

Independent Terminal Evaluation

Environmentally Sound Management (ESM) and Disposal of Polychlorinated Biphenyls (PCBs)

UNIDO Project No.: 104054
GEF ID: 3709



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

UNIDO OFFICE FOR INDEPENDENT EVALUATION

Independent Terminal Evaluation

PERU

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Abbreviations and acronyms

INITIALS	DESCRIPTION
BPC	Polychlorinated Biphenyls
CC	Consultative Committee of the project
CDC	Centers for Disease Control and Prevention
COP	Persistent Organic Pollutants
CORPAC	Peruvian Corporation of Airports and Commercial Aviation
CRBAS	Basel Regional Center for South America
CU	Project Coordination Unit
DESA	Executive Direction of Environmental Health
DGAEE-MINEM	General Directorate of Energy Environmental Affairs of the Ministry of Energy and Mines
DGCA-MINAM	General Directorate of Environmental Quality of the Ministry of the Environment
DIGECA	General Direction of Environmental Quality (Costa Rica)
DIGESA	General Directorate of Environmental Health
DINAMA	National Directorate of Environment (Uruguay)
DIRESA	Regional Directorate of Environmental Health
DISA	Environmental Health Directorate
DREM	Regional Directorate of Energy and Mines
DTIE-PNUMA	Division of Technology Industry and Economy
ECA	Environmental Quality Standards
EGASA	Electric Generation Company of Arequipa S.A.
EGEMSA	Electric Generation Company of Machupicchu S.A.
EIA	Environmental Impact Assessment
ELECTRODUNAS	Electro Dunas S.A.A.
ELSE	Electro Sur Este S.A.
ELN	Electro Norte
EMT	Mid Term Evaluation
ENEL	Ente nazionale per l'energia elettrica SpA
ENOSA	Electro Nor Oeste S.A.
EPU	Electro Puno
FMAM	Global Environment Fund
FONAFE	National Fund for the Financing of State Business Activity
GEF	Global Environment Fund
GORE	Regional Government
GTSQ	Technical Group of Chemical Substances
HIDRANDINA	Hidrandina S.A.
INACAL	National Institute of Quality
IPES	NGO - Promotion of Sustainable Development
MDIC	Ministry of Development, Industry and Foreign Trade (Brazil)
MEF	Ministry of Economy and Finance

INITIALS	DESCRIPTION
MINAE	National Ministry of Environment and Energy (Costa Rica)
MINAG	Ministry of Agriculture
MINAM	Ministry of the Environment
MINEM	Ministry of Energy and Mines
MINSA	Ministry of Health
MMA	Ministry of the Environment (Brazil)
MME	Ministry of Mining and Energy (Brazil)
MTC	Ministry of Transport and Communications
MVCS	Ministry of Housing Construction and Sanitation
NGO	Non governmental organization
NPC	National Project Coordinator
NTS	Technical Norm of Health
OEFA	Environmental Assessment and Inspection Agency
ONU	United Nations
ONUDI	United Nations Industrial Development Organization
ORAZUL	Orazul Energy Perú S.A.
OSINERGMIN	Supervisory Body of Investment in Energy and Mining
PAMA	Environmental Management and Adjustment Program
PCB	Polychlorinated Biphenyls
PCM	Presidency of the Council of Ministers
PGPCB	PCB management plans
PLANAA	National Environmental Action Plan
PLANEFA	Annual Environmental Assessment and Control Plan
PNA	National Environmental Policy
PNI COPs	National Plan for the Implementation of Persistent Organic Pollutants
PNUD	United Nations Development Program
PNUMA	United Nations Environment Program
ppm	Parts per million
PRODOC	Project Document
PRODUCE	Ministry of Production
RAEE	Waste Electrical and Electronic Equipment
RETC	Pollutant Release and Transfer Register
SD OEFA	Decentralized Headquarters OEFA
SEDAPAL	Lima Water and Sewerage Service
S. N. I	National Society of Industries
SINEFA	National System of Evaluation and Environmental Control
SUNAT	National Superintendence of Customs and Tax Administration
TOC	Theory of Change
TREDI	Tredi S.A.
UC	Coordinating Unit
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization

Glossary of evaluation-related terms

Term	Definition
Baseline	The situation, prior to an intervention, against which progress can be assessed.
Effect	Intended or unintended change due directly or indirectly to an intervention.
Effectiveness	The extent to which the development intervention's objectives were achieved, or are expected to be achieved.
Efficiency	A measure of how economically resources/inputs (funds, expertise, time, etc.) are converted to results.
Impact	Positive and negative, intended and non-intended, directly and indirectly, long term effects produced by a development intervention.
Indicator	Quantitative or qualitative factors that provide a means to measure the changes caused by an intervention.
Lessons learned	Generalizations based on evaluation experiences that abstract from the specific circumstances to broader situations.
Logframe (logical framework approach)	Management tool used to facilitate the planning, implementation and evaluation of an intervention. It involves identifying strategic elements (activities, outputs, outcome, impact) and their causal relationships, indicators, and assumptions that may affect success or failure. Based on RBM (results based management) principles.
Outcome	The likely or achieved (short-term and/or medium-term) effects of an intervention's outputs.
Outputs	The products, capital goods and services which result from an intervention; may also include changes resulting from the intervention which are relevant to the achievement of outcomes.
Relevance	The extent to which the objectives of an intervention are consistent with beneficiaries' requirements, country needs, global priorities and partners' and donor's policies.
Risks	Factors, normally outside the scope of an intervention, which may affect the achievement of an intervention's objectives.
Sustainability	The continuation of benefits from an intervention, after the development assistance has been completed.
Target groups	The specific individuals or organizations for whose benefit an intervention is undertaken.

Executive summary

This terminal evaluation had two purposes. The first was to assess project performance based on the criteria of relevance, effectiveness, efficiency sustainability and impact. The evaluation included an analysis of the delivery and completion of project activities, outputs and outcomes, and of risk management. The evaluation also assessed the extent and forms by which the project contributed to the conditions necessary to phase out PCBs equipment and waste. The second purpose was to draw lessons and recommendations for UNIDO and the GEF that could help improve identification, preparation and implementation of similar projects. The evaluation covered the whole duration of the project, from October 2010 to January 2017. It also addressed project identification and preparation issues related to performance during implementation. A combination of methods was used to deliver evidence-based qualitative and quantitative information, based on diverse sources: desk studies and literature review, individual interviews, focus group meetings, surveys and direct observation. A draft of the evaluation was also circulated among the interviewed stakeholder for correction of factual errors or errors of interpretation. The evaluation was carried out from January 24 to March 31, 2017. Field work in Peru took place from 17 February to 1 March 2017.

The project had as its main objective to support Peru in the establishment of a system to manage and eliminate PCBs by 2028, and to help the country meet its commitments to the Stockholm and Basel Conventions. The project started operations in October of 2010; it was originally scheduled to close on July 2014, but got a slow start related to readiness and design deficiencies, and closed in March 2017. After the midterm evaluation, the project was extended and restructured, allowing it to meet and exceed most of its outcomes. The main counterpart agency in Peru was the *Dirección General de Salud Ambiental* (Directorate General of Environmental Health) (DIGESA) and it was executed through a small Project Coordinating Unit.

The project has helped establish foundations for the sound management of Polychlorinated Biphenyls (PCBs) in Peru by contributing to the development of necessary conditions. It helped strengthen regulatory and enforcement capacities by providing technical support, and facilitating the participation of key sectors in drafting a proposal for regulations of PCBs management. The project has also nurtured a keen awareness of the risks posed by PCBs, and of options to manage these risks among the relevant public institutions, electricity utilities and other industries.

In addition, the project helped generate information critical for the development of targeted strategies to continue the elimination of PCBs, and both tested and demonstrated the feasibility of technologies and approaches to manage and eliminate PCBs. And it helped reduce the financial burden of eliminating PCBs by introducing less costly technologies, and increasing the number of firms that can provide services for PCBs elimination.

While the project built on processes already instituted in Peru, the evaluation found no other interventions that could have resulted in the observed changes at scale. The growing commitment to corporate social responsibility by utilities in Peru was an important contextual factor contributing to the progress. For more than a decade, private utility firms had been instructed by their foreign investors to adopt more corporate social responsibility principles in their operation. By the time the project launched, several firms had already started to incorporate CSR principles in their operations, and proved receptive to efforts to improve the environmental management of their operations. Under these conditions, the participating utilities committed resources and embraced the project's goal of PCBs management and elimination.

Changes in DIGESA leadership impacted the extent of institutional ownership of the project. By the time a director got to understand and commit to the project, he or she was replaced by a new one. While DIGESA developed trust in the Project Coordinating Unit and hosted all events, the project was never embedded in DIGESA as planned during project design. One important consequence is that DIGESA has been very slow in reviewing and presenting the proposed regulation to authorities within the government responsible for its approval. These delays in approval hampered the progress made in addressing the PCBs in Peru; key elements of the management system set up by the project cannot take effect until the regulation is approved.

Initial deficiencies in design and readiness led to delays in the achievement of outputs, so that the midterm evaluation found the project unsatisfactory. But UNIDO addressed these issues, by changing the log frame and strengthening the project coordination team. The new project management team quickly bolstered the functions of the Consultative Committee to ensure the participation of all key sectors in the project. The new management also proactively coordinated DIGESA and other key institutions to enable a good information flow among the parties.

An effective inter-sectoral coordination, a proactive Project Coordination Unit and a commitment to adaptive management were key factors in the project's accomplishments. Much of the progress made in the establishment of a system for PCBs management in Peru can, in fact, be attributed to this project, which made critical contributions in raising awareness and introducing new and less costly technologies and procedures well-suited to Peru. Participants reported that without the project, the elimination of PCBs in Peru would have been substantially delayed, and would have arrived at a higher cost. The evaluation has summarized the main recommendations as follows:

Recommendations:	
To UNIDO:	
1	In future projects, ensure that roles and responsibilities are properly discussed and agreed upon by all partner institutions, and that commitments are formalized before the project starts.\
2	Establish a clear distinction of the implementation and execution roles in a project. While administrative support of implementing agencies to a project can improve efficiency, to ensure sound quality control and oversight it is important that procurement and other project execution functions are sufficiently funded and kept separate from supervision.
3	Urge the government of Peru to review and pass the regulation as soon as possible to guaranty that the country fully benefit from the project's accomplishments.
To DIGESA and the government of Peru:	
4	Take quick action to review, prepare and submit the proposed regulation to the authorities in the government responsible for their approval.

Three key **Lessons learned** emerge from this project:

1. While it is important to acknowledge that individuals can play an important role in championing a project, it is also critical that the discussions and agreements on project objectives, activities and responsibilities are fully owned by all participating institutions, and that formal institutional commitment is established prior to the initiation of a project.
2. Effective participation and a strong stakeholder commitment are crucial but insufficient conditions in seeking policy or regulatory reforms. Timely action and approval of reforms require informed and committed decision makers.
3. To achieve a strong stakeholder commitment, projects must strengthen stakeholder awareness and build on ongoing processes. They should propose solutions that are perceived as relevant, useful and within reach of the targeted sectors. Projects should also include approaches that combine formal instruments to involve stakeholders (such as effective consultative or steering committees), proactive involvement in project activities and effective coordination and information sharing.

Acknowledgements

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1. Evaluation objectives, methodology and process

This terminal evaluation had two purposes. The first was to assess project performance based on the criteria of relevance, effectiveness, efficiency sustainability and impact. The evaluation included an analysis of the delivery and completion of project activities, outputs and outcomes, and of risk management. In accordance with the evaluation terms of reference provided by UNIDO, the key question of this evaluation was determining “whether the project has achieved or is likely to achieve its main objective of establishing environmentally sound management (ESM) practices for PCBs and to increase the phase-out and disposal of PCBs-containing equipment and wastes, particularly focusing in the electrical utilities and main users of electricity in Peru.” The evaluation addressed this question by assessing the extent and forms by which the project contributed to the conditions necessary to phase out PCBs equipment and waste.

The second purpose was to draw lessons and recommendations for UNIDO and the GEF that could help improve identification, preparation and implementation of similar projects. Thus, this terminal evaluation report includes examples of good practices for other projects. The evaluation covered the whole duration of the project, from October 2010 to January 2017. It also addressed project identification and preparation issues related to performance during implementation.

The terminal evaluation was conducted in accordance with the UNIDO Evaluation Policy¹ the UNIDO Guidelines for the Technical Cooperation Programme and Project Cycle², the GEF Guidelines for GEF Agencies in Conducting Terminal Evaluations³, the GEF Monitoring and Evaluation Policy⁴ and the GEF Minimum Fiduciary Standards for GEF Implementing and Executing Agencies⁵. The evaluation was also carried out using a participatory approach that sought to inform and consult with all key parties associated with the project. The evaluation team consisted of Aaron E. Zazueta and Ruth Loayza Flores, who liaised with the UNIDO Independent Evaluation Division (ODG/EVQ/IEV) on methodological issues.

The evaluation was carried out from January 24 to March 31, 2017. The evaluation team submitted an inception report to UNIDO on February 8, which was discussed over a telephone conference with the UNIDO Carolina Gonzalez-Mueller, Project Officer in UNIDO and Javier Guarnizo, Chief of the UNIDO Independent Evaluation Division. The evaluation team adopted a theory of change approach to assess the causal links between project activities, outcomes and outputs, and to assess the extent to which the project contributed to conditions necessary to achieve the phase-out of PCBs in Peru.

¹UNIDO. (2015). Director General’s Bulletin: Evaluation Policy (UNIDO/DGB/(M).98/Rev.1)

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)

³ GEF. (2008). Guidelines for GEF Agencies in Conducting Terminal Evaluations (Evaluation Office, Evaluation Document No. 3, 2008)

⁴ GEF. (2010) The GEF Monitoring and Evaluation Policy (Evaluation Office, November 2010)

⁵ GEF. (2011). GEF Minimum Fiduciary Standards: Separation of Implementation and Execution Functions in GEF Partner Agencies (GEF/C.41/06/Rev.01, 3 November 2011, prepared by the Trustee)

The theory of change developed by the evaluation team was discussed and verified with the project Coordination Unit at the beginning of the field visit. The theory of change is described in detail in section 3 of this report. As part of the inception report, the evaluation team also developed an evaluation matrix which is found in Annex 2. A combination of methods was used to deliver evidence-based qualitative and quantitative information, based on diverse sources: desk studies and literature review, individual interviews, focus group meetings, surveys and direct observation. In preparing for interviews and visits in Peru, the evaluation team reviewed the documentation of the project provided by the UNIDO's Project Officer and the Project Coordinator Unit in Peru. This included the project document, the midterm evaluation of the project, records related to meetings of the project committee (including ordinary and extraordinary meetings), the draft of the supreme decree regulating PCBs in Peru, annual progress reports for the project and back to the office UNIDO mission reports, Project Implementation Reports to the GEF and publications by the project, as well as other reports and related policy documents found in the GEF and project websites. The full list of the reports consulted in the evaluation is found in the references. The evaluation team remained in close contact with the project coordinating unit to select persons to be interviewed and in general to plan the country visit.

Field work in Peru took place from February 17 to March 1, 2017. During this time, the evaluation team interviewed 12 persons from five Firms, including executives, technicians and workers and 30 persons from government offices, four persons of Business Organization and NGO including decision makers and technicians. Among the people interviewed there were 31 men and 15 women⁶. Site visits and interviews took place in the cities of Lima, Cuzco and Chimbote. The team also interacted repeatedly with the project coordinator and the lead technical advisor, who were very helpful in providing information and clarifying issues along the way.

The evaluation faced no major limitations in terms of access to information. All visits and interviews took place as scheduled. The evaluators were granted all the information requested and were given access to a representative range of stakeholders. The evaluation team presented preliminary findings and conclusion and received feedback from stakeholders in a meeting of the Consultative Committee, held on February 27, 2017. In this meeting members of the committee commented on evaluation but mostly expressed their satisfaction with the project. The evaluation team also met with Mr. Antonio Gonzalez Norris, GEF Focal Point and with Marcos Alegre Chang, Deputy Minister of Environmental Management on February 22, 2017. In this meeting, the evaluation team obtained the GEF Focal Point's perspective on the project, and also provided a debriefing on the emerging findings and conclusions. The use of a theory of change approach and mixed methods allowed the evaluators to assess causality, provide reasons why results were achieved or not, and triangulate information (Garcia and Zazueta 2015).

⁶ Annex 3 presents the names of the people interviewed during the evaluation.

2. Country and project background

2.1 Country overview

Peru is located in South America, with an extension of 1,285,215. 60 km², 11.7% located on the coast, 28% in the highlands and 60.3% in the jungle or Amazon. As of 2016 its population was estimated at 31,488,625 mostly young (75.75% between 0 to 44 years) and living in urban areas (76.70%), with a population density of 24.60 hab / km². Life expectancy as of 2016 is 74.80 years to 2016, which shows an increase compared to 2010 (73.66 years).

The population growth rate between 2012 and 2016 decreased from 1.13% to 1.08%, with the cities of Lima, La Libertad, Piura, Cajamarca and Puno having the largest populations. The male population was slightly higher (50.09%) than the female population. The economically active population (PEA) exceeded 70% (72.2% in the first half of 2016, 72.3% and 71.6% in 2014 and 2015 respectively).

The birth rate dropped from 20.31 per thousand in 2010 (year the project was formulated) to 18.26 in 2016, while the mortality rate (per thousand) in the same period increased from 5.50 to 5.67. However, the infant mortality rate fell from 19.54 to 17.17 per thousand.

In recent decades, Peru has shown greater growth and socio-economic development. The Gross Domestic Product –(GDP) has been showing sustained growth since 2002, reaching its highest point in 2008 (9.8%); but from 2009 onwards it grew by only 1.1%, recovering in 2010 (8.8%), declining again to 2.4% in 2014, and recovering slightly to 2016 (3.28%). The Service, Mining and Manufacturing Sectors, contribute most to the country's GDP, as can be seen in Annex 4.

In Peruvian exports, it is the mining sector that has a greater weight; however, exports decreased in the period between 2010 to 2015 (from USD 21,903 million from 2007 to USD 18,836). Copper and gold occupy the top spot among the export mining products to Switzerland, China, the United States, Canada and Japan. In the case of agriculture exports, trade is highest with the United States, the Netherlands, Germany and Spain.

In recent years, there has been a decline in the population living in poverty (30.8% in 2010, 25.8% in 2012 and 21.8% in 2015) and extreme poverty (from 7.6% in 2010 to 6% in 2012 and 4.1% in 2015).

The main chemicals and waste problems in the country are the contamination of water, air and soil pollution caused by inadequate practices of production, distribution, storage, transportation, handling and final disposal of solid waste, both municipal and toxic, which includes the PCBs. The composition of solid waste in Peru for 2012 included organic matter 50.9%, plastics 10.1% and hazardous waste 8.5%. In 2012, Peru generated some 11,029,535 t of solid waste⁷.

⁷ Informe Nacional del Estado del Ambiente 2012-2013. Pag. 26. MINAM

2.2 PCB specific issues in Peru.

Peru ratified the Stockholm Convention on POPs on 2005 and prepared the National Implementation Plan (NIP) in 2007. The NIP identified PCBs as a top priority in managing POPs. It specifically identified the need of a thorough inventory on PCBs, and for a gradual phase-out the PCBs-containing equipment. A preliminary inventory carried out for the NIP concluded that the PCBs equipment in the country represents a significant threat to human health and the environment, because PCBs in Peru are not properly identified or properly managed (UNEP 2007).

The project identification form estimated 44,839 units in the electrical power sector in Peru (GEF 2008). This total included generation, transmission and distribution stations as well as pole-mounted distribution transformers. In addition to these transformers, the report mentioned about 1,600 transformers of different sizes in its fishing and industry sectors.

The Project document presents the following summary of equipment containing PCBs:

TABLE 1: Equipment containing PCBs

	IN USE (metric tons)	POTENCIAL PCBs (metric tons)
Industries and Mining	56	261.23
Electricity	307	9,770.0
Others	13	52.0
Total	376	10,083.23

The NIP also highlighted weaknesses of the current hazardous waste management practices and the need for regulations, capacity building and public awareness

When the project started, there was no express legislation that prohibited PCBs imports. However, there were administrative requirements set by the General Directorate of Environmental Health (DIGESA) in compliance with the Rotterdam and Basel Conventions for the prior informed consent and control measures on their import and export or their residues. A 2013 thesis, based on information from DIGESA, concluded most PCBs export permits were granted to the industrial sector.⁸ There were no regulations prohibiting the use of new PCBs-containing equipment; nor were there manuals or technical and regulatory procedures for accreditation of entities or companies responsible for the detection, analysis, treatment or final disposal of PCBs elements. There were also no manuals to show how maintenance should be carried out on machines containing PCBs;

⁸ “Estrategia para la Gestión Ambientalmente Racional de Bifenilos Policlorados (PCB) en el Perú, consideraciones ambientales y tecnológicas”. Mendoza 2013

moreover, there was no national legislation on PCBs specifically. There was also little knowledge on the risks of PCBs or ways to manage risks among decision makers, laborers, health workers and the public.

At the time, the GEF/UNIDO Peru PCB project was approved, the GEF had approved another regional project related to PCBs. This was “Best Practices for the Management of PCBs in the South American Mining Sector” (CRBAS-GEF/ UNEP), which helped establish some groundwork that the GEF/UNIDO PCB project built upon. The project was implemented by the United Nations Environment Program (UNEP) and executed by the Regional Center of the Basel Convention for South America in Argentina (CRBAS), in cooperation with governments of Chile and Peru, through the National Coordination of the Ministry of the Environment (MMA) and Ministry of the Environment (MINAM), respectively. The project’s overall objectives were to establish coordinated regional approaches to achieve the best environmental techniques and practices for the sound management of PCBs in the South American mining sector, and to identify sources of PCBs and develop tools for elimination. The project was carried out in alliance with the national mining organizations, and with the participation of nine mining companies and 20 mining units. MINAM formulated in 2016 the Procedure for the purchase of equipment and supplies free of PCB⁹. With guidelines to reduce or eliminate the possibility of acquiring contaminated equipment or equipment that has received maintenance return contaminated. The project, which closed in 2014, contributed to developing technical guides to carry out evaluations of the Management of PCBs and to develop measures that allowed the control, mitigation or elimination of risks related to PCBs in the mining sector. The project also enabled recording and monitoring of PCB inventories in the mines, and helped to develop PCB management plans in mining facilities; identify equipment and other items containing PCBs; and advance the standardization of procedures for the analysis of soils, oils, contaminated materials, equipment and other applications.¹⁰

2.3 Project overview

The project was designed to support Peru’s implementation of the NIP and country commitments to the Stockholm and Basel Conventions. The project document (GEF 2010) states that the “overall objective of the project is to establish environmentally sound management practices for PCBs and to increase the phase-out and disposal of PCBs-containing equipment and wastes, particularly focusing on the electrical utilities and main users of electricity in Peru”. The total GEF grant was 2,580,000 USD and the expected co-financing (cash and in-kind) at CEO endorsement was 5,190,000 UDD, resulting in a total cost of 7,900,000 USD.

⁹ / Ministry of the Environment, General Direction of Environmental Quality - Lima: MINAM, 2016.

¹⁰ Informe final del Proyecto (2015) - http://www.inti.gob.ar/pcb/documentos/informesReportesDocumentos/InformesReportes/InformeFinalProyecto180116_AC_MM.pdf

2.3.1 Project objectives

The immediate objectives of the project were to:

- “Strengthen the legal and regulatory framework to assure the sound management of PCBs and their gradual phase-out and elimination before 2025 and 2028 respectively;
- Inventory and label 10,000 pieces of oil-containing electrical equipment;
- Strengthen capacity for PCBs waste management and domestic treatment through implementing best available techniques (BAT) and BEP;
- Decontaminate PCBs oils in in-service transformers;
- Dispose of 1,000 tons of PCBs-containing equipment and wastes in an environmentally sound manner; and

Improve occupational safety measures and distribute general knowledge concerning PCBs.”

Three substantive outcomes developed to achieve the project’s objectives were:

Outcome 1 will result in establishing appropriate capacity in the country for implementing the PCBs-related measures of Stockholm and Basel Conventions. Capacity building will be carried out in regulatory and institutional development, strengthening PCB-related enforcement capabilities including laboratory capacities, and comprehensive data management.

Outcome 2 will result in ESM of PCBs-containing electric equipment. The PCBs inventory will be completed on 10,000 pieces of equipment. PCBs management and phase-out plans will be developed and implemented. Local capacity will be created for dechlorination of PCBs-containing mineral-oils and for decontamination of the carcasses of the equipment. Gradual phase-out of PCBs will be boosted by disposal of 1,000 tons of PCBs-containing equipment and wastes.

Outcome 3 will provide for health and social benefits through increased awareness of PCBs among policy makers, stakeholders, and target populations, as well as information dissemination to environmental NGOs and media. Dedicated training will be provided to medical personal engaged in occupational safety matters, and to firemen on the procedures, in case of PCBs transformer fires.

The ongoing project management, monitoring, and evaluation under Outcome 4 includes establishment of the Project Steering Committee (PSC), composed of national and local stakeholder agencies, recruitment of national and international consultants, execution of a management training program for project staff (particularly at the local level), and ongoing monitoring and reporting of project activities.”(GEF 2010).

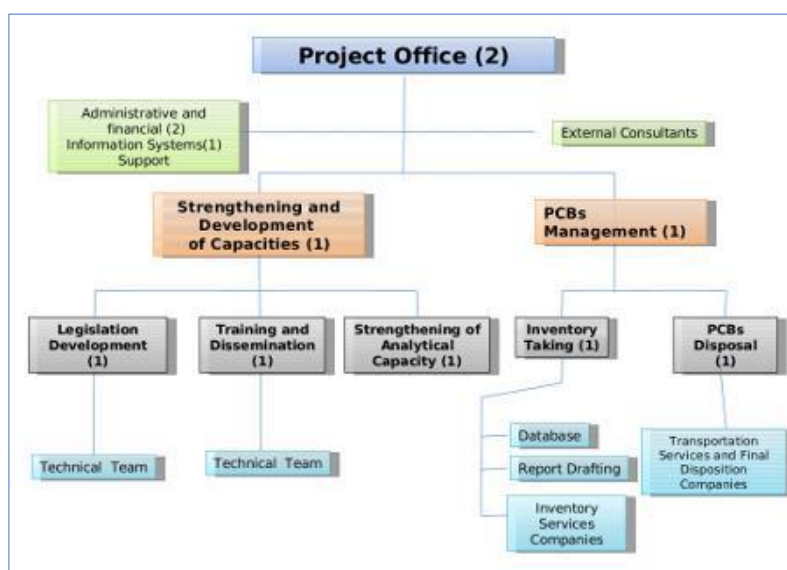
Project Factsheet

Project Title:	Environmentally Sound Management (ESM) and Disposal of Polychlorinated Biphenyls (PCBs)
UNIDO project No. and/or ID:	GF/PER/10/001 / 104054
GEF project ID:	3709
Region:	Latin America and Caribbean
Country(ies):	Peru
GEF focal area(s) and operational programme:	POPs: POPs-1; POPs-2
GEF implementing agency(ies):	UNIDO
GEF executing partner(s):	Dirección General de Salud Ambiental, Government of Peru
Project size (FSP, MSP, EA):	FSP
Project CEO endorsement / : Approval date:	29 June 2010
Project implementation start date: (First PAD issuance date) :	14 October 2010
Original expected implementation end date (indicated in CEO endorsement/Approval document) :	31 July 2014
Revised expected implementation end date (if applicable) :	31 December 2014
Actual implementation end date:	31 March 2017
GEF project grant: (excluding PPG, in USD) :	2,580,000
GEF PPG (if applicable, in USD) :	130,000
UNIDO co-financing (in USD) :	90,000 (in-kind)
Total co-financing at CEO endorsement (in USD) :	5,190,000 (cash + in-kind)
Materialized co-financing at project completion (in USD) :	9,797,929
Total project cost (excluding PPG and agency support cost, in USD; i.e., GEF project grant + total co-financing at CEO endorsement) :	7,990,000
Mid-term review date:	December 2012 - January 2013
Terminal evaluation date:	January 23 – 31 March 2017

2.3.2 Project implementation and execution arrangements

The project implementation arrangements were designed to embed the project in the normal operations of the responsible government offices in Peru. The responsibilities for project implementation were as follows:

Figure 1



- General Directorate for Environmental Health.** DIGESA was made the project coordinating agency. It is the agency responsible for coordinating legislative activities, and for developing regulations and procedures for POPs in Peru. DIGESA was made responsible for conducting inventories of PCBs-containing electrical equipment and waste; for establishing a database and an information-sharing network; and for providing individuals, agencies and companies with information(GEF 2010).
- Ministry of Energy and Mining (MINEM)** was made responsible for aiding and conducting inventory of the equipment, developing policy and coordinating activities to support environmentally sound technologies for treatment of PCBs-containing equipment. MINEM was also responsible for providing assistance in implementing activities and measures for elimination of use of PCBs-containing equipment and disposal of POPs.
- Project Steering Committee:** This committee was given as its main role the coordination and input by participating agencies. It consisted of representatives of the Ministries of Health, Energy and Mines, Environment, Production and industrial stakeholders, OSINERGMIN, later replaced by OEFA, IPES (NGO) and UNIDO. The chairman duties were allocated to DIGESA.
- During project design, the Project Management Office (PMO) was embedded within DIGESA. Subsequently, it was referred to as the project coordinating unit (CU). It consisted of the National Project Coordinator and a technical assistant, who were supported by an accountant, a secretary and an IT specialist. The project also aimed to recruit a part-time international Chief Technical Advisor. The CU was placed under the supervision of DIGESA and also reported through DIGESA to UNIDO. Under the CU there were five technical units: unit for legislation development, unit for training and dissemination, unit for strengthening of analytical capacity, unit for PCB inventory, and unit for PCB disposal. These five units were placed under the supervision of DIGESA and were to be financed by DIGESA. In total, the project was to be implemented by 12 people (GEF 2010). However, as explained below, this management structure was not implemented. Figure 1 presents the original organigram for project implementation envisioned at project design.

- The project document also indicates that private sector stakeholders and other participants were to be actively integrated into the project, though it was not indicated how (GEF 2010).

2.3.3 Position of UNIDO in the project

UNIDO was selected as the GEF implementing agency for the project. As the UN's specialized agency for industrial development, UNIDO has a comparative advantage in the industrial sector, including the technologies for PCBs management. UNIDO has assisted several countries in the development of the national implementation plans, and has accumulated knowledge about the complexity and diversity of the PCBs-related problems (GEF 2010).

3. Project theory of change and key evaluation questions

The theory of change (TOC) is a heuristic to help clarify the links between project activities and long-term objectives. Key in the development of a TOC is identification of the conditions likely to bring about the behavioural changes required to achieve the project's long-term goal (Chen 1990; Mayne 2008). Given the complex nature of the interactions of human behaviour and the environment (the social ecological system), and the unpredictability of outcomes of these interactions, it is also critical to identify key assumptions made during project design, and the ways project management adapted to unexpected circumstances (Folke et al. 2002; Levin 2003).

There was no explicit theory of change developed for this project. But the project document and the logical framework provided enough information to construct a theory of change indicating how the project was expected to help bring about conditions for the phase-out of PCBs. Thus, the evaluation team constructed a proposed TOC and, while in Peru, verified the proposed TOC with the project coordination unit.

