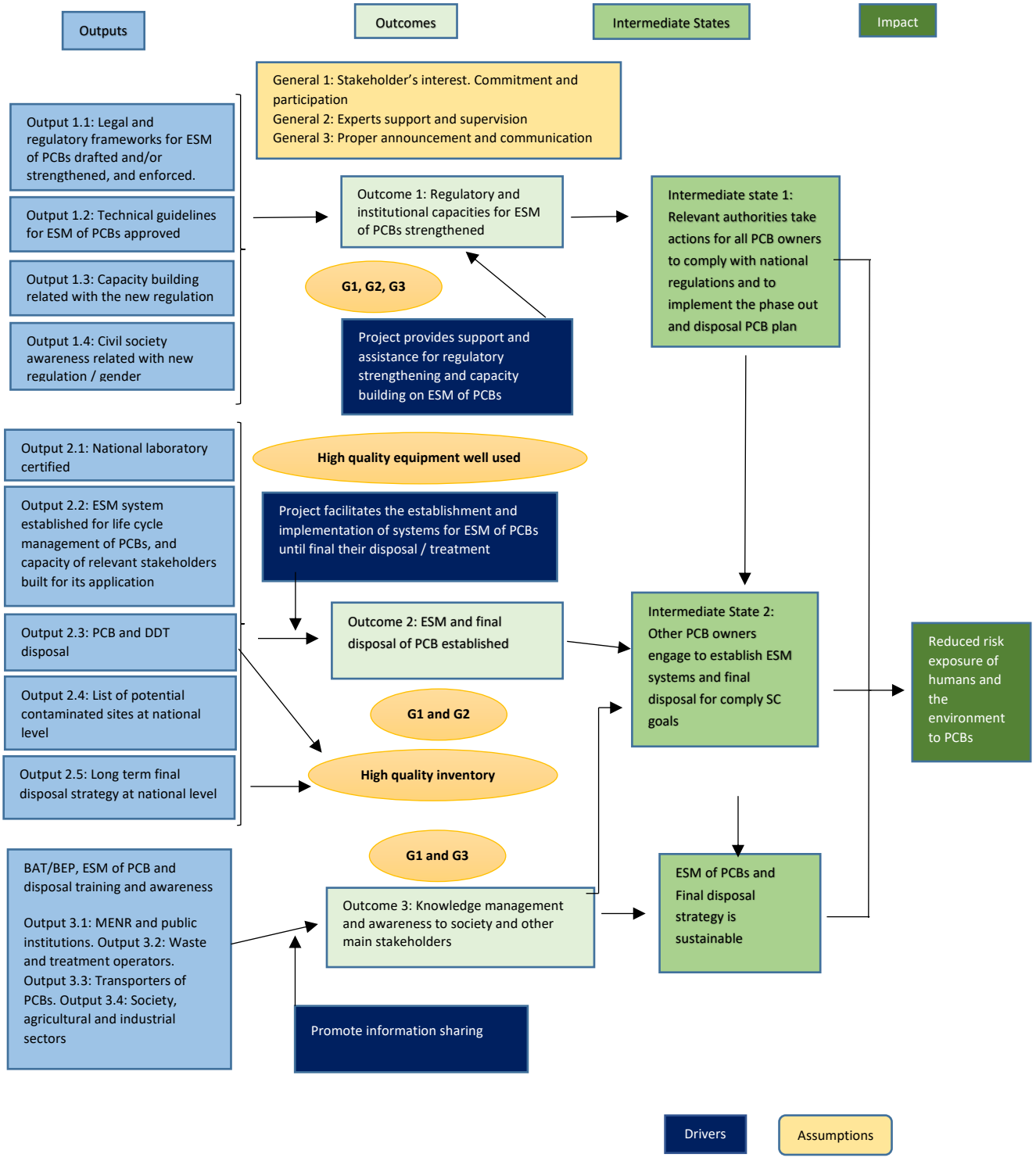
Theory of change (TOC) is a methodology or management tool that explains the process of evolution by outlining causal linkages in the initiative (its shorter-term, intermediate, and longer-term outcomes).

The fourteen outputs and the four outcomes included in the TOC are those initially proposed in the project document. On the other hand, the figure presents three intermediate states that indicate progress to longer-term impact. First, it is anticipated that once the legislation has been strengthened, the MENR will take action to monitor the new regulation compliance and promote ESM of PCBs guidelines training during and after the project (Intermediate State 1). After having a national laboratory, a list of potential sites, and updating the inventory under the project, PCB and DDT would be disposed of; this will contribute to the implementation of the ESM of PCB and national strategy for long-term disposal (Intermediate State 2). The ESM of PCB implementation sustainability would be ensured through sharing knowledge and disseminating awareness with the main stakeholders in the sector (Intermediate 3).
In the medium-term other PCB owners will soundly dispose of all their PCBs by 2028. Therefore, it is expected to reduce the risks of PCB exposure to the environment and human health in the long term. (Impact statement).

Six key assumptions have been proposed in the TOC. They relate to the stakeholders' interest, commitment and active participation, expert support and supervision, proper project announcement and communication, high-quality methodologies and tools well used, high-quality training and inventory.

Three important drivers identified by the evaluation relate to the project: support and assistance for regulatory strengthening and capacity building, facilitate the establishment and implementation of systems for ESM of PCBs, and promote information sharing on ESM of PCBs.

FIGURE 1: THEORY OF CHANGE



3. Project's contribution to Development Results – Effectiveness and likelihood of Impact

3.1 Project's achieved results and overall effectiveness

The project included four substantive outcomes in the logical framework to deliver fourteen outputs and to reach the project objective. The assessment of the delivery of outputs as well as achievement of outcomes was based on logical framework[7] indicators updating, indicators monitoring in the Project Implementation Reports[8], Final project execution report updated until December 2022, and overall effectiveness assessment tool. The scale used for rating ranges from Highly Satisfactory (HS) to Highly Unsatisfactory (HU) [9]

3.1.1 Delivery of outputs

In general, the project has performed **Satisfactorily (S)** in terms of delivery outputs because the indicators target was reached, some delays will be analyzed in other sections, but the project achieved the outputs expected; Table 1 shows each output indicator and targets, the results reached and the effectiveness satisfaction rate. To calculate the general 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. From nine outputs; four have been rated HS, four outputs have been rated S and one output has been rated MU. The following paragraphs describe each output's effectiveness, some positive and negative factors for relevant results and the quality perception of stakeholders.

Component 1, the Output 1.1 Legal instruments and technical tools are designed and available to regulate and control ESM of PCBs – the output was rated as "Highly-Satisfactory". The country's constitution, Art. 94 and 97, states that they are obligated to care for the population's health and to propitiate social, economic and technological development that prevents environmental contamination. Accordingly, Guatemala subscribed to the SC in 2010. In 2018 under the project implementation, the Government Agreement No. 194-2018 "ESM for PCBs Regulation" was approved; the MENR is the public organism responsible for the new legal agreement implementation and monitoring.
The new agreement includes (i) The creation of a National PCB System where all PCB owners, inventories, storages and maintenance centres must register for national control and monitoring, companies must update the information annually, the annual report must include an affidavit (ii) PCB classification, concentration and limits, (iii) ESM of PCBs (inventories, identification and labelling, ownership changes procedures, (iv) equipment maintenance, storage, transportation and final disposal, (v) Accidents and environmental risk management, (vi) contaminated sites management, (vii) prohibitions, (viii) Infringements and sanctions (related to the environmental permissions required by the industries for their operation) with administrative, civil and criminal liability.
The agreement defined the deadline for PCB identification and labelling at the national level until 28 February 2023 and the deadline for final disposal as 2028.

[7] Annex B. Project Logical Framework
[8] Annex C. Project Implementation Report until June 2022, Table: Targeted results and progress to-date.
[9] HS: highly satisfactory=6; S: satisfactory=5; MS: moderately satisfactory=4; MU: moderately unsatisfactory=3; U: unsatisfactory=2; and HU: highly unsatisfactory=1.

The Management Information System "SINPCB"[10] aims to contribute to the new regulation compliance monitoring. SINPCB was designed and delivered to the MENR in 2019 and updated twice. In addition, the PMU organized system usage training for several stakeholders. All PCB owners in the country must register their inventory in the system. All PCB owners who participated in the program had a user name and updated PCB inventory information; as of November 2022, 125 firms are registered in the system[11].

Output 1.2 Guidelines for ESM of PCBs are developed for governmental bodies and other national organizations – the output was rated as "Highly-Satisfactory". In 2018, PMU drafted the first draft of nine technical guidelines; with the TAC collaboration and international consultants' support, the tools were improved and updated. Finally, the products approved and published included:

1. Pocket guide for the management of PCBs.
2. General knowledge and concepts.
3. Risk management related to PCBs.
4. PCBs' inventory.
5. Sampling of PCB-susceptible equipment.
6. PCB Analysis methodology.
7. Maintenance of equipment with dielectric oil.
8. Packaging, transportation and temporary storage of PCBs.
9. Environmentally Sound Management of equipment and waste with PCBs

Between 2019 to 2020, the PMU executed three workshops with this material; 86 people participated - 40% women. In addition, digital and printed materials are available for stakeholders.

Output 1.3 Relevant stakeholders are trained and able to use/apply the norms, policies and regulatory framework for ESM of PCBs within the framework of POPs. – The output was rated as "Highly-Satisfactory". After the new agreement approval (Output 1.1), information socialization and training began; the project organized 17 workshops between 2019 and 2021, and 664 people participated - 31% women.

Output 1.4 Civil society (especially gender groups) are aware of the proposed legal / regulatory framework and able to participate in its discussion, with due consideration of gender and other key issues – this output was rated as "Highly-Satisfactory". The project implemented five workshops for gender-sensitive awareness-raising activities between 2018 to 2020. In 2022, graduates were added, training 252 environmental educators.

To disseminate and socialize the PCB regulation, the material was developed to be used in the various web platforms, such as the social networks of the Ministry of Environment and Defenders of Nature and one Facebook account with 95,660 followers. The audiovisual material used as tutorials of the SINPCB was updated.

Component 2. Environmentally sound management system (ESM) of PCB-containing electrical equipment and waste, and disposal of DDT the is the Output 2.1 National reference laboratory for PCBs and DDT established and inventory data validated and georeferenced – this output was rated as "Satisfactory". In 2018, local laboratories assessment identified INLASA as being the Nacional Reference

[10] The system was designed for computers and an app for cellphones.
[11] Fourth Executive Report December 2022 – Output 4

Laboratory. In 2019, INLASA was trained and accredited for PCB quantitative analysis service. The project purchased portable equipment consisting of 10 mobile devices, and data collectors were trained.
During the project, 4,794 analyses were tested (3,301 with L2000DX and 1,493 by chromatography). Chromatography confirmed 173 pieces of equipment weighing approximately 245 metric tons of which 222 metric tons belong to public sector institutions.

Output 2.2 ESM system for PCBs established at each process step (identifying, handling, collecting, transport, safe interim storage and phase-out). BAT/BEP guidance available for managing PCB wastes by hazardous waste operators included – this output was rated as "Satisfactory"**.** Since the beginning, PCB owners updated their equipment inventory and applied qualitative and quantitative analysis for confirmed cases. In 2019, INDE offered its installations as the national PCB temporary storage. The equipment disposal strategy approved was local dechlorination and exportation. In 2021, the PCB equipment was collected and stored. Finally, in 2022 the PCB local treatment and exportation were finalized. All processes were executed as per the BAT/BEP guidance and ESM technical guidelines.

Output 2.3 Up to 400 tons of PCB wastes and PCB-containing equipment and 15 tons of DDT are decontaminated or disposed of based on a cost-benefit analysis of the disposal strategies – this output was rated as "Satisfactory". In the project inventory, 70% of confirmed cases (by chromatography) had a PCB concentration between 50 to 500 ppm; for this reason, the project included local dechlorination in the final disposal strategy[12]. In October 2020, UNIDO completed the tendering process to dispose PCBs and DDT; through this process, the company SETCAR, S.A. was selected with the collaboration of their local partner, REPELSA.

