Terminal Evaluation (TE) Report of the project

"*Design and Execution of a Comprehensive PCB Management Plan for Kazakhstan*"

GEF Project ID: 2816

UNDP PIMS Number: 3477

GEF Operation Programme: Persistent Organic Pollutants (POPs)

Prepared by:

Ms. Hilda van der Veen (vanderveen.hilda@gmail.com)
Ms. Olga Klimanova
(olgaklimanova01@gmail.com)

September, 2015

This report includes the findings of the Terminal Evaluation (TE) of the Global Environment Facility (GEF) funded project "*Design and Execution of a Comprehensive PCB Management Plan for Kazakhstan" (GEF project ID: 2816; UNDP PIMS Number: 3477)* which started implementation in the Republic of Kazakhstan ("Kazakhstan") in February 2010. The project is being implemented by the United Nations Development Programme (UNDP). The project's Executing Agency/Implementing Partner role was initially assumed by the Ministry of Environmental Protection (MEP), which later became the Ministry of Environment and Water Recourses (MEWR) and towards the end of the project became the Ministry of Energy (August 2014).

The TE report has been prepared by two independent consultants, Ms. Hilda van der Veen (Team Leader) and Ms. Olga Klimanova (National Consultant). The Terminal Evaluation was carried out during the period 5 December 2014 – 31 March 2015. A TE mission was undertaken from 12 – 22 December during which meetings were held with project partners as well as beneficiaries and field visits were made to different project sites (see Annex II).

The evaluation mission team consisted of Ms. Hilda van der Veen (TE Team Leader) and Ms. Olga Klimanova (TE National Consultant), who were accompanied to meetings and field visits by the *Project Manager* (Ms. Amina Beibitova), the project's *Transportation and Logistics Expert* (Mr. Almat Abenov) or the project's *Capacity Development Specialist* (Ms. Gaukhar Maikenova).

ACKNOWLEDGEMENTS

The evaluators wish to extend special thanks to all entities and individuals in the various cities and Oblasts of the Republic of Kazakhstan who made themselves available for discussions and interviews during the course of the Terminal Evaluation mission from 12 – 22 December 2014, and value their continuous cooperation and assistance during subsequent contacts for clarifications and/or additional information.

The evaluators also like to extend special appreciation to the Project's Management Office for their cooperation in preparing a well organized itinerary for the evaluation mission, arranging for discussions and interviews with a large number of project partners and field visits to project sites representative of

the phase in which the project currently finds itself. All of these efforts facilitated an efficient and thorough evaluation mission.

TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS VII

EXECUTIVE SUMMARY VIII

1. INTRODUCTION 1

SCOPE & METHODOLOGY 1
CONSTRAINTS AND LIMITATIONS OF THE EVALUATION 4

2. PROJECT DESCRIPTION AND DEVELOPMENT CONTEXT 5

2.1 PROJECT START AND DURATION 5
2.2 PROBLEMS THAT THE PROJECT SOUGHT TO ADDRESS 5
2.3 IMMEDIATE AND DEVELOPMENT OBJECTIVES OF THE PROJECT 6
2.4 BASELINE INDICATORS 6
2.5 MAIN STAKEHOLDERS 7
2.6 EXPECTED RESULTS 7

3. FINDINGS 8

3.1 PROJECT DESIGN / FORMULATION 8
3.1.1 ANALYSIS OF PROJECT LOGICAL FRAMEWORK (PLF) 8
3.1.2 ASSUMPTIONS AND RISKS 8
3.1.3 LESSONS FROM OTHER RELEVANT PROJECTS INCORPORATED INTO PROJECT DESIGN 9
3.1.4 PLANNED STAKEHOLDER PARTICIPATION 9
3.1.5 REPLICATION APPROACH 9
3.1.6 UNDP COMPARATIVE ADVANTAGE 10
3.1.7 LINKAGES BETWEEN THE PROJECT AND OTHER INTERVENTIONS WITHIN THE SECTOR 11
3.1.8 MANAGEMENT ARRANGEMENTS 11

3.2 PROJECT IMPLEMENTATION 13
3.2.1 ADAPTIVE MANAGEMENT (CHANGES TO THE PROJECT DESIGN AND PROJECT OUTPUTS DURING IMPLEMENTATION) 13
3.2.2 PARTNERSHIP ARRANGEMENTS (WITH RELEVANT STAKEHOLDERS INVOLVED IN THE COUNTRY/REGION) 14
3.2.3 FEEDBACK FROM M&E ACTIVITIES USED FOR ADAPTIVE MANAGEMENT 15
3.2.4 PROJECT FINANCE 18
3.2.5 MONITORING AND EVALUATION: DESIGN AT ENTRY AND IMPLEMENTATION **(S)** 20
3.2.6 UNDP AND IMPLEMENTING PARTNER IMPLEMENTATION / EXECUTION, COORDINATION, AND OPERATIONAL ISSUES **(S)** 21

3.3 PROJECT RESULTS 23
3.3.1 OVERALL RESULTS (ATTAINMENT OF OBJECTIVES) **(S)** 40
3.3.2 RELEVANCE **(S)** 41
3.3.3 EFFECTIVENESS **(S)** 42
3.3.4 EFFICIENCY **(MS)** 44
3.3.5 COUNTRY OWNERSHIP **(S)** 44
3.3.6 MAINSTREAMING **(HS)** 45
3.3.7 SUSTAINABILITY **(S)** 47
3.3.8 IMPACT **(S)** 50

4. CONCLUSIONS, RECOMMENDATIONS & LESSONS 51

4.1 RATINGS 51
4.2 MAIN PROJECT RESULTS 52
4.3 CONCLUSIONS 54

4.4 RECOMMENDATIONS FOR THIS PROJECT 57
4.5 LESSONS-LEARNED 58

ANNEX I: TERMINAL EVALUATION TERMS OF REFERENCE 61

ANNEX II: ITINERARY & LIST OF ORGANIZATIONS, ENTITIES AND INDIVIDUALS INTERVIEWED 77

ANNEX III: LIST OF DOCUMENTS REVIEWED 79

ANNEX IV: EVALUATION MATRIX & QUESTIONS 80

ANNEX V: INTERVIEW GUIDE 85

ANNEX VI: RATING SCALES 88

ANNEX VII: EVALUATION CONSULTANT CODE OF CONDUCT AGREEMENT FORM – MRS. HILDA VAN DER VEEN 74

ANNEX VIII: EVALUATION CONSULTANT CODE OF CONDUCT AGREEMENT FORM-MS. OLGA KLIMANOVA 75

ANNEX IX: NATIONAL AND INTERNATIONAL EXPERTS ENGAGED BY THE PROJECT 74

ANNEX X: LIST OF PROJECT PARTNERS 74

ANNEX XI: TRAINING DETAILS 78

ANNEX XII: SUMMARY OF FIELD VISITS & FIELD VISIT PHOTOS 74

ANNEX XIII: MANAGEMENT RESPONSES 77

ANNEX XIV: REPORT CLEARANCE FORM 78

Table 1: Project Summary Table viii
Table 2: Evaluation Rating ix
Table 3: Project Rating ix
Table 4: Selected GEF tracking Tool indicators – *Part I* xi
Table 5: Selected GEF tracking Tool indicators – *Part II* xi
Table 6: Steps in the Terminal Evaluation 2
Table 7: Project Baseline Indicators and Project Expected Targets 6
Table 8: Changes made to the project design and outputs during implementation 13
Table 9: MTE Recommendations and Project Response 15
Table 10: Planned / Actual Co-financing raised over the duration of the project 18
Table 11: Project Expenditures for the period 2010 – 2014 (up to 31 December 2014) 19
Table 12: Project Monitoring and Evaluation Tools 20
Table 13: Project Achievements by project outcome 23
Table 14: Project Workshops and Gender Distribution 30
Table 15: Additional PCB equipment identified as a result of the project 32
Table 16: List of PCB transformers drained and PCB waste weight [tonnes] 34
Table 17: PCB export routes attempted by project 34
Table 18: Costs incurred for the packaging, transportation and disposal of 80.4 tonnes of PCB transformer waste 36
Table 19: List of PCB capacitors collected and to be disposed of 38
Table 20: Costs incurred for the packaging, transportation and disposal of 150 tonnes of PCB Capacitors 39
Table 21: Project Objectives and Proof of their Attainment 40
Table 22: PCB activities as outlined in NIP and as addressed in the proposal 41
Table 23: Extent to which the project's objective has been achieved 43
Table 24: Project Sustainability Ratings 47

Table 25: Evaluation Rating 51
Table 26: Project Rating 51
Table 27: Selected GEF tracking Tool indicators – *Part I* 53
Table 28: Selected GEF tracking Tool indicators – *Part II* 53
Table 26: Project Rating 76
Table 27: Itinerary for Final Evaluation Mission of the UNDP/GEF Project "Design and Execution of a Comprehensive PCB Management Plan for Kazakhstan" 12-21 December 2014, Astana, Kazakhstan 77
Table 28: National and International Experts recruited to provide TA 74
Table 29: List of Project Partners 74
Table 30: Training Details 78

Figure 1: Time table for PCB oil disposal 36

Box 1: SMC issues integrated into the Concept for the Transition of the Republic of Kazakhstan to a Green Economy 46

ACRONYMS AND ABBREVIATIONS

AMT	Arcelor Mittal
APR	Annual Project Report
AWP	Annual Work Plan
CO	Country Office
GEF	Global Environment Facility
IA	Implementing Agencies
IR	Inception Report
IW	Inception Workshop
LCM	Life-Cycle Management
M&E	Monitoring & Evaluation
MEP	Ministry of Environmental Protection, later became MEWR (see "*MEWR*")
MEWR	Ministry of Environment and Water Recourses
MoE	Ministry of Energy
MSP	Medium Sized Project
MT	Metric ton
MTE	Mid-Term Evaluation
NGO	Non-Governmental Organization
NIM	National Implementation Modality
NIP	National Implementation Plan
NPD	National Project Director
OP	Operational Program
OVI	Objectively Verifiable Indicators
PCB	Polychlorinated Biphenyls
PIR	Project Implementation Review
POPs	Persistent Organic Pollutants
PPE	Personal Protection Equipment
PPG	Project Preparation Phase
ProDoc	Project Document
SC	Steering Committee
TE	Terminal Evaluation
UN	United Nations
UNDP	United Nations Development Programme
UNDP-CO	United Nations Development Programme Country Office
UNDP-GEF	Global Environment Facility, United Nations Development Programme
USD	United States Dollar

EXECUTIVE SUMMARY

Table 1: Project Summary Table

Project Title	Design and Execution of a Comprehensive PCB Management Plan for Kazakhstan			
GEF Project ID:	2816		*at endorsement (US$)*	*at completion (US$)*
UNDP Project ID:	3477	**GEF financing:**	3,300,000	3,300,000
Country:	Kazakhstan	**IA/EA own:**	15,000	15,000
Region:	Europe and the CIS	**Government:**	10,901,356	10,538,436
Focal Area:	GEF 4: POPs	**Other:**	6,618,324	4,396,695
FA Objectives (OP/SP):	SO1 & SO2	**Total co-financing:**	17,519,680	14,950,131
Executing Agency:	MEP/MEWR/MoE	**Total Project Cost:**	20,819,680	18,250,131
Other Partners involved:	See full list of project partners in Annex X.	**ProDoc Signature (date project began):**		23 February 2010
		(Operational) Closing Date:	**Proposed**: 31 December 2014	**Actual**: 31 August 2015

The project "*Design and Execution of a Comprehensive PCB Management Plan for Kazakhstan"* is a joint initiative of the United Nations Development Programme (UNDP) and the Government of Kazakhstan. The Executing Agency/Implementing Partner role was initially assumed by the Ministry of Environmental Protection (MEP), which became the Ministry of Environment and Water Recourses (MEWR) and towards the project's end became the Ministry of Energy (which currently assumes the responsibilities of the former MEWR).

The project was approved with a total budget of 20,819,680 US$, of which 3,300,000 US$ was a GEF grant, 10,901,356 US$ was supported by the Government of Kazakhstan through co-financing contributions (cash/in-kind) contributions and 6,618,324 US$ was provided as co-financing contributions by the private sector.

The project was approved by the GEF Council in January 2010. The project as approved had a duration of five (5) years (January 2010 – December 2014). At the time of the TE, the project had initiated a request for project extension for 5 months, until 31 May 2015.

The aim of the project is to implement a comprehensive PCB management plan for Kazakhstan. The overall objective of the project is to ensure minimization of PCB releases and subsequent health and environmental impacts through systematic capacity development for sound PCB management in the country.

The project's logical framework included five outcomes:

- Regulatory and administrative institution strengthening.
- Capacity building for sound PCB management, identification of additional PCB sources.
- Replacement, setting-up safe dismantling of 850 tons of PCB transformers and their safe disposal.
- Regionally organized secure storages and disposal of PCB capacitors.
- Monitoring, learning, adaptive feedback, outreach and evaluation.

For more detailed information on the project's sub-components, kindly refer to the Project Logical Framework presented in Annex I/A.

MAIN EVALUATION FINDINGS

In Table 2 and Table 3 is an overview presented of the ratings, which have resulted from this project's Terminal Evaluation. Overall the project's implementation has been rated as **Satisfactory (S)**.

Table 2: Evaluation Rating

1. Monitoring and Evaluation	*Rating*[1]	2. IA& EA Execution	*Rating*
M&E design at entry	S	Quality of UNDP Implementation	S
M&E Plan Implementation	S	Quality of Execution - Executing Agency	S
Overall quality of M&E	S	Overall quality of Implementation / Execution	S
3. Assessment of Outcomes	**Rating**	**4. Sustainability**	**Rating**[2]
Relevance	R	Financial resources	MU
Effectiveness	S	Socio-political	L
Efficiency	MS	Institutional framework and governance	L
		Environmental	L
		Overall likelihood of sustainability	L
		Overall Project Outcome Rating	**S**

Table 3: Project Rating

Project Component or Objective	**Rating Scale**						**Rating**
	HU	U	MU	MS	S	HS	
Project Concept/Design, Relevance and Strategy							
Project relevance, country ownership/drivenness					X[3]		S
Stakeholder involvement					X		S
Management arrangements					X		S
Project budget and duration					X		S
Design of project M&E system					X		S
Project Implementation							
Adaptive management					X		S
Monitoring systems					X		S
Risk management				X			MS
Work planning					X		S
Financial management					X		S
Reporting					X		S
Delays					X		S
Stakeholder Participation, Partnership Strategy							
Production and dissemination of information				X			
Local resource users and NGOs participation				X			MS
Establishment of partnerships					X		S
Involvement and support of governmental institutions					X		S
Project Results					X		S
Overall Project Achievement and Impact					X		S

[1] Highly Satisfactory (HS): no shortcomings; Satisfactory (S): minor shortcomings; Moderately Satisfactory (MS); Moderately Unsatisfactory (MU): significant shortcomings; Unsatisfactory (U): major problems; Highly Unsatisfactory (HU): severe problems.

[2] Likely (L): negligible risks to sustainability; Moderately Likely (ML): moderate risks; Moderately Unlikely (MU): significant risks; Unlikely (U): severe risks.

[3] Project Relevance is rated as "Relevant".

MAIN PROJECT RESULTS

The project's main results include among else:

1. **Design, execution and demonstration of the full range of activities that make up the comprehensive life-cycle management of PCB containing wastes and equipment**, including identification, inventory, regulation, analysis, storage, handling, packaging, transportation and disposal of waste and equipment containing PCBs.
2. **Demonstrated the unfeasibility of the land/sea based trans-boundary movement of PCB wastes and equipment through neighboring countries** by attempting obtaining permission for 6 potential land and sea based transportation routes.
3. **Demonstrated the feasibility of the air lifting of PCB containing oils, soil, equipment and affiliated wastes (exportation of PCB wastes by plane)**, which is a first for a GEF funded project.
4. **Resulted in the improvement of the regulatory framework pertaining to PCB management**, through the adoption of amendments to the EcoCode, the adoption of a regulation on the management of POPs and 8 guidelines on specific aspects of PCB management.
5. **Identified an additional 571 PCB containing capacitors and an additional 48 PCB containing transformers**[4] as a result of continued inventory efforts undertaken by the project and expanding project support to an additional ~ 100 potential holders, making the total number of potential PCB holders the project reached out 360.
6. **Disposed of 80 tonnes of transformer related PCB waste at Tredi (France)**, consisting of 68 tonnes of drained oil, 7 tonnes of contaminated soil and 5 tonnes of packing materials. **Safeguarded the storage of 33 drained transformers, representing a total of 670 tonnes of contaminated equipment**. In total 20% of the transformers present in Kazakhstan were drained with project support[5].
7. **Repacked, transported and safely stored, 2,402 PCB capacitors (~ 150 tonnes)** in an interim storage facility, which are expected to be disposed of before the project comes to an end. Within the project's scope, about 6% of PCB capacitors present in Kazakhstan will have been disposed as part of the project[6].
8. **Trained 1,090 project stakeholders and beneficiaries on the sound management of PCBs** (including the safe management, storage, transportation, etc. of PCB containing equipment and waste).
9. **Capacitated 10 national laboratories in PCB analysis in various media, and developed methodologies/guidelines for PCB analysis**, which resulted in the accreditation of 5 laboratories for PCB analysis in oil, 3 in soil and 1 in food.
10. **Built the capacity of 2 national hazardous waste management companies** which have been capacitated in the safe (re)packaging, transportation and interim storage of PCB containing wastes.
11. **Created awareness of decision makers, ministries, regional environmental departments, the general public and ~ 360 electrical equipment holders on PCBs and their management.**
12. **SMC and hazardous waste issues were mainstreamed into the *Concept for the Transition of the Republic of Kazakhstan to a Green Economy*** and became part of the *Action Plan* for the Concept's implementation approved by the President.

For additional detailed information on the project's results and attainment of project objectives kindly

[4] In addition to the PCB inventory conducted as part of the preparation of the NIP.
[5] 164 transformers in total based on existing inventory data, of which 33 transformers were drained with project support
[6] 40 000 PCB capacitors in total in Kazakhstan of which ~2400 will be disposed of by the project.

refer to *Section 3.3*

In the Tables 4 and 5 below are a number of project results presented. The results which have been presented in these tables are GEF Tracking Tools indicators and are presented to the GEF upon project closure.

Table 4: Selected GEF tracking Tool indicators – *Part I*

Indicators	Implementation Status[7]	Comments
Environmentally sound management[5] (ESM) of PCBs in place.	2	The project has ensured that the country has a system in place for the sound management of PCBs, and has demonstrated the functioning of this system already once through the disposal of 80 tons of PCB oils and associated wastes. The project will demonstrate this approach a second time through the disposal of 150 tons of PCB containing capacitors.
Legislative and regulatory measures in place for environmentally sound management of POPs, and for the sound management of chemicals in general	3[8]	Legislative/regulatory measures have been implemented and are being enforced by the regional ecological departments of the 16 Oblasts. *Approved*: ▪ 11 amendments to the EcoCode were approved (2011) ▪ 3 amendments to the "*Standard List of Environmental Activities*" applicable to economic entities were approved in 2012. ▪ "*Rules for handling Persistent Organic Pollutants (POPs) and POPs containing waste*" entered into force in June 2012. *Pending approval (expected in the course of 2015)*: ▪ In 2014, 7 additional amendments to the EcoCode were proposed and submitted for approval.
Professional Training	~ 1,090 individuals trained	See Table 30 and Annex XI for an overview of the type of training provided as part of the project and the number of participants per event.

Table 5: Selected GEF tracking Tool indicators – *Part II*

Indicators	Quantity (tons)		Cost[6] (US$ / ton)	Comments
	Project target	Achieved to date		
PCB concentrated oils disposed of and average cost	N/A	80,3	7,343	**Result**: Oil from the drainage of 33 transformers.

[7] 0 = Not applicable: not an objective of the project; 1 = ESM plan has been developed; 2 = infrastructure and logistics in place to permit implementation; 3 = ESM of PCBs budgeted and implemented.

[8] 0 = Not applicable : not an objective of the project; 1 = Legislative/regulatory measures drafted or revised; 2 = Legislative/regulatory measures adopted but not enforced; 3 = Legislative/regulatory measures implemented/enforced with corresponding budget.

PCB capacitors disposed of and average cost	600	150	6,666	**Planned**: 200 tons of PCB capacitors from small holders + planned parallel efforts by the Government to dispose of 400 tons of capacitors from Darial-U (the second target was later removed from the project as cash co-financing for this activity was no longer available). **Result**: 2,402 PCB capacitors (150 tons) are expected to be disposed of by the end of the project.
PCB contaminated equipment and wastes disposed of and average cost	850	12	N/A	**Planned**: 850 tons of PCB contaminated oil with associated waste and transformer carcasses. **Result**: 68 tonnes of drained oil, 7 tons of contaminated soils and 5 tons of packing materials (drums, pallets, PPE) were disposed of as part of the first batch.
PCB oils and PCB contaminated equipment under safe storage and average cost	N/A	670	N/A	**Result**: 33 drained transformers (representing 670 tonnes of contaminated equipment) are safely stored.

RECOMMENDATIONS FOR THIS PROJECT

The Terminal Evaluation makes two types of recommendations. Firstly, recommendations, which the project could potentially still address before it comes to an end and secondly recommendations (essentially lessons-learned), which could be useful for a future PCB management project.

- **Recommendation #1: Ensure project extension**. The project should not be operationally closed before the export of the shipment of 150 tonnes of capacitors has been accomplished. Secondly, it might be preferable to await operational closure of the project until the 2014 amendments to the EcoCode have been approved – however the latter might take too long. The TE recommends to extent the project until May 2015.
- **Recommendation #2: Prepare an Exit plan the soonest**. At the time of the TE, no exit plan had been developed yet, even though the same recommendation was made by the MTE. In order for the project to hand over its responsibilities to the Ministry of Energy and/or Zhasyl Damu Agency, a process needs to be initiated with the Ministry the soonest. Its outcomes should be a action plan which indicate what future activities will be implemented, in which manner and by whom.
- **Recommendation #3: Prepare a lessons-learned report**. The Kazakhstan PCB management project has encountered and overcome many project implementation challenges which are also faced by other land-locked and Central Asian countries. Additionally, the project is the first GEF project, which has successfully exported PCB waste by air. It is therefore very important that project results, lessons-learned and recommendations would be captured in a high-quality end of project report, which could potentially be disseminated that the next Basel, Rotterdam and Stockholm COP (May 4 – 14, 2015) for use and exchange with other parties to the Stockholm Convention.
- **Recommendation #4: Prepare a project video.** The project has collected many photos and video materials through its implementation. It would embed confidence in project partners and PCB holders, to visually showcase the entire life-cycle management of PCB waste management and the achievements of the project. A project video would also allow for a good project keepsake

that could easily be used share experiences with other countries.

- **Recommendation #5: Start the development of a second phase PCB project.** Such a 2nd phase PCB project could focus on further strengthening of the legislative framework, identify and implement local solutions for the decontamination of drained equipment such as transformers, further expand the inventory (e.g. include transformers owned by the local energy distribution companies); focus on improving storage conditions at PCB holder awaiting disposal; explore various financial incentives to allow PCB holders to put up the funding to phase-out and dispose of PCB equipment. A second phase PCB project would preferably be developed in partnership with the GEF (GEF-VI) and the UNDP-Kazakhstan Government Fund for implementation of innovative ideas.
- **Recommendation #6: Ensure all project related materials are easily accessible to the public/project stakeholders.** Before the project comes to an end, the project should ensure that all eight (8) guidelines prepared by the project, as well as other materials, guidelines, tools and the like are posted on the Zhasyl Damu Agency website, or another website, to ensure that project related documentation remains easily accessible to project stakeholders, even though the project comes to an end.
- **Recommendation #7: Organize a round table to improve coordination among laboratories and SRC.** As many unclarities remain to exist among laboratories, it might be advisable to bring together all laboratories before project closure to clarify the challenges related to purchasing and registering of standards, purchasing of cartridges, pricing of PCB analysis, among other issues. Such a round table could also come up with recommendations to improve future coordination among laboratories and to allow for more frequent discussions on challenges and potential solutions. It would also be worthwhile to invite the Standard Register Company (SRC), to shed more light on how to register standards and bring up ways in which SRC could help facilitate the process for laboratories.
- **Recommendation #8**: **Ensure PCB data captured by updated NIP reflects project results**. PCB inventory data is submitted to and kept at regional ecological departments in a decentralized manner. Therefore, with the exception of updated PCB information in the NIP (currently being updated with the support of UNDP) no PCB related inventory data is kept/managed centrally. Before project closure it is therefore of the utmost importance that the updated NIP document reflects the correct amount of PCBs as identified and inventorized during the project's durations.

LESSONS-LEARNED

- **The single largest challenge of the project, has been the prohibition of the trans-boundary transportation of PCB containing wastes by land/sea.** The project explored 6 different export and transportation routes (see table 17), and ultimately decided to export PCB waste by air (a first for a GEF project). This resulted in significant delays (see Figure 1). Between the signature of the agreement between PolyEco and the project in May 2012, until the final disposal of the PCB waste at Tredi in France in June 2014, two (2) years and 2 months passed. Of that period, a little more than a year was spent on efforts to identify potential transport routes.
- **Air transportation of PCBs and costs.** Although it is extremely costly – PCBs can be exported by air if the need arises. Kazakhstan might have been the first country that has exported PCB waste by air transport as part of a GEF project. **Costs in US$ per tonnes disposed of:** For PCB pure oil 7,343 US$/tonne and for PCB containing capacitors 6,666 US$/tonne including packaging for transport, cargo air planes, permits and final disposal costs.
- **Another significant challenge to the project has been the frequent changes of Government.** Government changes resulted in changes being made to the Ministries and turnover of high-level staff involved in the project, but also resulted in changes made to national priorities and requirements for the regulatory framework following such changes. Except for going along with the changes, there is not much a project can do, except to try to continue working with technical ministry staff which is much less likely to change as a result of Government changes.

- **Implementing a number of consecutive POPs/Chemicals projects can result in a critical mass of PCB/POPs expertise and capacity in the country.** Kazakhstan implemented a NIP project, followed by a PCB management project, a SAICM mainstreaming project and a NIP update/Health care waste management project. All these projects and their activities contained POPs and chemicals components and as a result, capacity and awareness on these subjects within government entities, NGOs, experts, hazardous waste companies and waste holders, and the like can be considered considerable. A second advantage is that when an entity has insufficient expertise in a certain area, it is easily able to locate the required expertise at national level.
- **Mainstreaming of PCB and POPs issues is key to ensure continuity of national efforts to improve SMC.** The project contributed to the development of the Green Economy Concept. Ultimately one chapter (of six) has been solely dedicated to waste, and PCB priorities have been mainstreamed. In Kazakhstan – like many other Central Asian countries – the adoption of a plan/concept is unlikely, if not all financing for its implementation has been secured. As such, SMC priorities have been allocated financing for their implementation and it is now the responsibility of the responsible entities to allocate the necessary resources to implement them.
- **Allowing "external" partners to review legislations/regulations before their enactments, allows for the identification of implementation challenges before legislation is enacted**. The Sustainability Concept (and also the Green Economy Concept) has allowed NGOs, trade unions, business associations, Government and private sector entities, among others, to participate and make recommendations to the lead ministry, when new legislation/regulations are being discussed or changed in Kazakhstan. In this manner challenges can be identified early on – before the legislation/regulation are enacted. An added benefit of an inclusive approach is that there is less opposition from a powerful private sector, when it has been engaged through the various stages of the legislation's preparation.
- **Quality training and capacity building of local/national hazardous waste management companies can result in the establishment of long-term sustainable hazardous waste solutions.** The project supported two commercial hazardous waste companies and build their capacity (in partnership with PolyEco) on (re)packaging, transportation, (interim) storage, of PCB containing waste. When the project comes to an end, these companies will be able to continue providing such services to PCB holders.
- **Commitment to PCB phase-out and access to financing is much higher among (partially) Internationally owned companies**. International companies have the means and need to abide by targets set at corporate level, as such they are the most committed to meet national requirements for PCB management, phase-out and disposal. For nationally owned companies, it is much more challenging to meet the objectives of the project, as they often do not have the financial means to cover inventory, management and replacement costs, as no economic incentives are in place.
- **Ensuring geographical coverage of training activities, allows projects to reach out to many key stakeholders compared to organizing training events at centralized locations**. The project provided training in many different locations, which allowed for many more stakeholders (in particular, regional environmental departments and technical staff of PCB holders) to participate in the training. If the training and workshops would have been exclusively organized at national level (e.g. Astana and Almaty), these participants would not have been able to attend, due to travel and financial constraints. This approach is not common for UNDP projects, but proved very successful.
- **During project planning, it is worthwhile for private sector companies to allocate flexible budgets for disposal of PCBs**, as ultimately it is hard to estimate what exact costs are that are going to be incurred. As companies often determine and approve budgets the year before, it is sometimes challenging to increase budget for PCB disposal mid-way through the year.
- **The extent to which laboratories require support, turns out often to be much more extensive than initially anticipated**. Although the support provided by the project to laboratories was valued highly - in particular training activities supported by RECETOX and the development of guidelines on PCB analysis - it also became clear to the project team that there will always be

additional request for further necessary capacity building (iceberg principle). Furthermore, it was observed that for future PCB project it would be useful to make training more hands-on and include a test to allow for participants' certification.