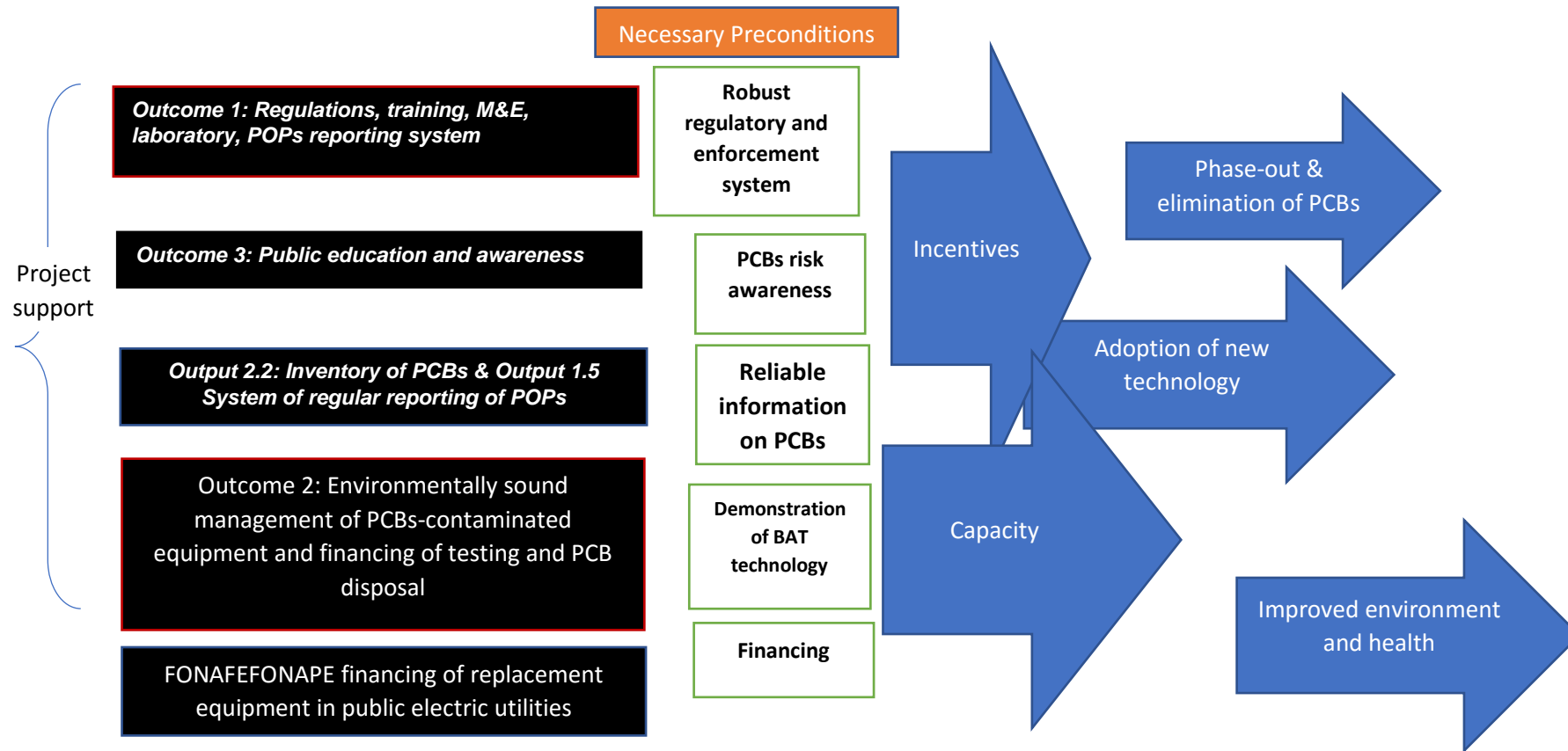
The TOC proposes that in order to eliminate PCBs in Peru by 2028, it is critical to achieve a technological transformation and other related behavioural changes. Incentives for change would be achieved by putting in place a robust regulatory and enforcement system, by developing awareness on the risk of PCBs and ways to manage these risks, and by making available reliable information on the location and extent of PCBs to decision makers, technicians, workers and the public. Capacities to bring about change would be accomplished by adapting and demonstrating technologies and approaches to eliminate and manage PCBs in the Peruvian context, and by giving access to the necessary financial resources.

Figure 2 illustrates the proposed TOC for the Peru PCBs project, including how the three project outcomes could contribute to the preconditions for bringing about the behavioural and technological changes needed to phase out PCBs and reduce risks to human health and the environment in Peru. But to bring about the necessary behavioural changes, the incentives for change and capacities to carry out change would need to be in place. The project aimed to help develop Peru's capacities to meet its commitments with the Stockholm and Basel conventions to phase-out and eliminate PCBs by 2025 and 2028, respectively. The five main conditions leading to the behavioural changes needed to achieve the phase-out and elimination of PCBs are: (i) a robust regulatory system to assure the sound management and gradual phase-out of PCBs.; (ii) information

on the extent and location of contaminated equipment; (iii) the transfer of technology and knowledge for safe management and treatment of PCBs using best available technologies; (iv) financing for the testing, management and disposal of contaminated equipment and waste, and for replacement of discarded equipment; and (v) policy makers, stakeholders and other populations that are aware of the health and social benefits of safe PCBs management.

Figure 2: Theory of change

Project Environmentally Sound Management and Disposal of PCBs in Peru



Assumptions

Strong government ownership to meet commitments to the Stockholm and Basel Conventions

Socio-political conditions conducive to effective public awareness campaigns

There were several important assumptions made during project development. Given that the objective of the project was to help Peru meet its commitments to the international conventions, it was assumed that the government would have a strong ownership of the project and would quickly pass needed regulations. The legal framework would establish compulsory standards and norms for the management and phase-out of PCBs. It was also assumed that the political context was such that greater awareness of the risks of PCBs would increase political willingness and action to phase-out PCBs. Thus, the impending prohibitions and a higher awareness of the benefits of PCBs phase-out were expected to provide sufficient incentive for policy makers, the public and firms to commit to the phase-out. This assumption turned out to be partially correct, as DIGESA, the main counterpart of the project in the government, never developed ownership of the project. Access to technology and financing provided the needed resources and the capacity to develop and implement PCBs management plans and phase-out. In the case of private utilities, it was assumed that access to equipment replacement capital would not be an obstacle; this assumption proved correct.

4. Project assessment

4.1 Project identification and Formulation

Project identification and formulation and project design entailed the examination of the adequacy of the processes project reparation processes and the overall readiness for the project. The project was formulated to address PCBs-related priorities identified during the elaboration of the NIP. These included: (i) the need to develop and implement new regulatory requirements for the management of PCBs, (ii) the training and capacity-building of authorities and workers on the health and environmental risks of PCBs and on the rational management of PCBs, (iii) the execution of plans for the management and disposal of PCBs, (iv) the improvement of infrastructure for final disposal of PCBs and their residues and (v) the identification and cataloguing of contaminated equipment and PCBs residues. Project design also drew on several surveys and inventories that had been carried out during the NIP formulation and by other agencies. But it was not clear which were the basis for establishing a target of 1000 t. of contaminated equipment for destruction within the electrical sector.

There is no record that a stakeholder analysis was carried out during project preparation. The midterm evaluation reported that project preparation did not involve very few agencies and people, and particularly that none of the firms, nor most agencies relevant to the project took part in design. The midterm evaluation gave the project an overall rating of unsatisfactory due to major project lacking in design as not all project and to delays in implementation that were traced to deficiencies in the process of project formulation. This led to difficulties during implementation and delays during the early years of the project. The midterm evaluation also indicated that a broader stakeholder engagement would have helped identify incongruences in the logical framework and better adjust the project to country conditions. Delays in the signature of the project document (which is typically a condition prior to implementation) also prevented a fuller engagement of counterpart agencies, as funds could not be approved for the project.

4.2 Project design

The project components and overall types of interventions included in the project were appropriate and relevant to the attainment of project outcomes. Outcomes were also sufficiently clear to help guide project implementation. But as pointed out, by the midterm evaluation, the lack of consultation during the formulation process resulted in a project design that did not reflect the situation in the country. For example, consultations across the various sectors would have indicated significant existences of PCBs- contaminated equipment in sectors other than electrical and mining. Some activities did not consider the institutional and administrative frameworks in the country. The account of the midterm evaluation was confirmed during interviews in Peru. Informants reported that the project design developed in other countries was brought to Peru and used as a blueprint without sufficiently considering the conditions of Peru. Moreover, the project document included 64 specific activities to be carried out, some of which had no clear results indicators, or had no targets or included outputs that were beyond the reach of the project, because they depended on policy-makers' decisions. These include, for example, outputs related to the approval of norms, procedures or regulations.

Because the project design was not adapted to the conditions of Peru, this approach risked committing the project to actions that were not applicable or were not the most effective to contribute to the phase-out of PCBs in Peru. An Example is: Activity 2.3.2: Transferring a technology to clean the carcasses of the Transformers. In other cases, activities were not sequenced in the right order; for example, Activity 1.1.3, in the logical framework referring to the establishment of a training center in DIGESA, should have been programmed prior to other training activities. While some objectives were clear and had quantifiable indicators, other objectives were vague and lacked indicators.

4.3 Changes in the project during implementation.

After the midterm evaluation, UNIDO deployed a team of technical experts to help restructure the project and address the identified weakness in design. The process entailed a thorough review of the logical framework. Streamlining the project required cutting some activities, adding a few and merging others where sense programmatically. The number of activities was reduced from 64 in the original logical framework to 48.

The focus was on adjusting the project design to conditions in Peru. For instance, the original logical framework included the development of a PCBs training center in DIGESA and the creation of a unit within the central government to address PCBs management; but this proved at odds with public administration trends in Peru, which for over a decade had moved towards decentralization of policy execution to the regions while seeking to retain policy-making functions at the center. These activities were replaced by workshops to train regional institutions in PCB management. Product 2.4 of the original logical framework, related to the disposition of 1000 tons of PCBs, was eliminated, as the inventory only found a fraction of the PCBs anticipated at design. Instead, an activity was added to increase the inventory by 2000 samples, in order to confirm the previous findings and expand the inventory to other sectors that were likely to have PCBs.

Activities that included outcomes outside of the project reach, such as the adoption of a regulation or norms by the government, were amended to indicate that the project would develop proposals for regulations and norms and present them to the government for approval. The number of norms was also streamlined, with certain norms consolidated. Annex 5 presents a table indicating changes made in the logical framework when the project was restructured.

4.4 Implementation performance

4.4.1. Relevance and ownership

4.4.1.1. Relevance

The project was highly relevant to Peru. When the project was approved in 2010, it was fully in line with the priorities established by the National Environmental Policy of Peru¹¹ -- particularly in relation to axis two, integral management of environmental quality, which focuses on promoting sustainable management of productive, processing and commercial activities, and on the prevention and control of environmental impacts and management of health risks. The project also contributed to objectives in axis four of the National Environmental Policy, which pertains to compliance with international agreements signed and ratified by Peru. The project has also contributed to strategic actions 2.3 and 2.4 set by the National Environmental Action Plan 2011 – 2021¹² in reference to the reduction and disposal of toxic waste, and to strategic action 7.15 related to the fulfillment of the environmental commitments derived from international treaties. Similarly, the project was designed to help Peru meet its commitments to the Stockholm and Basel conventions.

The project is also highly relevant to the GEF. It was designed to support Peru in meeting its commitments to the mentioned conventions and the requirements of Operational Program 14 on Persistent Organic Pollutants (POPs), by helping the country develop policies and regulations, and strengthening human and institutional capacities and awareness on the risks, sound management and safe disposal of POPs. The project was also highly relevant to UNIDO's commitment, since the early 1990s, to help countries address problems of toxic waste and meet their commitments to international environmental convention regarding management of POPs. The project was also perceived to be highly relevant by all participating government agencies and stakeholders interviewed during the terminal evaluation.

4.4.1.2 Government ownership

The project was designed to have a very small Project Coordination Unit that would function through DIGESA, which is part of the Ministry of Health. But this execution structure was never implemented. The midterm evaluation reported that during its initial years, the project management unit was not well integrated into the operations of DIGESA and often operated in isolation. Lack of access to decision makers in DIGESA also made it difficult for the Project Coordination Unit to coordinate activities. At the root of this problem was the process that had been followed during preparation; which while spearheaded by DIGESA, it included very few people. Also, project implementation

¹¹ "Política Nacional del Ambiente del Perú" approved by Supreme Decree N° 012-2009 – MINAM, May 23, 2009

¹² Plan Nacional de Acción Ambiental 2011-2021, approved by Supreme Decree No. 014-2011-MINAM, July 2011

started prior to the signature of the project document. These two factors proved particularly critical in light of the frequent turnover among the Directors of DIGESA. (There were three at least four directors during within the span of the project.) As few people understood the project and there were no formal obligations, the project did not compete well in the mix of multiple priorities faced by the agency. Despite the urgent recommendation of the midterm evaluation to immediately sign the project document, the signature took an additional four months.

Shortly before the midterm evaluation UNIDO had replaced the staff in the Project Coordination Unit, installing persons with more experience in the management of projects, who were well acquainted with DIGESA and other key government agencies. This was an important step, as the new Coordination Unit did have the full confidence of decision makers in DIGESA. But the CU was still left to work on its own. DIGESA's role in the project was largely as a convener, a role that was important given the prestige of the institution in the public administration system in Peru. DIGESA staff were also heavily involved as participants in project workshops and through laboratory analysis in the inventory. Nevertheless, the CU did not get the expected material support. For example, despite the repeated complaints by UNIDO, the project CU was only briefly given access to suitable offices and had to operate most of the time from home, through a virtual office. Given the large number of workshops and other activities in the project, this lack of a suitable office posed a challenge to the CU. The turnover among its decision makers, also affected project outcomes by resulting in lengthy delays in DIGESA's review of the regulatory framework developed during the project.

4.4.1.3 Participation

While there was not enough participation during project formulation and during the early years of implementation, after the midterm evaluation, restructuring and changes in the CU corrected this problem. The Steering Committee was revitalized and renamed Consultative Committee (CC); members felt that they could not be responsible for the project but could play an advisory role. Ordinary Consultative Committee meetings were held once a year. Through these meetings, the CU informed on the progress made by the project and solicited input to plans for the coming period. These meetings were typically well attended, with sufficient continuity of participants to make the CC an effective forum to keep stakeholders informed and involved in the planning and execution of the project. In addition, multiple extraordinary meetings were held to address specific issues, especially the PCB regulation. After the midterm evaluation in early 2013, the project held 11 extraordinary CC meetings. The project also set up a website in which it published progress reports, as well as upcoming event and technical documents on PCBs. The multiple workshops carried out by the project were another mechanism used to keep stakeholders informed and involved in the project. These mechanisms, DIGESA's convening and a very proactive approach to communication by the CU quickly led to a very active participation of most targeted state agencies and firms. This was confirmed during this evaluation, as all firms and agencies contacted indicated they were highly satisfied with the role of the CU. Contacted stakeholders also indicated high ownership project outcomes and a strong commitment to continue the process started by the project.

4.4.2 Effectiveness

Project effectiveness is rated as Highly satisfactory. Effectiveness is evaluated by assessing: i) the extent to which the project accomplished the outputs of its activities and the projects outcomes and ii) the extent to which outcomes contributed to the conditions likely to lead to the desired long-term changes.

4.4.2.1 Accomplishment of project outputs and outcomes.

The restructured logical framework of the project after the midterm review included 48 activities. Annex 6 contains an annotated assessment and ratings for each 48 project activities. 36 of these activities referred to 3 outcomes that contributed to substantive project outcomes: i) 18 activities pertain to the strengthening of the institutional and regulatory framework; ii) 10 to support the management and disposal of PCBs and ii) 8 to support socioeconomic benefits and public awareness. The remaining 12 activities were related to iv) project management and to M&E functions. Table 2 provides a summary of the distributions of ratings for the project.

Table 2: Distribution of project ratings

	HS	S	MS	MU	U	HU	NA	Total
Outcome 1	10	7					1	18
Outcome 2	6	2	1				1	10
Outcome 3	3	3	1				1	8
Outcome 4	1	8	2				1	12
Total	20	20	4				4	48

The biggest achievements of the project refer to outcomes related to the strengthening of the institutional and regulatory framework and to the support of the management and disposal of PCBs. These were two critical components of the project in which the project is rated highly satisfactory. The project helped develop a proposed regulation that defined a system for the management and elimination of PCBs in the country. This was done with the participation of all the key public and private stakeholders. As such the proposed regulation is strongly supported by all affected sectors. The project also helped build capacities to the management and disposal of PCBs through workshops and the introduction and testing on new technology and approaches. With regards to Outcome 3, the support of socioeconomic benefits and public awareness the project helped address health issues related to PCBs and build capacities in the public health sector.

Four activities were rated as no longer applicable. One pertaining outcome one was meant to establish a registry of accredited laboratories in Peru, but a registry already exists and the activity is not needed. Another activity in outcome two, related to the construction of a warehouse did not take place. The firm contracted to do the elimination of PCBs decided to adopt a different strategy that was just as effective but that also significantly reduced risks related to the transportation of PCBs. One activity pertaining to outcome three related to work place safety and health, and was rated not applicable because the activity could not take place. Inspections required the approval of the regulations, which has been delayed. Activity 4.2.6 pertained to the quality of the terminal evaluation and was not rated.

Regarding the fourth outcome, related to project management and M&E, the overall performance of the project was satisfactory in terms of the specific outputs identified in the logical framework. Despite some hurdles encountered during the first phase of the project, these were corrected after

midterm. Section 4.4.9 of the report elaborates on the challenges and creative solutions used to overcome them.

4.4.2.2 Project contribution to the conditions that will lead to the elimination of PCBs in Peru.

The evaluation used the framework presented in the project theory of change (TOC) to assess the project's contributions to the conditions leading to the desired behavioural and technological transformations that in the long run are likely to result in the elimination of PCBs in Peru. The project was assessed as having made important contributions to all the five conditions identified by the TOC.

1. A robust regulatory and enforcement system. Prior to the project there was health and environmental sectors legislation pertaining to the production, importation, transportation trade, management and disposition of toxic substances. But only a few regulations made direct reference to PCBs and most aspects of the PCBs cycle were not regulated. Similarly, public agencies paid little or no attention to PCBs and the public sector had no oversight capacity related to PCBs. The project provided the technical support and helped facilitate the development of a draft regulation that covers all aspects of the PCB cycle. The proposed regulation assigns roles and responsibilities for PCB management, oversight, reporting and enforcement to public administration agencies, PCB users and other stakeholders. This proposed regulation is strongly supported by public agencies and the industry, as it was developed with the participation of all relevant stakeholders. The project also helped develop DIGESA's laboratory oversight and quality control capacities for PCB analysis in the country, and supported the development of enforcement and oversight capacities in OEFA. Other supported activities include the development of a technical norm that includes diseases caused by PCBs in listing workplace diseases.
2. Policymakers and stakeholders aware of the PCBs risks. Before the project started, only a few individuals in some of the private electrical utilities were aware of the risks posed by PCBs. Some policy-makers and civil servants had heard of PCBs but did not fully understand their risks or ways to manage risks. Through the numerous workshops targeted to policy-makers, civil servants, electrical utilities and workers, the project was able to develop widespread awareness and understanding among stakeholders of the risks to human health and the environment posed by PCBs, and on the ways to manage such risks. For example, prior to the project, private electric utilities were reluctant to publicly acknowledge the existence of PCBs, but since the project utilities have adopted and implemented plans to identify and manage contaminated equipment and have been much more forthcoming on the topic.
3. Information on the extent and location of PCBs. The information on the extent and location of PCBs is critical for their elimination. The NIP for the Stockholm Convention and surveys carried out by some agencies had provided estimates of the existences in Peru. Nonetheless it was not until the project carried out field testing through the inventory of PCBs that more reliable information was obtained. This information indicates that there are considerably fewer PCBs in Peru than originally estimate-- good news for the country. But this finding also indicated that there is considerable cross-contamination of equipment through inappropriate maintenance practices. This demonstrates the need to expand efforts to localize and eliminate PCBs beyond the electrical utilities and the mining sector. Reliable information on the extent and location of PCBs and PCBs-contaminated equipment was obtained through output 2.2 and the inventory of PCBs. Also, the project developed a web application for the future reporting system to track and

provide information on PCBs. This application will function as part of the Register of Pollutant Releases and Transfers – RETC¹³.

4. **Demonstration of technologies.** One obstacle faced prior to the project was the high costs for the testing and elimination of PCBs. Prior to this project and the GEF/UNEP Mining sector project, the only option available to dispose of PCBs was through export. This is very expensive, as it requires exportation of PCBs and payment for destruction abroad. The project introduced two other options, dechlorination and retrofill, that allowed the domestic treatment of equipment with less than 500 ppm. As these processes, do not require the destruction of equipment, utilities can now avoid the equipment replacement costs, which is also very high. Prior to the project there were also no approaches or tested procedures and protocols to inventory, identify, transport, store and dispose of PCBs. The project worked with utilities to test and adapt procedures for the Peruvian context, and on the basis of these tests developed a set of *Guidelines for the Environmentally Rational Management of BPC Stocks and Residues*. By project closure, elements of these guidelines were widely used by electrical utilities in Peru. Moreover, by the end of the project, seven participating utilities had developed PCBs management plans, and seven had begun implementation of the PCBs management phase out plans and the rest were preparing to develop such plans as part of their new strategies.
5. **Financing to pay for the costs of transition.** As indicated, one of the obstacles prior to the phase-out of PCBs was the high costs of the treatment and technological options. Inventory and testing of equipment were also expensive, as samples were typically taken to laboratories for testing. During the duration of the project, it assumed the costs of testing, decontamination of equipment and elimination of PCBs. And as indicated, the project helped introduce new less costly technologies and approaches. Moreover, the approach initiated by the project spreads the phase-out until the year 2028. This provides sufficient time for utilities to plan for the technological transition in the context of their equipment replacement cycles. During the project the costs of the inventories, sampling, testing and destruction of contaminated equipment and disposal of residues were financed as part of outcome 2. The replacement of discarded equipment would be financed by FONAFE (The National Fund for the Financing of State Business Activity). This covers equipment replacement for most of the participating firms, as the project was mostly designed to focus on the electricity sector and most electric utilities are state enterprises. Annex 7 includes the 30 firms participating in the project.

4.4.3 Impact

The assessment of impact refers to the extent to which the project brought about changes in the human condition or in the environment. Changes can be positive or negative, intended or unintended. In the case of this project the evaluation found no evidence of negative impacts on the environment or on human welfare. Regarding positive impacts, the project meant to reduce the risks

¹³The RETC is a catalog of releases and transfers of chemical pollutants, with emphasis on those considered to be hazardous, including risks to health, the environment and the population, the amount of emissions and transfers through air, water and Soil, as a result of natural resources transformation actions. RETC MinamMINAMMinam website WHAT IS RETC? <http://retc.minam.gob.pe/acercade>

of PCBs releases to the environment to prevent the subsequent negative effects on humans and on the environment. In terms of this indicator of impact, the project contributed to the elimination of 142.5t of PCBs and 41.1 t of PCBs Contaminated equipment.¹⁴

4.4.3.1 Forms of project contributions to impact

These amounts are considerably lower than the original target set in the project document (1000 t of PCBs and contaminated equipment), because the PCBs did not exist in the concentrations and amounts assumed during project design. But the project's intention was to give a "boost" to the direct elimination of PCBs; it was assumed that elimination would take place over the period of 18 years (from 2010 to 2028). Thus, a more useful criterion to assess the project's contributions to impact are the forms and extent to which the project helped bring about the conditions likely to result in to the behavioural change and technological transformations for the elimination of PCBs by 2028

Section 4.4.2.2 above reported on the project's contributions to the five key conditions identified in the theory of change needed to bring about required for the transformation. This section provides an assessment of the extent of the changes that took place to which the project contributed and the specific role that the project had in bringing about such changes.

4.4.3.2 Extent of changes to which the project contributed

Given the nature of the challenges related to persistent organic pollutants (POPs), problems are not likely to be solved during the time span of a project or program. Mismatches between the duration of projects and the time necessary to bring about behavioural change at broader scales will require mechanisms to continue the process after the project ends (Garcia and Zazueta 2015). The extent of adoption of the innovations or changes introduced by the project also provide an indicator of the momentum for change that the project has generated. The evaluation examined the extent and scale of adoption of project contributions applying a framework that focuses on three likely mechanisms for broader adoption, developed by the GEF Independent Evaluation Office (GEFIEO 2014):

- **Mainstreaming:** This pertains to processes by which information, lessons or specific results of the project are incorporated into broader stakeholder mandates and initiatives such as laws, policies, regulations and programs. The evaluation found considerable evidence that the information and management practices were adopted and integrated into the regular operations of government agencies and utility firms. For example, OEFA reported it had incorporated PCBs in its regular inspection visits. Seven of the participating electrical utilities reported that they had developed management plans to continue the inventories and phase out PCBs by 2028, and seven indicated that plans had budgets and were under implementation.

¹⁴ "Inventario y Eliminación de Existencia y Residuos con PCB". 2017. DIGESA, ONUDI, GEF, Proyecto PCB

Similarly, all agencies and utility firms interviewed mentioned that they have made changes in their procedures or operations as a result of their participation in the project, including the adoption of measures for an adequate handling of equipment and the dielectric oil that could contain PCBs and use of protection equipment. Three private utilities reported that they had completed their PCBs inventory and that they were PCB free or that they were close to eliminating PCBs in their operations. Annex 8 presents co-financing of participating utilities which would provide an indicator of their commitment to PCBs elimination.

- Replication. This takes place when the supported initiatives are reproduced or adopted at a comparable administrative, geopolitical or ecological scale, often in another geographical area or region. OEFA reported over a dozen regional replications of the workshops carried out by the project. It also reported that there are over 60 persons trained within its organization in the 25 regions of the country. Other agencies and utilities also reported replicating the workshops, though not as extensively as OEFA. Interviews indicated that project participants shared the knowledge obtained with other colleagues through reports or informal conversations. The regional office of OEFA in Arequipa reported the replication of workshops among industry, citizens and municipalities, and calculated that some 600 persons have been trained on PCBs risks and their management in that region. The regional office of Diresa/Desa in Tacna also reported replication of workshops among hospitals, academia and public and private organizations, and reported that their training activities have reached around 400 people.
- Scaling-up: Scaling-up takes place when the supported initiatives are implemented at a larger geopolitical scale, often expanded to include new aspects or concerns that may be political, administrative, or ecological. Based on the lessons and outcomes of the project, FONAFE decided to integrate in its Strategic Plan 2017 – 2021 the identification and elimination of PCBs. This is an important decision, as it ensures that all the 35 public enterprises held by FONAFE, not just those that participated in the project (including electrical and water and sanitation utilities, airports, shipping fleets and mining and petroleum operations many of which have equipment likely to contain PCBs), will adopt and implement PCBs management plans, and will get access to the necessary resources to implement the required PCBs phase out activities. This decision is also significant because the utilities held by FONAFE and the three private utility firms that have eliminated PCBs, or are close to elimination, represent nearly the entire (98%) electrical transmission sub sector in the country. Also because of its participation in the project, FONAFE has incorporated sound environmental management as a commitment across its operations in its strategic plan for 2017-2021. DIGESA laboratory has also begun to carry out quality control of PCBs testing by private laboratories in the country.

4.4.3.3 The role of the project on the changes observed.

So far, the evidence indicates that Peru made significant progress in putting in place the key conditions likely to lead to the elimination of PCBs by 2018. The evidence also indicates that there is a causal link between the project activities and the changes that have been observed. But, when dealing with complex systems, only in a few cases is it possible to attribute accomplishments to a given intervention. This is because in complex systems it is rarely feasible to isolate the effects of one factor or actor. And as mentioned earlier, it is likely the effects of interventions will not reach maturity by project closing, since the system response time tends to be much longer than the duration of the project. Nevertheless, it is possible to assess the project's contributions towards long-term objectives through various forms of counterfactual analysis (Zazueta and Garcia 2014; Mayne 2008).

While the project did spearhead the establishment of the foundations of a national system to manage and eliminate PCBs, the project was also a continuation of processes that were on their way and benefited from favourable contextual conditions. Thus, to assess the role of the project, it is important to account for the contribution of other factors. One form of counterfactual analysis is to account for possible rival hypothesis. This project benefited and built on processes that were already in place, and also benefited from favourable contextual conditions. Two important enabling factors were i) a concern by policy makers for the risks PCBs represent for human health and ii) Peru's commitment to the Stockholm Convention. In absence of these two factors the project would very likely not have taken place. The NIP was an important antecedent that helped identify national priorities and that provided an initial estimate of PCBs that the project built upon. Likewise, the regional GEF-UNEP Mining project had developed management guidelines for the mining sector, which the project also expanded. This project had also begun building awareness among decision makers and had enabled the operation of a dechlorinating plant in the country.

The growing adoption of the concept of corporate social responsibility turned out to be a particularly important contextual factor in the progress made by electrical utilities. By the time the project started, a few private utilities such as Luz del Sur, Electro Dunas and Hidrandina had, under instructions from their holding companies, begun to look for ways to eliminate PCBs. Some had already included in their strategic plans the elimination of PCBs. In the case of the public utilities held by FONAFE, there was also an explicit commitment to corporate social responsibility, but there was no clear strategy on how to address environmental issues, and PCBs did not figure in the picture. Nevertheless, the executives of FONAFE and of several of its utilities were receptive to the project.

Given that the project was not acting alone or in a vacuum, the question remains: What was the role of the project in the changes that took place? This question was addressed during the evaluation by exploring with informants the main benefits generated by the project and, at the end of each interview, by asking respondents to reflect what would have happened if the project had not taken place. The responses were as follows:

- The seven utility firms interviewed responded that through their participation in the project they developed a better understanding of the risks of PCBs. All interviewed utility firms indicated that the project provided them with a way forward to identify and eliminate PCBs, and that for several it allowed them to take concrete actions to meet their commitments to corporate social responsibility.
- One firm, Luz del Sur, participated in the capacity building activities of the project but eliminated the PCBs with its own resources. Luz del Sur had initiated identification of PCBs since 2005, had its own dechlorination plant and had exported PCBs for incineration. While the project provided useful information, and helped confirm their approach, Luz del Sur reported that the absence of the project would have not affected the timing or costs of their results.
- Four of the utility firms indicated that without the project they most likely would have gone ahead with elimination, but that it would have been at a higher cost, and would have taken considerably more time.
- Two utility firms indicated that without the support of the project most likely they would have not yet addressed PCBs. All firms consider of great importance the approval of the regulation for the rational environmental management of PCBs.

Interviews with government agencies produced the following responses.

- Eight of nine agencies interviewed ranked knowledge on PCBs and the management of their risks and strengthened institutional capacities as key benefits generated by the project.
- Five of seven agencies that responded to the question answered that the absence of the project would most likely have delayed the process. The DIGESA Laboratory indicated that without the project it is unlikely that it would have obtained the ISO 17025 certification. Nor would the Laboratory would have received the by INACAL in Determination of PCBs in dielectric oils with reference to ASTM D 4059-00 (2010) in 2015.
- Two of seven respondents mentioned higher costs in the absence of the project.
- All agencies interviewed considered that the project provided important support in the development of a PCB regulation proposal, but most also considered that the adoption of the regulation was key for the long-term sustainability of the system developed by the project.

