

INDEPENDENT EVALUATION UNIT
OFFICE OF EVALUATION AND INTERNAL OVERSIGHT

INDEPENDENT TERMINAL EVALUATION

Environmentally Sound Management and Final Disposal of PCBs at
the Russian Railways network and other PCB owners (Phase I)

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LIST OF ACRONYMS AND ABBREVIATIONS

BAT	Best available techniques
BEP	Best environmental practices
CIIC	Center for International Industrial Cooperation
ESM	Environmental Sound Management
GEF	Global Environment Facility
IA	Implementing Agency
ISID	Inclusive and Sustainable Industrial Development
M&E	Monitoring and Evaluation
MEP	Mordovian Ecology Plant
MONRE	Ministry of Natural Resources and Environment
MTR	Mid-term Review
NEA	National Executing Agency
NFP	National Focal Point
NIP	National Implementation Plan
NPC	National Project Coordinator
NPD	National Project Director
NPM	National Project Manager
PCBs	Polychlorinated biphenyls
PPE	Personal Protective Equipment
PIF	Project Identification Form
PIR	Project Implementation Report
PM	Project Manager
PMU	Project Management Unit
POPs	Persistent Organic Pollutants
PRF	Project Results Framework
PSC	Project Steering Committee
RZP	Russian Railway Company
SC	Stockholm Convention
TE	Terminal Evaluation
TOC	Theory of Change
TOR	Terms of Reference
UNEP	United Nations Environment Program
UNIDO	United Nations Industrial Development Organization
USD	United States Dollar
WP	Work Plan

Executive Summary

A. Introduction

The full-sized project “*Environmentally Sound Management and Final Disposal of PCBs at the Russian Railways network and other PCB owners (Phase I)*”, funded by the Global Environment Facility, was implemented from February 2014 to December 2022 by the United Nations Industrial Development Organization in the Russian Federation. The project was nationally co-executed by the Ministry of Natural Resources and Environment.

The main objective of the project was to build capacity to introduce and implement a PCB management system to facilitate the implementation of the Stockholm Convention on POPs, to dispose of at least 3,800 tons of PCBs and PCB-containing equipment in an environmentally-sound manner and to maximize opportunities for public-private partnership through development of efficient policies and regulations. The evaluation covered the whole duration of the project.

B. Evaluation findings and conclusions

Two major limitations of this evaluation was that a national consultant, who would have assisted in gathering information through interviews and carrying out field visits, could not be identified and recruited on time, and a significant portion of project documentation was in Russian. Thus, the in-depth evaluation was carried through remote interviews of key stakeholders and partners of the project and a review of the project documentation that was available in English, and no field visit was undertaken. Based on the information available and the findings of the discussions held, the evaluation made the following conclusions:

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

Effectiveness: Most of the stated objectives have been successfully achieved. The project facilitated the strengthening of the legal framework and institutional capacity building for the environmentally sound management of PCBs. The project contributed to strengthen the regulatory framework and build capacity for ESM of PCBs. The project succeeded also to build capacity for PCB identification and inventory, and facilitated the establishment destruction facilities operating with BAT technologies, however the one dedicated to soundly eliminate pure PCBs is not yet operational. Many big PCB owners including Russian Railway Company have adopted best practices for PCB management. Two of the three proposed intermediate states of the theory of change have started to emerge, progress to long term impact is considered moderately satisfactory.

Efficiency: Due to various factors such as slow start due to the low awareness of partners and stakeholders on the requirements of the Stockholm Convention, transfer of project management from UNIDO HQ to the UNIDO Center for International Industrial Cooperation in Moscow, change in the top management of the Russian Railway Company, and the COVID19 pandemic, implementation was considerably delayed by more than four years. Most efficient options have been applied for recruitment and procurement. However, because of the delays a large and unjustified over-expenditures for project management costs was evidenced, which caused a significant reduction in budget allocation for equipment, and affected delivery. Instead of two, only one mobile decontamination units was procured for the treatment of lowly contaminated PCBs. On the other

hand, a significant portion of the co-financing pledged at design materialized during implementation. For instance, the Russian Railway invested more than \$11.6 million to establish a hazardous waste complex.

Sustainability: No risks that may jeopardize the sustainability of the project results that the future flow of benefits have been identified.

UNIDO Backstopping: UNIDO has provided adequate technical backstopping by hiring high-quality consultants. Procurements of goods and services for the project were according to internal procedures. The guidance and support provided was highly appreciated by the national counterparts and stakeholders

Cross-cutting issues:

Although there was no evidence of gender dimension consideration during implementation, a satisfactory involvement and participation of women was seen in the project activities

Regarding M&E, the SMART indicators, proposed in the project results framework of the project document, were adequate to allow for proper monitoring and tracking progress at both output and results levels. The planned PSC meetings were undertaken, and reporting was satisfactory.

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

C. Recommendations

To UNIDO
1. The project has achieved most of the stated objectives. However, many key targets have not been fully achieved at project closure: inventory system not fully demonstrated, technology for destruction of pure PCB not yet operational, trials on-going. Furthermore, no replication and up-scaling mechanism was proposed in the design. UNIDO could consider develop a follow-up initiative, medium-sized project, to consolidate, promote, and replicate the project results.
To UNIDO, CIIC and MONRE
2. Trials are still on-going regarding the high temperature oxidation (plasma) technology for the destruction of highly PCB contaminated equipment and pure PCBs. It is recommended to closely monitor these trials and to ensure that the facility operator can destroy PCBs at BAT level.
To MONRE:
3. The project has facilitated the drafting of legal documents for the environmental sound management of PCBs in the Russian Federation. Some of these regulations have already been adopted by the government. However, it is recommended that MONRE take the necessary actions to get the remaining draft regulations adopted so that PCB owners are legally bound to soundly management their PCB equipment. 4. To ensure compliance, it is suggested that the relevant authorities take the necessary steps to strictly enforce the regulations on PCBs including regular inspections at PCB owners' facilities. 5. The official government rate for hazardous waste treatment is 280,000 rubles (approximately \$3,700) per ton. While this rate would be complete to destroy highly contaminated PCB equipment (or pure PCBs), it would not be competitive for lowly contaminated equipment as the current rate applied worldwide is about \$2,000 per ton. The risk is that PCB owners might opt to choose for more competitive options outside the country rather than to rely on locally available ones for the treatment of their lowly contaminated equipment. The authorities might consider of having two different rates for lowly and highly PCB contaminated equipment respectively. 6. This pilot demonstration project has been successful in strengthening the legislation, building capacity for identification, sound management and safe disposal of PCBs. To encourage owners across the country to soundly management their PCB equipment, it is suggested that the authorities initiate the necessary actions to promote the project results.

D. Lessons learned

One key lesson emerged:
1. Russian Railway Company invested considerably to establish a BAT hazardous waste facility to destroy wastes of hazard class 1 – 2, in which wastes containing PCBs are classified. Due to the construction of residential buildings nearby, the facility can only destroy wastes of hazard class 3 – 4 but not those of hazard class 1 – 2. Choosing the right location (e.g. dedicated industrial zones with no future residential development in the close vicinity in the long term) to construct such facilities posing risks to the environment and the population would avoid unwanted outcomes.

1. Introduction

1.1 Evaluation rationale, purpose, objectives and scope

Rationale and purpose of the evaluation

1. The project under evaluation *Environmentally Sound Management and Final Disposal of PCBs at the Russian Railways network and other PCB owners (Phase I)* (GEF Project ID 4915) was implemented in the Russian Federation from February 2014 to December 2022 (henceforth referred to as the Russia project). Given the number of PCB projects being implemented by UNIDO, many being in the last phase of implementation, and taken into account significant similarities at project design level, a cluster evaluation approach was adopted. This PCB cluster evaluation covered eight (8) projects, and included the Russia project (Table 1).

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

3. This cluster approach was also to produce synergies and increase the value added in the conduct of evaluations. The efficiency gains produced by this approach would be invested in additional learning and more strategic assessments to inform UNIDO management, Member States, donors and beneficiaries with further more relevant and useful evaluation findings, conclusions and recommendations, such as:

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

Objectives and scope of the evaluation

4. The Cluster Evaluation followed the UNIDO Evaluation Policy¹, the UNIDO Guidelines for the Technical Cooperation Project and Project Cycle², and UNIDO [Evaluation Manual](#). Furthermore, the GEF Guidelines for GEF Agencies in Conducting Terminal Evaluations, the GEF Monitoring and Evaluation Policy³ and the GEF Minimum Fiduciary Standards for GEF Implementing and Executing Agencies will be applied. The evaluation was also built upon the findings and recommendations of the Cluster Evaluation on UNIDO POPs portfolio carried out in 2015⁴.

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

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

² 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)

³https://www.thegef.org/sites/default/files/council-meeting_documents/EN_GEF.ME_C56_02_GEF_Evaluation_Policy_May_2019_0.pdf

⁴https://www.unido.org/sites/default/files/2015-04/FINAL_report_NIPS_CLUSTER_EVAL_20150409_0.pdf#page=81&zoom=100,120,76

Region	Country	GEF ID	Project budget (USD)	Budget left (SAP 31.03.22 USD)
EUR	Serbia	4877	2,100,000	786,423
ASP	India	3775	14,100,000	107,230
ASP	Lao PDR	4782	1,400,000	271,414
LAC	Bolivia	5646	2,000,000	278,300
LAC	Guatemala	5816	2,000,000	403,866
EUR	Russian Federation	4915	7,400,000	30,000
AFR	Republic of Congo	5325	975,000	25,000
AFR	Morocco	9916	1,826,484	621,734
<u>Total</u>			<u>31,801,484</u>	<u>1,902,233</u>

*Table taken from the terms of reference for this evaluation

1.2 Project Context

5. The Russian Federation ratified the Stockholm Convention on Persistent Organic Pollutants (POPs) on August 17, 2011 with the aim to protect human health and the environment from the adverse effects of POPs. The Ministry of Natural Resources and Environment was assigned by the Government as the National Focal Point (NFP) for the Convention. In order to facilitate the ratification of the Convention and to define the actions required for the implementation of the Convention, Russia has initiated in early 2009 the formulation of the NIP through a GEF-supported Enabling Activities project implemented by the Ministry of Natural Resources and Environment (MONRE) and UNEP. The NIP was successfully developed and approved by the Interagency Committee by the end of 2011. However, the NIP was submitted to the Stockholm Secretariat only on 14 November 2017.

6. As Russia was the largest producer of PCBs, the development of an environmentally sound management (ESM) system for PCBs was one of the first priorities of the post-NIP programme. The ESM system included amongst others carrying out a full scale inventory study, the development of an action for the removal of PCB equipment still in service, the safe collection and interim storage of such pieces of equipment, the adoption of economical and environmentally friendly technologies for the disposal of PCB wastes.

7. The production of PCBs in Russia had started in 1938 and stopped in 1993. During this period, the country produced approximately 180,000 tons of PCB (local brand names Sovol and Sovtol), which were mostly used as dielectric material for the energy equipment such as transformers, capacitors and switch-off gears. In the course of the NIP development, the “preliminary” inventory of PCB-contaminated equipment was undertaken among the major owners of energy equipment. The inventory covered only 3,000 large enterprises and 3,000 energy sub-stations. Several owners of these equipment were not included in the inventory such as the Russian Railway Holding, which has around 6,000 enterprises and is one of the major owners of PCB-containing equipment. Due to financial constraint, the inventory was done mostly through distribution of questionnaires among the local environmental authorities. The preliminary inventory identified 7,514 transformers and 329,026 capacitors containing a total of 20,841 tons of pure PCB. No chemical analysis of the transformer oil was done, therefore, the collected data did not include equipment cross-

contamination during their services. According to available world data, the percentage of transformers contaminated during servicing could be approximately 7%. This percentage of cross-contamination was found during the Project Preparation Grant (PPG) phase of the project. The Russian Railway Corp. (RZD) collected and tested 500 oil samples from their equipment, and found that 37 transformers (about 7%) contained oil with PCB contamination ranging from 60 to 2,000 ppm.

8. As Russia does not have specific PCB management legislation or guidelines to properly segregate and manage PCB containing equipment from those without PCBs, it is very likely that the 7% of cross contaminated equipment is prevailing in other companies owning large number of transformers. It is obvious that Russia needs to complete a much more comprehensive inventory of PCBs with the chemical analysis and covering the whole country.

9. During the preliminary inventory process, it was found that some owners of PCB-contaminated equipment were aware about the hazards that PCBs pose to human health and environment and took measures to protect their staff, prevented leakages or spills to the environment and, when required, undertook the safe disposal of decommissioned contaminated equipment and wastes. This however was not a common practice and the need to have nation-wide ESM system for PCB management was evidenced.

10. It was also found out that some PCB owners, being socially and environmentally responsible, were undertaking measures for safe management of their contaminated stockpiles and wastes, however they had very limited options to do it: either to use a local company or to apply to a qualified European disposal company. The costs of exporting the PCB wastes for disposal in Europe were in the range US\$ 5-7/kg, depending on the location of the wastes. The services of the local disposal companies were within US\$ 2-3/kg. However, there was no assurance that these local companies had sufficient experience and technical capacities to implement safe disposal of wastes according to BAT/BEPs. Without having this assurance, many responsible PCB owners just put their PCB wastes for interim storage until such technologies are available in the country. Therefore, Russia requires infrastructure and capacity to manage and dispose of PCBs in an environmentally sound manner, which also includes the analysis, interim storage, collection, labelling, handling and transport of PCB-containing electrical equipment and related wastes and their disposal. The environmentally sound PCB destruction capacities were almost non-existing in the country. There were very limited capacities to incinerate PCB wastes by plasma arc and other, mostly combustion technologies with the very low daily capacities, not sufficient for disposal of large volumes of PCB wastes by the deadlines established by the Convention. It was in this context that the project was developed to assist the Russian Federation to fulfill its obligations towards the Stockholm Convention by building national capacity for the ESM and sound elimination of PCB contaminated equipment and wastes by 2028.