During the equipment collection process, there was an incident in San Jose Villanueva; a transformer fell and spilt contaminated oil; REPELSA, the responsible company, in coordination with the PCB owner, solved the situation according to international standards. REPELSA and SETCAR imported the dechlorination equipment for local treatment; the Romanian equipment had to be adapted to the Guatemalan technical characteristics; this adaptation required unexpected additional time. Carrying out local dechlorination reduced the total export weight by 36%, and the treated dielectric oil was recovered as a by-product. SETCAR sold the decontaminated oil to a local company as an alternative fuel.[13]
The final results reported until December 2022 are:

- Equipment with PCB ready to export 258 ton
- Local treatment 106.85 ton
  TOTAL PCB treated 364.85 tons
- DDT ready to export 17.10 tons
- Waste of the process 2.21 tons
  TOTAL DDT treated 19.32 tons

As of December 2022, the certificates of environmentally responsible disposal are yet to be received from SETCAR owing to shipping offer unavailability and hazardous waste transportation restrictions. The final exportation destinations are Romania and Germany.

[12] Long term strategy for PCB disposal in Guatemala – December 2022
[13] PIRS 2021-2022 final version

Output 2.4 A list of potentially contaminated sites, with PCBs or DDT, is prepared. A task team will be established for the development of guidelines for the evaluation of contaminated sites – the output was rated as "Highly-Satisfactory". PMU investigated 16 locations at the national level and 3 locations confirmed with L2000Dx samples analysis.

Output 2.5 Long-term PCB and DDT elimination and disposal strategy, including financially feasible business plans, developed and approved – this output was rated as "Satisfactory". The strategy shows lines of action to meet the PCB disposal goals and to ensure the project's impact sustainability. The strategy included the national PCB inventory analysis and financial analysis. This output collects lessons learned and experience of project implementation.

Output 2.6 "Institutional strengthening of MENR" (not included in the original logframe) – This output aims to ensure the project's sustainability; it includes the following: (i) Capacity-building for reinforcing knowledge of the ESM of PCBs and legal framework, (ii) Updating the regulation based on project implementation results and other government compulsory requirements that MENR must comply, and (iii) The maintenance required for the SINPCB system.

Component 3, Output 3.1 Staff of MENR and relevant state organizations are trained on all aspects of BAT/BEP for ESM of PCBs and wastes, data tracking and reporting, including the use of on-line databases – this output was rated as "Satisfactory". Between 2019 to 2021, PMU executed eight workshops with MENR staff and PCB owners technical and administrative personnel.

Output 3.2 Hazardous waste treatment operators are trained in depth on BAT/BEP for the ESM and disposal of PCB/DDT wastes – this output was rated as "Satisfactory". After the training materials approval, the PMU organized one workshop in 2020, 125 people attended (23% were women), there is no information available about which treatment operators participated.

Output 3.3 Transporters of PCBs wastes are trained on BEP issues applicable to their activity – this output was rated as "Satisfactory". After the training materials approval, two workshops were carried out in 2019, 43 people from transporter companies attended (28% women), there is no information available about which transporters attended.

Output 3.4 Members of pertinent professional, agricultural, industrial or other organizations, the electrical sector, NGOs and citizen groups participate in workshops to become aware of ESM of PCB and disposal of PCB and DDT, and of alternatives for crop and disease protection – this output was rated as "Satisfactory". In 2020, three workshops were held, training 54 people (27% women). In 2021, Defenders of Nature Foundation FDN and university teachers participated in socialization activities for training related to PCBs' risks; 94 people participated (68% women). All project stakeholders participated in eight videos' production.

Finally, for **Component 4, Output 4.1** The monitoring and evaluation framework obtained an effectiveness rate of "Highly-Satisfactory". The M&E products complied with UNIDO and GEF technical standards. The inception workshop report is a high-quality tool for project management.

Four Project Implementation Reports were approved by UNIDO (PIR1 2018-2019, PIR2 2019-2020, PIR3 2020-2021 and PIR4 2021-2022). The M&E framework supported the project tracking and decision making

process. The Medium-Term Review was not executed due to project delays and extensions. As the implementing agency, UNIDO undertook field missions to provide technical input and monitor the implementation.

TABLE 1. DELIVERY OF OUTPUTS

Output	Indicators	Delivery outputs/outcomes	Score
Output 1.1 Legal instruments and technical tools are designed and available to regulate and control ESM of PCBs, including transboundary movement.	* Number of environment policies, strategies, laws, regulation approved/enacted. Target: At least one legal instrument and technical tool drafted in line with SC and country requirements	* One new regulation for PCB management approved. The regulation was socialized to the main stakeholders * One Management Information System designed, updated and approved to support the new regulation implementation and national monitoring. *One video for opening an account in the SINPCB system and one video for inventory and equipment registry.	HS
Output 1.2 Guidelines for ESM of PCBs are developed for governmental bodies and other national organizations.	*Number of ESM guidelines for PCBs. Target: At least one ESM guideline for PCBs drafted	* Nine technical guidelines as part of the ESM of PCBs approved (physical and digital) * Three workshops, 86 people trained - 40% women	HS
Output 1.3 Relevant stakeholders are trained and able to use/apply the norms, policies and regulatory framework for ESM of PCBs within the framework of POPs.	* Number of trainings. Target: At least 4 targeted trainings * Number of training participants/trainees (male/female). Target: At least 100 stakeholders trained (70 male/ 30 female)	*17 workshops implemented related to the usage/apply the norms, policies and regulations for ESM of PCBS; in total, 664 people were trained - 31% women	HS

Output 1.4 Civil society (especially gender groups) are aware of the proposed legal / regulatory framework and able to participate on its discussion, with due consideration of gender and other key issues.	* Number of awareness raising activities. Target: At least 3 targeted awareness raising activities * Number of participants (male/female) from civil society, especially women, workers and community people. Target: At least 1 gender-sensitive awareness raising activity * Number of gender-specific trainings - No target	*Five workshops on gender-sensitive awareness raising. 114 participants - 50% women. * One workshop training. 8 people - 62% women (contents not specified) * One Facebook account opened with 95,660 followers with ESM of PCB and new regulation deadlines. * One communication strategy analysis * Three more graduates are added, training 252 environmental educators - 70% women.	HS
Output 2.1 National reference laboratory for PCBs and DDT established and inventory data validated and geo-referenced.	* Number of accredited national reference laboratories. Target: One analytical reference laboratory installed with the adequate capacity * Number of pieces of equipment sampled. Target: At least 6,000 devices sampled	*One laboratory certified and accredited * Almost 5,000 dielectric oil samples were analysed by screening. 1412 samples had confirmatory analysis. In addition, 173 pieces (245 tons) were confirmed by chromatography. * Training in chromatography maintenance to 5 technicians.	S
Output 2.2 ESM system for PCBs established at each process step	* ESM for PCB established and operative. Target: The ESM system for PCBs and DDT is available * Number of people trained (male/female) - No target	* 10 workshops training 426 stakeholders (50 female / 376 male) * Being a demonstrative project, it showed how to implement a local ESM system of PCB. * Other outputs such 1.2 contributed to reach the target.	S
Output 2.3 Up to 400 tons of PCB wastes and PCB-containing equipment and 15 tons of DDT are decontaminated or disposed of based on a cost-benefit analysis of the disposal strategies.	* Quantity of PCBs and DDT (tons) eliminated/ discontinued. Target: Up to 400 tons of PCB and 15 tons of DDT disposed.	* 364.85 Ton PCB treated under the project * 19.32 Ton of DDT exported for final disposal The firm in charge of the final disposal must to send the certificates to the PCB owners.	S

Output 2.4 A list of potentially contaminated sites, with PCBs or DDT, is prepared. A task team will be established for the development of guidelines for the evaluation of contaminated sites.	* Number of sites investigated/ number of contaminated sites identified - No specific target	* 16 locations were investigated, 3 were confirmed PCB with semi-quantitative analysis. * This product was reached with other outputs products such 1.2	HS
Output 2.5 Long-term PCB and DDT elimination and disposal strategy, including financially feasible business plans, developed and approved (based on project results).	*Existence of long-term PCB / DDT phase-out strategy. Target: One National Plan developed * Number of new jobs (male/female). Target: At least 10 new jobs created (at least 2 female)	* One long-term PCB and DDT elimination and disposal strategy, including financially. * No data related with employment	S
Output 2.6 MENR institutional stregthen [14]	* It is not part of the original project design, there is not a indicador measure baseline.	* Training for the Department of Chemical Products and Hazardous Waste (DCP) and the Department of Environmental Control and Monitoring, to reinforce knowledge about PCB ESM, legal framework, available tools - 263 people – 6% women * Proposal to update Government Agreement 194-2018 of the PCB. * Report on strengthening activities in MENR Acquisition and purchase of various equipment.	HS
Output 3.1 Staff of MENR and relevant state organizations is trained on all aspects of BAT/BEP for ESM of PCBs and wastes, data tracking and reporting, including the use of on-line databases.	*Number of training courses. No specific target *Number of participants / courses. Target: At least 10 relevant staff trained (7 male/ 3 female)	* Eight training related with BAT/BEP for the MENR and other stakeholders staff, 131 people trained - 27% women.	S
Output 3.2 Hazardous waste treatment operators are trained in depth on BAT/BEP for the ESM and disposal of PCB/DDT wastes	* Number of training courses. No specific target * Number of participants / courses. Target: At least 10 relevant operators trained	* One training, 125 people - 23% women, there is not detail about how many and which operators were trained.	S

[14] This output is not officially included in the project logframe

Output 3.3 Transporters of PCBs wastes are trained on BEP issues applicable to their activity.	* Number of training courses. No specific target * Number of participants / courses. Target: At least 5 relevant transporters trained	* 2 workshops training 43 persons -28% women from 9 relevant transporters of PCB	S
Output 3.4 Members of pertinent professional, agricultural, industrial or other organizations, the electrical sector, NGOs and citizen groups participate in workshops to become aware of ESM of PCB and disposal of PCB and DDT.	* Number of training courses. No specific target * Number of participants / courses. Target: At least 50 relevant members trained	* Two awareness-raising activities - training 152 people, 56% women coming from public, private and academic sector. * 8 videos developed for the communication campaign.	S
Output 4.1 Monitoring and Evaluation	* Number of inception reports. Target: One workshop with report * Number of annually project reports. Target: One report per year * One Project Medium-Term Review * Field missions and activities required for M&E system. * One Project Final Evaluation	* One inception workshops with the respective report and annexes * 4 Project Implementation Reports * 1 Final Project Report with guidelines and annexes, detailed description per output.	HS

3.1.2 Achievement of outcomes and project objective

Outcome 1 strengthened the institutional structure and capacity of the country for the management of POPs with an emphasis on PCBs. This outcome also developed mechanisms, work plans, and deadlines that stakeholders (especially PCB holders) must meet for the country to comply with the SC goals.
Additionally, MENR linked the new regulation monitoring with internal processes that existed before the project. This outcome achievement is scored as "Satisfactory".

Outcome 2 was qualified as "Highly-Satisfactory" because the project stakeholders implemented the ESM of PCBs. The actors have technical tools, an information system, an accredited laboratory, an updated inventory and the guidelines for its update. Additionally, for results' sustainability, the project designed a long-term strategy for PCBs disposal. The project exported 354.85 tons of PCB and 19.32 tons of DDT.

Outcome 3 is rated as "Satisfactory". The project implemented capacity-building activities with all stakeholders. The indicators of this outcome report the number of training sessions and participants. Still, we need to clarify which organizations the participants represented to measure the compliance level.

Outcome 4. UNIDO Project Manager led the M&E lines; the NC, PMU and the partner NGO implemented the system and produced the outputs at the country level. As a result, the M&E plan complied with UNIDO and GEF standards and supported the project execution and decision-making process. This outcome was rated as "Satisfactory".

Project's effectiveness rate – "Satisfactory"

3.2 Progress towards impact

Regarding the impact of project implementation, there are some behavioural changes, broader dimensions, and intermediate states' emergence.

3.2.1 Behavioral changes

The project's main contribution was to standardize the knowledge and practices of PCB management in the country; in the past, there was no official and formal knowledge about this type of chemical waste. As a result, each owner managed the equipment at will in several cases without technical knowledge, and most considered it optional.

Following the establishment of the regulatory framework and technical guidelines for ESM of PCBs, firms have changed management practices; they are proactive and know the scope, times, and resources for PCB management. For example, some PCB owners considered storing disused equipment indefinitely. Not knowing whether or not they contained PCBs, companies assumed that all inventory had to be disposed of; now, they know that only part of the inventory is exported or treated locally after confirmation of quantitative analysis.