4.4.4 Likelihood of sustainability

Sustainability is understood as the likelihood that the project benefits will continue after the project ends. Sustainability is assessed in terms of the risks confronting the project. The higher the risks the lower the likelihood that the project benefits will be sustained. The risks frequently considered in a sustainability analysis include sociopolitical, financial, environmental, and risks related to institutional frameworks and governance. Projects such as the PCBs management project in Peru seek to catalyze processes that will yield the desired results over the long run. Thus, in the case of these projects the analysis should not just consider the effect of risks on the specific outcomes accomplished by the project; attention to the factors affecting the trajectory and momentum of change are also critical.

Sociopolitical risks are rated low. The disclosure of PCBs-contaminated equipment can be politically sensitive in account of the risk they pose to human health. The project has helped raise awareness of PCBs risks and their management and the participation of all key stakeholders in the public and private sector. Prior to the project, utilities were particularly reluctant to accept the existences of PCBs, fearing reputational consequences. The project has provided tools and practices to help overcome those concerns.

Financial risks are low. A few firms expressed concern over the potential costs of PCBs decontamination and elimination, and of the costs of the replacement of PCB contaminated equipment; following the guidelines of the Stockholm convention, all equipment found to have more than 50 ppm must be identified, labelled and removed from use. Nevertheless, the approach followed by the convention allows firms until 2028 to eliminate PCBs. This is sufficient time to replace contaminated equipment within the context of the capital replacement cycles. The regulation also makes provisions for the appropriate management and containment of PCBs-contaminated equipment in service. Also, considering relatively low rates (less than 2%) found so far

of contaminated equipment in Peru, the costs of elimination of PCBs is calculated to be 4.6 % of the gross revenue of the electrical sector of one year¹⁵.

Technological risks are rated Moderately likely. The evidence obtained from the equipment inventories carried out by the project indicates that a considerable number of equipment was cross-contaminated due to inadequate maintenance practices. At least 20% of the contaminated equipment was produced after 1983, after the use of PCBs was banned. Also, while 42% of contaminated equipment had more than 500 ppm (indicating these were likely original sources of PCBs), 58% of the equipment had amounts lower than 500 ppm of PCBs, which are too low for equipment manufactured with PCBs, pointing to a likelihood this equipment was cross contaminated¹⁶. Firms participating in the project reported that as part of their PCBs management plans they were requiring certifications from maintenance service providers that serviced equipment is free of PCBs. The participating firms have also put in place protocols to prevent any acquisition of PCBs-contaminated equipment. These measures will ensure that the electricity transmission sector will remain free of PCBs and will help raise the overall standards among service providers and equipment suppliers. But there is still much equipment outside the electrical that has not been inventoried. This equipment can be a source of cross-contamination, particularly considering that many of maintenance service providers operate in the informal sector which is difficult to regulate and control.

Institutional and Governance risks are rated moderately likely. As indicated earlier, the approval of the regulation has been delayed due to the administration transition and the change of government officials in the Ministry of Health (MINSA) and MINAM. Most people interviewed believed there is an urgent need for the approval of the regulation and expressed concerns for the ongoing delays in its approval. The delays of the regulation are not likely to have an impact on most of the electrical utilities that participated in the project, they are likely to continue their equipment inventories and with the elimination of PCBs. The private utilities have either eliminated their PCBs existences or have inventoried all their equipment and are close to total elimination. In the case of public utilities, several have begun to implement PCBs management plans and those that have not soon will, as required by FONAFE's 2017-2021 Strategic Plan.

Despite the current commitment expressed by all parties, as time goes by, and definitely in the long run, the absence of a regulation is likely to undermine the trajectory and momentum that the project helped develop. Without the regulations, there are no standards to hold the industry accountable. Also, without a mandate the public agencies don't have the authority to carry out their roles and will lack the budget to carry out PCBs phase-out activities. In the case of OEFA, officials have reported that some firms have refused them access to their installations, as they are not yet required to do so. The lack of a mandate and budget is also likely to severely hamper the capacity of

¹⁵ Information provided by Mario Mendoza, see Annex-9

¹⁶ Information provided by Mario Mendoza and *Inventario y Eliminación de Existencias y Residuos con PCB*. 2017, p 69.

DIGESA and OEFA to continue expanding to program to the mining sector and other industries suspect of PCBs contamination; Also, significantly limiting the ability of these two agencies to reach to maintenance service providers to address cross-contamination of equipment. Similarly, several of the instruments developed by the project cannot come into effect until after the approval of the regulation. For example, the *Guide and the Technical Health Norm for Inspections of the Work Place* can only come into effect 30 days after the approval of the regulation. Similarly, the implementation of the National Registry of PCBs has been held until the approval of the regulation. As this system was designed to track the existence, residues and locations contaminated with PCBs, it is a critical instrument that will provide key information to better target actions to phase out PCBs. It will also be the main source of information to meet Peru's commitments to report to the Stockholm Convention.

4.4.5 Efficiency

Project efficiency is rated as satisfactory. It is difficult to come up with a precise calculation to measure the value for money generated by the project. Other projects implemented in the region are not fully comparable as their specific outputs vary according to the needs of the country. But it is possible to triangulate an indicative analysis by broadly comparing projects with similar objectives in terms of results and funding allocations. In terms of outcomes, the Peru project which had a total cost of 12.4 million USD (2.6 of the GEF Grant and 9.8 of co-financing), fares well when comparing the 2000-plus people trained with the 125 persons trained by the PCBs project in Uruguay (GEF ID 3120) at a lower total cost of 2 million USD. The Peru project also fares well when compared with the expected number of trainees of the PCBs project in Costa Rica GEF (ID 4485), fewer than 200 people at total project costs of close to 11 million USD. Also, the Peru project had a much broader reach when compared with the intended reach of the Costa Rica project. The Peru project carried out capacity building activities in institutions in Lima and across the 25 regions of the country, and reached 32 firms. At a slightly lower cost, the Costa Rica project is designed to build capacities at the central level and work in two regions, to reach eight firms.

Through the introduction of new technologies and the development of demand of services (such as inventory, testing, retrofill and dechlorination) the project has reduced the costs for of management and elimination of PCBs in Peru. The utility firm ElectroDunas, for example, reported that the project saved it USD 200,000 the price it would have paid for equipment replacement had it disposed of the PCBs under the conditions prior to the project. Electro Sur also reported that the project helped avoid an expense of 320 000 USD for the replacement of contaminated equipment. The CU of the project estimates that new technological options that the project helped establish in Peru saved the participating utility firms some 2.5 million USD in costs of inventory, treatment and disposal of PCBs. While it is difficult to find a benchmark to assess the money value for the contributions of the project in the establishment of a PCBs management system in Peru, it would seem that the great progress made in the reductions of PCBs risks for generations to come is well worth 12.4 million USD.

As indicated in Annex 10, the costs of management and M&E of the Peru project are calculated to be 348% of the amount originally GEF grant budgeted at project design. This figure is misleading, as the total nominal management costs at project completion including monitoring and evaluation were 18.2% of the total GEF grant. These costs are comparable to the administration or management costs of the PCBs Project grant in Costa Rica (20%) and Uruguay (17%). It was also reported that some coordination costs directly related to specific project activities were added accounted as part of those activities. The budget over-run is explained by the fact that the amount originally budgeted for management and administration (excluding M&E) in the Peru project was extremely low to begin

with, a total of 18,100 USD. This low amount was originally budgeted under the assumption that a small team would help set up the project structure within DIGESA and the project would be mostly implemented by DIGESA. But this never happened, and a project Coordination Unit of two persons execute the project. As indicated earlier, the CU team had to operate through a virtual office as they were never given access to a suitable office.

The project was originally programmed to last four years, but lasted six years and four months, from November, 2010 to March 31, 2017. As explained in section Project coordination and management bellow, low ownership by DIGESA was a delaying factor. The delays in the signing of the project document contributed to a slow start up during the first couple of years. After the midterm evaluation, the project closing date was extended to December 2014. The project was further delayed in part when the international tender for PCB elimination was declared deserted. A two-year delay is not unusual for GEF projects¹⁷. Other PCB management projects implemented in Latin America, with similar objectives ranging from three to six years in duration. The additional time enabled the project to complete most of its targets and exceed some of them. The project training and capacity building activities reached a more organizations and regions with in the country than originally planned. Thus, significantly adding to the project contributions to capacity building. The additional time also allowed the project to increase the number of inventoried equipment (from 10000 to close to 16000) which helped develop a better information base of the existence of PCBs existences in Peru.

4.4.6 Project management and Co-financing

4.4.6.1 Project management.

Project management is rated as highly satisfactory. The midterm evaluation reported coordination deficiencies between the project's coordination unit (CU) and DIGESA. The CU was reported to function in isolation with little interaction with DIGESA. After the midterm evaluation UNIDO replaced the project manager with someone who knew DIGESA and was known to people in the public administration system. The new manager knew how to operate within DIGESA and had access and the confidence of decision makers in the organization. The new project manager gave early priority to establishing an effective Consultative Committee that included representatives of all key agencies involved in the project and held yearly ordinary meetings. Through these meetings, a website and regular communications, the CU kept all participating agencies informed and involved in the project. Nevertheless, as indicated earlier, project management took place under very strenuous conditions. The project was originally designed to be executed through DIGESA, but that integration did not fully take place. Instead of 13 people implementing the project as originally planned, project executions were mostly carried out by only two people. The project used this space

¹⁷ The GEF Independent Evaluation Office reported in 2013 the number of months of project extensions during implementation for completed projects. For projects approved during GEF 3 (2003 – 2006) 75% of the projects had extensions in implementation of 19 months; for GEF 2 (1999-2002) 75% of the projects had extensions in implementation for 36 months; and for GEF 1 (1992- 1998) 75% of the projects had extensions for 32.5 months. Assessment of the GEF Project Cycle. OPS 5 Technical Document 18, 2013, p.12 <http://www.gefio.org/sites/default/files/ieo/ieo-documents/ops5-td18-gef-project-cycle-assessment.pdf>

as a warehouse. As DIGESA had been expected to carry out the execution roles, not enough budget was allocated during design for this function. This resulted in budget overruns. UNIDO stepped in and filled in some of the project execution functions providing support to the CU on aspects related to procurement. While this worked well, it also led to the mixing of the project implementation and the project execution roles which is not recommended as this risks compromising the integrity of supervision. Project management gets a highly satisfactory rating because after midterm, the management problems identified by the midterm evaluation were completely resolved and because despite the difficult working conditions, the new CU did an excellent job in coordinating activities and facilitating the participation of stakeholders.

4.4.6.2 Co-financing

Annex 8 presents the co-financing provided by each firm and public entity that participated in the project. The realized co-financing reported by the project was 9,797,929 USD. This is nearly double the 5,190,000 expected at project approval. Reporting did not distinguish between different types of co-financing. But a methodology was followed that provided reliable estimates of the costs contributions to the project by participating entities. The CU developed a methodology to calculate co-financing that was followed by the participating firms and public entities when calculating and reporting their co-financing. The evaluation verified the co-financing letters submitted by the participants. Co-financing by utilities was reported in cash and it included the costs of the time paid to conduct equipment sampling in the field, logistical support to the firm that carried out decontamination of equipment and export of PCBs and PCBs contaminated equipment. Firms co-financing also included estimates of the costs of staff time that participated in workshops and other project events. Co-financing by OEFA included costs of staff time in inspections, testing and participation in workshops and other project events. Co-financing by DIGESA was largely in kind and it included time of staff participation in meetings, tests and analysis carried out by the laboratory and laboratory equipment depreciation. Co-financing by FONAFE, which was the largest, consisted on the financing of purchase of transformers and other electrical equipment free of PCBs. Co-financing by FONAFE includes only investments made up to December 2012, co-financing by DIGESA includes only costs incurred until June 2014.

4.4.7 Assessment of monitoring and evaluation systems

4.4.7.1 M&E Design.

Baseline. The project document provides a baseline of the institutional and regulatory setting at the time of project design, and also identifies the most important barriers pertaining to the sound management of PCBs in Peru. These include legal, institutional, environmental and technical knowledge and awareness barriers. As indicated by the midterm evaluation, the impact indicators related to the project environmental benefits were defined using the preliminary inventories developed by the POPs NIP (2006). It also included the information derived from surveys carried out by the Investment Supervisory Organization of Energy and Mining (OSINERGMIN). There is no record of original studies or surveys carried out as part of project design. The baseline assessment of the barriers existing in Peru was sufficient to provide a picture of the overall conditions in the country at the time the project started. The midterm evaluation later observed that the information on PCBs had many weaknesses and required adjustments. Nevertheless, the project has gradually helped generate more reliable information.

Monitoring and Evaluation Plan. The project document included a detailed M&E plan that had as a main purpose to facilitate tracking of implementation progress to outcomes and to facilitate learning, feedback and knowledge sharing and lessons among the main stakeholders. The project

logical framework did identify indicators, sources of verification and risks and assumptions some project outputs and outcomes. Yet as indicated in the midterm evaluation, indicators and targets for many activities were not identified. In some cases, targets were established that were outside of the project responsibility, such as the adoption of norms, regulations and guidelines by the government. The plan also defined key monitoring responsibilities and activities with UNIDO and the project manager having central roles in coordinating M&E activities. Key events included the inception workshop, annual tripartite project reviews between UNIDO, the project, and the government. The inception report was particularly important, as it provided opportunities to all parties to understand their roles in the project. The plan also called for annual reports to be presented to UNIDO, as well as an annual work plan to help track progress. Other reports included a midterm evaluation, a project terminal report, project publications and an independent final evaluation to be carried out within 12 months of project completion.

4.4.7.2 M&E Plan implementation (use of adaptive management)

The midterm evaluation was carried out as scheduled and reported that key components of the M&E plan had not taken place. As the project had been developed in close quarters, few people were familiar with the specifics of the project, and participating agencies did not fully understand their roles. Yet the inception workshop did not address many of these issues. This was a missed opportunity to bring on board the participating institutions and to review the logical framework in light of the conditions in the country.

The midterm evaluation also observed that the information on the existences of PCBs used during design had significant weaknesses, and that urgent adjustments were needed, based on the results of the inventory of 12,000 pieces of equipment carried out by the project; and it called for additional inventories to confirm the results. The midterm evaluation was correct in pointing out the deficiencies of the initial baseline of PCBs existences, but it would have taken an inventory similar to the one carried out by the project to develop a more reliable baseline. The recommendation was accepted, and the project increased the sample to nearly 16,000 pieces of equipment, confirming its initial findings. Despite the weaknesses of the data used during design, the approach adopted by the project helped to develop a more reliable information base on the existences and characteristics of PCBs in the country.

The project systematically collected and reported information on the activities carried out and results of the project. Each year, the project Coordination Unit evaluated the achievements of the program, and on this basis drafted a proposal of an annual plan for the following year, which was approved by UNIDO. The Coordination Unit also provided a progress report every year to the Consultative Committee, keeping its members well-informed as they all took part in project activities throughout the year. DIGESA was also kept apprised of project activities, as all communications and reports were signed by a DIGESA officer.

Outcome 4, "Project Management, Monitoring and Evaluation," included the establishment of a web-based project management information system (activity 4.1.4), to track and make information available on the programmed and executed activities annually, to facilitate its supervision, control and evaluation. It also kept track of the formulation of annual reports and annual tripartite evaluation meetings (UNIDO - DIGESA - Project Coordination Unit). This spreadsheet was implemented and maintained by the project Coordination Unit.

The project produced publications with information of interest to a broader audience, such as the result of the PCBs inventory and the *Guide for Environmentally Sound Management of Stocks and Waste of Polychlorinated Biphenyls*, both, welcomed and appreciated by private and public-sector

stakeholders. A project terminal report was carried out, detailing the project activities and results. The information obtained through M&E was also used for adaptive management adjusting project activities, to ensure that funding was used in areas of more utility. Having found a much lower quantity of PCBs and PCBs-contaminated equipment, the project decided to increase the inventory from 10,000 pieces of equipment to 12,000 and subsequently to close to 16 000. This was an important decision, as it helped to develop a better picture of existing PCBs in the country. Adjustments were also made during implementation to respond to emerging conditions and to meet the needs of project participants. For Example, the project had had programmed as one activity the support to the development of supervision procedures. OEFA already had a procedure but needed support on training its staff. The project adapted and met OEFA's need. Given the political risks of broad media campaigns on PCBs, for instance, the project opted to carry out an approach that targeted more directly populations at risk, and sought to build capacities within institutions and utility firms to carry out outreach and information with the community.

4.4.7.3 Budgeting and funding of M&E activities.

The project document budgeted USD 111,900 of the GEF grant for M&E activities in the coordination unit. The co-financing tables also included USD 127,700 for M&E activities of government institutions and USD 32,000 for activities by UNIDO. In practice, most M&E activities became mainstreamed in other project activities in such a way that not all the allocated M&E funds were used. By project completion, only 42% of the GEF grant funds budgeted for the coordination unit had been used.

4.4.8 Monitoring of long-term changes.

The project developed and tested a web-based register to track and disseminate information regarding the existence, location and disposal of PCBs in Peru in the long term. This page will be maintained by MINAM, and housed on the website of the Register of Pollutant Releases and Transfers – RETC¹⁸. The information will be registered by the owners of equipment or waste, and will be made available to decision makers and other stakeholders. The establishment of this register is required by Article 12 of the Draft Regulation for the Sanitary and Environmental Management of Polychlorinated Biphenyls,¹⁹ which indicates that PCBs holders are required to report stocks and wastes that contain or are contaminated with PCBs in a concentration higher than allowed, in the National Register of Stocks and Residues managed by MINAM. Reports are to be submitted by March 31 of each year and should cover information on the period corresponding with January to December of the previous year. Likewise, the Third Transitory Provision of the Regulations established by MINAM, within thirty (30) working days of the approval of the Regulation, will create

¹⁸The RETC is a catalog of releases and transfers of chemical pollutants, with emphasis on those considered to be hazardous, including risks to health, the environment and the population, the amount of emissions and transfers through air, water and Soil, as a result of natural resources transformation actions. RETC Minam website - WHAT IS RETC? <http://retc.minam.gob.pe/acercade>

¹⁹ Ministerial Resolution No. 390-2016-MINSA, which pre-published the draft Regulations for PCBs (July 2016). El Peruano.

the said Registry. The register will provide updated information of the PCBs on the progress made in the destruction of PCBs in the country over the long run, and will also help to identify strategies to best targets PCB. However, it is subject to the approval of the PCB Regulation, already mentioned above.

4.4.9 Assessment of factors affecting achievement of project results.

4.4.9.1 Factors that had a positive effect on project results

A proactive project coordination unit has been very effective in keeping stakeholders involved in the project through awareness raising and information sharing. The coordination unit has also been successful in building capacities and promoting approaches and technologies to manage the PCBs risks in ways within financial reach to stakeholders and appropriate for Peru. Public institutions and utility firms have also made important in-kind and cash contributions to the project. The sustainability of project accomplishments is greatly enhanced by the commitment to the sound PCBs management developed during the project by participating institutions and utility firms. UNIDO has taken timely and critical actions, and provided technical back-stopping by hiring international experts to help address the findings of the midterm evaluation. UNIDO's administrative support also helped ease the burden of the coordinating unit and allowed timely procurement of goods and services for the project.

4.4.9.2 Factors that hampered project results or sustainability.

Project preparation, readiness and quality at project entry were factors. The design adopted for the project clearly drew from international experience regarding other similar PCBs management projects. The design process undertaken, however, did not take the time to adapt the international lessons to the conditions of Peru, and did not include the key stakeholders. As a result, in the first phase of the project - up to the midterm evaluation - stakeholders did not fully understand the project, or their role in it. This led to little interest and ownership in the project. This situation was corrected with the changes made in the project management and design after the midterm evaluation.

DIGESA had been one of the few institutions involved in preparing the project. Yet only one person seemed to be part of this process. With the departure of this person, changes in the direction of institution and a deficient inception workshop, there remained little understanding and interest on the project within the institution. As the project document was not signed before the project started, the new direction of DIGESA felt no obligation to commit resources. This situation was exacerbated by poor communication between the project manager and the direction of DIGESA.

After the midterm evaluation, DIGESA assumed the convening role of the project, which contributed to an effective consultative committee. Throughout the project, DIGESA staff and particularly the laboratory was heavily involved as beneficiaries and contributors to the project. Yet frequent changes in the leadership of the institution continued to weaken project ownership, so that DIGESA assumed only partially the role established during project design. The working conditions of the CU, through a virtual office, also hindered coordination and communication between the coordination unit and DIGESA staff.

Delays in the review of the proposed regulation, and in its presentation to government authorities responsible for their approval, have prevented some institutions from fully assuming their role in the PCBs management system designed by the project, resulting in delays in the implementation of PCBs management norms and guidelines. Further delays in the approval of the regulation are likely to

further weaken the commitment of some stakeholders to PCBs management, and the momentum for the expansion of activities to other economic sectors with PCBs.

4.5 Gender mainstreaming

The project sought to address gender-related concerns in the project in several ways. First, the project kept track of the gender of the participants in project activities, particularly of those participating in courses and workshops. The records indicate that of a total of 2,030 participants, 870 were women (43%) and 1,160 men (57%). Of 293 decision-makers who participated in 30 project training events, 76 were women, corresponding to 26%. But it should be noted that the selection of individuals attending workshops is the prerogative of the participating public or private agencies.

With respect to human resources and the management structure of the project, the Coordination Unit team, since October 2012, has been composed of a female project coordinator and a male technical adviser. From the start of the project until September 2012, coordination was carried out by a male, with a technical assistant who was also male. A female administrative assistant worked until the middle of 2014. The project had the professional services of nine national consultants for specific jobs, such as guides, and advice in the case of inventories, special studies, among others; five were women and four men. There were two international consultants, a man and a woman.

In its workshops and publications, the project addressed gender-related health and environmental risks and effects of PCBs in the immunological, neurological and reproductive system. The project also pointed out how PCBs have a particularly insidious effect on women and children, as they tend to accumulate in fatty tissue (SINGULAR) and have genotoxic and carcinogenic properties. The project's awareness-raising activities and publications also pointed out that PCBs can be present in the air, water and soil, and that their bio-magnification and bioaccumulation in fish and animals are transmitted through the food chain. The project stressed need for preventive measures for women and children as PCBs affect the reproductive functions and result in neurobehavioral and developmental deficits in newborns and school-age children due to exposure to PCBs through maternal milk or the uterus.²⁰

5 Conclusions, recommendations and lessons learned

5.1 Conclusions

The project has helped develop and implement a system for the management of PCBs in the electricity distribution subsector in Peru. In doing so, it has also helped establish foundations for the phase out of PCBs, and helped to address other persistent organic pollutants, as many of the processes and capacities implemented can be applied to the management of other POPs. The

²⁰ Guide to the Environmentally Sound Management of Stocks and Residues of Polychlorinated Biphenyls (PCBs), 2017, p.43

project contributed to the development of five necessary conditions likely to lead to the incentives and capacities to bring about the sound management of PCBs.

- The project helped strengthen regulatory and enforcement capacities by providing technical support and facilitating the participation of key sectors in drafting a proposal for regulations of PCBs management. Through 42 workshops that included 2030 participants and other technical assistance, the project also helped develop capacities in public institutions regarding analysis, risk management and inspection of PCBs.
- The project has helped develop a keen awareness of the risks posed by PCBs, and options to manage these risks among the relevant public institutions, electricity utilities and other industries.
- Through an inventory of close to 16,000 pieces of equipment, the project has provided more reliable information on the existences, location and characteristics of PCBs. This information is critical to develop more targeted strategies to continue the elimination of PCBs in the country. There also exists an opportunity to further strengthen the oversight and inspection system by establishing collaboration between DIGESA's laboratory and OEFA in the analysis of samples obtained by OEFA during PCBs inspection.
- The project has tested and demonstrated the feasibility of technologies and approaches to manage and eliminate PCBs, on the basis of Best Available Techniques and Best Environmental Practices and from lessons trials carried out in the country. It has also developed a set of guidelines for the management and elimination of PCBs. The project build capacities and commitment to the sound management of PCBs in 98% of the electricity transmission sector by working closely in the testing of technology and approaches with the 30 larger utility firms in the country.
- The project helped reduce the financial burden of eliminating PCBs by introducing into the country less costly technologies, and increasing the number of firms that can provide services for PCB elimination.

The project built on and sometimes incorporated existing initiatives. The growing commitment to corporate social responsibility by utilities was an important contextual factor contributing to the progress. For more than a decade, the private utility firms had been instructed by their foreign investors to adopt more corporate social responsibility principles in their operation. This gradually evolved to include, in some firms, an interest in the elimination of PCBs. With public utilities, the changes took place later; but by the time the project launched several firms had already started to incorporate CSR principles in their operations, and were also receptive to efforts that sought to improve the environmental management of their operations. Under these conditions, the participating utilities committed resources and embraced the project's goal of PCBs management and elimination.

The midterm evaluation rated the project as unsatisfactory on account of deficiencies in design and readiness, delays in the achievement of outputs and low participation and country ownership. These issues were addressed by UNIDO by changing the log frame and strengthening the project coordination team. The new project management team quickly bolstered the functions of the Consultative Committee to ensure the participation of all key sectors in the project. The new management also proactively coordinated DIGESA and other key institutions to ensure a good information flow among the parties. Soon the CU obtained the confidence of DIGESA and the support and commitment of other key public institutions and participating utilities.

After the implementation of the recommendations of the midterm evaluation, DIGESA fully trusted the work of the CU, and consistently lent support to the project by convening and presiding over meetings and events. The DIGESAS laboratory’s participation was also key in realizing the inventory and building PCBs analysis capacities in the country. Nonetheless, frequent change of directors in the institution (three in a period of six years) impacted the institutions ownership of the project. By the time a director got to understand and commit to the project, he or she was replaced by a new one. The CU tried to mitigate this factor by continuing to profile DIGESA in all project activities and keeping staff involved in the project. Despite these efforts, the project was never embedded totally in DIGESA as planned during project design.

One important consequence is that DIGESA has been very slow in reviewing and presenting the proposed regulation to authorities within the government responsible for its approval. These delays in approval have hampered the progress made in addressing the PCBs in Peru; key elements of the management system set up by the project cannot take effect until the regulation is approved. Examples include OEFA’s authority to carry out inspections, the work place norm, the Guidelines for the Environmentally Sound Management of PCBs and budget approvals to carry out PCBs related operations in the public sector.

An effective inter-sectoral coordination, a proactive Project Coordination Unit and a commitment to adaptive management were key factors contributing to the accomplishments of the project. Much of the progress made in the establishment of a system for PCBs management in Peru can be attributed to the project. Project participants reported critical contributions in awareness raising and in the introduction of new and less costly technologies and procedures well-suited to Peru. All project participants also expressed the belief that without the project, the elimination of PCBs in Peru would be substantially delayed, and would arrive at a higher cost. This perception was corroborated by the evaluation. While prior to the project some private utilities had initiated the elimination of PCBs, these were isolated initiatives. Also, while another concurrent GEF project also took place these initiatives are fairly isolated, or of a smaller scale. This Evaluation found no other interventions that could have resulted in the observed changes at scale.

5.2 Recommendations

The evaluation has the following recommendations:

UNIDO:	
R1	In future projects, ensure that roles and responsibilities are properly discussed and agreed upon by all partner institutions, and that commitments are formalized before the project starts.
R2	Establish a clear distinction of the implementation and execution roles in a project. While administrative support of implementing agencies to a project can improve efficiency, to ensure quality control it is also important that procurement and other execution functions and project supervision roles are kept separately and are appropriately funded.
R3	Urge the government of Peru to review and pass the regulation as soon as possible to guaranty that the country fully benefit from the project’s accomplishments.

DIGESA:	
R4	Take quick action to review, prepare and submit the proposed regulation to the authorities in the government responsible for their approval.
R5	Once the regulation has been approved, disseminate it among the relevant stakeholders and carry out the necessary actions to ensure its compliance.
OEFA and DIGESA:	
R6	Establish an institutional agreement between OEFA and DIGESA to give OEFA access to the services of DIGESA's laboratory, and specifically to the analysis of samples collected during inspections.
OEFA:	
R7	Develop a strategy to address PCBs contamination in other sectors, and to address cross-contamination of equipment during maintenance.

5.3 Lessons learned

Three key lessons emerge from this project:	
1	While it is important to acknowledge that individuals can play an important role in championing a project, it is also critical that the discussions and agreements on project objectives, activities and responsibilities are fully owned by all participating institutions, and that formal institutional commitment is established prior to the initiation of a project.
2	Effective participation and a strong stakeholder commitment are crucial but insufficient conditions in seeking policy or regulatory reforms. Timely action and approval of reforms require informed and committed decision makers.
3	To achieve a strong stakeholder commitment, projects must strengthen stakeholder awareness and build on ongoing processes. They should propose solutions that are perceived as relevant, useful and within reach of the targeted sectors. Projects should also include approaches that combine formal instruments to involve stakeholders (such as effective consultative or steering committees), proactive involvement in project activities and effective coordination and information sharing.