- **Laboratories which are allowed to set their own pricing for analysis are more competitive as compared to laboratories that have to abide by fixed pricing levels**. Costs for the analysis of a PCB oil sample varied between 9,000 Tenge (49 US$) to 14,000 Tenge (76 US$).
- **Many companies keep PCB equipment (even though it is not in use) and list it as "*in operation*" but not as "*PCB waste*"**. The root cause of this practice is that on the one hand the costs to ensure compliance with PCB related legislation are very high, while on the other hand the fines are low. If a PCB holder lists PCB containing equipment as a waste, the waste is required to be registered, a waste passport/permit needs to be obtained, the waste needs to be stored according to PCB waste guidelines and waste needs to be disposed of after 3 years. To avoid incurring such costs, many companies opt therefore to list such equipment as "in operation". Without legislation in place that urges for the phase-out of PCB equipment and economic incentives to support this phase-out, PCB holders (mostly national ones) will try to meet deadlines as late as possible.
- **Risks related to the trans-boundary movement of POPs wastes and frequent changes of Government are likely to materialize during the implementation of POPs project in the Central Asia region**. It would therefore be important for the project's management to monitor these types of risks closely, and develop and implement mitigation plans if possible. At a minimum such risks should be taken up in the PLF and/or Risk Log.

1. INTRODUCTION

This Terminal Evaluation (TE) has been initiated by the Kazakhstan UNDP Country Office. In accordance with UNDP-GEF Monitoring and Evaluation guidelines all full and medium-sized UNDP supported GEF financed projects are required to undergo a TE upon completion of project implementation. In the case of the Kazakhstan PCB management project the UNDP CO opted to conduct the TE a little before project closure, so that recommendations coming out of the TE could potentially be addressed before the project will be operationally closed.

The TE report has been prepared by two independent consultants, Mrs. Hilda van der Veen (Team Leader) and Ms. Olga Klimanova (National Consultant). The Terminal Evaluation was carried out during the period 5 December 2014 – 31 March 2015. A TE mission was undertaken from 12 – 22 December during which meetings were held with project partners as well as beneficiaries and field visits were made to project sites (see Annex II).

The objectives of the terminal evaluation were to assess the achievement of project results and objectives, and to draw lessons that can both improve the sustainability of benefits from this project, and aid in the overall enhancement of UNDP programming.

Scope & Methodology

The methodology applied to conduct the terminal evaluation is compliant with international criteria and professional norms and standards; including the norms and standards adopted by the UN Evaluation Group.

The TE has been conducted in accordance with the "*UNDP Handbook on Planning, Monitoring and Evaluating for Development Results*", the "*UNDP/GEF Monitoring & Evaluation Resource Kit*" the "*GEF Monitoring and Evaluation Policy*" and the "*UNDP Evaluation Guidance for GEF Financed Projects*".

The TE has been undertaken in-line with GEF principles, which are: *independence*, *impartiality*, *transparency*, *disclosure*, *ethical*, *partnership*, *competencies/capacities*, *credibility* and *utility*[9]. The TE has also considered the two GEF evaluation objectives at project level, namely (i) promote accountability for the achievement of GEF objectives; including the global environmental benefits; and (ii) promote learning, feedback and knowledge sharing on results and lessons learned among the GEF and its partners.

The TE has been conducted and the findings have been structured around the UNDP/GEF five (5) main evaluation criteria[2]. These are:

Relevance	Extent to which the activity is suited to local and national environmental priorities and policies and to global environmental benefits to which the GEF is dedicated; this analysis includes an assessment of changes in relevance over time.
Effectiveness	Extent to which an objective has been achieved or how likely it is to be achieved.
Efficiency	Extent to which results have been delivered with the least costly resources possible.
Impacts	Extent to which there are indications that the project has contributed to, or enabled progress toward, reduced environmental stress and/or improved ecological status.

[9] http://www.thegef.org/gef/sites/thegef.org/files/documents/ME_Policy_2010.pdf

Sustainability Likely ability of an intervention to continue to deliver benefits for an extended period of time after completion; projects need to be environmentally as well as financially and socially sustainable.

In addition to the GEF guiding principles described in the Evaluation Terms of Reference (TORs) see Annex I, the Evaluation Team also applied to this mandate their knowledge of evaluation methodologies and approaches and their expertise in global environmental issues. They applied several methodological principles such as (i) *Validity of information*: multiple measures and sources were sought out to ensure that the results were accurate and valid; (ii) *Integrity*: Any issue with respect to conflict of interest, lack of professional conduct or misrepresentation to be immediately referred to the client; and (iii) *Respect and anonymity*: All participants will have the right to provide information in confidence.

The evaluation has been conducted following a set of steps presented in the Table 6 below:

Table 6: Steps in the Terminal Evaluation

I. Review Documents and Prepare Mission ▪ Collect and review project documents ▪ Prepare mission: agenda and logistic ▪ Elaborate and submit Inception work plan
II. Briefing / Review Work Plan / Mission ▪ Teleconference / Briefing ▪ Finalize mission
III. Collect Information ▪ Mission to Kazakhstan for the Team Leader ▪ Interview key-stakeholders and conduct field visits ▪ Collect further project related documents ▪ Mission debriefing to the Project Team
IV. Analyse Information ▪ In-depth analysis and interpretation of data collected ▪ Follow-up interviews (if necessary) and emails for clarification purposes ▪ Elaborate and submit draft evaluation report
V. Finalize Evaluation Report ▪ Circulate draft report to UNDP/relevant stakeholders ▪ Integrate comments and submit final report

The TE findings have been triangulated through the concept of "*multiple lines of evidence*" using several evaluation tools and gathering information from different types of stakeholders and different levels of management. The following evaluation instruments have been applied for this purpose:

Evaluation Matrix: An evaluation matrix has been developed based on the evaluation scope presented in the TOR, the project log-frame and the review of key project documents (see Annex IV). This matrix is structured along the five UNDP evaluation criteria and includes all evaluation questions; including the scope presented in the TORs. The matrix provides overall directions for the evaluation, and has been used as a basis for interviewing stakeholders and reviewing project documents.

Documentation Review: The TE team conducted a thorough documentation review in Kazakhstan and in the United States. A list of documents for review was identified, with all requested documents being provided by the UNDP Project Team and the Kazakhstan UNDP CO (for a full list of the documents, refer to Annex III).

Interview Guide: Based on the evaluation matrix, an interview guide was developed (see Annex V) to solicit information from stakeholders.

Mission Agenda: An agenda for the TE mission (12 – 22 December – 2 weeks), including field visits and meetings with project stakeholders, was proposed by the Project Team and reviewed by the evaluation team to ensure that it was representative of the project's scope, subsequently a number of stakeholders was added.

The TE mission included visits to six (6) PCB holders (of the total 11 which participated in collection, phase-out, draining, packaging, export and destruction of PCB oils and capacitors); to three (3) laboratories (of the 5 which have been accredited for PCB analysis); 2 NGOs, 1 disposal company (of the 2 which participated in the project) and two (2) government counterparts (among other stakeholders).

Staff from project stakeholders who were selected for interviews were those that had benefitted from capacity buiding activities supported by the project (trainings, workshops, awareness raising activities); involved in the PCB inventory and/or the phase-out/export/disposal of PCBs. Persons selected for interviews were selected from stakeholders' Environment and Waste Departments, and often were the Chief Ecologist, Chief Environment Department; Chief Waste Department or Chief Laboratory, accompanied in the meetings by additional staff from those departments.

The mission took place over a period of two (2) weeks, and visited four (4) major cities (Almaty, Karaganda, Astana and Ust-Kamenogorsk). Considering the long distances to cover by the TE team; the low temperatures during that time of the year, and the limited duration of the mission, the number of project stakeholders that the TE team was able to meet was considered the maximum feasible within a two-week period and a good snapshot/coverage representative of the stakeholders involved in the project.

Interviews: Stakeholders have been interviewed in person through semi-structured interviews using the interview guide presented in Annex V. Some follow up has been undertaken using emails when needed.

Field Visit: A number of field visits have been conducted during the TE mission in Kazakhstan to provide the Evaluation Team with direct primary sources of information from the field and project beneficiaries.

Achievement Rating: The Evaluation Team has rated project Outcomes, Effectiveness, Efficiency, Monitoring and Evaluation (M&E), Implementing and Executing Agency (I&E) Execution according to the GEF project review criteria using the ratings: *Highly Satisfactory* (HS), *Satisfactory* (S), *Moderately Satisfactory* (MS), *Moderately Unsatisfactory* (MU), *Unsatisfactory* (U), and *Highly Unsatisfactory* (HU).

Sustainability Rating: The Evaluation Team has rated the dimensions of sustainability of the project outcomes as follows: *Likely* (L), *Moderately Likely* (ML), *Moderately Unlikely* (MU), and *Unlikely* (U).

Relevance Rating: The Evaluation Team has rated the dimensions of relevance of the project as follows: *Relevant* (R) and *Not Relevant* (NR).

Impact Ratings: The Evaluation Team has rated the dimensions of Impact of the project as follows: *Significant* (S), *Minimal* (M), and *Negligible* (N).

The evaluation team also used additional ratings where relevant: *Not Applicable* (N/A) and *Unable to Assess* (U/A).

Constraints and Limitations of the Evaluation

The Terminal Evaluation and in particular its mission, had a number of limitations, which have been described below:

1. ***The International Consultant arrived 1 day too late for the TE mission***. The ICs flight from NY to Astana was cancelled due to a technical defect of the plane. As a result the IC arrived a day too late in Frankfurt, where due to subsequent tardiness of departure of the flight the IC missed the connecting flight to Astana. Flights were rebooked to Almaty to not miss the opportunity to meet all the Almaty project partners on the 2nd day of the initially planned TE mission. Because of these delays, the IC only had a brief moment to meet the PC in Astana during an hour lay-over at 5 am to quickly discuss the project, prior to flying to Almaty, where she was met by the national consultant and the project's Training & Capacity Building Expert. This "initial briefing" meeting with the project team was then rescheduled and took place on Saturday 13 December.
2. ***The International Consultant did not speak Russian***. Except for meetings with the project team; the UNDP CO; Scientific-practical center of sanitary–epidemiological expertise and monitoring; and the NGO Ecomuseum, all interviews took place in Russian. Simultaneous/consecutive translation was provided by the national TE consultant or otherwise by the project's Transportation & Logistics Expert, who participated in most meetings. As both are not trained translators, it is very likely that not all nuances were always translated properly.
3. ***The International and National Consultant were accompanied by a member of the project team for the majority of the meetings***. Although their presence in most cases facilitated visits and detailed understanding of the project (in particular in understanding the role of a particular partner as part of the larger scheme/objective of the project), in certain cases certain stakeholders might have withheld sharing information with the TE team that otherwise they might have provided if a member of the project team would not have been present (such as feedback that would not be positive for the project or the project team).
4. ***The project only visited only one (1) location where PCBs wastes were stored.*** The project visited the Promotchod interim storage facility in Karaganda, where ~ 2,400 capacitors were stored (150 tonnes) that had been collected from six (6) PCB owners (see also Table 19). Of the six (6) companies that participated in the packaging, collection, transport and export of PCB capacitors, four (4) were visited during the TE. However, as the PCB capacitors had already been removed, no tour of the companies was made, the visits were just intended to have meetings with the companies' management. Of the five (5) companies which participated in the draining of PCB transformers (see Table 17) and the export and destruction of PCB oil, one (1) company was visited (AMT Steel), which was the company which held 75% of the PCB containing transformers. During the TE mission the team was unable to visit the storage facility where the drained AMT transformers shells have been stored due to heavy snowfall and non-accessibility to the storage facility. In conclusion, the TE mission covered a good percentage of the companies, which participated in the PCB capacitor removal/destruction activities, but a low percentage of the companies that participated in the PCB oil removal/destruction activities.
5. ***Number of meetings with the government counterparts was limited and only took place towards the end of the TE mission and after repeated requests voiced by the TE team***. Eventually the TE mission was able to meet with the Head of the Waste Management Department of the Ministry of Energy as well as a representative of the Zhasyl Damu Company (ZDC falls under the Waste Management Department within the Ministry). This limited exposure to the national government counterparts, was in part due to recent government restructuring, during which the Ministry of Environment ceased to exist, and the Ministry of Energy absorbed most of its functions. In part, limited exposure to Government counterparts was also in part due to the fact that the Project Implementation Unit (Project Team) was not physically located in Ministry of Environment (later on the Ministry of Energy), but in a location separate from the UNDP CO and Government Offices.

2. PROJECT DESCRIPTION AND DEVELOPMENT CONTEXT

2.1 Project start and duration

From 2003 to 2006, the Government of Kazakhstan implemented its first POPs project entitled "*Assistance to Kazakhstan in Fulfilling its Commitments Under the Stockholm Convention of Persistent Organic Pollutants*" with the financial support of the GEF and technical support provided by UNDP. As part of this project, an initial PCB inventory was conducted, an action plan formulated and Kazakhstan's first National Implementation Plan (NIP) prepared. In 2009 Kazakhstan submitted its National Implementation Plan (NIP) to the Secretariat for the Stockholm Convention on POPs. One of the main priorities listed in the NIP was to establish and implement a national PCB Management Plan.

To address this national priority, the Government of Kazakhstan and UNDP formulated a project proposal entitled "*Design and Execution of a Comprehensive PCB Management Plan for Kazakhstan".* The project was approved by the GEF Council in January 2010 with a duration of five (5) years (January 2010 – December 2014).

The total budget of the project was 20,819,680 US$, of which 3,300,000 US$ was a GEF grant, 10,901,356 US$ was supported by the Government of Kazakhstan through co-financing contributions (cash/in-kind) and 6,618,324 US$ was provided as co-financing contributions by private sector partners.

The project's Executing Agency/Implementing Partner role was initially assumed by the Ministry of Environmental Protection (MEP), which later on became the Ministry of Environment and Water Recourses (MEWR) and finally became the Ministry of Energy.

The project started in February 2010. At the time of the TE the project was 4 years and 11 months under implementation, and had initiated a request for project extension for 5 months, with a revised project closing date of 31 May 2015.

2.2 Problems that the project sought to address

PCBs are an important environmental and health hazard in Kazakhstan. The country has inherited PCB contaminated equipment and oil from when it was part of the Soviet Union, at which time it hosted a number of strategic industries and defense facilities. During Soviet times, such facilities procured stable electric equipment, which during the 1960s – 1980s production period were very likely to contain PCBs.

One of the few PCB capacitors production facilities in the Newly Independent States (NIS) was located in Kazakhstan (Ust-Kamenogorsk) and was producing a significant portion of all PCB containing capacitors in the NIS. It should be noted that PCB oil was not produced at this plant, but was imported and added to the capacitors produced. Improper handling of PCB oils during the production caused significant pollution of the Ust-Kamenogorsk area.

The preliminary PCB inventory, conducted in preparation of the NIP (2009), indicated that there were a total of 56,000 capacitors containing approximately 757 tonnes of PCBs, stored in almost 2,500 tonnes of contaminated equipment. In addition, the inventory identified 113 PCB containing transformers (confirmed) and an additional potential 26 PCB holders submitted data on 356 transformers that potentially could contain PCBs.

According to a PCB inventory conducted in Eastern Europe and the former Soviet Union, the Republic of Kazakhstan ranked second among the CEIT countries with a total of 980 tonnes of PCB contaminating oils and 250,000 tonnes of PCB contaminated soils (the Russian Federation ranks first).

PCB quantities in the Republic of Kazakhstan were significant, while at national level there were no

facilities for their safe disposal. The fact that Kazakhstan is a very large and land-locked country also complicates transportation by land (both within national boundaries as well as trans-boundary), which has significant cost implementations and thus an impact on the cost effectiveness of PCB management and disposal.

As such the project aimed to address the four main barriers to the safe and sustainable management of PCBs and replacement of PCB containing equipment:

- **Legal barriers**: There existed no legislation in Kazakhstan banning or restricting the use of PCBs in any application. Consequently, requirements for specific handling, pre-caution or disposal were absent in legal documentation or technical guidance.
- **Awareness barriers**: One of the main barriers to not taking action on PCBs was the lack of awareness of the risks and consequences of unsustainable management of PCBs. The largest gap being awareness among policy makers at various government institutions as well as some industry partners.
- **Technical barriers**: Technical barriers were found at all stages of PCB management, ranging from a lack of laboratory capacity to analyze PCB in samples and environmental/biological media, lack of capacity to identify, handle, store, transport, etc. equipment containing PCBs and finally a lack of capacity to treat/dispose of PCB equipment in the country.
- **Economic barriers**: Investments for the replacement of PCB containing equipment were often beyond the economic means for many companies and government entities.

2.3 Immediate and development objectives of the project

The **project's objective** is to enhance the capacity for the safe management of PCB oil and PCB-containing equipment at all stages of the PCB management cycle in Kazakhstan.

The **ultimate project objective** is to ensure minimization of PCB releases and subsequent health and environmental impacts through the development of systematic capacity for the sound management of PCBs in the country.

2.4 Baseline Indicators

The Project Results Framework (PRF) as taken up in the Project Document contained baseline indicators. A copy of the PRF is included in Annex I: Terms of Reference for the Terminal Evaluation (Annex A).

For the project's overall objective, the baseline indicators have been provided in Table 7 below.

Table 7: Project Baseline Indicators and Project Expected Targets

Project Strategy	Objectively verifiable indicators	Baseline	Target
Objective: To enhance the capacity for safe management of PCB oil and PCB-containing equipment at all stages of the PCB management cycle in Kazakhstan	Clear regulation anchored scheme for PCB management with identified roles and deadlines in Kazakhstan established	No specific regulations, guidelines or enforcement for PCB management through-out their lifecycle. Roles and responsibilities of PCB holders and authorities at regional and central level not elaborated.	1. Environmental Code amend-ment and technical specifications adopted. And integrated by environmental authorities. 2. Clear PCB reporting and enforcement set up nationally. PCB holder submitted management plans integrated in environmental inspections.

Project Strategy	Objectively verifiable indicators	Baseline	Target
	Site and regional based PCB disposal systems developed and demonstrated from planning to disposal.	No safe PCB disposal undertaken. No organized system for assisting PCB holders in finding optimized PCB management solutions.	1. One major PCB capacitors and one major PCB transformer site management demonstrated from planning to disposal. Resulting in 1,400 tons PCB waste processed. 2. Regionally based PCB collection/disposal scheme in place with 200 tons PCB waste processed.

In addition, multiple baseline indicators were provided for each project outcome, and specific baseline indicators were provided for each end-of-project target / Objectively Verifiable Indicator (OVI). For details on the baseline indicators, kindly refer to Annex I.

2.5 Main Stakeholders

The project has been implemented using the National Implementation (NIM) modality and involved a wide range of stakeholders. The main stakeholders, and their roles in the project have been presented in Annex X.

2.6 Expected Results

The expected results of the project were to design and execute a comprehensive PCB management plan for Kazakhstan. It should be noted that the title of the project, as well as the terminology "PCB Management Plan" might be a bit misleading. Essentially what the project was anticipating to achieve was to design and execute a system for the entire Life-Cycle Management (LCM) of PCBs, by demonstrating all aspects related to PCB management that make up this life-cycle, and giving PCB holders and government entities the opportunity to participate in each of these steps at least once.

The project's expected targets have been presented in Table 7 above, while the project's anticipated outcomes have been listed below:

- Strengthened regulatory framework and administrative processes for the sound management of PCBs.
- Capacity built for the sound management of PCB and identification of additional PCB sources.
- Replacement and setting-up of safe dismantling of 850 tons of PCB transformers and their safe disposal.
- Regionally organized secure storages and disposal of PCB capacitors.

3. FINDINGS

3.1 Project Design / Formulation

3.1.1 Analysis of Project Logical Framework (PLF)

The Project's Logical Framework (PLF) as developed for the project and incorporated in the signed project document, has been included as part of Annex I (Terminal Evaluation Terms of Reference) and has been reviewed and assessed as part of this TE.

The PLF outlines the project's overall objective, the project's five outcomes, provides pre-project baseline information, presents the project's overall Objectively Verifiable Indicators (OVIs) as well as End of Project Targets. Both the OVIs and the End-of Project targets proved to be verifiable by external and objective sources throughout the TE. The TE found that the project objectives, project outcomes, project targets and the project's OVIs were clear.

The PLF also includes a separate list of project outputs (presented at the bottom of the PLF). However the results of these outputs have not in all cases been "translated" into OVIs and/or end-of project targets.

As a direct consequence, the evaluation of project progress (whether during a yearly Project Implementation Review – PIR, MTE or TE) cannot be measured for all project outputs, simply because no OVIs or baseline information has been included in the PRF for these outputs. Although all the outputs are indirectly related to the project targets/outcomes, in certain cases the relationship is not very clear. In other cases the expected output is key to project success, but because they have not been translated into End-of-Project Targets are more challenging to monitor.

> *Recommendation:* For future GEF Chemicals and Waste projects it would be recommended to either "translate" anticipated project outputs into the PLF as "End-of-Project-Targets" or as OVIs, or alternatively rephrase ""End-of-Project-Targets" as outputs to allow the project (and external evaluators) to more easily track progress towards their achievement. The multitude of terminology used in the project document's PF, could create confusion and overlap and could complicate monitoring towards project achievement.

3.1.2 Assumptions and Risks

The project's Risks and Assumptions have been presented in the PLF (See Annex I). In general these risks and assumptions were well defined and realistic.

Ultimately however, the risks that impacted the project the most, and which had not been taken up in the PLF, were the following:

- **The single largest challenge of the project, has been the fact that none of its bordering countries allowed for the trans-boundary movement of PCBs**.
- **One the most significant challenges to the project – have been the frequent changes of Government** – not only in terms of changes made to the Ministries and high-level staff, but also in terms of changing national priorities and legislations following such changes.

> *Recommendation:* The above-mentioned risks are very specific to the Central Asia region, and similar challenges have been encountered by chemicals-related projects in other Central Asian countries. Therefore, for future POPs/Chemicals projects, it would be important to monitor these types of risks closely, and develop and implement mitigation plans if possible. At a minimum such risks should be taken up in the PLF and/or Risk Log.

3.1.3 Lessons from other relevant projects incorporated into project design

The Kazakhstan PCB management project was the first single country GEF PCB project in Central Asia. As such it could not draw from lessons emerging from similar GEF/PCB projects implemented in the country or the region.

That said, the project did drew upon experiences and lessons-learned from the following three projects/activities:

- **Development of the National Implementation Plan (NIP) on POPs**. Implemented with the support of the GEF and UNDP, the elaboration of the NIP included a preliminary inventory of PCB containing equipment and oils. Even though the inventory was preliminary, it provided useful insights in the expected size of PCB stockpiles and the number of potentially PCB containing equipment still in operation in Kazakhstan, which supported project target setting.
- **Ust-Kamenogorsk Environment Remediation Project (World Bank / EU)**[10]. During its design, the PCB management proposal was able to draw on lessons-learned which emerged from the WB project. PCB management project activities related to the strengthening of laboratory capacity for PCB analysis, also relied heavily on laboratory equipment provided by the WB project for pollution monitoring of ground and drinking water (Gas-Chromatography).

In summary, to the extent possible, lessons-learned from other relevant projects had been incorporated in the project design.

3.1.4 Planned stakeholder participation

The project document contained a section on "*Stakeholder Analysis*" which listed the roles and responsibilities of various stakeholders having a role in the management of PCBs. The project document listed particular stakeholders (e.g. entities) with whom the project had engaged during the PIF/PPG phase, as well as larger groups of project stakeholders, which the project anticipated to engage with during project activities (e.g. PCB holders, NGOs, regional and local government authorities, general public, bi-lateral and international development agencies, etc.).

In the section "Stakeholder Involvement Plan", the project document elaborated upon the ways in which it would engage various project stakeholders, including among else, project board meetings, technical consultations, trainings and outreach activities and awareness raising events.

Throughout the TE it was obvious that the project during its implementation had been able to reach out to and engage a very large numbers of stakeholders. For example, the project reached out to over 360 PCB holders, and was able to create awareness and capacity on PCB management of more than 1,000 project beneficiaries (See Table 14 and Annex XI).

The evaluators are of the opinion that the involvement of the large number of stakeholders as well as significant number of project beneficiaries, which benefitted from awareness raising and capacity building is unusual, and is to the credit of the project management team and the government entities (national, regional and local).

3.1.5 Replication approach

Possibilities for the replication of the project's results and lessons-learned, as taken up in the project documents, was founded upon a number of assumptions:

- The fact that the project was the first of its kind in the Central Asia region, allowing for lessons-learned and experiences to be used/replicated in other countries in the Central Asia region.
- Demonstrating the entire range of PCB management steps in one project founded upon

[10] http://www.worldbank.org/projects/P078342/ust-kamenogorsk-environmental-remediation-project?lang=en. The objectives of the project are to (i) prevent the groundwater contamination plume's further migration towards the residential areas, the city's sources of drinking water supply and eventually into the Irtysh River; and (ii) strengthen institutional mechanisms for groundwater quality monitoring to enable control of ongoing groundwater pollution from local municipal and industrial sources.

Stockholm and Basel Convention guidance, if successful, would allow for the project's experiences, outcomes and results to be replicated in the country, region and well as globally.

- Considering the regulatory and policy framework for former Soviet countries and countries in the Central Asia region are fairly similar, improvements made to the regulatory and policy framework in Kazakhstan and technical guidance developed for the management of PCBs could more easily be replicated/adapted for countries in the Central Asian region. An additional advantage is that many of the relevant documentation will be available in Russian.

Even though the project document considered regional and global replication, it did not include a narrative explaining the opportunities or approaches for the replication of the project's approach at national level. The number of PCB containing capacitors and transformers in Kazakhstan is quite large, and the project was only intended to manage/dispose of a certain percentage of them, it would therefore have been helpful if the project document would have elaborated a bit in more detail on how to project was going to influence the sound management and disposal of all PCB containing capacitors and transformers present in the country.

Recommendation: For future GEF/POPs/PCBs projects it would be important to elaborate on the national replication approach in the project document, in addition to replication at regional/international level.

3.1.6 UNDP comparative advantage

At the time of the development of the project, GEF funding had been approved for UNDP-supported PCB management activities in 10 countries: Argentina, Brazil, Ghana, Kyrgyzstan, Latvia, Mexico, Morocco, Slovak Republic and Uruguay. With respect to the management and disposal of PCBs, UNDP had been supporting these countries in:

- Strengthening legal frameworks and improving enforcement capacity pertaining to PCB management by addressing gaps in national PCB management regulations and creating an enabling environment for the environmentally sound management and destruction of PCBs.
- Undertaking additional PCB inventories to identify remaining geographically dispersed PCBs and sensitive sites. For example by identifying small and medium-sized enterprises possessing a portion of the remaining inventory.
- Improving PCB management practices (such as handling, storage, transport, and destruction) by providing technical guidance on management and safe disposal of PCBs and training for government officials, handlers of PCB-containing equipment, and other private sector entities, to ensure the sound management of PCBs throughout their life cycle.
- Ensuring safe disposal of PCBs in collaboration with PCB-containing equipment holders by developing safe domestic disposal facilities, facilitating export of PCB waste to safe disposal facilities abroad, and improving coordination among PCB holders to lower the cost of transport and destruction of PCBs.
- Implementing public awareness campaigns and communication strategies to support all of the above activities.