1.3 Overview of the Project

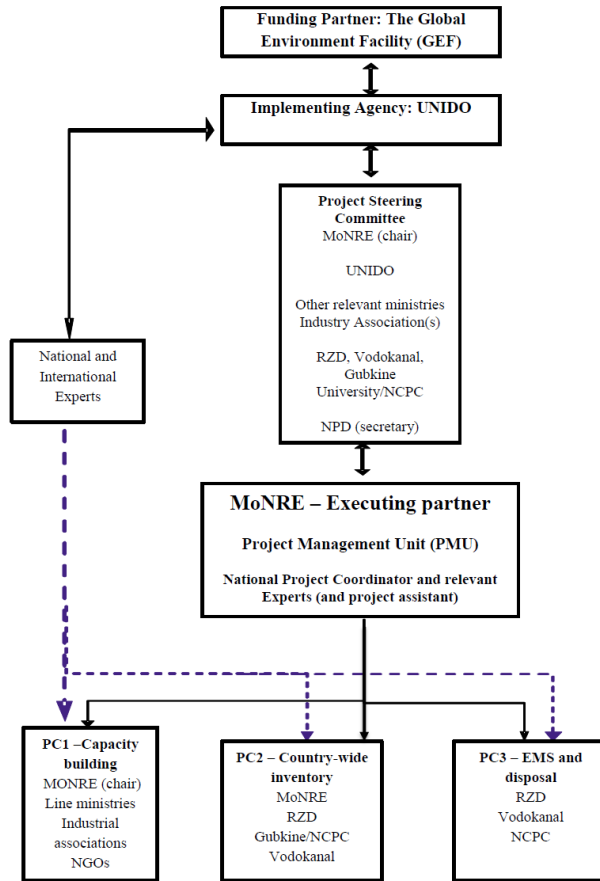
11. The project was funded through a GEF grant, amounting to USD 7,400,000, a UNIDO co-financing of USD 200,000 (grant and in-kind), and a total of National Government (cash and in-kind) and public and private sectors (cash and in-kind) co-financing of USD 34,200,000 amounting to a total project budget of USD 41,600,000.

12. The main objective of the project was to establish the national environmentally sound management (ESM) system for PCBs phase out and disposal and promote local use of non-combustion technologies for disposal of PCBs at the Russian Railways network and other PCB owners. The project would also dispose of at least 3,800 tons of PCBs, PCB-containing equipment and waste in an environmentally sound manner and would maximize opportunities for public-private partnership through development of conducive policies and regulations. To achieve these objectives, the project design proposed three components on legislation strengthening and human resource capacity building for ESM of PCBs; country-wide PCB inventory; and ESM and disposal of PCB contaminated equipment wastes, which were expected to achieve the following three substantive Outcomes:

- Strengthening of legislation and policy framework and enforcement of PCBs management to meet relevant obligations under the Stockholm Convention
- Development of strategy and plan of action for management, decontamination and disposal of PCB-contaminated equipment and wastes based on PCBs inventory and risk assessment for efficient allocation of human and economic resources
- Establishment of ESM system / structure for PCBs and disposal of 3,800 tons of PCBs and PCB-contaminated equipment and wastes

13. With regard to implementation arrangements, the project was supposed to be implemented by UNIDO and its project manager (PM), based at UNIDO headquarters in Vienna. MONRE was the national executing agency (NEA), and was responsible at the policy level for updating the legislation, developing and introduction to local industries the environment management system, including technological issues and obligations for safe disposal of PCB-contaminated equipment and wastes. MONRE was responsible to host the Project Management Unit (PMU). Selection and recruitment of National Project Coordinator (NPC) and other national consultants would be done according UNIDO's recruitment rules and regulations. The NPC would report to UNIDO and MONRE, and would act as Secretary of the project steering committee (PSC). MONRE would be responsible for the development of project related studies, reviews and results of the project activities. It would also be involved in formulation of updated legislation, organizing the inventory data and formulation of technical guidelines for analytical and technical components of the project. As can be seen in the Organigram below, three project committees (PC1, PC2 and PC3) would be established and would responsible to execute the three components in close collaboration with NEA.

14. PSC would be established under the Chairmanship of the MONRE, and the members would include UNIDO, line ministries (energy, economy, and industry), industrial associations, NGOs, and technical partners (RZD, Gubkin University, Vodokanal Co.). It was expected that the PSC would operate in accordance with the GEF and UNIDO policies.



Project factsheet*

Project Title:	<i>Environmentally Sound Management and Final Disposal of PCBs at the Russian Railway Network and Other PCBs Owners</i>
GEF ID:	4915
UNIDO ID:	140019
GEF Replenishment Cycle:	GEF-5
Country(ies):	<i>The Russian Federation</i>
GEF Focal Area:	<i>Persistent Organic Pollutants (POPs)</i>
Executing Agency(ies):	<i>Ministry of Natural Resources and Environment of Russia</i>
Project Type:	<i>Full-Sized Project (FSP)</i>
Project Duration:	99 months
Extension(s):	4
GEF Project Financing:	7,400,000 USD
Agency Fee:	703,000 USD
Co-financing Amount:	34,200,000 USD
Date of CEO Endorsement/Approval:	11/20/2013
UNIDO Approval Date:	1/20/2014
Actual Implementation Start:	2/5/2014
Mid-term Review (MTR) Date:	3/23/2017
Original Project Completion Date:	10/5/2018
Project Completion Date as reported in FY21:	4/30/2022
Current SAP Completion Date:	4/30/2022
Expected Project Completion Date:	4/30/2022
Expected Terminal Evaluation (TE) Date:	9/15/2022
Expected Financial Closure Date:	12/31/2022

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

I.4 Theory of Change

15. A theory of change (TOC) was not provided in the project document. As per the terms of reference for this PCB Cluster evaluation, a common TOC⁵ for the eight projects was developed by the evaluation team, and was shared with the UNIDO Project Managers of the eight projects and the UNIDO Evaluation Office during the inception phase. For the Russia project, the TOC was adapted to explain the process of change by outlining causal linkages in the initiative for its shorter-term, intermediate, and longer-term outcomes and impact (Figure 1).

16. The nine outputs as well as the three outcomes included in the TOC (Figure 1) are those proposed in the project document. The evaluation team has proposed three intermediate states that indicate progress to longer term impact. It is anticipated that once the legislation on PCBs has been strengthened, the relevant authorities in the countries would take actions for its enforcement to ensure full compliance of PCB owners (Intermediate State 1). This would trigger Intermediate State 2, whereby the PCB owners would engage in establishing ESM systems for the identification and sound management of PCBs at their facilities. Finally, with the assistance and support of the relevant authorities, it is foreseen that the PCB owners would take advantage of the treatment / disposal technologies established by the project to soundly dispose all their PCB contaminated equipment by 2028 (Intermediate State 3), and hence would reduce risk exposure of humans and the environment to the harmful effects of PCBs (Impact statement).

17. Three key assumptions have been identified for the intermediate states to happen for long-term impact. It is expected that the relevant enforcing authorities would undertake regular inspection (Assumption No. 3) to ensure that the PCB owners are complying with the national regulations on PCBs, in particular that the latter have established the ESM system at their premises. Furthermore, it is anticipated that the PCB owners would be willing to participate and share data (Assumption No. 2) and would have the financial resources to soundly dispose of their PCB contaminated equipment and wastes (Assumption No. 4)

⁵ Refer to Figure 1 of the inception report for this PCB cluster evaluation.

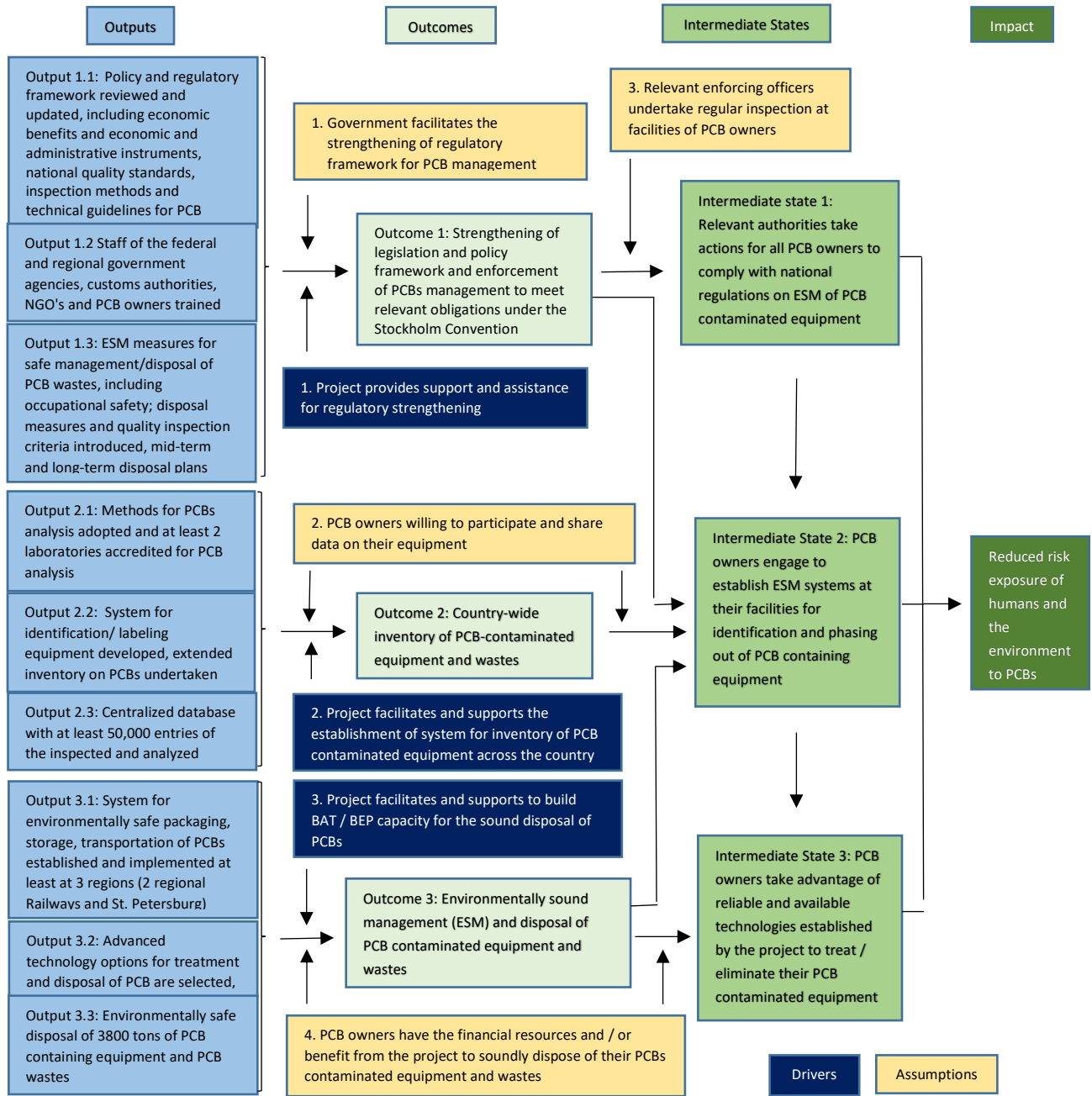


Figure 1: Theory of Change

I.5 Evaluation approach and methodology

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

19. Furthermore, it was agreed to undertake evaluation missions in India, Russia and Bolivia. For the other countries, it was decided to hire national consultants to assist the team in information gathering and site visits. However, due the global political situation⁶, it was decided not undertake a mission to Russia but rather to rely on a national consultant for information gathering.

20. Unfortunately, despite efforts made, the UNIDO Evaluation Division could not identify a suitable national consultant for the Russia project, and the team was informed accordingly in November 2022. In this context, the evaluation methods used were mainly desk studies and remote individual interviews⁷ with key stakeholders and partners of the project. The planning of the persons to be selected for interviews was done in close consultation with the UNIDO Evaluation Office and the UNIDO Project Manager (PM). A participatory approach that sought to keep informed and consult all key stakeholders of the project was used throughout the evaluation process. Where appropriate, both quantitative and qualitative evaluation methods were used to determine project achievements against the expected outputs, outcomes, and impacts.

21. The effective evaluation was carried out from October 2022 to January 2023. The remote interviews were carried out from mid-November to beginning January 2023. Prior to all the interviews, specific questionnaires⁸ were developed (in French language) and emailed to all interviewees at least one week before the scheduled interview. They were requested to fill out these questionnaires and to email them back before the interview. As per the terms of reference for this evaluation, the evaluation team proposed a theory of change (TOC) (cf. Section 1.4) that was used to identify causal and transformational pathways from the project outputs to outcomes and longer-term impacts, drivers, and assumptions to achieve them. In particular, the evaluation assessed the extent to which the project contributed to put in place the conditions necessary to trigger the occurrence of the intermediate states proposed in the TOC in order to achieve long term impact.

22. In preparing for interviews, the evaluation team reviewed the extensive documentation provided by the UNIDO Project Manager and the National Project Coordinator. These included the project document, minutes of Project Steering Committee (PSC) meetings, annual and progress reports, Project Implementation Reports (PIR), awareness and training workshop reports, as well as

⁶ Russian invasion of Ukraine, and economic sanctions imposed on Russia

⁷ Using any available communication platform such as Zoom, Google Meet or other

⁸ Annex 5 for set of questionnaires developed by the evaluation team

technical reports of national experts. The full list of documents consulted and persons interviewed during the evaluation are given in Annexes 2 and 3, respectively.

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

I.6 Limitations of the Evaluation

24. Despite the assistance and support provided by the UNIDO PM and his assistant, who contacted the stakeholders individually (by phone and email), it took more than six weeks (from mid-November to end December 2022) to undertake the interviews. Moreover, the evaluation could interview only six of the twelve selected stakeholders, the others never responded to requests made. In particular, the evaluation could not interview the Mordovian Ecology Plant, the operator of the plasma technology developed by Gubkin Russian State University for the destruction of PCBs. Furthermore, LLC Rusatom Greenway, the operator of the facility for the decontamination PCB contaminated equipment did not provide the information requested on the amount of equipment treated despite an official request made by the UNIDO PM. Noting that the evaluator is non-Russian speaking, save for the inception report, annual and progress reports, PIR reports, PSC minutes of meeting, work plans, and the midterm review (MTR) report that were in English, all the other documents submitted to the evaluation were in Russian, which included training and awareness raising materials and the corresponding workshop reports, tools and documentation for PCB management, documentation and drafted texts on policies and legislation, national coordination and technical committee reports, and reports of consultants among others. These are highlighted in Annex 2.

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

2.1 Project's achieved results and overall effectiveness

25. Overall effectiveness is assessed on the extent to which the outputs have been successfully delivered and the outcomes achieved, and whether the objective of project has been met. To meet the objective of the project, the planned activities were designed to deliver nine outputs that would contribute to three substantive outcomes. The assessment of the delivery of outputs as well as achievement of outcomes and project objective was based on whether their indicators proposed in the Project Results Framework (PRF)⁹ are available. The scale used for rating ranges from **Highly Satisfactory (HS)** to **Highly Unsatisfactory (HU)**¹⁰.

2.1.1 Delivery of outputs

26. The project has performed moderately satisfactorily in terms of delivery of outputs. As reported in Table 2, of the nine outputs, five have been rated **Satisfactory (S)**, three **Moderately Satisfactory (MS)**, and the last one **Moderately Unsatisfactory (MU)** respectively. The assessment, which is summarized below, was based on whether the targets / indicators of the respective output have been achieved (Table 2).