ANNEXES

Annex 1: References

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<ul style="list-style-type: none"> • Ley Nº 29712 – Modification to the General Health Law
<ul style="list-style-type: none"> • Ley Nº 28611 – General Law of the Environment
<ul style="list-style-type: none"> • Ley Nº 28245 - Framework Law of the National Environmental Management System
<ul style="list-style-type: none"> • Decreto Supremo Nº 008-2005-PCM - Regulation of Law No. 28245
<ul style="list-style-type: none"> • Ley Nº 29783 - Occupational Safety and Health Act
<ul style="list-style-type: none"> • Decreto Supremo Nº005-2012 – Regulation of Law No. 29783
<ul style="list-style-type: none"> • Ley Nº 27314 - General Law of Solid Waste
<ul style="list-style-type: none"> • Decreto Supremo Nº 057-2004-PCM - Regulation of Law No. 27314

<ul style="list-style-type: none"> Decreto Legislativo 1278 – New General Law on Solid Waste
<ul style="list-style-type: none"> Decreto Supremo N° 016-93 EM – Regulation of Environmental Protection in Mining Metallurgical activities
<ul style="list-style-type: none"> Decreto Supremo N° 029-94-EM - Regulation of Environmental Protection in Electrical Activities
<ul style="list-style-type: none"> Ley N° 28256 - Land Transport Law of Hazardous Materials and Waste
<ul style="list-style-type: none"> Decreto Supremo N° 021-2008-MTC – Regulation of Law No. 28256
<ul style="list-style-type: none"> Decreto Supremo N° 002-2008-MINAM - Approves Environmental Quality Standards for Water
<ul style="list-style-type: none"> Decreto Supremo N°015-2015-MINAM – Modification to the parameters and values of the Environmental Quality Standards for Water given in Supreme Decree No. 002-2008-MINAM
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<ul style="list-style-type: none"> Ley N° 29325 - Law of the national system of evaluation and environmental control -SINEFA
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<ul style="list-style-type: none"> Decreto Supremo N° 001-2012-MINAM – Approves the "National regulations for management of waste of waste of electrical and electronic equipment"
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<ul style="list-style-type: none"> Resolución Ministerial N° 490-2016-MINSA - Draft of "Regulations for Sanitary and Environmental Management of Polychlorinated Biphenyls"
<ul style="list-style-type: none"> Decreto Supremo N° 012-2009-MINAM – Approves the "National Environment Policy"
<ul style="list-style-type: none"> Decreto Supremo N° 014-2011-MINAM - Approves the "National Environmental Action Plan - PLANAA Perú 2011-2021"
<ul style="list-style-type: none"> Decreto Supremo N° 189-2012-PCM – Creates the Multisectoral Commission responsible for developing policy proposals and policies aimed at improving environmental and social conditions under which economic activities, especially the extractive industries

Annex 2: EVALUATION OUTLINE, QUESTIONS MATRIX, METHODS AND INFORMATION SOURCES

Evaluation Report Outline	Questions and issues to address	Method	Sources of information
Executive summary 4 Pages)			
I. Evaluation objectives, methodology and process	Presentation of the evaluation objectives, method, process and information sources		TOR/Prodoc
II. Country and project background			
A. Country context:	Overview of the economy, the environment, institutional development, and other data of relevance to the project.	Desk review followed by verification with Project Officer and Coordination Unit	TOR/ archival research
B. Sector specific issues and developments concerning the project	What prompted the project? What were the issues regarding management of PCB previous to the project (extent of their use, management practices, social, health and economic concerns? What was the regulatory framework pertaining PCB (including gaps)? What were the institutional mandates (including gaps and overlaps)? What were the capacities to implement regulations among government and industry? Was their sufficient awareness among the policymakers and the public on PCBs?	Desk review followed by verification with Project Officer and Coordination Unit	Prodoc and archives, followed with interviews with Project Officer, Coordination Unit (CU) and, government officials
C. Project summary:			
1 Description of the project:	What were the project objectives and structure, donors and counterparts, project timing and duration, project costs and co-financing?	Desk review and verification interviews	Prodoc, evaluation TOR, interviews with Project Officer, CU and other stakeholders
2 Project history and previous cooperation	What specific events led to the project such as commitments to international conventions, disasters, previous initiatives or cooperation?	Desk review and verification interviews	Prodoc; followed with interviews with Project Officer, Government officials
3 Project implementation arrangements	What were the implementation modalities, institutions involved, major changes to project implementation?	Desk review/ verification interviews	TOR/PRODOC, project archives and verification with Project officer, CU and other stakeholders

4 Positioning of the UNIDO project	What are the comparative advantages of UNIDO as an agency to implement this project (consider other initiatives of Government, other donors, private sector, etc.)?	Desk review; interviews	Prodoc, UNIDO national strategy (?), Project Officer, CU Government officials and other stakeholders
5 Counterpart organization(s)	What were the counterpart organization agencies, how were they identified and what were their roles in the project?	Desk review and interviews	Prodoc, UNIDO national strategy, Project Officer, CU Government officials and other stakeholders
III. Project assessment			
A. Project identification and formulation	To what extent did the project identify and address root causes of the problem? Who participated in design? What preliminary studies were carried out?	Mid-term evaluation (MTE), Desk review, verification interviews	Project preparation documents followed with interviews with project officer, government officials and other stakeholders
B. Project design	What is the theory of change of the project (TOC)? To what extent does TOC address the necessary conditions (and root causes) to reach the long-term objectives of the project? To what extent were key stakeholders involved in the preparation of the project?	Desk review and verification interviews	Review of project archives, the midterm review and other project reports; interviews with Project Officer and technical team, government officials, project committee, business sector participants and other stakeholders; and observations
C. Implementation performance			
1) Relevance and ownership	What is the relevance, ownership and project involvement of project to the country, its beneficiaries and other stakeholder? Are the project objectives consistent to the GEF focal area strategies for POPs?	Desk review, interviews, field observations	Review of project achieves the midterm evaluation and other project reports to identify the policies, plans or laws the project supports, interviews with Project Officer and technical team, government officials, project committee, business sector participants and other stakeholders, observations and the GEF POPs Strategy.

<p>2) Effectiveness (the extent to which the development intervention's objectives and deliverables were achieved, or are expected to be achieved, taking into account their relative importance)</p>	<p>--To what extent are the conditions identified by the project sufficient to generate the necessary capacities to meet Peru's its commitments with the Stockholm and Basel conventions to phase out and elimination of PCBs by 2025 and 2028 respectably?.</p> <p>--How and to what extent did the project help Peru establish necessary legal and regulatory system?</p> <p>--How and to what extent did the project demonstrated technologies, methods or approaches that have a comparative advantage in the context of Peru.</p> <p>--What is the extent of adoption of the innovations (or other contributions to the reduction of PCBs) of the project? .</p> <p>--How and to what extent has the project helped raise awareness among policy makers, stakeholders and other target population's on the social and health benefits of PCB phase out.</p> <p>--What were the factors which hindered or enabled the contributions of the project to the necessary conditions for the sound management and phase out of PCBs in Peru?</p>	<p>Desk review, interviews, field observations</p>	<p>Review of project achieves the mid-term review and other project reports; interviews with Project Coordinator and the technical team, government officials, project committee, business sector participants and other stakeholders; and observations</p>
<p>3) Counterfactual analysis</p>	<p>What are the most important accomplishments in the conditions necessary to reach the long-term objectives of phasing out PCBs in Peru? What did the project contribute achievement of those conditions? What other factors can account for or contributed to such conditions?</p>	<p>Interviews and desk analysis</p>	<p>Interviews with Project Officer and technical team, government officials, project committee, business sector participants and other stakeholders; and observations</p>
<p>4) Efficiency (report on the overall cost-benefit of the project and partner countries' contribution to the achievement of project objectives)</p>	<p>What was the cost of the project and country contributions? How do cost compare with other similar initiatives? What were the specific contributions of the project to reaching these conditions? Are there any other factors that could account or have also contributed for such changes?</p>	<p>Desk review and interviews</p>	<p>Review of project achieves quick review of cost of other similar UNIDO projects in comparable countries, interviews other stakeholders</p>

5) Likelihood of sustainability of project outcomes	To what extent did the project generated benefits to, and buy-in from key stakeholders? To what extent are the necessary capacities in place to sustain project benefits? Are there any institutional, sociopolitical or financial risks to the benefits generated by the project? Did the project significantly reduced the cost of testing and destruction of contaminated equipment and waste (the project document targeted a 30% reduction in costs)?	Desk review; interviews, field observations	Review of project archives the midterm review and other project reports; interviews with Project Coordinator and technical team, government officials, project committee, business sector participants and other stakeholders; and observations
6) Catalytic role and broader adoptions of the project outcomes	To what extent has the project helped to set up mechanisms that will help broaden the changes triggered by the project? Are there indications of mainstreaming, replication or scaling-up of project contributions?	Desk review; interviews, field observations	Review of project achieves the midterm review and other project reports; interviews with Project Officer and technical team, government officials, project committee, business sector participants and other stakeholders; and observations
7) Project coordination and management	Were the recommendations of the mid-term evaluation put to action in a timely manner? If some recommendations were not implemented, why? What was the performance quality of the supervision (UNIDO)? What was the performance quality of execution (the CU)? What was the country ownership and performance quality?	Desk review; interviews, field observations	Review of project archives, the midterm evaluation and other project reports; interviews with Project Officer, Project Coordinator and the technical team, government officials, project committee, and observations
8) Project monitoring	Were the baseline, M&E plan and project indicators complete as recommended by the MTE? If not, why not? What factors hindered or enabled project monitoring? Did the M&E plan provide the necessary information to track progress to project outcomes?	Desk review, interviews, field observations	Review of project archives and other project reports; interviews with Project Officer, Project Coordinator, the technical team, government officials and the project committee, and observations
9) Long term monitoring	Has the project established a realistic monitoring plan? And, has it helped put in place the capacities to track, report and use information for adaptive management once the project ends?	Desk review, interviews,	Review of project archives the midterm review and other project reports; interviews with Project Officer, the Project Coordinator, the technical team, government officials and the project committee, and observations

10) Assessment of processes affecting achievement of project results	What other processes affected the achievement project results and contributions to desired long-term trajectories? The evaluation will give special attention to quality of preparation and readiness, country ownership and performance, quality of UNIDO supervision, stakeholder involvement, met assumptions and adaptive management.	Desk review, interviews, field observations	Review of project archives the midterm review and other project reports; interviews with Project Officer, Project Coordinator the technical team, government officials, project committee, business sector participants and other stakeholders and observations
D. Gender mainstreaming	Did the project consider gender dimensions of its interventions? How did project implementation and results likely to affect gender relations (benefits, risks, division of labor, labor opportunities, decision making)? What was the gender composition of the management team?	Desk review, interviews, field observations	Review of project archives and reports of activities; interviews with stakeholders, project staff and observations
E. Project ratings (Annex 11)			
IV. Conclusions, recommendations and lessons learned			
A. Conclusions	What were the main achievements or shortfalls of the project and their key factors?	Desk analysis, verification	Verification with stakeholders for factual accuracy and for interpretation.
B. Recommendations	Recommendations to UNIDO, the government and other counterparts and the GEF.	Desk analysis, consultation	Consultation with Evaluation Office and stakeholders
C. Lessons learned	What key lessons of wider applicability emerge from the evaluation?	Desk analysis, consultation	Consultation with Evaluation Office and stakeholders

Annex 3a: List of people interviewed from public entities

DATE	ENTITY	NAME	POSITION
02/17/2017	DIGESA LABORATORY	Ivonne Loayza	Head of the Environmental Control Laboratory
		Elva Marta Jauregui	Head of Quality
		Sixto Guevara	Area Coordinator
		Roberto Carlos Martínez	Organic Area
		Carlos Lavado	Organic Area
02/21/2017	DIGESA	Eco. Mirtha Trujillo	CEO
02/21/2017		Lic. Susalen Tang	Director of Environmental Health - Member of the Advisory Committee
02/21/2017		Blg. Ivonne Loayza	Head of the Environmental Control Laboratory
		Quim. Sixto Guevara	Coordinator of the Camacho Laboratory
		Sr. Francisco Guevara Robles	Coordinator of Chemicals and Pesticides
		Ing. Wilmer Llagas Chafloque	Toys / Desktop Tools and Chemical Substances Monitoring Area
		Ana Cecilia Guevara Baca	Evaluator of Technical Records related to Waste
		Yesenia Huerta Rojas	OSA - Specialist in Norms Agreements and Cooperation / Technical Team
		Johnny Hurtado Cáceres	Evaluator of Technical Records related to Waste
		Yoan Mayta Paulet	Occupational health Direction
02/17/2017	MINEM	Ing. Elías Acevedo	Technician of the General Direction of Environmental Miners Affairs
		Ing. Maritza León	Attorney at the General Direction of Environmental Miners Affairs
02/21/2017	MINISTERIO DE VIVIENDA, CONSTRUCCIÓN Y SANEAMIENTO	Ing. Fausto Roncal	General Director of the General Directorate for Environmental Affairs. (Ex Coordinator of Management of Environmental Quality Strategies in the General Directorate of Environmental Quality of MINAM)
		ing. Juan Narciso	Director of the Environmental Management Directorate of the General Direction of Environmental Affairs (ex General Director of Environmental Quality of MINAM. He was member of the Project Advisory Committee)

DATE	ENTITY	NAME	POSITION
02/21/2017	PRODUCE	Ing. Ronald Ordaya	Director of Environmental Evaluation of Industries (In 2011-2012 he worked in the Project Coordination Unit and then in OEFA)
02/22/2017	MINAM	Ing. Marcos Alegre Chang	Deputy Minister of Environmental Management
		Sr. Antonio Gonzalez Norris	Director of International Cooperation and Negotiation Office - GEF Focal Point in Peru
		Blg. Omar Bravo	Specialist in Hazardous Waste of the DGCA, ex Member of DIGESA Laboratory
02/23/2018	OEFA	Abog. Tessy Torres	President of the Directing Council
		Mariela Tala	Evaluation Direction
		ing. Orlando Cossio	Electricity Coordinator of the Supervision Department (Member of the Advisory Committee-Supervision Directorate)
		Quim. Carmen Serrano	Specialist in the Coordination of the Supervision Directorate
		Ing. Carlos Amaya Rojas	Evaluation Direction
02/21/2017	OEFA-AREQUIPA	Sr. Paul Picardo	Environmental Specialist
02/21/2017	DIRESA /GORE TACNA	Srta. Marisol Mendoza	Specialist in Solid Waste Surveillance and Air Quality DESA Tacna

Annex 3b: List of interviewed people from companies

DATE	ENTITY	NAME	POSITION
02/20/2017	HIDRANDINA/ CHIMBOTE	Ing. Freddy Arroyo Rosales	Supervisor of Safety, Occupational Health and Environment
		Ing. Marco Salazar Vargas	Chief Business Unit of Chimbote
		Sr. Edgard Manuel Roncal Alva	Assistant Warehouse Chimbote
02/21/2017	S.N.I	Ing. Rosa María del Castillo	Manager of the Chemical Industry Committee - Former Director General of Environmental Affairs PRODUCE and Member of the Advisory Committee
02/21/2017	FONAFE	Ing. Alex Cahuana Quino	Corporate Manager of Planning and Operational Excellence
		Ing. Christian Arzapalo Trujillo	Social Responsibility Executive

DATE	ENTITY	NAME	POSITION
02/22/2017	ELECTRODUNAS	Ing. Roberto Lorenzati,	Human Resources Manager
		Ing. Wilber Basaldúa	Head of Area of Security and Environment
02/22/2017	IPES	Dulia Aráoz	Environmental Specialist - Member of the Advisory Committee
02/23/2017	LUZ DEL SUR	Ing. Teysa Cornejo	Environmental Specialist
02/24/2017	ELECTRO SUR ESTE	Ing. Álvaro Marín Casafranca	ELSE Commercial Manager (who represented the General Manager)
		Ing. Raúl Valencia	Head of Integral Security and Environment
		ing. Ernesto Delgado Olivera	Planning and Development Manager
02/24/2017	EGEMSA	Ing. Edwin Pereyra	Security and Environment Specialist
		Ing. Luis Zea Miranda	Head of Division maintenance transmission
		Ing. Carlos Vidal López	Specialist in the Environment

Annex 4: Gross national product - PERU

GROSS NATIONAL PRODUCT BY PRODUCTIVE SECTORS 2010 - 2016							
(Millions of 2007 PEN)							
	2010	2011	2012	2013	2014	2015	2016
Farming and agriculture	21766,00	22658,00	23991,00	24362,45	24814,33	25613,87	26076,40
Fishing	1891,00	2892,00	1960,00	2445,13	1762,07	2041,68	1835,74
Mining	50714,00	51043,00	52473,00	55034,97	54554,27	59715,10	69441,79
Manufacture	59255,00	64329,99	65264,99	68507,77	66047,14	65079,33	64020,33
Electricity and water	6501,00	6994,00	7401,00	7810,83	8192,98	8679,28	9313,18
Construction	23993,00	24848,00	28779,00	31352,54	31956,26	30097,06	29150,70
Trade	40420,00	44034,00	47218,00	49984,32	52192,86	54216,71	55199,00
Services 1/	177840,00	190252,99	204186,00	216867,59	227755,88	237365,95	246584,79
GROSS NATIONAL PRODUCT	382380,00	407051,98	431272,99	456365,60	467275,78	482808,97	501621,95

1/ Includes import duties and taxes on products

Source: INEI y BCR.

Elaboration: Central Management of Economic Studies.

GROSS NATIONAL PRODUCT BY PRODUCTIVE SECTORS 2010 - 2016							
(Percentage per sector)							
	2010	2011	2012	2013	2014	2015	2016
Farming and agriculture	5,69	5,57	5,56	5,34	5,31	5,31	5,20
Fishing	0,49	0,71	0,45	0,54	0,38	0,42	0,37
Mining	13,26	12,54	12,17	12,06	11,67	12,37	13,84
Manufacture	15,50	15,80	15,13	15,01	14,13	13,48	12,76
Electricity and water	1,70	1,72	1,72	1,71	1,75	1,80	1,86
Construction	6,27	6,10	6,67	6,87	6,84	6,23	5,81
Trade	10,57	10,82	10,95	10,95	11,17	11,23	11,00
Services 1/	46,51	46,74	47,34	47,52	48,74	49,16	49,16
GROSS NATIONAL PRODUCT	100,00	100,00	100,00	100,00	100,00	100,00	100,00

1/ Includes import duties and taxes on products

Source: INEI y BCR.

Elaboration: Central Management of Economic Studies.

Annex 5: Differences between logical framework of Prodoc and 2013 restructuring

RESCHEDULED ACTIVITIES	PRODOC ACTIVITIES	RESCHEDULED INDICATOR	PRODOC INDICATOR	RESCHEDULED GOALS
Outcome 1: Institutional capacity building, improved policy/legal framework and established environmental monitoring of PCBs				
Output 1.1: Capacity for PCB management created through training of government officials and PCB users				
Activity 1.1.1: Training of environmental inspectors on PCBs and corresponding legislation	Activity 1.1.1: Training of environmental inspectors on PCBs and corresponding legislation	# of courses given # of trained people # of approved persons	> Number of environmental inspectors trained in PCB related issues. > Number of trained staff > A Training Center is established. (Removed) > Number of trained trainers. > Number of inspectors trained in the evaluation of phase-out plans.	1 course per Macro region At least 20 persons per course At least 70% approved
Activity 1.1.2: Information meetings for local authorities and decision-makers from the public and private sector on PCBs, the Stockholm Convention and the Project	Activity 1.1.2: Training for local authorities and decision makers at the local level on the Stockholm Convention and PCBs	# of meetings # of attendees # of participating institutions		At least 2 meetings (01 in Lima and 01 in Region) At least 20 (authorities and officials of public and private entities) At least 20 participating institutions
Activity 1.1.3: Training and accreditation of trainers on PCBs	Activity 1.1.3: Establishment of a training center within DIGESA to provide training to other organizations (ELIMINATED)1/	# of trainers trained # of approved/ accredited trainers		At least 10 trainers are trained At least 60% of trainers are accredited
Activity 1.1.4: Training in risk management of storage, handling, transport of hazardous substances and waste	Activity 1.1.4: Training of Trainers on PCBs	# of companies trained		At least 30 companies trained in risk management
	Activity 1.1.5: Training of environmental inspectors for the evaluation of PCB phase-out plans (INCLUDED EN 1.1.1)			

RESCHEDULED ACTIVITIES	PRODOC ACTIVITIES	RESCHEDULED INDICATOR	PRODOC INDICATOR	RESCHEDULED GOALS
Output 1.2: Monitoring expertise upgrades				
Activity 1.2.1: Provide support to entities for the rationally environmental management of PCBs within government.	Activity 1.2.1: Establish a Unit within the government dedicated to the management of PCBs (ELIMINATED)	# of assisted entities	> Number of PCB-related inspections. >The POPs Unit has been established and is working. >Inspection procedures for the customs department, number of trained inspectors > Number of workshops and number of attendees >Number of persons trained. Information system related to PCBs updated.	At least 4 assisted entities
Activity 1.2.2: Targeted inspections at potential PCB owners	Activity 1.2.2: Develop inspection procedures for the customs and training department (MODIFIED, INCLUDED IN 1.2.1)	# of inspections carried out # of informative meetings		At least 30 inspections made At least 4 informative meetings
Activity 1.2.3: Provide support to develop Monitoring Procedures	Activity 1.2.3: Inspections directed at potential PCB owners	Procedure developed for the control of compliance with the regulations		1 procedure for the monitoring of compliance with the regulations elaborated
	Activity 1.2.4: Consultation workshops for stakeholders on the results of targeted inspections (ELIMINATED)			
	Activity 1.2.5: Assisting OSINERGMIN to monitor PCB rules and regulations in the energy sector (MODIFIED, INCLUDED IN 1.2.3)			
Output 1.3: Procedures/regulation/technical guidelines adapted				
Activity 1.3.1: Elaborate Draft Regulation for the Environmental Management of PCBs	Activity 1.3.1: Develop and promulgate a supreme decree prohibiting the uncontrolled import and export of PCBs and materials containing PCBs in electrical equipment and their components (ELIMINATED)	Draft Regulations for the management of Polychlorinated Biphenyls raised to the corresponding instances for their subscription	> Number of regulations, standards, norms and guidelines to address the management of PCBs and their disposal. >Supreme Decree on the prohibition of uncontrolled movement	1 Regulation on approval

RESCHEDULED ACTIVITIES	PRODOC ACTIVITIES	RESCHEDULED INDICATOR	PRODOC INDICATOR	RESCHEDULED GOALS
Activity 1.3.2: Develop guidelines for the environmentally sound management of PCBs	Activity 1.3.2: Develop and promulgate a supreme decree requiring PCB owners to conduct an inventory, labelling, storage and environmentally sound disposal of their equipment, waste and facilities containing PCBs (ELIMINATED)	1 Revised and Validated Guide	of PCB-containing equipment, materials and waste. > Supreme Decree requiring inventory, labelling, storage and environmentally sound disposal. >DIGESA is nominated to maintain the PCB database and to carry out the tasks related to the execution. > Inventory and guidelines for labelling. > Guidelines for environmentally sound management and disposal. > Procedures of inspection in occupational safety related to PCBs.	1 Guide
Activity 1.3.3: Develop occupational safety inspection procedures	Activity 1.3.3: Nominate a National Agency to maintain the database on PCBs and carry out related control tasks (ELIMINATED)	Technical Standard of Health -TSH (Procedure) Approved		1 TSH
	Activity 1.3.4: Develop guidelines for the inventory and labelling of equipment containing PCBs (ELIMINATED)			
	Activity 1.3.5: Develop guidelines for the environmentally sound management and disposal of equipment containing PCBs (SLIGHTLY MODIFIED AND INCLUDED IN THE 3 RESCHEDULED ACTIVITIES)			
	Activity 1.3.6: Develop occupational safety inspection procedures			
Output 1.4: At least one laboratory for assessing PCB level in transformers strengthened with data management system and standard methods of sampling analysis				
Activity 1.4.1: Develop standardized methods for the analysis of PCBs by Gas Chromatography	Activity 1.4.1: Develop standardized methods for the sampling, detection and analysis of PCBs (SLIGHTLY MODIFIED)	Standardized and validated method for PCB analysis	> Official method of sampling, detection and analysis is published in the official newspaper.	1 Validated method for PCB analysis by Gas Chromatography

RESCHEDULED ACTIVITIES	PRODOC ACTIVITIES	RESCHEDULED INDICATOR	PRODOC INDICATOR	RESCHEDULED GOALS
Activity 1.4.2: Provide laboratory infrastructure and accrediting DIGESA environmental laboratory for PCBs analysis	Activity 1.4.2: Provide laboratory infrastructure and accrediting DIGESA environmental laboratory for PCBs analysis	No. of equipment purchased Consulting contract to support accreditation Number of management tools developed	> Number of accredited laboratories for sampling and analysis of PCBs. > Number of trained laboratory personnel. > Number of staff members trained.	13 equipment purchased - 2 consultancies contracted for internal audits - at least 5 management tools (procedures) developed
Activity 1.4.3: Training of laboratory staff of DIGESA on PCB analysis and accreditation	Activity 1.4.3: Training of laboratory staff of DIGESA on PCB analysis and accreditation	# of trained professionals	> Number of laboratories registered in DIGESA that are accredited and certified for PCB analysis and detection. > Number of inspectors trained to take PCB samples.	At least 50% of the laboratory staff has been trained for accreditation - at least 3 professionals have been trained in PCB analysis
Activity 1.4.4: Registration of laboratories accredited by the INDECOPI that analyze PCBs	Activity 1.4.4: Registration and Certification of laboratories for PCB analysis and PCB detection practices (SLIGHTLY MODIFIED IN RESCHEDULED ACTIVITIES)	Proposal for the Registry of laboratories by DIGESA - TUPA procedure proposal	> Number of laboratories certified in private industries.	1 proposal for the registration of accredited laboratories - 1 Procedure for TUPA
Activity 1.4.5: Sampling training for PCB analysis	Activity 1.4.5: Training of non-laboratory personnel and sampling for analysis of PCBs (INCLUDED IN RESCHEDULED ACTIVITY 1.4.5)	# of persons trained in sampling for PCB analysis		At least 20 participants are trained in PCB sampling
	Activity 1.4.6: Provide assistance to private industries willing to establish certified laboratories (INCLUDED IN RESCHEDULED ACTIVITY 1.4.5)			
Output 1.5: Regular reporting of POPs as part of the national health and environment reporting system				
Activity 1.5.1: Validate the existing PCB database, make it operational and disseminate it	1.5.1 activity: Establish a centralized for PCB-related information and for the presentation of periodic reports (SLIGHTLY MODIFIED IN	Validated database	> Centralized PCB database has been established and is in operation. > Interested authorities	1 Database

RESCHEDULED ACTIVITIES	PRODOC ACTIVITIES	RESCHEDULED INDICATOR	PRODOC INDICATOR	RESCHEDULED GOALS
	RESCHEDULED ACTIVITY 1.5.1)		regularly inform each other. > Decree on the presentation of annual report on PCB-related issues.	
Activity 1.5.2: Establish a coherent information exchange mechanism between stakeholders authorities	Activity 1.5.2: Establish a coherent information exchange mechanism between stakeholders authorities	Mechanism for the exchange of information established		1 Mechanism established
Activity 1.5.3: Develop and Implement procedures, including forms, to standardize the reporting of PCBs and other POPs related activities to facilitate the annual reporting of Peruvian Focal Point to the Counsel of the Parties	Activity 1.5.3: Develop and Implement procedures, including forms, to standardize the reporting of PCBs and other POPs related activities to facilitate the annual reporting of Peruvian Focal Point to the Counsel of the Parties	# of cities with passive PCB monitoring in the air # of treatment plants evaluated		In at least 5 cities, monitoring of PCB on air In at least 10 cities, the evaluation of PCBs in water for human consumption
Outcome 2: Environmentally sound management of PCB-containing equipment and wastes, including country-wide inventory, treatment of transformers, which are still in use and final disposal of PCB wastes				
Output 2.1: ESM of PCBs and a plan of phasing out PCB contaminated equipment are developed				
Activity 2.1.1: Organize stakeholder awareness workshops on the development of a PCB Management Plan	Activity 2.1.1: Organize awareness-raising workshops for stakeholders on the development of the phase-out plan (SLIGHTLY MODIFIED IN RESCHEDULED ACTIVITY 2.1.1)	# of workshops # of persons trained in the development of PCB Management Plans	> Number of companies that developed and implemented PCB disposal plans. > Number of participants in the stakeholder awareness workshop in the development of phase-out plans.	4 regional workshops - At least 16 people know the guide to elaborate their Management Plan
Activity 2.1.2: Develop PCB management plans by stakeholders	Activity 2.1.2: Development of phase-out plans by stakeholders (SLIGHTLY MODIFIED IN RESCHEDULED ACTIVITY 2.1.2)	No. of elaborated PCB management plans No. of EEEE participants	> Number of phase-out plans. > Number of approved	At least 16 companies trained in the development of PCB Management Plans At least 10 PCB management plans

RESCHEDULED ACTIVITIES	PRODOC ACTIVITIES	RESCHEDULED INDICATOR	PRODOC INDICATOR	RESCHEDULED GOALS
Activity 2.1.3: Approval of phase-out plans by senior management of companies	Activity 2.1.3: Approval of phase-out plans by the authorities (MODIFIED)	No. of PCB management plans approved	phase-out plans. > Number of participants in the workshop for the demonstration of general PCB management guidelines.	At least 8 plans approved by companies in the electricity sector
	Activity 2.1.4: Workshop for Stakeholders to Demonstrate General guidelines for the management of PCBs (ELIMINATED)			
Output 2.2: Inventory and labelling of 10,000 electrical equipment undertaken				
Activity 2.2.1: Update the inventory data on electrical equipment	Activity 2.2.1: Update the inventory data on electrical equipment	No. of computers included in the database Nº of companies incorporated into the project Updated database	>Preliminary inventory data is updated and entered into the database. >10,000 pieces of equipment Potentially contaminated are identified for analytical testing and labelling. >Number of tested equipment reported. >3% of the reported equipment have been re-evaluated by the authorities.	16 electrical companies update their data - at least 5 companies join the project - Database of the updated inventory
Activity 2.2.2: Identify 10,000 equipment for analytical testing	Activity 2.2.2: Identify 10,000 equipment for analytical testing	No. of potentially contaminated equipment identified for analytical testing and sampling		2000 potential identified stocks and likely contaminated sites
Activity 2.2.3: Sample collection, analysis, labelling and reporting	Activity 2.2.3: Sample collection, analysis, labelling and reporting	# samples analyzed and reported # of tagged devices # of reports		2000 muestras analizadas - Al menos el 80% de los equipos contaminados son etiquetados
Activity 2.2.4: Validate the inventory exercise through inspections	Activity 2.2.4: Validate the inventory exercise through inspections	% of validated samples % of equipment reported have been revaluated Validation Report		5 positive and 5 negative samples analyzed in two external laboratories

RESCHEDULED ACTIVITIES	PRODOC ACTIVITIES	RESCHEDULED INDICATOR	PRODOC INDICATOR	RESCHEDULED GOALS
Output 2.3: Treatment of in-service PCB-contaminated equipment with non-combustion technology carried out				
Activity 2.3.1: Select BAT to remove mineral oils and carcasses containing PCBs	Activity 2.3.1: Select and transfer BAT to dechlorinate mineral oils containing PCBs	Technical report by an international expert	<ul style="list-style-type: none"> > A dechlorination technology is selected. > A technology for cleaning transformer covers is selected. > Number of reinforced installations for the storage, handling and dismantling of equipment containing PCBs. > At least 1,000 tons of transformers and waste contaminated with PCBs are disposed of in an environmentally sound manner. 	1 Report of an international expert
Activity 2.3.2: Collection of waste at storage sites	Activity 2.3.2: Transfer a technology to clean the covers of the transformers (MODIFIED IN RESCHEDULED ACTIVITY 2.3.3)	Warehouse equipped		A warehouse equipped for treatment and export of stocks
Activity 2.3.3: Treatment of stocks and wastes contaminated with PCBs and export of stocks with high concentration of PCBs	Activity 2.3.3: Strengthen a technical facility for the handling, dismantling and interim storage of equipment containing PCBs including regulatory approval (MODIFIED IN RESCHEDULED ACTIVITY 2.3.2)	Tender Bases elaborated - Bid called and Good Pro granted. - Contract signed and executed		100% of the identified stocks have been eliminated
Output 2.4: Dismantling facility and final disposal of 1,000 tons of PCB-contaminated transformers and wastes established (PRODUCT ELIMINATED AFTER THE RESCHEDULING OF THE LOGIC FRAME)				
	Activity 2.4.1: Oil Replacement in Transformers with Low Contamination (PCBs<1000 ppm)		<ul style="list-style-type: none"> > Weight of mineral oil contained in equipment that has been cleaned from PCBs (PCBs <1000ppm). > Weight of highly contaminated equipment that was replaced (PCB> 1000ppm). > Weight of waste collected for storage facilities. > Weight of dechlorinated oil of transformers with low 	
	Activity 2.4.2: Replace highly contaminated mineral oil transformers (PCBs>1000 ppm)			
	Activity 2.4.3: Collection of waste for storage sites			
	Activity 2.4.4: Declorination of mineral oils with low contamination			