On the other hand, unintentional institutional changes can be attributed to the project. For example, in MENR, several departments coordinated project activities and participated in training processes. This led to the modification of the form for obtaining environmental permits and licenses by including a question about the ownership and number of transformers. Companies are also categorized as "large" or small" owners depending on the environmental impact of economic activity, the number of transformers they own, the number of employees, etc. After providing the information requested each company must comply with the new PCBs regulation.

The companies are motivated to complete inventory updates and adhere to disposal due to the fact that the legal regulation includes fines and the denial of environmental licenses.

- **Economic perspective**

In the sector of electrical energy distributors, the project catalyzed the resource investment for the management of PCBs. For example, the Electric Company of Guatemala (EEGSA), which has the country's most significant number of transformers. Starting in 2018, they began a massive PCB identification process; the project took 500 samples, and later, the company carried out 1,000 quantitative tests. EEGSA exported 42 tons of PCBs to France on its own, and they currently have 300 pieces of equipment pending to declare itself free of PCBs. The company has 99% updated information in the SINPCB system. Other PCB owners had similar economic behaviour and generated several jobs as they managed internal projects to implement the ESM of PCBs.

- **Safeguarding environment – ESM of PCBs**

The project's objective was to develop the ESM for PCBs and eliminate 400 tons of PCBs and 15 tons of DDT; the main goal was to take care of the environment and human health. In addition, the MENR formalized the practices for implementing the ESM and PCB for several actors, for example, improving the maintenance centres' methods to avoid cross-contamination to guarantee the organization's ESM of PCB reliability.

On the other hand, in the past, some owners of electrical equipment abandoned the equipment to be considered scrap without economic value; now, the regulatory framework and technical guides avoid this type of practice, and the proper storage and final disposal process is known.

Before the intervention of this project, the country stored 15 tons of DDT, and as there were no resources, this inventory was left pending; during the project, it was possible to include this inventory in the final elimination and export process.

- **Social inclusiveness**

Community appropriation - Before the Project, several communities and their population thought the abandoned electrical equipment oil was curative for bone and joint problems. The Project trained PCB owners on health risks with particular emphasis on municipalities. As a result, municipal companies affirm that the population is aware of the risks.
Workers - Before the project, some workers did not manage PCBs with personal protective equipment. After completing training they learned how to work with PCB materials.

3.2.2 Broader adoption

- **Mainstreaming:** At MENR, there was a catalytic effect between various departments by binding the inventory updating, regulation compliance monitoring and SINPCB system with institutional processes that existed before the project, for example, the inclusion of new fields in the form that public and private companies fill out to obtain environmental permits and licenses.

- **Replication:** Project participant firms are replicating the ESM of the PCB process; as the report mentioned before, the most significant PCB owners are investing their resources in updated inventories and final equipment disposal. In some cases, other PCB owners did not participate in the project, but due to the project results, they are contacting MENR and firms such as EEGSA to request cooperation and training. Furthermore, during the project, PCB owners were aware of the importance of prevention measures; now, presenting the PCB quantitative analysis is compulsory for buying a new transformer.

- **Scale-up:** Due to the project approach being to include the biggest PCB owners and go from general needs to specific needs, the scale-up approach is not applicable in this intervention.

3.2.3 Emergence of TOC intermediate states

In spite of the project's barriers, internalities and externalities, the project's impact was significant. The project contributed to the NIP and SC goals through deadline identification and implementation framework for all stakeholders. The project defined the regulation and technical frameworks for ESM of PCBs application and involved the biggest PCB owners. Almost 365 tons of PCBs and 19 tons of DDT were exported.

Progress towards impact rate – "Satisfactory"

4. Project's quality and performance

4.1 Project Design and Logical Framework.

The project design identified and addressed the main problems and managed the country's needs related to PCBs management; the design was feasible and valid. The project's logical framework is technically accurate according to UNIDO technical standards[15]. The design is similar to regional experiences in Peru and Bolivia. The environmental and social risks included during the design were relevant and well-qualified.

The project's objective included eliminating 400 Tons of PCBs; the first inventory was calculated based on MENR preliminary information and general estimates of the PCB owners. On the other hand, a DDT inventory was collected from the health sector before the project began.

Guatemala project GEF resources for PPG assigned was USD 85.000. The Inception Workshop and report strengthened and adapted the design for implementation; the participants mentioned that in the workshops, they understood the project logic, the activities and the resources required.

[15] UNIDO Evaluation Manual - Office of Evaluation and Internal Oversight Independent Evaluation Division

An opportunity for improvement is the establishment of specific and clear goals related to the description of the output and the indicators; For example, the products of component three seek to train actors in specific topics, the indicators measure the number of training and participants, and the goals mention the target audience. The PIR reports have an information gap since the number of training and participants are reported, but the audience was not specified.

In Output 4, the indicators, baseline, target, sources of verification and assumptions columns are not included.

The latest project package[16] included "Output 2.6: Institutional strengthening of MENR" This product contains a proposal to update the legal regulation approved in 2018, a report on activities strengthened in MENR and measures for guaranteeing sustainability. It needs to be clarified if the output was at the level of the proposal or if it had been made official.

Project design – "Satisfactory"

4.2 Relevance and Coherence

The project design and implementation are coherent and relevant to the MENR agenda looking to reach the SC goals in 2025 and 2028. The project fulfilled the main stakeholders' needs for the ESM of PCBs: legal framework, technical guidelines, capacity building and awareness. Although five years have passed, the project's expected results are still valid and pertinent to the stakeholders. The project is important for the country due to establishing a roadmap for implementing the ESM of PCBs with clear national deadlines.

The project relevance for UNIDO is high due to its alignment with the regional strategy and knowledge agenda.

From the beginning, the project's relevance level was high for the large holders of PCBs[17]; they were part of the PSC, and INDE provided the space for the national storage centre. PCB holders from the public sector identified in the project an opportunity to manage PCB stocks with the support of external funds.

In the electricity sector, the project objective relevance increased due to training and awareness activities; for example, before the project, the companies believed that they should eliminate 100% of stored equipment; after the project, they now know that only equipment confirmed through quantitative analysis should be disposed of. This clarification motivated more companies to take samples and update their inventories with their resources.

[16] Version December 2022.
[17] EEGSA, ENERGUATE and INDE together they manage the 93% of total electricity distribution.

The project was relevant for small PCB owners because they could not finance PCB disposal, in some cases they would store the old equipment indefinitely, this could be riskier in some sectors for example EMPAGUE is an organization responsible for water provision. Finally for maintenance centres, the project is relevant because now they have a legal framework that regulates their activities and a specific technical guidance document for their processes.

Project relevance and coherence – "Highly-Satisfactory"

4.3 Efficiency

UNIDO managed GEF funds according to their internal procedures. Before approving requests and pay disbursements, UNIDO ensured that the project presented all relevant documents. The funds for this project were managed through FDN in coordination with UNIDO[18]; minor amounts, such as petty cash, were managed by the NC[19]. In March 2017, UNIDO made the first disbursement and activities began. At the end of the period, the PMU sent the first set of deliverables and payment receipts; after approval the next disbursement was made. The project repeated this dynamic during the implementation. Regarding contracting services and products for the project, if the supplier was local, the funds were executed by the PMU; otherwise, if the supplier was international, UNIDO paid directly.

GEF assigned two million dollars for the project. In the Request for CEO Approval document, the table: "Project framework" shows the budget per component: 8% for component one (legal framework, ESM technical guidelines and capacity building); 75% for component 2 (laboratory, inventory, ESM and 400 Ton PCB and 15 Ton DDT final disposal, list of storage places and national elimination long-term strategy); 5% for component 3 (BAT/BEP for ESM of PCB capacity building and awareness for different targets); 4% for component 4 (M&E) and 9% as Project Management Cost.

The project executed USD 1.774.673 which is 89% of the total budget.[20] The co-financing resources agreed upon was USD 13,771,100; according to the documents shared during the evaluation, the co-financing resources executed until November 2022 was USD 10,017,440, this represents 73% of the target[21].

The project's original design was for 36 months, starting in 2015 and finalizing in 2018; however, implementation began in 2016, and two extensions[22] were officially approved. In the end, the project formally finished in December 2022 after 69 months of execution.

[18] This agreement is under a contract between the NGO and UNIDO.
19 For the following descriptions, PMU is the unit composed of the NC and FDN staff.
20 UNIDO website information https://open.unido.org/projects/GT/projects/140298
21 The information comes from eight letters from local partners. Some partners are not mentioned in the CEO Approval document, and in other cases, there is no information about some important stakeholders, for example, MENR.
22 Each extension was approved by UNIDO for 12 additional months.

In 2019, UNIDO approved the first extension due to a delay in the project start-up and the change of the first disbursement date. Additionally, there were delays related to the MENR institutional processes and PCB owners' administrative constraints; the most affected activities were those associated with updating the inventory and capacity building. As a result, the new project finalization date was December 2021.

The PIR for the period July 2020 - June 2021 mentions the approval of a second extension due to several factors: (i) COVID caused project delays due to restrictions and preventive measures. (ii) PCB owners prioritized the processes related to the country's electricity supply provision, especially during COVID. (iii) Change of authorities and staff rotation. (iv) Additional time was required for customs clearance procedures for a dechlorination machine and adaptation of the equipment to Guatemalan conditions.

Finally, the PIR for July 2021-June 2022 describes the need to adjust the work plan and project closure date due to the shortage of containers and shipping companies' unavailability and additional time required for equipment adaptations. Additionally, the process for obtaining the exportation authorizations was slow and bureaucratic. As a result, the last finalization date was December 2022.

Stakeholders recognize the need for each of the approved extensions and justify them due to situations and externalities that were not under the control of the project. On the other hand, despite the extensions, the project did not require additional economic resources; however, stakeholders had to invest more time and human resources.

In general, UNIDO transferred the disbursements on time. The PMU managed the resources efficiently and rationally compared to the final results. An opportunity for improvement is to match the country's execution plan with UNIDO's disbursement plan since, on some occasions, these did not fit, and the NC had to prioritize activities due to the difference between the available funds and the costs of the planned activities; this coordination should be flexible and dynamic enough to accommodate possible delays.

One key factor for accountability and transparency ensurance was to hire an external NGO for budget execution because, as part of the contract, financial and accounting reports were included, and invoice presentation was required.

Project efficiency – "Satisfactory"

4.4 Sustainability

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. There are four dimensions or aspects of risks to sustainability[23].

[23] The overall sustainability is assessed using a four-point scale: Likely (L). There is little or no risks to sustainability; Moderately Likely (ML). There are moderate risks to sustainability; Moderately Unlikely (MU). There are significant risks to sustainability; Unlikely (U). There are severe risks to sustainability; Unable to Assess (UA). Unable to assess the expected incidence and magnitude of risks to sustainability.

4.4.1 Financial risks

The project invested in products and services for the ESM of PCBs in the country; some resources were part of the contribution to PCB owners, for example, the implementation of the PCB elimination demonstration plan for 13 companies. In addition, other project benefits have been delivered to the different actors to continue their usage after the project end, for example, the SINPCB system.

The MENR received equipment and supplies acquired by the project that will contribute to updating the inventory, especially for those small PCB owners. In addition, the project delivered computers and more than 40 hours of consulting with the company that developed SINPCB for technical consultations. The MERN has the political will to invest; however, the budget available to continue is unknown. The DCP Coordination emphasized that the highest investment falls on PCB owners because they have to comply with the law compulsorily. Some co-financing partners updated their contributions at the end of the project, while others did not provide this information.

Large PCB owners, especially private companies, have the resources to update inventories and final disposal. However, small PCB owners do not have the resources to meet the required goals, especially those not in the electricity sector.

Financial Sustainability Risks - Moderately Likely (ML)

4.4.2 Socio-political risks

For this project, the MERN has been the counterpart for the implementation through the Department of Chemical Waste (DCP); the importance of the project impact transcended time and the change of government, which reflects the political will of the ESM of PCBs. The DCP Coordination participated actively during the project and is empowered to maintain the project results.

The product "Long-term PCB and DDT elimination and disposal strategy" includes five action lines, processes and budgets for continuing the project impact. Implementing the strategy and hiring a person dedicated exclusively to these tasks will ensure the sustainability of results. Some products, such as the SINPCB system, already have a person responsible for their continuity.
Some companies implemented the ESM of PCBs before the project; for example, ENERGUATE invested in quantitative analysis; when the project started, they had 22 transformers confirmed. Other PCB owners had ESM of PCB technical knowledge; they contributed to some products; for example, EEGSA shared comments in technical guides.

The small PCB owners, especially those not in the electricity sector, have the risk of not meeting the required goals since only some stakeholders participated in the project or took ownership of it.