In Kazakhstan in specific, UNDP and its Kazakhstan Country Office had been supporting the Government in the implementation of the Enabling Activity "*Assistance to Kazakhstan in Fulfilling its Commitments Under the Stockholm Convention of Persistent Organic Pollutants*". As such UNDP already had been working closely with the Government, PCB holders, international/bi-lateral development organizations, NGOs, among others in the development of the NIP and in developing a preliminary PCB inventory.

The evaluators felt that UNDP (Kazakhstan) certainly had a comparative advantage to support the Government of Kazakhstan in developing and implementing this type of a project.

3.1.7 Linkages between the project and other interventions within the sector

Linkages between the project and previously implemented relevant projects have been described in section 3.1.3 "*Lessons from other relevant projects incorporated into project design*".

The project also worked closely with and contributed to a number of initiatives pertaining to hazardous waste management throughout its implementation (*Note*: these linkages were not described in the project document, as these initiatives did not exist at the time of the project's development):

- **GEF/World Bank project: "Elimination of POPs Wastes in Kazakhstan".**
  The most important component of this project is the establishment of treatment capacity for PCBs, POPs and other types of hazardous waste in the Republic of Kazakhstan to serve demand in Central Asia for destruction/treatment of such wastes. At the time of the TE, the feasibility study of the hazardous waste facility was due (December 2014), but had not yet been finalized. Land allocation for the hazardous waste facility had been completed and community consultations were still on going. It is expected that the facility might be operational by 2020.

  Project contribution: The UNDP project and its PCB experts contributed to the World Bank/GEF project through participation in various expert groups and round tables. Considering the UNDP project has engaged most national PCB experts, other POPs/PCB projects appear to rely heavily on the UNDP PCB project and its experts for advice.

- **GEF/UNDP project: "NIP Update, Integration of POPs into National Planning and Promoting Sound Healthcare Waste Management in Kazakhstan".**
  Project contribution: Information from the PCB inventories undertaken as part of the UNDP PCB project, have been used to update the NIP chapter on PCBs. The updated NIP has been submitted to the Government for review and comments from the different ministries have been received. It is expected that the NIP will be approved in 2015.

- **The Green Economy Concept.**
  Project contribution: Supported by the UNDP Country Office and various UNDP environment related projects, among which the PCB management project, SMC and waste issues were integrated into the *Concept for the Transition of the Republic of Kazakhstan to a Green Economy* and became part of the *Action Plan* for the Concept's implementation approved by the President. Of the 6 chapters, one chapter exclusively focuses on Waste Management. UNDP and the PCB management project also supported the Government in the adaptation of legislation/regulations, for the implementation of the Green Economy Concept.

3.1.8 Management arrangements

The management arrangements as presented in the project document (PART III: Management Arrangements), had been clearly described and were based on common project management arrangement for UNDP NIM projects. The TE team also felt that, throughout implementation, the project had well adhered to the management arrangements as described.

At the start of the project, the Executing Agency/Implementing Partner role was initially assumed by the Ministry of Environmental Protection (MEP), which later on became the Ministry of Environment and Water Recourses (MEWR) and towards the end of the project was assumed by the Ministry of Energy. Changes in Executing Agency/Implementation Partner, were the direct result of Government changes.

For the first part of the project's implementation, the Project Director was a high-level Government Official (Vice-Minister of Environment). Towards the end of the project, when the Ministry of Energy became the Executing Agency, the Deputy Director of the Waste Management Department of the Ministry of Energy became the new project director.

Lesson-Learned: One the most significant challenges to the project has been the frequent changes of Government. Not only in terms of changes made to the Ministries and high-level staff, but also in terms of changing national priorities and legislations following such changes.

The project document clearly described the arrangement that the executing agency/implementing partner would appoint a national project director and hire with GEF funding a project Manager, national experts and an administrative and financial assistant, because of the physical location of the unit (separate from the Ministries and the UNDP CO). However to the TE team the project unit appeared to be working a bit in isolation, reducing opportunities for handing over responsibilities and expertise to the entities that would assume responsibilities related to PCB management when the project comes to an end. Even though this type of arrangement is common is the Central Asian region, and embedding of the project within an existing structure might not have improved coordination with government structures much, it nevertheless is an aspect that should be carefully considered for future projects.

3.2 Project Implementation

3.2.1 Adaptive management (changes to the project design and project outputs during implementation)

Most of the information presented in this section has been extracted from the yearly Project Implementation Reviews (PIRs) as well as the Mid-Term Evaluation (MTE) report.

A few minor and major modifications were made to the project's outputs during project implementation. The changes made to the project's outputs have been presented in Table 8 below, along with the reason(s) for such changes:

Table 8: Changes made to the project design and outputs during implementation

Planned Activity	Ultimate Project Activities	Reason for change
Outcome 3: Replacement, setting-up safe dismantling of 850 tons of PCB transformers and their safe disposal **Target**: **850** tons of PCB waste safely disposed. **Target: 30** transformers phased-out and replaced within 36 months of project implementation.		
Output 3.2: Transformers disconnected, drained, dismantled and cleaned, metals recycled.	At the time of the TE: ▪ The project had disposed of 80 tons of PCB waste (68 tons of pure PCB oil; 7 tons of contaminated soil and 5 tons of packaging, drums, pallets, PPE etc. = totaling 80 tonnes). ▪ 33 empty transformer shells with a combined weight of **670** tons had been stored, of which 23 safely. ▪ Combined, the project had therefore ensured the safe disposal and storage of **750** tonnes of PCB contaminated oil and associated wastes.	▪ Because trans-boundary movement of PCB containing waste was impossible, the only remaining solution for the project was to export PCB waste by air. However, because air transportation is much more expensive (7,343 US$ per tonne versus 3,300 US$ per ton used as an estimate during project preparation for assumed land-based export), the project had to reduce the amount of PCB that it initially anticipated disposing of. ▪ In Kazakhstan there are currently no solutions for the decontamination/cleaning of PCB contaminated equipment. It is for this reason that the project had to ensure the safe storage of drained ("empty") transformer shells until a solution can be implemented at national level to decontaminate such equipment to allow for the recycling of transformer metals. *Note*: The project document stipulates that the disposal of transformer shells is the responsibility of the holders.
Outcome 4: Regionally organized secure storages and disposal of PCB capacitors **Target**: **200** tons of PCB equipment and waste disposed. **Target**: All Darial-U capacitors disposed by end year 4.		
Output 4.4: 15,000 PCB capacitors at Darial-U Capacitor site disconnected, packed and stored.	150 tons of capacitors (~ 2,402 capacitors) originating from 6 companies, have been packed and are stored at Promotchod Kazakhstan ready for transportation abroad and	The funding set-aside by the Government of Kazakhstan for the disposal of the remaining Darial-U capacitors (5,946) was no longer available. As the project was relying on Government cash co-financing to fund the disposal of the Darial-U

Output 4.5: Clean-up premises and pack all potentially PCB contaminated wastes. *Output 4.6*: Transportation and disposal of approximately 600 tons of PCBs and associated waste disposed	disposal at Tredi in France. At the time of the TE, France had granted approval for air transportation.	capacitors (~ 400 tons), Darial-U related project activities had to be cancelled[11]. This was beyond the project's control. However, the project did complete the collection, packaging and storage of 150 tons of capacitors (~2,402). The tonnage corresponds to 201 pallets each containing 4 drums. As one plane can hold 100 pallets each, and approval for each plane/export needs to be obtained separately, this arrangement was considered most cost-effective, rather than exporting the initially anticipated 200 tonnes.

Although some of the project activities were changed (see Table 8 above), the changes made to the project's design and outputs were deemed in line with the project objectives.

3.2.2 Partnership arrangements (with relevant stakeholders involved in the country/region)

Throughout the TE it was obvious that the project during its implementation had been able to reach out and engage a very significant numbers of stakeholders (see also section 3.1.4).

The main stakeholders with whom the project entered into partnerships, along with their respective responsibilities/roles in the project's execution, have been described in more detail in Annex X. Below is provided a short summary of the main project partners:

- National Government entities: Ministry of Environment and Water Resources (MEWR); Ministry of Energy (ME); Ministry of Economy and Budget Planning (MEBP); Ministry of Agriculture (MA); Ministry of Justice (MJ); Ministry of Health (MH); Ministry of Defense (MD); Ministry of Industry and New Technologies; National Customs Committee under the Ministry of Finance
- Regional Ecological Departments: Regional Environmental Departments (RED) under the Ministry of Energy (formerly MEWR) of 14 regions and 2 cities (Astana and Almaty); Division of Natural Resources Management of Karaganda Akimat
- Electrical equipment holders (~ 360)
- PCB Transformer holders, which participated in disposal: Arcelor Mittal Temirtau (AMT) Steel, Atyrau oil refining plant, Stepnogorsk bearing plant and Kazakhmys.
- PCB Capacitor holders, which participated in disposal: Alatau Zharyk Company, Aksu Ferrosplavnyi Zavod, Energougol AMT, Kazmetizprom, VK REK and Kondensatornyi Zavod.
- International Partners: PolyEco; Tredi; Veolia GB; Center of International Treaties, Russia; ReCeTox, Czech Republic.
- Commercial and Government laboratories: "EcoNus" LLP, Karaganda; "EcoEzpert", Karaganda; Water management Plant, Ust-Kamenogorsk; National Sanitary and Epidemiological Station, Almaty; Scientific analytical Center Laboratory, LLP, Almaty; Laboratory of the Kaz National University after Al-Farabi, Almaty; East Kazakhstan Department of the state sanitation and epidemiology control of the Ministry of Health, Ust-Kamenogorsk; "KazEcoAnaliz" LLP, Almaty; "Batys Ecoproect" LLP, Aktobe; National Veterinary laboratory of the Ministry of Agriculture, Astana.
- Commercial Storage Facilities: Promotchod Kazakhstan and Astana NAN.

[11] The capacitors are still located at the Darial-U site and their ownership has recently been transferred to Zhasyl Damu Company, which operates under the Ministry of Energy.

- NGOs: Kazakhstan Association of Enterprises for Sustainable Development; EcoMuseum; Center for Cooperation for Sustainable Development; EcoForum of Kazakhstan; Green Women; Civil Alliance, Ust-Kamenogorsk.

The project reached out to over 360 holders of oil containing electrical equipment, and was able to train, create awareness and build capacity on PCB management of more than 1,000 workshop and training participants (see Table 14 and Annex XI).

In summary, the evaluators are of the opinion that the involvement of the large number of project stakeholders and individuals involved in aspects of PCB and electrical equipment management, who benefitted from awareness raising and capacity building, can be considered impressive and is to the credit of the project management team and the government entities (national, regional and local).

3.2.3 Feedback from M&E activities used for adaptive management

Project Implementation Reviews (PIRs)

The TE team received all the project's PIRs (2011, 2012, 2013 and 2014). It should be noted that only in the 2011 and 2013 PIRs the sections on adaptive management had been filled out, even though it was clear from the TE that additional changes had been made to other project activities which had not been reflected in the adaptive management section of the PIR of the respective year (in particular project components 3 and 4 – for details on the changes made, kindly refer to Table 8).

Of the changes proposed by the MTE, all of the accepted MTE recommendations as well as the activities the project had implemented in response of these recommendations had been properly reflected in the 2014 PIR.

The conclusion that can be drawn from the review of the 2011, 2012, 2013 and 2014 PIRs is that the quality of the PIRs appears to be good, even though it would be advisable for future GEF projects to make more use of the "*adaptive management*" sections of the PIR. When a PIR is used adequately as a monitoring tool, it can point out important project aspects and challenges to its management, which otherwise could be overlooked.

Since 2012, UNDP reviews the quality of PIR report before submitting them to the GEF. The **2012** and **2013** Kazakhstan PIRs was both rated as **Highly Satisfactory (HS)**. For 2013, the evaluation made the following observations "*Very good progress report with well justified and consistent ratings. More comments for RTA IP rating would be welcome*."

Mid-Term Evaluation

The MTE made a number of recommendations, which are presented in Table 9 below. The project's adaptive management in response to their recommendations has also been summarized. In general it can be concluded that most of the MTE's recommendations were accepted, and the project implemented adequate measures and activities to redirect the project accordingly.

Table 9: MTE Recommendations and Project Response

MTE Recommendations	Accepted	Project Response
#1 Work more closely with PCB owners to complete PCB plans: The project team should work with the PCB owners more intensively to help them complete their plans within the project time line.	*Yes*	**Project Response/Action**: ▪ Guidelines on how to prepare a PCB management plan, and a template for a PCB management plan were posted on the MEWR website. ▪ National expert was hired to support companies in conducting their inventories. ▪ Consulting company was contracted to train and support PCB holders in preparing their PCB management plans.

#2 Exit Strategy: A clear exit strategy needs to be developed so that the mechanisms and structures are created during the project implementation to guarantee the end of funding sustainability.	*Yes*	**Project Response/Action**: ▪ Even though in its management response, the project indicated that it would prepare a Draft Action Exit Strategy for MEP as it was the executive body for implementation of the SC, no such strategy was prepared.
#3 Define Technical standards: Technical standards should be defined before the inventory is started so that the companies are aware of what they are expected to evaluate.	*Partially*	*Note: Recommendation was partially accepted as the procedures for treatment of PCB equipment and conducting an inventory were described in the rules for handling of POPs. Stakeholders had been involved in the review of these rules and had been trained in their implementation.* **Project Response/Action**: ▪ The project team prepared and sent to MEWR seven (7) new requirements on POPs use, handling and disposal for including into the EcoCode. ▪ The project updated regulations on POP handling, including new chapters on PCB holders' responsibilities, introduced deadlines to phase out of different types of PCB equipment, included descriptions of acceptable POPs disposal technologies and PPE. ▪ Guidelines on how to prepare a PCB management plan, and a template for a PCB management plan were posted on the MEWR website. ▪ The Project provided training sessions for 50 officials from the Regional Departments of Ecology.
#4 Accelerate Project Implementation: In order to meet a 100% execution mark by the end of the project in December of 2014, the measures should be taken to accelerate the project activities, as for now about 30.5% of budget has been utilized.	*No*	*Note:* Recommendation was not accepted. 2/3 of the project funds were intended for transportation and disposal of PCB containing wastes. As these activities had been postponed due to trans-boundary transportation issues, it was beyond the influence of the project to expedite budget expenditures.
#5 Remove project component on Disposal of Daryal-U capacitors: It is recommended to take the component on disposal of Daryal-U capacitors out of the project document, as half of them were taken for disposal before the start of the project, and the remaining half is not in the competency of the project being under responsibility of the government.	*No/Yes*	*Note:* Although after the MTE this recommendation was not accepted by the project, ultimately the project did accept this recommendation, and the activity and corresponding targets were removed.
#6 Include PCB modules in higher education: PCB issues should be included in high level education, university levels, to prevent future impacts and a level of awareness among the new professionals.	*No*	Recommendation was not deemed relevant. A number of universities had already incorporated POPs in their educations programmes. In addition, IAC, Zhasyl Damu JSC and the Center for the Promotion of Sustainable Development have included PCB topics in their training on Natural Resource Management.
#7 Improve Regulations in terms of monitoring storage: The new regulation approved was not clear in the storage control aspects and	*Partially*	**Project Response/Action**: Requirements for storage of PCB waste and temporary storage facilities and reporting requirements were at the time of the MTE, described in Chapter 7 of the "*Organization of the Storage of PCN containing waste of the Rules*

standards. There exists a lack of clearness as to who will control and monitor the activity and how it should be reported. This should be addressed with the MEP by the project manager to clarify it to the stakeholders.		*for Handling of POPs*". However, at the time of the MTE, these had just been approved, and stakeholders were quite unclear about many aspects related to the rules. ▪ The project team prepared and sent to MEWR seven (7) new requirements on POPs use, handling and disposal for including into the EcoCode. ▪ The project updated regulations on POP handling, including new chapters on PCB holders' responsibilities, introduced deadlines to phase out of different types of PCB equipment, included descriptions of acceptable POPs disposal technologies and PPE. ▪ The Project provided training sessions for 50 officials from the regional Departments of Ecology. ▪ PCB aspects were included in the checklist for the inspections by the regional ecological departments.
#8 Consider local treatment/ decontamination of PCB contaminated (low concentration) oils: Once more inventory information is available, the project should consider the needs for an alternative to the exporting of contaminated equipment and oils would be to treat locally the low concentration PCBs using a service provider with anyone of the available technologies such as dechlorination and transformer decontamination.	*Yes*	**Project Response/Action**: ▪ The Project participated in a round table organized by the World Bank on POPs disposal technologies. ▪ The project prepared an overview of PCB disposal technologies. Requirements for disposal technologies were submitted in 2014 as part of the six (6) amendments to the EcoCode.
#9 Establish a more central storage location: The disadvantage of the ASTANA NAN interim storage facility location is that it is very far north in the country and the distances for transporting of contaminated equipment and oils are large. It is this evaluating team's suggestion that another storage facility be established in the southern part of the country.	*No*	Recommendation was not accepted. The MEP was concerned that the establishment of centralized storage facilities would lead to additional hotspots, as it would be challenging to ensure the continued ownership of the PCB waste. ▪ After the MTE, the project provided advice/recommendations for the upgrading of a commercial PCB waste storage facility managed by Promotchod Kazakhstan – located in Karaganda. The facility (for an interim period) is currently storing 150 tonnes of PCB capacitors before these will be exported to France. ▪ Promotchod is best located for air export, while Astana NAN is best located for land (rail) export, in the situation that land-based export becomes again an opportunity in the future.
#10 Clear alternative transportation routes with GEF & UNDP: If there is no viable transit route for PCB elimination under outcome 3, MEP, project management and UNDP should address the GEF about this situation and evaluate alternative actions.	*Yes*	**Project Response/Action**: ▪ Prepared amendments for the Custom Union (CU) legislation. ▪ Participated in CU expert group meetings. ▪ Brought the issue to the attention at the Extraordinary Conferences of Party of Basel, Stockholm and Rotterdam Conventions. ▪ Ultimately, as this proved to be the only opportunity for export of PCB waste, after consultations with UNDP MPU/Chemicals in Bratislava and HQ, approval was granted to apply project funds for the air-transportation and disposal in France of 80 tons of PCB wastes (pure PCB oil, contaminated soil and packaging) as well as 150 tonnes of PCB containing capacitors.
#11 Respond to notifications of the BC trans-boundary movement. The	*No*	*Recommendation was not deemed relevant*. Such activities are not the responsibility of the project – but MEP's. Certain

MEP will need to respond to the necessary notifications required by the Basel Convention Transfrontier Movement (TFS) once the project is completed and the elimination process continues.		departments of MEP regularly submit these reports. That said, the project does assist MEP in preparing such reports.
#12 Support Laboratory Accreditation: The project should further support the process of laboratory accreditation and ensure that there is an adequate amount of laboratories accredited to provide for Inventory needs. Various sorts of activities should be involved, including practical trainings, consultations, technical assistance, introduction of methods and analytical standards, etc.	*Yes*	**Project Response/Action:** ▪ In partnership with RECETOX, the project provided training sessions for 15 representatives from regional ecological laboratories, 15 representatives from private laboratories and more than 30 representatives from the 6 oblast laboratories under the Committee of State Sanitary Epidemiological Control in the Ministry of Health. ▪ At the time of the TE, 5 laboratories had been accredited for PCB analysis in oil, 3 in soil and 1 in fish.
#13 Move funds from outcome 3 to 4 to allow for additional disposal: Funds from component 3 should be considered to be transferred to Outcome 4, in order to increase the amount of equipment and oils that can be eliminated.	*Yes*	**Project Response/Action**: ▪ The project moved funds from Component 4 to Component 3 to increase the amount of PCB waste that could be disposed of as part of Component 3.

3.2.4 Project Finance

In this section, two aspects related to project finance are reviewed, firstly project co-financing and secondly project expenditures.

Co-financing

In Table 10 below is summarized the co-financing that was anticipated when the project was submitted to the GEF for approval, as well as the co-financing that was actually mobilized during the project's duration.

Table 10: Planned / Actual Co-financing raised over the duration of the project

Co-financing (type/source)	UNDP track (US$)		Government (US$)		Partner Agency (US$)		Total (US$)	
	Plann	Actual	Planned	Actual	Planned	Actual	Planned	Actual
UNDP	15,000	15,000					15,000	15,000
Government / MEP (cash)			10,522,581	10,159,661			10,522,581	10,159,661
ArcelorMittal					3,475,000	580,456	3,475,000	580,456
Juventa DB					2,983,000	0	2,983,000	0
Aktobe Plant of Chrome					76,500	0	76,500	0
Atyrau oil refinery plant					58,615	6,287	58,615	6,287
JREK					25,211	0	25,211	0
Government / MEP (in kind)			378,775	378,775			378,775	378,775
Aksu Plant of Chrome					1,644,441	3,090,255	1,644,441	3,090,255
Alatau Zharyk Company					0	26,503	0	26,503
Energougol					0	25,615	0	25,615

Stepnogorsk Bearing Plant					0	2,123	0	2,123
KEGOK					0	333,622	0	333,622
Czech Trust Fund					0	56,860	0	56,860
SAICM QSP TF					0	246,543	0	246,543
VK REK					0	20,431	0	20,431
Lab trainings					0	5,000	0	5,000
Lab trainings					0	3,000	0	3,000
						TOTALS	**19,179,123** [12]	**14,950,131**

The project leveraged approximately 2.6 million US$ in co-financing less than anticipated (17,519,680 US$, which was the co-financing amount indicated at the time of project endorsement). This can be mostly adhered to the fact that eventually Juventa DB did not participate in the project (~ 3 million US$ in co-financing) and that co-financing provided by Acelor Mittal (3.4 million US$) turned out much lower than expected (~ 580,456 US$). AMT did not phase-out and replace all 107 PCB transformers during the project as expected at the time of the elaboration of the project document, but instead purchased 11 PCB-free dry transformers, and is expecting to replace the remaining 83 PCB transformers before 2020.

However none of these co-financing changes significantly impacted the success of the project activities for which this co-financing was intended. Furthermore, minimal co-financing requirements during GEF-4 were required to be in a ratio of 1 (GEF funding) : 2 (co-financing). By the end of the project, the GEF : co-financing ratio came to 1 : 5.3 which is considered sufficient.

One of the project activities that were severely impacted by the non-materialization of co-financing was the disposal of the Darial-U capacitors. 5,946 PCB containing capacitors remain to date on their original site, because the cash co-financing for their repackaging, transport and disposal was no longer available. Non-leveraging/non-availability of this co-financing was beyond the control of the project.

In summary, the TE team feels that the co-financing raised over the duration was **Satisfactory (S)**.

Project Expenditures

Based on the Combined Delivery Reports (CDRs) provided by UNDP Kazakhstan for the years 2010, 2011, 2012, 2013 and 2014[13], a summary of project expenditures by year can be found in Table 11 below.

Table 11: Project Expenditures for the period 2010 – 2014 (up to 31 December 2014)

Project Activity /Component	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
1. Regulatory Strengthening	167,712	92,378	14,040	2,089	0	276,218
2. Capacity Building for PCB Management	42,810	166,631	171,233	97,020	1,781	479,475
3. Disposal of PCB transformers	15,951	58,978	88,598	462,619	149,635	775,781
4. Regional Storage and Disposal of PCB Capacitors	45,887	43,503	76,313	21,205	836,524	1,023,432
5. Monitoring and Evaluation	0	309	22,152	2,194	2,480	27,135
Project Management	53,612	43,168	54,115	81,093	78,404	310,392
TOTAL	**325,971**	**404,966**	**426,451**	**666,221**	**1,068,824**	**2,892,433**
% Delivery (accumulative)	10%	22%	35%	55%	88%	88%

As can be deducted from Table 11, project expenditures in 2010, 2011 and 2012 were relatively low, with delivery picking up in 2013 and 2014. The higher delivery rates for 2013 and 2014 are the result of

[12] Please note that this amount is different from the co-financing amount as taken up in the project Document at the time of project endorsement (see also Table 1, as the figure includes "planned co-financing" which was mobilized and idscussed during project implementation).

[13] The 2014 CDR summarizes expenditures up to 31 December, 2014

repackaging, transportation and disposal activities that had been re-scheduled because of the pre-longed efforts to find feasible land-based export routes. Only when the project took the decision to export PCBs by air transportation, was it able to start spending project funds allocated for these activities, which make up a significant portion of the budget.

At the time of the TE, the project had an unspent balance of 407,751.43 US$ which represents approximately 10% of the total project budget. Of that amount, at the time of the TE, 16,501 US$ had already been committed.

> *Recommendation:* Based on the remaining project commitments for 2015, it is highly recommended that the project would be extended until May 2015.

3.2.5 Monitoring and evaluation: design at entry and implementation **(S)**

The TE team felt that the Monitoring and Evaluation plan as described and included in the Project Document (See *PART IV: Monitoring and Evaluation Plan and Budget*) was very comprehensive and in line with the UNDP rules and procedures for Monitoring and Evaluation of (GEF) projects.

Table 12 below summarizes the M&E activities as planned for in the project document and conducted throughout the project's implementation.

The column "*Comments & Observations*" summarizes the views of the TE team for each of these M & E activities. In summary the TE team is of the opinion that the M & E of the project, both at project design phase and during implementation, can be rated as **Satisfactory (S)**.

Table 12: Project Monitoring and Evaluation Tools

Type of M & E Activity	Responsible Parties	TE Comments and Observations
Inception Workshop	Project Team	Satisfactory (S)
Inception Report	Project Team	Satisfactory (S)
Measurement of Means of Verification for project purpose indicators	Project Manager who oversaw specific studies	Satisfactory (S)
Measurement of Means of Verification for Project Progress and Performance	Project Manager, Project Team and Project Steering Board	Satisfactory (S)
Project Implementation Review (PIR) and ARR	Project Team, UNDP CO, UNDP GEF	APR: Satisfactory (S) PIR: Satisfactory (S)
Quarterly Progress Reports	Project Team	Satisfactory (S)
CDRs	Project Manager	Satisfactory (S)
Issues Log	Project Manager, UNDP CO, Programme Staff	Satisfactory (S)
Risks Log	Project Manager, UNDP CO, Programme Staff	Satisfactory (S)
Lessons-Learned Log	Project Team	Marginally Unsatisfactory (MU). As previously mentioned, it will be important for the project to capture the lessons-learned from the project, which so far has not yet been done.
Mid-Term Evaluation	Project Team, UNDP CO, UNDP-GEF Regional Coordinating Unit, External Consultants (evaluation team), National Executing Agency	Satisfactory (S)
Final Evaluation, including lessons-learned	Project Team, Independent	Not yet applicable

	Evaluators, UNDP Country Office, UNDP-GEF Headquarter and Regional Coordinating Unit, National Executing Agency.	
Terminal Report	Project Team, UNDP CO	Not yet applicable
Audit	Independent Audit Entity	Audits were conducted in 2012 and 2014, and an additional audit will be conducted in 2015.
Visits to field sites	UNDP CO, UNDP GEF Regional Coordinating Unit (as appropriate), Government representatives.	Satisfactory (S).

Based on observations made following the TE mission as well as a desk review of M&E related reports, the TE team has only a few minor remarks and suggestions for future improvements:

Recommendation - Capture lessons-learned and project results. The project has achieved many results that would be highly beneficial not only for the replication of this project's results within the country, but also for other PCB projects (and POPs projects) being implemented in the Central Asia Region, in particular in light of the specific challenges which are being faced by these countries, because of trans-boundary transportation issues for hazardous wastes. It would be highly beneficial for other countries to have easy access to the project's lessons-learned.

Recommendation: Facilitate future access to guidelines, technical documentation and information materials. At the time of the TE it seemed that most of this information was available within the project management's unit. However the evaluators felt that when the project comes to an end, it is likely that useful information materials, such as technical documentation, guidelines, methodologies and the like, as well as visual materials (photos/videos, etc.) prepared by the project, would not continue to be easily accessible to project stakeholders.

At the time of the TE, only 2 guidelines (those available in Russian, English and Kazakh), had been posted on the website of MEP. As MEP ceased to exist, the project had arranged for the posting of the 8 technical guidelines on the website of Zhasyl Damu Company, however at the time of the TE this had not yet been completed. It is very important that technical documents developed under the project and approved by the government continue to remain easily accessible to PCB holders.