⁹ Annex A of the project document

¹⁰ **HS**: highly satisfactory; **S**: satisfactory; **MS**: moderately satisfactory; **MU**: moderately unsatisfactory; **U**: unsatisfactory; and **HU**: highly unsatisfactory

27. The project faced several challenges that caused significant delays to the execution of activities. The project was slow to start due to the low awareness of the project partners on the requirements of the Stockholm Convention. The project team had to bring the issue of PCB management to the National Security Council, which issued the relevant order to the respective agencies to initiate the strengthening of legislation for PCB management. It is worth noting that the NIP for the Russian Federation was submitted to the Stockholm Secretariat on 14 November 2017 while the project was launched on 24 April 2014. Furthermore, it was found that the scope of strengthening the legislation was wider than expected at the time of designing the project proposal. The change in the top management of the Russian Railway Company, one of the key partner of the project as well as of transfer of project management from UNIDO HQ to the UNIDO Center for International Industrial Cooperation (CIIC) in Moscow at the request of the national counterparts in 2016, the challenge to import standards for PCB testing (cf. paragraph on **Output 2.2** of this Section) and the COVID19 pandemic exacerbated the delays. The challenges met to procure the high temperature oxidation (plasma) unit (discussed below under Output 3.3) also delayed implementation.

28. The project has performed satisfactorily for **Component 1**, which was on the strengthening of the regulatory framework for the environmental sound management (ESM) of PCBs in the Russian Federation. Target for **Output 1.1** has successfully been achieved. MONRE established an inter-agency working group led by the Federal Service for Supervision of Natural Resource Use (Rosprirodnadzor) to update the national legislation and technical regulations to be in line with the requirements of Stockholm Convention. A number of amendments and regulations relevant to PCBs have already been adopted by the government including the following: (1) amendments to the Technical Rules of the Custom Union «About requirements to oils and special liquids» (No. TP TC № 030/2012); (2) amendments to the Order of the Ministry of natural resources and environment of the Russian Federation No.868 dated on 18.12.2002 «About organization of professional training for permits for hazardous waste management»; (3) amendments to the Decision of the EEC Board of April 21, 2015 No. 30 “On non-tariff regulation measures”, according to which the import of analytical standards and chemical reagents containing PCBs for chemical analysis is permitted in accordance with the provisions of the Stockholm Convention on POPs; (4) The Federal Classificatory Catalogue of Wastes which include waste transformer oils containing PCBs was approved by the Order of the Federal Service for supervision on natural resources use; and (5) The Implementation Plan under the Stockholm Convention on POPs. And guidelines for identification, labelling, packaging, transportation, and disposal have been developed and approved by MONRE. Delivery for **Output 1.2** was also successful. A training centre was established at Railway Company, and more than 600 people from different professional groups (decision makers, environmental inspectors, customs officers, health professionals, local authorities, etc.), and coming from different regions of the country were trained on the ESM of PCBs. For **Output 1.3**, while manuals of ESM measures for safe management / disposal of PCB wastes, including occupational safety; disposal measures and quality inspection have been developed, there is no evidence whether monitoring at workplaces is being done. **Output 1.3** has thus rated **MS**. Overall, delivery for **Component 1** is rated **S** (see Table 3).

29. **Component 2** was about building capacity for the identification of PCBs. Target for **Output 2.1** was satisfactorily achieved. The method GOST IEC 61619-2014 - Determination of PCB contamination in insulating fluids by capillary column gas chromatography method - was adopted, and the laboratories of Gubkin Russian State University, the Research and Production Center of the

Russian Railway Company, and the “Inspectorate R” were selected as project laboratories for PCBs analysis respectively. In that context, the Gubkin Russian State University renovated its laboratory and purchased a gas chromatograph coupled with mass spectrometer (GC/MS), and the project procured two chromatographs for “Inspectorate R” and one for the Russian Railway laboratory. Given the shortage of laboratory capacity for PCBs analysis across the country, two mobile laboratories were established by project. The staff of all these laboratories were given adequate training on PCB analysis. The two mobile units and the “Inspectorate R” laboratory obtained full accreditation for PCB analysis. Due to unexpected circumstances, the entity designated to operate the two mobile units was changed. And the new operator, with the consent of the project, transformed these mobile units into fixed ones.

30. Targets for **Output 2.2** were only partially reached. While the code of practice was drafted and adopted by project stakeholders, and more than 50 people trained on its implementation and who applied it during the inventory exercise, only 17,500 of the targeted 50,000 transformers were sampled from the Russian Railway company network (see Table 2). Furthermore, due to legislative restrictions, PCB compounds could not to be imported to be used as standards during analysis of the oil samples by chromatography. It took more than two years to get the ban on importation of PCB standards removed. With the availability of the PCB standards, the analysis of the collected samples have started and revealed that PCB contamination in the samples collected. However, no information is available on whether the analysis of the 17,500 samples has been completed and the extent of PCB contamination. A documentary inventory carried out revealed that Russian Railway Company owned more than 25,000 PCB-filled capacitors. However, given that the target of 50,000 transformers tested was not achieved, **Output 2.2** is rated **MS**.

31. **Output 2.3** is rated **S**. A PCB database was successfully established, and it has been handed over to the Federal Service for supervision on natural resources use, which is responsible for its management and updating. In the future, it is planned that this database would be extended to accommodate data generated nationally, and it would be the main instrument for PCB control and management. Overall achievement for **Component 2** is rated **S**.

32. **Component 3** concerned the ESM and disposal of PCB contaminated equipment and wastes. For **Output 3.1**, the target of developing guidance documents on procedures for the handling, safe packaging, temporary storage, transportation and disposal of PCB contaminated equipment has been satisfactorily met, and training has provided to the relevant stakeholders. On the other hand, there is no documented evidence whether the target of establishing or upgrading 3 temporary storage facilities and Railway infrastructures for storage and long-range transportation of PCBs has been achieved. **Output 3.1** is thus rated **MS**. The target of selecting, establishing and implementing advanced technology options for the treatment and disposal of PCB for **Output 3.2** has been reached, and this output is thus rated **S**. As reported in Table 2, the targets for **Output 3.3** have only been partially achieved. The Russian Railway company invested \$11.2 million to establish a hazardous waste complex (Picture 1) at one of its sites in Yaroslavl City, located 250 km northeast of Moscow. The complex included a hazardous waste facility, adequately equipped with the appropriate operating systems to prevent emissions of dioxins and furans, for the destruction of PCBs, class 1 hazardous chemicals. The facility, having a destruction capacity of 4,500 tons annually, was delivered the operating permit (RU 6517306-019-2015) on 30 October 2015. Unfortunately, in 2016 residential buildings were constructed near the complex, and it was no longer possible to destroy

class 1 hazardous chemicals / wastes at the facility. The facility was thus adapted / modified for the disposal of other classes of hazardous chemicals / wastes. Currently, the complex is operational, but it can only destroy class 3 – 4 hazardous wastes. For the destruction of highly PCB contaminated dielectric oils and pure PCBs, the project opted for a stationary facility using the plasma – high temperature oxidation technology that was developed by the Gubkin Russian State University. The procurement to establish this unit was delayed due to a failed first bid, the first service provider did not meet all requirements for national requirements on legislation and also price was very high. Furthermore, due to sanctions imposed on the Russian Federation as a result of the Russian invasion of Ukraine¹¹, international banking transactions, in particular SWIFT transfers could not be done. A solution was found, funds could be transferred from UNIDO HQ to UNDP, Moscow, who had an account in a bank not under the sanctions. However, this delayed the procurement process by about 5 months, but in the end, Gubkin University could successfully establish the high temperature oxidation technology, which was then transferred to the Mordovian Ecology Plant (MEP), the facility operator. This established technology, which has a destruction capacity of 800 tons annually, is not yet operational as trials are on-going to confirm that MEP can operate at BAT level¹². Regarding decontamination mobile units, only one «Meliiform-PCB-5000», and not 2 as designed in the project document, was procured by project and delivered to the Russian Railway hazardous waste complex in Yaroslavl City. During the commissioning of this unit, which has an annual capacity of decontaminating 1,200 tons, two tons of PCB contamination transformer oil were successfully treated, reducing the PCB level from 130 ppm to 20 ppm. Through a decision taken by the PSC during a meeting held on 13 December 2019, the «Meliiform-PCB-5000» unit was transferred to Rusatom Greenway LLC, which is a subsidiary of the State Corporation Rosatom. Through the Federal Law No. 225 adopted on July 26, 2019, Rosatom was empowered by the Russian Government to manage waste of hazard class 1-2 and to select federal waste management operators in the framework of the National Project “Ecology”. In that context, Rusatom Greenway has been appointed as waste management integrator and would be responsible, among other, to establish three waste complexes having the capacities to process hazard class 1-2 wastes including those containing PCBs. The decision to transfer the mobile unit was motivated by the fact that Rusatom Greenway had the status of national operator for hazardous waste facilities that would allow to expand the scope of the project. After the transfer and adequate training of the staff, the mobile unit was fully operational since the end of 2021. Despite repeated requests, no information on the amount of PCB treated was provided to the evaluation. In light of the above discussion, targets have not been achieved, and **Output 3.3** has thus been rated **MU**. **Component 3** has also been rated **MS** (Table 3).

Picture 1: Inauguration of the hazardous waste complex

¹¹ Conflict started in 20 February 2022

¹² Emission of dioxins and furans in the flue gases less than 0.1ngTEQ/Nm³ during destruction of PCBs



Source of picture: UNIDO CIIC

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

Table 2: Delivery of outputs

Outputs	Target / Indicators	Comments	Rating
Output 1.1: Policy and regulatory framework reviewed and updated, including economic benefits and economic and administrative instruments, national quality standards, inspection methods and technical guidelines for PCB management	Official guidance documents concerning PCB identification, labeling, handling and disposal drafted and officially approved. Text of the framework regulations on PCBs. Official guidance documents approved and demonstrated in the project. Draft regulation submitted for approval procedure	The national legislation and technical regulation updated to be in line with the requirements of Stockholm Convention. A number of relevant PCB regulations adopted by the Government of the Russian Federation in order to improve PCB management Guidelines for identification, labelling, packaging, transportation, and disposal have been developed and approved by MONRE	S
Output 1.2: Staff of the federal and regional government agencies, customs authorities, NGO's and PCB owners trained on the new regulations	Establishment of a training center inside the Railway Company	Training centre established at Railway Training of different professional groups (decision makers, environmental inspectors, customs officers, health professionals, local authorities etc) in safe PCB management was held all over the country. In addition, training of more than 600 people from the energy supply objects, executive bodies and public health protection authorities has been held.	S

Output 1.3: ESM measures for safe management / disposal of PCB wastes, including occupational safety; disposal measures and quality inspection criteria introduced, mid-term and long-term disposal plans developed, deadlines for introduction of BATs established	Organized disposal activities and monitoring of workplace where PCBs are being handled or disposed is established	Manuals of ESM measures for safe management / disposal of PCB wastes, including occupational safety; disposal measures and quality inspection developed. No evidence of monitoring being done at work places	MS
Output 2.1: Methods for PCBs analysis adopted and at least 2 laboratories accredited for PCB analysis	At least 2 laboratories are upgraded with equipment for carrying out PCB analysis using an international standard method and accredited. Staff from the laboratories trained and accredited on the new methods	Methods for PCBs analysis adopted and three (3) laboratories selected as project laboratories for PCBs analysis, their technical infrastructure strengthened, including staff of the selected laboratories trained on PCB sampling and analysis. Given the shortage of laboratory capacity for PCBs analysis on the territory of the Russian Federation, two fully accredited mobile laboratories established by project, and staff appropriately trained.	S
Output 2.2: System for identification/ labeling equipment developed, extended inventory on PCBs undertaken	Code of Practice for identifying, labeling, tracking and screening analysis of PCBs is drafted. At least 30 operators trained on the implementation of such a code of practice (theoretical and hands-on training). Inventory teams established throughout the country and an inventory coordination unit established. Inventory including sampling and analysis of 50,000 transformers is carried out	Code of practice drafted and adopted by project stakeholders. More than 50 people trained on its implementation and applied it during the inventory exercise. However, only 17,500 transformers sampled, no evidence that all that been tested by chromatography. According to documentary inventory revealed that Russian Railway Company owned more than 25,000 PCB-filled capacitors	MS

Output 2.3: Centralized database with at least 50,000 entries of the inspected and analyzed equipment and contaminated sites established	A PCB database containing PCB inventory data which univocally identify any single PCB equipment, linked to a georeferenced traceability system is implemented	PCB database successfully established by project. Database handed over to Federal Service for supervision on natural resources use, responsible for its management and updating. Database expected to be extended to the national level and would be the main data instrument for PCB data management	S
Output 3.1: System for environmentally safe packaging, storage, transportation of PCBs established and implemented at least at 3 regions (2 regional Railways and St.Petersburg)	Guidance procedures for the packaging, temporary storage, transportation and disposal of PCBs in Russia put in place and verified. At least 3 temporary storage facilities and Railway infrastructures (i.e. dedicated wagons/platforms) established or upgraded for the storage, packaging and long-range transportation of PCBs	Guidance procedures on handling safe packaging of PCBs developed , temporary storage, transportation and disposal for companies developed However, no evidence whether 3 temporary storage facilities and Railway infrastructures established or upgraded for storage and long-range transportation of PCBs established	MS
Output 3.2: Advanced technology options for treatment and disposal of PCB are selected, cooperation for their introduction is established and implemented	A set of technologies for the disposal / treatment of low contaminated PCB equipment, metal carcasses and porous material are identified and their relevant parameters concerning disposal capacity requirements, reliability and environmental performance are evaluated	Decontamination technology by sodium and plasma technology for PCB destruction identified	S
Output 3.3: Environmentally Safe Disposal of 3800 tons of PCB containing equipment and PCB wastes	One stationary and 2 mobile suitable disposal facilities, compliant with the SC BAT/BEP criteria, for a capacity suitable to fulfill or exceed project needs, established, tested and permitted. 3800 tons of PCBs equipment or waste disposed by means of such facility	Russian Railways established a hazardous waste facility for PCB (class 1 hazardous chemicals) destruction, but later modified to destroy only class 3 - 4 hazardous wastes. One stationary (plasma – high temperature oxidation) technology developed and constructed by the Gubkin Russian State University and transferred to the facility operator Mordovian Ecology Plant (MEP).	MU

		Trials on-going to confirm sound destruction of PCBs. Only one and not 2 mobile decontamination unit procured by project and handed to Rusatom Greenway, the operator of facility. Trainings provided to Greenway staff, and facility fully operational No evidence on the amount of PCB treated	
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Table 3: Rating of components and overall rating for achievement of outputs

Component	Outputs	Rating	Score*	Average score	Component Rating
Component 1	Output 1.1	S	5	4.7	S
	Output 1.2	S	5		
	Output 1.3	MS	4		
Component 2	Output 2.1	S	5	4.7	S
	Output 2.2	MS	4		
	Output 2.3	S	5		
Component 3	Output 3.1	MS	4	4.0	MS
	Output 3.2	S	5		
	Output 3.3	MU	3		
Overall			40	4.4	MS

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

1.1.2 Achievement of outcomes and project objective

34. The assessment of project objective and outcomes was based on the availability of the indicators proposed in the PRF of the project document. Similar to outputs, the rating scale used was from **HS** to **HU**. Table 4 summarizes this assessment. The project development objective has been rated **Moderately Unsatisfactory**. The project has built capacity to introduce and implement a PCB management system as well as to procure BAT technologies to eliminate and treat PCB contaminated equipment. However, at closure it has not achieved the objective to soundly dispose of at least 3,800 tons of PCBs and PCB-containing equipment. Target for **Outcome 1** has been partially met. Not all the regulatory instruments drafted by the project and submitted to the relevant legislative bodies, have been officially adopted. **Outcome 1** is rated **MS**. The two indicators for **Outcome 2** are verified. Guidance on inventory has been developed and adopted by project partners and stakeholders, facilitated the inventory of 17,500 transformers. In cooperation with the project, a PCB management plan has been developed under NIP, and has been officially adopted on 3 October 2017 by the Decree №529 of the Government Management Plan. This outcome has been rated **S**. **Outcome 3** has also been rated **MS** as the project has contributed to procure BAT technologies for the treatment / destruction of both lowly and highly PCB contaminated equipment as well as pure PCBs, but the facility running on plasma technology is not yet operational. The Russian Railway Company established a BAT level hazardous waste facility, originally to destroy PCBs (Class 1 hazardous chemicals), but later modified to destroy only class 3 – 4 hazardous wastes. Based on the same

approach used for the overall rating of outputs, **Achievement of Outcomes and Project Objective** has been rated **MS**¹³.