Socio-political sustainability risks - Likely (L).

4.4.3 Institutional framework and governance risks

Guatemala signed the SC in 2010. In 2018, Government Agreement No. 194-2018, "MEDA for the Regulation of PCBs", was approved. In the agreement, all equipment owners susceptible to PCB contamination must report their inventory and apply ESM of PCB. The regulation also included companies that transport, store and maintain equipment. However, after almost four years of regulation approval, it was insufficient to implement and control the ESM of PCBs, because compliance monitoring needed to be clearly defined in a work plan with resources established.

The national PCB inventory is an important aspect of accountability and transparency because it is directly linked to SC compliance. SINPCB system usage ensures information transparency. Output 2.5 includes a "PCB inventory analysis" this document details the methods applied and participants. The project inventory is accurate and well-developed. However, after the project finalizes, the inventory updating could be at risk because it is still being determined who will manage the required processes and available budget.

Institutional framework and governance risks - Moderately Probable (ML).

4.4.4 Environmental risks

The project increased the national capacity building and knowledge about the ESM of PCBs and the environmental and human health risks. In addition, the project increased PCB awareness and demystified fieldwork activities.

On the other hand, although staff turnover was a negative factor for efficacy, in sustainability terms independent of where trained people work, there are professionals in Guatemala with solid knowledge about PCBs at the national level.

MENR exported 19.32 Tons of DDT, and 13 companies eliminated 364.85 Tons of PCBs under the project. The firms are focused on prevention measures, such as requiring quantitative results for new transformers and maintenance centres; other PCB owners are focused in inventory updating and disposal.

After project implementation, in the country, a national laboratory was certified and accredited for PCB quantitative analysis. 13 PCB holders participated in the demonstrative strategy of PCB elimination. The PCB sector knows about providers of products and services for ESM of PCBs.

All factors mentioned above positively affect the project outcomes' sustainability. Therefore, the environmental risks rate is Likely (L).

Project sustainability– “Moderate Likely”

4.5 Gender mainstreaming

The project has been designed following UNIDO's gender mainstreaming policy; these include women's participation in workshops, gender-specific presentations, gender-specific information material and gender-specific awareness-raising campaigns.

In the logical framework, Output 1.4 includes awareness sessions for civil society -with a gender approach- related to the new regulatory framework. Outputs 1.3, 2.2, 3.1, 3.2, 3.3 and 3.4 include the number of participants disaggregated by gender. Output 2.5 indicator includes new jobs generated by implementing the long-term PCB and DDT elimination strategy disaggregated by gender.

In summary, indicator 1.4, related to awareness-raising activities with a gender focus, was met; the other indicators present women's participation level; however, there is no defined target. Women's participation level in training ranges from 12% to 70%; the average is 40%. No information was found on new jobs created. During the interviews, REPELSA[24]mentioned having created four jobs (two women).

Several women held critical positions during the project implementation, for example: In the MENR, the project focal point, INDE management, certified laboratory personnel, PMU personnel, and international consultants. Moreover, 20% of the PSC participants were women. On the other hand, 80% of PCB owner enterprises managers interviewed were men.

In the electrical sector, men represent the majority of the workforce, especially in tasks that require physical work; in universities, the proportion of women studying engineering and related careers is significantly lower than men. The stakeholders recognised the importance of including more women in the electricity sector in the country. Until now, the participation of women has been improving; this is evidenced in the number of managerial positions and the distribution of responsibilities.

Project gender approach– "Satisfactory"

5. Performance of partners

5.1 Donor

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

[24] REPELSA is a private firm specialising in POPs transportation that participated in the project as a local partner of SETCAR, the firm in charge of the PCB final disposal.

5.2 UNIDO

The UNIDO Project Manager (PM) participated during the project design, implementation and closure. He conducted field visits to Guatemala and monitored the achievement of results and budget execution with the reports and information sent by the PMU. The PM disbursed the resources on time after reporting and document approvals according to UNIDO standardized procedures.

PMU had the PM support with the project's main acquisitions and services hired; for example, the contract with SETCAR -the firm responsible for the PCB final disposal- was arranged in Vienna.

The PM participated in the annual PSC meetings; during this activity, the main stakeholders learned the achieved results, project challenges, agreements required and next steps. Thanks to the PM's experience and technical knowledge, he facilitated and oriented the MENR for making decisions and improving the implementation strategy. For example, after technical analysis and PSC meetings, UNIDO approved two extensions at no additional costs to allow for the completion of activities.

The PM organized a workshop in Peru for the country's experience in POPs issues and projects financed by UNIDO. The main actors of the projects in Guatemala and Bolivia attended the seminar because the logic of their projects was very similar; in this workspace, the countries exchanged knowledge and identified similar challenges. During the execution, the NCs of both countries exchanged experiences and knowledge thanks to the dynamics created from the beginning of the implementation.

UNIDO's performance is rated Highly Satisfactory.

5.3 MENR

The MENR headed the PSC and TAC. In addition, it coordinated the decisions at a political and strategic level, for example, the approval of the regulation draft. Internally, the DCP Management led the project and participated actively, promoting the inclusion of other departments such as Environmental Audit (EAD); The goal was to share responsibility of ESM of PCBs implementation and triangulate control processes.

The ministry identified the technical project criteria with the advice of experts. For example, the type of PCB owners that would participate in the different phases of the project and their benefits, characteristics to identify a team as a suspect, and reference concentration levels to confirm PCBs and identify the type of treatment required.

The DCP, in coordination with other departments, facilitated the process to get licenses required for the import of the de-chlorinator from Romania, the local dechlorination process, and the export of PCBs. An opportunity for improvement is to expedite obtaining permits and authorizations since, in some cases, they are slow and bureaucratic.

The MENR participated in several capacity-building activities. When human and financial resources were available, the ministry participated in field activities and paid some expenditures. However, there is no information on the budget executed by the ministry as a co-financing partner. MENR performance is rated Satisfactory.

5.4 PCB Owners

The large PCB owners (companies that supply electricity to 93% of users in the country or large firms) participated actively from the beginning of the project. The main contributions were the temporary donation of a physical space to store PCBs, local dechlorination treatment and packaging for export by INDE. PCB owners such as EEGSA participated in the review process of technical guides because they have implemented the ESM of PCBs since before the start of the project.

The small PCB owners -unconventional holders with less than 20 pieces of equipment- were interested in the project since they saw the opportunity to eliminate their PCBs; these companies did not have the resources to dispose PCBs on their own. All the PCB owners participated in the capacity-building activities.

The project financially supported 23 companies -including large and small- for chromatography tests, and 13 were included in the final disposal phase.

After participating in the project, the interest of PCB owners continues because they have been made aware of the risks of these chemicals and are legally responsible for eliminating their inventories. PCB owners' performance is rated as Highly Satisfactory.

Project performance partners– "Highly-Satisfactory"

6. Factors facilitating or limiting the achievement of results

6.1 Project management and Results-based work planning

The findings indicate that the NC adopted an RBM approach to implementing the project. The output indicators were used to track progress, and the updates were included in each project implementation report. In addition, there is documented evidence that using a participatory approach, the PSC made decisions and recommendations based on information provided by the executing partners and TAC; in critical points, the decision was supported by international experts' advice and UNIDO.

Furthermore, the annual plan was updated based on the agreed changes and extensions with the project stakeholders. Finally, each PIR detailed additional information related to budget execution per product and complete annexes with support documentation. The collaborative work between the NC and the NGO partner -Defensores de la Naturaleza- was the key point for the efficiency and efficacy of the project management.

Factors that affected positively the project management were:

- The MENR focal person was the same from beginning to end; she led and supported the processes required.
- Stakeholders were open to participating in the project; having a technical standard for PCB was a priority for the sector.
- Some PCB owners had experience in the ESM of PCB before the project; in some cases, they exported independently and supported the project by giving feedback on technical documents.
- INDE provided a place for national storage, local treatment and exportation
- The PMU and NGO had staff with technical knowledge, work experience in MENR and soft skills, especially teamwork.
- The project resources were managed efficiently. The NC and FDN staff chose the best options and used a convenient cost/benefit approach.
- International experts supported the implementation in critical times, such as bottlenecks, delays, acceleration process, etc.
- UNIDO PM has a lot of experience in the region. He identified which projects can contribute from each other: in this case, the Peru project was a reference for two similar projects. At the same time, Bolivia and Guatemala exchanged experience and knowledge for having similar logic, objective and approach.

Factors that affected the project management negatively were:

- A company in Guatemala sued the MENR because they applied to execute PCB final disposal. The company did not comply with the required technical and experience. This demand was an externality that consumed time and resources and tried to affect the project's image.
- In the beginning, the image of the project in some PCB owners had a punitive approach, which generated little participation; they were afraid of developing activities that would expose them to non-compliance and penalization through fines. Some owners were not sure if they would receive any benefits if they participated in the project.
- SETCAR had significant challenges in local dechlorination because its equipment was not suitable for LAC technical specifications (voltage difference, frequency, etc.); the additional time for conditioning the equipment, processes and personnel to the reality of the country delayed the execution.
- In some coordination activities, there were bottlenecks with SETCAR because only one person in the company spoke English; the language was a challenge that affected communication and time. REPELSA, its local partner, was the actor that facilitated this inconvenience, although SETCAR's work policy was hermetic.
- The time to obtain export permissions takes at least one year due to bureaucratic processes in the ministry.
- When a piece of equipment is owned by the state and is inventoried, the process to deregister and deliver the equipment is bureaucratic and lengthy; this generates delivery delays. For this reason, some PCB owners could not give the equipment identified for disposal and receive project benefits.

Project project management– "High-Satisfactory"

6.2 Monitoring, Evaluation and Reporting

The monitoring and evaluation framework was designed and implemented according to GEF procedures; for component four, the budget was GEF: US$ 80,000; co-finance: US$ 250,000. PIR 2021-2022 (June 2022) report shows that the M&E component executed USD 27,161[25] according to the available information of NC and FDN. There is no information about the co-financing budget implemented.

The M&E structure is described in the CEO Approval Document; the original design was strengthened after the Inception Workshop; the report depicts the M&E plan and the main products.

The M&E stakeholders were UNIDO, NC and FDN. UNIDO approved each product before disbursement and provided support and feedback related to the main products, for example, the PIRs. NC and FDN implemented the plan, designed verification tools, monitored and controlled the project and presented the M&E outputs; there were: PIRs (four), Verification tools per output (minutes, files, videos, templates, etc.), Financial information, operative reports and the final project package approved on December 2022. The M&E products were designed according to the UNIDO template; the annexes and information were organized and clear.

Having information about M&E resources management executed per stakeholder would be good. The GEF CEO Approval document mentions: “A detailed schedule of project review meetings will be developed by the project management team in close consultations with the project implementation partners and stakeholders’ representatives and included in the Project Inception Report. One of them would be a Mid-Term Review and Final Evaluation”; however, in the end, the project included just a Final External Evaluation.

Project M&E and reporting– “Highly-Satisfactory”

6.3 Stakeholder engagement and communication

The stakeholders' commitment to the project's implementation was high; for example, INDE -PCB owner- provided a space for the storage and treatment of equipment confirmed. The section "performance of the participants" provides more details.
NC and FDN Officer were an efficient team; they were the backbone of the project's communication and coordination system and had excellent relationships with all stakeholders. In addition, PCB owners highlighted the flexibility, adaptation and support of the PMU during project implementation.
PCB owners knew the project goal and benefits since the beginning; they understood that not all PCB owners would receive the same benefits, and the criteria and selection process was transparent.
The external communication of the project was enriched by the strategy developed during the project; now, they have materials such as accounts on social networks, guides and videos. The communication materials

[25] This amount is higher, but the information was unavailable; the resources executed in this data come from the FDN resources.

strengthen awareness of PCBs related to environmental and health risks, the promotion of the environmentally sound management of PCB guides, and the use of the SINPCB system.