Recommendation: Use visual project materials to communicate project results. PolyEco produced a short commercial video, which made use of images and video material from the draining and the packaging, storage and transportation of transformer oil and capacitors in Kazakhstan. It would be important for the project, to produce – using a similar approach – a short video/photo presentation that recaps all the highlights of the project, which could be shared with project partners and the donors. This would be a cost effective means to capture project results and allow for easy national, regional and global dissemination.

3.2.6 UNDP and Implementing Partner implementation / execution, coordination, and operational issues **(S)**

Overall, the TE team felt that there were few implementation, execution, coordination or operational issues during the project's implementation.

The project team and the project's experts seemed very committed to the project's objectives. Throughout the duration of the TE and after the TE mission, requested information was reasonable quickly provided to the TE team when asked for.

Project partners, often referred to the technical expertise and knowledge of PCB management of the project manager and the project experts, throughout the TE. It seemed to the TE team, that the project had been able to retain very knowable and committed individuals, who not only guided the implementation of the PCB management project, but also provided advice to other hazardous waste related projects and supported government entities in answering questions when necessary. The project's experts were highly respected within their field and among their partners.

Except for the implementation challenges, which the project encountered in finding a way to export the PCB wastes, it seems that the project did not face mayor implementation issues. It should be mentioned that the commitment of the project to ultimately find a solution to export the waste and make all the necessary preparation for export, were admirable.

Some additional challenges, which the project faced in the project's implementation were:

- **Frequent changes of Government:** During the project's duration the Ministry of Environmental Protection (MEP), became the Ministry of Environment and Water Recourses (MEWR). Later on during the project the MEWR ceased to exit and the Ministry of Energy absorbed its functions and responsibilities. These changes, but also other Government changes, did not only impact the involvement of (high-level) staff in the project, but also resulted in changes being made to national priorities, after which often legislations was changed, which again impacted legislation, regulations and guidelines developed by the project.

3.3 Project Results

Project Achievements

In Table 13 below, the project results and achievements have been mapped against the OVI and end-of-project targets as taken up in the Project's Logical Framework (For the original version of the PLF, kindly refer to Annex I). The project results/achievements at the time of the TE have been extracted from the project's PIRs and have been verified and updated following interviews and meetings held during the TE's mission. Additional information has been extracted from project related documentation provided by the project team (see Annex III).

Table 13 provides an overview of the project results in bullet points, while following Table 13, a narrative on the project's results provides additional insight and details on how and in which manner project results have been achieved. The narrative also explains why a certain rating has been provided for each project outcomes (see the last column in Table 13).

Table 13: Project Achievements by project outcome

OBJECTIVE	MEASURABLE INDICATORS FROM PROJECT LOGFRAME	END-OF-PROJECT TARGET	STATUS OF DELIVERY	RATINGS
Objective: To enhance the capacity for safe management of PCB oil and PCB-containing equipment at all stages of the PCB management cycle in Kazakhstan	Clear regulation anchored scheme for PCB management with identified roles and deadlines in Kazakhstan established	1. Environmental Code amend-ment and technical specifications adopted. And integrated by environmental authorities.	▪ In 2011, 17 amendments on POPs management were proposed to the Ecological Codex (EcoCode), 11 of which were adopted. ▪ 7 new amendments to EcoCode were proposed in 2014. Approval of the amendments is pending (expected during the course of 2015). ▪ "*Rules for handling Persistent Organic Pollutants (POPs) and POPs containing waste*" approved by Order of Minister of Environment Protection on 24th February 2012 № 40 and entered into force on 26th June 2012. ▪ 3 new requirements related to the management of PCB ("*Obligatory conduction of PCB Inventory; preparation of PCB Management Plans for each PCB holder*; A PCB Disposal Programme has been included in the list of environmental measures for enterprises – which was approved by Order of the Minister of Environmental Protection (12th January 2012 № 5).	**S**
		2. Clear PCB reporting and enforcement set up nationally. PCB holder submitted management plans integrated in environmental inspections.	▪ PCB reporting requirements are clearly stated in the PCB regulation and EcoCode. ▪ Regional ecological departments ensure inspections in accordance with the EcoCode and PCB regulation. ▪ Availability of a PCB management Plan (consisting of inventory results - labeling & reporting - PCB phase-out plan; and PCB disposal Plan) has been taken up in the checklists for	

			environmental inspections.	
	Site and regional based PCB disposal systems developed and demonstrated from planning to disposal.	1. One major PCB capacitors and one major PCB transformer site management demonstrated from planning to disposal. Resulting in 1,400 tons PCB waste processed.	▪ The project completed the draining of **33** transformers and the subsequent packaging, transport (by air) and disposal at Tredi (France) of **80** tons of PCB waste. ▪ The total weight of the drained transformers is **670** tons. ▪ At the time of the TE the project had collected, packed, transported and safely stored 2,402 PCB capacitors from 6 companies, representing **150** tonnes. The capacitors were stored at Promotchod Kazakhstan in a safe storage facility, awaiting completion of the procedures for export. *Note*: If the project will be successful at disposing of the 150 tons of capacitors, the project will have disposed of **230** tonnes of PCB containing equipment, oils and wastes, and will have ensured the safe storage of **670** tonnes of transformer shells. Totaling: **900** tonnes.	**S**
		2. Regionally based PCB collection/disposal scheme in place with 200 tons PCB waste processed.	▪ 2 commercial storage facilities (Promotchod Kazakahstan and Astana NAN) undertook facility upgrading to meet PCB storage requirements following advice from the project. ▪ Promotchod is best located for air export, while Astana NAN is best located for land (rail) export. ▪ Pomotchod currently stores 150 tonnes of PCB capacitors, while Astana NAN stores pesticides and other types of hazardous wastes.	
OUTCOMES	**MEASURABLE INDICATORS FROM PROJECT LOGFRAME**	**END-OF-PROJECT TARGET**	**STATUS OF DELIVERY**	**RATINGS**
Outcome 1: Regulatory and administrative strengthening for sound PCB management	1. Proposed changes in Environmental Code and changes in associated laws finalized.	1. Fully consulted proposal submitted 1 year.	▪ In 2011, 17 amendments on POPs management were proposed to the Ecological Codex (EcoCode). ▪ A proposal for 3 amendments to the "*Standard List of Environmental Activities*" applicable to economic entities, was submitted in 1st June 2011. ▪ In 2014, 7 additional amendments to the EcoCode were proposed and submitted for approval. ▪ "*Rules for handling persistent organic pollutants (POPs) and POPs containing waste*" were submitted in November 2011.	**S**
	2. Changes ensuring safe PCB management in Env. Code adopted.	2. Legislation adopted within 2 years.	▪ 11 of the 17 proposed amendments to the EcoCode in 2011 were included by degree of the President of the Republic of Kazakhstan (12 December 2011). ▪ 3 amendments to the "*Standard List of Environmental Activities*" were approved by the Minister of Environmental Protection on 12 January 2012. ▪ It is expected that the 2014 proposed amendments will be adopted in the course of 2015.	**S**

			▪ "*Rules for handling Persistent Organic Pollutants (POPs) and POPs containing waste*" approved by Order of Minister of Environment Protection on 24th February 2012 № 40 and entered into force on 26th June 2012.	
	3. Development of technical guidance implementing PCB regulative framework	3. 5 guidance documents covering various stages and stakeholders of PCB life-cycle	▪ Eight (8) guidelines were developed by the project. Five (5) of which were approved by the Scientific Council.	**S**
	4. Development and adoption of PCB environ-mental and food quality guidelines	4. Specific quality guidelines developed covering abiotic environment and food	▪ The project and the Ministry of Health submitted an official request for the inclusion of MAC values for PCBs into SanPin. However the Ministry of Justice responded that without additional national research to verify these MAC values, these will not be included.	**U**
Output 1.1: Environmental Code and other PCB related legislation reviewed, changes developed. Environmental Code revised to include a chapter on PCB management and disposal. Output 1.2: Responsibilities vis-a-vis International Chemicals´ Conventions in the government re-aligned Output 1.3: Detailed PCB rules, guidelines, incentive schemes developed Output 1.4: Capacity for implementing and knowledge of PCB regulations and guidance among public sector actors, including training of customs department in PCB identification, enhanced. Output 1.5: Awareness raising campaigns on PCB risks and regulatory requirements among authorities and wider public conducted				
OUTCOMES	**MEASURABLE INDICATORS FROM PROJECT LOGFRAME**	**END-OF-PROJECT TARGET**	**STATUS OF DELIVERY**	**RATINGS**
Outcome 2: Capacity building for sound PCB management, identification of additional PCB sources	1. Number of PCB holder management plans developed.	All PCB holding companies submit management plans.	▪ **150** representatives of firms and enterprises were trained on PCB management issues. ▪ Based on information from Regional Ecological Departments, more than **360** companies started an inventory of oil containing equipment and submitted the first part of the inventory (list of equipment). ▪ Out of the **20** companies in Kazakhstan which are known to hold PCBs, at the time of the TE **2** PCB management plans had been submitted, and **8** PCB management plans had been drafted.	**MS**
	2. Number of PCB holder replacement plans developed.	20 plans during 3 first years of project	▪ At the time of the TE, **3** companies had approved their PCB phase-out plans (Kazakhmys, AMT, Kazzinc).	**MS**
	3. Number of new approaches for PCB data collection initiated. (Separate investigation for Min. of Defense, collection	100 additional companies surveyed. Complete PCB data from Ministry of defense.	▪ PCB inventories were initiated at ~ 100 additional companies. ▪ Analysis of the information provided to the Ecology regional departments indicated that more than 360 enterprises completed the first stage of the inventory. ▪ The inventory identified an additional - *Capacitors*: **467** PCB capacitors on the Eastern Kazakhstan Electro Distribution Company, **100** capacitors at AMT Steel Department and **4** PCB capacitors at the Ust-	**S**

	through Ministry of industries channels, reward system)		Kamenogorsk Capacitor Plant. - *Transformers*: **2** transformers at the Coal Mine in Eastern Ekibastuz, **32** transformers at the Bearing Company in Stepnogorsk, **12** transformers at the Kazakhmys and **2** transformers at the Aksu ferroalloy plant. *Ministry of Defense (MoD)* ▪ The project provided support to the MoD through the training of 38 representatives. The results of the inventory are expected by 2016. *Laboratories* ▪ A comprehensive laboratory-training component was developed and implemented with support of the Czech Research Centre for Toxic Compounds in the Environment (RECETOX), which included preparation of methodologies for the analysis of PCBs in soil and liquid; A study tour to RECETOX in Brno, Czech Republic (Nov 2011), and a two three-day training events, during which 60 participants were trained on methods for analyzing PCB in oil, water, soil and food. ▪ At the time of the TE, 5 laboratories had been accredited for PCB analysis in oil, 3 in soil and 1 in food. In addition, 4 laboratories had been accredited for PCB analysis in water (SEZ, National Analytical Centre, Ust-kamenorsk gorvodocanal and Kazecoanalyze). ▪ Three PCB analysis methods and Device L2000DX for PCB testing in oil, soil and water samples have been registered and included into the State register of international, regional and national standards of the Republic of Kazakhstan.	
Output 2.1: Improved capacities of PCB holders for sound PCB management Output 2.2: PCB holder-wise management and replacement plans Output 2.3: PCB inventory expanded and updated Output 2.4: Enhanced PCB analysis preparedness at State Hydro-meteorological services and Ministry of Health laboratories Output 2.5: Risk based priority setting tools for PCBs management initiatives developed.				
Outcome 3: Replacement, setting-up safe dismantling of 850 tons of PCB trans-formers and their safe disposal	1. Company phase out plans developed.	106 PCB transformer	▪ At the time of the TE, 1 company (AMT) had its PCB phase-out plan approved by the regional ecological department. As part of its phase-out plan, AMT (which owns 107 transformers of which 25 have already been phased out), aims to phase out the remaining 82 by 2020.	**MU**
	2. Safe workshop and storage assigned up dated for PCB dismantling and storage.	2(a). Safe transformer storage facility established within second year of project.	The project provided advice to private PCB holders on the requirements for safe storage of PCB containing wastes. At the time of the TE: ▪ **AMT** was storing 22 of the drained 25 transformers in a storage location upgraded based on project recommendations. **Stepnogorsk Bearing Plan** was safely storing 2 drained "empty" transformers.	**MS**

		2(b). Disconnection and dismantling personnel fully trained for safe PCB handling	▪ The project also provided training and recommendations to **Aksu Ferroalloy Plant** for upgrading of its storage facility. However, at the time of the TE the recommendations had not yet been implemented. ▪ PolyEco and the project trained personnel of the Promotchod waste management company, AMT coal and steel, Kazakhmys, Atyrau oil refinery, Stepnogorsk ball bearing company, Aksu Ferroallow, VKREC, Kazmetizprom, Alatau Zharyk Company among others on drainage, packaging, transportation and storage.	
	3. Number of PCB contaminated transformers drained and dismantled.	3. 30 transformers phased-out and replaced within 36 months of project implementation. Replacement plan for all transformers accepted by end year 4.	▪ At the time of the TE, a total of 33 transformers had been phased out (25 from Arcelor Mittal Temirtau (AMT) Steel, 4 from Atyrau oil refining plant, 2 from the Stepnogorsk bearing plant, and 2 from Kazakhmys). ▪ At the time of the TE, AMT steel had approved a phase-out/replacement plan for the remaining 82 transformers – with a deadline of 2020.	**S**
	4. Tons of PCB contaminated oil and associated waste disposed through exports.	4. Target: 850 tons of PCB waste safely disposed.	At the time of the TE: ▪ The project had disposed of **80** tonnes of PCB waste (68 tons of pure PCB oil; 7 tons of contaminated soil and 5 tons of packaging, drums, pallets, PPE etc. = totaling 80 tonnes). ▪ **33** empty transformer shells with a combined weight of **670** tons had been stored, of which 23 safely. ▪ Combined, the project had therefore ensured the safe disposal and storage of **750 tonnes** of PCB contaminated oil and associated wastes.	**MS**
Output 3.1: Phase-out and procurement of replacement transformers planned and scheduled Output 3.2: Transformers disconnected, drained, dismantled and cleaned, metals recycled Output 3.3: Disposal of oils and associated waste				
Outcome 4: Regionally organized secure storages and disposal of PCB capacitors	1. Storage manned with professional workers	1. All storage personnel undergone safe handling, fire, spill containment training.	▪ 24 workers from AMT and Promotchod received training from PolyEco on safe handling of PCB containing waste (packaging, storage and transportation), fire safety and spill containment. Polyeco also provided on-site training on the packaging of PCB capacitors. Astana-Nan staff was trained in September 2012 by International Consultant Aleksandar Michovski (Macedonia).	**S**
	2.System of storages operational	2. PCB waste received within 36 months of project inception	▪ 2 regional/commercial storage sites are operational: Promotchod Kazakhstan and Astana NAN (see also Outcome 3).	**S**
	3. Disposal of regionally collected PCB containing equipment and waste.	3. **200** tons of PCB equipment and waste disposed.	▪ **150** tons of capacitors (~ 2,402 capacitors) were packed and stored – and are ready for transportation abroad and disposal at Tredi in France.	**S**

	4. Tons of PCB capacitors disposed from Darial-U site	4. All Darial-U capacitors disposed by end year 4. ~ 400 tons	Project activity removed – based on decision taken after MTE recommendation and Project Steering Committee decision.	**NA**
Output 4.1: Secure, temporary PCB storage facilities identified, constructed/upgraded Output 4.2: Safe operation of storage sites secured Output 4.3: PCB collection and disposal put in place and implemented Output 4.4: 15,000 PCB capacitors at Darial-U Capacitor site disconnected, packed and stored. Output 4.5: Clean-up premises and pack all potentially PCB contaminated wastes. Output 4.6: Transportation and disposal of approximately 600 tons of PCBs and associated waste disposed.				
			Overall Project Results	**S**

The following section of the TE report provides the reasoning on the rating that was provided by the TE team, as well as summarizes some important project results and facts that could not be captured in Table 13 but were important for the argumentation of the rating.

Outcome 1: **Regulatory and administrative strengthening for sound PCB management**		
	Indicators	**End of Project Targets**
1.1	Proposed changes in Environmental Code and changes in associated laws finalized.	Fully consulted proposal submitted within 1 year.
1.2	Changes ensuring safe PCB management in Environmental Code adopted.	Legislation adopted within 2 years.
1.3	Development of technical guidance implementing PCB regulative framework.	5 guidance documents covering various stages and stakeholders of PCB life-cycle.
1.4	Development and adoption of PCB environmental and food quality guidelines.	Specific quality guidelines developed covering abiotic environment and food.

1.1 & 1.2: In 2011, 17 amendments on POPs management were proposed to the Ecological Codex (EcoCode). 11 of the 17 proposed amendments to the EcoCode were included by degree of the President of the Republic of Kazakhstan (12 December 2011). In 2014, 7 additional amendments[14] to the EcoCode were proposed and submitted for approval. It is expected that these amendments will be adopted in the course of 2015.

A proposal for 3 amendments to the "*Standard List of Environmental Activities*" applicable to economic entities, was submitted in 1st June 2011 and were approved by the Minister of Environmental Protection on 12 January 2012. The list of the environmental requirements for PCB holders was amended by adding the requirement to develop a Plan for phasing out PCB containing equipment and the Requirement to develop the Program for PCB utilization. Even though these requirements were part of the PCB management, they were added separately to ensure that regional ecological departments included these in their checklists.

"*Rules for handling Persistent Organic Pollutants (POPs) and POPs containing waste*" were submitted in November 2011 and approved by Order of Minister of Environment Protection on 24th February 2012 № 40 and entered into force on 26th June 2012.

1.3 Eight (8) guidelines were developed by the project. Five (5) of which were approved by the Scientific Council. These eight guidelines are:

- PCB management guidelines.
- Standard PCB Management Plan for PCB holders.
- Overview of PCB Disposal and Treatment Technologies.
- Instructions for Storage of PCB Waste.
- Guidelines on Conducting PCB Contaminated Site Risk Assessment.
- Risk Assessment Manual.
- A Review of the current situation on POPs monitoring in the environmental of Kazakhstan and Abroad.

[14] Prohibition of exploitation of the damaged equipment (PCB containing and PCB contaminated); Prohibition of use of the PCB containing and PCB contaminated equipment in production of food and forage; Prohibition of dissolving of PCB containing oils with pure oils in PCB contacting equipment; Regulation of receiving permission on utilization of POPs and equipment, and some technical requirements for cleaning the burning gasses and temperature regimes; The Rules on POPs operation were amended to align the deadlines and other technical issues related to PCB management; and MAC standards were proposed based on WHO for 8 types of food products, water and soil.

- Proposal for Design of POPs monitoring framework in Kazakhstan.

It is expected that before the project comes to an end – the eight (8) guidelines will be posted on the Zhasyl Damu Agency website. At the time of the TE, only 2 guidelines (those available in Russian, English and Kazakh), had been posted on the website of MEP. As MEP ceased to exist, the project had arranged for the posting of the 8 technical guidelines on the website of Zhasyl Damu Company, however at the time of the TE this had not yet been completed.

1.4 The project and the Ministry of Health submitted an official request for the inclusion of MAC values for PCBs into SanPin. An initial request was submitted for PCBs in food (eggs, milk, meat, fat, etc.), and a second request focused on water and soil. However the Government (Ministry of Justice) responded that without additional national research to verify these MAC values, these will not be included.

Rating Outcome 1: Satisfactory (S)
Argumentation: The project has met all end-of-project targets and OVIs as taken up in the PLF. However, certain amendments are still pending and are expected to be approved in the course of 2015, but most likely after the project comes to an end. Although the project has achieved significant improvements in the regulatory framework governing the management of PCBs to date, the framework could benefit from additional strengthening. For example, to date MAC values have not yet been accepted. Furthermore, with the extension of the deadline for the second phase of the PCB inventory and the submission of PCB management plans by December 2018, regional ecological departments will only have to start monitoring compliance after that date. Unfortunately regional ecological departments remain to have limited staff to be able to monitor PCB issues on a regular basis. Thirdly, companies can currently continue to manage PCB equipment without having to meet national requirements for PCB waste, as long as they do not register the PCB equipment as a hazardous waste. That said, the overall regulatory framework has improved significantly, however it is recommended that future POPs/PCB management projects continue to further improve and update it.

Outcome 2: **Capacity building for sound PCB management, identification of additional PCB sources**		
	Indicators	**End of Project Targets**
2.1	Number of PCB holder management plans developed.	All PCB holding companies submit management plans.
2.2	Number of PCB holder replacement plans developed.	20 plans during 3 first years of project
2.3	Number of new approaches for PCB data collection initiated.	100 additional companies surveyed. Complete PCB data from Ministry of Defense.

Throughout its duration the project conducted a significant amount of capacity building. In Table 14 below is an overview provided of the workshops and trainings facilitated and organized by the project. For the details on these training events (number of participants per training event, type of participants, etc.) kindly refer to Annex XI.

Table 14: Project Workshops and Gender Distribution

Topics	No. of Workshops	Total Participants	Women [%]	Men [%]
Project Inception Workshop	1	49	59	41
Establishment of legislative base	1	24	42	58
Inventory rules and safe PCB handling	21	397	38	62
Inventory rules and safe PCB handling, packaging of PCB capacitors	2	80	25	75
Inventory rules and safe PCB handling, pilot inventory	2	32	31	69
Introduction to PCB analysis	5	101	88	12
PCB life-cycle management, disposal technologies	1	65	43	57

Review of world system and discussion and design of PCB monitoring system for Kazakhstan.	1	10	80	20
Inventory rules, approaches for controlling the enterprises on compliance with the Rules	1	32	34	66
TOTAL	35	**790**	45	55

The regional coverage of the training was well received. As training was provided in many different locations, it allowed for many more stakeholders (in particular, regional ecological departments and technical staff) to participate in the training. If the training and workshops had been exclusively organized at national level (e.g. Astana and Almaty) many of the participants would not have been able to attend due to travel and financial constraints. This regional training approach is not common for UNDP projects, but proved very successful.

It should also be noted that large PCB holders, like AMT Steel and Coal, issued internal guidelines for company personnel on how to handle/manage oil containing electrical equipment. Subsequently such holders trained their personell on PCB management. For example, AMT Steel created awareness on PCB issues and management among ~ 7,000 of their personnel.

In addition, project partners (Zhasyl Damu, IAC, CSD and other UNDP projects) also organized training in line with the objectives of the PCB Management project. In total partners trained an additional **300** participants. Therefore, the total number of people trained totals ~**1,090**.

Laboratory support: Although not captured in the project indicators and end-of-project targets as taken up in the PLF, the project also provided considerable support to laboratories. During the MTE it was recommended for the project to "*further support the process of laboratory accreditation and ensure that there is an adequate amount of laboratories accredited to provide for inventory needs*".

A comprehensive laboratory-training component was developed and implemented with support of the Czech Research Centre for Toxic Compounds in the Environment (RECETOX), which included:

- Preparation of methodologies for the analysis of PCBs in soil and liquids, based on the Belarus and EU methods.
- A study tour to RECETOX in Brno, Czech Republic in November 2011 for nine (9) representatives from MEP, Laboratory of the Ministry of Health, Custom's Laboratory, KazhydroMet and Ust-Kamenogorsk Gorvodokanal' laboratories.
- Two three-day training events organized by RECETOX experts, during which 60 participants were trained on methods for analyzing PCB in isolating liquids (transformer oil), water, soil and food (human milk).

In total the project provided training sessions for 15 representatives from regional ecological laboratories, 15 representatives from private laboratories and more than 30 representatives from the 6 oblast laboratories under the Committee of State Sanitary Epidemiological Control - Ministry of Health.

The project also supported the registration of PCB analysis methods and the Device L2000DX for PCB testing in oil, and water samples and their inclusion into the State Register of international, regional and national standards of the Republic of Kazakhstan.

At the time of the TE, 5 laboratories had been accredited for PCB analysis in oil, 3 in soil and 1 in food. Some of the laboratories were already on a commercial basis offering their services for PCB analysis as part of the 2nd phase of the PCB inventories. It appears that at the time of the TE, analysis capacity was sufficient.

Interviewed laboratory beneficiaries expressed particular content with the support provided by RECETOX, the quality of the training and the usefulness of the guidelines for PCB analysis developed with project support.

2.1 Throughout the project's duration 150 representatives of firms and enterprises were trained on PCB management issues. Based on information provided by the regional ecological departments, more than 360 companies completed the first part of the inventory of oil containing equipment and submitted inventory reports (list of equipment) o regional ecological departments.

Out of the 20 companies in Kazakhstan, which are known to hold PCBs, at the time of the TE 2 PCB management plans (10%) had been submitted, and 8 PCB management plans (40%) had been drafted.

The main challenge for reaching this project target seemed to have been related to the deadline for the submission of PCB management plans[15]. In line with legislation in place, companies were expected to submit their PCB management plans by December 2014. However many companies expressed that they had difficulties completing the 2nd phase of the inventory (PCB analysis) in time, often due to unavailability of financial resources to cover expenses for the analysis expenses, and would be unable to meet the deadline.

It was therefore decided to postpone the deadline to December 2018. An amendment to the EcoCode to change the deadline to obtain the results of the 2nd stage of the inventory was submitted for approval in 2014 and is expected to be approved during the course of 2015. As many PCB holders were aware that the deadline was going to be extended, they did not complete the analysis by December 2014. Consequently, it is hard to finalize PCB management and phase-out plans, as companies are unsure whether equipment contains PCBs / is contaminated and needs to be phased-out eventually.

2.2 At the time of the TE, 1 company (AMT) - representing 5% of the total number of PCB holders, and representing 65% of the PCB transformers present in Kazakhstan - had its PCB phase-out plan approved by the regional ecological department. As part of its phase-out plan, the company (which owns 107 transformers of which 25 have already been phased out) aims to phase out the remaining 82 by 2020.

2.3 During the project's duration, PCB inventories were initiated at an additional ~ 100 companies. As a result of the 1st phase of the inventories undertaken at approximately 360 enterprises (based on data from the Regional Ecological Departments), PCB containing equipment (not included in the preliminary PCB inventory) was identified (see Table 15 below).

Table 15: Additional PCB equipment identified as a result of the project

Capacitors	
Eastern Kazakhstan Electro Distribution Company	467
AMT Steel Department	100
Ust-Kamenogorsk Capacitor Plant	4
TOTAL	**571**
Transformers	
Coal Mine in Eastern Ekibastuz	2
Bearing Company in Stepnogorsk	32
Kazakhmys	12
Aksu ferroalloy plant	2
TOTAL	**48**

Rating Outcome 2: Marginally Satisfactory (MS)

Argumentation: This rating has been provided because the number of anticipated PCB management plans as well as the number of PCB replacement plans was significantly lower than anticipated (see end-of-project targets). Secondly, even though a large number of additional companies started inventories and the project identified a considerable amount of additional transformers and capacitors, the way in which the inventory results are kept doesn't allow for easy aggregation of results. Each PCB holder is required to submit their inventory results to their regional ecological departments (16 in total + 2 cities).

[15] PCB management plans consist of phase 1 and phase 2 inventories and a PCB phase-out plans, among other components

However, no centralized computer system is in place and documentation is submitted in hard-copy. For now it appears as if the PCB management project team as well as the NIP update project team, are assuming this centralization/aggregation of inventory results for inclusion in the NIP update, however this is not very sustainable. The regional ecological departments also do not appear to have the manpower (in terms of sufficient technical staff) to review and verify submitted PCB management plans and inventory results. Finally, the project was expected to support the Ministry of Defense (MoD) in obtaining inventory results. The project provided support to the MoD through the training of 38 representatives, however the results of the inventory are only expected by 2016. It is for these reasons that a Marginally Satisfactory (MS) rating has been provided.

Outcome 3: **Replacement, setting-up safe dismantling of 850 tons of PCB transformers and their safe disposal**		
	Indicators	**End of Project Targets**
3.1	Company phase out plans developed.	106 PCB transformer
3.2	Safe workshop and storage assigned up dated for PCB dismantling and storage.	(a). Safe transformer storage facility established within second year of project. (b). Disconnection and dismantling personnel fully trained for safe PCB handling
3.3	Number of PCB contaminated transformers drained and dismantled.	30 transformers phased-out and replaced within 36 months of project implementation. Replacement plan for all transformers accepted by end year 4.
3.4	Tons of PCB contaminated oil and associated waste disposed through exports.	Target: 850 tons of PCB waste safely disposed.