RESCHEDULED ACTIVITIES	PRODOC ACTIVITIES	RESCHEDULED INDICATOR	PRODOC INDICATOR	RESCHEDULED GOALS
	Activity 2.4.5: Decontaminate empty covers		contamination. > Weight of decontaminated equipment. > Weight of highly contaminated waste exported.	
	Activity 2.4.6: Export highly contaminated waste			
Outcome 3: Socio-economic measures including improved public education and awareness				
Output 3.1: Social and occupational environment improved				
Activity 3.1.1: Amend the occupational hazards list with PCBs	Activity 3.1.1: Amend the occupational hazards list with PCBs	Draft ministerial resolution amending the list of occupational diseases	<ul style="list-style-type: none"> > List of occupational hazards is updated with PCBs. > Guidelines for the detection of health risks related to PCBs. > Number of specialists trained in occupational health. > Number of interest groups applying safety measures for workers. > Number of inspections to address PCB issues. > Compliance rate 	1 Draft of ministerial resolution
Activity 3.1.2: Elaborate the Technical Standard of Health for the detection of health risks related to PCBs	Activity 3.1.2: Develop guidelines for the detection of health risks related to PCBs	Draft Health Technical Standard for the detection of health risks related to PCBs		1 Draft of Technical Standard of Health
Activity 3.1.3: Training for medical doctors dealing with occupational safety to diagnose PCB exposures and provide emergency medical attention and treatment	Activity 3.1.3: Training for medical doctors dealing with occupational safety to diagnose PCB exposures and provide emergency medical attention and treatment	Training course designed No. of medics trained in the diagnosis of PCB exposure and medical care		1 Course executed - at least 50 trained physicians
Activity 3.1.4: Disseminate the Technical Standards of Health developed to the interested parties	Activity 3.1.4: Develop and disseminate guidelines on safety of workers for stakeholders	Printed diffusion material Distributed diffusion material		1000 copies disseminated at the level of the Regional Directorates of Health and DISAS Lima
Activity 3.1.5: Undertake joint occupational safety and health inspections	Activity 3.1.5: Inspections at work	# of inspections carried out		At least 20 inspections carried out
Output 3.2: Information and awareness programmess undertaken				

RESCHEDULED ACTIVITIES	PRODOC ACTIVITIES	RESCHEDULED INDICATOR	PRODOC INDICATOR	RESCHEDULED GOALS
Activity 3.2.1: Strengthening operational capacity for risk prevention and contingency care	Activity 3.2.1: Public awareness campaigns on the health risks of electrical equipment containing oils (MODIFIED AND INCLUDED IN RESCHEDULED ACTIVITIES 3.2.1 AND 3.2.2.)	# of events held # of people participating in events	<ul style="list-style-type: none"> > Number of public awareness campaigns. Number of people participating in the campaigns. Number of campaigns > Number of policy makers and informed decision makers. > Number of persons trained. Quantity of PCB-containing equipment and waste rejected for import. 	2 Training events 20 people per event
Activity 3.2.2: Training of spokespersons in PCB Risks Communication against contingencies	Activity 3.2.2: Disseminate the technical experiences of the project to the politicians and decision makers (ELIMINATED)	Number of people trained in risk communication		At least 10 people trained in risk communication
Activity 3.2.3: Conduct awareness raising to discourage the trade of potentially PCB-containing waste transformers oils	Activity 3.2.3: Conduct awareness raising to discourage the trade of potentially PCB-containing waste transformers oils	Number of awareness actions carried out		At least 5 awareness actions carried out
Activity 3.2.4: Disseminate information to the general public through the project website.		Update		Quarterly
Outcome 4: Establish project management structure and monitoring and evaluation				
Output 4.1: Project management structure established				
Activity 4.1.1: Establish Project Office (PO), project units and appoint project leadership staff	Activity 4.1.1: Establish Project Office (PO), project units and appoint project leadership staff	Office implemented	<ul style="list-style-type: none"> > Project office and project units established and composed. > Steering Committee established. > Experts hired for the project. > Training of the management of the project carried out. > Established and composite stakeholder focal points 	1 working office
Activity 4.1.2: Establish the Project Advisory Committee	Activity 4.1.2: Establish the Project Steering Committee (PSC) (SLIGHTLY MODIFIED IN RESCHEDULED ACTIVITY 4.1.2)	Advisory Committee established, formalized with regulations List of representatives to the Advisory Committee		1 formalized Project Advisory Committee 1 approved regulation At least 6 annual meetings

RESCHEDULED ACTIVITIES	PRODOC ACTIVITIES	RESCHEDULED INDICATOR	PRODOC INDICATOR	RESCHEDULED GOALS
Activity 4.1.3: Hire Technical Advisers and experts in relation to the development of activities.	Activity 4.1.3: Hire the Senior Technical Adviser, Technical Adviser, legal and technical expert	Experts for the project contracted	> GIS established	
Activity 4.1.4: Establish a project management information system (MIS) in a web application	Activity 4.1.4: Sustained training in project management for personnel managing the project (ELIMINATED)	GIS established		1 Project Management Information System implemented and working
	Activity 4.1.5: Establish coordination points within interested organizations (ELIMINATED)			
	Activity 4.1.6: Establish a project management information system (GIS) including a project website to disseminate information to stakeholders			
Output 4.2: Project Monitoring and Evaluation				
Activity 4.2.1: Organize Inception Workshop	Activity 4.2.1: Organize Inception Workshop	Inception Workshop held	> Inception Workshop held. > Impact indicators. > Financial audits carried out. > Annual reports and reviews of the implementation of the project. > Annual Tripartite Review Meetings developed. > Mid-term evaluation carried out > Final external	Inception Workshop report
Activity 4.2.2: Measure impact indicators	Activity 4.2.2: Measure impact indicators	Annual report with impact indicators		4 Annual Reports
Activity 4.2.3: Prepare Annual Project Reports and Project Implementation reviews	Activity 4.2.3: Carry out annual project financial audits (ELIMINATED)	Annual progress report of the project		4 Project progress reports
Activity 4.2.4: Hold annual tripartite review meetings	Activity 4.2.4: Prepare Annual Project Reports and Project Implementation reviews	# of tripartite meetings		At least 4 tripartite meetings
Activity 4.2.5: Carry out mid-term external evaluation	Activity 4.2.5: Hold annual tripartite review meetings	Mid-term external evaluation report		1 Report

RESCHEDULED ACTIVITIES	PRODOC ACTIVITIES	RESCHEDULED INDICATOR	PRODOC INDICATOR	RESCHEDULED GOALS
Activity 4.2.6: Carry out final external evaluation	Activity 4.2.6: Carry out mid-term external evaluation	Final External Evaluation Report	evaluation carried out > Final report of the completed project	1 Final External Evaluation Report
Activity 4.2.7: Complete Project Terminal Report	Activity 4.2.7: Carry out final external evaluation	Project Terminal Report		Project Terminal Report
	Activity 4.2.8: Complete Project Terminal Report			
Based on: Logical Framework from PRODOC and the Logical Framework that was modified in 2013 and was reached by the Project Coordinator in document "Ejecución Plan Proyecto PCB 2013-2016"				
1/ This activity was not considered in the reprogramming of 2013, since it had already been executed, having provided a screen to the DIGESA auditorium which was used in the events that the project organized in that place.				
2/This activity was not considered in the reprogramming of 2013 because the Draft Regulation indicates that MINAM should manage the database (National Registry of PCBs) which is included in the activity 4.1.4				

Annex 6: Project outcomes and outputs

LOGIC FRAME 1/				COMPLIANCE	OBSERVATIONS
OUTPUT	INDICATOR	GOALS	RESULTS		
Outcome 1: Institutional capacity building, improved policy/legal framework and established environmental monitoring of PCBs					
Output 1.1: Capacity for PCB management created through training of government officials and PCB users					
Activity 1.1.1: Training of environmental inspectors on PCBs and corresponding legislation	# of courses given # of trained people # of approved persons	1 course per Macro-region At least 20 persons per course At least 70% approved	Approximately 211 people (Supervisors and Inspectors) were trained in 2014 in aspects related to Polychlorinated Biphenyls through 04 macro-regional workshops held in Huancayo, Ica and Tarapoto and Cajamarca. There is not the range of the approved % of people, because the entrance and end tests of the course were not taken.	Satisfactory	The collaboration with the university did not worked as planned because the faculty did not have the required knowledge on PCBs. This resulted in a shift of the approach becoming less academic.
Activity 1.1.2: Information meetings for local authorities and decision-makers from the public and private sector on PCBs, the Stockholm Convention and the Project	# of meetings # of attendees # of participating institutions	At least 2 meetings (01 in Lima and 01 in Region) At least 20 (authorities and officials of public and private entities) At least 20 participating institutions	In 2015, training was provided to local authorities and decision makers at the local level (28) on the Stockholm Convention and PCBs in the cities of Cusco (4), Tacna (4), Arequipa (4), Mala-Lima (4) and Chachapoyas-Amazonas (5); and in 2016 in Chiclayo-Lambayeque (7) and Callao with a total of 353 participants. In these events, 55 institutions participated, including 17 from Chachapoyas, 4 from Arequipa, 8 from Mala (Lima), 12 from Tacna, 08 from Chiclayo, 04 from Callao and 02 from Cusco y Chachapoyas-Amazonas (5).	Highly Satisfactory	

Activity 1.1.3: Training and accreditation of trainers on PCBs	# of trainers trained # of approved/ accredited trainers	At least 10 trainers are trained At least 60% of trainers are accredited	A training course was held for trainers in Lima in January 2015, in which 41 professionals were trained, the results of the final evaluation being 16/20, representing a 33% increase in knowledge of the taught topics, in relation to the entrance tests. The accreditation was not given, because in the rescheduling the logical framework, considered it to make the courses in a university, which did not materialize.	Satisfactory	The accreditation was introduced as an indicator during the rescheduling, but despite attempts to develop courses with two universities the administrative hurdles could not be overcome. Upon contact with the university the project staff also realized that the university faculty was not well informed on PCBs. Under these conditions the project decided to develop training courses by other means. The learning of the participants was tested and reported but accreditation was not possible due to the absence of a university accreditation
Activity 1.1.4: Training in risk management of storage, handling, transport of hazardous substances and waste	# of companies trained	At least 30 companies trained in risk management	In 2015, three training courses were held in Risk Management: Risk Prevention and Communication and Contingency Plan for spills and fires with polychlorinated biphenyls; Risk management of storage, handling, transportation of hazardous substances and waste; and, Management of Polychlorinated Biphenyls; training to 211 people from transportation companies, security and environment areas of companies, manufacturers and service providers of equipment maintenance; making a total of more than 40 trained companies.	Highly Satisfactory	
Output 1.2: Monitoring expertise upgrades					
Activity 1.2.1: Provide support to entities for the rational management of PCBs within government.	# of assisted entities	At least 4 assisted entities	Support was provided to OEFA, DIGESA, SEDAPAL, CORPAC, among others agencies. To OEFA, carrying out confirmatory analyzes of the samples taken in its supervision actions; to DIGESA, in the evaluation of files related to PCBs; to SEDAPAL, in the evaluation of 48 cylinders of dielectric oils that were in waste quality in order to determine the content of PCBs; and CORPAC, in the evaluation of PCBs in their equipment.	Highly Satisfactory	

<p>Activity 1.2.2: Targeted inspections at potential PCB owners</p>	<p># of inspections carried out # of informative meetings</p>	<p>At least 30 inspections made At least 4 informative meetings</p>	<p>In the framework of the PCB inventory, inspections were carried out at 07 airports (El Callao, Chiclayo, Cajamarca, Cusco, Iquitos, Juliaca, Tarapoto), 02 mining companies (MARSA and Shougang), 02 industrial companies (Aris and Trupal); as well as Electro Perú and Duke Energy; being realized in each entity, an informative meeting. Inspections were also carried out at the Chosica headquarters of the Railways company to see their equipment, as well as SEDAPAL. It should be noted that prior to the beginning of the inventories, inspections were carried out on all the electric companies that were benefited from the Project.</p>	<p>Highly Satisfactory</p>	
<p>Activity 1.2.3: Provide support to develop Monitoring Procedures</p>	<p>Procedure developed for the control of compliance with the regulations</p>	<p>1 procedure for the monitoring of compliance with the regulations elaborated</p>	<p>In August 2014, the course: Environmental Management of Polychlorinated Biphenyls directed to OEFA supervisors was held, with the participation of 26 people. As the procedure had already been developed, it was possible to validate the supervision procedure of said entity. Furthermore, there were courses for Supervisors and Inspectors in subjects related to Polychlorinated Biphenyls made in the same year in Cajamarca, Huancayo, Ica and Tarapoto, with 211 participants, which likewise constitute a support for the supervision actions of OEFA.</p>	<p>Satisfactory</p>	<p>Activity was adapted to the needs of OEFA. As OEFA already had a procedure, the project helped them to train and test their staff on the procedure</p>
<p>Output 1.3: Procedures/regulation/technical guidelines adapted</p>					

<p>Activity 1.3.1: Elaborate Draft Regulation for the Environmental Management of PCBs</p>	<p>Draft Regulations for the management of Polychlorinated Biphenyls raised to the corresponding instances for their subscription</p>	<p>1 Regulation on approval</p>	<p>Since 2012 the project has worked on the draft Regulations for the sanitary and environmental management of Polychlorinated Biphenyls, pre-published by Ministerial Resolution No. 490-2016-MINSA on July 13, 2016. The observations and suggestions received were taken into account for the final project. The draft was elaborated with the participation of all entities involved; and was discussed through extraordinary meetings under the CC of the Project. At the closing of the project (01 February 2017) and conducting the interviews to DIGESA and MINAM (21-22 February 2017), the draft had not yet been approved. According to the levels of decision of DIGESA and MINAM, this project had to be revised for its promulgation. At the time of writing this Report, it is known, that it is still pending approval.</p>	<p>Highly Satisfactory</p>	
<p>Activity 1.3.2: Develop guidelines for the environmentally sound management of PCBs</p>	<p>1 Revised and Validated Guide</p>	<p>1 Guide</p>	<p>The Guidelines for the Environmentally Sound Management of Polychlorinated Biphenyls (PCBs) have been developed and published. It was disseminated in the closing meeting of the project, sending to the partner entities and companies that participated in the project. Also, was published on the project website. It should be noted that the Guide responds to a work in cabinet and to the field experience carried out for the execution of the whole process of inventory, disposal, etc., which reflects its validation. Nevertheless; the first complementary provision of the R.M. No. 490-2016-MINSA, states that the guide will be approved within 30 days of the approval of the Regulation; however, it is clear that this is beyond the scope of the project. The guide was elaborated by a joint work and is product of the experimentation of the different processes for the management of PCBs.</p>	<p>Highly Satisfactory</p>	<p>The guide was elaborated by a joint work and is product of the experimentation of the different processes for the management of PCB</p>

Activity 1.3.3: Develop occupational safety inspection procedures	Technical Standard of Health (Procedure) Approved	1 Technical Standard of Health	It has been developed the project of Technical Standard of Health for Inspections of Working Environments with possible presence of Polychlorinated Biphenyls (PCB), which according to R.M. No. 490-2016-MINSA, shall be approved within thirty (30) working days from the publication of the Regulation, modifying the existing one (second supplementary provision). The Technical Standard of Health is formulated, its approval is beyond the scope of the project.	Satisfactory	The Technical Standard of Health was formulated; its approval is beyond the scope of the project.
Output 1.4: At least one laboratory strengthened to test the PCB levels in transformers using data management system and standard methods of sampling analysis					
Activity 1.4.1: Develop standardized methods for the analysis of PCBs by Gas Chromatography	Standardized and validated method for PCB analysis	1 Validated method for PCB analysis by Gas Chromatography	The project has supported DIGESA in the elaboration of working procedures and in the Method of analysis of PCBs using Gas Chromatography with detection by electron capture validation, which has been accredited by the National Institute of Quality - INACAL.	Satisfactory	
Activity 1.4.2: Provide laboratory infrastructure and accrediting DIGESA environmental laboratory for PCBs analysis	No. of equipment purchased Consulting contract to support accreditation Number of management tools developed	13 equipment purchased - 2 consultancies contracted for internal audits - at least 5 management tools (procedures) developed	Office equipment was purchased (2 lap top, 1 printer 1 electric screen, 3 Seville Racks), laboratory (1 Analyzer Dexsil L2000DX, 3 columns for 60 m chromatography 1 150psi split / splitless injector 7890A, 1 Autosampler (Additional tray for the 7683B auto-injection towers for chromatograph of gases), 1 extractor of 5 feet brand ESCO, 15 coolers brand Rubbermaid, 1 Microdetector of electron capture with EPC) Two consultants were hired to support accreditation. 05 Procedures were developed: test for determination of PCB by Potentiometric Method; Test for the determination of PCBs as aroclors in insulating liquids by GC - ECD; Sampling for Soils; Manipulation of Samples; Washing of glass material and 06 Instructions (Manipulation of Gas Manometer, Maintenance of a Gas Chromatograph, Kern Analytical Balance ABS 220-4, Mettler Toledo XS105DU Analytical Balance, Mettler AE 163 Analytical Balance, Environmental Conditions.	Highly Satisfactory	

Activity 1.4.3: Training of laboratory staff of DIGESA on PCB analysis and accreditation	# of trained professionals	At least 50% of the laboratory staff has been trained for accreditation - at least 3 professionals have been trained in PCB analysis	The following courses were developed in support to the laboratory: Interpretation of the Standard with 38 participants; Training of Internal Auditors with 24 participants, Uncertainty chemical trials with 15 participants; 100% of Camacho's laboratory staff were trained; and 3 professionals were trained in PCB analysis abroad.	Highly Satisfactory	
Activity 1.4.4: Registration of laboratories accredited by the INDECOPI that analyze PCBs	Proposal for the Registry of laboratories by DIGESA - TUPA procedure proposal	1 proposal for the registration of accredited laboratories - 1 Procedure for TUPA	Unrealized activity, because the Head of the Laboratory indicated that the laboratories accredited to INDECOPI would be called, which are listed on the website of that institution. At present, there are 8 accredited laboratories for the sampling and analysis of PCBs by INACAL belonging to 6 entities, including DIGESA.	NA (not applicable)	Not needed as such registry already existed.
Activity 1.4.5: Sampling training for PCB analysis	# of persons trained in sampling for PCB analysis	At least 20 participants are trained in PCB sampling	<ul style="list-style-type: none"> • Several training events were held in different cities of the country: "PCB detection using Clor-N-oil kits" in Chiclayo, Cusco, and Lima with 93 participants from companies and public entities. • DISA staff from 16 regions of the country were trained on sampling to perform passive monitoring of PCBs in air and PCB analysis in surface waters and for human consumption. • Two events were held for public and private staff laboratories on "Gas Chromatography for Analysis of PCBs in Dielectric Oils: Fundamentals, Development of Methods and Applications" and "Determination of PCBs in Dielectric Oils by Gas Chromatography", with a total participation of 79 professionals. • Staff of the airports of Chiclayo, Cusco, Arequipa, Iquitos, Tarapoto, were trained in sampling of dielectric oils of the equipment; 01 seminar on Aspects in the Determination of PCBs in environmental and biological matrices with 40 participants. 	Highly Satisfactory	
Output 1.5: Regular reporting of POPs as part of the national health and environment reporting system					

Activity 1.5.1: Validate the existing PCB database, make it operational and disseminate it	Validated database	1 Database	The National Registry of Existence and Residues with PCBs for the report of stocks, residues and sites contaminated with PCBs, will be administered by MINAM and will be housed on the RETC website. It should be noted that its operation is subject to the approval of the Regulation which, in its third transitional supplementary provision, establishes that MINAM, within thirty (30) days of its approval, will create the National Register of PCB Stocks and Residues where PCB holders will be obliged to report annually	Satisfactory	The software was formulated and hosted on MINAM's National Registry of Existence and Residues - RETC server
Activity 1.5.2: Establish a coherent information exchange mechanism between stakeholders authorities	Mechanism for the exchange of information established	1 Mechanism established	The mechanism for the exchange of information between competent authorities has been established in the draft of the PCB Regulation, which establishes the obligation to report. Also, that the competent authority in the area of environmental control can supervise the veracity of the information and Statements reported by the owner of PCBs. This information will be able to be visualized by each competent entity.	Satisfactory	
Activity 1.5.3: Develop and Implement procedures, including forms, to standardize the reporting of PCBs and other POPs related activities to facilitate the annual reporting of Peruvian Focal Point to the Counsel of the Parties	# of cities with passive PCB monitoring in the air # of treatment plants evaluated	In at least 5 cities, monitoring of PCB on air In at least 10 cities, the evaluation of PCBs in water for human consumption	Passive PCB air monitoring was performed in the cities of Lima, Callao, Arequipa, Cusco, Chiclayo, Trujillo and La Oroya. PCBs were evaluated in the water resources that feed drinking water treatment plants and water for human consumption in 15 treatment plants located in Cajamarca, Puno, Tacna, Arequipa, Huancayo, La Libertad (Trujillo), Lambayeque (Chiclayo), Piura, Chimbote, Tumbes, Iquitos, Tarapoto, Pucallpa, Cusco and Lima; No values were found above the detection values of the equipment, which are below the Environmental Quality Standard - Water Category 1A and the Environmental Quality Standard value for water for human consumption.	Highly Satisfactory	
Outcome 2: Environmentally sound management of PCB-containing equipment and wastes, including country-wide inventory, treatment of transformers, which are still in use and final disposal of PCB wastes					
Output 2.1: Environmentally sound management of PCBs and plans for phasing out PCB contaminated equipment are developed					

Activity 2.1.1: Organize stakeholder awareness workshops on the development of a PCB Management Plan	# of workshops # of persons trained in the development of PCB Management Plans	4 regional workshops - At least 16 people know the guide to elaborate their Management Plan	Between 2011 and 2012, 4 macro-regional workshops on "Training in Management of PCBs in Transformers" were organized in the cities of Lima, Chiclayo, Arequipa and Tarapoto where 216 people participated; and, between 2013 and 2014, 04 macro-regional workshops were held in Chiclayo, Cusco, Lima and Puno, training to 222 people.	Highly Satisfactory	
Activity 2.1.2: Develop PCB management plans by stakeholders	No. of elaborated PCB management plans No. of EEEE participants	At least 16 companies trained in the development of PCB Management Plans At least 10 PCB management plans	The Coordinating Unit of the project has trained and advised all the member electrical companies (30) in the elaboration of PCB Management Plans, with progress in ELSE, HIDRANDINA, ELN, ENOSA, EPU, EGASA and EGEMSA companies. It is known that the companies that belong to FONAFE (15) are formulating their Management Plans and some already have them. However, since the Regulation that establishes the obligation for owners of stocks or residues containing PCB formulate their PCB Management Plans has not been approved, most of the companies did not do it, because at present is voluntary.	Satisfactory	Many more companies than those defined in the goal have been trained. There is evidence that companies have made or are carrying out their plans on PCBs
Activity 2.1.3: Approval of phase-out plans by senior management of companies	No. of PCB management plans approved	At least 8 plans approved by companies in the electricity sector	Companies do not report approval of such plans. The UC point out that some companies have been implementing, particularly in inventory activities. Seven (07) companies have PCB Management Plans and are using them. However, it should be noted that it is expected that these plans will be approved by the competent authority.	Moderately Satisfactory	The regulation is required for companies to submit their plans for approval.
Output 2.2: Inventory and labelling of 10,000 electrical equipment undertaken					
Activity 2.2.1: Update the inventory data on electrical equipment	No. of computers included in the database Nº of companies incorporated into the project Updated database	16 electrical companies update their data - at least 5 companies join the project - Database of the updated inventory	The inventory and labelling of 15 912 electrical equipment was carried out between transformers, capacitive transformers, capacitors and cylinders belonging to 30 companies (17 of electricity subsector, 7 of transport sector - CORPAC, 3 of industrial sector, 2 of mining sector and 1 of the sanitation sector. An updated inventory database is available.	Highly Satisfactory	

Activity 2.2.2: Identify 10,000 equipment for analytical testing	No. of potentially contaminated equipment identified for analytical testing and sampling	2000 potential identified stocks and likely contaminated sites	A total of 15,912 equipment (exceeding the target of 10,000) were evaluated between transformers, capacitors and cylinders with dielectric oil. It was determined that 309 contained PCBs with concentrations equal to or greater than 50 ppm; 70% of them belong to the electricity sector located mainly in Junín and Lima. 123 equipment contained 5000 ppm or more, among others. Likewise, a probable contaminated site was evaluated in Aris company, being determined that the soils did not have concentration greater than the one established in the Environmental Quality Standard of PCB for Industrial Soils (33 mg / kg).	Highly Satisfactory	
Activity 2.2.3: Sample collection, analysis, labelling and reporting	# samples analyzed and reported # of tagged devices # of reports	2000 muestras analizadas - Al menos el 80% de los equipos contaminados son etiquetados	Samples were collected from 15 624 transformers and 41 cylinders with dielectric oil which were analyzed using combined detection procedures with kits, Dextsil L2000DX equipment and laboratory analysis with gas chromatography. 31 capacitive transformers and 216 capacitors were evaluated per plate. The 15 912 stocks and wastes evaluated were labelled and a report was drawn up for each company participating in the inventory (30).	Highly Satisfactory	
Activity 2.2.4: Validate the inventory exercise through inspections	% of validated samples % of equipment reported have been re-evaluated Validation Report	5 positive and 5 negative samples analyzed in two external laboratories	The validation of 13 samples taken during the sampling was carried out, which were sent to 03 laboratories (INTI of Argentina, SGS of Peru and SD Meyers of Canada). The results were subjected to Statistical Analysis of the comparability of the results of the measurements of arocloros by the different laboratories. It was found high dispersion in the results of the 3 laboratories compared with the results of DIGESA. The Validation Report was prepared by an expert.	Highly Satisfactory	
Output 2.3: Treatment of in-service PCB-contaminated equipment with non-combustion technology					
Activity 2.3.1: Select BAT to remove mineral oils and carcasses containing PCBs	Technical report by an international expert	1 Report of an international expert	There is the technical report of an international expert (September 2013), which indicates the most appropriate technologies for the country.	Satisfactory	

Activity 2.3.2: Collection of waste at storage sites	Warehouse equipped	A warehouse equipped for treatment and export of stocks	The activity was not executed because the company contracted for the dechlorination (TREDI) decided to build the infrastructure in the KANAY plant located in Lima, discarding the proposal of ELECTRO DUNAS to provide the space (conditioned warehouse located in Chincha - Ica). Although the Project Coordinating Unit considered that the plant could be placed in one of the two temporary warehouses to which they were to be put up; the contractor company opted for a more economical and safer strategy in which it avoided the transport of PCB for long distances using mobile elimination equipment.	Not applicable	The contracting firm decided for an approach that met the objectives of the activity but also reduced risks of transportation of PCBs.
Activity 2.3.3: Treatment of stocks and wastes contaminated with PCBs and export of stocks with high concentration of PCBs	Tender Bases elaborated - Bid called and Good Pro granted. - Contract signed and executed	100% of the identified stocks have been eliminated	168 equipment belonging to 16 companies were decontaminated using retrofill and dechlorination methods. The analysis of the dielectric oils of this equipment showed concentrations below 50 ppm of PCB. <ul style="list-style-type: none"> • 96 equipment with a weight of 41,136 t were exported for incineration at the TREDI plant located in Saint Vulvas, France. • PCBs were eliminated in 100% of the stocks and wastes identified with PCBs belonging to FONAFE's electricity companies. The activities were carried out by TREDI France with a subsidiary in Argentina, starting in May 2015, after a first bidding process that resulted in deserted (2014). 	Highly Satisfactory	
Output 2.4: Facility for dismantling and final disposal of 1,000 tons of PCB-contaminated transformers and wastes established 2/					
Outcome 3: Socio-economic measures including improved public education and awareness					
Output 3.1: Social and occupational environment improved					
Activity 3.1.1: Amend the occupational hazards list with PCBs	Draft ministerial resolution amending the list of occupational diseases	1 Draft of ministerial resolution	The Technical Standard of Health has been developed which includes the diseases produced by Polychlorinated Biphenyls (PCBs) in the list of occupational diseases. The draft is in DIGESA for approval	Satisfactory	

Activity 3.1.2: Develop guidelines for detecting PCB-related health hazards	Draft Health Technical Standard for the detection of health risks related to PCBs	1 Draft of Technical Standard of Health	The draft of the Technical Standard of Health: Detection of health risk due to exposure to Polychlorinated Biphenyls (PCBs) has been formulated. The draft is also in DIGESA for approval.	Satisfactory	
Activity 3.1.3: Training for medical doctors dealing with occupational safety to diagnose PCB exposures and provide emergency medical attention and treatment	Training course designed No. of medics trained in the diagnosis of PCB exposure and medical care	1 Course executed - at least 50 trained physicians	There were several events with this proposal: 03 training courses directed to health personnel, on Occupational Health, with 181 participants; workshop "Occupational Health Instruments related to PCBs" aimed at health personnel and occupational health and hygiene professionals, with 51 participants of whom 9 were doctors (2013); Occupational Health Training in Polychlorinated Biphenyls, with 39 participants, 10 of whom were doctors (2014); Workshop on Occupational Health and PCBs for doctors and health personnel, with 91 participants, 22 of them, were doctors (2016). In total, 41 doctors were trained.	Highly Satisfactory	
Activity 3.1.4: Disseminate the Technical Standards of Health developed to the interested parties	Printed diffusion material Distributed diffusion material	1000 copies disseminated at the level of the Regional Directorates of Health and DISAS Lima	Diffusion of Technical Standard of Health projects developed in occupational health and PCBs, did not work, since they were not approved during the execution of the project. They have only been diffused in the training events.	Moderately satisfactory	The material has been produced but it has not been distributed. Institutions are waiting for the approval of the regulation to distribute them.
Activity 3.1.5: Undertake joint occupational safety and health inspections	# of inspections carried out	At least 20 inspections carried out	No inspections were carried out, because the Technical Standard of Health were not approved during the duration of the project.	Not applicable	Inspections require the approval of the regulation. In absence of the regulations, they could no done.
Output 3.2: Information and awareness programmes undertaken					

Activity 3.2.1: Strengthening operational capacity for risk prevention and contingency care	# of events held # of people participating in events	2 Training events 20 people per event	Two courses were conducted for this purpose: Training Workshop "Prevention and Communication of Risks and Contingency Plan against Spills and Fire with Polychlorinated Biphenyls (PCBs)" with the participation of 48 entities mainly district municipalities and electricity companies (April 2015). "Training in Management of Polychlorinated Biphenyls", with 28 representatives of maintenance companies, 12 of electric companies and 18 of government entities. (August 2015)	Highly Satisfactory	
Activity 3.2.2: Training of spokespersons in PCB Risks Communication against contingencies	Number of people trained in risk communication	At least 10 people trained in risk communication	In order to receive the expertise of international experts (toxicologists) on the risks of PCBs, Dr. Obaid Faroon of the CDC / ASTDR in Atlanta, USA, there were 03 lectures in 2015 with the participation of 156 persons of public entities, private companies, universities, NGOs. Also, Dra. Maritza Rojas of Carabobo University of Venezuela developed 02 courses on the fundamentals of exposure to chemical risks, particularly PCBs (November 2015 and May 2016). 103 DISAS representatives from the 25 regions of the country and professionals from partner companies and public entities participated in them.	Highly Satisfactory	
Activity 3.2.3: Conduct awareness raising to discourage the trade of potentially PCB-containing waste transformers oils	Number of awareness actions carried out	At least 5 awareness actions carried out	To this end, a working meeting was held in April 2015 for representatives of waste oil recycling companies and civil society in the proper handling of PCB-containing oils. A virtual publication was also prepared in relation to the Risk management, which is published on the project website. During the awareness raising workshops about the trade of recycled oil with informal recycling business, the project found out that there was no informal trade of dielectric oils as they are too expensive. All recycling of dielectric oils takes place through formal sector firms that are authorized by DIGESA, that is why, the project did not do more actions in this sense.	Satisfactory	The intention of this activity was to reach the informal oil recyclers, but as they had no role in the recycling of dielectric oils, the activity was not relevant. To prevent the spread of contaminated oils, the project instead focused on regulating firms to prevent the selling of PCBs containing oils placing requiring certificates certifying oils are PCBs free when sold or purchased.
Activity 3.2.4: Disseminate information to the general public through the project website.	Update	Quarterly	The website of the project has been updated and maintained, which provides information on organized events (conferences, courses, workshops), elaborated technical documents and related documents: www.proyectopcb.com/wordpress	Satisfactory	