Project engagement and communication "High-Satisfactory"

6.4 Overarching assessment and ratings table

	Evaluation criteria	Rating [26]	Comments
A	Impact (progress toward impact)	S	The project shows visible signs of impact; stakeholders know how to implement ESM of PCBs; the companies identified the scope, times, and resources for compliance with SC goals. The biggest owners are updating their inventories and eliminating them on their own. Stakeholders understand PCBs' environmental and health risks and use the frames and tools designed during the project. The intervention catalysed in the MENR the information triangulation and cooperation between two departments; the environmental licenses now include questions about PCB ownership.
B	Project design	S	
1	Overall design	HS	The participatory approach was adopted to develop the project. The project design identified and addressed the main problems and needs related to PCB management; the design was feasible and valid. The design is similar to regional experiences in Peru and Bolivia. The Inception Workshop strengthened and adapted the design for implementation; participants understood the project logic.
2	Logframe	S	Logframe is technically according to UNIDO standards. The baseline, resources of verification and assumptions were accurate. Indicators are smart; however, some still need a clear target; for example, some indicators specify the number of capacity-building activities, but the expected number of participants still needs to be determined. In Component 4, the indicators, baseline, target, sources of verification and assumptions columns are not included. The last project report included a new Output, "2.6: Institutional strengthening of MENR" It needs to be clarified if the output was at the level of the proposal or if it had been made official and included in the log frame.
C	Project performance		
1	Relevance and Coherence	HS	The project is coherent and relevant to the MENR agenda to reach the SC goals in 2025 and 2028. The project was vital for the country due to establishing an initial roadmap for implementing the ESM of PCBs with clear national deadlines. The intervention objective relevance increased due to training and awareness activities. The project relevance for UNIDO is high because it is

[26] 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 (MS): 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. 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.

			aligned with the regional PCB disposal strategy. The project expected results are still valid and pertinent to the stakeholders.
2	Effectiveness	S	The Project outcomes were achieved. From nine outputs, six have been rated HS, eight outputs have been rated S. In component one, "ESM for PCBs Regulation" was approved, and the SINPCB system was designed to contribute to legal regulation compliance monitoring. The "ESM of PCB technical guidelines" was approved and published by the ministry. Training and awareness sessions were implemented. The project delivered to the MENR materials for future training and a communication strategy. In component 2, one national laboratory was certified and accredited for PCB quantitative analysis. The project, in coordination with PCB owners and MENR, established all processes of the ESM system. Almost 365 PCB tons and 19 DDT tons were disposed of under the project. The PMU designed a long-term PCB and DDT elimination and disposal strategy; it includes five lines of action, inventory assessment and financial requirements. Finally, the PMU had an additional output, "Proposal for MENR strengthening", to ensure the sustainability of project results. Component 3 included capacity-building activities with all stakeholders with the materials produced by Components 1 and 2; the indicators showed the number of events and participants per gender but still needed to detail which organizations the participants represented; in some cases, the indicators did not include a target. Component 4. UNIDO Project Manager led the M&E lines; the NC, PMU and the partner NGO implemented the system and produced the outputs at the country level. As a result, the M&E plan complied with UNIDO and GEF standards and supported the project execution and decision-making process.
3	Efficiency	S	The project executed USD 1.,774,673, 89% of the total budget[27]. The co-financing resources executed until November 2022 was USD 10,017,440, representing 73%[28]. The project's original design was for 36 months; in the end, two extensions were approved, and the project formally finished in December 2022 after 69 months. The PMU managed the resources efficiently and rationally compared to the final results. Despite the extensions, the project did not require additional economic resources.
4	Sustainability	ML	Financial risks are Moderate Likely. MENR need to define the available budget for maintaining the project results. PCB small owners do not have the resources to implement ESM of PCBs after the project. Socio-political risks are Likely. The MENR counterpart participated actively and was empowered to maintain the project results. They have a long-term PCB elimination strategy. Institutional Framework risks are Moderate Likely. Although the Regulation of PCBs was approved in 2018, after four years of implementation, it was insufficient to control the ESM of PCBs compliance because the monitoring needed a work plan and budget. On the other hand, the project inventory is accurate and well-developed. However, after the project is finalised, the

[27] UNIDO website,

[28] This information needs to be completed; for example, there is not information about MENR contribution.

			inventory updating responsibility could be at risk because the MENR route map needs clarification. Environmental risks- Likely (L): The project increased the national capacity building and knowledge about the ESM of PCBs; MENR has the material for continuing this process; the continuity expenditure is manageable for the ministry. After the project, PCB owners are focused on inventory updating and disposal.
D	Cross-cutting performance criteria		
1	Gender mainstreaming	S	The project has been designed following UNIDO's gender mainstreaming. The project complies with the gender indicators target related to awareness-raising activities with a gender focus and women's participation. Women's participation is, on average, 40%; some indicators did not have clear targets. Several women held critical positions during the project implementation. The stakeholders recognised the importance of including more women in the electricity sector. Until now, the participation of women has been improving; this is evidenced in the number of managerial positions and the distribution of responsibilities.
2	M&E and Reporting	HS	The monitoring and evaluation framework was designed and implemented according to GEF procedures and UNIDO requirements. UNIDO approved each product before disbursement. NC and FDN implemented the plan and presented the M&E outputs: PIRs (four), Verification tools per output (minutes, files, videos, templates, etc.) and financial information[29]. Due to the lack of time and extensions, the project did not implement a medium-term review.
3	Results-based Management (RBM)	HS	The PMU adopted the RBM approach to implementing the project in a participatory way with the PSC. The output indicators were used to track progress. In addition, PMU updated the annual plan based on the agreed changes and extensions. The collaborative work between the NC and the NGO partner -Defensores de la Naturaleza- and their work experience were the critical points for the efficiency and efficacy of the project management.
E	Performance of partners		
1	Donor	HS	GEF was the main donor for the project. The funds were available, and fund transfers were timely and adequate.
2	UNIDO	HS	The role of UNIDO was crucial for the project to achieve success. The UNIDO Project Manager (PM) participated in the project design, implementation and closure. The PM disbursed the resources on time after reporting and document approvals according to UNIDO standardized procedures. The PM participated in the annual PSC meetings. Thanks to the PM's experience and technical knowledge, he facilitated and oriented the MENR for making decisions and improving the implementation strategy.
3	National counterparts - MENR	S	The MENR headed the PSC and TAC. In addition, it coordinated the decisions at a political and strategic level. Internally, the DCP Management led the project and participated actively, promoting the inclusion of other departments such as Environmental Audit (EAD).

[29] In the evaluation available documentation, the information is about resources executed by FDN and PMU

			The DCP facilitated the processes to stakeholders to get licenses for the import of the de-chlorinator from Romania, the local dechlorination process, and the export of PCBs. An opportunity for improvement is to reduce the time to get permissions required for ESM of PCB in some cases; they are slow and bureaucratic. The MENR participated in several capacity-building activities. There is no information on the budget executed by the ministry as a co-financing partner.
4	PCB Owners	HS	The large PCB owners participated actively from the beginning of the project. The main contributions were the temporary donation of a storage and participation in the review process of technical guides. The small PCB owners were interested in the project since they saw the opportunity to eliminate their PCB. All the PCB owners participated in the capacity-building activities. Twenty-three companies -large and small- participated in chromatography tests, and 13 in the final disposal phase. After the project, the interest of PCB owners continues because they have been made aware of the risks of these chemicals and are legally responsible for eliminating their inventories.
F	**Overall assessment**	**S**	

7. Conclusions, recommendations, lessons learned

7.1 Conclusions

The project's main contribution was to standardize PCB management knowledge and practices in the country and provide a legal and technical framework for its implementation. This project was designed according to the country's reality, covering all PCB issues and challenges; its level of relevance is still valid. The intervention was implemented effectively by stakeholders in their different roles.

The project shows visible signs of impact as stakeholders know how to implement the ESM of PCBs; the companies identified the scope, times and resources to fulfil the national regulation and contribute to SC goals. In addition, an unintentional positive effect of the project was that in the MENR, the intervention catalyzed the triangulation of information and cooperation between the two departments.

Due to some externalities, the project requested two extensions; other issues delayed the finalization date. The delays were related to the project start-up date change, COVID restrictions, additional time for importing and adapting the equipment for PCB dechlorination, exportation sector barriers and bureaucracy for obtaining the exportation authorizations. Although the delays, thanks to adjustments and stakeholders' support, the project completed all its activities efficiently without requiring an additional UNIDO budget. Stakeholders had to invest human resources time; the stakeholders' satisfaction level is high; generally, the project fulfilled stakeholders' expectations. 364.85 Tons of PCB and 19.32 Tons of DDT were disposed of.

The project executed USD 1.774.673, 89% of the total budget (Dec-2022). The partners invested USD 10,017,440 in samples analysis, updating inventory, building or repairing PCB storages, purchasing new equipment, personnel, etc.

The evaluation identified two sustainability risks (Moderately likely) related to the available resources - MENR and small PCB owners- and institutional preparedness status for future actions. The ministry and PCB owners have all the necessary tools for the continuity of project results, especially the long-term strategy; and the work plan for strengthening the Ministry.

The project complies with the gender indicators target related to awareness-raising activities with a gender focus and women's participation; the materials include women's information, for example, PCB risks during pregnancy and breastfeeding.

The support from GEF, UNIDO, NGO (Defensore de la Naturaleza) and NC and the participation of MERN and key stakeholders were commensurate with their available resources. The project's overall assessment is rated as "Satisfactory".

7.2 Recommendations

To UNIDO

8. Develop a participatory methodology for the products related to long-term strategies and ministry strengthening (outputs 2.5 and 2.6) to ensure empowerment and reduce sustainability risks. To design these products during a workshop three to six months before closing is recommended.
9. To include a participatory self-evaluation process when the project cannot execute the Mid-term review. During the self-evaluations, the efficiency and effectiveness of the inputs and outcomes are analyzed, and a roadmap and action plan are developed to achieve the expected results; this exercise reinforces stakeholder cooperation and catalyzes commitment and participation.
10. Annex the country's technical specifications (voltage difference, frequency, etc.) in the TDR for the final elimination contract because sometimes the firms do not consider this constraint when they design their work plan; in the end, this could evolve into a project delay. For example, in Guatemala and Bolivia, the contracted companies extended the implementation from six to nine months because their equipment could not work in the country; they needed to adapt the de-chlorinator and acquire/import materials.
11. Add in the Project Implementation Reports co-financing funds execution information to ensure the availability of this information for the final evaluation and to know how effective the participating partners are in investing resources.

To National Government - MENR

12. Implement the long-term strategies (output 2.5 and 2.6) and strengthen the DCP to give continuity to the project results.

13. Continue identifying and implementing internal collaborative processes between departments to triangulate information, strengthen the regulation monitoring compliance, and decentralize responsibility for the national implementation of ESM for PCBs.
14. Identify improvement opportunities for reducing the time of processes required for giving the licenses for PCB transportation, storage, local treatment and POPs exportations through internal operative analysis following the new law for government services digitalisation and automatisation.

7.3 Lessons learned and Good Practices

6. Hire a national organisation (as an NGO) plus an NC for the implementation strengthened the government interaction and added more legitimacy because the NGO was perceived as a private firm and not as a person who should be responsible for all execution; at the same time, the NGO was tracking more carefully the day-to-day implementation and monitoring process. UNIDO transferred issues, monitoring and reports from the operational level to the NGO through a contract establishing periodic reports and justification of expenses.
7. In Guatemala, PCB owners learned the project's benefits and scope for public and private PCB owners; this provoked proactive participation and allowed all stakeholders to know what to expect; For example, some private companies knew they would receive capacity building and qualitative analysis, they had enough time for fundraising to PCB disposal. In Bolivia, PCB owners' expectations were sometimes unmet because the benefits information needed to be disseminated clearly and on time.
8. TOR for the final disposal services should be included as a requirement that at least one person from the field team and one from the management team speak Spanish (or at least English). Knowledge of the local language ensures effective communication, generates a good work synergy and allows knowledge transfer. For example, in Guatemala, at the SETCAR company, the technicians in charge of local dechlorination only spoke Romanian. In the team that worked at the managerial level, only one person spoke English. On the other hand, in Bolivia, the stakeholders worked effectively and comfortably with TREDI-Argentina.
9. To share with stakeholders clearly since the beginning the project's objective and benefits contribute to their participation and satisfaction level
10. Including a product with a long-term PCB inventory and disposal strategy where a financial analysis is included based on the project results strengthens the sustainability benefits because it provides the public and private stakeholders with a route map.