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

Table 4: Achievement of Outcomes and Project Development Objective

Project Development Objective		Comments	Rating
The project will build capacity to introduce and implement a PCB management system to facilitate the implementation of the Stockholm Convention on POPs, will dispose of at least 3,800 tons of PCBs and PCB-containing equipment in an environmentally-sound manner and will maximize opportunities for public-private partnership through development of efficient policies and regulations		While the project has built capacity to introduce and implement a PCB management system, it has not achieved the objective to soundly dispose of at least 3,800 tons of PCBs and PCB-containing equipment	MU
Outcomes	Indicators / target	Comments	Rating
Outcome 1: Strengthening of legislation and policy framework and enforcement of PCBs management to meet relevant obligations under the Stockholm Convention	Regulatory instruments, including a framework regulation on PCBs and official guidance on PCB management is drafted, submitted to the relevant legislative bodies, and officially adopted	Regulatory instruments drafted and submitted to the relevant legislative bodies, but not all have been officially adopted	MS
Outcome 2: The disposal strategy and plan of actions based on PCBs inventory and risk assessment for efficient allocation of human and economic resources	<ul style="list-style-type: none"> • Availability of a PCB inventory including sample and monitoring data concerning at least 50,000 transformers. • Availability of a PCB management plan drafted and agreed by relevant stakeholders 	<ul style="list-style-type: none"> • Guidance on inventory developed and adopted by project partners and stakeholders but only 17,500 transformers inventoried so far. Capacity built for PCB testing • PCB management plan developed under NIP, and in cooperation with the project, adopted on the 3rd October 2017 by the Decree №529 of the Government. Management plan 	S

¹³ 1 x **MU** (3) + 2 x **MS** (4) + 1 x **S** (5) = 16. Average score = 16/4 = 4.0 , which corresponds to **MS**

<p>Outcome 3: ESM of PCB through safe packaging, storage and transportation applied and 3,800 tons of PCBs and PCB contaminated equipment disposed of</p>	<p>Consultancy services will be provided to assure the compliance of technologies compliant with SC BAT/BEP. Capacities will be established for the treatment of 3800 tons of PCB contaminated equipment.</p>	<p>Two BAT technologies procured and established by project for the treatment of 3,800 tons of PCB contaminated equipment, but one not yet fully operational</p>	<p>MS</p>
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2.2. Progress towards impact

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

2.2.1. Behavioral changes

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

38. **Economically competitive** – In the context of the Morocco PCB initiative¹⁴, one of the eight projects of the PC cluster evaluation, a rate of \$2,045 per ton was charged by Maroc Maintenance Environnement, a local facility for the treatment of lowly PCB contaminated equipment (less than 2,000ppm). In an economic feasibility study in Ecuador¹⁵, a treatment rate of \$1,150 per ton and \$1,950 per ton for lowly PCB contaminated oil (less than 5,000ppm) and for PCB contaminated equipment was proposed respectively. In the same feasibility study, a rate of \$3,800 per ton was proposed for the destruction of pure PCB oils or highly contaminated PCB equipment. This rate would include the packing, shipping and the actual destruction costs at a dedicated facility. In the Russian Federation, since 2022 the official government tariff for hazardous waste treatment is 280,000 rubles per ton¹⁶ corresponding approximately to a rate of \$3,700¹⁷ per ton. If this rate is applied by Rusatom Greenway, the operator of the dechlorinating mobile unit for the treatment of lowly PCB contaminated equipment (less than 5,000ppm), this would not be economically competitive compared to the above mentioned prices. The risk is that PCB owners might opt to choose for more competitive options in neighboring countries rather than to rely on local ones for treatment of their lowly contaminated equipment. On the other hand, this official rate would be competitive for the destruction of highly PCB contaminated equipment locally. In light of the above discussion, the

¹⁴ Making polychlorinated biphenyls management and elimination sustainable in Morocco – GEF ID 9916,

¹⁵ *Economic feasibility proposal for treatment and/or disposal technologies of dielectric oils contaminated with PCB*, C. Gonzalez and Darío Bolanos Guerron, accepted for publication on 2 December 2020, can be accessed at: <https://doi.org/10.1016/j.heliyon.2020.e05838>

¹⁶ Interview data

¹⁷ Based on the exchange as at March 2023

authorities might consider having two different rates for lowly and highly PCB contaminated equipment respectively.

39. **Environmentally sound** – One of the key objective of this pilot project was to build capacity for the ESM of PCBs in the Russian Federation. The project interventions contributed to concrete behavioral changes within the Russian Railway company, the key partner of the project. This state owned and vertically integrated company located in 77 out of 89 constituent entities of the Russian Federation territory, employing more than 700,000 people, and owning about 28,000 power transformers and more than 25,000 capacitors, has implemented, through an integrated approach, an ESM system for safe management of equipment and wastes containing PCBs¹⁸. It has also long-term plans for the phasing out and sound disposal of PCB-containing equipment. The Railway Company also invested significantly to establish a hazardous waste facility to BAT level for the destruction of class 3-4 hazardous wastes. Furthermore, the project has undertaken numerous awareness raising and training workshops targeting different groups such as energy supply companies, electricity producing and distributing companies, decision makers, environmental inspectors, and customs officers on the need for ESM of PCBs. There are indications that the biggest PCB owners have adopted the ESM system for PCB management¹⁹. In September 2020, the Deputy Minister of Energy of Russia officially informed the biggest 40 PCB-owners about the necessity to fulfill the obligations of Stockholm Convention requirements through identification and establishing phase-out plan for the ESM of PCBs²⁰. The project has also contributed to establish two PCB destruction facilities operating at BAT level and provided appropriate training to the staff of these facilities.

40. **Socially inclusive** – The project anticipated that by reducing or eliminating human exposure to toxic chemicals such as PCBs, the risk of development diseases caused by the exposure to these compounds would be reduced, and therefore people's health would be protected, and would thus bring down health and social costs. The project carried out numerous awareness raising and training workshops on ESM of PCBs. There are some evidence that the big PCB owners, mainly state owner companies in the power sector, and have implemented ESM systems at their facilities²¹. For instance, the Russian Railway company has implemented the ESM system for sound PCB management, which would undoubtedly reduce risk exposure to PCBs not only for its employees but also for the millions of passengers travelling by trains regularly, as it is confirmed that the Railway company has a significant number of PCB contaminated equipment in its network (refer to Section 2.1.1 under **Output 2.2**)

2.2.2. Broader adoption

41. This section addresses the catalytic effect of the project and describes the extent to which the project's interventions have been adopted within the country or beyond the domains and scales originally targeted. The three mechanisms, namely mainstreaming, replication, and scaling-up, and which are frequently used to promote the broader adoption of project interventions and innovations, are discussed below.

¹⁸ Interview data

¹⁹ Interview data

²⁰ Interview data

²¹ Interview data

42. **Mainstreaming** occurs when information, lessons or specific results generated by the project are incorporated into broader institutional mandates and operations, such as laws, policies, regulations, and programs. As reported earlier (refer to Section 2.1.1 under **Output 1.1**), the Russian Federation government has already adopted some of the legal texts on PCBs developed by the project. Nevertheless, it is recommended that the MONRE take the necessary steps to get the whole set of proposed legal texts approved and enacted by the government. The PCB owning companies would thus be legally bound to soundly manage their PCB contaminated equipment until final disposal by 2028.

43. **Replication** occurs when the initiatives, technologies or innovations supported by the project are reproduced or adopted on a comparable scale. The key objectives of this pilot project were to build capacity within the Russian Railway Company for the identification and ESM of PCB contaminated equipment and the disposal of 3,800 tons of PCB contaminated equipment. As reported in the project document, more than 180,000 tons of PCBs have been manufactured in the Russian Federation. However, the design did not include a replication strategy. Nevertheless, once all the legal texts proposed by the project for the ESM of PCBs would be adopted and enacted, it would be expected the project interventions would be replicated as other companies across the country would be legally bound to soundly manage their PCB equipment. However, it is too early to assess this aspect.

44. **Scaling-up** takes place when the project-supported interventions are implemented at a larger scale, which can be administrative, geopolitical, ecological or business scales. As discussed in the earlier section on replication, scaling-up is anticipated to take place as other companies across the country would be legally bound to soundly manage their PCB equipment.

2.2.3 Emergence of TOC intermediate states

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

46. Legal texts for the sound management of PCBs have already been drafted, reviewed, and accepted by the project partners. Some of these have already been adopted by the government (cf. Section 2.1.1 under **Output 1.1**). There are evidences that MONRE have taken actions to enforce these legislations²² indicating that Intermediate State 1 has started to emerge, and has thus been rated **S**. As earlier discussed (Section 2.2.1 under **Environmentally Sound**) the Russian Railways has implemented an ESM system for the management of its PCB contaminated equipment and has long term plans for their phasing out and sound disposal. Training on ESM targeting major PCB owners have also been undertaken, and there are some evidence of uptake and actual implementation of the ESM system by these big owners²³. Intermediate State 2 is rated **MS**. As reported in Section 2.1.1 under **Output 3.3**, only the mobile treatment facility to decontaminate lowly PCB contaminated equipment was fully operational. As no data is available on the amount of contaminated equipment

²² Interview data from two different sources

²³ Interview data

by the mobile facility, there is no evidence that Intermediate State 3 is emerging, and has therefore been rated **MU**.

47. Assumption 1 has shown to hold and is rated **S**. Indeed, the key national stakeholders were actively involved in the drafting of legal documents for PCB management. While the Russian Railways was fully engaged and shared data during the inventory carried, it is too early to assess engagement of other PCB owners, thus Assumption 2 is rated **MS**. Assumption 3 has been rated **S** as there are evidence of law enforcement, and environmental officers conducting random inspections at enterprises owning PCB contaminated²⁴. On the other hand as no data is available on the amount of PCB equipment treated so far, Assumption 4 is rated **MU**.

48. The three drivers were in place during project implementation and contributed to the successful the regulatory strengthening, establishment of inventory guidelines, and the establishment of two BAT level facilities for the sound treatment / disposal of PCB contaminated equipment. The three drivers have been satisfactorily rated (Table 5). Given the status of intermediates, assumptions, and drivers, **Progress towards impact** is considered **Moderately Satisfactory**.

Table 5: Status of intermediate states, assumptions and drivers

Intermediate State	Observation/findings	Rating*
Intermediate state 1: Relevant authorities take actions for all PCB owners to comply with national regulations on sound chemicals management	Some evidence that legislation being enforced by the authorities	S
Intermediate State 2: PCB owners engage to establish ESM systems at their facilities for identification and phasing out of PCB containing equipment	Russian Railways fully engaged. Training on ESM targeting other major PCB owners undertaken. Some evidence of uptake and actual implementation of ESM system by major PCB owners	MS
Intermediate State 3: PCB owners take advantage of reliable and available technologies established by the project to treat / eliminate their PCB contaminated equipment	Only mobile treatment facility for lowly PCB contaminated equipment operational. No available information on amount of equipment treated. Trials for plasma technology for highly PCB contaminated equipment on-going	MU
Assumptions	Observations/findings	Rating
1. Government facilitates the strengthening of regulatory framework for PCB management	Key national counterparts actively involved in the drafting of legal documents for PCB management	S
2. PCB owners willing to participate and share data on their equipment	Russian Railways fully engage and shared data for inventory. Too early to assess engagement of other PCB owners	MS

²⁴ Refer to footnote 21

Intermediate State	Observation/findings	Rating*
3.Relevant enforcing officers undertake regular inspection at facilities of PCB owners	Some evidence that of law enforcement, and environmental officers conducting random inspections at enterprises that own equipment contaminated with PCBs.	S
4.PCB owners have the financial resources and / or benefit from the project to soundly dispose of their PCBs contaminated equipment and wastes	No data on the amount of PCB treated by the mobile dechlorination unit.	MU
Drivers	Observations/findings	Rating
1.Project provides support and assistance for regulatory strengthening	The project satisfactorily facilitated the regulatory strengthening through the recruitment of national consultants to draft and update the national legislation. Training provided to PCB owners on ESM of PCBs	S
2.Project facilitates and supports the establishment of system for inventory of PCB contaminated equipment across the country	Project facilitated the establishment of guidelines for PCB inventory, and training on ESM of PCBs targeting PCB owners satisfactorily undertaken.	S
3.Project facilitates and supports to build BAT / BEP capacity for the sound disposal of PCBs	Two BAT level destruction facilities established with the support of the project	S

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

3. Project's quality and performance

3.1. Project design and results framework (logframe)

49. The evaluation acknowledges several strengths in the design of the project. In particular, a participatory approach was adopted during the preparatory phase involving the major stakeholders and beneficiaries including MONRE, Russian Railway Company, water supply Company "Vodokanal of St. Petersburg" and the Gubkin Russian State University. The logical framework approach was used to develop the project that led to the establishment of a Project Results Framework (PRF)²⁵ and the main elements of the project, i.e., the overall objective, outcomes, outputs, as well as indicators, their means of verification, and the assumptions.