3.1 The project target "*106 PCB transformers phased out*" was specifically meant for AMT Steel, which is the largest PCB transformer holder in the country.

At the time of the TE, AMT - representing 5% of the total number of PCB holders, and representing 65% of the PCB transformers present in Kazakhstan - had its PCB phase-out plan approved by the regional ecological department. As part of its phase-out plan, the company (which owns 107 transformers of which 25 have already been phased out) aims to phase out the remaining 82 by 2020.

However, during the project's development stage, the target of "107 transformers" was set based on the replacement and phase-out of all AMT owned transformers, with AMT providing the necessary co-financing for transformer replacement (3,475,000 US$). However, eventually AMT only replaced and phased-out 25 transformers, and covered expenses related to the inventory, packaging, storage and transportation (representing 580,456 US$ in co-financing). This is one of the main reasons why the level of co-financing raised by the project turned out to be lower than anticipated.

3.2 At the time of the TE, of the **33 PCB transformers drained with project support, 27 (80%) were stored in facilities upgraded to meet storage requirements for drained PCB transformers**.

Throughout the course of the project's implementation, the project provided advise to PCB transformer holders on the requirements for safe storage of PCB containing wastes. In addition, PolyEco and the project trained personnel of Promotchod Kazakhstan, AMT Coal and Steel, Kazakhmys, Atyrau oil refinery, Stepnogorsk ball bearing company, among others, on transformer drainage, packaging, transportation and storage.

At the time of the TE:

- AMT was storing 22 of the drained 25 transformers in a storage location upgraded based on project recommendations. According to AMT it had been impossible to transport the other 3 transformers to the centralized location, due to transportation challenges.
- Stepnogorsk Bearing Plan was safely storing 2 drained "empty" transformers.

- The project also provided training and recommendations to Aksu Ferroalloy Plant for upgrading of its storage facility. However, at the time of the TE the recommendations had not yet been implemented.

The storage of drained empty PCB transformer shells, although safely stored for now, does pose risks for the future. Eventually, such shells require decontamination, as holders are likely unwilling to store such waste indefinitely. Unfortunately, there are no decontamination solutions yet at national level and as such the risk persists that in the future emptied shells might be inadequately reused. It is therefore of utmost importance that in the near future solutions for decontamination in the country are being put in place, for example through the development and implementation of a PCB project focusing on decontamination.

3.3 At the time of the TE, PCB holders had phased out a total of **33** transformers. An overview of the phased out transformers is provided in Table 16 below. The Table also provides an overview of the weight of the PCB oil and waste recovered from these transformers.

Table 16: List of PCB transformers drained and PCB waste weight [tonnes]

PCB Holder	No. of transformers	Weight [Tonnes]	Packing period
AMT, Temirtau	25	59.250	30 Sept – 21 Oct
Atyrau oil refining plant	4	8.340	28 Oct – 31 Oct
Stepnogorsk Bearing Plant	2	6.400	4 Nov – 5 Nov
Kazakhmys, Ballkhash	1	3.285	7 Nov – 8 Nov
Kazakhmys, Zhezkazgan	1	3.120	20 Jan – 22 Jan 2014
	33	**80.520**	

Of all the PCB holders, only AMT Temirtau Steel had approved a phase-out/replacement plan for its remaining 82 transformers – with a deadline of 2020.

3.4 The export of PCB wastes turned out the most challenging and time consuming part of the project. The main challenge faced by Kazakhstan in the export of PCB waste for disposal abroad (which is a challenge faced by several other land-locked Central Asian countries), is the prohibition of trans-boundary movement of PCB containing oils and PCB containing capacitors by bordering countries.

In Table 17 below are summarized the various PCB export routes which the project tried to explore.

Table 17: PCB export routes attempted by project

Attempted routes	Attempts by project	Outcome
1. Via Russia	Submission of multiple alternative notification files.	**Russia** forbids transit in their regulations
2. Via China	Submission of multiple alternative notification files.	**China** forbids transit in their regulations
3. Azerbaijan **Georgia** **Turkey**	Submission of notification files	**Georgia**: written response on ban on 18/4/2012 **Azerbaijan**: written response on ban on 23/5/2012
4. Uzbekistan **Turkmenistan** **Iran** **Turkey**	**Turkmenistan**: Difficulty in contacting the competent authority, details not even available at the Basel Convention Secretariat, trip difficult to arrange since invitation was necessary for visa. **Uzbekistan:** Response on 14/5/2012 that transit could be possible, but formal response could only be provided on submission of	**Turkmenistan**: Official response on ban on 31/10/2012 after sending letter to the Minister of Environment on 10/7/2012

	notification file. Response received on 5/11/2012 that the notification files had to be translated to the Russian language. No further investigation.	
5. Directly to Iran via the Caspian Sea Turkey	Difficult to book direct shipment without prior stop at Baku port.	**Iran**: Letter sent on 2/7/2012 stating that no generic prohibition existed according to law. Notification docs arrived in Iran on 20/11/2012. Request for additional clarification on 19/12/2012. Official ban sent on 23/2/2013. Endeavour of UNDP Iran and UNDP Kazakhstan to change the decision. Official ban sent again on 10/6/2013 by the Embassy of Iran in Astana.
6. Uzbekistan Afghanistan Pakistan		Route directly rejected
Official decision to pursue air transportation taken by UNDP Kazakhstan in June 2013		
By Air from Karaganda airport to Lyon (France)		Submission of final notification file on 23/10/2013, upon extension of contract for additional quantities. • Consent received by France on 22/11/2013. • Final consent by Kazakhstan on 17/1/2014.

[*Source*: PolyEco PowerPoint Presentation presented at UNDP MPU/Chemicals retreat January 2015]

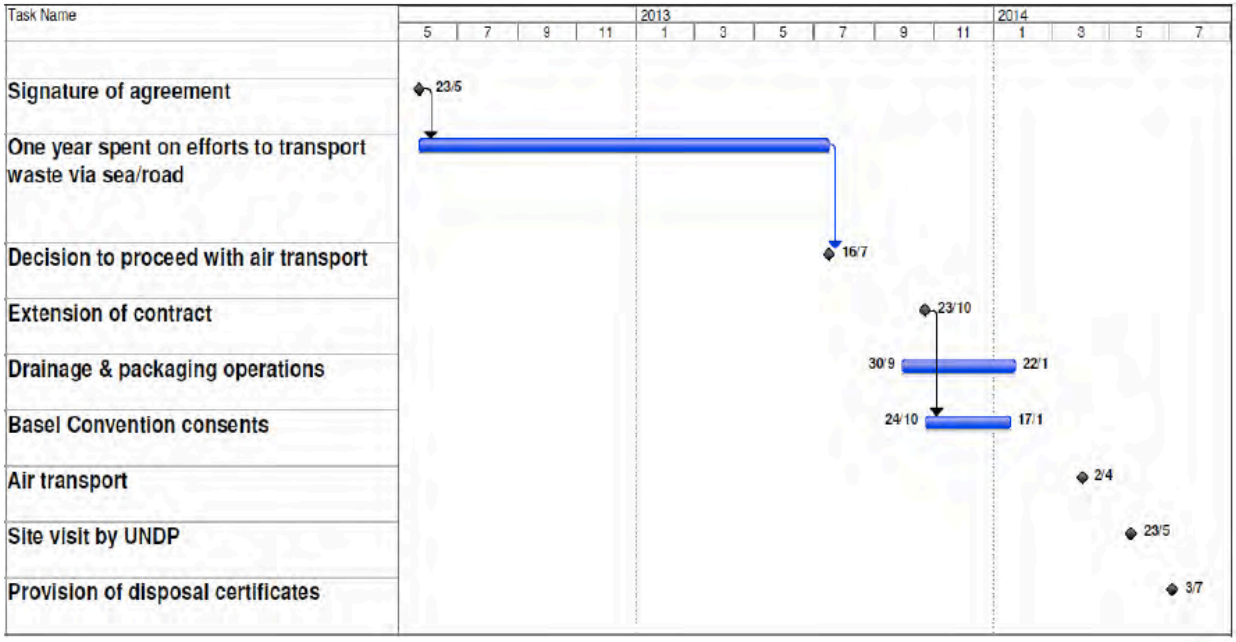
In parallel to exploring potential exportation routes, the project team also tried to influence legislation/regulations, which would allow for land-based trans-boundary movement. As part of these efforts, the project team also prepared amendments to the Custom Union (CU) legislation and participated in CU expert group meetings.

The project team also participated in the *Extraordinary Conferences of Party of the Basel, Stockholm and Rotterdam Conventions*, to raise awareness on the issue of the trans-boundary transportation of hazardous waste for Central Asian countries.

In August 2013 a proposal for amending the "*List of Wastes Prohibited for Import and Transit*" of the Customs Union Agreement (between Russia, Kazakhstan and Belarus), was prepared with support of the project and forwarded to the Eurasia Economic Committee (EEC). Russia and Belarus agreed with this proposal. The proposal was approved in March 2014, and might help the future land-based export of capacitors. Currently Russia is preparing similar amendments to its own legislation.

As can be seen in the time-table in Figure 1 below, between the signature of the contracting agreement between PolyEco and the project in May 2012, until the final disposal of the PCB waste at Tredi in France in June 2014, two (2) years and 2 months passed. Of that period, a little more than a year was spent on efforts to identify potential transport routes.

Figure 1: Time table for PCB oil disposal



[*Source*: PolyEco PowerPoint Presentation presented at UNDP MPU/Chemicals retreat January 2015]

Not only was significant time lost on finding a potential transportation route, but transportation by air proved to be significantly costlier than anticipated during project preparation. In Table 18 below an overview of the costs is provided.

Table 18: Costs incurred for the packaging, transportation and disposal of 80.4 tonnes of PCB transformer waste

Description	Unit	Unit Price	Price USD
Handling and Packaging of PCB oil	N/A		79,120
Shipment	Approximately 80 tons of PCB oils with associated corresponding packaging and pallets	NA	376,986
Disposal	Approximately 80 tons of PCB oils with associated corresponding packaging and pallets	597 USD per ton of weighed PCB oil	47,200
Staff and Consultancy Costs			87,100
		Total	**590,406**

Ultimate disposal costs per tonne, amounted to 7,343 **US$.**

During project development it was assumed that PCB disposal would cost up to **3,300 US$/tonne**[16]. As air transportation turned out to be the determining factor in disposal costs, the project was unable to dispose of the weight initially aimed for and has to reduce its targets.

It should also be mentioned that initially the project aimed to dispose of PCB oils from 24 transformers located at the Arcelor Mittal (AMT) steel plant in Temirtau, representing approximately 60 tonnes. However when it was decided to make use of air transportation, it proved more economical to use the full capacity of the chartered cargo plane. Therefore the scope was extended to include an additional 20 tonnes of PCB contaminated waste from three additional industries: Kazakhmys, Atyrau refinery and EPK, Stepnogorsk (see Table 16).

[16] Including packaging: 100 US/tonne; transportation: 1,300 US$ per tonne; disposal: 1,800 US$/tonne

At the time of the TE, the project had managed to dispose of 80 tons of PCB waste for which the disposal certificates had been received, which consisted of:

- 68 tonnes of pure PCB oil
- 7 tonnes of contaminated soil
- 5 tonnes of packaging, drums, pallets, PPE etc.

33 empty transformer shells with a combined weight of **670** tons had been stored, of which 23 safely (see also 3.2).

It should be mentioned that one of the project outputs ("*Output 3.2: Transformers disconnected, drained, dismantled and cleaned, metals recycled*") was not deemed feasible, as there are no facilities in Kazakhstan which would allow for the cleaning of the drained transformers. Instead the project focused on the safe storage of the drained transformers, to ensure their safeguarding, until feasible solutions at national level will become available for their decontamination.

Combined, the project has ensured the safe disposal and storage of **750 tonnes** of PCB contaminated oil and associated wastes.

Rating Outcome 3: Satisfactory (S)
Argumentation: Even though the ultimate targets achieved by the project were slightly lower (750 tonnes) as compared to the targets set at the project's development stage (850 tonnes), the TE team felt that, considering the significant challenges faced and overcome by the project due to the trans-boundary movement of the PCB wastes and the ultimately high costs for air transportation, the project should be commended for it continued commitment to demonstrate the possibility of export of PCB waste by air freight for disposal abroad.

Outcome 4: **Regionally organized secure storages and disposal of PCB capacitors**		
	Indicators	**End of Project Targets**
4.1	Storage manned with professional workers	All storage personnel under-gone safe handling, fire, spill containment training.
4.2	System of storages operational	PCB waste received within 36 months of project inception
4.3	Disposal of regionally collected PCB containing equipment and waste.	**200** tons of PCB equipment and waste disposed.
4.4	Tons of PCB capacitors disposed from Darial-U site	All Darial-U capacitors disposed by end year 4. ~ 400 tons

4.1 & 4.2: Because of the challenges faced in exporting PCB containing waste, the project and the Government of Kazakhstan decided not to establish centralized storage facilities as initially foreseen by the project. The main reason for this decision was that it would be unclear for how long PCB waste would have to be stored in centralized facilities, in particular in light of the trans-boundary export challenges faced by the country. A longer storage period for hazardous wastes might potentially cause issues related to ownership of the waste (for example, when original PCB holders go out of business or the Government entity owning the storage facility is being changed). Therefore, the project took the decision not to establish centralized facilities.

In lieu of Government owned storage facilities, the project did provide advisory services to two (2) commercial hazardous waste and interim storage companies (Astana NAN and Promotchod Kazakhstan) which subsequently upgraded their facilities to meet storage guidelines as stipulated by the Basel Convention, "*Rules for handling persistent organic pollutants (POPs) and POPs containing waste*" and "*Instructions for Storage of PCB Waste*." The two interim storage facilities dispose of the

required PPE and emergency equipment (absorbent, fire equipment, etc.), and have put in place non-permeable floor coverage, ventilation, lighting, security, signage, etc. Facility upgrades were provided as co-financing, while the project procured some PPE and absorbent.

Promotchod Kazakhstan, located in Karaganda, is best located for air transport and is currently storing 150 tonnes of packed PCB capacitors, while Astana NAN is best located for land (rail) export. Astana NAN currently stores pesticides and other types of hazardous waste.

The project provided training to storage personnel of the two commercial storage facilities as well as to storage personnel of PCB holders on safe PCB handling and storage of PCB containing waste, fire/spill containment and packaging of PCB capacitors.

4.3 At the time of the TE 2,402 PCB containing capacitors, originating from 6 different companies (see Table 19 below), had been packed and transported for interim storage at Promotchod Kazakhstan (see also photos in Annex XII). At the time of TE, the Government of France had just granted the approval for transportation of the 150 tons of PCB waste. The TE team deemed it highly likely that disposal of the PCB capacitors would be achieved within the next coming months.

It should be mentioned that initially the contract for the repacking and transportation of PCB capacitors for disposal abroad was awarded to Veolia and Astana NAN chemicals. However the tender had been based on rail transportation through Russia and Belarus, which ultimately turned out to be prohibited. Therefore the project had to re-launch the tender, which was awarded to PolyEco in partnership with Promotchod Kazakhstan.

Although the project initially anticipated the disposal of 200 tonnes of PCB equipment, the maximum tonnes that would fit on two cargo planes is 150 tonnes (each cargo plane can fit 80 pallets, each pallet carrying 4 drums, each drum containing 3 capacitors). Considering the freight costs are extremely high for air transportation, the project decided to dispose of a maximum of 150 tonnes, as it would allow maximum use of two cargo planes, and provide for the most cost-effective solution.

Table 19: List of PCB capacitors collected and to be disposed of

PCB Holder	**No. of capacitors**	**Weight [Tonnes]**
Alatau Zharyk Company, Almaty	350	19,798
Aksu Ferrosplavnyi Zavod, Aksu	1,330	85,848
Energougol AMT, Karaganda	288	18,120
Kazmetizprom, Ust-Kamenogorsk	97	6,296
VK REK, Ust-Kamenogorsk (incl.4 capacitors of **Kondensatornyi Zavod**)	337	20,699
	2,402	**150,761**

Table 20: Costs incurred for the packaging, transportation and disposal of 150 tonnes of PCB Capacitors

Milestone Descriptions	Amount (US$)
• **Submission of work plan with detailed air transportation (including possible air carriers, type and capacity of aircrafts, copies of transport documents, loading/unloading procedures, customs clearance of each aircraft) package of notification documentations, H&S plan, risk assessment plan, Environmental Management Plan and Emergency Response Plan. Performance security.**	100,000 (10%)
• **Provision of trainings and requirements for local subcontractors to accomplish packaging, labeling and loading of the PCB wastes using appropriate PPE and safety precaution, equipment and transportation to the Point of Shipment.** • **Provision of a list of necessary personal protective equipment, UN packaging, safety equipment, cleaning materials, disposables, etc (to be procured by local companies.** • **Oversight, monitoring and quality control.** • **Obtaining insurance, license and export/import permits.**	600,000 (60%)
• **Preparation of shipping documents for the transport from the temporary storage to the point of disposal, including Customs declarations, Basel Convention documents.** • **Submission of documentation acknowledging the receipt of the PCB contaminated wastes shipment from the temporary storage. Documentation shall include acknowledgement of the inventory of the shipment as contained on the shipping documents.** • **Air transportation of PCB wastes from the temporary storage to the destruction facility.** • **Submission of Certificate acknowledging the receipt of the PCB contaminated wastes shipment from the transport sub-contractor, at the destruction facility. Documentation shall include acknowledgement of the inventory of the shipment as contained on the shipping documents.**	100,000 (10%)
• **Submission of Report of the destruction of the PCB contaminated wastes from the destruction facility. Certification that at the time of disposal, the destruction facility was permitted to destroy hazardous wastes.** • **Provision of Certificate that the PCB contaminated wastes were destroyed according to the regulations by the destruction facility duly signed and stamped by the state environmental authority.** • **Submission of Final Report.**	200,000 (20%)

Ultimate disposal costs per ton, amounted to **6,666 US$/tonne**.

4.4 The MTE recommended removing this project activity. The main reason for removing this activity was that it was considered beyond the control of the project to implement this project activity.

In the period 2007 – 2009 the Government of Kazakhstan provided funding and technical assistance for the disposal of 10,052 PCB capacitors from the Darial-U site at Envio GmbH in Germany.

The UNDP/GEF PCB project was expected to support the disposal of the remaining PCB capacitors at the Darial-U site (5,946), using cash co-financing provided by the Government of Kazakhstan. Unfortunately the funding set-aside for the disposal of the remaining capacitors was no longer available. As such, the project was unable to support this project component, therefore it was recommended (and accepted) to remove this project activity.

The remaining capacitors are still at the Darial-U site and their ownership has recently been transferred to Zhasyl Damu Company operating under the Ministry of Energy. The project did support a fact-finding mission in 2009 and 2014, and provides Zhasyl Damu Company with advice upon request.

Rating Outcome 4: Satisfactory (S)
Argumentation: The ultimate targets achieved by the project are significantly lower (150 tonnes) than the target initially anticipated by the project (600 tonnes). However, the disposal of the 400 tonnes of

PCB capacitors from the Darial-U, which was supposed to be achieved making use of cash-co-financing provided by the Government, which ultimately did not materialize, was removed from the project after recommendations made by the MTE. The TE team felt that considering the significant challenges faced by the project (extremely high transportation costs, trans-boundary movement challenges and loss of cash co-financing), the project did achieve targets that were feasible. The project was also able to put in place a system for the entire life-cycle management for PCB capacitor management, to showcase to holders that management, storage and disposal are feasible, which was one of the main objectives of the project.

3.3.1 Overall results (attainment of objectives) **(S)**

With respect to the attainment of the project's objective as well as the project's ultimate objective the TE team is pleased to report that the project's objective as well as the project's ultimate objective have been achieved. As such this aspect of the project has been rates as **Satisfactory (S)**.

In Table 21 below, the project's objectives have been presented as well as information detailing why the evaluators believe that objectives have been achieved.

Table 21: Project Objectives and Proof of their Attainment

	Rating	Comments
Project Objective: Enhance the capacity for the safe management of PCB oil and PCB-containing equipment at all stages of the PCB management cycle in Kazakhstan.	**S**	**Achieved**
OVI 1: Clear regulation anchored scheme for PCB management with identified roles and deadlines in Kazakhstan established.	**S**	**Achieved**
Target 1.1: Environmental Code amendment and technical specifications adopted. And integrated by environmental authorities.	**S**	▪ 2011 amendments adopted ▪ 2014 amendments expected to be adopted in 2015 ▪ Amendments have been integrated by environmental authorities
Target 1.2: Clear PCB reporting and enforcement set up nationally. PCB holder submitted management plans integrated in environmental inspections.	**S**	▪ Reporting deadlines set up ▪ Submission of PCB management plans integrated in environmental inspections
OVI 2: Site and regional based PCB disposal systems developed and demonstrated from planning to disposal.	**MS**	**See details below**
Target 2.1: One major PCB capacitors and one major PCB transformer site management demonstrated from planning to disposal. Resulting in 1,400 tons PCB waste processed.	**MS**	▪ Major transformer sites and 6 major capacitors site management demonstrated from planning to disposal ▪ 750 tonnes PCB waste processed
Target 2.2: Regionally based PCB collection/disposal scheme in place with 200 tons PCB waste processed.	**S**	▪ 150 tonnes PCB capacitors processed ▪ The project decided not to establish regional collection/disposal schemes
Ultimate Project Objective: Ensure minimization of PCB releases and subsequent health and environmental impacts through the development of systematic capacity for the sound management of PCBs in the country.	**S**	**Achieved** (see section 3.3.8)
Overall Rating	**S**	

Overall Project Results **(S)**

Based on the overage rating for each of the project result by outcome and project-sub-activity (kindly refer to the last column of table 12), the rating for overall product results has been rated as **Satisfactory (S)**.

3.3.2 Relevance **(S)**

> *Relevance: "Extent to which the activity is suited to local and national environmental priorities and policies and to global environmental benefits to which the GEF is dedicated."*

The project "*Design and Execution of a Comprehensive PCB Management Plan for Kazakhstan*" is very relevant to the Objective of the Stockholm Convention: "*to protect human health and the environment from persistent organic pollutants*".

The objective and outcomes of the project contributed towards the Strategic Objective of GEF-4 for Persistent Organic Pollutants focal area (C.31.10) which sets the long term impact of GEF interventions as the protection of human health and environment by assisting countries to reduce and eliminate production, use and releases of POPs, consequently to contribute generally to capacity development for the sound management of chemicals.

The project outcomes and activities explicitly supported the GEF-4 *Strategic Objective 1: Strengthening Capacity for NIP Development and Implementation*; and GEF-4 *Strategic Objective 2: Partnering in Investments for NIP Implementation of POPs Focal Area Strategy for Persistent Organic Pollutants*.

Furthermore, most of the national PCB priorities as taken up in Kazakhstan's National Implementation Plan (NIP), included as PCB activities outlined in the NIP Action Plan, were addressed by the project. In Table 22 below, the link between the proposed PCB activities as taken up in the NIP, and the project outcomes has been indicated.

Finally, the project was in line with national environmental policies, which focus on reducing pollution and eliminating pressure and impacts on human health and the environment. The project was in line with:

- Concept for Environmental Safety (2004-2015)
- Concept for the Transition of the Republic of Kazakhstan to Sustainable Development (2007 – 2024)
- Programme on Environmental Protection of the Republic of Kazakhstan (2008 – 2010)
- Concept for the Transition of the Republic of Kazakhstan to a Green Economy (2013-2020)

Because of the reasons mentioned above, the project was rated as Relevant (R).

Table 22: PCB activities as outlined in NIP and as addressed in the proposal

NIP PCB Activity	Addressed in proposal
Establishment and functioning of the National or Sub-regional Center on POPs under MEP (RGP or RGKP status with budget financing).	Outcome 1
Development of normative requirements regulating turn, use, storage and elimination of PCB-containing equipment and wastes.	Outcome 1
Making detailed inventory of PCB-containing equipment in the republic, including the institutions under the Ministry of Defense.	Outcome 2
Examination of industrial dumps to identify PCB-containing	Outcome 2: Inventories

equipment and PCB-contaminated territories.	
Establishment of a center on training personnel of enterprises and supervising bodies on PCB management.	Activities included in Outcome 2 Government to consider need of specific center during implementation
Organization of temporary storages at enterprises.	Partly, Outcome 3
Defining of places for construction of state storages for PCBs-containing equipment.	Outcome 4
Organization of state storages.	Outcome 4
Scientific studies on development technologies on elimination of PCB-containing equipment and wastes and rehabilitation of polluted soils.	Not included
Rehabilitation of polluted territories.	Not included, see IBRD activities
Selection of the technology on elimination of PCB-containing equipment and wastes.	No technology to be selected
Construction of a plant for elimination of the equipment and wastes containing PCBs.	Not included, see IBRD activities
Preparation and transportation of PCB-containing equipment for elimination.	Included in Outcomes 2, 3, and 4 for PCB waste covered by project activities.
Elimination of PCB-containing equipment and wastes.	Included in Outcomes 2, 3 and 4 for PCB waste covered by project activities.

3.3.3 Effectiveness **(S)**

Effectiveness: "Extent to which an objective has been achieved or how likely it is to be achieved."

The project's objective: "*To enhance the capacity for safe management of PCB oil and PCB-containing equipment at all stages of the PCB management cycle in Kazakhstan*" has been achieved. The project was able to demonstrate and build capacity for all stages required for the sound management and disposal of PCBs, covering among else the development and strengthening of the regulatory and policy framework for PCB management as well as PCB inventories, PCB analysis, PCB equipment and waste storage, collection, transportation, packaging and disposal.

Even though the project encountered many challenges in exporting the PCB waste, it ultimately was able to demonstrate and involve PCB holders and project stakeholders in the entire life-cycle management of PCBs.

In order to measure the achievement of the project's objective, two (2) Objectively Verifiable Indicators and four (4) end-of-project targets, had been taken up in the project document. Although achievement of project targets has been discussed in detail in section 3.3 ("*Project Results*"), findings in relation to the project objective have been summarized in Table 23 below.

As can be seen, to date most project targets have been achieved. It is expected that before the project comes to an end, the amendments to the EcoCode proposed in 2014 will be approved and the 150 tonnes of PCB capacitors will be disposed of at Tredi France.

The fact that the project was ultimately able to finance and arrange for the processing of 900 tonnes of PCB transformers and capacitors and not the intended 1,400 tonnes, is due to two main reasons:

- Trans-boundary air transportation turned out to be significantly more expensive than the cost estimates taken up in the project document, which had been based on train/land transportation[17].
- Cash-co-financing for the disposal of the remaining Darial-U PCB capacitors was no longer available and as such the project was unable to support the disposal of the anticipated 400 tonnes of PCB capacitors as initially foreseen in the project document.

Table 23: Extent to which the project's objective has been achieved

OVI	End-of-project target	Achieved	Likely to be Achieved
Clear regulation anchored scheme for PCB management with identified roles and deadlines in Kazakhstan established	Environmental Code amendment and technical specifications adopted. And integrated by environmental authorities.	▪ EcoCode amendments adopted in 2011 ▪ Regulations for POPs handling and requirements for PCB management for economic entities adopted.	▪ Additional amendments submitted in 2014 are awaiting adoption in 2015.
	Clear PCB reporting and enforcement set up nationally. PCB holder submitted management plans integrated in environmental inspections.	▪ PCB reporting requirements have been taken up in the PCB regulation and EcoCode. ▪ Regional ecological departments ensure inspections in accordance with the EcoCode and PCB regulation. ▪ Requirements for PCB management plans have been taken up in environmental inspections.	
Site and regional based PCB disposal systems developed and demonstrated from planning to disposal.	One major PCB capacitors and one major PCB transformer site management demonstrated from planning to disposal. Resulting in **1,400 tons PCB waste processed**.	▪ Drained **33 transformers** and safely stored empty transformer shells (representing **670 tonnes**) ▪ Disposed **80 tons of PCB waste** (oil, soil and packaging) in Tredi, France. ▪ Collected, packed, transported and safely stored **2,402 PCB capacitors** from 6 companies, representing **150 tonnes.** ▪ Total: **900 tonnes**	
	Regionally based PCB collection/disposal scheme in place with 200 tons PCB waste processed.	▪ **150 tonnes** of PCB containing capacitors collected, packed and stored for disposal abroad.	▪ 150 tonnes disposed at Tredi, France

[17] Transformer oil: Disposal costs per tonne amounted to **6,291 US$ (~ 6,300 US$/tonne)**. PCB capacitors: Ultimate disposal costs per ton, amounted to **5,706 US$/tonne (~ 5,700 US$/tonne)**. During project development it was assumed that PCB disposal would cost up to **3,300 US$/tonne**.