ANNEX 1: LISTS OF DOCUMENTATION REVIEWED

- **List of documentation to be consulted**
- GEF – Request for CEO Approval Report
- Inception Workshop report
- Project Implementation Review reports (PIRs) and accompanying annexes
- Monitoring and Evaluation Reports
- Co-financin letters – original and updated
- Final Project Executive Report.
- Final versions Outputs 1.1, 2.2, 2.3, 2.5, 2.6
- National coordination and technical meeting reports
- Minutes of project steering committee meetings
- Training and awareness raising workshop reports including list of participants (gender wise)
- Copies of tools and communications materials/ documentations developed for workshops
- Government regulation approved
- UNIDO website

ANNEX 2. INTERVIEWS PARTICIPANTS AND SURVEY REPONDANTS

- UNIDO project manager
- MENR – COORDINATOR DCP
- National Coordinator
- NGO – Defensores de la Naturaleza Project Officer
- PCB Owners – (7 representants).
- SETCAR
- REPELSA
- International and National Consultants

ANNEX 3. EFFICIENCY ANALYSIS PER OUTPUT

Interventions	2018-2019 *2017 planned	2019-2020	2020-2021	2021-2022
Output 1.1 Legal instruments and technical tools are designed and available to regulate and control ESM of PCBs, including transboundary movement.	A Standing legislation published in the official journal New regulation socializarion training to main stakeholders	Inventory Mangement Information System is designed and delivered to the Ministry (SINPCB).	The PCB Information System (SIPCB) was updated, allowing functions to generate greater productivity in PCB control and monitoring for both owners and MERN. Mid-Year Implementation Update (Dec 2020) A Standing legislation published in the official journal, submitted in "PIR 2019 - 01 July 2018 – 30 June 2019"	Target reached. Under the law the PCB owners must to entry their PCB data in the system, the companies are using the system effectively
Output 1.2 Guidelines for ESM of PCBs are developed for governmental bodies and other national organizations.	Nine guidelines for the ESM of PCB for every process step published and socialized with the mian stakeholders for their feedback Adapting tThe guidelines are bieng adapted to ease the aplication of legal framework. TAC and international stakeholders collaborated for guidelines improvement and updating	3 workshop to train about the guidelines 86 persons (35 female / 51 male) Nine guidelines for the ESM of PCB for every process step published, submitted in "PIR 2019 - 01 July 2018 – 30 June 2019"	The output have been completed and informed in previous reports	The output have been completed and informed in previous reports
Output 1.3 Relevant stakeholders are trained and able to use/apply the norms, policies and regulatory framework for ESM of PCBs within the framework of POPs.	5 workshops training 150 stakeholders (35 female / 117 male)	8 workshops training 179 stakeholders (37 female / 142 male) 5 workshops training 150 stakeholders (35 female / 117 male) , submitted in "PIR 2019 - 01 July 2018 – 30 June 2019"	4 workshops training 335 persons (139 women / 196 men). Mid-Year Implementation Update (Dec 2020) 8 workshops training 179 stakeholders (37 female / 142 male), submitted in "PIR 2020 - 01 July 2019 – 30 June 2020" 5 workshops training 150 stakeholders (35 female / 117 male), submitted in "PIR 2019 - 01 July 2018 – 30 June 2019"	The number of trainings have been completed and informed in previous reports.

Interventions	2018-2019 *2017 planned	2019-2020	2020-2021	2021-2022
Output 1.4 Civil society (especially gender groups) are aware of the proposed legal / regulatory framework and able to participate on its discussion, with due consideration of gender and other key issues.	1 workshop for gender-sensitive awareness raising activity. (17 women / 7 men)	4 workshops for gender-sensitive awareness raising activity for 90 persons (39 women / 51 men) 1 gender sensitive awareness raising activity (17 women / 7 men)	1 workshop training 8 persons (5 women/ 3 men) Mid-Year Implementation Update (Dec 2020) 4 workshops for gender-sensitive awareness raising activity for 90 persons (39 women / 51 men) 1 gender sensitive awareness raising activity (17 women / 7 men), submitted in "PIR 2020 - 01 July 2019 – 30 June 2020"	3 more graduates are added training 252 environmental educators (74 men and 178 women
Output 2.1 National reference laboratory for PCBs and DDT established and inventory data validated and geo-referenced.	Validated legislation published in the official journal.	One laboratory accredited	Through the project, 4,996 dielectric oil samples were analysed by screening methods and confirmatory analysis was carried out of 1,412 of these samples. Chromatography confirmed 173 pieces of equipment weighing approximately 245 tonnes, of which 222 tonnes belong to public sector institutions. All the equipment analyzed is georeferenced, Mid-Year Implementation Update (Dec 2020) One laboratory accredited, submitted in "PIR 2020 - 01 July 2019 – 30 June 2020"	Training in chromatography maintenance to 5 technicians of the accredited Laboratory was held in Jan 2022. Completing the trainings planned for this output.
Output 2.2 ESM system for PCBs established at each process step (identifying, handling, collecting, transport, safe interim storage and phase-out). (BAT/BEP guidance available for managing PCB wastes by hazardous waste operators included).	No information	10 workshops training 426 stakeholders (50 female / 376 male)	The ESM has been established at national level through the development of BAT/BEP guides, which are available for public consultation, and have been disseminated through appropriate training. Mid-Year Implementation Update (Dic 2020) 10 workshops training 426 stakeholders (50 female / 376 male), submitted in "PIR 2020 - 01 July 2019 – 30 June 2020"	Being a demonstrative project, it showed how to implement a local ESM system of PCB. All workshops have been completed reaching the goal of the output, being informed in previous reports.

Interventions	2018-2019 *2017 planned	2019-2020	2020-2021	2021-2022
Output 2.3 Up to 400 tons of PCB wastes and PCB-containing equipment and 15 tons of DDT are decontaminated or disposed of based on a cost-benefit analysis of the disposal strategies. (An appropriate strategy for the identification, collection and disposal of DDT and PCB-containing oil and PCB containing equipment will be developed during project implementation. The selection process will be done in line with UNIDO's procurement procedures and an open international competition).	1833 tons of PCB identified by rapid Oil kits.	204 equipment confirmed by chromatography 1833 tons of PCB identified by rapid Oil kits, submitted in "PIR 2019 - 01 July 2018 – 30 June 2019	The quantity of PCBs to eliminate was increased, adding 149.9 tonnes of equipment contaminated with PCBs, totalling 262 pieces (electrical equipment and drums with oil). submitted in "PIR - 01 July 2020 – 30 June 2021" 204 pieces of equipment confirmed as contaminated, of which 68 items are from public institutions and representing approximately 222 tonnes to be dealt with through the Project. In October 2020, the tendering process for the disposal of 222 tonnes of PCBs and 15 tonnes of DDT was realized through UNIDO. Through this process the company SETCAR, S.A. was selected to carry out the treatment of this equipment. Mid-Year Implementation Update (Dec 2020) 204 samples confirmed by chromatography, submitted in "PIR 2020 - 01 July 2019 – 30 June 2020" 183.3 tonnes of PCBs identified by rapid Oil kits, submitted in "PIR 2019 - 01 July 2018 – 30 June 2019	The activities that are currently developing are: The local decontamination of 109 m3 of oil; exporting only carcasses and oil with a concentration over 2000 ppm, and pesticides (DDT). The preliminary amounts to be accounted are: Equip. w/PCB ready to export 225 ton Treated oil equivalent 109 ton Equipment decontaminated 22.43 ton TOTAL treated 364.85 TON DDT 17.10 tons Waste of the process 2.21 tons TOTAL 19.32 TONS
Output 2.4 A list of potentially contaminated sites, with PCBs or DDT, is prepared. A task team will be established for the development of guidelines for the evaluation of contaminated sites.	Nine guidelines for the ESM of PCB for every process step published	16 places investigated, 3 places confirmed with L2000Dx	16 sites investigated, 3 sites confirmed with L2000Dx, submitted in "PIR 2020 - 01 July 2019 – 30 June 2020"	This output have been completed, creating a technical guideline for the identification of contaminated sites, informing of the results in previous reports.
Output 2.5 Long-term PCB and DDT elimination and disposal strategy, including financially feasible business plans, developed and approved (based on project results).	Nine guidelines for the ESM of PCB for every process step published	Not applicable	Not applicable	Product presented in the last project months. It is part of the final documents version. The national strategy includes inventory analysis, national PCB strategy and financial analysis

Interventions	2018-2019 *2017 planned	2019-2020	2020-2021	2021-2022
Output 3.1 Staff of MENR and relevant state organizations is trained on all aspects of BAT/BEP for ESM of PCBs and wastes, data tracking and reporting, including the use of on-line databases. Staff of MENR and relevant state organizations will be trained to upgrade their knowledge in all the required fields for implementing, operating and controlling the ESM.	85 trained persons of the MENR and relevant state organizations trained on all aspects of BAT/BEP (23 women and 62 men)	5 workshops training 87 persons of the MENR and relevant state organizations trained on all aspects of BAT/BEP (29 women and 58 men)	1 workshop training 20 persons (4 women/ 16 men) Mid-Year Implementation Update (Dec 2020) 5 workshops training 87 persons of the MENR and relevant state organizations trained on all aspects of BAT/BEP (29 women and 58 men), submitted in "PIR 2020 - 01 July 2019 – 30 June 2020"	Trainings and number of participants set as goals have been reached, nevertheless, in this report we report a new workshop held in December 2021, training 21 persons. (2 women/ 19 men)
Output 3.2 Hazardous waste treatment operators are trained in depth on BAT/BEP for the ESM and disposal of PCB/DDT wastes	Not applicable	1 workshops training 125 persons (29 female / 96 male)	1 workshop training 125 persons (29 female / 96 male), submitted in "PIR 2020 - 01 July 2019 – 30 June 2020"	Trainings and number of participants set as goals have been reached, being informed in previous reports.
Output 3.3 Transporters of PCBs wastes are trained on BEP issues applicable to their activity.	Not applicable	2 workshops training 43 persons (12 female / 31 male) 9 relevant transporters trained.	2 workshops training 43 persons (12 female / 31 male) 9 relevant transporters trained, submitted in "PIR 2020 - 01 July 2019 – 30 June 2020"	Trainings and number of participants set as goals have been reached, being informed in previous reports.
Output 3.4 Members of pertinent professional, agricultural, industrial or other organizations, the electrical sector, NGOs and citizen groups participate in workshops to become aware of ESM of PCB and disposal of PCB and DDT, and of alternatives for crop and disease protection.	Not applicable	Not applicable	Awareness-raising activities were carried out reaching environmental educators and volunteers, training 58 persons (22 women/ 36 men), Mid-Year Implementation Update (Dec 2020)	Trainings and number of participants set as goals have been reached, nevertheless another workshop was held in August 2021 training 94 persons (64 women/ 30 men)
Output 4.1	The activities associated with this outcome include organizing an inception workshop to validate or sharpen the project log frame and related baselines and indicators for the regular monitoring and evaluation procedures. These procedures will involve completion of an evaluation based on project design, project outcomes and impact indicators, development of an annual project financial audit, and preparation of APR/PIR reports. The completion of periodic reviews and a final evaluation are key activities that will be completed under this component. UNIDO as the implementing agency will undertake field missions to provide technical input and to monitor the implementation process. Technical reviews will be done by a National Technical Advisor and the UNIDO Project Manager for the monitoring and evaluation of activities. At the end of the project, a terminal evaluation report will be prepared stressing the lessons learned through the			

ANNEX 4. EVALUATION FRAMEWORK

Evaluation criteria	Evaluation indicators	Means of verification
Project Design		
The evaluation will examine the extent to which: The project's design is adequate to address the problems at hand. The project has a clear thematically-focused development objective, the attainment of which can be determined by a set of verifiable indicators. The project was formulated based on the logical framework (project results framework) approach. Was there a need to reformulate the project design and the project results framework given changes in the countries and operational context? Is inventory data (conducted during the preparatory phase) included in the project document based on remote inventory, physical inventory or estimates? Are relevant environmental and social risk considerations included at the time of project design?	Situational analysis Project results framework Risk assessment and management Adjustments made due to operational context Environmental and social safeguards	Project document and annexes Interviews with UNIDO, National Focal Points, key national partners, and other project stakeholders
Relevance and Coherence		
The evaluation will examine the extent to which the project is relevant or coherent to the: National development and environmental priorities, national implementation plans and strategies of the national governments and their populations, as well as regional and international agreements. 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.). 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 project outcomes in the reduction or elimination of releases of uPOPs from open burning Does the project remain relevant taking into account the changing environment?	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	Pertinent project documents and annexes Interviews with UNIDO, national project coordinators, key national stakeholders