50. The evaluation concurs with the MTR that found the project design to be adequate to address the problems at hand such as lack of knowledge on technical issues related to the ESM of PCBs and non-existence of PCB decontamination facilities in the country. Based on the situational analyses and the needs assessment done, a clear thematically-focused development objective has been proposed, and the causal pathways from project outputs through outcomes towards impacts have been clearly described in the PRF. The evaluation also concurs with the MTR that in addition to end of project targets, midterm ones could have also been proposed. The evaluation also agrees with the MTR regarding indicators and targets, while adequate and SMART²⁶ ones as well as their means of verification have been proposed for most of the outputs, those for Output 1.2 could have been better

²⁵ Annex A of the project document

²⁶ SMART: specific, measurable, achievable, relevant and time-bound indicators

formulated. Nevertheless, the evaluation considers that the proposed indicators were adequate to monitor progress at both output and results levels.

51. The project document provided a detailed budget per component and per output and per activity for GEF funds²⁷ as well as for co-financing. Relevant socioeconomic benefits to be delivered by the project as well as consideration of gender dimensions have been adequately described in the project document²⁸. Adequate institutional arrangement has been proposed for project implementation at UNIDO level, and for coordination and execution at national level. Relevant national stakeholders, such as ministries, institutions and state owned companies from the energy sector, and academia been identified and their foreseen involvement described²⁹.

52. Rating on **Project Design and results framework** is rated **Satisfactory**.

3.2. Relevance

53. The project is highly relevant as it is assisting Russian Federation, which is a party to the Stockholm Convention, to fulfill its obligations towards the Convention. In particular, it is building the country's capacity to soundly manage its PCB contaminated equipment and wastes. Furthermore, this project is perfectly aligned with the State Policy for Environmental Development for the period 2012-2030.

54. The proposed project is consistent with GEF-5 Chemicals FA objective CHEM-1 "Phase out POPs and reduce POPs releases"; Outcome 1.4 "POPs waste prevented, managed and disposed of and POPs contaminated sites managed in an environmentally sound manner"; Output 1.4.1 "PCB management plans under development and implementation".

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

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

3.3 Coherence

57. During a visit to Moscow in October 2018, experts of the Nordic Environment Finance Corporation (NEFCO) experts discussed prospects for cooperation in the destruction of PCBs in the

²⁷ Annex F of the project document

²⁸ Section B.2 of the project document

²⁹ Section B.1 of the project document

Russian Federation, including in its Arctic zone. After initial talks and discussions between the UNIDO project team, NEFCO and the project partners, a Joint Declaration on Cooperation for the purpose of implementation the Stockholm Convention on POPs provisions was signed. During the negotiations, it was agreed that the project would procure the technology for PCB disposal, and NEFCO would finance the needed infrastructure for the operation of that technology, including the transportation system.

58. The project played a key role in the development of the PCB management plan that was included in the country's NIP. The NIP was adopted on 3 October 2017 by the Decree №529 of the Government, and submitted to the Stockholm Convention Secretariat on 14 November 2017.

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

3.4 Efficiency

60. The CEO endorsement date of the project was 20 November 2013 and administrative project implementation started officially at UNIDO on 5 February 2014. The project was planned for a duration of 54 months to end on 5 October 2018. However, due to challenges faced by the project, which are discussed earlier (cf. Section 2.1.1), implementation was considerably delayed, and 5 extensions were granted and the actual closure date was 31 December 2022.

61. A full agency mode of execution was applied with UNIDO managing the GEF funds. The procurement of equipment and goods as well as the recruitment of consultants was done by UNIDO. The organization of meetings and workshops was done in collaboration with MONRE, the executing agency. The management of GEF funds was done according to the UNIDO internal procedures. For payments and disbursements of funds disbursement, for example, the UNIDO PM ensured that all relevant documents and approvals were obtained before making requests³⁰.

62. There is a clear evidence that the project has used the most efficient options for the recruitment of consultants, for sub-contracting service providers, and for project execution. In terms of quality of the project's interventions, there is documented evidence and also reported by the MTR³¹ that the national counterparts appreciated the project contributions to assist in strengthening the national legal and regulatory framework for the ESM of PCBs and for supporting national efforts to implement the Stockholm Convention. Also, the MTR highlighted that participants of training workshops³², carried out mostly before 2017, stated that the training and technical assistance provided was very relevant and contributed to build their capacity for the ESM of PCBs. They highly rated the trainings, on a total of 498 participants that attended 6 training workshops, 75% gave a rating of Excellent, 24 % Good and 1% Satisfactory³³.

63. Table 6 below, which summarizes budget allocations and expenditures for GEF funds according to budget line, indicates that 99.6% of total funds have been disbursed (or obligated) at 30 June 2022. The table also reports the budget allocation per budget line as designed in the project

³⁰ Interview data

³¹ MTR was carried out in March 2017

³² The reports of the training workshops are in Russian language

³³ At the end of each training workshop, the participants were asked to give their appreciation by giving a rating from the four following choices: Excellent, Good, Satisfactory and Unsatisfactory

document³⁴. Given that the two sets of budget lines (first and last columns of Table 6) are not exactly the same, the evaluation has merged rows 1 and 3, and rows 4 and 7 of Table 6 respectively to create Table 7 for better analysis. Figures from Table 7 clearly indicate that there has been significant reallocation of GEF funds during implementation. In particular, there has been a very significant budget reallocation for the budget line consultants and staff budgets representing an over expenditure of \$2,131,479 (Table 7, row 1). Although the project has been extended for 50 more months, there was no particular reason why this would have required significant additional expertise from consultants. The over expenditures would more likely correspond to additional costs required for project management due to the extensions. A major portion of this reallocation came from the budget line contractual services and equipment, which decreased by \$1,630,765 from \$5,280,000 (at design) to \$3,649,244 (Table 7, row 3). This budget line would most likely concern **Component 3**, for which a budget of \$5,500,000 was allocated at design³⁵. This decrease in budget allocation has certainly affected delivery for this component, as only one mobile treatment unit was procured instead of two (cf. Section 3.3 under **Output 3.3**). In terms of percentage the share for these two budget lines were 14.7% and 71.4% at design, and changed to 43.5% and 49.3% during implementation respectively (Table 7, rows 1 and 3). Noting the significant shortfall for contractual services and equipment, which meant less investment for tangible products for **Component 3** (establishment of BAT technologies for PCB destruction and actual destruction of PCBs), and the very high over expenditures for consultants and staff, the evaluation considers that the funds were not efficiently managed.

64. A total of \$34,200,000 co-financing (\$19,762,000 cash and \$14,438,000 in-kind) was pledged from the national counterparts, private and public sectors, and UNIDO during the preparatory phase (Table 8). During the midterm review, the MTR team was informed that \$29,600,000 materialized, but the information was provided component wise and with no specification regarding the co-financing type (cash or in-kind) (Table 9). The MTR requested project management for more detailed information as per Table 8 format. Official requests were sent to all the co-financiers for these disaggregated co-financing information, but replies were not received within the MTR exercise period. The MTR thus recommended that this information should be made available during official reporting (e.g. annual reports, progress reports, or PIRs). This recommendation was not implemented as the terminal evaluation received exactly the same table (Table 9) regarding co-financing materialized. Nevertheless, there are documented evidence that both types of co-financing materialized. For instance, the Russian Railways invested \$11.6 to establish the hazardous waste complex and provided human resources and logistic for transformer oil sampling, the Gubkin University upgraded its laboratory and purchased a GS/MS (see Section 2.1.1) and Vodokanal Company provided resources for transformer oil sampling and capacity building for PCB analysis. Given that information on co-financing materialized date back to the MTR (in 2017) and that the destruction facilities were established in 2022, the co-financing for Activities 3.3.4 (Transportation of 3,800 tons of PCBs to disposal facilities) and 3.3.5 (Safe disposal of 3,800 tons of PCBs is carried out) amounting to \$14,000,000³⁶ is not included in the figures reported in Table 9. Despite requests made, the evaluation could obtain additional information regarding materialized co-financing.

³⁴ Annex G of the project document

³⁵ See page 3 of project document

³⁶ Annex F of the project document

65. Given the considerable delays in project implementation that resulted in very significant over expenditures for project management and shortfall for **Component 3, Efficiency** is rated **Moderately Satisfactory**.

Table 6: Budget allocation (\$) and expenditures (\$) of GEF funds as at 30 June 2022*

	Budget line	Agreed budget*	Disbursements**(%)***	Available budget	Budget****	Budget line****
1	Staff & inter. consultants	264,409	250,855(94.9%)	13,554	784,000	Consultants
2	Local travel	193,935	187,537(96.7%)	6,398	439,000	Travel
3	Nat. consultants & staff	2,953,050	2,943,042(96.4%)	10,008	302,000	Nat. experts
4	Contractual services	2,317,884	2,317,861(100%)	23	539,000	Subcontracts
5	Train/fellowship/study	144,206	144,206(100%)	0	422,000	Workshops
6	International meetings	4,989	4,898(100%)	0	-	-
7	Equipment	1,331,360	1,331,488(100%)	(127)	4,741,000	Equipment
8	Other direct costs	190,166	190,280(100%)	(114)	173,000	Sundries
	Total	7,400,000	7,370,279(99.6%)	29,721	7,400,000	Total

Source of table: PIR FY22;*budget allocation during implementation; **including obligations; ***% expenditure; ****budgets at design and budget line from the project document

Table 7: Agreed budget (\$) allocations, budget allocations (\$) at design, and variance

	Budget line	Agreed budget (\$)*(%)**	Budget***(%)**	Variance	Budget line
1	Consultants & staff (1+3)	3,217,459(43.5%)	1,086,000(14.7%)	+2,131,479	Consultants & Nat. Experts
2	Local travel	193,935(2.6%)	439,000(5.9%)	-245,065	Travel
3	Contractual services & equipment (4+7)	3,649,244(49.3%)	5,280,000(71.4%)	-1,630,765	Subcontracts & Equipment
4	Train/fellowship/study	144,206(1.9%)	422,000(5.7%)	-277,794	Workshops
5	International meetings	4,989(0.07%)	-	-	-
6	Other direct costs	190,165(2.6%)	173,000(2.3%)	+17,165	Sundries
	Total	7,400,000	7,400,000		Total

*budget allocation during implementation,**% with respect to total budget ***budget allocation as per project document (at design)

Table 8: Co-financing pledged at design

Sources	Name of Co-financier (source)	Type	Amount (\$)
National Government	Ministry of Natural Resources and Environment	Cash	300,000
National Government	Ministry of Natural Resources and Environment	In-kind	1,700,000

Private Sector	Russian Railway Holding (RZD)	Cash/in-kind	19,000,000/11,000,000
Public Sector	Gubkin State University for Oil and Gas	Cash/In-kind	400,000/700,000
Public Sector	St.Petersburg water supply company "Vodokanal"	In-kind	900,000
GEF Agency	UNIDO	Cash/In-kind	62,000/138,000
Total Co-financing			34,200,000 (19,762,000/14,438,000)

Source: Project document

Table 9: Co-financing at design and materialized

	Total Pledged (\$)	Total materialized (\$)	%
Component 1	3,000,000	2,000,000	66.7
Component 2	4,000,000	3,500,000	87.5
Component 3	25,600,000	24,000,000	93.8
Component 4	800,000	100,000	12.5
Total	33,400,000	29,600,000	88.6

Source: UNIDO project team

3.5 Sustainability

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

67. **Sociopolitical Sustainability** – The Russian Federation became party to the Stockholm Convention on 25 February 2002, which it ratified on the 17 August 2011, and is fully committed to its implementation. At the time of submitting its NIP, the country established the National Coordination Center for the Stockholm on 11 September 2017 by a government decree. This center, which is a federal agency, was established to fulfill the provisions of Article 9 of the Stockholm Convention on exchange information. Furthermore, MONRE, by Order No 529 dated 03.10.2017, adopted the NIP on POPs, which contains the main elements of the project under evaluation including the need for the sound treatment and disposal of accumulated unused and prohibited pesticides, industrial waste and equipment containing POPs including PCBs. Furthermore, there are several policy initiatives and Government programmes to support environmental sustainability and related international commitments. In particular, MONRE initiated a \$66 billion project "National Project

Ecology” aiming for environmental protection³⁷. Given the strong government commitment for environmental protection, **Sociopolitical sustainability** is rated **Likely**.

68. **Financial Sustainability** – The two established facilities for the destruction of PCBs are operated by state owned companies. It is expected that the operating costs of these facilities would be financed mainly from government budget, but also partly from income generated for the treatment of PCB contaminated equipment³⁸. Another key point regarding this aspect of sustainability is whether owners would likely mobilize the necessary resources to soundly dispose of their PCB containing equipment and associated wastes. According to information gathered, the big PCB owners, which are mostly state owned companies, have the financial resources to soundly manage until final disposal all their PCB equipment³⁹. For instance, the Russian Railways invested more than \$11.6 million to establish a hazardous waste complex (Section 2.1.1 under Output 3.3). The risk would be rather the smaller owners. One possible option is that they could benefit from the support of national project Ecologia, which consists of several federal projects including one for treatment hazardous wastes⁴⁰. Furthermore, the high amount of co-financing, which was committed and materialized (see Tables 8 and 9), demonstrate the high level commitment and ownership of national counterparts and beneficiaries (mainly PCB owners) stakeholders of the project and low financial risks. **Financial Sustainability** is rated **Likely**.

69. **Institutional framework and governance sustainability** – Several legal texts developed by project have already been adopted by the government (cf. Section 2.1.1 under **Output 1.1**). Furthermore, the NIP, which has already been adopted, sets legal requirements to PCB management, and which are obligatory for all PCB owners. As reported earlier (see Section 2.1.1 under **Output 1.1**), MONRE established a working group to improve the legislation for PCM management, and this working group would be responsible to coordinate the implementation of the NIP. Adequate law enforcing capacity exists in the country, and enforcing officers are already carrying out random inspections at enterprises, owners of PCB equipment⁴¹. As earlier mentioned, most the major PCB owners have already established an ESM system at their facilities. In light of the above discussion, **Sustainability of institutional framework and governance** is considered **Likely**.

70. **Environmental risks** – The project is considered ecologically sustainable as it was designed to build the capacity of the Russian Federation for the sound management of PCB contaminated equipment until their final disposal. Furthermore, as no environmental risk that can influence or jeopardize the project outcomes and future flow of project benefits has been identified, **Environmental Sustainability** is rated **Likely**.