3.3.4 Efficiency **(MS)**

Efficiency: "Extent to which results have been delivered with the least costly resources possible."

Project activities were implemented in such a way that cost-effectiveness was achieved throughout project implementation. The implementation followed standard UNDP rules and regulations and assured that procurement processes were open, transparent and competitive. All larger contracts were published internationally. UNDP procurement procedures for all project activities, including selection of services and equipment, was based on the best quality/cost ratio.

Even though implementation of project activities was achieved with the least costly resources, the trans-boundary movement of PCB waste by air transport, in lieu of initially planned land/rail transportation, turned out much more expensive than anticipated. However, because it was in the interest of the project and the country to demonstrate the entire PCB management life-cycle, it was agreed to take this approach.

As such, the cost-effectiveness, per tonnes PCB waste disposed of (7,343 US$/ton), in the case of the GEF Kazakhstan PCB project, might very well be the highest among all GEF funded PCB management and disposal projects. That said, it was the first GEF project which exported PCBs by air, and as such was able to generate important lessons-learned and experiences that will be highly valuable for countries that in the future find themselves in a similar situation. Based upon the costs incurred by the Kazakhstan project, other countries can undertake a cost assessment to determine whether it is worthwhile to pursue transportation by air, or otherwise opt for alternative solutions.

3.3.5 Country Ownership **(S)**

The Republic of Kazakhstan is committed to the safe management of PCBs as demonstrated by the signature of the Stockholm Convention, its subsequent ratification on 7 June 2007, and inclusion in the list of Parties to the Convention on 9 November 2007.

With the financial support of the GEF and Technical Assistance provided by UNDP, Kazakhstan started the preparation of its National Implementation Plan (NIP) in 2004. The National Implementation Plan of the Republic of Kazakhstan on the obligations under the Stockholm Convention on POPs, was finalized in 2009 and approved by Degree of the Government of the Republic of Kazakhstan on December 8, 2009 #261. The NIP was submitted to the Stockholm Convention Secretariat on 8 December 2009 as well. As elaborated upon in section 3.3.2 ("Relevance"), the project was developed in line with the priorities and activities for PCB management as defined and approved in the National Action Plan.

Furthermore, project ownership and commitment to the improved management of PCBs in specific, and POPs more generally, can be deducted from the following actions that without Government commitment and ownership of the project, would not have materialized:

- Approval of amendments to the EcoCode, adoption of a regulation for the management of POPs (and PCBs), and inclusion of PCB reporting requirements in the PCB regulation and EcoCode.
- Allocation of government co-financing (~ 10 million US$) that was predominantly used for the disposal of 10,052 capacitors (period 2007 – 2009).
- Transfer of the ownership of legacy PCB and POPs wastes (e.g. remaining PCB capacitors at the Darial-U site) to Zhasyl Damu Company[18], a company operating under the Ministry of Energy

[18] http://zhasyldamu.kz/en/about-the-company/mission-goals-and-objectives.html

which is responsible for the implementation of measures and projects for the destruction and disposal of economically unattractive wastes.

- Feasibility study on the establishment of a Hazardous Waste Disposal Facility (with World Bank and GEF support "Elimination of POPs Wastes"), expected to be operational by 2020.
- Commitment to continuous improvement of the management of POPs, through the approval and implementation of the GEF/UNDP POPs project "*NIP Update, Integration of POPs into National Planning and Promoting Sound Healthcare Waste Management in Kazakhstan*".
- Mainstreaming of PCB and hazardous waste issues into the Green Economy concept (see also section 3.3.6) and inclusion of a chapter exclusively on waste.

Based on the observations made during the TE mission, and the manner in which the project was developed, the evaluators are of the opinion that the country's ownership for this project is very high, and that the project was entirely driven by the Kazakhstan's objectives for the improved management of PCBs.

3.3.6 Mainstreaming **(HS)**

It should be mentioned that the project did not contain a specific mainstreaming component when it was developed. However, the project did succeed in important mainstreaming results (see also section 3.1.7 "*Linkages between the project and other interventions in the sector*").

Supported by the UNDP Country Office and various UNDP environment related projects, among which the PCB management project, and the project "*Kazakhstan/UNDP/UNEP Partnership Initiative for the Integration of Sound Management of Chemicals Considerations in Development Planning and Processes*", SMC and waste issues were integrated into the *Concept for the Transition of the Republic of Kazakhstan to a Green Economy* and became part of the *Action Plan* for the Concept's implementation approved by the President. Of the 6 chapters, which make up the Green Economy Concept, one chapter exclusively focuses on Waste Management (see box 1 for more information on the priorities that were mainstreamed).

Box 1: SMC issues integrated into the Concept for the Transition of the Republic of Kazakhstan to a Green Economy

Of the 37 recommendations proposed by the National Action Plan on SMC, 9 were approved by the Prime Minister of the Republic of Kazakhstan of which 6 were included in the *Concept for the Transition of the Republic of Kazakhstan to a Green Economy.* These were:

- Improvement of the regulatory framework/system.
- Introduction and adoption of environmentally friendly technologies and processes.
- Adoption of the Globally Harmonized System (GHS) of Classification and Labelling of Chemicals.
- Improvement of the statistical reporting and monitoring on chemicals.
- Improvement of the technical capacity of regional analytical laboratories.

Regarding technical and human resource capacity, the following proposals were included in the Concept's Action Plan:

- Risk assessment, linked with chemicals production; the use of chemicals in the work place and chemical releases into the environment.
- Introduce measures on early warning systems related to chemical risks/accidents and their impact on human health.
- Introduce preventive and rehabilitation measures to ensure risk mitigation for population groups living on contaminated sites and industrial sites.
- Identify and assess contaminated and industrial sites.
- Increase the technical capacity of analytical laboratories to obtain reliable information on the pollution levels of surface and ground water, soil and air with the aim to introduce rehabilitation and preventive measures.
- Identify and assess contaminated waste landfill sites with the aim to rehabilitate such sites.
- Develop and implement awareness raising and capacity building activities on SMC for government entities and public officers, including customs officers, representatives of industry and the larger public.

Following approval of the Green Economy Concept, UNDP and the PCB management project also supported the Government in the adaptation of legislation/regulations for the implementation of the Green Economy Concept.

The Work Group representatives who supported the development of the Waste Management Chapter for the Green Economy Concept, also ensured that all these action were integrated into the sectoral plans of all relevant ministries. Ultimately it is these ministries which are responsible for the implementation of these actions and which will be allocated the necessary budgets for their implementation.

Additional co-development benefits/impacts of the project that should be mentioned are:

- **Improved Health Benefits (MDG 4 – Reduce Child Mortality & MDG 5 – Improve Maternal Health)**. By safeguarding population groups at risk (in particular those that are considered to be at a heightened risk and impact from exposure to PCBs such as maintenance workers, repair men, women of child-bearing age, foetuses and small children) these population groups now have a lower health risk from PCBs, which also has important consequences for future healthcare costs and human suffering. The project achieved this through capacity building and training on safeguarding and management of PCBs, and most importantly through the removal and disposal of PCB containing equipment.
- **Gender Equality (MDG 3 – Promote Gender Equality and Empower Women)**. The project ensured that women and men had equal opportunities to benefit from training organized by the project. In total, the project organized 34 workshops, information seminars and round tables. During these events 792 stakeholders were trained, of which 44.8% women and 55.2% men. It should be mentioned though that people who are most likely to be exposed to PCBs are

men, as the energy sector and maintenance firms that service electrical equipment are predominantly employing men. As such, it's quite remarkable that the project was able to reach out and engage such a high percentage of women in workshops and trainings. It is believed that awareness and capacity building on the risks and management of PCBs empowers people (whether men or women) to take informed decisions, protect themselves and others, and speak out when necessary.

- **Response capacity in the event of an Emergency/Natural disaster.** The project also built the capacity of the Ministry of Emergencies to ensure that, in the event of an emergency/natural disaster, the Ministry would be able to respond to situations that involve hazardous materials and/or chemicals, resulting in better emergency preparedness.

Based on the mainstreaming results obtained, the evaluators are of the opinion that this aspect – even though it was not embedded in the project's development – can be considered **Highly Satisfactory (HS)**.

3.3.7 Sustainability **(S)**

Sustainability: "Likely ability of an intervention to continue to deliver benefits for an extended period of time after completion; projects need to be environmentally as well as financially and socially sustainable."

In Table 24 below, the four aspects of sustainability (Financial Sustainability; Socio-Political; Institutional Framework and Governance; and Environmental Sustainability) are presented as well as the rating provided by the evaluators.

The ratings used for sustainability aspects of the project are the following: Highly Likely; Likely; Moderately Likely; Moderately Unlikely; Unlikely; Highly Unlikely.

Table 24: Project Sustainability Ratings

Sustainability	Rating
Financial Resources: • **High costs for inventories, phase-out and disposal**: After the project comes to an end, PCB holders will be solely responsible to carry the costs for inventories (including costs for analysis), phase-out of PCB equipment and replacement by non-PCB equipment, as well as transportation and disposal costs at an approved disposal facility. These costs – depending on the size of the inventory – can be considerable, and are much harder to bear for national companies than for (partially) internationally owned companies. There are currently no financial incentives in place for PCB holders and it is expected that in particular national holders might wait as long as possible to phase-out and dispose of PCB containing equipment. It is assumed that most companies will await the Hazardous Waste Facility in Kazakhstan to become operational, as transportation for disposal abroad is very costly, although some of the international holders might dispose of PCB waste at a more rapid pace, as in certain cases they are to abide by corporate targets. • **UNDP-Kazakhstan Government Fund for implementation of innovative ideas**: The Government of Kazakhstan has allocated 30 million US$ for the implementation of environmental issues through UNDP – this funding might present an opportunity to address PCB issues in the future. • **Green Economy Concept:** contains 1 chapter on Waste Management. Priorities on SMC and PCBs have been included and financial resources have been allocated for its implementation.	Moderately Unlikely
Socio-Political: • **Frequent Government Changes**: Considering that there do not appear to be sensitive issues or controversies surrounding PCBs, Socio-Political changes are unlikely to have a great impact on this sector. That said, Government changes	Likely

appear to happen frequently in Kazakhstan, and can also results in changing national priorities, as well as legislation and the like, which indirectly might impact priorities and legislation governing PCB and POPs issues.	
Institutional Framework and Governance: • **Regulatory Framework**: The amendments made to the EcoCode in 2011 and the amendments likely to be accepted in 2015 will facilitate the sound management of PCBs and inspections beyond the project's duration. That said, penalties for breaking environmental laws are very low; companies (when the 2014 amendments have been accepted) will only have to abide to the deadlines of completing their PCB management plans by 2018; regional ecological department do not have a lot of technical capacity to ensure compliance (verifying inventory reports); and PCB holder do not have to manage PCB waste according to guidelines as long as the equipment is not listed as a waste. As indicated previously, the legislative framework would therefore benefit from further strengthening. • **Capacity Building/Training**: Future training and capacity building in the area of PCB management will be provided by NGOs and consulting companies (e.g. Center for Sust. Development, ECOMuseum, Information Center). PCB project experts would be engaged to provide PCB training, offered as part of holistic training packages. • **Capacity of PCB experts and national project partners:** Throughout the TE it became clear that project PCB experts will continue to be engaged by project partners on PCB issues even when the project comes to an end. There is sufficient in-country capacity for POPs and PCB management. • **Laboratory Capacity**: At the time of the TE, 5 laboratories had been accredited for PCB analysis in oil, 3 in soil and 1 in food. Some of the laboratories were already on a commercial basis offering their services for PCB analysis as part of the 2nd phase of the PCB inventories. It appears that capacity is sufficient. • **Inventory results**: Inventory results are submitted by PCB holders to the regional ecological departments and not to the project or to a centralized body – no electronic system is in place that keeps track. However, the latest inventory information has been used to update the PCB chapter as included in the updated NIP, so this ensures some continuation. That said, it will be challenging to keep track of PCB holders' efforts at a centralized level when the project comes to an end. • **Storage and disposal capacity**: Following capacity building by the project, Veolia and PolyEco, Promotchod Kazakhstan and Astana NAN have the capacity and the facilities that meet storage guidelines and that are ready to receive PCB waste. In partnership with PolyEco, Promotchod expects to be able to facilitate the packaging, storage, export and disposal abroad of PCB wastes. • **Continuity of responsibilities for PCB management at national level**: The Ministry of Energy, in particular its hazardous waste department, assumes responsibility for PCB issues. The environment agency "Zhasyl Damu Company" (under the MoE) has in its programme and budget specific tasks, activities and priorities related to PCBs.	Likely
Environmental: • The project resulted in the disposal of **80 tonnes of PCB oils and contaminated soil**, and the **safe storage of 33 drained transformers, totaling 670 tons**. The project is also expected to soon **facilitate** the disposal of **2,402 PCB containing capacitors equivalent to 150 tonnes**. The tonnes of wastes (to be) disposed of will never again pose an environmental risk. On the other hand it will be important to ensure that solutions are found at national level to decontaminate drained PCB electrical equipment, to avoid that such equipment eventually is reused in an unsafe manner. • Awareness and capacity on PCB management has been significantly increased, electrical equipment and PCB holders are much better aware of the environmental issues surrounding PCBs, and 1,090 people have been trained in aspects related to PCB management. This all will benefit the environmentally sound management of PCB containing equipment owned by PCB holders.	Likely

Overall, the evaluation team feels that the sustainability of the project is Likely (L) and thus deemed

Satisfactory (S).

Recommendation: Start the development of a second phase PCB project. Such a 2nd phase PCB project could focus on further strengthening of the legislative framework, identify and implement local solutions for the decontamination of drained equipment such as transformers, further expand the inventory (e.g. include transformers owned by the local energy distribution companies); focus on improving storage conditions at PCB holder awaiting disposal; explore various financial incentives to allow PCB holders to put up the funding to phase-out and dispose of PCB equipment. A second phase PCB project would preferably be developed in partnership with the GEF (GEF-VI) and the UNDP-Kazakhstan Government Fund for implementation of innovative ideas.

Recommendation: Prepare an Exit plan the soonest. At the time of the TE, no exit plan had been developed yet, even though the same recommendation was made by the MTE. In order for the project to hand over its responsibilities to the Ministry of Energy and/or Zhasyl Damu Agency, a process needs to be initiated with the Ministry the soonest. Its outcomes should be an action plan which indicate what future activities will be implemented, in which manner and by whom.

3.3.8 Impact **(S)**

Impact: "Are there indications that the project has contributed to, or enabled progress toward, reduced environmental stress and/or improved ecological status?"

In order to rate project aspects related to "*impact*" a TE is expected to review whether a project has demonstrated:

a) Verifiable improvements in ecological status;
b) Verifiable reductions in stress on ecological systems; and/or
c) Demonstrated progress towards these impact achievements.

In the case of the Kazakhstan PCB Management Project, the project's impact verifiable through "*improvements in ecological status"* or "*reductions in stress on ecological systems"* has not been tested as part of the project. The project did not analyze PCB levels before and/or after project activities, however the PCBs disposed of with the project's assistance (the disposal of faulty and leaking equipment was prioritized by the project), has resulted in a reduction of the amount of PCBs being released into the environment.

However, the project has "*demonstrated progress towards these impact achievements*". Even though PCB levels before and after project activities have not been tested, the project has removed 230 tonnes of PCB waste from locations that where not fit to use, keep, store and safeguard this type of waste and equipment. Leaking and damaged PCB equipment was prioritized as part of these efforts, as the risks this equipment was posing was the greatest. Furthermore, the project also removed 7 tonnes of contaminated soil, where it was indicated that PCB levels surpassed safety thresholds.

Of the 230 tonnes, 80 tonnes have already been properly disposed of at Tredi in France and will never again be able to impact human and environmental health. The 150 tonnes currently packed and stored at Promotchod Kazakhstan, is expected to be properly disposed of at Tredi in France before the project's end. As such the project will have resulted in the disposal of a total of 230 tonnes of PCB waste, which no longer will pose a risks to environmental and human health and will be for good eliminated from global re-distribution.

Secondly, the project has also safeguarded the storage of drained/empty transformers. The safe storage of these transformers, totaling 670 tonnes, will warrant that the risk they post to environmental and human health has been dramatically reduced.

Thirdly, the project trained more than 1,000 people to create awareness and capacity in the handling and management of PCBs. In addition, companies like AMT Steel, trained their personal in proper management and maintenance of oil containing equipment. Because awareness on PCB has significantly been increased, the likelihood of cross-contamination, spills and improperly management have also been significantly reduced.

Finally, as a result of the project, PCB holders have completed the first phase of their inventories and most are in the process of completing the inventory's second phase. Major holders have also developed phase-out plans. As a result of these actions, the Government of Kazakhstan has a much better idea on where risks are presenting themselves, and can work with companies to start phasing out PCB containing equipment.

The impact of the project has been evaluated as **Satisfactory (S)**.

4. CONCLUSIONS, RECOMMENDATIONS & LESSONS

4.1 Ratings

In Table 25 and Table 26 below is an overview presented of the ratings, which have resulted from this project's Terminal Evaluation. Overall the project's implementation has been rated as **Satisfactory (S)**.

Table 25: Evaluation Rating

1. Monitoring and Evaluation	*Rating*[19]	2. IA& EA Execution	*Rating*
M&E design at entry	S	Quality of UNDP Implementation	S
M&E Plan Implementation	S	Quality of Execution - Executing Agency	S
Overall quality of M&E	S	Overall quality of Implementation / Execution	S
3. Assessment of Outcomes	**Rating**	**4. Sustainability**	**Rating**[20]
Relevance	R	Financial resources	MU
Effectiveness	S	Socio-political	L
Efficiency	MS	Institutional framework and governance	L
		Environmental	L
		Overall likelihood of sustainability	L
		Overall Project Outcome Rating	**S**

Table 26: Project Rating

Project Component or Objective	**Rating Scale**						**Rating**
	HU	U	MU	MS	S	HS	
Project Concept/Design, Relevance and Strategy							
Project relevance, country ownership/drivenness					X[21]		S
Stakeholder involvement					X		S
Management arrangements					X		S
Project budget and duration					X		S
Design of project M&E system					X		S
Project Implementation							
Adaptive management					X		S
Monitoring systems					X		S
Risk management				X			MS
Work planning					X		S
Financial management					X		S
Reporting					X		S
Delays					X		S
Stakeholder Participation, Partnership Strategy							
Production and dissemination of information				X			
Local resource users and NGOs participation				X			MS
Establishment of partnerships					X		S
Involvement and support of governmental institutions					X		S
Project Results					X		S
Overall Project Achievement and Impact					X		S

[19] Highly Satisfactory (HS): no shortcomings; Satisfactory (S): minor shortcomings; Moderately Satisfactory (MS); Moderately Unsatisfactory (MU): significant shortcomings; Unsatisfactory (U): major problems; Highly Unsatisfactory (HU): severe problems.

[20] Likely (L): negligible risks to sustainability; Moderately Likely (ML): moderate risks; Moderately Unlikely (MU): significant risks; Unlikely (U): severe risks.

[21] Project Relevance was rated as Relevant (R).

4.2 Main Project Results

The project's main results include among else:

1. **Design, execution and demonstration of the full range of activities that make up the comprehensive life-cycle management of PCB containing wastes and equipment**, including identification, inventory, regulation, analysis, storage, handling, packaging, transportation and disposal of waste and equipment containing PCBs.
2. **Demonstrated the unfeasibility of the land/sea based trans-boundary movement of PCB wastes and equipment through neighboring countries** by attempting obtaining permission for 6 potential land and sea based transportation routes.
3. **Demonstrated the feasibility of the air lifting of PCB containing oils, soil, equipment and affiliated wastes (exportation of PCB wastes by plane)**, which is a first for a GEF funded project.
4. **Resulted in the improvement of the regulatory framework pertaining to PCB management**, through the adoption of amendments to the EcoCode, the adoption of a regulation on the management of POPs and 8 guidelines on specific aspects of PCB management.
5. **Identified an additional 571 PCB containing capacitors and an additional 48 PCB containing transformers**[22] as a result of continued inventory efforts undertaken by the project and expanding project support to an additional ~ 100 potential holders, making the total number of potential PCB holders the project reached out 360.
6. **Disposed of 80 tonnes of transformer related PCB waste at Tredi (France)**, consisting of 68 tonnes of drained oil, 7 tonnes of contaminated soil and 5 tonnes of packing materials. **Safeguarded the storage of 33 drained transformers, representing a total of 670 tonnes of contaminated equipment**. In total 20% of the transformers present in Kazakhstan were drained with project support[23].
7. **Repacked, transported and safely stored, 2,402 PCB capacitors (~ 150 tonnes)** in an interim storage facility, which are expected to be disposed of before the project comes to an end. Within the project's scope, about 6% of PCB capacitors present in Kazakhstan will have been disposed as part of the project[24].
8. **Trained 1,090 project stakeholders and beneficiaries on the sound management of PCBs** (including the safe management, storage, transportation, etc. of PCB containing equipment and waste).
9. **Capacitated 10 national laboratories in PCB analysis in various media, and developed methodologies/guidelines for PCB analysis**, which resulted in the accreditation of 5 laboratories for PCB analysis in oil, 3 in soil and 1 in food.
10. **Built the capacity of 2 national hazardous waste management companies** which have been capacitated in the safe (re)packaging, transportation and interim storage of PCB containing wastes.
11. **Created awareness of decision makers, ministries, regional environmental departments, the general public and ~ 360 electrical equipment holders on PCBs and their management.**
12. **SMC and hazardous waste issues were mainstreamed into the *Concept for the Transition of the Republic of Kazakhstan to a Green Economy*** and became part of the *Action Plan* for the Concept's implementation approved by the President.

For additional detailed information on the project's results and attainment of project objectives kindly refer to *Section 3.3*

[22] In addition to the PCB inventory conducted as part of the preparation of the NIP.
[23] 164 transformers in total based on existing inventory data, of which 33 transformers were drained with project support
[24] 40 000 PCB capacitors in total in Kazakhstan of which ~2400 will be disposed of by the project.

In the Tables 27 and 28 below are a number of project results presented. The results which have been presented in these tables are GEF Tracking Tools indicators and are presented to the GEF upon project closure.

Table 27: Selected GEF tracking Tool indicators – *Part I*

Indicators	Implementation Status[25]	Comments
Environmentally sound management[5] (ESM) of PCBs in place.	2	The project has ensured that the country has a system in place for the sound management of PCBs, and has demonstrated the functioning of this system already once through the disposal of 80 tons of PCB oils and associated wastes. The project will demonstrate this approach a second time through the disposal of 150 tons of PCB containing capacitors.
Legislative and regulatory measures in place for environmentally sound management of POPs, and for the sound management of chemicals in general	3[26]	Legislative/regulatory measures have been implemented and are being enforced by the regional ecological departments of the 16 Oblasts. *Approved*: ▪ 11 amendments to the EcoCode were approved (2011) ▪ 3 amendments to the "*Standard List of Environmental Activities*" applicable to economic entities were approved in 2012. ▪ "*Rules for handling Persistent Organic Pollutants (POPs) and POPs containing waste*" entered into force in June 2012. *Pending approval (expected in the course of 2015)*: ▪ In 2014, 7 additional amendments to the EcoCode were proposed and submitted for approval.
Professional Training	~ 1,090 individuals trained	See Table 30 and Annex XI for an overview of the type of training provided as part of the project and the number of participants per event.

Table 28: Selected GEF tracking Tool indicators – *Part II*

Indicators	Quantity (tons)		Cost[6] (US$ / ton)	Comments
	Project target	Achieved to date		
PCB concentrated oils disposed of and average cost	N/A	80,3	7,343	**Result**: Oil from the drainage of 33 transformers.
PCB capacitors disposed of and average cost	600	150	6,666	**Planned**: 200 tons of PCB capacitors from small holders + planned parallel efforts by the Government to dispose of 400 tons of capacitors from Darial-U (the second target was later removed from the project as cash co-financing for this activity was no longer available). **Result**: 2,402 PCB capacitors (150 tons) are expected to

[25] 0 = Not applicable: not an objective of the project; 1 = ESM plan has been developed; 2 = infrastructure and logistics in place to permit implementation; 3 = ESM of PCBs budgeted and implemented.

[26] 0 = Not applicable : not an objective of the project; 1 = Legislative/regulatory measures drafted or revised; 2 = Legislative/regulatory measures adopted but not enforced; 3 = Legislative/regulatory measures implemented/enforced with corresponding budget.

				be disposed of by the end of the project.
PCB contaminated equipment and wastes disposed of and average cost	850	12	N/A	**Planned**: 850 tons of PCB contaminated oil with associated waste and transformer carcasses. **Result**: 68 tonnes of drained oil, 7 tons of contaminated soils and 5 tons of packing materials (drums, pallets, PPE) were disposed of as part of the first batch.
PCB oils and PCB contaminated equipment under safe storage and average cost	N/A	670	N/A	**Result**: 33 drained transformers (representing 670 tonnes of contaminated equipment) are safely stored.

4.3 Conclusions

The conclusions for this project will be summarized in line with the five (5) Evaluation Criteria applied for GEF projects, which are *Relevance*; *Effectiveness*; *Efficiency*; *Impact*; and *Sustainability*.

Evaluation Criterion	CONCLUSION
Relevance (R)	The project was considered to be very relevant towards the achievements of the Objective of the Stockholm Convention, which is: "*to protect human health and the environment from persistent organic pollutants*", and contributed towards the Strategic Objectives of GEF-4 for the POPs focal area. Furthermore, most of Kazakhstan's national PCB priorities as taken up in the country's National Implementation Plan (NIP) - included as PCB activities outlined in the NIP Action Plan - were addressed by the project. Finally, the project was in line with national environmental policies, which focus on reducing pollution and eliminating pressure and impacts on human health and the environment. Therefore the project was rated as **Relevant (R)**. In addition, the Evaluation Team would like to conclude that in light of the particular challenges which are faced by Central Asian landlocked countries (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan) in exporting hazardous wastes for disposal abroad, the project was particularly relevant. The GEF PCB project in Kazakhstan was the first of its kind under these challenging circumstances and had to address all the challenges, which are very particular for this region and are faced by all these Central Asian countries. As such, the project turned out to be an example project, from which the lessons-learned and the manner in which challenges were faced and subsequently overcome will provide very useful guidance for other Central Asian countries in dealing with their hazardous waste, in particular POPs, in the future. As such the project was deemed very **Relevant (R)**.
Effectiveness (S)	The project's objective: "*To enhance the capacity for safe management of PCB oil and PCB-containing equipment at all stages of the PCB management cycle in Kazakhstan*" has been achieved. The project was able to demonstrate and build capacity for all stages required for the sound management and disposal of PCBs, covering among else the development and strengthening of the regulatory and policy framework for PCB management as well as PCB inventories, PCB analysis, PCB equipment and waste storage, collection, transportation, packaging and disposal. Even though the project encountered many challenges in exporting the PCB waste, it ultimately was able to demonstrate and involve PCB holders and project stakeholders in the entire life-cycle management of PCBs.