Outcome 4: Establish project management structure and monitoring and evaluation					
Output 4.1: Project management structure established					
Activity 4.1.1: Establish Project Office (PO), project units and appoint project leadership staff	Office implemented	1 working office	In 2011, the Project Coordination Office was integrated with the National Coordinator, 01 Technical Assistant and 01 Technical-Administrative Assistant. From 2013 until the end of the project, it was integrated by the National Coordinator and 01 Technical Advisor, with the support of an Administrative Assistant until mid-2014. However, it should be noted that although they were given an area to work, it did not have the necessary conditioning. Likewise, this was a condition that was not under the control of the project or UNIDO. It depended on DIGESA.	Moderately Satisfactory	Project design intended the project to be fully integrated in DIGESAS operations with the support of at least a dozen people. This did not fully take place. The project coordination unit did not have a physical office. DIGESA assigned a space in a warehouse that was not suited as there was no telephone or internet service. Despite this inconvenience and the shortage of staff, the coordination unit functioned effectively through a virtual office.
Activity 4.1.2: Establish the Project Advisory Committee	Advisory Committee established, formalized with regulations List of representatives to the Advisory Committee	1 formalized Project Advisory Committee 1 approved regulation At least 6 annual meetings	The Advisory Committee composed of MINAM, MINEM, PRODUCE, SUNAT-ADUANAS, OEFA, IPES, DIGESA / MINSA and UNIDO was established. A Performance Norm (Regulation) was established, which indicated - among others - an annual meeting. 07 regular meetings Annual and 16 extraordinary meetings were held. In these last meeting, the draft Regulation of PCBs was analyzed mainly.	Highly Satisfactory	
Activity 4.1.3: Hire Technical Advisers and experts in relation to the development of activities.	Experts for the project contracted	Without Information	The project contracted the professional services of 02 international PCB experts, 09 national consultants for specific jobs (guides, inventory advice, special studies, etc.) and young professionals who sampled and supported the analysis in the DIGESA laboratory.	Satisfactory	
Activity 4.1.4: Establish a project management information system (MIS) in a web application	GIS established	1 Project Management Information System implemented and working	The Project Coordinating Unit designed an electronic worksheet to monitor project activities, as a mechanism for monitoring, controlling and evaluating the execution of project activities.	Satisfactory	

Output 4.2: Project Monitoring and Evaluation					
Activity 4.2.1: Organize Inception Workshop	Inception Workshop held	Inception Workshop report	The Project Inception Workshop, which was attended by UNIDO, was held in November 2010, convening public entities that would form the Consultative Committee and the companies in the electricity sector interested in being part of the project. It should be noted that, although the workshop was conducted, according to the Mid-Term Evaluation, it did not involve all the relevant actors, nor did it fully fulfill its fundamental objective: revision of the logical framework and Formulation of the 2011 Annual Work Plan; the roles and responsibilities of the project team and key stakeholders were not reviewed or clarified; nor the structure of operation of the Coordinating Unit, among other important aspects.	Moderately Satisfactory	The inception workshop did not take place as it was expected. It could not correct some of the short comings of design, which contributed to a low ownership among participating institutions during the first phase of the project -- until project midterm.
Activity 4.2.2: Measure impact indicators	Annual report with impact indicators	4 Annual Reports	In the Annual Progress Reports of the Project, the progress made in relation to the impact indicators is indicated. At the end of the project the following impact indicators are reported: <ul style="list-style-type: none"> • 15,912 equipment evaluated on PCB content • 309 contaminated equipment with concentrations greater than 50 ppm • 168 equipment with contaminated oil with a total weight of 101.3 t were decontaminated at values lower than 50 ppm, using the backfill and dechlorination methods • 96 equipment contaminated with PCBs (41.1t), with concentrations higher than 3000 ppm as waste, were exported for incineration. • 2 030 representatives of public and private institutions participated in 43 training events. 	Satisfactory	There were no annual reports of results. The progress of the impact indicators was included in the annual reports. It qualifies satisfactory because it complies even if by another means, it fulfilled the objective of the activity that was to maintain information and report on impact.
Activity 4.2.3: Prepare Annual Project Reports and Project Implementation reviews	Annual progress report of the project	4 Project progress reports	A total of 05 Annual Progress Reports of the PCB Project was carried out, in which the activities carried out in the framework of the results of the project are recounted. These reports and the 2017 Final Report (which included the 2016 report) were submitted to DIGESA, with a review of key implementation points at the Advisory Committee meetings.	Satisfactory	

Activity 4.2.4: Hold annual tripartite review meetings	# of tripartite meetings	At least 4 tripartite meetings	Seven tripartite meetings were held between UNIDO-DIGESA and the coordination of the Project, in order to review progress, difficulties and take the necessary corrective measures	Satisfactory	
Activity 4.2.5: Carry out mid-term external evaluation	Medium-term external evaluation report	1 Report	Between December 2012 and January 2013, the external mid-term evaluation was carried out and the corresponding report.	Satisfactory	
Activity 4.2.6: Carry out final external evaluation	Final External Evaluation Report	1 Final External Evaluation Report	Final report formulation in process	Not applicable	
Activity 4.2.7: Complete Project Terminal Report	Project Terminal Report	Project Terminal Report	In February 2017, the Project Terminal Report was presented	Satisfactory	
Based on : Informe Final del Proyecto-PCB 2010-2017 (2017), Informes de Avances del Proyecto PCB (2012, 2013, 2014 y 2015), Inventario y Eliminación de Existencias y Residuos con PCB (2017),Ejecución Plan Proyecto PCB 2013-2016, Fortaleciendo Capacidades para la Gestión y Manejo de Bifenilos Policlorados (PCB) (2017,)Informe del Curso de Formación de Capacitadores en temas relacionados a los PCBs (2015), Resolución Ministerial N° 490-2016-MINSA					
1/ Corresponds to the Logical Framework modified in 2013 and was reached by the Project Coordinator in document "Ejecución Plan Proyecto PCB 2013-2016"					
2/ This product was eliminated in the reprogramming of the project in 2013					

Annex 7: Companies participating in the PCB inventory

- 1. Chavimochic Special Project**
- 2. ENEL DISTRIBUCIÓN PERÚ S.A.A. (antes EDELNOR S.A.A.)**
- 3. Electro Dunas S.A.A.**
- 4. EGASA - Arequipa Electric Generation Company S.A.**
- 5. EGEMSA - Electric Generation Company Machupicchu S.A.**
- 6. Electrocentro S.A.**
- 7. Electronorte S.A.**
- 8. Electro Oriente S.A.**
- 9. Electroperu S.A.**
- 10. Electrosur S.A.**
- 11. Electronoroeste S.A.**
- 12. Electro Puno S.A.A.**
- 13. Electro Sur Este S.A.A.**
- 14. Electro Ucayali S.A.**
- 15. Hidrandina S.A.**
- 16. Corpac S.A. - Mayor General FAP Armando Revoredo Iglesias Airport- Cajamarca**
- 17. Corpac S.A. - Capitán FAP José A. Quiñones International Airport - Chiclayo**
- 18. Corpac S.A. - Alejandro Velasco Astete International Airport - Cusco**
- 19. Corpac S.A. - Coronel FAP Francisco Secada International Airport - Iquitos**
- 20. Corpac S.A. - Inca Manco Cápac International Airport - Juliaca**
- 21. Corpac S.A. - Jorge Chávez International Airport - Lima**
- 22. Corpac S.A. - Cadete FAP Guillermo del Castillo Paredes Airport - Tarapoto**
- 23. Sociedad Eléctrica del Sur Oeste S.A.**
- 24. Shougang Generación Eléctrica S.A.A.**
- 25. STATKRAFT S.A. (antes SN Power Perú S.A.)**
- 26. Trupal S.A.**
- 27. Minera Aurífera Retama S.A.**
- 28. Orazol Energy Egenor S. en C. por A. (antes Duke Energy Egenor S. en C. por A.)**
- 29. Aris Industrial**
- 30. Lima Water and Sewerage Service - SEDAPAL**

Annex 8: Co-financing utilities and public entities

A. UTILITIES	AMOUNT IN USD
STATKRAFT S.A. (ex SN Power S.A.)	5200
ELECTRO SUR ESTE S.A.A.	112320
ELECTRO UCAYALI S.A.	50728
ENEL DISTRIBUCIÓN PERÚ (ex EDELNOR)	15224
ELECTRONORTE S.A.	41279
ELECTRO ORIENTE S.A.	25433
EMPRESA DE GENERACIÓN ELÉCTRICA DE MACHUPICCHU S.A.	12018
ELECTROPERÚ S.A.	11138
ELECTRO PUNO S.A.A.	57043
SOCIEDAD ELÉCTRICA DEL SUR OESTE S.A. (SEAL)	33741
ELECTROSUR S.A.	22243
EMPRESA DE GENERACIÓN DE AREQUIPA (EGASA)	4962.23
ELECTROCENTRO S.A.	84237
HIDRANDINA S.A.	100978
ELECTRO NOROESTE S.A.	
ELECTRO DUNAS S.A.A.	106895
CHAVIMOCHIC	
ORAZUL (ANTES DUKE ENERGY)	24905.66
ARIS INDUSTRIAL	13180.9
SUB TOTAL UTILITIES	721525.79
B. PUBLIC ENTITIES (CASH + in kind)	
OEFA	175909.66
FONAFE*	8718290.79
DIGESA**	182,203.72
SUB TOTAL PUBLIC ENTITIES	9076404.17
TOTAL (UTILITIES + PUBLIC ENTITIES)	9797929.96
* Amounts of December, 2012	
** Amounts of June 2014	

NOTE: This table was formulated based on information provided by public and private entities to the project CU as of April 5, 2017. The CU developed a methodology to calculate co-financing that was followed by the participating firms and public entities when calculating their co-financing. Co-financing by utilities was reported in cash and it included the costs of the time paid to conduct equipment sampling in the field, logistical support to the firm that carried out decontamination of equipment and export of PCBs and PCBs contaminated equipment. Co-financing also included estimates of the costs of staff time that participated in workshops and other project events. Co-financing by OEFA included costs of staff time in inspections, testing and participation in workshops and other project events. Co-financing by FONAFE included mostly financing of purchase of transformers and other electrical equipment free of PCBs. Financing by DIGESA was largely in kind and it included time of staff participation in meetings, tests and analysis carried out by the laboratory and equipment depreciation.

Annex 9: PCB elimination costs and cross contamination

1. Calculation of cost of elimination of PCBs in the electricity sector

- The project analyzed 15912 equipment equivalent to 12 500 t.
- With this sample were found 309 contaminated equipment that equals 295 t and represents 1.4% in number of equipment, and 2.4% in weight.
- If we consider that in the country's electricity sector there are approximately 100,000 equipment, we could calculate the total weight

Total equipment weight = $(12\ 500 \times 100\ 000) / 15\ 912 = 78\ 557\ t$

We can estimate that they are 80 000 t approx.

Therefore with the experience of the project we can expect 2.4% to be contaminated, that is:

Weight of equipment contaminated with PCB = $80\ 000 \times 0.024 = 1\ 920\ t$ with PCB

If we consider that the cost of PCB disposal is \$ 7,000 per t, we have that the total cost would be:

Total PCB disposal cost = $1920 \times 7000 = \$\ 13\ 440\ 000$ (approximately \$ 13.5 million)

According to the statistical report of the Ministry of Energy and Mines, 2015, the annual energy bill of the regulated market is 2,880 million USD.

PCB elimination at the country level then represents:

Cost of elimination of PCBs in the electricity sector represents $13.5 / 2880 = 4.6\%$ of the one-year billing in electricity.

2. Distribution curve of the contaminated equipment to support the hypothesis that there is a lot of cross-contamination

1. At least 20% of the equipment that was found contaminated with PCBs was manufactured after 1983, which means that PCBs are cross contaminated.
2. On the other hand, 60% of the contaminated equipment have concentrations below 500 ppm, concentrations that are not typical of equipment that was originally manufactured with PCB.

These two factors allow us to conclude that in the country there have been practices that have become cross contamination of PCBs.

3. Growth of electrification in Peru.

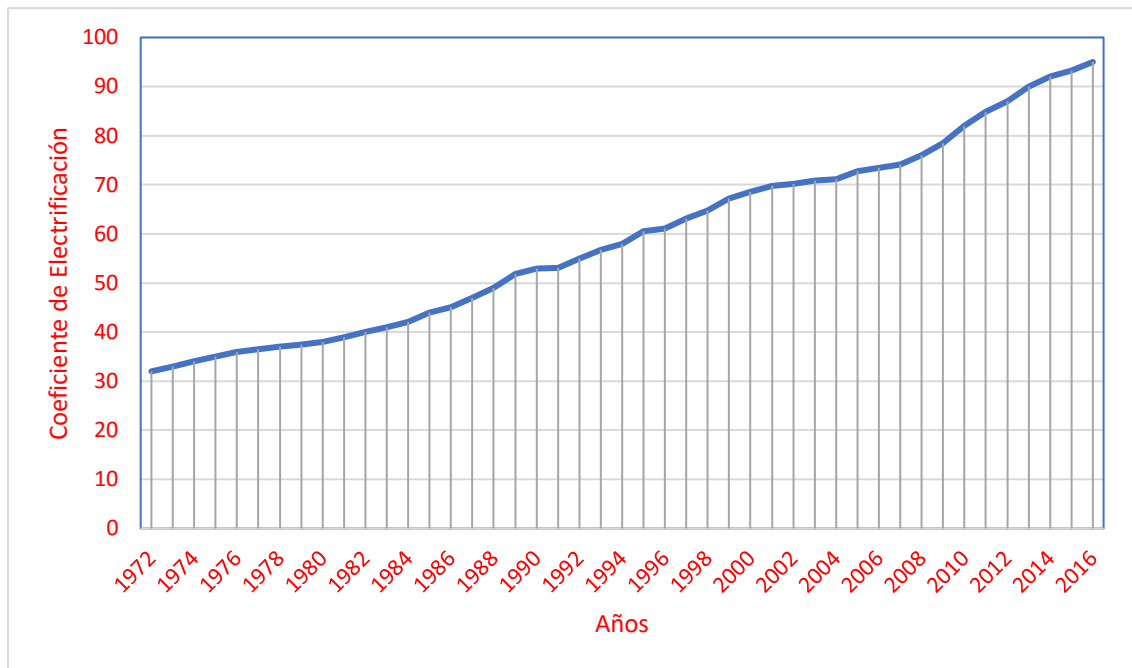
In Peru, it has been found that the number of PCBs with a concentration above 50 ppm (maximum permissible concentration) is 2%.

This value is below the values founded in the region that is approximately 7%. It means that Peru did not import many PCB equipment. These could be the reasons:

- Peru was not willing to pay the greater value of the purchase of transforming equipment and capacitors with PCB, since these are almost 30% more expensive than normal ones, without PCBs (since it was the best technology at that time).

The electricity sector - which is the one that uses transformers extensively that could be the way to import PCBs - has had an important development since the 1990s, as can be seen in the attached graph. On 1983, which is the year in which PCB use was banned, Peru had only a 40% electrification coefficient. The country's electricity development occurred mainly after the forbidden the use of PCBs

Electrification coefficient rate for Peru 1972- 2016



Prepared by Ing. Mario Mendoza, Project Technical Advisor and translated by EE

Annex 10: Executed budget of the project in USD ¹

OUTPUT	PRODOC GEF	PRODOC COF	GEF Executed 2010 - 2017	Co.f. Executed 2010 - 2017	GEF Balance	Co.f. Balance	GEF % of execution	Co.f. % of execution	Total
Outcome 1: Institutional capacity building, improved policy/legal framework and established environmental monitoring of PCBs	430000	780000	433155		-3155		100.73%		
Output 1.1: Capacity for PCB management created through training of government officials and PCB users	70100		170316		-100216		242.96%		
Output 1.2: Monitoring expertise upgrades	98250		24598		73652		25.04%		
Output 1.3: Procedures/regulation/technical guidelines adapted	41100		27236		13864		66.27%		
Output 1.4: At least one laboratory for assessing PCB level in transformers strengthened with data management system and standard methods of sampling analysis	174400		131569		42831		75.44%		
Output 1.5: Regular reporting of POPs as part of the national health and environment reporting system	46150		79436		-33286		172.13%		

OUTPUT	PRODOC GEF	PRODOC COF	GEF Executed 2010 - 2017	Co.f. Executed 2010 - 2017	GEF Balance	Co.f. Balance	GEF % of execution	Co.f. % of execution	Total
Outcome 2: Environmentally sound management of PCB-containing equipment and wastes, including country-wide inventory, treatment of transformers, which are still in use and final disposal of PCB wastes	1930000	4100000	1514125		415875		78.45%		
Output 2.1: ESM of PCBs and a plan of phasing out PCB contaminated equipment are developed	104400		42503		61897		40.71%		
Output 2.2: Inventory and labelling of 10,000 electrical equipment undertaken	197750		198065		-315		100.16%		
Output 2.3: Treatment of in-service PCB-contaminated equipment with non-combustion technology carried out	527500		1196183		-668683		226.76%		
Output 2.4: Dismantling facility and final disposal of 1,000 tons of PCB-contaminated transformers and wastes established	1100350		77374		1022976		7.03%		
Outcome 3: Socio-economic measures including improved public education and awareness	90000	110000	88857		1143		98.73%		
Output 3.1: Social and occupational environment improved	48350		46217		2133		95.59%		
Output 3.2: Information and awareness programmes undertaken	41650		42640		-990		102.38%		

OUTPUT	PRODOC GEF	PRODOC COF	GEF Executed 2010 - 2017	Co.f. Executed 2010 - 2017	GEF Balance	Co.f. Balance	GEF % of execution	Co.f. % of execution	Total
Outcome 4: Establish project management structure and monitoring and evaluation	130000	200000	452773		-322773		348.29%		
Output 4.1: Project management structure established	18100		405549		-387449		2240.60%		
Output 4.2: Project Monitoring and Evaluation	111900		47224		64676		42.20%		
GRAND TOTAL	2580000	5190000	2488910	9797930	91090	4607929.96	96.47%	188.78	12286839.96
¹ Prepared on the basis of "Resumen del Proyecto 2017" issued by the Project Coordination and Project Document -Section E1 (2010). Co-financing information by component was not available.									
The amount of co-financing in some cases (FONAFE and DIGESA, is to 2012 or 2014, because, it wasn't possible to get current information									

Annex 11: Rating Tables

Table 1. Rating criteria for Quality of project identification and formulation process (LFA Process)

Evaluation issue	Evaluator's comments	Ratings
1. Extent to which the situation, problem, need / gap is clearly identified, analyzed and documented (evidence, references).	There was little information of PCBs in Peru. Project design was based on the POPs NIP. Some key information and assumptions proved to be incorrect	MS
2. Adequacy and clarity of the stakeholder analysis (clear identification of end-users, beneficiaries, sponsors, partners, and clearly defined roles and responsibilities in the project(s)).	There is no evidence of a stakeholder analysis. The project document identifies roles for partners, but these roles were not formally agreed to by project entry.	MU
3. Adequacy of project monitoring and evaluation (M&E) design.	Output and outcome indicators did not include targets and in some cases indicators were not included. Some key indicators were not realistic as they expected deliverables that were beyond the project's reach.	MS
4. Overall LFA design process.		MS

Table 2. Quality of project design (LFM)

Evaluation issue	Evaluator's comments	Rating
1. Clarity and adequacy of outcome (clear, realistic, relevant, addressing the problem identified). Does it provide a clear description of the benefit or improvement that will be achieved after project completion?	Outcomes and their benefits were clear and realistic.	S
2. Clarity and adequacy of outputs (realistic, measurable, adequate for leading to the achievement of the outcome).	Some outputs were not realistic as they expected deliverables outside the reach of the project	MS
3. Clarity, consistency and logic of the objective tree, and its reflection in the LFM results hierarchy from activities to outputs, to outcome and to overall objective.	The objective tree was clear and consistent	S
4. Indicators are SMART for Outcome and Output levels.	Some outcomes did not have sufficiently clear indicators or targets	MS
5. Adequacy of Means of Verification and Assumptions (including important external factors and risks).	Means of verification were adequate with some deficiencies in project assumptions	MS
6. Overall LFM design quality.		MS

Table 3. Quality of project implementation performance

Evaluation criteria	Rating	
<ul style="list-style-type: none"> Ownership and relevance 	<p>Relevance was highly satisfactory. Most participating stakeholders and agencies developed a strong ownership of the project. Only in the case of DIGESA, the key counterpart agency ownership was weak.</p>	MS
<ul style="list-style-type: none"> Effectiveness 	<p>The project met or exceeded all its key outcomes and made major contributions to the establishment of a PBCs. Management system in Peru.</p>	HS
<ul style="list-style-type: none"> Efficiency 		S
<ul style="list-style-type: none"> Impact 	<p>The project contributed to key changes to the conditions necessary to reach long term objectives.</p>	HS
<ul style="list-style-type: none"> Likelihood of/ risks to sustainability 		ML
<ul style="list-style-type: none"> Project management 	<p>Project management was proactive and creative in solving logistical challenges. The CU also played a key role as facilitator and coordinator of project activities despite the restrictions in staff and resources.</p>	HS
<ul style="list-style-type: none"> M&E 		S

Criterion	Evaluator's summary comments	Evaluator's rating
Attainment of project objectives and results (overall rating), sub criteria (below)	The project made important contributions to the necessary conditions to eliminate PCBs in Peru	HS
Project implementation	Having resolved the weaknesses of readiness and design, after midterm the project accomplished or exceeded most of its outcomes	HS
Effectiveness	The project exceeded or accomplished most of the key outcomes	HS
Relevance	PCBs present big risks to human and environmental health in Peru. The project contributed to the national health and environmental priorities and to the GEF POPs strategic priorities.	HS
Efficiency	While the project took over two years than originally planned, the project delivers results at a cost comparable to other projects.	S
Sustainability of project outcomes (overall rating), sub criteria (below)	The project helped establish a solid foundation for a PCBs management system in Peru. Utilities have mainstreamed PCBs management in their operations. Yet delays in the approval of the regulation place long term risks to the sustainability of the system.	ML
Financial risks		low
Socio-political risks		low
Institutional framework and governance risks	Delays in the adoption of the regulation risks the long-term sustainability	ML
Environmental risks		Low
Monitoring and evaluation (overall rating), sub criteria (below)		S
M&E Design		MS
M&E Plan implementation (use for adaptive management)		S
Budgeting and Funding for M&E activities		S
Project management - UNIDO specific ratings		S
Quality at entry / Preparation and readiness	Readiness and design deficiencies contributed to implementation delays during the first two years of the project.	MU
Implementation approach		S
UNIDO Supervision and backstopping		S
Gender Mainstreaming	Gender based records on participants were kept. There was gender balance in the management structure of the project and gender relevant issues were addressed during project activities.	S
Overall rating		S

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.

Please note: Relevance and effectiveness are considered as critical criteria. The overall rating of the project for achievement of objectives and results **may not be higher** than the lowest rating on either of these two criteria. Thus, to have an overall satisfactory rating for outcomes a project must have at least satisfactory ratings on both relevance and effectiveness.

RATINGS ON SUSTAINABILITY

Sustainability will be understood as the probability of continued long-term outcomes and impacts after the GEF project funding ends. The evaluation will identify and assess the key conditions or factors that are likely to contribute or undermine the persistence of benefits beyond project completion. Some of these factors might be outcomes of the project, i.e. stronger institutional capacities, legal frameworks, socio-economic incentives /or public awareness. Other factors will include contextual circumstances or developments that are not outcomes of the project but that are relevant to the sustainability of outcomes.

Rating system for sustainability sub-criteria

On each of the dimensions of sustainability of the project outcomes will be rated as follows.

- 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.

All the risk dimensions of sustainability are critical. Therefore, overall rating for sustainability will not be higher than the rating of the dimension with lowest ratings. For example, if a project has an Unlikely rating in either of the dimensions then its overall rating cannot be higher than Unlikely, regardless of whether higher ratings in other dimensions of sustainability produce a higher average.

RATINGS OF PROJECT M&E

Monitoring is a continuing function that uses systematic collection of data on specified indicators to provide management and the main stakeholders of an ongoing project with indications of the extent of progress and achievement of objectives and progress in the use of allocated funds. Evaluation is the systematic and objective assessment of an on-going or completed project, its design, implementation and results. Project evaluation may involve the definition of appropriate standards, the examination of performance against those standards, and an assessment of actual and expected results.

The Project M&E system will be rated on M&E design, M&E plan implementation and budgeting and funding for M&E activities as follows:

- Highly satisfactory (HS): There were no shortcomings in the project M&E system.
- Satisfactory(S): There were minor shortcomings in the project M&E system.

- Moderately satisfactory (MS): There were moderate shortcomings in the project M&E system.
- Moderately unsatisfactory (MU): There were significant shortcomings in the project M&E system.
- Unsatisfactory (U): There were major shortcomings in the project M&E system.
- Highly unsatisfactory (HU): The Project had no M&E system.

M&E plan implementation will be considered a critical parameter for the overall assessment of the M&E system. The overall rating for the M&E systems will not be higher than the rating on M&E plan implementation.

All other ratings will be on the GEF six-point scale:

HS	= Highly satisfactory	Excellent
S	= Satisfactory	Well above average
MS	= Moderately satisfactory	Average
MU	= Moderately unsatisfactory	Below average
U	= Unsatisfactory	Poor
HU	= Highly unsatisfactory	Very poor (appalling)

GEF Minimum requirements for M&E²¹)

Minimum requirement 1: Project design of M&E

All projects will include a concrete and fully budgeted M&E plan by the time of work program entry for full-sized projects (FSP) and CEO approval for medium-sized projects (MSP). This M&E plan will contain as a minimum:

1. SMART indicators for project implementation, or, if no indicators are identified, an alternative plan for monitoring that will deliver reliable and valid information to management;
2. SMART indicators for results (outcomes and, if applicable, impacts), and, where appropriate, indicators identified at the corporate level;
3. Baseline for the project, with a description of the problem to be addressed, with indicator data, or, if major baseline indicators are not identified, an alternative plan for addressing this within one year of implementation;
4. Identification of reviews and evaluations that will be undertaken, such as mid-term reviews or evaluations of activities; and
5. Organizational set-up and budgets for monitoring and evaluation.

Minimum requirement 2: Application of project M&E

Project monitoring and supervision will include implementation of the M&E plan, comprising:

- SMART indicators for implementation are actively used, or if not, a reasonable explanation is provided;
- SMART indicators for results are actively used, or if not, a reasonable explanation is provided;
- The baseline for the project is fully established and data compiled to review progress reviews, and evaluations are undertaken as planned; and
- The organizational set-up for M&E is operational and budgets are spent as planned.

²¹ http://www.thegef.org/gef/sites/thegef.org/files/documents/ME_Policy_2010.pdf

Annex 12: PCBS MANAGEMENT PERU PROJECT IDENTIFICATION AND FINANCIAL DATA

I. Dates

Milestone	Expected date	Actual date
Project CEO endorsement/approval date		29 June 2010
Project implementation start date (PAD issuance date)		14 October 2010
Original expected implementation end date (indicated in CEO endorsement/approval document)	31 July 2014	14 October 2010
Revised expected implementation end date (if any)	31 December 2014	March 31 2017
Terminal evaluation completion		April 10 2017
Planned tracking tool date		June 30 2017

II. Project framework (to be completed)

Project component	Activity type	GEF financing (in USD)		Co-financing (in USD)	
		Approved	Actual	Promised	Actual
1. Institutional capacity building, improved policy/legal framework and established environmental monitoring of PCBs	Capacity building	430,000	433,155	780,000	NI
2. (ESM) of PCB-containing equipment and wastes, including country-wide inventory, treatment of transformers, which are still in use and final disposal of PCB wastes	Environmentally sound management	1,930,000	1,514,125	4,100,000	NI
3. Socio-economic measures including improved public education and awareness	Socio-Economic	90,000	88,857	110,000	NI
4. Establish project management structure and monitoring and evaluation	Management	130,000	452,773	200,000	NI
Total (in USD)		2,580,000	2,488,910	5,190,000	9797929.96

NI: No information available

Note: Actual co-financing includes private and government entities and most of them only reported total amounts. For DIGESA and FONAFE information is updated to December 2012 and June 2014, respectively.

Annex 13: Evaluation Terms of Reference

Independent Terminal Evaluation of the UNIDO project:

**Environmentally Sound Management (ESM)
and Disposal of
Polychlorinated Biphenyls (PCBs)**

UNIDO Project number: GF/PER/10/001
UNIDO SAP ID: 104054
GEF ID: 3709

DECEMBER 2016

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- I. Project background and overview
- II. Scope and purpose of the evaluation
- III. Evaluation approach and methodology
- IV. Evaluation team composition
- V. Time schedule and deliverables
- VI. Project evaluation parameters
- VII. Deliverables and Reporting
- VIII. Quality assurance

Annex 1 - Outline of an in-depth project evaluation report

Annex 2 - Rating tables

Annex 3 - GEF Minimum requirements for M&E

Annex 4 - Guidance on integrating gender in evaluations of UNIDO projects and programmes

Annex 5. Checklist on terminal evaluation report quality

Annex 6 – Required project identification and financial data

Annex 7 – Job descriptions

Annex 8 – Project results framework

I. Project background and overview

Project factsheet

Project Title	Environmentally Sound Management (ESM) and Disposal of Polychlorinated Biphenyls (PCBs)
UNIDO project No. and/or SAP ID	GF/PER/10/001 – SAP ID: 104054
GEF project ID	3709
Region	Latin America and Caribbean
Country(ies)	Peru
GEF focal area(s) and operational programme	POPs: POPs-1; POPs-2
GEF implementing agency(ies)	UNIDO
GEF executing partner(s)	Dirección General de Salud Ambiental, Government of Peru
Project size (FSP, MSP, EA)	FSP
Project CEO endorsement / Approval date	29 June 2010
Project implementation start date (First PAD issuance date)	14 October 2010
Original expected implementation end date (indicated in CEO endorsement/Approval document)	31 July 2014
Revised expected implementation end date (if applicable)	31 December 2014
Actual implementation end date	31 March 2017
GEF project grant (excluding PPG, in USD)	2,580,000
GEF PPG (if applicable, in USD)	130,000
UNIDO co-financing (in USD)	90,000 (In-kind)
Total co-financing at CEO endorsement (in USD)	5,190,000 (cash+in-kind)
Materialized co-financing at project completion (in USD)	
Total project cost (excluding PPG and agency support cost, in USD; i.e., GEF project grant + total co-financing at CEO endorsement)	7,900,000
Mid-term review date	December 2012 - January 2013
Planned terminal evaluation date	15 January – 15 March 2016

(Source: Project document)²²

²² Project information data throughout these TOR are to be verified during the inception phase.

i. Project background and context

Peru is located in Western South America, bordering the South Pacific Ocean, between Chile and Ecuador. It has a population of around 30.15 million, with 86% of the population being below 55 years of age (almost 45% of the population being below 25 years of age). Population growth rate is below 1% (0.99% - 2014). Literacy rate of total population is almost 90%. One quarter of the population lives below the poverty line. Unemployment is low at 3.6%; youth unemployment is 9.5% (2014).