71. As no risk has been identified, **Sustainability** of the project is rated **Likely**.

3.6 Gender mainstreaming

72. The project design did not make explicit provisions of gender consideration. However, the project document mentioned that social factors, primarily gender, determine their occupational

³⁷ Interview data. <https://strategy24.ru/rf/ecology/projects/natsional-nyy-proyekt-ekologiya>)

³⁸ Interview data

³⁹ Interview data

⁴⁰ Interview data

⁴¹ Interview data

roles, have an impact on the level and frequency of exposure to toxic chemicals, the kind of chemicals encountered, and the resulting impacts on human health, so the Labor Law restricts their employment for some hazardous positions. The project would thus promote the additional working places for women only where there are no direct contacts with PCBs (laboratories, monitoring, etc.). The awareness programme would assist to reduce accidental contacts with the contaminated wastes. The Ministry of Health, Ministry of Labor and Social Affairs would be provided with the information of harmful characteristics of PCBs and the measures required protecting women. Relevant additions to the occupational safety regulations would be initiated. A draft updated legislation to be elaborated under Component 1 of the project would be consulted with the Parliamentary Committee for social affairs in order to include their recommendations in respect of gender issues. These measures would bring social and economic benefits, in the first run, to women, resulting in protection of their health the health of future generations. For women who need to participate in the project, the management of the participating companies would organize regular monitoring of the working conditions and possible risks of prevent their exposure to PCB, and, if possible, to move them other "non-hazardous" positions. Thus the gender issue would be a part of any activity of the project in order, from one side, to facilitate at a possible degree the participation of women in the activities, but at the same time to be sure that participating women would not be exposed to the risks presented by PCB-contaminated materials. There is no evidence that efforts have been made to implement the afore-discussed proposed measures. However, involvement / participation of women in the project activities (PSC meetings, workshops, etc.) was satisfactory. For example more than 50% of the 478 participants that attended the six training workshops organized by the Russian Energy Agency on ESM of PCBs in 2016 were women. It was reported that 5 of the 11 national consultants were females. It was also found that no women held positions where they could be occupationally exposed to PCBs. Five of the eight persons interviewed for this terminal evaluation exercise were women. **Gender mainstreaming** is rated **Satisfactory**.

4. Performance of Partners

4.1 UNIDO

73. At the start, the project was being implemented by a PM at the UNIDO HQ. At the request of the national counterparts, implementation was transferred to the UNIDO CIIC in Moscow, with its director acting as PM (cf. Section 2.1.1). A proper handing over was done, but this transfer caused a delay of a few months. Assisted by a project assistant, the UNIDO PM provided adequate and timely guidance for the implementation of the project, and solutions were found to the reported problems. Being a Russian greatly facilitated communication with the national counterparts and stakeholders, and the PM could lobby at the highest level to overcome barriers. He was involved in all the main events such as the PSC meetings and the training workshops, and undertook field missions at project sites providing support and technical advice (through quality recruited consultants) that were highly appreciated stakeholders (Table 10)⁴². In light of the above, the performance of UNIDO is rated **Satisfactory**.

4.2 National counterparts

74. The engagement of MONRE, the NEA, was very satisfactory. It was very committed and fully assumed its role. It fully supported the project and took the necessary decisions to facilitate implementation. For example, as reported in Section 2.1.1, the federal agency Rosprirodnadzor,

⁴² The stakeholders interviewed were asked to rate the UNIDO PM, the NPC and the PMU. Not all of them gave ratings.

falling under MONRE, led the working group to improve the regulatory framework for PCB management (see Section 2.1.1). MONRE supported the project team to coordinate and organize all the project activities. The other partners of the project such as the Russian Railway and the Gubkin University were also very much engaged and fully supported the project by providing the necessary human and financial resources. This is evidenced by the high level of co-financing that materialized (Tables 8 and 9). Performance of **National Counterparts** is rated **Satisfactory**.

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

Entity	n*	Stakeholder ratings**		Average score	Overall rating***
		S: 5	HS: 6		
UNIDO PM	6	1	5	5.83	HS
NPC	5	1	4	5.80	HS
PMU	4	1	3	5.75	HS

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

4.3 Donor

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

5. Factors facilitating or limiting the achievement of results

5.1 Project management and Results-based management

76. **Project Management.** As earlier discussed (Section 4.1), the project management changed in 2016 from UNIDO HQ in Vienna, Austria to UNIDO CIIC in Moscow. This also led to a slight change in the executing arrangement. In agreement with the national counterparts, the UNIDO PM was included as member of the PMU. Thus, in addition to the UNIDO PM, the PMU was constituted by the chief of international department of MONRE, the chief of ecological department of Russian Railway, the chief of Rosprirodnadzor, the deputy chief of the department of the international organizations of the Ministry of Foreign Affairs and the NPC, who was recruited during the early phase of the project. The meetings were indifferently carried out at the offices of CIIC or at those of MONRE. The PMU was responsible for the day to day management of the project, and to coordinate and organize activities. There is documented evidence that the PMU performed very satisfactorily, and it adapted to situations to find solutions to challenges faced or problems met. For example, a solution was found transfer funds from UNIDO HQ to procure the plasma technology (See Section 2.1.1 under Output 3.3). The stakeholders highly appreciated the coordination work done, and the support and assistance provided by the PMU (see Table 10).

77. In light of the above discussion, **Project Management** is rated **Satisfactory**.

78. **Results-based Management.** The findings clearly indicate that a RBM approach was adopted to implement the project. As per the Project Implementation Reports (PIR) provided to the evaluation, it is clear that monitoring was based on the PRF, and the indicators mentioned therein

were used to track progress at both output and outcome levels. Rating on **Results-Based Management** is **Satisfactory**.

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

5.2 Monitoring & evaluation and reporting

80. **M&E Design.** The project document proposed a detailed monitoring and evaluation (M&E) plan⁴³. This plan, with a total budget of US\$200,000, included all the monitoring and evaluation activities to be implemented within the project. It involved the measurement of key impact indicators annually, regular monitoring and analysis of performance indicators to feed into annual and PIR reports, annual project review through PSC meetings to assess project progress and performance indicators, and the conduct MTR and the terminal evaluation.

81. The M&E plan included the establishment of the PSC, which would be responsible to ensure that the M&E system was in place. This committee, under the chairmanship of MONRE would be responsible to assess work plans, progress reports and M&E reports and make recommendations to guide the project team. Based on the above, the **Monitoring and Evaluation Design** is rated **Satisfactory**.

82. **M&E Implementation and reporting.** As per the M&E plan, the M&E system was operational. PMU regularly discussed with project stakeholders/partners on the progress of execution of activities according to the agreed work plan, and if necessary, expertise was mobilized to provide technical support. The PSC was established and five meetings were convened on 18 November 2015, 20 December 2016, 19 December 2017, 11 December 2018, and 13 December 2019 respectively. There is documented evidence that the PSC was providing adequate guidance by taking the right decisions and making the appropriate recommendations. It was during the December 2019 meeting that the strategic decision to transfer the decontamination mobile unit from Russian Railway to Rusatom Greenway was taken. The MTR was completed in March 2017 and made twenty two recommendations. While project management confirmed that these recommendations were considered during the last phase of implementation, there are documented evidence that not all of them were implemented. As discussed earlier (one before last paragraph of Section 3.4), the recommendation on co-financing was not implemented. In terms of reporting, all the PIR reports except that 2018 were submitted, and all annual progress reports up to 2020 were available. As there were some deficiencies in the implementation of the MTR recommendations and also in terms of reporting, **M&E implementation and reporting** is rated **Moderately Satisfactory**.

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

5.3 Stakeholder engagement and communication

84. The three key partners of the project namely the Russian Railway Company, the Gubkin University and the Vodokanal Company were already identified and contacted during the preparatory phase to ensure their commitment. They were all active members of the PSC and other technical committees. Russian Railway adopted the ESM system, supported the PCB inventory and invested significantly to establish a hazardous waste complex. Gubkin University upgraded its laboratory for PCB analysis and developed the high temperature oxidation (plasma) technology for

⁴³ Section C of the project document

PCB destruction. Vodokanal also supported the inventory exercise and built the capacity of its laboratory personnel for PCB analysis. Being the NEA and part of the PMU, MONRE was very actively involved in the coordination and organization of project activities, it led the working group to update the regulatory framework for PCB management, and was active member of the PSC and other technical and coordination committees among others.

85. Communication has been satisfactory during the implementation of the project. Being a citizen of the Russian Federation made communication and advocacy for the project a lot easier for the UNIDO PM. There is documented evidence that the PMU and the UNIDO made a lot of efforts to ensure regular communication amongst stakeholders and partners. This was done during training and awareness raising workshops, PSC and other technical meetings. Flyers and brochures have been produced and disseminated during awareness raising activities and training workshops. In addition, a project website has been created and regularly updated: <https://stoppcb.ru/en/>. The project is promoted on the UNIDO CIIC website: <https://unido.ru/>. The project activities and results have also been promoted at numerous national and international meetings / conferences / Environmental Forum such as: "Innoprom", International industrial exhibition, Ekaterinburg, 11 – 14 July 2016; "Nevsky International Ecological Congress" , St. Petersburg, 25 – 27 May 2017; IV International Cooperation Council 31 October 2019; Yenisei Environmental Forum 27-28 November 2019; Saint-Petersburg “Ecological Forum” and “IX International Ecology Forum” in 2021. A large number of articles and papers on the project have been published in newspapers and specialized magazines, and project events have benefitted from media coverage. Rating on **Stakeholder engagement and Communication** is **Satisfactory**.

5.4. Overarching assessment and rating table

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

Table 13: Summary of Assessment and Ratings for the project

	Evaluation criteria	Evaluator’s summary comments	Rating
A	Impact (progress toward impact)	Some evidence that two of the three intermediate states of the proposed TOC emerging. No information available to assess emergence of third one	MS
B	Project design		S
1	<ul style="list-style-type: none"> Overall design 	Several strengths noted in the design: participatory and logical framework approaches to develop project; appropriate SMART indicators to monitor progress at output and result level; adequate costed M&E plan	S
2	<ul style="list-style-type: none"> Logframe 	End of project target as well as well-defined SMART indicators for outputs and outcomes provided to monitor progress and track at output and result levels. Midterm targets and indicators could have been proposed as well	S
C	Project performance	All stated objectives achieved	MS

	Evaluation criteria	Evaluator's summary comments	Rating
1	<ul style="list-style-type: none"> Relevance 	Project assisting the Russian Federation to fulfill its obligations regarding sound management of PCBs in the context of the Stockholm Convention, and aligned with GEF Focal areas and UNIDO mandates	HS
2	<ul style="list-style-type: none"> Effectiveness 	Not all objectives achieved, nevertheless regulations on PCBs strengthened and some already adopted by government. Capacity for PCB inventory as well as capacity to treat lowly PCB contaminated equipment built, however facility to destroy pure PCB not yet operational	MS
3	<ul style="list-style-type: none"> Coherence 	Joint Declaration on Cooperation signed with Nordic Environment Finance Corporation for implementation the Stockholm Convention on POPs provisions in particular for cooperation in the destruction of PCBs in the Russian Federation, including in its Arctic zone.	S
4	<ul style="list-style-type: none"> Efficiency 	Most efficient options applied for recruitment and procurement. However, implementation delayed by 50 months, and large over expenditures for project management costs evidenced, causing significant reduction in budget allocation for equipment and only one instead of two mobile decontamination units procured	MS
5	<ul style="list-style-type: none"> Sustainability of benefits 	No socio-political, institutional framework & governance, and financial risks that could jeopardized the sustainability of project benefits identified	L
D	Cross-cutting performance criteria		
1	<ul style="list-style-type: none"> Gender mainstreaming 	Satisfactory involvement and participation of women seen in project activities	S
2	<ul style="list-style-type: none"> M&E: <ul style="list-style-type: none"> ✓ M&E design ✓ M&E implementation 	Adequate budgeted M&E plan available. Proper project monitoring and tracking of results done using SMART proposed in the PRF. Reporting satisfactory	S
3	<ul style="list-style-type: none"> Results-based Management (RBM) 	RBM approach adopted and proper monitoring of project progress done involving all key stakeholders.	S
E	Performance of partners		
1	<ul style="list-style-type: none"> UNIDO 	UNIDO provided timely and adequate support and technical back-stopping through hired quality national experts	S
2	<ul style="list-style-type: none"> National counterparts 	MONRE fulfilled all its executing obligations and provided adequate human	S

	Evaluation criteria	Evaluator's summary comments	Rating
		and financial support for project implementation	
3	• Donor	GEF funds available and timely transferred	S
F	Overall assessment		MS

RATING OF PROJECT OBJECTIVES AND RESULTS

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

6. Conclusions, recommendations and lessons learned

6.1 Conclusions

87. Due to numerous factors such as slow start due to the low awareness of partners and stakeholders on the requirements of the Stockholm Convention, transfer of project management from UNIDO HQ to UNIDO CIIC, change in the top management of the Russian Railway Company, the COVID19 pandemic, the implementation of this highly-relevant project was considerably delayed by more than four years. Nevertheless, thanks to the dedicated project team and UNIDO providing the adequate guidance and technical support through quality recruited consultants, most of the stated project objectives have been successfully achieved. The project contributed to strengthen the regulatory framework and build capacity for ESM of PCBs. The project succeeded also to build capacity for PCB identification and inventory, and facilitated the establishment destruction facilities operating with BAT technologies. However the one for destroying highly PCB contaminated equipment and pure PCBs is not yet operational. Most efficient options have been applied for recruitment and procurement. Because of the delays a large and unjustified over expenditures for project management costs was evidenced, which caused a significant reduction in budget allocation for equipment, and affected delivery, only one instead of two mobile decontamination units was procured. There are good evidence of changes as a result of the project interventions. Major PCB owners, mostly big state owned companies, have adopted and implemented ESM system for safe management of PCBs. At this point, progress to long term impact of the project is considered moderately satisfactory, two of the three proposed intermediate states of the TOC have started to emerge.

6.2 Recommendations

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

To UNIDO
1. The project has achieved most of the stated objectives. However, many key targets have not been fully achieved at project closure: inventory system not fully demonstrated, technology for destruction of pure PCB not yet operational, trials on-going. Furthermore, no replication and up-scaling mechanism was proposed in the design. UNIDO could consider develop a follow-up initiative, medium-sized project, to consolidate, promote, and replicate the project results.
To UNIDO CIIC and MONRE
2. Trials are still on-going regarding the high temperature oxidation (plasma) technology for the destruction of highly PCB contaminated equipment and pure PCBs. It is recommended to closely monitor these trials and to ensure that the facility operator can destroy PCBs at BAT level.
To MONRE:
3. The project has facilitated the drafting of legal documents for the environmental sound management of PCBs in the Russian Federation. Some of these regulations have already been adopted by the government. However, it is recommended that MONRE take the necessary actions to get the remaining draft regulations adopted so that PCB owners are legally bound to soundly management their PCB equipment.
4. To ensure compliance, it is suggested that the relevant authorities take the necessary steps to strictly enforce the regulations on PCBs including regular inspections at PCB owners' facilities.
5. The official government rate for hazardous waste treatment is 280,000 rubles (approximately \$3,700) per ton. While this rate would be complete to destroy highly contaminated PCB equipment (or pure PCBs), it would not be competitive for lowly contaminated equipment as the current rate applied worldwide is about \$2,000 per ton. The risk is that PCB owners might opt to choose for more competitive options outside the country rather than to rely on locally available ones for the treatment of their lowly contaminated equipment. The authorities might consider of having two different rates for lowly and highly PCB contaminated equipment respectively.
6. This pilot demonstration project has been successful in strengthening the legislation, building capacity for identification, sound management and safe disposal of PCBs. To encourage owners across the country to soundly management their PCB equipment, it is suggested that the authorities initiate the necessary actions to promote the project results.