	At the time of the TE most of the project targets had been achieved (the project was still awaiting the export/disposal of 150 tonnes of PCB capacitors and the approval of amendments to the EcoCode proposed in 2014), however the Evaluation Team was confident that ultimately these targets would also be achieved. Eventually, the project will have financed and arranged for the processing of 900 tonnes of PCB transformers and capacitors (150 tonnes of capacitors; 80 tonnes of PCB oils and 670 tonnes of drained transformer shells), 500 tonnes short of the 1,400 tonnes as taken up in the project document. This is mainly due to two challenges that were faced by the project but outside of its control: i) Trans-boundary air transportation turned out to be significantly more expensive (45%) than the cost estimates taken up in the project document, which had been based on train/land transportation; ii) Cash-co-financing for the disposal of remaining Darial-U PCB capacitors was no longer available and as such the project was unable to support the disposal of an additional 400 tons of PCB capacitors as initially foreseen in the project document. In conclusion, considering the challenges faced and overcome by the project, and the finances available to the project, the effectiveness of the project was deemed **Satisfactory (S)**.
Efficiency (MS)	Project activities were implemented in such a way that cost-effectiveness was achieved throughout project implementation. Even so, the trans-boundary movement of PCB waste by air transport, in lieu of initially planned land/rail transportation, turned out much more expensive than anticipated during the project's development phase. However, because it was in the interest of the project and the country to demonstrate the entire PCB management life-cycle, the Project Board agreed to go ahead with the export of PCB wastes by air, even though the cost-efficiency was significantly lower. The cost-efficiency, per tonnes PCB waste disposed of (**7,343 US$/ton PCB oil** and **6,666 US$/ton PCB capacitors**) turned out to be almost twice as high as the **3,300 US$/ton** estimated by the project document. This cost-efficiency might well be the lowest among all GEF funded PCB management and disposal projects. That said, it was the first GEF project which exported PCBs by air, and as such was able to generate important lessons-learned and experiences that will be highly valuable for countries that in the future find themselves in a similar situation. Based upon the costs incurred by the Kazakhstan project, other countries can undertake a cost assessment to determine whether it is worthwhile to pursue transportation by air, or otherwise opt for alternative solutions. In conclusion, because of the low cost-efficiency, balanced with the valuable lessons-learned for Central Asian countries, the Evaluation rated the project's efficiency as **Marginally Satisfactory (MS)**.
Impact (S)	The project did not analyze PCB levels before and/or after project activities, however the PCBs disposed of with the project's assistance, has resulted in a reduction of the amount of PCBs that otherwise could potentially have been released into the environment, impacting human and environmental health. The project removed 230 tonnes of PCB waste from locations that where not fit to use, keep, store and safeguard this type of waste and equipment. Leaking and damaged PCB equipment was prioritized as part of these efforts, as the risks this equipment was posing was the greatest. Furthermore, the project also removed 7 tonnes of contaminated soil with PCB levels surpassing MAC values.

	Of the 230 tonnes, 80 tonnes had already been properly disposed of at Tredi in France at the time of the TE and will never again be able to impact human and environmental health. The 150 tonnes packed and stored at Promotchod Kazakhstan at the time of the TE, are expected to be properly disposed of at Tredi in France before the project's end. Secondly, the project has also safeguarded the storage of drained/empty transformers. The safe storage of these transformers, totaling 670 tonnes, will warrant that the risk they post to environmental and human health has been dramatically reduced. Thirdly, the project trained more than 1,000 people to create awareness and capacity in the handling and management of PCBs. Because awareness on PCB has significantly been increased, the likelihood of cross-contamination, spills and improperly management have also been significantly reduced. Finally, as a result of the project, PCB holders have completed the first phase of their inventories and most are in the process of completing the inventory's second phase. Major holders have also developed phase-out plans. As a result of these actions, the Government of Kazakhstan has a much better idea on where risks are presenting themselves, and can work with companies to start phasing out PCB containing equipment. In conclusion, the project has demonstrated that it has contributed to, or enabled progress toward, reduced environmental stress from PCBs, as such the project's impact has been rates as **Satisfactory (S)**.
Sustainability (L)	The evaluation rated the various aspects of Sustainability, which are *Financial Resources*; *Socio-Political*; *Institutional Framework & Governance*; and *Environmental*. In general sustainability was deemed Likely (L), with the assumption that the approval of amendments to the EcoCode proposed in 2014 will happen relatively soon. These amendments contain the conditions and deadlines by which and when PCB holders need to comply and complete their 2nd phase of the PCB inventories as well as the dates by which PCB containing in-service equipment would need to be phased-out. Without these deadlines, except for (partially) internationally owned companies, it is unlikely that national companies, in particular those that do not find themselves in a very fortunate financial situation, would take steps to undertake the 2nd phase of the inventory or phase-out in-service PCB containing electrical equipment. It should be noted that the project supported the draining of 20% of the PCB transformers present in Kazakhstan and supported the disposal of 6% of PCB capacitors present in Kazakhstan, hence the majority of the PCB phase-out/disposal effort is still ahead. Secondly, even though the country tested the export of PCB oils and PCB capacitors via air (plane), it also concluded that such an approach is too costly when it would need to be applied to dispose of the remainder of PCB wastes and equipment present in the country. Therefore, even though the project was able to demonstrate and build capacity for all stages required for the sound management and disposal of PCBs, it is unlikely that a similar approach will be used in the future. It is assumed that instead, Kazakhstan will either await the construction and operationalization of a hazardous waste disposal facility in the country itself, or await the harmonization of legislation within the Custom's Union, which would potentially again allow for the transport by land (train) of PCB oils and PCB capacitors via neighboring countries (e.g. Russia) for transportation to Europe. Without either of these two options materializing, there is a small likelihood that the country would take big steps towards the phase-out and disposal of PCBs. In conclusion, the project has put in place the necessary capacity and regulatory and policy framework to continue the sound management, phase-out and disposal of

PCBs, however from a sustainability perspective the main constraints for future PCB phase-out would likely be *Financial Resources* of the government and PCB owners to cover PCB management related expenses, as well as the availability of a cheaper *Transportation Routes* or a local *PCB Disposal/Destruction Option*. That said, related to sustainability aspects the project could influence, the sustainability of the project was rated as Likely (L).

4.4 Recommendations for this Project

The Terminal Evaluation makes two types of recommendations. Firstly, recommendations, which the project could potentially still address before it comes to an end and secondly recommendations (essentially lessons-learned), which could be useful for a future PCB management project.

- **Recommendation #1: Ensure project extension**. The project should not be operationally closed before the export of the shipment of 150 tonnes of capacitors has been accomplished. Secondly, it might be preferable to await operational closure of the project until the 2014 amendments to the EcoCode have been approved – however the latter might take too long. The TE recommends to extent the project until May 2015.
- **Recommendation #2: Prepare an Exit plan the soonest**. At the time of the TE, no exit plan had been developed yet, even though the same recommendation was made by the MTE. In order for the project to hand over its responsibilities to the Ministry of Energy and/or Zhasyl Damu Agency, a process needs to be initiated with the Ministry the soonest. Its outcomes should be a action plan which indicate what future activities will be implemented, in which manner and by whom.
- **Recommendation #3: Prepare a lessons-learned report**. The Kazakhstan PCB management project has encountered and overcome many project implementation challenges which are also faced by other land-locked and Central Asian countries. Additionally, the project is the first GEF project, which has successfully exported PCB waste by air. It is therefore very important that project results, lessons-learned and recommendations would be captured in a high-quality end of project report, which could potentially be disseminated that the next Basel, Rotterdam and Stockholm COP (May 4 – 14, 2015) for use and exchange with other parties to the Stockholm Convention.
- **Recommendation #4: Prepare a project video.** The project has collected many photos and video materials through its implementation. It would embed confidence in project partners and PCB holders, to visually showcase the entire life-cycle management of PCB waste management and the achievements of the project. A project video would also allow for a good project keepsake that could easily be used share experiences with other countries.
- **Recommendation #5: Start the development of a second phase PCB project.** Such a 2nd phase PCB project could focus on further strengthening of the legislative framework, identify and implement local solutions for the decontamination of drained equipment such as transformers, further expand the inventory (e.g. include transformers owned by the local energy distribution companies); focus on improving storage conditions at PCB holder awaiting disposal; explore various financial incentives to allow PCB holders to put up the funding to phase-out and dispose of PCB equipment. A second phase PCB project would preferably be developed in partnership with the GEF (GEF-VI) and the UNDP-Kazakhstan Government Fund for implementation of innovative ideas.
- **Recommendation #6: Ensure all project related materials are easily accessible to the public/project stakeholders.** Before the project comes to an end, the project should ensure that all eight (8) guidelines prepared by the project, as well as other materials, guidelines, tools and the like are posted on the Zhasyl Damu Agency website, or another website, to ensure that project related documentation remains easily accessible to project stakeholders, even though the project comes to an end.

- **Recommendation #7: Organize a round table to improve coordination among laboratories and SRC.** As many unclarities remain to exist among laboratories, it might be advisable to bring together all laboratories before project closure to clarify the challenges related to purchasing and registering of standards, purchasing of cartridges, pricing of PCB analysis, among other issues. Such a round table could also come up with recommendations to improve future coordination among laboratories and to allow for more frequent discussions on challenges and potential solutions. It would also be worthwhile to invite the Standard Register Company (SRC), to shed more light on how to register standards and bring up ways in which SRC could help facilitate the process for laboratories.
- **Recommendation #8**: **Ensure PCB data captured by updated NIP reflects project results**. PCB inventory data is submitted to and kept at regional ecological departments in a decentralized manner. Therefore, with the exception of updated PCB information in the NIP (currently being updated with the support of UNDP) no PCB related inventory data is kept/managed centrally. Before project closure it is therefore of the utmost importance that the updated NIP document reflects the correct amount of PCBs as identified and inventorized during the project's durations.

4.5 Lessons-Learned

- **The single largest challenge of the project, has been the prohibition of the trans-boundary transportation of PCB containing wastes by land/sea.** The project explored 6 different export and transportation routes (see table 17), and ultimately decided to export PCB waste by air (a first for a GEF project). This resulted in significant delays (see Figure 1). Between the signature of the agreement between PolyEco and the project in May 2012, until the final disposal of the PCB waste at Tredi in France in June 2014, two (2) years and 2 months passed. Of that period, a little more than a year was spent on efforts to identify potential transport routes.
- **Air transportation of PCBs and costs.** Although it is extremely costly – PCBs can be exported by air if the need arises. Kazakhstan might have been the first country that has exported PCB waste by air transport as part of a GEF project. **Costs in US$ per tonnes disposed of:** For PCB pure oil 7,343 US$/tonne and for PCB containing capacitors 6,666 US$/tonne including packaging for transport, cargo air planes, permits and final disposal costs.
- **Another significant challenge to the project has been the frequent changes of Government.** Government changes resulted in changes being made to the Ministries and turnover of high-level staff involved in the project, but also resulted in changes made to national priorities and requirements for the regulatory framework following such changes. Except for going along with the changes, there is not much a project can do, except to try to continue working with technical ministry staff which is much less likely to change as a result of Government changes.
- **Implementing a number of consecutive POPs/Chemicals projects can result in a critical mass of PCB/POPs expertise and capacity in the country.** Kazakhstan implemented a NIP project, followed by a PCB management project, a SAICM mainstreaming project and a NIP update/Health care waste management project. All these projects and their activities contained POPs and chemicals components and as a result, capacity and awareness on these subjects within government entities, NGOs, experts, hazardous waste companies and waste holders, and the like can be considered considerable. A second advantage is that when an entity has insufficient expertise in a certain area, it is easily able to locate the required expertise at national level.
- **Mainstreaming of PCB and POPs issues is key to ensure continuity of national efforts to improve SMC.** The project contributed to the development of the Green Economy Concept. Ultimately one chapter (of six) has been solely dedicated to waste, and PCB priorities have been mainstreamed. In Kazakhstan – like many other Central Asian countries – the adoption of a plan/concept is unlikely, if not all financing for its implementation has been secured. As such, SMC priorities have been allocated financing for their implementation and it is now the responsibility of the responsible entities to allocate the necessary resources to implement them.
- **Allowing "external" partners to review legislations/regulations before their enactments, allows for the identification of implementation challenges before legislation is enacted**. The

Sustainability Concept (and also the Green Economy Concept) has allowed NGOs, trade unions, business associations, Government and private sector entities, among others, to participate and make recommendations to the lead ministry, when new legislation/regulations are being discussed or changed in Kazakhstan. In this manner challenges can be identified early on – before the legislation/regulation are enacted. An added benefit of an inclusive approach is that there is less opposition from a powerful private sector, when it has been engaged through the various stages of the legislation's preparation.

- **Quality training and capacity building of local/national hazardous waste management companies can result in the establishment of long-term sustainable hazardous waste solutions.** The project supported two commercial hazardous waste companies and build their capacity (in partnership with PolyEco) on (re)packaging, transportation, (interim) storage, of PCB containing waste. When the project comes to an end, these companies will be able to continue providing such services to PCB holders.
- **Commitment to PCB phase-out and access to financing is much higher among (partially) Internationally owned companies**. International companies have the means and need to abide by targets set at corporate level, as such they are the most committed to meet national requirements for PCB management, phase-out and disposal. For nationally owned companies, it is much more challenging to meet the objectives of the project, as they often do not have the financial means to cover inventory, management and replacement costs, as no economic incentives are in place.
- **Ensuring geographical coverage of training activities, allows projects to reach out to many key stakeholders compared to organizing training events at centralized locations**. The project provided training in many different locations, which allowed for many more stakeholders (in particular, regional environmental departments and technical staff of PCB holders) to participate in the training. If the training and workshops would have been exclusively organized at national level (e.g. Astana and Almaty), these participants would not have been able to attend, due to travel and financial constraints. This approach is not common for UNDP projects, but proved very successful.
- **During project planning, it is worthwhile for private sector companies to allocate flexible budgets for disposal of PCBs**, as ultimately it is hard to estimate what exact costs are that are going to be incurred. As companies often determine and approve budgets the year before, it is sometimes challenging to increase budget for PCB disposal mid-way through the year.
- **The extent to which laboratories require support, turns out often to be much more extensive than initially anticipated**. Although the support provided by the project to laboratories was valued highly - in particular training activities supported by RECETOX and the development of guidelines on PCB analysis - it also became clear to the project team that there will always be additional request for further necessary capacity building (iceberg principle). Furthermore, it was observed that for future PCB project it would be useful to make training more hands-on and include a test to allow for participants' certification.
- **Laboratories which are allowed to set their own pricing for analysis are more competitive as compared to laboratories that have to abide by fixed pricing levels**. Costs for the analysis of a PCB oil sample varied between 9,000 Tenge (49 US$) to 14,000 Tenge (76 US$).
- **Many companies keep PCB equipment (even though it is not in use) and list it as "*in operation*" but not as "*PCB waste*"**. The root cause of this practice is that on the one hand the costs to ensure compliance with PCB related legislation are very high, while on the other hand the fines are low. If a PCB holder lists PCB containing equipment as a waste, the waste is required to be registered, a waste passport/permit needs to be obtained, the waste needs to be stored according to PCB waste guidelines and waste needs to be disposed of after 3 years. To avoid incurring such costs, many companies opt therefore to list such equipment as "in operation". Without legislation in place that urges for the phase-out of PCB equipment and economic incentives to support this phase-out, PCB holders (mostly national ones) will try to meet deadlines as late as possible.
- **Risks related to the trans-boundary movement of POPs wastes and frequent changes of Government are likely to materialize during the implementation of POPs project in the Central**

Asia region. It would therefore be important for the project's management to monitor these types of risks closely, and develop and implement mitigation plans if possible. At a minimum such risks should be taken up in the PLF and/or Risk Log.

ANNEX I: TERMINAL EVALUATION TERMS OF REFERENCE

INTRODUCTION

In accordance with UNDP and GEF M&E policies and procedures, all full and medium-sized UNDP support GEF financed projects are required to undergo a terminal evaluation upon completion of implementation. The terms of reference (TOR) out the expectations for a Terminal Evaluation (TE) of the UNDP-GEF full size project of Kazakhstan: "Design and Execution of a Comprehensive PCB Management Plan for Kazakhstan"

The essentials of the project to be evaluated are as follows:

PROJECT SUMMARY TABLE

<table>
<tr><td>Project Title:</td><td colspan="5">Design and Execution of a Comprehensive PCB Management Plan for Kazakhstan"</td></tr>
<tr><td>GEF Project ID:</td><td>00071180
PIMS 3477</td><td></td><td>at endorsement (Million US$)</td><td colspan="2">at completion (Million US$)</td></tr>
<tr><td>UNDP Project ID:</td><td>00071180</td><td>GEF financing:</td><td>3.30</td><td colspan="2">3.30</td></tr>
<tr><td>Country:</td><td>Kazakhstan</td><td>IA/EA own:</td><td>UNDP</td><td colspan="2"></td></tr>
<tr><td>Region:</td><td>Central Asia</td><td>Government:</td><td>=9.7+1.1=10.8</td><td colspan="2"></td></tr>
<tr><td>Focal Area:</td><td>Chemicals</td><td>Other:</td><td>6.6</td><td colspan="2"></td></tr>
<tr><td>FA Objectives, (OP/SP):</td><td></td><td>Total co-financing:</td><td>20.8</td><td colspan="2"></td></tr>
<tr><td>Executing Agency:</td><td>1. UNDP
2. Ministry of Energy</td><td>Total Project Cost:</td><td>20.8</td><td colspan="2"></td></tr>
<tr><td rowspan="2">Other Partners involved:</td><td rowspan="2">AMT, Kazchrom, ANPZ, SPZ, Promotkhod Kazakhstan, CSD, Ecomuseum,</td><td colspan="3">ProDoc Signature (date project began):</td><td>23/02/2010</td></tr>
<tr><td>(Operational) Closing Date:
December 2014</td><td>Proposed:
December 2014</td><td>Actual:</td></tr>
</table>

OBJECTIVE AND SCOPE

This GEF-funded five-year project started in February 2010 and is expected to be completed in December 2014. The total project budget is US$ 20 800 000. GEF financing amounts to US$ 3 300 000 and UNDP financing to US$ 15 000. The implementing agency for the project is the Ministry of Environmental Protection of the Republic of Kazakhstan (RoK).

Kazakhstan is committed to safe management of PCB as demonstrated by signature of the Stockholm Convention and its subsequent ratification on 7 June 2007 and inclusions in the list of parties to the Convention on 9 November 2007. The aim of the project is to implement a comprehensive PCB management plan for Kazakhstan. The overall objective is to ensure minimization of PCB releases and subsequent health and environmental impacts through systematic capacity development for sound PCB management in the country. The activities consist of:

(1) regulatory and administrative institution strengthening;

(2) capacity building for sound PCB management, identification of additional PCB sources;

(3) replacement, setting-up safe dismantling of 850 tons of PCB transformers and their safe disposal;

(4) regionally organized secure storages and disposal of PCB capacitors; and

(5) monitoring, learning, adaptive feedback, outreach and evaluation.

The TE must to conduct according to the guidance, rules and procedures established by UNDP and GEF as reflected in the UNDP Evaluation Guidance for GEF Financed Projects.
The objectives of the evaluation are to assess the achievement of project results, and to draw lessons that can both improve the sustainability of benefits from this project, and aid in the overall enhancement of UNDP programming.

EVALUATION APPROACH AND METHOD

An overall approach and method for conducting project terminal evaluations of UNDP supported GEF a financed project has developed over time. The evaluator is expected to frame the evaluation effort using the criteria of **relevance, effectiveness, efficiency, sustainability, and impact,** as defined and explained in the UNDP Guidance for Conducting Terminal Evaluations of UNDP-supported, GEF-financed Projects. A set of questions covering each of these criteria have been drafted and are included with this TOR (*Annex C*) The evaluator is expected to amend, complete and submit this matrix as part of an evaluation inception report, and shall include it as an annex to the final report.
The evaluation must provide evidence-based information that is credible, reliable and useful. The evaluator is expected to follow a participatory and consultative approach ensuring close engagement with government counterparts, in particular the GEF operational focal point, UNDP Country Office, project team, UNDP GEF Technical Adviser based in the region and key stakeholders. The evaluator is expected to conduct a field mission to Almaty, East Kazakhstan, Pavlodar, Karagandy Oblasts including the following project sites Alatau Zharyk Company, KazNU laboratory, NGO "Center for sustainable development", Aksu ferroalloy plant, EK energy distribution company, Gorvodokanal, AMT, Kazakhmys, Promothod Kazakhstan. Interviews will be held with the following organizations and individuals at a minimum:

- UNDP Kazakhstan
- Ministry of Energy
- Ministry of National Economy
- Ministry of Investment of Development
- Ministry of Agriculture
- Ministry of Internal Affairs
- Division of natural recourses of Karaganda oblast Akimat
- Department of Ecology of MEP in Karaganda oblast
- Alatau Zharyk Company
- Aksu ferroalloy plant
- EK energy Distribution Company
- Gorvodokanal
- AMT
- Kazakhmys
- Promotkhod Kazakhstan
- Scientific-practical center of sanitary –epidemiological expertise and monitoring
- KazNU laboratory
- KAPUR
- NGO Center for sustainability development

The evaluator will review all relevant sources of information, such as the project document, project reports – including Annual APR/PIR, project budget revisions, midterm review, progress reports, GEF

focal area tracking tools, project files, national strategic and legal documents, and any other materials that the evaluator considers useful for this evidence-based assessment. A list of documents that the project team will provide to the evaluator for review is included in Annex B of this Terms of Reference.

In preparation for the evaluation mission, the project manager, with assistance from UNDP country office, will arrange for the completion of the last stage tracking tool.

EVALUATION CRITERIA & RATINGS

An assessment of project performance will be carried out, based against expectations set out in the Project Logical Framework/Results Framework (Annex A), which provides performance and impact indicators for project implementation along with their corresponding means of verification. The evaluation will at a minimum cover the criteria of: **relevance, effectiveness, efficiency, sustainability and impact.** Ratings must be provided on the following performance criteria. The completed table must be included in the evaluation executive summary. The obligatory rating scales are included in Annex D.

Evaluation Ratings:			
1. Monitoring and Evaluation	***rating***	**2. IA& EA Execution**	***rating***
M&E design at entry		Quality of UNDP Implementation	
M&E Plan Implementation		Quality of Execution - Executing Agency	
Overall quality of M&E		Overall quality of Implementation / Execution	
3. Assessment of Outcomes	**rating**	**4. Sustainability**	**rating**
Relevance		Financial resources:	
Effectiveness		Socio-political:	
Efficiency		Institutional framework and governance:	
Overall Project Outcome Rating		Environmental:	
		Overall likelihood of sustainability:	

PROJECT FINANCE / COFINANCE

The Evaluation will assess the key financial aspects of the project, including the extent of co-financing planned and realized. Project cost and funding data will be required, including annual expenditures. Variances between planned and actual expenditures will need to be assessed and explained. Results from recent financial audits, as available, should be taken into consideration. The evaluator(s) will receive assistance from the Country Office (CO) and Project Team to obtain financial data in order to complete the co-financing table below, which will be included in the terminal evaluation report.

Co-financing (type/source)	UNDP own financing (mill. US$)		Government (mill. US$)		Partner Agency (mill. US$)		Total (mill. US$)	
	Planned	Actual	Planned	Actual	Planned	Actual	Actual	Actual
Grants								
Loans/ Concessions								
• In-kind support								
• Other								
Totals								

MAINSTREAMING

UNDP supported GEF financed projects are key components in UNDP country programming, as well as regional and global programmes. The evaluation will assess the extent to which the project was

successfully mainstreamed with other UNDP priorities, including poverty alleviation, improved governance, the prevention and recovery from natural disasters, and gender.

IMPACT

The evaluators will assess the extent to which the project is achieving impacts or progressing towards the achievement of impacts. Key findings that should be brought out in the evaluations include whether the project has demonstrated: a) verifiable improvements in ecological status, b) verifiable reductions in stress on ecological systems, and/or c) demonstrated progress towards these impact achievements.27

CONCLUSIONS, RECOMMENDATIONS & LESSONS

The evaluation report must include a chapter providing a set of **conclusions**, **recommendations** and **lessons**.

IMPLEMENTATION ARRANGEMENTS

The principal responsibility for managing this evaluation resides with the UNDP CO in Kazakhstan. The UNDP CO will contract the evaluators and ensure the timely provision of per diems and travel arrangements within the country for the evaluation team. The Project Team will be responsible for liaising with the Evaluators team to set up stakeholder interviews, arrange field visits, coordinate with the Government etc.

MISSION
Almaty - 1 day
Ust-Kamenogorsk – 2 days
Pavlodar - 1 day
Karagandy - 1 day
Astana – 5 days

EVALUATION TIMEFRAME

The total duration of the evaluation will be *25* days according to the following plan:

Activity	Timing	Completion Date
Desk Review	2 days	*October*
Evaluation Mission	*10* days	*3-12 November*
Draft Evaluation Report	*10* days	*24 November*
Final Report	*3* days	*15 December*

EVALUATION DELIVERABLES

The evaluation team is expected to deliver the following:

Deliverable	Content	Timing	Responsibilities
Initial Report	Evaluator provides clarifications on timing and method	No later than 2 weeks before the evaluation mission.	Evaluator submits to UNDP CO
Presentation	Initial Findings	End of evaluation mission	To project management, UNDP CO
Draft Final Report	Full report, (per annexed template) with annexes	Within 2 weeks of the evaluation mission	Sent to CO, reviewed by RTA, PCU, GEF OFPs

27A useful tool for gauging progress to impact is the Review of Outcomes to Impacts (ROtI) method developed by the GEF Evaluation Office: ROTI Handbook 2009

Final Report*	Revised report	Within 1 week of receiving UNDP comments on draft	Sent to CO for uploading to UNDP ERC.

*When submitting the final evaluation report, the evaluator is required also to provide an 'audit trail', detailing how all received comments have (and have not) been addressed in the final evaluation report.

TEAM COMPOSITION

The evaluation team will be composed of international and national evaluators. The consultants shall have prior experience in evaluating similar projects. Experience with GEF financed projects is an advantage. *International evaluator is a team leader of evaluation team, develops, and submits the final report.* The evaluators selected should not have participated in the project preparation and/or implementation and should not have conflict of interest with project related activities.

The International evaluator must present the following qualifications:

- Minimum 10 years of relevant professional experience in environmental issues, including POPs.
- Knowledge of UNDP and GEF
- Previous experience with results-based monitoring and evaluation methodologies;
- Technical knowledge in the targeted focal area(s)
- *Experience with CIS, East Europe countries*
- *Experience with UNDP projects*
- English language
- Knowledge of PA policy and management structure of the Republic of Kazakhstan or CIS countries;

EVALUATOR ETHICS

Evaluation consultants will be held to the highest ethical standards and are required to sign a Code of Conduct (Annex E) upon acceptance of the assignment. UNDP evaluations are conducted in accordance with the principles outlined in the UNEG 'Ethical Guidelines for Evaluations'

PAYMENT MODALITIES AND SPECIFICATIONS

%	Milestone
10%	At contract signing
40%	Following submission and approval of the 1ST draft terminal evaluation report
50%	Following submission and approval (UNDP-CO and UNDP RTA) of the final terminal evaluation report

APPLICATION PROCESS

Applicants are requested to apply online http://jobs.undp.org , by 10 October 2014 Individual consultants are invited to submit applications together with their CV for these positions. The application should contain a current and complete C.V. in with indication of the e-mail and phone contact. Shortlisted candidates will be requested to submit a price offer indicating the total cost of the assignment (including daily fee, per diem and travel costs).