Peru has a GDP of USD 210.3 billion (official exchange rate, 2014) and a GDP real growth rate of 5.1% (2013). Services constitute the highest contribution to GDP with 56.3%, followed by industry at 37.5% and finally agriculture with 6.2%. However, agriculture sector engages one quarter of the labour force; the smallest share of the labour force being engaged in industry (17.1%) and the highest (56.8%) in services. Agricultural products are plenty, such as asparagus, coffee, cocoa, cotton, sugarcane, rice, potatoes, corn, plantains, grapes, oranges, pineapples, guavas, bananas, apples, lemons, pears, coca, tomatoes, mangoes, barley, medicinal plants, palm oil, marigold, onion, wheat, dry beans; poultry, beef, pork, dairy products, guinea pigs, fish. Industries are in the following sectors: mining and refining of minerals, steel, metal fabrication, petroleum extraction and refining, natural gas and natural gas liquefaction, fishing and fish processing, cement, glass, textiles, clothing, food processing, beer, soft drinks, rubber, machinery, electrical machinery, chemicals, furniture. Growth rate of industrial production is estimated to be at 5% (2013).

Current environmental issues are deforestation, overgrazing of the slopes of the costa and sierra leading to soil erosion, desertification, air pollution in Lima, pollution of rivers and coastal waters from municipal and mining wastes. Peru is party to various environmental international agreements, such as Antarctic-Environmental Protocol, Antarctic-Marine Living Resources, Antarctic Treaty, Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Hazardous Wastes, Marine Dumping, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94, Wetlands, Whaling.

Polychlorinated Biphenyls (PCBs) were never produced in Peru. PCB-containing equipment and oil were mainly imported from the USA and Europe. In Peru, PCBs were/are used in open, close, and semi-open environments. Closed applications include the use of PCBs as dielectric fluids for transformers, electrical cables, switches and capacitors, whereas in semi-open systems PCBs were used in hydraulic systems. In open environments PCBs were associated with heat transfer fluids, cutting oil and paintings. Peru accessed the Stockholm Convention on Persistent Organic Pollutants in 2001 and ratified it in 2005. It was obliged to submit its National Implementation Plan (NIP) latest in December 2007, which it did. The NIP identified the elimination of the PCBs as one of the key priorities to implement the country's obligations under the Stockholm Convention. The lack of specific standards and regulations for the management, handling, treatment and disposal of PCB-containing equipment and materials was also identified during the preparation of the NIP. Additionally, it was also evidenced that workers and the public in general are not sufficiently conscious about the risks to their health and the environment associated with the PCBs. The project aims to assist the Government of Peru to implement actions needed to properly handle and eliminate PCBs and comply with its obligations under the Stockholm Convention.

The overall objective of the project is to establish environmentally sound management (ESM) practices for PCBs and to increase the phase-out and disposal of PCB-containing equipment and wastes, particularly focusing in the electrical utilities and main users of electricity in Peru.

The project is funded through a GEF grant, amounting to USD 2,580,000 (and PPG Grant of USD 130,000), a UNIDO contribution of USD 90,000 (In-kind); and the counterparts' co-financing of USD 5,190,000 (cash and in kind), which amount to total project budget of USD 7,900,000.

Project implementation started in October 2010 and the initial project end date was in July 2014. The same was revised to March 2017.

Regular Monitoring is foreseen in the project document, as well as an independent mid-term evaluation (MTE) and a terminal evaluation (TE). An independent MTE was carried out by an international evaluator as well as a national evaluator from December 2012 – January 2013 (MTE report November 2013), and included a field mission to Peru in December 2012. The TE is scheduled to take place from January-March 2017.

ii. Project objective and structure

The overall objective of the project is to establish environmentally sound management (ESM) practices for PCBs and to increase the phase-out and disposal of PCB-containing equipment and wastes, particularly focusing in the electrical utilities and main users of electricity in Peru. The project aims to create fundamental capacities within the government and major PCB owners for complying with the PCB-related obligations under the Stockholm Convention on POPs.

The immediate objectives of the project are as follows:

- i. Strengthen the legal and regulatory framework to assure the sound management of PCBs and their gradual phase-out and elimination before 2025 and 2028 respectively;
- ii. Inventory and label 10,000 pieces of oil-containing electrical equipment;
- iii. Strengthen capacity for PCBs waste management and domestic treatment through implementing best available techniques (BAT) and BEP;
- iv. Decontaminate PCB oils in in-service transformers;
- v. Disposal of 1,000 tons of PCB-containing equipment and wastes in an environmentally sound manner;
- vi. Improve occupational safety measures and distribute general knowledge concerning PCBs.

Following are the 3 main outcomes of the project, besides project management:

Outcome 1: Capacity building - establish appropriate capacity in the country for implementing the PCBs-related measures of Stockholm and Basel Conventions

Outcome 2: ESM of PCB-containing electric equipment - PCBs inventory to be completed on 10,000 pieces of equipment. PCB-management and phase-out plans will be developed and implemented.

Outcome 3: Awareness raising - to provide for health and social benefits through increased awareness of PCBs among policy makers, stakeholders, and target populations, as well as information dissemination to environmental NGOs and media.

iii. Mid-term Evaluation

In line with the UNIDO Evaluation Policy and GEF evaluation policy, an independent MTE was carried out by an evaluation team (ET) which included an international as well as a national evaluator from December 2012 – January 2013. It also included a field mission to Peru from 3 – 8 December 2012. The ET visited the Coordinating Unit and national counterpart institutions and carried out interviews over the course of one week.

Following are some of the findings of the MTE:

Relevance: The ET considered the project to be highly relevant for national development and in particular to environmental agendas fitting within the current legislative and regulatory frameworks of the country. Moreover, the project was considered highly relevant also for other stakeholders of the project including UNIDO, the GEF, enterprises, employees, civil society and health professionals. However, it was pointed out that in reality some of these groups had not been fully involved in the project at the time of the MTE. Further, the project had not managed to adequately involve all of the stakeholders and decision-makers and had not disseminated PCB related information nor carried out awareness raising activities.

Effectiveness: was considered to be unsatisfactory (low), in particular given that the main achievement of the project - two years after it was initiated - was mainly related to only one of the products under Result 2 (the inventory part, under Sound Management of Equipment, Inventory, Treatment and Final Disposal). The financial disbursements of the project were also considered to be moderately unsatisfactory.

Sustainability: the ET considered the sustainability of the project to be moderately likely. Although 100% of the public electric utility companies in the country have internalized PCB management and are committed with the inventory and decontamination stages, not all of the stakeholders have reached this goal.

The general coordination and management mechanisms were considered to be neither efficient nor effective. Further, regarding monitoring and evaluation (M&E) systems, even though a M&E plan did exist, the ET noted that this had not been implemented.

Further details can be referred to in the MTE report (November 2013).

iv. Project implementation and execution arrangements

UNIDO: the GEF implementing agency.

General Directorate for Environmental Health (DIGESA): the project coordinating agency, with the responsibility to, inter alia coordinate legislative activities while initiating amendments and additions to relevant legislation and develop regulations and procedures for POPs related activities; facilitate cooperation inter-relations between stakeholders and provide the stakeholders with centralized management.

Ministry of Industry and Energy (MIE): responsible for providing assistance in conducting inventory of the equipment, developing policy and coordinating activities for introducing and applying the management system and environmentally sound technologies for treatment of PCBs-containing equipment.

Project Management Office (PMO): to consist of the National Project Coordinator (NPC) and a technical assistant (TA) supported by administration office (an accountant, a secretary and an IT specialist). The PMO to be under the supervision of DIGESA and report through DIGESA to UNIDO.

Project Steering Committee (PSC): to consist of representatives of Ministries of Health, Energy and Mines, Environment, Production, industrial stakeholders, OSINERGMIN, IPES (NGO) and UNIDO.

Project Technical Team (PTT): The project aimed to recruit a part-time international Chief Technical Advisor (CTA).

Private sector stakeholders and other potential project participants were expected to be actively integrated into the project.

v. Budget information

The project is funded through a GEF grant, amounting to USD 2,580,000 (and PPG Grant of USD 130,000), a UNIDO contribution of USD 90,000 (In-kind); and the counterparts' co-financing of USD 5,190,000 (cash and in kind), which amount to total project budget of USD 7,900,000.

Some financial details are shown below:

Financing plan summary for the project (USD)

	<i>Project preparation</i>	<i>Project</i>	<i>Total</i>
GEF financing	130,000	2,580,000	2,710,000
Co-financing (Cash and In-kind)	130,000	5,190,000	5,320,000
Total	260,000	7,770,000	8,030,000

Source: CEO endorsement document

Project outcomes	GEF (USD)	Co-financing (USD)	Total (USD)
1. Legal and institutional capacity for PCBs management and enforcement	430,000	780,000	1,210,000
2. Environmentally sound management (ESM) of PCB-containing equipment and wastes	1,930,000	4,100,000	6,030,000
3. Health and social benefits	90,000	110,000	200,000
Project management	130,000	200,000	330,000
Total	2,580,000	5,190,000	7,770,000

Source: CEO endorsement document

Co-financing Source Breakdown is as follows:

Name of Co-financier (source)	Classification	Type	Project (USD)
Ministry of Environment	Government	Cash	357,100
		In-kind	442,900
Other stakeholder participants	Private	Cash	3,240,100
		In-kind	1,059,900
UNIDO	IA	In-Kind	90,000
Total Co-Financing			5,190,000

Source: CEO endorsement document

UNIDO GEF-grant disbursement breakdown (USD):

Item	EXECUTED BUDGET in 2010	EXECUTED BUDGET in 2011	EXECUTED BUDGET in 2012	EXECUTED BUDGET in 2013	EXECUTED BUDGET in 2014	EXECUTED BUDGET in 2015	Total Expenditure (2010-present)
							(02 Mar.)
Contractual Services				788,840.00	385.28		789,225.28
Equipment			328,897.36	15,000.00			343,897.36
Internat. Cons/Staff			97,378.20	20,972.25		3,075.45	121,425.90
Internat. meetings							
Local Travel			10,741.75	5,412.04		34,009.40	50,163.19
Nat. Consult./Staff			378,678.48	76,472.79	29,409.88	0.00	484,561.15
Other Direct Costs			11,704.51	803.73	-2.93		12,505.31
Train/Fellowship/Study			21,290.96				21,290.96
Total			848,691.26	907,500.81	29,792.23	37,084.85	1,823,069.15

(Source: SAP database, 02 March 2015)

II. Scope and purpose of the evaluation

The terminal evaluation (TE) will cover the whole duration of the project from its starting date in October 2010 to the estimated completion date in March 2017. It will assess project performance against the evaluation criteria: relevance, effectiveness, efficiency, sustainability and impact.

The TE has an additional purpose of drawing lessons and developing recommendations for UNIDO and the GEF that may help improving the selection, enhancing the design and implementation of similar future projects and activities in the country and on a global scale upon project completion. The terminal evaluation report should include examples of good practices for other projects in the focal area, country, or region.

The terminal evaluation should provide an analysis of the attainment of the project objective(s) and the corresponding technical components or outputs. Through its assessments, the terminal evaluation should enable the Government, the national GEF Operational Focal Point (OFP), counterparts, the GEF, UNIDO and other stakeholders and donors to verify prospects for development impact and promoting sustainability, providing an analysis of the attainment of global environmental objectives, project objectives, delivery and completion of project outputs/activities, and outcomes/impacts based on indicators, and management of risks. The assessment includes re-examination of the relevance of the objectives and other elements of project design according to the project evaluation parameters defined in chapter VI.

The key question of the TE is whether the project has achieved or is likely to achieve its main objective of establishing environmentally sound management (ESM) practices for PCBs and to increase the phase-out and disposal of PCB-containing equipment and wastes, particularly focusing in the electrical utilities and main users of electricity in Peru.

III. Evaluation approach and methodology

The terminal evaluation will be conducted in accordance with the UNIDO Evaluation Policy²³, the UNIDO Guidelines for the Technical Cooperation Programme and Project Cycle²⁴, the GEF Guidelines for GEF Agencies in Conducting Terminal Evaluations²⁵, the GEF Monitoring and Evaluation Policy²⁶ and the GEF Minimum Fiduciary Standards for GEF Implementing and Executing Agencies²⁷.

It will be carried out by an independent evaluation team, as an independent in-depth evaluation using a participatory approach whereby all key parties associated with the project are kept informed and regularly consulted throughout the evaluation. The evaluation team will liaise with the UNIDO Independent Evaluation Division (ODG/EVQ/IEV) on the conduct of the evaluation and methodological issues.

²³ UNIDO. (2015). Director General's Bulletin: Evaluation Policy (UNIDO/DGB/(M).98/Rev.1)

²⁴ 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)

²⁵ GEF. (2008). Guidelines for GEF Agencies in Conducting Terminal Evaluations (Evaluation Office, Evaluation Document No. 3, 2008)

²⁶ GEF. (2010) The GEF Monitoring and Evaluation Policy (Evaluation Office, November 2010)

²⁷ GEF. (2011). GEF Minimum Fiduciary Standards: Separation of Implementation and Execution Functions in GEF Partner Agencies (GEF/C.41/06/Rev.01, 3 November 2011, prepared by the Trustee)

The evaluation team will be required to use different methods to ensure that data gathering and analysis deliver evidence-based qualitative and quantitative information, based on diverse sources, as necessary: desk studies and literature review, statistical analysis, individual interviews, focus group meetings, surveys and direct observation. This approach will not only enable the evaluation to assess causality through quantitative means but also to provide reasons for why certain results were achieved or not and to triangulate information for higher reliability of findings. The specific mixed methodological approach will be described in the inception report.

The evaluation team will develop interview guidelines. Field interviews can take place either in the form of focus-group discussions or one-to-one consultations.

The methodology will be based on the following:

- A desk review of project documents, including, but not limited to:
 - The original project document, monitoring reports (such as progress and financial reports to UNIDO and UNIDO-GEF annual Project Implementation Reports (PIRs)), mid-term review (MTR) report, output reports (case studies, action plans, sub-regional strategies, etc.), back-to-office mission report(s), end-of-contract report(s) and relevant correspondence.
 - If applicable, notes from the meetings of committees involved in the project (e.g. approval and steering committees).
 - Other project-related material produced by the project.
- The evaluation team will use available models of (or reconstruct if necessary) theory of change for the different types of intervention (enabling, capacity, investment, demonstration). The validity of the theory of change will be examined through specific questions in interviews and possibly through a survey of stakeholders.
- Counterfactual information: In those cases where baseline information for relevant indicators is not available, the evaluation team will aim at establishing a proxy-baseline through recall and secondary information.
- Interviews with project management and technical support including staff and management at UNIDO HQ and in the field and – if necessary - staff associated with the project’s financial administration and procurement.
- Interviews with project partners and stakeholders, including, among others, government counterparts, GEF OFP, project stakeholders, and co-financing partners as shown in the corresponding sections of the project documents.
- On-site observation of results achieved by demonstration projects, including interviews of actual and potential beneficiaries of improved technologies.
- Interviews and telephone interviews with intended users for the project outputs and other stakeholders involved in the project. The evaluation team shall determine whether to seek additional information and opinions from representatives of any donor agency(ies) or other organizations.
- Interviews with the relevant UNIDO Field Office in Colombia, which covers Peru, to the extent that it was involved in the project, and members of the project management team and the various national and sub-regional authorities dealing with project activities as necessary. If deemed necessary, the evaluation team shall also gain broader perspectives from discussions with relevant GEF Secretariat staff.
- Other interviews, surveys or document reviews as deemed necessary by the evaluation team and/or UNIDO, ODG/EVQ/IEV for triangulation purposes.
- The inception report will provide details on the methodology used by the evaluation team and include an evaluation matrix.

IV. Evaluation team composition

The evaluation team will be composed of one international evaluation consultant acting as the team leader and one national consultant(s). The consultants will be contracted by UNIDO. The tasks of each team member are specified in the job descriptions annexed to these terms of reference.

The evaluation team might be 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.

Members of the evaluation team must not have been directly involved in the design and/or implementation of the projects/programme under evaluation.

The UNIDO project manager and the project teams in the participating countries will support the evaluation team. The UNIDO GEF Coordinator and the GEF OFP will be briefed on the evaluation and provide support to its conduct. GEF OFP will, where applicable and feasible, also be briefed and debriefed at the start and end of the evaluation mission.

V. Time schedule and deliverables

The evaluation is scheduled to take place from 15 January to 15 March 2017. The evaluation mission is planned for 1 to 10 February. At the end of the field mission, there will be a presentation of the preliminary findings for all stakeholders involved in this project/programme in the participating country.

At the end of the evaluation field mission, a debriefing should also be conducted inviting local stakeholders (incl. government and parties involved in the evaluation). After the evaluation mission, the international evaluation consultant will come to UNIDO HQ for debriefing and presentation of the preliminary findings of the terminal evaluation.

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

VI. Project evaluation parameters

The evaluation team will assess the project performance guided by the parameters and evaluations questions provided in this section. In addition to the qualitative assessment based on the evidence gathered in the evaluation, the evaluation team will rate the project on the basis of the rating criteria for the parameters described in the following sub-chapters, A to I. Ratings will be presented in the form of tables with each of the criteria / aspects rated separately and with brief justifications for the rating based on the findings and the main analyses (see Table 1 to Table 3). Annex 2 presents the template for summarizing the overall ratings.

For GEF projects: As per the GEF's requirements, the evaluation report should also provide information on project identification, time frame, actual expenditures, and co-financing in the format in, which is modelled after the GEF's project identification form (PIF).

1. Project identification and design

Project identification assessment criteria derived from the logical framework approach (LFA) methodology, establishing the process and set up of steps and analyses required to design a project in a systematic and structured way, e.g. situation, stakeholder, problem and objective analyses.

The aspects to be addressed by the evaluation include inter alia the extent to which:

- The situation, problem, need / gap was clearly identified, analyzed and documented (evidence, references). The project design was based on a needs assessment
- Stakeholder analysis was adequate (e.g. clear identification of end-users, beneficiaries, sponsors, partners, and clearly defined roles and responsibilities in the project(s)).
- The project took into account and reflects national and local priorities and strategies
- ISID-related issues and priorities were considered when designing the project
- Relevant country representatives (from government, industries, gender groups, custom officers and civil society - including the GEF OFP for GEF projects), were appropriately involved and participated in the identification of critical problem areas and the development of technical cooperation strategies.

Project design quality assessment criteria derive from the logical framework approach (LFA) methodology, leading to the establishment of Log Frame Matrix (LFM) and the main elements of the project, i.e. overall objective, outcomes, outputs, to defining their causal relationship, as well as indicators, their means of verification and the assumptions. The evaluation will examine the extent to which:

- The project's design was adequate to address the problems at hand;
- The project had a clear thematically focused development objective;
- The project outcome was clear, realistic, relevant, addressed the problem identified and provided a clear description of the benefit or improvement that will be achieved after project completion;
- Outputs were clear, realistic, adequately leading to the achievement of the outcome;
- The attainment of overall development objective, outcome and outputs can be determined by a set of SMART verifiable indicators;
- The results hierarchy in the LFM, from activities to outputs, outcome and overall objective, is logical and consistent.
- Verification and Assumptions were adequate, identifying important external factors and risks;
- All GEF-4 and GEF-5 projects have incorporated relevant environmental and social considerations into the project design / GEF-6 projects have followed the provisions specified in UNIDO/DGAI.23: UNIDO Environmental and Social Safeguards Policies and Procedures (ESSPP).

2. Implementation Performance

Implementation assessment criteria to be applied are shown below and correspond to DAC criteria, as well as to good programme/project management practices.

3. Relevance and ownership

The evaluation will examine the extent to which the project is relevant to the:

- National development and environmental priorities and strategies of the Government and the population, and regional and international agreements. See possible evaluation questions under "Country ownership/drivenness" below.
- Target groups: relevance of the project's objectives, outcomes and outputs to the different target groups of the interventions (e.g. companies, civil society, beneficiaries of capacity building and training, etc.).

- GEF's focal areas/operational programme strategies: In retrospect, were the project's outcomes consistent with the GEF focal area(s)/operational program strategies? Ascertain the likely nature and significance of the contribution of the project outcomes to the wider portfolio of POPs.
- Does the project remain relevant taking into account the changing environment?

4. Effectiveness

- (i) Achievement of expected outcomes:
- What outputs and outcomes has the project achieved so far (both qualitative and quantitative results)?
 - To what extent have the expected outcomes, outputs and long-term objectives been achieved or are likely to be achieved?
 - Has the project generated any results that could lead to changes of the assisted institutions?
 - Have there been any unplanned effects?
 - Are the project outcomes commensurate with the original or modified project objectives?
 - If the original or modified expected results were described as merely outputs/inputs, were there any real outcomes of the project and, if so, were these commensurate with realistic expectations from the project?
 - If there was a need to reformulate the project design and the project results framework given changes in the country and operational context, were such modifications properly documented?
- (j) How do the stakeholders perceive the quality of outputs? Were the targeted beneficiary groups actually reached?
- (k) Longer-term impact: Identify actual and/or potential longer-term impacts or at least indicate the steps taken to assess these (see also below "monitoring of long term changes"). Wherever possible, evaluators should indicate how findings on impacts will be reported in future.
- (l) Catalytic or replication effects: Describe any catalytic or replication effects: the evaluation will describe any catalytic or replication effect both within and outside the project. If no effects are identified, the evaluation will describe the catalytic or replication actions that the project carried out. No ratings are requested for the project's catalytic role.

5. Efficiency

The extent to which:

- The project cost was effective? Was the project using the most cost-efficient options?
- Has the project produced results (outputs and outcomes) within the expected time frame? Was project implementation delayed, and, if it was, did that affect cost effectiveness or results? Wherever possible, the evaluator should also compare the costs incurred and the time taken to achieve outcomes with that for similar projects. Are the project's activities in line with the schedule of activities as defined by the project team and annual work plans? Are the disbursements and project expenditures in line with budgets?
- Have the inputs from the donor, UNIDO and Government/counterpart been provided as planned, and were they adequate to meet the requirements? Was the quality of UNIDO inputs and services as planned and timely?
- Was there coordination with other UNIDO and other donors' projects, and did possible synergy effects happen?
- Were there delays in project implementation and if so, what were their causes?

6. Assessment of risks to sustainability of project outcomes

Sustainability is understood as the likelihood of continued benefits after the GEF project ends. Assessment of sustainability of outcomes will be given special attention but also technical, financial and organization sustainability will be reviewed. This assessment should explain how the risks to project outcomes will affect continuation of benefits after the GEF project ends. It will include both exogenous and endogenous risks. The following four dimensions or aspects of risks to sustainability will be addressed:

- i. **Financial risks.** Are there any financial risks that may jeopardize sustainability of project outcomes? What is the likelihood of financial and economic resources not being available once GEF assistance ends? (Such resources can be from multiple sources, such as the public and private sectors or income-generating activities; these can also include trends that indicate the likelihood that, in future, there will be adequate financial resources for sustaining project outcomes.) Was the project successful in identifying and leveraging co-financing?
- ii. **Socio-political risks.** Are there any social or political risks that may jeopardize sustainability of project outcomes? What is the risk that the level of stakeholder ownership (including ownership by governments and other key stakeholders) will be insufficient to allow for the project outcomes/benefits to be sustained? Do the various key stakeholders see that it is in their interest that project benefits continue to flow? Is there sufficient public/stakeholder awareness in support of the project's long-term objectives?
- iii. **Institutional framework and governance risks.** Do the legal frameworks, policies, and governance structures and processes within which the project operates pose risks that may jeopardize sustainability of project benefits? Are requisite systems for accountability and transparency and required technical know-how in place?
- iv. **Environmental risks.** Are there any environmental risks that may jeopardize sustainability of project outcomes? Are there any environmental factors, positive or negative, that can influence the future flow of project benefits? Are there any project outputs or higher-level results that are likely to have adverse environmental impacts, which, in turn, might affect sustainability of project benefits? The evaluation should assess whether certain activities will pose a threat to the sustainability of the project outcomes.

7. Assessment of monitoring and evaluation (M&E) systems

- i. **M&E design.** Did the project have an M&E plan to monitor results and track progress towards achieving project objectives? The evaluation will assess whether the project met the minimum requirements for the application of the Project M&E plan (see Annex 3).
- ii. **M&E plan implementation.** The evaluation should verify that an M&E system was in place and facilitated timely tracking of progress toward project objectives by collecting information on chosen indicators continually throughout the project implementation period; annual project reports were complete and accurate, with well-justified ratings; the information provided by the M&E system was used during the project to improve performance and to adapt to changing needs; and the project had an M&E system in place with proper training for parties responsible for M&E activities to ensure that data will continue to be collected and used after project closure. Was monitoring and self-evaluation carried out effectively, based on indicators for outputs, outcomes and impacts? Are there any annual work plans? Was any steering or advisory mechanism put in place? Did reporting and performance reviews take place regularly?
- iii. **Budgeting and Funding for M&E activities.** In addition to incorporating information on funding for M&E while assessing M&E design, the evaluators will determine whether M&E

was sufficiently budgeted for at the project planning stage and whether M&E was adequately funded and in a timely manner during implementation.

8. Monitoring of long-term changes

The M&E of long-term changes is often incorporated in GEF-supported projects as a separate component and may include determination of environmental baselines; specification of indicators; and provisioning of equipment and capacity building for data gathering, analysis, and use. This section of the evaluation report will describe project actions and accomplishments towards establishing a long-term monitoring system. The evaluation will address the following questions:

1. Did the project contribute to the establishment of a long-term monitoring system? If it did not, should the project have included such a component?
2. What were the accomplishments and shortcomings in establishment of this system?
3. Is the system sustainable — that is, is it embedded in a proper institutional structure and does it have financing? How likely is it that this system continues operating upon project completion?
4. Is the information generated by this system being used as originally intended?

9. Assessment of processes affecting achievement of project results

Among other factors, when relevant, the evaluation will consider a number of issues affecting project implementation and attainment of project results. The assessment of these issues can be integrated into the analyses of project design, relevance, effectiveness, efficiency, sustainability and management as the evaluators deem them appropriate (it is not necessary; however, it is possible to have a separate chapter on these aspects in the evaluation report). The evaluation will consider, but need not be limited to, the following issues that may have affected project implementation and achievement of project results:

10. Preparation and readiness / Quality at entry.

Were the project's objectives and components clear, practicable, and feasible within its time frame? Were counterpart resources (funding, staff, and facilities), and adequate project management arrangements in place at project entry? Were the capacities of executing institution and counterparts properly considered when the project was designed? Were lessons from other relevant projects properly incorporated in the project design? Were the partnership arrangements properly identified and the roles and responsibilities negotiated prior to project approval?

11. Country ownership/drivenness.

Was the project concept in line with the sectoral and development priorities and plans of the country—or of participating countries, in the case of multi-country projects? Are project outcomes contributing to national development priorities and plans? Were relevant country representatives from government and civil society involved in the project? Was the GEF OFP involved in the project design and implementation? Did the recipient government maintain its financial commitment to the project? Has the government—or governments in the case of multi-country projects—approved policies or regulatory frameworks in line with the project's objectives?

12. Stakeholder involvement and consultation.

Did the project involve the relevant stakeholders through continuous information sharing and consultation? Did the project implement appropriate outreach and public awareness

campaigns? Were the relevant vulnerable groups and powerful supporters and opponents of the processes involved in a participatory and consultative manner? Which stakeholders were involved in the project (e.g., NGOs, private sector, other UN Agencies) and what were their immediate tasks? Did the project consult with and make use of the skills, experience, and knowledge of the appropriate government entities, nongovernmental organizations, community groups, private sector entities, local governments, and academic institutions in the design, implementation, and evaluation of project activities? Were perspectives of those who would be affected by project decisions, those who could affect the outcomes, and those who could contribute information or other resources to the process taken into account while taking decisions?

13. Financial planning.

Did the project have appropriate financial controls, including reporting and planning, that allowed management to make informed decisions regarding the budget and allowed for timely flow of funds? Was there due diligence in the management of funds and financial audits? Did promised co-financing materialize? Specifically, the evaluation should also include a breakdown of final actual project costs by activities compared to budget (variances), financial management (including disbursement issues), and co-financing.

14. UNIDO's supervision and backstopping.

Did UNIDO staff identify problems in a timely fashion and accurately estimate their seriousness? Did UNIDO staff provide quality support and advice to the project, approve modifications in time, and restructure the project when needed? Did UNIDO provide the right staffing levels, continuity, skill mix, and frequency of field visits for the project?

15. Co-financing and project outcomes and sustainability.

Did the project manage to mobilize the co-financing amount expected at the time of CEO Endorsement? If there was a difference in the level of expected co-financing and the co-financing actually mobilized, what were the reasons for the variance? Did the extent of materialization of co-financing affect project outcomes and/or sustainability, and, if so, in what ways and through what causal linkages?

16. Delays and project outcomes and sustainability.

If there were delays in project implementation and completion, what were the reasons? Did the delays affect project outcomes and/or sustainability, and, if so, in what ways and through what causal linkages?

17. Implementation and execution approach.

Is the implementation and execution approach chosen different from other implementation approaches applied by UNIDO and other agencies? Does the approach comply with the principles of the Paris Declaration? Is the implementation and execution approach in line with the GEF Minimum Fiduciary Standards: Separation of Implementation and Execution Functions in GEF Partner Agencies (GEF/C.41/06/Rev.01) and the relevant UNIDO regulations (DGAI.20 and Procurement Manual)? Does the approach promote local ownership and capacity building? Does the approach involve significant risks? In cases where Execution was done by third parties, i.e. Executing Partners, based on a contractual arrangement with UNIDO was this done in accordance with the contractual arrangement concluded with UNIDO in an effective and efficient manner?

18. Environmental and Social Safeguards.

If a GEF-5 project, has the project incorporated relevant environmental and social risk considerations into the project design? What impact did these risks have on the achievement of project results?

19. Project coordination and management

The extent to which:

- i. The national management and overall coordination mechanisms have been efficient and effective? Did each partner have assigned roles and responsibilities from the beginning? Did each partner fulfil its role and responsibilities (e.g. providing strategic support, monitoring and reviewing performance, allocating funds, providing technical support, following up agreed/corrective actions)?
- ii. The UNIDO HQ-based management, coordination, monitoring, quality control and technical inputs have been efficient, timely and effective (e.g. problems identified timely and accurately; quality support provided timely and effectively; right staffing levels, continuity, skill mix and frequency of field visits)?

20. Assessment of gender mainstreaming

Gender mainstreaming assessment criteria are provided in the table below. Guidance on integrating gender is included in Annex 4.

The evaluation will consider, but need not be limited to, the following issues that may have affected gender mainstreaming in the project:

- a. Did the project/programme design adequately consider the gender dimensions in its interventions? If so, how (at the level of project outcome, output or activity)?
- b. Was a gender analysis included in a baseline study or needs assessment (if any)?
- c. How gender-balanced was the composition of the project management team, the Steering Committee, experts and consultants and the beneficiaries?
- d. Have women and men benefited equally from the project's interventions? Do the results affect women and men differently? If so, why and how? How are the results likely to affect gender relations (e.g., division of labour, decision-making authority)?
- e. Are women/gender-focused groups, associations or gender units in partner organizations consulted/included in the project?
- f. To what extent were socioeconomic benefits delivered by the project at the national and local levels, including consideration of gender dimensions?