Evaluation criteria	Evaluation indicators	Means of verification
To what extent was the project aligned with – and complementary to – other work being delivered within the participating countries?		
Effectiveness and Progress to impact		
The evaluation will assess the objectives and current results (results to date): 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? 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? Are the targeted beneficiary groups actually being reached? How do the stakeholders perceive the quality of outputs? Has the project generated any results that could lead to changes of the assisted institutions? Have there been any unplanned effects? Identify actual and/or potential longer-term impacts or at least indicate the steps taken to assess these. Have the relevant authorities in the countries prepared and enforced the regulations on PCBs? What is the geographical coverage of the project? What quantity of PCBs have been identified? And disposed off? Have any spillages been observed or reported? Does a certified laboratory for testing of PCB-oil exist in the country? Will the participating countries continue with PCB disposal? Has the project provided information on POPs, including PCBs, to educational institutions (schools, colleges, universities, …)?	Target for outputs, outcomes, and objectives of Project Results Framework Occurrence of intermediate states in the participating countries Stated contribution of stakeholders in achievement of outputs	Review of relevant documents such as PIRs, progress reports, meeting reports Direct observation and discussion during evaluation mission Interviews with UNIDO, NPCs, National Focal Points, key government representatives, consultants and other partners such as NGOs, academia, etc.
Efficiency at current stage of implementation		

Evaluation criteria	Evaluation indicators	Means of verification
The extent to which: The project cost is effective? Has the project used the most cost-efficient options? 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? 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? 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? Have the counterpart institutions spent co-finance as initially committed? Was there coordination with other UNIDO and other donors' projects, and did possible synergy effects happen? Give the reasons/justifications for the extension granted to the project. Has a knowledge management system been established? To what extent have the recommendations of the mid-term evaluation been taken into consideration? What has been the impact of COVID-19 on project implementation?	Level of compliance with expected milestones mentioned in logical framework and with respect to financial planning and annual plans Level of co-finance mobilized Document the delays that occurred List of reasons, validated by project team	For all questions under Efficiency: PIRs, PSC meeting reports, annual and progress reports, NPSC meeting reports, national reports Interviews with UNIDO, NPC, National Focal Points, consultants and other project stakeholders
Assessment of risks to likelihood of sustainability of project outcomes		
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 affect continuation of benefits after the GEF project ends. It will include both exogenous and endogenous risks. The following four dimensions or aspects of risks to sustainability will be addressed: *Financial risks*. Are there any financial risks that may jeopardize sustainability of project outcomes? What is the likelihood of financial and economic resources not being	UNIDO risk level indicators: Low, Moderate, High	Review of relevant documents such as PIRs, progress reports, meeting documents, progress reports

Evaluation criteria	Evaluation indicators	Means of verification
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? *Socio-political risks*. 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? *Institutional framework and governance risks*. 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? *Environmental risks*. 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 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.		Interviews with UNIDO, NPCs, National Focal Points, and other national stakeholders and NGOs
Assessment of M&E systems		
M&E design. Did the project have an M&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&E plan. *M&E plan implementation*. The evaluation should verify that an M&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;	Availability of logframe, workplans, roles of overseeing bodies, budgeted M&E plan Level of implementation of M&E system (execution of activities);	Project document PIRs, meeting reports, progress and annual reports, financial and

Evaluation criteria	Evaluation indicators	Means of verification
the information provided by the M&E system was used during the project to improve performance and to adapt to changing needs; and the project had an M&E system in place with proper training for parties responsible for M&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? *Budgeting and funding for M&E activities*. In addition to incorporating information on funding for M&E while assessing M&E design, the evaluators will determine whether M&E was sufficiently budgeted for at the project planning stage and whether M&E was adequately funded and in a timely manner during implementation.	changes in implementation approach to adapt to changing situations; compliance of the countries in the submission of relevant reports in a timely manner Compliance with reporting requirements as mentioned in TORs and/or project document	reports, audit and other relevant reports Interviews with UNIDO, NPCs, and NPSC members, and other relevant stakeholders / partners
Monitoring of long-term changes		
The M&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: 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? What were the accomplishments and shortcomings in establishment of this system? 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? Is the information generated by this system being used as originally intended?	Evidence of initial efforts to establish a long-term monitoring system	Project reports, M&E reports Interviews with UNIDO, NPCs, National Focal Points, and other relevant stakeholders
Project coordination and management		

Evaluation criteria	Evaluation indicators	Means of verification
The extent to which: 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)? 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)? The UNIDO CO is involved in the project.	Level and quality of project coordination and management at regional and national level	PIRs, meeting reports, and project coordination and management reports Interviews with UNIDO,
Gender mainstreaming		
The evaluation will consider, but need not be limited to, the following issues that may have affected gender mainstreaming in the project: Did the project design adequately consider the gender dimensions in its interventions? If so, how? (For GEF-4 take this point out?) Was a gender analysis included in a baseline study or needs assessment (if any)? (For GEF-4 take this point out?) 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? 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)? Are women/gender-focused groups, associations or gender units in partner organizations consulted/included in the project? To what extent were socio-economic benefits delivered by the project at the regional, national, and local levels, including consideration of gender dimensions?	Incorporation of gender-responsive approaches and indicators, such as: Women's participation Gender balance Integration of gender dimensions in project delivery Equality, benefits, and results	Project reports Interviews with UNIDO, NPCs, National Focal Points, NGOs, Women's Associations involved, and other beneficiaries

ANNEX 5. FINAL EVALUATION TOOLS AND QUESTIONARIES ADAPTED TO GUATEMALA

National counterpart: MENR

Questions	Response and comments
1. How willing is your government to fulfil the Stockholm Convention agreements and targets? Are SC targets 2028 achievable? If not, what is the country's strategy for improving its performance and goals? 2. Is the PCBs Environmental Sound Management (ESM) a priority issue being tackled by your government? Why or why not? 3. Are any other initiatives (public or private sector), projects or interventions the country has been implementing for PCBs management? 4. Is the UNIDO project relevant to the country's priorities regarding national implementation plans POPs/PCB? 5. Are the project objective, components and outcomes designed to address the main problem related to the ESM of PCBs in your country?	
6. What support has your government, specifically your department, given to implementing the UNIDO project? Please specify the organizational structure, human resources and political willingness. 7. How was the co-financing resources disbursement? Please, provide information related to co-financing resources planned and executed; if it is a difference, why? 8. Did you participated in the national disposal plan design? How? 2.4 9. Are financial resources available after the project ends? Has your organization budget for ESM of PCBs disposal until 2028? If it has, how much?	
10. Are you satisfied with the support and guidance provided by UNIDO 11. Please give your feedback on the assistance and support provided by UNIDO, and other international experts. Please elaborate. 12. Please rate the guidance & support provided by UNIDO (from 1 to 6). 1: Highly unsatisfactory; 2: Unsatisfactory; 3: Moderately unsatisfactory; 4: Moderately satisfactory; 5: Satisfactory; and, 6: Highly satisfactory 13. What other types of assistance do you think would have been helpful?	
14. Did your country/ministry deliver all the project outputs successfully? 15. Are there any social or political factors that may influence positively or negatively the project results? If yes, please comment. 16. What were the main challenges faced to undertake the activities? 17. How were the challenges overcome? 18. Are there already visible signs of the project's impact, such as a behavioural change (Detection and analysis, storage, national inventory, disposal) between PCB private/public stakeholders? Please give some concrete examples.	
19. Have the project outcomes/outputs (capacity building, ESM PCB implementation, PCB disposal, etc.) been adopted/integrated/enforced at national level? If so, please give an example and comment. If not, do you have any plan to replicate or scale project results at the national level? Please elaborate. Related with 2.2 : ESM plan 20. Is there any national plan for supporting PCBs small owners in the analysis, storage and disposal processes? for example additional technical support lower costs, financial incentives, taxes incentives. 21. How the project shared with the main stakeholders the new specific legislation for PCB, technical guidelines and bulletins related? 22. Have the relevant authorities started applying the Environmental Sound Management of PCBs legal framework and regulatory measures to all stakeholders, especially PCBs owners? If no why? *inspectors indirect 1.2 si se construye se aplica 23. Do the regulatory units have the resources to monitor the PSCs stakeholders at the national level, especially PCB owners and wastes disposal responsible?	

PMU AND NGO DEFENSORES DE LA NATURALEZA

Questions	Response and comments
1. What was your role in the project? 2. Which were the reports/products/lists/dataset under your responsibility? How many times per year did you submit these reports/inputs? 3. Have there been delays in activities and outputs under your responsibility? If yes, please give the reasons for the delays. 4. How many months did you work on this project? 5. Did you work at the same time on other projects/other organization responsibilities? If yes, how much time did you dedicate to the PCB project (average percentage)? 6. When was the project officially launched in your country? 7. When was the Project Management Team (PMT) established? 8. What were the responsibilities of the PMT? 9. Who was the leader of the PMT? 10. Who were the members of the PMT?	
11. Who was responsible to recruit the National consultants (NCs)? 12. What was the procedure to select and recruits the NCs? 13. Were they directly contracted by UNIDO? 14. Were you the technical counterpart of one or more consultancies (responsible for working with the consultancy products)? If yes, please reply: a. What did the consultants have to deliver? b. Are you satisfied with their performance/quality? c. Did they submit the reports on time or late? If late, the reasons for the delay? d. Could you send me a copy of these reports/products?	
15. Who were the project's main/key stakeholders? Please explain their role in the project. 16. Were they actively participating in the project? Please reply per stakeholder. 17. Did the project receive support from the government/national authorities or local authorities? If yes, what type of support (human resources, capacity building, infrastructure, financial disbursements)? Please reply per stakeholder. 18. How was the communication (frequency and channel) between the key stakeholders? 19. How was the project data governance model? How did stakeholders share/update the information? Did the stakeholders have any common platform for information storage? For example, sample analysis results, inventory, etc.	
20. Please give your feedback on the assistance and support provided by UNIDO, National Project Coordinator and other international experts. Please elaborate. 21. Please rate the guidance & support provided by UNIDO and the RPC separately (from 1 to 6). 1: Highly unsatisfactory; 2: Unsatisfactory; 3: Moderately unsatisfactory; 4: Moderately satisfactory; 5: Satisfactory; and, 6: Highly satisfactory 22. What other types of assistance do you think would have been helpful?	
23. Are there any social or political factors that may influence positively or negatively the project results? If yes, please comment. 24. What were the main challenges faced to undertake the activities? 25. How were the challenges overcome? 26. Did the project have any delays? If yes, specify which one, and explain why the project postponed the activities/outcomes.	
27. Are there already visible signs of the project's impact, such as a behavioural change (Detection and analysis, storage, national **inventory,** disposal) between PCB private/public stakeholders? Please give some concrete examples. 28. Are you aware of job creation due to the project implementation? If yes, how many jobs were created, and what type of job? Any data disaggregated by gender? 29. Are you aware of any improvement in health risks prevention measures in the PCB sector workers and communities close to PCB storage?	