6.3 Lessons learned

89. The following major lesson stemmed out

One key lesson emerged:

2. Russian Railway Company invested considerably to establish a BAT hazardous waste facility to destroy wastes of hazard class 1 – 2, in which wastes containing PCBs are classified. Due to the construction of residential buildings nearby, the facility can only destroy wastes of hazard class 3 – 4 but not those of hazard class 1 – 2. Choosing the

right location (e.g. dedicated industrial zones with no future residential development in the close vicinity in the long term) to construct such facilities posing risks to the environment and the population would avoid unwanted outcomes.

[Annexes](#)

Annex 1: TOR of the evaluation

Annex 2: List of documents consulted

Annex 3: List of persons interviewed

Annex 4: Evaluation questionnaires



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

TERMS OF REFERENCE

Cluster evaluation of UNIDO projects

Polychlorinated biphenyls (PCBs)

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1. UNIDO PCBs portfolio background

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

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

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

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

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

2. Rationale and purpose of the evaluation

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

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

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

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

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

Table 1. List of projects for Cluster Evaluation

Region	Country	UNIDO project N.	GEF ID	Them area	Project budget(EUR)	Year of Eval	Budget left (SAP 31.03.22 USD)
EUR	SERBIA	100313	4877	PCB	2,100,000	2022	786,423
ASP	INDIA	104044	3775	PCB	14,100,000	2022	107,230
ASP	LAO PDR	140157	4782	PCB	1,400,000	2022	271,414
LAC	BOLIVIA	140296	5646	PCB	2,000,000	2022	278,300
LAC	GUATEMAL A	140298	5816	PCB	2,000,000	2022	403,866
EUR	RUSSIAN FEDERATION	140019	4915	PCB	7,400,000	2022	30,000
AFR	CONGO	140160	5325	PCB	975,000	2022	25,000
AFR	MOROCCO	170117	9916	PCB	1,826,484	2022	621,734 (ex OpenData)
tot					<u>31,801,484</u>		<u>1,902,233</u>

3. Scope and focus of the evaluation

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

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

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

The Cluster Evaluation, as foreseen in the Independent Evaluation Division Work Plan (WP) 2018-19⁴⁴ and reiterated in WP 2020-21⁴⁵, will follow the UNIDO Evaluation Policy⁴⁶, the UNIDO Guidelines for the Technical Cooperation Project and Project Cycle⁴⁷, and UNIDO [Evaluation Manual](#). Furthermore, the GEF Guidelines for GEF Agencies in Conducting Terminal Evaluations, the GEF Monitoring and Evaluation Policy⁴⁸ and the GEF Minimum Fiduciary Standards for GEF Implementing and Executing Agencies will be applied. The evaluation will also build upon the findings and recommendations of the Cluster Evaluation on UNIDO POPs portfolio carried out in 2015⁴⁹.

The evaluation has three main specific objectives:

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

⁴⁴ https://www.unido.org/sites/default/files/files/2018-11/IEV_WP_2018-19_final_180228.pdf

⁴⁵ https://www.unido.org/sites/default/files/files/2021-06/2021-04-21_EIO%20Evaluation%20work%20plan-budget%202020-21_Update%202021_EB%20Approved_F.pdf

⁴⁶ UNIDO. (2018). Director General`s Bulletin: Evaluation Policy (UNIDO/DGB/2018/08)

⁴⁷ 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)

⁴⁸ <https://www.thegef.org/sites/default/files/council-meeting>

documents/EN_GEF.ME_C56_02_GEF_Evaluation_Policy_May_2019_0.pdf

⁴⁹ [https://www.unido.org/sites/default/files/2015-](https://www.unido.org/sites/default/files/2015-04/FINAL_report_NIPS_CLUSTER_EVAL_20150409_0.pdf#page=81&zoom=100,120,76)

[04/FINAL_report_NIPS_CLUSTER_EVAL_20150409_0.pdf#page=81&zoom=100,120,76](https://www.unido.org/sites/default/files/2015-04/FINAL_report_NIPS_CLUSTER_EVAL_20150409_0.pdf#page=81&zoom=100,120,76)

4. Evaluation approach and methodology

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

The evaluation will use a theory of change (ToC) approach⁵⁰ and mixed methods to collect data and information from a range of sources and informants. It will pay attention to triangulating the data and information collected before forming its assessment. This is essential to ensure an evidence-based and credible evaluation, with robust analytical underpinning.

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

5. Data collection methods

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

- (a) **Desk and literature review** of documents related to the projects, including but not limited to:
 - The original project document, monitoring reports (such as progress and financial reports, mid-term review report, technical reports, back-to-office mission report(s), end-of-contract report(s) and relevant correspondence.
 - Notes from the meetings of steering committees involved in the project.
- (b) **Stakeholder consultations** will be conducted through structured and semi-structured interviews and focus group discussion. Key stakeholders to be interviewed include:
 - UNIDO Management and staff involved in the projects; and
 - Representatives of donors, counterparts and stakeholders.
- (c) Whenever possible, **field visits** to project sites in the involved countries. Due to the persisting emergency caused by the virus Covid-19, it shall be noted that restrictions on international travels are still in place at the time this ToR is drafted, therefore the field visits should be carried out by the national consultants only.
 - On-site observation of results achieved by the project, including interviews of actual and potential project beneficiaries.

⁵⁰ For more information on Theory of Change, please see chapter 3.4 of UNIDO [Evaluation Manual](#)

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

6. Evaluation key questions and criteria

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

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

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

Table 2. Project evaluation criteria

#	<u>Evaluation criteria</u>	<u>Mandatory rating</u>
A	Progress to impact	Yes
B	Project design	Yes

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

Performance of partners

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

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

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

- Need for follow-up:** e.g. in instances financial mismanagement, unintended negative impacts or risks.
- Materialization of co-financing:** e.g. the extent to which the expected co-financing materialized, whether co-financing was administered by the project management or by

some other organization; whether and how shortfall or excess in co-financing affected project results.

- c. **Environmental and Social Safeguards**⁵¹: appropriate environmental and social safeguards were addressed in the projects` design and implementation, e.g. preventive or mitigation measures for any foreseeable adverse effects and/or harm to environment or to any stakeholder.

7. Rating system

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

Table 3. Project rating criteria

Score		Definition	Category
6	Highly satisfactory	Level of achievement presents no shortcomings (90% - 100% achievement rate of planned expectations and targets).	SATISFACTORY
5	Satisfactory	Level of achievement presents minor shortcomings (70% - 89% achievement rate of planned expectations and targets).	
4	Moderately satisfactory	Level of achievement presents moderate shortcomings (50% - 69% achievement rate of planned expectations and targets).	
3	Moderately unsatisfactory	Level of achievement presents some significant shortcomings (30% - 49% achievement rate of planned expectations and targets).	UNSATISFACTORY
2	Unsatisfactory	Level of achievement presents major shortcomings (10% - 29% achievement rate of planned expectations and targets).	
1	Highly unsatisfactory	Level of achievement presents severe shortcomings (0% - 9% achievement rate of planned expectations and targets).	

⁵¹ Refer to GEF/C.41/10/Rev.1 available at: http://www.thegef.org/sites/default/files/council-meetingdocuments/C.41.10.Rev_1.Policy_on_Environmental_and_Social_Safeguards.Final%20of%20Nov%2018.pdf

8. Evaluation process

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

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

9. Time schedule and deliverables

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

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

After this phase and the factual validation, a synthesis aggregating the comparable findings from the different projects is expected to be produced by the team. The draft TE report will be submitted 4 to 6 weeks after the end of the mission. The draft TE report is to be shared with the UNIDO Project Managers (PMs), UNIDO Independent Evaluation Division, the UNIDO GEF Coordinator and GEF OFP and other stakeholders for comments. The ET leader is expected to revise the draft TE report based on the comments received, edit the language and submit the final version of the TE report in accordance with UNIDO ODG/EIO/EID standards.

Table 4. Tentative timelines

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

10. Evaluation team composition

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

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

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

The UNIDO Project Manager and the project management team in the different countries involved will support the evaluation team. The UNIDO GEF Coordinator and GEF Operational Focal Point (OFP) will be briefed on the evaluation and provide support to its conduct. GEF OFP(s) will, where applicable and feasible, also be briefed and debriefed at the start and end of the evaluation mission.

An evaluation manager from UNIDO Independent Evaluation Division will provide technical backstopping to the evaluation team and ensure the quality of the evaluation. The UNIDO

Project Managers and national project teams will act as resourced persons and provide support to the evaluation team and the evaluation manager.

11. Reporting

Inception report

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

The Inception Report will focus on the following elements: preliminary project theory model(s); elaboration of evaluation methodology including quantitative and qualitative approaches through an evaluation framework (“evaluation matrix”); division of work between the evaluation team members; field mission plan, including places to be visited, people to be interviewed and possible surveys to be conducted and a debriefing and reporting timetable⁵². The draft inception report will also include a suggested outline of the overall synthesis report (see below), including the specific evaluation questions for the cross-cutting analysis.

Evaluation report format and review procedures

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

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

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

The draft reports will be delivered to UNIDO Independent Evaluation Division (with a suggested report outline) and circulated to UNIDO staff and key stakeholders associated with the project for factual validation and comments. Any comments or responses, or feedback on any errors of fact to the draft report will be sent to UNIDO’s Independent Evaluation Division for collation and onward transmission to the evaluation team who will be advised of any necessary

⁵² The evaluator will be provided with a Guide on how to prepare an evaluation inception report prepared by UNIDO Independent Evaluation Division.

revisions. On the basis of this feedback, and taking into consideration the comments received, the evaluation team will prepare the final version of the terminal evaluation report.

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

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

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

12. Quality assurance

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

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

Annex 2 – List of documents consulted

1. Project Document and Annexes (English)
2. Inception Report (English)
3. PSC meeting reports (English)
4. Project implementation Reports (English)
5. Work plans (English)
6. Annual reports (English)
7. All awareness raising and training workshop reports (Russian)
8. Russian Energy Atomic Reports and documents (English)
9. Awareness raising materials (Russian)
10. National coordination meetings (Russian)
11. Copies of decrees (Russian)
12. Technical meetings (Russian)
13. Guidance documents for inventory (Russian)
14. Plans for disposal of PCB contaminated equipment - Russian
15. Reports of consultants (English)
16. Copies of flyers and brochures (Russian)
17. Copies of drafted legal documents on PCB management (Russian)
18. Guidance documents for ESM of PCBs (Russian)
19. Documents on general information on PCBs (Russian)
20. Training materials for PCB management (Russian)
21. Financial reports (English)
22. Co-financing commitment letters (Russian)
23. Reports of technical meetings with PCB owners (Russian)
24. Methods for PCB analysis (Russian)
25. Copies of official letters (Russian)

Annex 3: List of interviewees

Sergey Korotkov	UNIDO PM	UNIDO CIIC
Nuritdin Inamov	PSC Member	MONRE, Director of the International Cooperation Department, GEF Focal Point
Maria Lazareva	National Project Coordinator	Consultant
Natalia Sokolova	NEA, Member of Inter Agency Working Group	MONRE, Federal Service for Supervision on Natural Resources Usage
Ekaterina Demicheva	Facility operator of decontamination mobile unit	LLC Rusatom Greenway
Prof. Stanislav Meshcheryakov	Project partner	Head of the Department of Industrial Ecology, Gubkin Russian State University
Ludmila Kruglyakova	Project partner and PCB owner	Russian Railway Company
Marina Myasoedova	Laboratory operator	Ecopur

Annex 4: Evaluation questionnaires

Terminal evaluation of the project: ***Environmentally Sound Management and Final Disposal of PCBs at the Russian Railways network and other PCB owners (Phase I) - GEF ID 4915***

UNIDO Project Manager

Questions	Answers
<p>1. (i) How was the project developed? (ii) Was it a request from the country (iii) How relevant is the project to UNIDO's mandate?</p>	
<p>2. (i) Were you involved in the development of the project (PIF and PPG)? (ii) If yes, were the key national stakeholders identified during that phase? (iii) In particular, were the main PCB owners (e.g. utilities) identified during the preparatory phase? (iv) Are you managing other PCB projects? (v) If yes, were you involved in their development? Please give the GEF ID of these projects. (vi) Any linkages among these PCB projects? e.g., same international consultants involved or lessons learned in one project facilitated the implementation of other projects?</p>	
<p>3. Were you PM since the beginning of the project? 4. If no, when did you take over and was the taking over challenging? Proper handing over?</p>	
<p>5. (i) How many projects were you managing during the implementation of the project under evaluation? (ii) Were you assisted (e.g full time project assistant) for the management of this project?</p>	
<p>6. (i) At UNIDO level, who is responsible to develop the TORs, the contracts and other documents to recruit and sub-contract</p>	

<p>consultants countries or for procurement?</p> <p>(ii) 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?</p> <p>(iii) Were other modalities used for procurement (of goods, equipment, etc.) in the project?</p> <p>(iv) How long did it generally take for procurement or sub-contracting for the project? Any challenges for procurement or sub-contracting? If yes, what were the challenges?</p> <p>(v) Modality for disbursement of funds or payments? What approval are required and from whom?</p> <p>(vi) Were disbursements / payments done on a timely manner?</p>	
<p>7. (i) Was the UNIDO Country (or Regional) Office involved during project implementation? (ii) If yes, describe their involvement and support during implementation?</p>	
<p>8. Financial management (i) Was there a need for approval to reallocate budgets? If yes, what were the reasons for these reallocations?</p>	
<p>9. (i) Did UNIDO directly sub-contract the international as well as national consultants? (ii) How were these consultants identified? (iii) Procedure for their recruitment?</p>	
<p>10. Feedback on International Consultants (ICs (i) Did they perform as expected?</p>	

<ul style="list-style-type: none"> (ii) Did they deliver on time? If no, what caused the delays? (iii) Did they cooperate fully with the Project? (iv) Have there been good collaboration between ICs and the other partners (UNIDO, National Project Coordinator, national counterparts, PCB owners, etc.)? 	
<p>11. Feedback on national consultants (NCs)</p> <ul style="list-style-type: none"> (i) Did they perform as expected? (ii) Were they timely reporting? (iii) Quality of their reports? 	
<p>12. Project Management Unit (PMU) or equivalent (e.g. National Execution Agency – NEA)</p> <ul style="list-style-type: none"> (i) When was the PMU (or equivalent) established? (ii) PMU led by whom (e.g. NPD, NPC, NPM)? (iii) Feedback on PMU (or equivalent) (iv) Feedback on responsible person (NPD, NPC, NPM, or other) heading the PMU 	
<p>13. Project Steering Committee, monitoring, challenges, delays, extension, achievement of objectives, and PIRs</p> <ul style="list-style-type: none"> (i) Was a PSC established? (ii) Did the PMU/NEA submit the required reports (progress, quarterly, annual or other) on a timely basis? Quality of these reports? (iii) Has the gender dimension specifically been considered 	

<p>during implementation and monitoring of the project?</p> <p>(iv) What were the major challenges faced by the project?</p> <p>(v) How were these challenges overcome?</p> <p>(vi) Any impact of these challenges on project implementation?</p> <p>(vii) How many extensions did the project benefit?</p> <p>(viii) What were the main reasons for the extensions?</p> <p>(ix) Have all the project objectives / outcomes / outputs been successfully achieved? All indicators available?</p> <p>(x) Were all the recommendations of the MTR considered during project implementation?</p> <p>(xi) Have the PIR reports been timely submitted?</p>	
14. Mechanism for replication / scaling up in place?	
15. Your general feedback on the project.	