VII. Deliverables and reporting

Inception report

These terms of reference (TOR) provide 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 evaluation team will prepare a short inception report that will operationalize the TOR relating to the evaluation questions and provide information on what type of and how the evidence will be collected (methodology). It will be discussed with and approved by the responsible in the UNIDO Independent Evaluation Division.

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 international evaluation

consultants; mission plan, including places to be visited, people to be interviewed and possible surveys to be conducted and a debriefing and reporting timetable²⁸.

Evaluation report format and review procedures

The draft report will be delivered to UNIDO Independent Evaluation Division (the suggested report outline is in Annex 2) and circulated to UNIDO staff, the GEF OFP, and national 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 provided by the stakeholders will be sent to UNIDO ODG/EVQ/IEV for collation and onward transmission to the project evaluation team who will be advised of any necessary revisions. On the basis of this feedback, and taking into consideration the comments received, the evaluation team will prepare the final version of the terminal evaluation report.

The evaluation team will present its preliminary findings to the national 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 after the field mission.

The terminal evaluation report should be brief, to the point and easy to understand. It must explain the purpose of the evaluation, exactly 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 in Annex 2.

Evaluation work plan and deliverables

The “Evaluation Work Plan” includes the following main products/deliverables:

INCEPTION PHASE:

- I. Desk review, briefing by project manager and development of methodology: Following the receipt of all relevant documents, and consultation with the Project Manager about the

²⁸ The evaluator will be provided with a Guide on how to prepare an evaluation inception report prepared by the UNIDO Independent Evaluation Division.

documentation, including reaching an agreement on the methodology, the desk review could be completed.

- II. Inception report: At the time of departure to the field mission, all the received material has been reviewed and consolidated into the Inception report.

FIELD MISSION:

- III. Field mission: The principal responsibility for managing this evaluation lies with UNIDO. It will be responsible for liaising with the project team to set up the stakeholder interviews, arrange the field missions, coordinate with the Government. At the end of the field mission, there will be a presentation of preliminary findings to the key stakeholders in the country where the project was implemented.
- IV. Preliminary findings from the field mission: Following the field mission, the main findings, conclusions and recommendations would be prepared and presented in the field and at UNIDO Headquarters.

REPORTING:

- V. Data analysis/collation of the data/information collected
- VI. A draft terminal evaluation report will be forwarded electronically to the UNIDO Independent Evaluation Division and circulated to main stakeholders.
- VII. Final terminal evaluation report will incorporate comments received.

VIII. Quality assurance

All UNIDO terminal evaluations are subject to quality assessments by the UNIDO Independent Evaluation Division. Quality assurance and control is exercised in different ways throughout the evaluation process (briefing of consultants on methodology and process by the UNIDO, ODG/EVQ/IEV, providing inputs regarding findings, lessons learned and recommendations from other UNIDO evaluations, review of inception report and evaluation report by UNIDO, ODG/EVQ/IEV). The quality of the evaluation report will be assessed and rated against the criteria set forth in the Checklist on evaluation report quality, attached as Annex 5. The applied evaluation quality assessment criteria are used as a tool to provide structured feedback. UNIDO, ODG/EVQ/IEV 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 terminal evaluation report are reviewed by the 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 1 - Outline of an in-depth project evaluation report

Executive summary

- Must provide a synopsis of the storyline which includes the main evaluation findings and recommendations
- Must present strengths and weaknesses of the project
- Must be self-explanatory and should be maximum 3-4 pages in length

A. Evaluation objectives, methodology and process

- Information on the evaluation: why, when, by whom, etc.
- Scope and objectives of the evaluation, main questions to be addressed
- Information sources and availability of information
- Methodological remarks, limitations encountered and validity of the findings

B. Country and project background

- Brief country context: an overview of the economy, the environment, institutional development, demographic and other data of relevance to the project
- Sector-specific issues of concern to the project²⁹ and important developments during the project implementation period
- Project summary:
 - Fact sheet of the project: including project objectives and structure, donors and counterparts, project timing and duration, project costs and co-financing
 - Brief description including history and previous cooperation
 - Project implementation arrangements and implementation modalities, institutions involved, major changes to project implementation
 - Positioning of the UNIDO project (other initiatives of Government, other donors, private sector, etc.)
 - Counterpart organization(s)

C. Project assessment

This is the key chapter of the report and should address all evaluation criteria and questions outlined in the TOR (see section VI - Project evaluation parameters). Assessment must be based on factual evidence collected and analyzed from different sources. The evaluators' assessment can be broken into the following sections:

- Project identification and formulation
- Project design
- Implementation performance
 - Relevance and ownership (report on the relevance of project towards countries and beneficiaries, country ownership, stakeholder involvement)
 - Effectiveness (the extent to which the development intervention's objectives and deliverables were achieved, or are expected to be achieved, taking into account their relative importance)
 - Efficiency (report on the overall cost-benefit of the project and partner countries' contribution to the achievement of project objectives)

²⁹ Explicit and implicit assumptions in the logical framework of the project can provide insights into key-issues of concern (e.g., relevant legislation, enforcement capacities, government initiatives)

- Likelihood of sustainability of project outcomes (report on the risks and vulnerability of the project, considering the likely effects of socio-political and institutional changes in partner countries, and its impact on continuation of benefits after the GEF project ends, specifically the financial, socio-political, institutional framework and governance, and environmental risks)
 - Project coordination and management (Report on the project management conditions and achievements, and partner countries' commitment)
 - Assessment of monitoring and evaluation systems (report on M&E design, M&E plan implementation, and budgeting and funding for M&E activities)
 - Monitoring of long-term changes
 - Assessment of processes affecting achievement of project results (report on preparation and readiness / quality at entry, country ownership, stakeholder involvement, financial planning, UNIDO support, co-financing and project outcomes and sustainability, delays of project outcomes and sustainability, and implementation approach)
 - Gender mainstreaming
- At the end of this chapter, an overall project achievement rating should be developed as required in Annex 2. The overall rating table required by the GEF should be presented here.

D. Conclusions, recommendations and lessons learned

This chapter can be divided into three sections:

A. Conclusions

This section should include a storyline of the main evaluation conclusions related to the project's achievements and shortfalls. It is important to avoid providing a summary based on each and every evaluation criterion. The main conclusions should be cross-referenced to relevant sections of the evaluation report.

B. Recommendations

This section should be succinct and contain few key recommendations. They should be:

- Based on evaluation findings
- Realistic and feasible within a project context
- Indicating institution(s) responsible for implementation (addressed to a specific officer, group or entity who can act on it) and have a proposed timeline for implementation if possible
- Commensurate with the available capacities of project team and partners
- Taking resource requirements into account.

Recommendations should be structured by addressees:

- UNIDO
- Government and/or counterpart organizations
- Donor

C. Lessons learned

- Lessons learned must be of wider applicability beyond the evaluated project but must be based on findings and conclusions of the evaluation
- For each lesson, the context from which they are derived should be briefly stated

Annexes should include the evaluation TOR, list of interviewees, documents reviewed, a summary of project identification and financial data, including an updated table of expenditures to date, and other detailed quantitative information. Dissident views or management responses to the evaluation findings may later be appended in an Annex.

Annex 2: Rating tables

Table 1. Rating criteria for Quality of project identification and formulation process (LFA Process)

Evaluation issue	Evaluator's comments	Ratings
1. Extent to which the situation, problem, need / gap is clearly identified, analyzed and documented (evidence, references).		
2. Adequacy and clarity of the stakeholder analysis (clear identification of end-users, beneficiaries, sponsors, partners, and clearly defined roles and responsibilities in the project(s)).		
3. Adequacy of project monitoring and evaluation (M&E) design.		
4. Overall LFA design process.		

Table 2. Quality of project design (LFM)

Evaluation issue	Evaluator's comments	Rating
1. Clarity and adequacy of outcome (clear, realistic, relevant, addressing the problem identified). Does it provide a clear description of the benefit or improvement that will be achieved after project completion?		
2. Clarity and adequacy of outputs (realistic, measurable, adequate for leading to the achievement of the outcome).		
3. Clarity, consistency and logic of the objective tree, and its reflection in the LFM results hierarchy from activities to outputs, to outcome and to overall objective.		
4. Indicators are SMART for Outcome and Output levels.		
5. Adequacy of Means of Verification and Assumptions (including important external factors and risks).		
6. Overall LFM design quality.		

Table 3. Quality of project implementation performance

Evaluation criteria	Rating	
• Ownership and relevance		
• Effectiveness		
• Efficiency		
• Impact		
• Likelihood of/ risks to sustainability		
• Project management		
• M&E		

Criterion	Evaluator's summary comments	Evaluator's rating
Attainment of project objectives and results (overall rating), sub criteria (below)		
Project implementation		
Effectiveness		
Relevance		
Efficiency		
Sustainability of project outcomes (overall rating), sub criteria (below)		
Financial risks		
Socio-political risks		
Institutional framework and governance risks		
Environmental risks		
Monitoring and evaluation (overall rating), sub criteria (below)		
M&E Design		
M&E Plan implementation (use for adaptive management)		
Budgeting and Funding for M&E activities		
Project management - UNIDO specific ratings		
Quality at entry / Preparation and readiness		
Implementation approach		
UNIDO Supervision and backstopping		
Gender Mainstreaming		
Overall rating		

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.

Please note: Relevance and effectiveness are considered as critical criteria. The overall rating of the project for achievement of objectives and results **may not be higher** than the lowest rating on either of these two criteria. Thus, to have an overall satisfactory rating for outcomes a project must have at least satisfactory ratings on both relevance and effectiveness.

RATINGS ON SUSTAINABILITY

Sustainability will be understood as the probability of continued long-term outcomes and impacts after the GEF project funding ends. The evaluation will identify and assess the key conditions or factors that are likely to contribute or undermine the persistence of benefits beyond project completion. Some of these factors might be outcomes of the project, i.e. stronger institutional capacities, legal frameworks, socio-economic incentives /or public awareness. Other factors will include contextual circumstances or developments that are not outcomes of the project but that are relevant to the sustainability of outcomes.

Rating system for sustainability sub-criteria

On each of the dimensions of sustainability of the project outcomes will be rated as follows.

- 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.

All the risk dimensions of sustainability are critical. Therefore, overall rating for sustainability will not be higher than the rating of the dimension with lowest ratings. For example, if a project has an Unlikely rating in either of the dimensions then its overall rating cannot be higher than Unlikely, regardless of whether higher ratings in other dimensions of sustainability produce a higher average.

RATINGS OF PROJECT M&E

Monitoring is a continuing function that uses systematic collection of data on specified indicators to provide management and the main stakeholders of an ongoing project with indications of the extent of progress and achievement of objectives and progress in the use of allocated funds. Evaluation is the systematic and objective assessment of an on-going or completed project, its design, implementation and results. Project evaluation may involve the definition of appropriate standards, the examination of performance against those standards, and an assessment of actual and expected results.

The Project M&E system will be rated on M&E design, M&E plan implementation and budgeting and funding for M&E activities as follows:

- Highly satisfactory (HS): There were no shortcomings in the project M&E system.
- Satisfactory(S): There were minor shortcomings in the project M&E system.
- Moderately satisfactory (MS): There were moderate shortcomings in the project M&E system.
- Moderately unsatisfactory (MU): There were significant shortcomings in the project M&E system.
- Unsatisfactory (U): There were major shortcomings in the project M&E system.
- Highly unsatisfactory (HU): The Project had no M&E system.

M&E plan implementation will be considered a critical parameter for the overall assessment of the M&E system. The overall rating for the M&E systems will not be higher than the rating on M&E plan implementation.

All other ratings will be on the GEF six-point scale:

HS	= Highly satisfactory	Excellent
S	= Satisfactory	Well above average
MS	= Moderately satisfactory	Average
MU	= Moderately unsatisfactory	Below average
U	= Unsatisfactory	Poor
HU	= Highly unsatisfactory	Very poor (appalling)

Annex 3 - GEF Minimum requirements for M&E³⁰

Minimum requirement 1: Project design of M&E

All projects will include a concrete and fully budgeted M&E plan by the time of work program entry for full-sized projects (FSP) and CEO approval for medium-sized projects (MSP). This M&E plan will contain as a minimum:

1. SMART indicators for project implementation, or, if no indicators are identified, an alternative plan for monitoring that will deliver reliable and valid information to management;
2. SMART indicators for results (outcomes and, if applicable, impacts), and, where appropriate, indicators identified at the corporate level;
3. Baseline for the project, with a description of the problem to be addressed, with indicator data, or, if major baseline indicators are not identified, an alternative plan for addressing this within one year of implementation;
4. Identification of reviews and evaluations that will be undertaken, such as mid-term reviews or evaluations of activities; and
5. Organizational set-up and budgets for monitoring and evaluation.

Minimum requirement 2: Application of project M&E

Project monitoring and supervision will include implementation of the M&E plan, comprising:

- SMART indicators for implementation are actively used, or if not, a reasonable explanation is provided;
- SMART indicators for results are actively used, or if not, a reasonable explanation is provided;
- The baseline for the project is fully established and data compiled to review progress reviews, and evaluations are undertaken as planned; and
- The organizational set-up for M&E is operational and budgets are spent as planned.

Annex 4 - Guidance on integrating gender in evaluations of UNIDO projects and programmes

Introduction

Gender equality is internationally recognized as a goal of development and is fundamental to sustainable growth and poverty reduction. The UNIDO Policy on gender equality and the empowerment of women and its addendum, issued respectively in April 2009 and May 2010 (UNIDO/DGB(M).110 and UNIDO/DGB(M).110/Add.1), provides the overall guidelines for establishing a gender mainstreaming strategy

³⁰ http://www.thegef.org/gef/sites/thegef.org/files/documents/ME_Policy_2010.pdf

and action plans to guide the process of addressing gender issues in the Organization's industrial development interventions.

According to the UNIDO Policy on gender equality and the empowerment of women:

Gender equality refers to the equal rights, responsibilities and opportunities of women and men and girls and boys. Equality does not suggest that women and men become 'the same' but that women's and men's rights, responsibilities and opportunities do not depend on whether they are born male or female. Gender equality implies that the interests, needs and priorities of both women and men are taken into consideration, recognizing the diversity of different groups of women and men. It is therefore not a 'women's issues'. On the contrary, it concerns and should fully engage both men and women and is a precondition for, and an indicator of sustainable people-centred development.

Empowerment of women signifies women gaining power and control over their own lives. It involves awareness-raising, building of self-confidence, expansion of choices, increased access to and control over resources and actions to transform the structures and institutions which reinforce and perpetuate gender discriminations and inequality.

Gender parity signifies equal numbers of men and women at all levels of an institution or organization, particularly at senior and decision-making levels.

The UNIDO projects/programmes can be divided into two categories: 1) those where promotion of gender equality is one of the key aspects of the project/programme; and 2) those

where there is limited or no attempted integration of gender. Evaluation managers/evaluators should select relevant questions depending on the type of interventions.

Gender responsive evaluation questions

The questions below will help evaluation managers/evaluators to mainstream gender issues in their evaluations.

B.1 Design

- Is the project/programme in line with the UNIDO and national policies on gender equality and the empowerment of women?
- Were gender issues identified at the design stage?
- Did the project/programme design adequately consider the gender dimensions in its interventions? If so, how?
- Were adequate resources (e.g., funds, staff time, methodology, experts) allocated to address gender concerns?
- To what extent were the needs and priorities of women, girls, boys and men reflected in the design?
- Was a gender analysis included in a baseline study or needs assessment (if any)?
- If the project/programme is people-centred, were target beneficiaries clearly identified and disaggregated by sex, age, race, ethnicity and socio-economic group?
- If the project/programme promotes gender equality and/or women's empowerment, was gender equality reflected in its objective/s? To what extent are output/outcome indicators gender disaggregated?

B.2 Implementation management

- Did project monitoring and self-evaluation collect and analyze gender disaggregated data?

- Were decisions and recommendations based on the analyses? If so, how?
- Were gender concerns reflected in the criteria to select beneficiaries? If so, how?
- How gender-balanced was the composition of the project management team, the Steering Committee, experts and consultants and the beneficiaries?
- If the project/programme promotes gender equality and/or women's empowerment, did the project/programme monitor, assess and report on its gender related objective/s?

B.3 Results

- a) Have women and men benefited equally from the project's interventions? Do the results affect women and men differently? If so, why and how? How are the results likely to affect gender relations (e.g., division of labour, decision making authority)?
- b) In the case of a project/programme with gender related objective/s, to what extent has the project/programme achieved the objective/s? To what extent has the project/programme reduced gender disparities and enhanced women's empowerment?

Annex 5. Checklist on terminal evaluation report quality

Independent terminal evaluation of UNIDO-GEF project:

Project Title:

UNIDO Project NO:

UNIDO SAP ID:

GEF ID:

Evaluation team leader:

Quality review done by:

Date:

Checklist on evaluation report quality

Report quality criteria	UNIDO ODG/EVQ/IEV assessment notes	Rating
○ Was the report well-structured and properly written? (Clear language, correct grammar, clear and logical structure)		
○ Was the evaluation objective clearly stated and the methodology appropriately defined?		
○ Did the report present an assessment of relevant outcomes and achievement of project objectives?		
○ Was the report consistent with the ToR and was the evidence complete and convincing?		

Report quality criteria	UNIDO ODG/EVQ/IEV assessment notes	Rating
<ul style="list-style-type: none"> ○ Did the report present a sound assessment of sustainability of outcomes or did it explain why this is not (yet) possible? (Including assessment of assumptions, risks and impact drivers) 		
<ul style="list-style-type: none"> ○ Did the evidence presented support the lessons and recommendations? Are these directly based on findings? 		
<ul style="list-style-type: none"> ○ Did the report include the actual project costs (total, per activity, per source)? 		
<ul style="list-style-type: none"> ○ Did the report include an assessment of the quality of both the M&E plan at entry and the system used during the implementation? Was the M&E sufficiently budgeted for during preparation and properly funded during implementation? 		
<ul style="list-style-type: none"> ○ Quality of the lessons: were lessons readily applicable in other contexts? Did they suggest prescriptive action? 		
<ul style="list-style-type: none"> ○ Quality of the recommendations: did recommendations specify the actions necessary to correct existing conditions or improve operations ('who?' 'what?' 'where?' 'when?'). Can these be immediately implemented with current resources? 		
<ul style="list-style-type: none"> ○ Are the main cross-cutting issues, such as gender, human rights and environment, appropriately covered? 		
<ul style="list-style-type: none"> ○ Was the report delivered in a timely manner? (Observance of deadlines) 		

Rating system for quality of evaluation reports

A number rating 1-6 is used for each criterion: Highly satisfactory = 6, Satisfactory = 5, Moderately satisfactory = 4, Moderately unsatisfactory = 3, Unsatisfactory = 2, Highly unsatisfactory = 1, and unable to assess = 0.

Annex 6: Required project identification and financial data

I. Date

Milestone	Expected date	Actual date
Project CEO endorsement/approval date		
Project implementation start date (PAD issuance date)		
Original expected implementation end date (indicated in CEO endorsement/approval document)		
Revised expected implementation end date (if any)		
Terminal evaluation completion		
Planned tracking tool date		

II. Project framework (to be completed)

Project component	Activity type	GEF financing (in USD)		Co-financing (in USD)	
		Approved	Actual	Promised	Actual
1. Institutional capacity building, improved policy/legal framework and established environmental monitoring of PCBs	Capacity building				
2. (ESM) of PCB-containing equipment and wastes, including country-wide inventory, treatment of transformers, which are still in use and final disposal of PCB wastes	Environmentally sound management				
3. Socio-economic measures including improved public education and awareness	Socio-Economic				
4. Establish project management structure and monitoring and evaluation	Management				
Total (in USD)					

TERMS OF REFERENCE FOR PERSONNEL UNDER INDIVIDUAL SERVICE AGREEMENT (ISA)

Title:	International evaluation consultant, team leader
Main Duty Station and Location:	Home-based
Missions:	Missions to Vienna, Austria and Peru
Start of Contract (EOD):	January 15, 2017
End of Contract (COB):	March 15, 2017
Number of Working Days:	25/30 working days spread over 2 months

1. ORGANIZATIONAL CONTEXT

The UNIDO Independent Evaluation Division (ODG/EVQ/IEV) is responsible for the operationalization of the independent evaluation function of UNIDO. It supports learning, continuous improvement and accountability, and provides factual information about result and practices that feed into the programmatic and strategic decision-making processes. Evaluation is an assessment, as systematic and impartial as possible, of a programme, a project or a theme. Independent evaluations provide evidence-based information that is credible, reliable and useful, enabling the timely incorporation of findings, recommendations and lessons learned into the decision-making processes at organization-wide, programme and project level. ODG/EVQ/IEV is guided by the UNIDO Evaluation Policy, which is aligned to the norms and standards for evaluation in the UN system.

2. PROJECT CONTEXT

Polychlorinated Biphenyls (PCBs) were never produced in Peru. PCB-containing equipment and oil were mainly imported from the USA and Europe. In Peru, PCBs were/are used in open, close, and semi-open environments. Closed applications include the use of PCBs as dielectric fluids for transformers, electrical cables, switches and capacitors, whereas in semi-open systems PCBs were used in hydraulic systems. In open environments PCBs were associated with heat transfer fluids, cutting oil and paintings. Peru accessed the Stockholm Convention on Persistent Organic Pollutants in 2001 and ratified it in 2005. It was obliged to submit its National Implementation Plan (NIP) latest in December 2007, which it did. The NIP identified the elimination of the PCBs as one of the key priorities to implement the country’s obligations under the Stockholm Convention. The lack of specific standards and regulations for the management, handling, treatment and disposal of PCB-containing equipment and materials was also identified during the preparation of the NIP. Additionally, it was also evidenced that workers and the public in general are not sufficiently conscious about the risks to their health and the environment associated with the PCBs. The project aims to assist the Government of Peru to implement actions needed to properly handle and eliminate PCBs and comply with its obligations under the Stockholm Convention.

The overall objective of the project is to establish environmentally sound management (ESM) practices for PCBs and to increase the phase-out and disposal of PCB-containing equipment and wastes, particularly focusing in the electrical utilities and main users of electricity in Peru.

Detailed background information of the project can be found the Terms of Reference (TORs) for the terminal evaluation.

3. DUTIES AND RESPONSIBILITIES

MAIN DUTIES	Concrete/ Measurable Outputs to be achieved	Working Days	Location
<p>1. Review project documentation and relevant country background information (national policies and strategies, UN strategies and general economic data); determine key data to collect in the field and adjust the key data collection instrument of 3A accordingly (if needed);</p> <p>Assess the adequacy of legislative and regulatory framework relevant to the project's activities and analyze other background info.</p>	<ul style="list-style-type: none"> • Adjust table of evaluation questions, depending on country specific context; • Draft list of stakeholders to interview during the field missions; • Brief assessment of the adequacy of the country's legislative and regulatory framework. 	6 days	Home-based
<p>2. Briefing with the UNIDO Independent Evaluation Division, project managers and other key stakeholders at UNIDO HQ.</p> <p>Preparation of the Inception Report</p>	<ul style="list-style-type: none"> • Detailed evaluation schedule with tentative mission agenda (incl. list of stakeholders to interview and site visits); mission planning; • Division of evaluation tasks with the National Consultant. • Inception Report 	2 days	Vienna, Austria
<p>3. Conduct field mission to Peru in February 2017³¹.</p>	<ul style="list-style-type: none"> • Conduct meetings with relevant project stakeholders, beneficiaries, the GEF Operational Focal Point (OFF), etc. for the collection of data and clarifications; • Agreement with the National Consultant on the structure and content of the evaluation report and the distribution of writing tasks; • Evaluation presentation of the evaluation's initial findings prepared, draft conclusions and recommendations to stakeholders in the country, 	6-10 days	Peru

³¹ The exact mission dates will be decided in agreement with the Consultant, UNIDO HQ, and the country counterparts.

MAIN DUTIES	Concrete/ Measurable Outputs to be achieved	Working Days	Location
	including the GEF OFP, at the end of the mission.		
4. Present overall findings and recommendations to the stakeholders at UNIDO HQ	<ul style="list-style-type: none"> After field mission(s): Presentation slides, feedback from stakeholders obtained and discussed 	2 days	Vienna, Austria
5. Prepare the evaluation report, with inputs from the National Consultant, according to the TOR; Coordinate the inputs from the National Consultant and combine with her/his own inputs into the draft evaluation report. Share the evaluation report with UNIDO HQ and national stakeholders for feedback and comments.	<ul style="list-style-type: none"> Draft evaluation report. 	6 days	Home-based
6. Revise the draft project evaluation report based on comments from UNIDO Independent Evaluation Division and stakeholders and edit the language and form of the final version according to UNIDO standards.	<ul style="list-style-type: none"> Final evaluation report. 	3 days	Home-based
	TOTAL	25-30 days	

MINIMUM ORGANIZATIONAL REQUIREMENTS

Education:

Advanced degree in environment, energy, engineering, development studies or related areas

Technical and functional experience:

- Minimum of 10 years' experience in environmental/energy project management and/or evaluation (of development projects)
- Strong experience on environmental/energy and knowledge about GEF operational programs and strategies and about relevant GEF policies such as those on project life cycle, M&E, incremental costs, and fiduciary standards
- Experience in the evaluation of GEF projects and knowledge of UNIDO activities an asset
- Knowledge about multilateral technical cooperation and the UN, international development priorities and frameworks
- Working experience in developing countries

Languages:

Fluency in written and spoken English and Spanish is required.

Reporting and deliverables

- 1) At the beginning of the assignment the Consultant will submit a concise Inception Report that will outline the general methodology and presents a concept Table of Contents;
- 2) The country assignment will have the following deliverables:
 - Presentation of initial findings of the mission to key national stakeholders;
 - Draft report;
 - Final report, comprising of executive summary, findings regarding design, implementation and results, conclusions and recommendations.
- 3) Debriefing at UNIDO HQ:
 - Presentation and discussion of findings;
 - Concise summary and comparative analysis of the main results of the evaluation report.

All reports and related documents must be in English and presented in electronic format.

Absence of conflict of interest:

According to UNIDO rules, the consultant must not have been involved in the design and/or implementation, supervision and coordination of and/or have benefited from the programme/project (or theme) under evaluation. The consultant will be requested to sign a declaration that none of the above situations exists and that the consultants will not seek assignments with the manager/s in charge of the project before the completion of her/his contract for this Evaluation.

TERMS OF REFERENCE FOR PERSONNEL UNDER INDIVIDUAL SERVICE AGREEMENT (ISA)

Title:	National evaluation consultant
Main Duty Station and Location:	Home-based
Mission/s to:	Travel to potential sites within Peru
Start of Contract:	January 15, 2017
End of Contract:	March 15, 2017
Number of Working Days:	25 days spread over 2 months

ORGANIZATIONAL CONTEXT

The UNIDO Independent Evaluation Division is responsible for operationalization of the independent evaluation function of UNIDO. It supports learning, continuous improvement and accountability, and provides factual information about result and practices that feed into the programmatic and strategic decision-making processes. Evaluation is an assessment, as systematic and impartial as possible, of a programme, a project or a theme. Independent evaluations provide evidence-based information that is credible, reliable and useful, enabling the timely incorporation of findings, recommendations and lessons learned into the decision-making processes at organization-wide, programme and project level. The UNIDO Independent Evaluation Division is guided by the UNIDO Evaluation Policy, which is aligned to the norms and standards for evaluation in the UN system.

PROJECT CONTEXT

The national evaluation consultant will evaluate the projects according to the terms of reference (TOR) under the leadership of the team leader (international evaluation consultant). S/he will perform the following tasks:

MAIN DUTIES	Concrete/measurable outputs to be achieved	Expected duration	Location
<p>Review and analyze project documentation and relevant country background information (national policies and strategies, UN strategies and general economic data); in cooperation with the Team Leader: determine key data to collect in the field and prepare key instruments in both English and local language (questionnaires, logic models) to collect these data through interviews and/or surveys during and prior to the field missions;</p> <p>Coordinate and lead interviews/ surveys in local language and assist the team leader with translation where necessary;</p> <p>Analyze and assess the adequacy of legislative and regulatory framework, specifically in the context of the project's objectives and targets; provide analysis and advice to the team leader on existing and appropriate policies for input to the team leader.</p>	<ul style="list-style-type: none"> • List of detailed evaluation questions to be clarified; questionnaires/interview guide; logic models; list of key data to collect, draft list of stakeholders to interview during the field missions • Drafting and presentation of brief assessment of the adequacy of the country's legislative and regulatory framework in the context of the project. 	5 days	Home-based
<p>Review all project outputs/ publications/feedback;</p>	<ul style="list-style-type: none"> • Interview notes, detailed evaluation schedule and 	4 days	Home-based

MAIN DUTIES	Concrete/measurable outputs to be achieved	Expected duration	Location
<p>Briefing with the evaluation team leader, UNIDO project managers and other key stakeholders.</p> <p>Coordinate the evaluation mission agenda, ensuring and setting up the required meetings with project partners and government counterparts, and organize and lead site visits, in close cooperation with the Project Management Unit.</p> <p>Assist and provide detailed analysis and inputs to the team leader in the preparation of the inception report.</p>	<p>list of stakeholders to interview during the field missions.</p> <ul style="list-style-type: none"> • Division of evaluation tasks with the Team Leader. • Inception Report. 		(telephone interviews)
<p>Coordinate and conduct the field mission with the team leader in cooperation with the Project Management Unit, where required;</p> <p>Consult with the team leader on the structure and content of the evaluation report and the distribution of writing tasks.</p>	<ul style="list-style-type: none"> • Presentations of the evaluation's initial findings, draft conclusions and recommendations to stakeholders in the country at the end of the mission. • Agreement with the Team Leader on the structure and content of the evaluation report and the distribution of writing tasks. 	6-10 days (including travel days)	Peru
<p>Prepare inputs and analysis to the evaluation report according to TOR and as agreed with the Team Leader.</p>	<p>Draft evaluation report prepared.</p>	4 days	Home-based
<p>Revise the draft project evaluation report based on comments from UNIDO Independent Evaluation Division and stakeholders and edit the language and form of the final version according to UNIDO standards.</p>	<p>Final evaluation report prepared.</p>	2 days	Home-based
TOTAL		25 days	

REQUIRED COMPETENCIES

Core values:

1. Integrity
2. Professionalism
3. Respect for diversity

Core competencies:

1. Results orientation and accountability
2. Planning and organizing
3. Communication and trust
4. Team orientation
5. Client orientation
6. Organizational development and innovation

Managerial competencies (as applicable):

1. Strategy and direction
2. Managing people and performance
3. Judgement and decision making
4. Conflict resolution

MINIMUM ORGANIZATIONAL REQUIREMENTS

Education:

Advanced university degree in environmental science, engineering or other relevant discipline like developmental studies with a specialization in industrial energy efficiency and/or climate change.

Technical and functional experience:

- Exposure to the needs, conditions and problems in developing countries.
- Familiarity with the institutional context of the project is desirable.
- Experience in the field of environment and energy, including evaluation of development cooperation in developing countries is an asset

Languages: Fluency in written and spoken English and Spanish is required.

Absence of conflict of interest:

According to UNIDO rules, the consultant must not have been involved in the design and/or implementation, supervision and coordination of and/or have benefited from the programme/project (or theme) under evaluation. The consultant will be requested to sign a declaration that none of the above situations exists and that the consultants will not seek assignments with the manager/s in charge of the project before the completion of her/his contract with the UNIDO Independent Evaluation Division