National Project Coordinator Questionnaire

Questions	Response and comments
1. How did you hear about the project? 2. Was there a call for applications? 3. How many candidates applied for the National Project Coordinator (NC) position? 4. Did you go through interviews? With whom?	
5. Are you directly contracted by UNIDO? 6. Who are you reporting directly your work? 7. What are your main responsibilities as NPC? 8. Where is your office located? Did you work at fieldwork, if yes which activities? 9. How many people worked in your team? Which were their roles? Were they working exclusively on this project, or did they share their time with other interventions? 10. What are the main challenges you have faced in managing the project or executing the activities? How did you overcome these challenges?	
11. Which were the reports/products under your responsibility? Can you share the reports/products? 12. What is the procedure for submitting these reports? Do you need to get the green light from the authorities before submitting to UNIDO? 13. Who is approving your products or evaluating your work?	
14. Were other consultants contracted for the project? If yes, who and how were they recruited? Please list the consultants and contracts 15. As responsible for working with the consultants and user of their products, please reply: 16. What did the consultants have to deliver? 17. Are you satisfied with their performance/quality? 18. Did they submit the reports on time or late? If late, the reasons for the delay? 19. Do these reports have to be validated? If so, by whom? 20. Could you send me a copy of these reports/products?	
21. Who were the project's main/key stakeholders? Please explain their role in the project. 22. Were they actively participating and collaborating in the project? Please reply per stakeholder. 23. Did the project receive support from the government/national authorities or local authorities/private sector? If yes, what type of support (human resources, capacity building, infrastructure)? Please reply per stakeholder. 24. Did the co-financing resources (agree at the beginning of the project) provided by the partners? 25. Were the collaboration and interaction between stakeholders satisfactory? 26. How was the communication (frequency and channel) between the key stakeholders? 27. How was the project data governance model? How did stakeholders share/update the information? Did the stakeholders have any common platform for information storage? For example, sample analysis results, inventory, etc.	
28. When was the project officially launched in your country? Which is the project geographical scope? 29. Did the project build on the results / data produced by previous initiatives such as the inventory carried out under the NIP on POPs/ PCBs or other? 30. Who implemented the PCBs sample analysis, inventory and disposal during the project? Which technic/methodology they used? 31. Did the stakeholders have the technical methods, certifications/permissions and technology for PCBs sample analysis, inventory and disposal? Please describe the situation before and after the project. 32. Information PCB owners participated in the project inventory output 2.3? Provide: Name, specify public/private, sector (electricity/oil/mining), types and quantities of contaminated equipment, and contaminated oils and wastes along with their corresponding PCB concentrations, equiptment used for inventory and their origen (technology, methodology). 33. Are the capacities built (technical methods, certifications/permissions and technology) within the project robust enough to continue delivering benefits (PCBs inventory and disposal) to stakeholders beyond the project life? Why or why not? Please elaborate. 34. Did the project provided or had portable and analytical field equipment for the identification of contamination and concentrations.2.4d	

Questions	Response and comments
35. Did you participated in the national disposal plan design? How? 2.4 is has long term approach it incldesnational and also plans for each owner 36. How many PBC owners developed their Environmental Sound Management for PCBs disposal plans during the project? 2.4 37. How did the project include to the maintenance workshops (transformers/equipment/oils)? Please specify this situation before and after the project.	
38. Are you satisfied with the support and guidance provided by UNIDO, the Regional Project Coordinator (RPC), the National Program Director? 39. Please give your feedback on the assistance and support provided by UNIDO, and other international experts. Please elaborate. 40. Please rate the guidance & support provided by UNIDO, RPC and NPD separately (from 1 to 6). 1: Highly unsatisfactory; 2: Unsatisfactory; 3: Moderately unsatisfactory; 4: Moderately satisfactory; 5: Satisfactory; and, 6: Highly satisfactory 41. What other types of assistance do you think would have been helpful?	
42. Has the project able to deliver all outcomes/outputs planned? Did the project had any delays, Why? 43. Did the project reach the key indicators main targets? Why? 44. Are there any social or political factors that may influence positively or negatively the project results? If yes, please comment. 45. What were the main challenges faced to undertake the activities? 46. How were the challenges overcome? 47. Are you aware of job creation due to the project implementation? If yes, how many jobs were created, and what type of job? Any data disaggregated by gender? 48. Are you aware of any improvement in health risks prevention measures in the PCB sector workers and communities close to PCB storage? 49. In terms of risk decrease and health conditions due to project intervention. Do you know if any stakeholders took blood tests on these vulnerable groups? Please describe and give examples.	
50. How the project shared with the main stakeholders the new specific legislation for PCB, technical guidelines and bulletins related? 1.3 51. Have the relevant authorities started applying the Environmental Sound Management of PCBs legal framework and regulatory measures to all stakeholders, especially PCBs owners? If no why? 52. Do the regulatory units have the resources to monitor the PSCs stakeholders at the national level, especially PCB owners and wastes disposal responsible?	
53. Has the project involved women? 54. Did the project benefit or have a particular emphasis on women? How? 55. How has it integrated gender dimensions in project delivery? 56. Any positive or emerging outcomes on gender equality? Please elaborate on gender mainstreaming benefits and results.	
57. How COVID-19 restrictions impacted the delivery of activities and outputs? what adjustments were made because of the delays?	
58. Who was the responsible of the M&E system/plan design and implementation? 59. How did you contribute to the project M&E System? 60. How was your interaction with the plan and tools? 61. Did the project have Medium-Term Review? If yes, which recommendations does the project implemented?	
62. Do you have any inputs/comments/suggestions/issues pertinent to the project you'd like to raise with me?	

National Project Manager – DCP COORDINATOR

Questions	Response and comments
1. Which institution is hosting the project? 2. When was a letter of agreement (LOA) or contract signed with UNIDO? 3. Which institution signed for your country? 4. When (date) and for which amount?	

Questions	Response and comments
5. Have the funds been timely transferred? 6. Are the funds sufficient to execute the activities at national level?	
7. How willing is your government to fulfil the Stockholm Convention agreements and targets? Are SC targets 2028 achievable? If not, what is the country's strategy for improving its performance and goals? 8. Are any other initiatives (public or private sector), projects or interventions the country has been implementing for PCBs management? 9. What approach was adopted for the implementation of the project? 10. Has a national project management unit (PMU) been established? 11. What is your role in the project and in PMU? 12. Please give the structure of the PMU and list its members.	
13. How was the National Project Coordinator (NPC) recruited? 14. Was there a call for applications? 15. Is the NPC directly contracted by UNIDO? 16. Are you satisfied with his/her performance? 17. Describe your collaboration with the NPC.	
18. Who was responsible to recruit the National consultants (NCs)? 19. What was the procedure to select and recruits the NCs? 20. Were they directly contracted by UNIDO? 21. Were you the technical counterpart of one or more consultancies (responsible for working with the consultancy products)? If yes, please reply: a. What did the consultants have to deliver? b. Are you satisfied with their performance/quality? c. Did they submit the reports on time or late? If late, the reasons for the delay? d. Do these reports have to be validated? If so, by whom? e. Could you send me a copy of these reports/products	
22. Who were the project's main/key stakeholders? Please explain their role in the project. 23. Were they actively participating and collaborating in the project? Please reply per stakeholder. 24. Did the project receive support from the government/national authorities or local authorities/private sector? If yes, what type of support (human resources, capacity building, infrastructure)? Please reply per stakeholder. 25. Did the co-financing resources (agree at the beginning of the project) provided by the partners? 26. Were the collaboration and interaction between stakeholders satisfactory? 27. How was the communication (frequency and channel) between the key stakeholders? 28. How was the project data governance model? How did stakeholders share/update the information? Did the stakeholders have any common platform for information storage? For example, sample analysis results, **inventory**, etc.	
29. When was the project officially launched in your country? Which is the project geographical scope? 30. Did the project build on the results / data produced by previous initiatives such as the inventory carried out under the NIP on POPs/ PCBs or other? 31. Are there any social or political factors that may influence positively or negatively the project results? If yes, please comment. 32. What were the main challenges faced to undertake the activities? 33. How were the challenges overcome? 34. Are there already visible signs of the project's impact, such as a behavioural change (Detection and analysis, storage, national inventory, disposal) between PCB private/public stakeholders? Please give some concrete examples.	
35. Are you satisfied with the support and guidance provided by UNIDO, the Regional Project Coordinator (RPC), the National Program Director? 36. Please give your feedback on the assistance and support provided by UNIDO, and other international experts. Please elaborate. 37. Please rate the guidance & support provided by UNIDO, RPC and NPD separately (from 1 to 6). 1: Highly unsatisfactory; 2: Unsatisfactory; 3: Moderately unsatisfactory; 4: Moderately satisfactory; 5: Satisfactory; and, 6: Highly satisfactory 38. What other types of assistance do you think would have been helpful?	

Questions	Response and comments
39. What are the reports that your country has to submit to UNIDO? Can you share the reports/products? 40. What is the frequency for the submission of these reports? 41. Have there been delays in submitting those reports? If yes, please give the reasons for the delays.	
42. Have the project outcomes/outputs (capacity building, ESM PCB implementation, PCB disposal, etc.) been adopted/integrated/enforced at national level? If so, please give an example and comment. If not, do you have any plan to replicate or scale project results at the national level? Please elaborate. Related with 2.2 : ESM plan 43. Is there a plan for replicating or scaling up project results (e.g., inventory, disposal) at national level? 44. Do the regulatory units have the resources to monitor the PSCs stakeholders at the national level, especially PCB owners and wastes disposal responsible? 1.3	
45. To what extent are the continuation of project results and eventual impact dependent on the availability of financial resources? Can these financial resources be mobilized nationally? 46. Is there any national plan for financial support for PCB disposal?	
47. Has the project involved women? 48. Did the project benefit or have a particular emphasis on women? How? 49. How has it integrated gender dimensions in project delivery? 50. Any positive or emerging outcomes on gender equality? Please elaborate on gender mainstreaming benefits and results.	
51. How COVID-19 restrictions impacted the delivery of activities and outputs? what adjustments were made because of the delays?	
52. Who is the responsible of the M&E system/plan for PCB sector at national level? 53. How your organization connect all stakeholders information, please comment before and after the project.	
54. Do you have any inputs/comments/suggestions/issues pertinent to the project you'd like to raise with me?	

UNIDO PM

Questions	Answers
1. How was the project developed? 2. How relevant is the project to UNIDO's mandate?	
3. Were you involved in the development of the project (PIF and PPG)? If yes, were the key national stakeholders identified during that phase? 4. Are you managing other PCB projects? If yes, were you involved in their development? Please give the GEF ID of these projects. 5. Any linkages among these PCB projects? e.g., same international consultants involved or lessons learned in one project facilitated the implementation of other projects?	
6. At UNIDO level, who is responsible to develop the TORs, the contracts and other documents to recruit and sub-contract consultants countries or for procurement? 7. Did UNIDO do all the procurement of equipment (e.g. for pilot projects)? What is the procedure? Any ceiling to request additional approval? Did this occur for this project? 8. Were disbursements / payments done on a timely manner?	
9. Financial management 10. Was there a need for approval to reallocate budgets? If yes, what were the reasons for these reallocations?	
11. (i) Did UNIDO directly sub-contract the international as well as national consultants? 12. (ii) How were these consultants identified? 13. (iii)Procedure for their recruitment?	
14. Feedback on International Consultants	
15. Feedback on national consultants (NCs)	
16. Project Management Unit (PMU) or equivalent (e.g. National Execution Agency – NEA) 17. When was the PMU (or equivalent) established? 18. Feedback on PMU (or equivalent)	

19. Feedback on responsible person (NPD, NPC, NPM, or other) heading the PMU	
20. Has the gender dimension specifically been considered during implementation and monitoring of the project? 21. What were the major challenges faced by the project faced? How were these challenges overcome? 22. Any impact of these challenges on project implementation? 23. Was any extension granted to the project? Reasons for extension 24. Have the PIR reports been timely submitted?	

PCB Owner – Big, Small and owners other sectors.

Questions	Response and comments
1. About your institution/company: 2. When was your enterprise/company established? 3. What does your enterprise/ company do? 4. How many people does your enterprise / company employ? How many men and women? 5. How many transformers and capacitors do your enterprise / company own? 6. How do you manage them?	
7. How and when was your enterprise / company contacted to be involved in project? 8. Was your enterprise / company involved in the preparatory phase of the project?	
9. What was the role of your enterprise / company in the project? 10. What did your enterprise / company and its staff benefit from project? 11. What did your enterprise / company contribute to the project?	
12. Are you satisfied with the training / support provided by the project on Environmental Sound Management (ESM)) of PCBs? 13. Have your enterprise / company implemented the ESM system for the identification and sound management of PCB contaminated equipment? (E.g. use of test kit for identification of PCB, safe storage of PCB contaminated equipment, workers trained on handling PCBs, etc.) 14. Have your enterprise / company developed a PCB phase out and disposal plan? Is this plan being implemented already? Long term disposal plan 2.4 15. How many tons of PCB contaminated equipment have your enterprise / company already identified and soundly managed and disposed of? 2.2 16. What were the major obstacles or challenges your enterprise / company faced during the implementation of the project? 17. How were the challenges / obstacles overcome? 18. What obstacles / challenges remain to identify and soundly destroy all the PCB contaminated equipment of your enterprise / company?	
19. Are you satisfied with the support / assistance provided by UNIDO, the Project Management Unit (PMU), the National Project Coordinator (NPC)? Please briefly give your feedback on each one of them. 20. Are you satisfied with the support and assistance of the national and international consultants (NCs and ICs)? Please give your feedback 21. What other types of assistance do you think would have been helpful?	
22. Where relevant, please rate individually the guidance & support provided by UNIDO, PMU, NPC, National Consultants (NCs) and International Consultants (ICs) from 1 to 6. 1: Highly unsatisfactory; 2: Unsatisfactory; 3: Moderately unsatisfactory; 4: Moderately satisfactory; 5: Satisfactory; and, 6: Highly satisfactory	
23. Now the project is over, what improvement can you think of? 24. Your feedback on the project?	