National counterpart: Director / High level officer

Country:

Contact person information (name, email, phone):

Name of your institution:

Position at the institution:

Date in filling out this questionnaire:

Please email back to:

Questions	Response and comments
<p>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?</p> <p>2. Is the UNIDO project relevant to the country's priorities regarding national implementation plans POPs/PCB? Is the PCBs Environmental Sound Management (ESM) a priority issue being tackled by your government? Why or why not?</p> <p>3. Are any other initiatives (public or private sector), projects or interventions the country has been implementing for PCBs management?</p>	
<p>4. Based on the co-financial agreement, how much did the ministry execute in the project? If all the resources that appear in the letter of intent were not invested, which are the main reasons?</p> <p>5. Are financial resources available after the project ends? Has your organization budget for ESM of PCBs disposal until 2028? If it has, how much?</p>	
<p>6. Are you satisfied with the support and guidance provided by UNIDO and the Regional Project Coordinator (RPC)? 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. Please give your feedback on</p>	

the assistance and support provided by UNIDO, and other international experts. 7. What other types of assistance do you think would have been helpful?	
8. Are there already visible signs of the project's impact, such as a behavioural change between PCB private/public stakeholders? 9. What challenges or obstacles remain for the sound management of PCB contaminated equipment across the country?	
10. 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?	
11. How the project contributes to your organization's gender approach? Any lesson learned?	
12. Do you have any inputs/comments/suggestions/issues pertinent to the project you'd like to raise with me?	

National Project Team Members

Country:

Contact person information (name, email, phone):

Name of your institution:

Your position in the institution:

Date in filling out this questionnaire:

Please email back to:

Questions	Response and comments
1. What was your role in the project?	

<p>2. Which were the reports/products/lists/dataset under your responsibility?</p> <p>3. Have there been delays in activities and outputs under your responsibility? If yes, please give the reasons for the delays.</p> <p>4. How many months did you work on this project?</p> <p>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)?</p>	
<p>5. Who were the project's main/key stakeholders? Please explain their role in the project. Were they actively participating in the project? Please reply per stakeholder.</p> <p>6. Were the collaboration, communication and interaction between stakeholders satisfactory? Please comment on the relationship between the National Project Coordinator (NPC), the National Project Manager (NPM) and the PMT.</p> <p>7. How was the project data governance model? How did stakeholders share/update the information? Did the stakeholders have any common platform for information storage?</p>	
<p>8. 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</p> <p>9. What other types of assistance do you think would have been helpful?</p>	
<p>10. Are there any social or political factors that may influence positively or</p>	

negatively the project results? If yes, please comment. 11. What were the main challenges faced to undertake the activities? How were the challenges overcome?	
12. Are you aware of any improvement in health risks prevention measures in the PCB sector workers and communities close to PCB storage?	
13. Did the project benefit or have a particular emphasis on women? How?	
14. How COVID-19 restrictions impacted the delivery of activities and outputs? what adjustments were made because of the delays?	
15. Do you have any inputs/comments/suggestions/issues pertinent to the project you'd like to raise with me?	

National Project Coordinator Questionnaire

Country:

Contact person information (name, email, phone):

Name of your institution:

Your position in the institution:

Date in filling out this questionnaire:

Please email back to:

Questions	Response and comments
16. What procedure was to select and hire the Project National Coordinator, and who hired him directly? Who made the final decision? How many candidates applied? To whom PNC reports his work?	

<p>17. What are your main responsibilities as NPC?</p> <p>18. 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?</p> <p>19. What are the main challenges you have faced in managing the project or executing the activities? How did you overcome these challenges?</p>	
<p>20. Which were the reports/products under your responsibility? Can you share the reports/products? Who is approving your products or evaluating your work?</p>	
<p>21. Were other consultants contracted for the project? If yes, who and how were they recruited? Please list the consultants and contracts</p> <ol style="list-style-type: none"> 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? 	
<p>22. Who were the project's main/key stakeholders? Please explain their role in the project. Were they actively participating and collaborating in the project? Please reply per stakeholder. Were the collaboration and interaction between stakeholders satisfactory? How was the communication (frequency and channel) between the key stakeholders?</p> <p>23. Did the co-financing resources (agree at the beginning of the project) provided by the partners? Did the project receive support from the government/national authorities or</p>	

<p>local authorities/private sector? If yes, what type of support (human resources, capacity building, infrastructure)? Please reply per stakeholder.</p> <p>24. How did stakeholders share/update the information? Did the stakeholders have any common platform for information storage? For example, sample analysis results, inventory, etc.</p>	
<p>25. When was the project officially launched in your country? Which is the project geographical scope?</p> <p>26. 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?</p> <p>27. Who implemented the PCBs sample analysis, inventory and disposal during the project? Which technic/methodology they used?</p> <p>28. 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.</p> <p>29. 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.</p> <p>30. How many PBC owners developed their Environmental Sound Management for PCBs disposal plans during the project?</p> <p>31. How did the project include to the maintenance workshops (transformers/equipment/oils)? Please specify this situation before and after the project.</p>	
<p>32. Are you satisfied with the support and guidance provided by UNIDO, the Regional</p>	

<p>Project Coordinator (RPC), the National Program Director?</p> <p>33. 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</p> <p>34. What other types of assistance do you think would have been helpful?</p>	
<p>35. Has the project able to deliver all outcomes/outputs planned? Did the project had any delays, Why?</p> <p>36. Did the project reach the key indicators main targets? Why?</p> <p>37. Are there any social or political factors that may influence positively or negatively the project results? If yes, please comment.</p> <p>38. What were the main challenges faced to undertake the activities? How were the challenges overcome?</p> <p>39. 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.</p> <p>40. 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?</p> <p>41. Are you aware of any improvement in health risks prevention measures in the PCB sector workers and communities close to PCB storage?</p>	
<p>42. Have the relevant authorities started applying the Environmental Sound Management of PCBs legal framework and regulatory measures to all stakeholders, especially PCBs owners?</p>	

43. Do the enforcing agencies have the necessary resources to inspect and monitor the PCB owners regarding compliance with national regulations on PCBs?	
44. Has the project involved women? How has it integrated gender dimensions in project delivery? Any positive or emerging outcomes on gender equality?	
45. How COVID-19 restrictions impacted the delivery of activities and outputs? what adjustments were made because of the delays?	
46. Who was the responsible of the M&E system/plan design and implementation? How was your interaction with the plan and tools? 47. Did the project have Mid-Term Review? If yes, which recommendations did the project implemented?	
48. Do you have any inputs/comments/suggestions/issues pertinent to the project you'd like to raise with me?	

National Project Manager

Country:

Contact person information (name, email, phone):

Name of your institution:

Your position in the institution:

Date in filling out this questionnaire:

Please email back to:

Questions	Response and comments
<p>49. Which institution is hosting the project?</p> <p>50. When was a letter of agreement (LOA) or contract signed with UNIDO? Which institution signed for your country? When (date) and for which amount?</p> <p>51. Have the funds been timely transferred? Are the funds sufficient to execute the activities at national level?</p>	
<p>52. Are any other initiatives (public or private sector), projects or interventions the country has been implementing for PCBs management?</p> <p>53. What is your role in the project and in PMU? Which is the structure and members.</p>	
<p>54. How was the National Project Coordinator (NPC) recruited? Was there a call for applications? Is the NPC directly contracted by UNIDO?</p> <p>55. Describe your collaboration with the NPC.</p>	
<p>56. Who was responsible to recruit the National consultants (NCs)? What was the procedure to select and recruits the NCs? Were they directly contracted by UNIDO? Please reply:</p> <ul style="list-style-type: none"> 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 	
<p>57. Who were the project's main/key stakeholders? Please explain their role in the project.</p>	

<p>Were they actively participating and collaborating in the project? How was the communication (frequency and channel) between the key stakeholders? Please reply per stakeholder.</p> <p>58. Did the co-financing resources (agree at the beginning of the project) provided by the partners? Did the project receive support from the government/national authorities? If yes, what type of support (human resources, capacity building, infrastructure)? Please reply per stakeholder.</p> <p>59. How did stakeholders share/update the information? Did the stakeholders have any common platform for information storage? For example, sample analysis results, inventory, etc.</p>	
<p>60. 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?</p> <p>61. Are there any social or political factors that may influence positively or negatively the project results? If yes, please comment.</p> <p>62. What were the main challenges faced to undertake the activities? How were the challenges overcome?</p> <p>63. 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.</p>	
<p>64. Please rate the guidance & support provided by UNIDO, RPC, NPC, NPD and International experts separately (from 1 to 6). 1: Highly unsatisfactory; 2: Unsatisfactory; 3: Moderately</p>	

<p>unsatisfactory; 4: Moderately satisfactory; 5: Satisfactory; and, 6: Highly satisfactory. Please elaborate.</p> <p>65. What other types of assistance do you think would have been helpful?</p>	
<p>66. What are the reports that your country has to submit to UNIDO? Can you share the reports/products? What is the frequency for the submission of these reports? Have there been delays in submitting those reports? If yes, please give the reasons for the delays.</p>	
<p>67. Have the results of the project (e.g. capacity building, ESM PCB implementation, PCB disposal, etc.) been adopted/integrated/enforced at a national level? If so, please give an example and comment.</p> <p>68. Is there a plan for replicating or scaling up project results (e.g., inventory, disposal) at national level?</p> <p>69. Have the relevant authorities started applying the Environmental Sound Management of PCBs legal framework and regulatory measures to all stakeholders, especially PCBs owners?</p> <p>70. Do the regulatory units have the resources to monitor the PSCs stakeholders at the national level, especially PCB owners and wastes disposal responsible?</p>	
<p>71. Did the project benefit or have a particular emphasis on women? How? How has it integrated gender dimensions in project delivery?</p>	
<p>72. How COVID-19 restrictions impacted the delivery of activities and outputs? what adjustments were made because of the delays?</p>	
<p>73. Do you have any inputs/comments/suggestions/issues</p>	

pertinent to the project you'd like to raise with me?	
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PCB owner – Project beneficiary

Country:

Contact person information:

Name of your company:

Your position in the company:

Please email back to: robert@uom.ac.mu

Questions	Response and comments
<p>1: About your institution/company:</p> <ul style="list-style-type: none"> (i) When was your enterprise/company established? (ii) How many people does your enterprise / company employ? How many men and women? (iii) How many transformers and capacitors do your enterprise / company own? (iv) How do you manage them? 	
<p>2: How and when was your enterprise / company contacted to be involved in project?</p> <p>3: Was your enterprise / company involved in the preparatory phase of the project?</p>	
<p>4: (i) What was the role of your company in the project?</p> <p>(ii) What did your company and its staff benefit from project?</p> <p>(iii) What did your enterprise / company contribute to the project?</p>	
<p>5: (i) Are you satisfied with the training / support provided by the project on the Environmental Sound Management (ESM) of PCBs?</p>	

Questions	Response and comments
<p>(ii) Have your 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.)</p> <p>(iii) Have your enterprise / company developed a PCB phase out and disposal plan? Is this plan being implemented already?</p> <p>(iv) How many tons of PCB contaminated equipment have your enterprise / company already identified and soundly managed and disposed of?</p> <p>(v) What were the major obstacles or challenges your company faced during the implementation of the project?</p> <p>(vi) How were the challenges / obstacles overcome?</p> <p>(vii) What obstacles / challenges remain to identify and soundly destroy all the PCB contaminated equipment owned by company?</p> <p>(viii) When the project will be finished, and if more PCB contaminated transformers are identified, would your company have the financial resources to soundly eliminate them?</p>	
<p>6: (i) 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.</p> <p>(ii) Are you satisfied with the support and assistance of the national and international consultants (NCs and ICs)? Please give your feedback</p>	

Questions	Response and comments
(iii) What other types of assistance do you think would have been helpful?	
7: 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	UNIDO: PMU NPC: NCs: ICs:
8: (i) Now the project is over, what improvement can you think of? (ii) Your feedback on the project?	

Questionnaire – Beneficiaries: PCBs cycle workers who have direct contact with wastes

**Staff: Public organization, PIU, PCB Owners, Laboratories, labelling, transportation, storage
Maintenance Centers Staff, private firms disposal PCBs, NGOs**

Organization where the participant work:

Work Place:

Time working at the company/organization:

Beneficiary information (name, email, phone):

Gender

Occupation:

Questions	Response and comments
1. Which activities related with PCBs management are you responsible for? Samples, tests, transportation, label, storage, etc. 2. Did you identify/report any spillages in your installations PCBs? Please specify before and after the project.	

Questions	Response and comments
<p>3. How did you come to hear about the project?</p> <p>4. Which are the most important contributions that the project provided you?</p> <p>5. How were your activities related with PCBs management before and after the project?</p> <p>6. Which tools your company/organization provides for carry out your work when you are in fieldwork? (training, security equipment, security clothes, etc)</p> <p>7. How did you report/update the information related to the PCB activities under your responsibility, for example, samples analyzed, results, equipment transported, etc.? Which tools did you use for the register (Physical list, word, excel)</p>	
<p>8. What improvement have you seen at the level of your organization/company/community as a result of the project (behaviour change, application of knowledge, etc)? please comment</p> <p>9. What tools does the company/organization provide to carry out fieldwork for the safety of personnel of workers exposed to PCBs? Did you or your colleagues give a blood test as part of the project or as part of regular activities with your company/organization? If yes when was the last time?</p> <p>10. How COVID-19 restrictions impacted the delivery of activities and outputs? what adjustments were made because of the delays?</p> <p>11. Do you have any inputs/comments/suggestions/issues pertinent to the project you'd like to raise with me?</p>	