UNDP applies a fair and transparent selection process that will take into account the competencies/skills of the applicants as well as their financial proposals. Qualified women and members of social minorities are encouraged to apply

ANNEX A: PROJECT LOGICAL FRAMEWORK

Project Strategy	Objectively verifiable indicators	Baseline	Target	Sources of verification	Assumptions
Objective: To enhance the capacity for safe management of PCB oil and PCB-containing equipment at all stages of the PCB management cycle in Kazakhstan	Clear regulation anchored scheme for PCB management with identified roles and deadlines in Kazakhstan established	No specific regulations, guidelines or enforcement for PCB management through-out their lifecycle. Roles and responsibilities of PCB holders and authorities at regional and central level not elaborated.	1. Environmental Code amendment and technical specifications adopted. And integrated by environmental authorities. 2. Clear PCB reporting and enforcement set up nationally. PCB holder submitted management plans integrated in environmental inspections.	1.Official Gazette and MEP documents	
	Site and regional based PCB disposal systems developed and demonstrated from planning to disposal.	No safe PCB disposal undertaken. No organized system for assisting PCB holders in finding optimized PCB management solutions.	1. One major PCB capacitors and one major PCB transformer site management demonstrated from planning to disposal. Resulting in 1,400 tons PCB waste processed. 2. Regionally based PCB col-lection/disposal scheme in place with 200 tons PCB waste processed.	1. PCB holder documentation. Disposal certificates. 2. Government documents. Disposal certificates	

Outcome 1: Regulatory and administrative strengthening for sound PCB management	1. Proposed changes in Environmental Code and changes in associated laws finalized.	1. Code exists without PCB amendments.	1. Fully consulted proposal submitted 1 year.	1. Documents from Min. Env. to Cabinet of Ministers.	**Risk**: Delays due to complexity of amend-ments in associated laws or changes in government. Development of quality guidelines assumed to prioritize monitoring efforts **Risk**: Capacity constraints postpone application of quality guidelines
	2. Changes ensuring safe PCB management in Env. Code adopted.	2. Code exists without PCB amendments.	2. Legislation adopted within 2 years.	2. Signed law published in Official Gazzette	
	3. Development of technical guidance implementing PCB regulative framework	3. No legislation/ guidelines covering PCBs	3. 5 guidance documents covering various stages and stakeholders of PCB life-cycle	3. MEP official publications	
	4. Development and adoption of PCB environ-mental and food quality guidelines	4. No food and environ-mental quality guidelines exist	4.Specific quality guidelines developed covering abiotic environment and food	4. Official Gazette. MEP official publications	

Outcome 2: Capacity building for sound PCB management, identification of additional PCB sources	1. Number of PCB holder management plans developed.	1&2. No PCB holder specific management and replacement plans developed	1. All PCB holding companies submit management plans.	1&2. MEP, official management plan filings by companies.	**Assumption**: All companies willing for change **Risk**: Unsafe PCB oil/equipment disposal due to economic benefit to some parties. **Assumption**: Adopted legislation requires PCB holders to develop management and replacement plans **Assumption**: Ministry of Defense willing to investigate PCB situation before legal requirements enter into force.
	2. Number of PCB holder replacement plans developed**.**	1&2. No PCB holder specific management and replacement plans developed	2. 20 plans during 3 first years of project	1&2. MEP, official management plan filings by companies.	
	3. Number of new approaches for PCB data collection initiated. (Separate investigation for Min. of Defense, collection through Ministry of industries channels, reward system)	3. Survey type initial investigation carried out as part of POPs EA project.	3. 100 additional companies surveyed. Complete PCB data from Ministry of defense.	3. MEP PCB database. Ministry of defense PCB data base exists and at least aggregated data accessible to other authorities	

Outcome 3: Replacement, setting-up safe dismantling of 850 tons of PCB trans-formers and their safe disposal	1. Company phase out plans developed.	1. Basic intention of PCB phase-out.	1.106 PCB transformer	1. Company records	**Assumption:** Economic situation does not deteriorate further for keeping the investment company plan. **Risk:** Budgeting fluctuating currencies may increase or decrease final transportation and disposal prices budgeted in US$
	2. Safe workshop and storage assigned up dated for PCB dismantling and storage.	2(a). No space assigned. Disconnected transformers are in the stored in the main production building 2(b). Workers barely aware of PCB dangers or proper pre-cautions	2(a). Safe transformer storage facility established within second year of project. 2(b). Disconnection and dismantling personnel fully trained for safe PCB handling	2(a). Regional environmental inspector International expert reports. 2(b). Training records and reports	
	3. Number of PCB contaminated transformers drained and dismantled.	3. Zero	3. 30 transformers phased-out and replaced within 36 months of project implementation. Replacement plan for all transformers accepted by end year four.	3.Company warehouse book-keeping and regional inspector reports	
	4. Tons of PCB contaminated oil and associated waste disposed through exports	4. Zero, no safe PCB disposal carried out	4. Target: 850 tons of PCB waste safely disposed.	4. Freight documents and disposal certificates	

Outcome 4: Regionally organized secure storages and disposal of PCB capacitors	1. Storage manned with professional workers	1. No safe storages exist.	1. All storage personnel undergone safe handling, fire, spill containment training.	1. Project documents, list of training attendees and training report.	**Risk**: Delays due to prolonged permitting due to site selection, and approvals for their release, NIMBY etc. **Assumption**: sites selected to ensure that no major local resistance to storing hazardous waste delay approval process. **Assumption**: companies willing to participate in early storage **Risk**: first bidding and disposal quantities may be low due to the fact that legislation has been approved close to target date
	2.System of storages operational	2. No safe PCB storages exist.	2. PCB waste received within 36 months of project inception	2. Diary/log for incoming material at storage site.	
	3. Disposal of regionally collected PCB containing equipment and waste.	3. None.	3. 200 tons of PCB equipment and waste disposed.	3. Certificate of disposal by final disposal facility.	
	4. Tons of PCB capacitors disposed from Darial-U site	4. First batches exported	4. All Darial-U capacitors disposed by end year 4.	4. Freight documents and disposal certificates	

Outcome 5: Monitoring, learning, adaptive feedback, outreach and evaluation	1: M&E and adaptive management applied to project in response to needs, mid-term evaluation findings with lessons learned extracted.	1.No Monitoring and Evaluation system 2. No evaluation of project output and outcomes	1. Monitoring and Evaluation system developed during year 1. 2. Mid-term-evaluation of project output and outcomes conducted with lessons learnt at 30 months of implementation.	1. Project document inception workshop report. 2. Independent midterm-evaluation report.	
Outcome 1: Regulatory and administrative strengthening for sound PCB management Output 1.1: Environmental Code and other PCB related legislation reviewed, changes developed. Environmental Code revised to include a chapter on PCB management and disposal. Output 1.2: Responsibilities vis-a-vis International Chemicals´ Conventions in the government re-aligned Output 1.3: Detailed PCB rules, guidelines, incentive schemes developed Output 1.4: Capacity for implementing and knowledge of PCB regulations and guidance among public sector actors, including training of customs department in PCB identification, enhanced. Output 1.5: Awareness raising campaigns on PCB risks and regulatory requirements among authorities and wider public conducted					
Outcome 2: Capacity building for sound PCB management, identification of additional PCB sources Output 2.1: Improved capacities of PCB holders for sound PCB management Output 2.2: PCB holder-wise management and replacement plans Output 2.3: PCB inventory expanded and updated Output 2.4: Enhanced PCB analysis preparedness at State Hydro-meteorological services and Ministry of Health laboratories Output 2.5: Risk based priority-setting tools for PCBs management initiatives developed.					
Outcome 3: Replacement, setting-up safe dismantling of 850 tons of PCB transformers and their safe disposal Output 3.1: Phase-out and procurement of replacement transformers planned and scheduled Output 3.2: Transformers disconnected, drained, dismantled and cleaned, metals recycled Output 3.3: Disposal of oils and associated waste					
Outcome 4: Regionally organized secure storages and disposal of PCB capacitors Output 4.1: Secure, temporary PCB storage facilities identified, constructed/upgraded Output 4.2: Safe operation of storage sites secured Output 4.3: PCB collection and disposal put in place and implemented Output 4.4: 15,000 PCB capacitors at Darial-U Capacitor site disconnected, packed and stored. Output 4.5: Clean-up premises and pack all potentially PCB contaminated wastes. Output 4.6: Transportation and disposal of approximately 600 tons of PCBs and associated waste disposed.					

Outcome 5: Monitoring, learning, adaptive feedback, outreach and evaluation

Output 5.1: M&E and adaptive management applied to project in response to needs and to extract lessons learned
Output 5.2: Lessons learned and best practices are replicated at the national level

ANNEX B: LIST OF DOCUMENTS TO BE REVIEWED BY THE EVALUATORS

Following documents can be used as a basis for evaluation of the project (titles underlined are available in Russian with an English annotation):
are available in Russian with an English annotation):

Document	Description
Project document	The Project Document and Revisions
Project reports	Project Inception Report Annual Progress Reports
MTE	MTE Report
Annual Project Report to GEF	Project Implementation Reviews (PIRs: 2010, 2011, 2012, 2013 draft)
Minutes	Project Steering Committee
Other relevant materials:	Rules on handling of POPs and POPs contained waste Proposals to the Ecocode Concept on movement of Kazakhstan to Green Economy Projects guidelines: 1. PCB Management Guidelines 2. Standard PCB management plan for PCB holders 3. Overview of PCB Disposal and Treatment Technologies 4. Instructions for storage of PCB waste 5. Guidelines on Conducting PCB Contaminated Site Risk Assessment 6. Risk assessment manual 7. A review of the current situation on POPs monitoring in the environment in Kazakhstan and abroad 8. Proposal for Design of Persistent Organic Pollutants (POPs) Monitoring Framework in Kazakhstan

Annex C

To determine the level of achievement of project outcomes and objectives following three criteria should be assessed:

- *Relevance:* Are the project's outcomes consistent with the focal areas/operational program strategies and country priorities?

- *Effectiveness:* Are the actual project outcomes commensurate with the original or modified project objectives? In case the original or modified expected results are merely outputs/inputs then the evaluators should assess if there are any real outcomes of the project and if yes then whether these are commensurate with the realistic expectations from such a project.
- *Efficiency:* Is the project cost effective? Is the project the least cost option? Is the project implementation delayed and if it is, then does that affect cost-effectiveness? Wherever possible, the evaluator should also compare the cost-time vs. outcomes relationship of the project with that of other similar projects.
- *Sustainability*: Assessment will give special attention to analysis of the risks that are likely to affect the persistence of project outcomes. The sustainability assessment should also explain how other important contextual factors that are not outcomes of the project will affect sustainability. The following four dimensions or aspects of sustainability will be addressed:
  - *Financial resources:* Are there any financial risks that may jeopardize sustenance of project outcomes? What is the likelihood of financial and economic resources not being available once the GEF assistance ends (resources can be from multiple sources, such as the public and private sectors, income generating activities, and trends that may indicate that it is likely that in future there will be adequate financial resources for sustaining project's outcomes)?
  - *Socio-political:* Are there any social or political risks that may jeopardize sustenance 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 the project benefits continue to flow? Is there sufficient public / stakeholder awareness in support of the long term objectives of the project?
  - *Institutional framework and governance:* Do the legal frameworks, policies and governance structures and processes pose risks that may jeopardize sustenance of project benefits? While assessing this parameter, also consider if the required systems for accountability and transparency, and the required technical know-how are in place.
  - *Environmental:* Are there any environmental risks that may jeopardize sustenance of project outcomes? The terminal evaluation should assess whether certain activities will pose a threat to the sustainability of the project outcomes.

ANNEX D – Rate tables

Table 1. Status of objective / outcome delivery as per measurable indicators

OBJECTIVE	MEASURABLE INDICATORS FROM PROJECT LOGFRAME	END-OF-PROJECT TARGET	STATUS OF DELIVERY*	RATING**
Objective :				
OUTCOMES	**MEASURABLE INDICATORS FROM PROJECT LOGFRAME**	**END-OF-PROJECT TARGET**	**STATUS OF DELIVERY**	**RATING**
Outcome 1:				
Outcome 2:				
Outcome 3:				
Outcome 4:				

Status of delivery colouring codes:

Green / completed – indicator shows successful achievement Yellow – indicator shows expected completion by the end of the project

Red – Indicator show poor achievement - unlikely to be complete by end of Project

Table 29: Project Rating

Project Component or Objective	**Rating Scale**						**Rating**
	HU	U	MU	MS	S	HS	
Project Concept/Design, Relevance and Strategy							
Project relevance, country ownership/drivenness							
Stakeholder involvement							
Management arrangements							
Project budget and duration							
Design of project M&E system							
Project Implementation							
Adaptive management							
Monitoring systems							
Risk management							
Work planning							
Financial management							
Reporting							
Delays							
Stakeholder Participation, Partnership Strategy							
Production and dissemination of information							
Local resource users and NGOs participation							
Establishment of partnerships							
Involvement and support of governmental institutions							
Project Results							
Overall Project Achievement and Impact							

ANNEX II: ITINERARY & LIST OF ORGANIZATIONS, ENTITIES AND INDIVIDUALS INTERVIEWED

Table 30: Itinerary for Final Evaluation Mission of the UNDP/GEF Project "Design and Execution of a Comprehensive PCB Management Plan for Kazakhstan" 12-21 December 2014, Astana, Kazakhstan

Time	Venue	Partner	Representative	Contact Information
Friday, 12 December 2014, Almaty				
9:30 - 10:15	NGO Office	NGO Center for Sustainability Development	**Yulia Dushkina**, Expert	Tel. +7 777 2068999, Address: Almaty, Abayia street 32, office 217
11:00 - 11:45	Center Office	Scientific-practical center of sanitary –epidemiological expertise and monitoring	**Aiman Nazhmetdinova**, Chief Laboratory	Tel.: +7 7273 756053, mob.: +7 777 2440502, Address Auezova 84, Astana
12:15 - 13:00	Laboratory Office	KazNU laboratory	**Bulat Kenesov**, Chief Laboratory	Tel.: +7 7272 921374, Mob.: +7 777 2272404, Address: Tole Bi 96a, Almaty
14:00 - 15:00	Company Office	Alatau Zharyk Kompainyasy	**Nurakhmanov Baurzhan Tolekazhyevitch**	Mob: 8701-9389148, Address: Rozybalieva 6
Saturday, 13 December 2014, Almaty				
10:00 - 13:00	PCB Office	Meeting with Project team	**Amina Beibitova**, Project Management & PCB Expert; **Almat Abenov**, Transportation and Logistics Expert; **Gaukhar Maikenova**, Training and Capacity Building Expert; **Assem Umirshina**, Project Assistant	
Monday, 15 December 2014, Temirtau-Karaganda				
09.00 – 11.00	AMT Office	ArcelorMittal Temirtau Steel Department	**Galina Drozdova**, Chief Ecologyst	Mob.: 8-701-9080286
11:00 - 12:00	Storage Facility	Promotkhod Kazakhstan Company	**Kalmykov Dmitryi**, Chief Waste Department	Tel: 87777400437
12:00 - 13:00	NGO Office	NGO Ecomuseum	**Kalmykov Dmitryi**, Director	Tel: 87777400437
14:00 - 15:00	Company Office	Energougol company – AMT Coal Department	**Bagdagul Kenzhegalievna**, Chief Ecologist	Tel.: 8-705-1089960
Wednesday, 17 December 2014, Astana				
10:00 – 11:00	UNDP Office	UNDP Country Office	**Stanislav Kim**, Head Energy and Environment Unit	
Thursday, 18 December 2014, Ust-Kamenogorsk				

09.00 – 10.00	Company Office	VK REK EK energy distribution company	**Gulzhanat Ibrayeva**, Chief Ecologyst	Tel.: 8-707-5450244
10:00 - 11:00	Company Office	Gorvodokanal Laboratory	**Zoyeva Galina Ivanovna**, Expert laboratory	Tel.: 8 777- 2793958
12:00 - 13:00	Company Office	Kazmetizprom Company	**Genadyi Petrovich**, Director **Lyubov Sergeevna**, Ecologyst	Tel.: 8 777- 2793958
Friday, 19 December 2014 Astana				
9:00 – 12:00	PCB Office	Meeting with Project team	**Amina Beibitova**, Project Management & PCB Expert; **Almat Abenov**, Transportation and Logistics Expert; **Gaukhar Maikenova**, Training and Capacity Building Expert; **Assem Umirshina**, Project Assistant	
14:30 - 15:30	PCB office	JSC “Zhasyl Damu”	**Zhanara Asanova**, Chief Waste Department	Tel.: 8775-9496196
Saturday, 20 December 2014 Astana				
10:00 – 11:00	PCB office	NEPC (KAPUR)	**Ramil Disembaev**, Director Environmental Department	
11:30 – 12.30	PCB office	Ministry of Energy	**Bizara Dosmakova**, Deputy Head Waste Department	Tel.: 8-701-5180795

ANNEX III: LIST OF DOCUMENTS REVIEWED

I. Project Documents

- Signed UNDP ProDoc
- GEF Project Information Form (PIF), Project Document and Log Frame Analysis (LFA)
- Implementing/executing partner arrangements
- List and contact details for project staff, key project stakeholders, including Project Boards, and other partners to be consulted
- Meeting minutes of Yearly Progress Report Meetings as well as Project Steering Committee Meetings; Quarterly Progress Reports (QPRs); Annual Progress Reports (APRs)
- Midterm evaluation (MTE) related documentation
- Annual Project Implementation Reports (PIR) for 2011, 2012, 2013 and 2014.
- Project budget, broken down by outcomes and outputs
- Financial Data (Combined Delivery Report – CDRs; Annual Work Plans – AWP; Two Year Work Plans - TYWP)
- Overview of co-financing received/mobilized per year
- Sample of project communications materials, i.e. press releases, brochures, documentaries, etc.
- Copies of pieces of legislation/regulations developed with the support of the project
- Guidance materials developed under the project

II. UNDP Documents

- Development Assistance Framework (UNDAF)
- Country Programme Document (CPD)
- Country Programme Action Plan (CPAP)

III. GEF Documents

- GEF focal area strategic program objectives

ANNEX IV: EVALUATION MATRIX & QUESTIONS

Evaluative Criteria Questions	Indicators	Sources	Methodology
Relevance: How does the project relate to the main objectives of the GEF focal area, and to the environment and development priorities at the local, regional and national levels?			
• How does the Project support the objectives of the Stockholm Convention (SC) • How does the Project support the related strategic priorities of the GEF?	• Existence of a clear relationship between project objectives and GEF POPs focal area	• Project documents • GEF focal area strategies and documents	• Document analysis • GEF website • Interview with government, Project Team, UNDP and other project partners
• How does the Project support the development objectives of the Republic of Kazakhstan? • Does the Project adequately take into account the national realities, both in terms of institutional framework and programming, in its design and its implementation? • To what extent were national partners involved in the design and implementation of the Project? • Were the capacities of executing institutions and counterparts properly considered when the project was designed? • Does the Project participate in the implementation of the SC in Kazakhstan? • How country-driven is the Project?	• Degree of coherence between project objectives and national development priorities, policies and strategies • Level of involvement of government officials and other partners in project design and implementation • Coherence between needs expressed by national stakeholders and UNDP-GEF criteria	• Project documents • Kazakhstan POPs National Implementation Plan • Key project partners	• Document analyses • Interview with government officials and project partners
• How does the Project support the objectives of UNDP in this sector?	• Consistency between project objectives and UNDP strategies and development objectives	• Project document • UNDP strategies and programme	• Document analyses • Interviews with government, UNDP, other partners
• How does the Project support the needs of target	• Strength of the link between expected	• Project partners and	• Document analysis

beneficiaries? • Is the implementation of the Project been inclusive of all relevant Stakeholders? • Are local beneficiaries and stakeholders adequately involved in Project design and implementation?	project results from the project and the needs of relevant stakeholders • Degree of involvement and inclusiveness of stakeholders and beneficiaries in project design and implementation	stakeholders • Needs assessment studies • Project documents	• Interviews with relevant stakeholders
• Are there logical linkage between expected results of the project (log frame) and the project design (in terms of Project components, choice of partners, structure, delivery mechanism, scope, budget, use of resources etc.)? • Is the length of the project sufficient to achieve project outcomes?	• Level of coherence between expected project results and project design internal logic • Level of coherence between project design and implementation approach	• Program and project documents • Key project stakeholders	• Document analysis • Key interviews
Effectiveness: To what extent have the expected outcomes and objectives of the project been achieved?			
• Has the project been effective in achieving its expected outcomes? ○ Institutions and mechanism for project management and coordination; ○ Management information system (MIS) and information management; ○ Enabling policy environment; ○ Conversion from DDT-based antifouling paints to alternatives; ○ Environmental education and awareness raising; ○ Monitoring and evaluation.	• Indicators in project document results framework and logframe	• Project documents • Project Team and relevant stakeholders • Data reported in project annual and quarterly reports	• Document analysis • Interviews with Project Team • Interviews with relevant stakeholders
• What lessons have been learned from the project regarding achievement of outcomes? • What changes could have been made (if any) to the design of the project in order to improve the achievement of the		• Data collected through evaluation	• Data analysis

project's expected results?			
Efficiency: Was the project implemented efficiently, in-line with international and national norms and standards?			
• Was adaptive management used or needed to ensure efficient resource use? • Did the project logical framework and work plans and any changes made to them use as management tools during implementation • Were the accounting and financial systems in place adequate for project management and producing accurate and timely financial information? • Were progress reports produced accurately, timely and responded to reporting requirements including adaptive management change? • Did the leveraging of funds (co-financing) happen as planned? • Was procurement carried out in a manner making efficient use of project resources?	• Availability and quality of financial and progress reports • Timeliness and adequacy of reporting provided • Planned vs. actual funds leveraged • Occurrence of change in project design / implementation approach (i.e. restructuring when needed to improve project efficiency)	• Project documents and evaluations • UNDP • Project Team	• Document analysis • Key interviews
• To what extent partnerships/linkages between institutions / organizations were encourage and supported • What partnerships/linkages were facilitated? Which ones can be considered sustainable? • What was the level of efficiency of cooperation and collaboration arrangements?	• Specific activities conducted to support the development of cooperative arrangements between partners • Examples of supported partnership? • Evidence that particular partnership/linkages will be sustained • Types/quality of partnership cooperation methods utilized	• Project documents and evaluations • Project partners and relevant stakeholders	• Document analysis • Interviews
• Did the project take into account local capacity in design and implementation of the project? • Was there an effective collaboration between institutions	• National expertise utilized • Number/quality of analysis done to asses local capacity potential and	• Project documents and evaluations • UNDP	• Document analysis • Interviews

responsible for implementing the project?	absorptive capacity	• Beneficiaries	
• What lessons can be learned from the project regarding efficiency? • How could the project have more efficiently carried out implementation (in terms of arrangement structures and procedures, partnership arrangements etc.)? • What change could have been made (if any) to the project in order to improve its efficiency)?		• Data collected throughout evaluation	• Data analysis
• How and to what extent have project implementation process, coordination with participating stakeholders and important aspects affected the timely project start-up, implementation and closure?	• Relationship and coordination mechanism of project partners • Timeliness of project activities implemented	• Project documents • Project Team and relevant stakeholders	• Document analysis • Key interviews
• Do the outcomes developed during the project formulation still represent the best project strategy for achieving the project objectives?	• Extent of relevance of project outcomes and objectives to changing circumstances	• Project documents • Project Team and relevant stakeholders	• Document analysis • Key interviews
• Does the project consult and make use of skills, experience and knowledge of the appropriate government entities, NGOs, community groups, private sector, local governments and academic institutions in the implementation and evaluation of project activities?	• National capacities utilized • Number/type of partnership formed	• Project documents • Project Team and relevant stakeholders	• Document analysis • Key interviews
Sustainability: To what extent are there financial, institutional, social-economic, and/or environmental risks to sustaining long-term project results?			
• Was project sustainability strategy developed during the project design? • How relevant was the project sustainability strategy?	• Evidence/quality of sustainability strategy • Evidence/quality of steps taken to address sustainability	• Project documents • Project Team and relevant stakeholders • Beneficiaries	• Document analysis • Key interviews

• Are there any financial risks that may jeopardize sustenance of project outcomes? What is the likelihood of financial and economic resources not being available once the GEF assistance ends (resources can be from multiple sources, such as the public and private sectors, income generating activities, and trends that may indicate that it is likely that in future there will be adequate financial resources for sustaining project's outcomes)?	• Financial resources available after project completion to support and sustain project outcomes	• Project Team and relevant stakeholders • Project partners • Beneficiaries	• Document and data analysis • Key interviews
• Are there any social or political risks that may jeopardize sustenance of project outcomes? What is the risk that the level of stakeholder ownership will be insufficient to allow for the project outcomes/benefits be sustained? Do the various key stakeholders see that it is in their interest that the project benefits continue to flow? Is there a sufficient public/ stakeholder awareness in support of the long term objectives of the project?	• Social and political risk assessment data to support sustainability of project outcomes	• Project Team and relevant stakeholders • Project partners • Beneficiaries	• Document and data analysis • Key interviews
Impact: Are there indications that the project has contributed to, or enabled progress toward, reduced environmental stress and/or improved ecological status?			
• What are the main positive and negative impacts of the project?	• Project impacts (e.g. capacity, policy enabling framework, etc.)	• Project documents • GEF focal area tracking tools	• Document analysis • Key Interviews
• How has the project contributed to global environmental benefits or reductions in stress to ecological systems, or is there evidence that the project has put in place processes that will lead to such impact?	• Levels of reduction of POPs release • Systems, structures and capacities that contribute to changes in POPs release	• Project documents • GEF focal area tracking tools	• Document analysis • Key Interviews

ANNEX V: INTERVIEW GUIDE

Note: This is only a guide for the interviewers and a simplified version of the evaluation matrix. Not all questions will be asked to each interviewee; it is a reminder for interviewers about the type of information required to complete the evaluation exercise and a guide to prepare the semi-structured interviews.

I. RELEVANCE - *How does the Project relate to the main objectives of the Stockholm Convention, UNECE POPs Protocol, GEF and to the environment and development challenges faced by Kazakhstan?*

I.1. Is the Project relevant to the SC, UNECE POPs Protocol and GEF objectives?
I.2. Is the Project relevant to UNDP objectives?
I.3. Is the Project relevant to Kazakhstan's development objectives?
I.4. Does the Project address the needs of target beneficiaries?
I.5. Is the Project internally coherent in its design?
I.6. How is the Project relevant in light of activities supported by other donors?

Future directions for similar projects

I.7. What lessons have been learnt and what changes could have been made to the Project in order to strengthen the alignment between the Project and the Partners' priorities and areas of focus?
I.8. How could the Project better target and address the priorities and development challenges of targeted beneficiaries?

II. EFFECTIVENESS – *To what extent are the expected outcomes of the Project being achieved?*

II.1. How is the Project effective in achieving its expected outcomes?
II.2. How is risk and risk mitigation being managed?
II.3. How are results and progress towards achieving project objectives being managed?

Future directions for similar projects

II.4. What lessons have been learnt for the project to achieve its outcomes?
II.5. What changes could have been made (if any) to the design of the Project in order to improve the achievement of the project' expected results?
II.6. How could the project be more effective in achieving its results?

III. EFFICIENCY - *How efficiently is the Project implemented?*

III.1. Were the project roles properly assigned during project design?
III.2. Are the project roles in line with UNDP and GEF programming guidelines?
III.3. Were counterpart resources (funding, staff, and facilities), enabling legislation, and adequate project management arrangements in place at project entry?
III.4. Was adaptive management used or needed to ensure efficient resource use?
III.5. Did the Project logical framework and work plans and any changes made to them use as management tools during implementation?
III.6. Were the accounting and financial systems in place adequate for Project management and producing accurate and timely financial information?

III.7. Were progress reports produced accurately, timely and respond to reporting requirements including adaptive management changes?
III.8. Was Project implementation as cost effective as originally proposed (planned vs. actual)
III.9. Did the leveraging of funds (co-financing) happen as planned?
III.10. Were financial resources utilized efficiently? Could financial resources have been used more efficiently?
III.11. Was procurement carried out in a manner making efficient use of project resources?
III.12. How was RBM used during program and project implementation?
III.13. Were there an institutionalized or informal feedback or dissemination mechanism to ensure that findings, lessons learned and recommendations pertaining to Project design and implementation effectiveness were shared among Project stakeholders, UNDP and GEF Staff and other relevant organizations for ongoing Project adjustment and improvement?
III.14. Did the Project mainstream gender considerations into its implementation?
III.15. To what extent were partnerships/ linkages between institutions/ organizations encouraged and supported?
III.16. Which partnerships/linkages were facilitated? Which one can be considered sustainable?
III.17. What is the level of efficiency of cooperation and collaboration arrangements? (between local actors, UNDP/GEF and relevant government entities)
III.18. Was an appropriate balance struck between utilization of international expertise as well as local capacity?
III.19. Did the Project take into account local capacity in design and implementation of the Project?

Future directions for the Project

III.20. What lessons can be learnt from the Project on efficiency?
III.21. How can the project more efficiently address its key priorities (in terms of management structures and procedures, partnerships arrangements etc…)?

IV. IMPACTS - *What are the potential and realized impacts of activities carried out in the context of the Project?*

IV.1. Will the project achieve its objective?
IV.2. How is the Project effective in achieving the objectives of the SC and of the UNECE POPs Protocol such as impacts or likely impacts on the local environment; on poverty; and, on other socio-economic issues?

Future directions for the Project

IV.3. How can the project build on its apparent successes and learn from its weaknesses in order to enhance the potential for impact of its own activities as well as other ongoing and future initiatives?

V. SUSTAINABILITY - *Are the initiatives and results of the Project allowing for continued benefits?*

V.1. Are sustainability issues adequately integrated in Project design?
V.2. Did the Project adequately address financial and economic sustainability issues?
V.3. Is there evidence that Project partners will continue their activities beyond Project support?

V.4. Are laws, policies and frameworks being addressed through the Project, in order to address sustainability of key initiatives and reforms?
V.5. Is the capacity in place at the national and local levels adequate to ensure sustainability of the results achieved to date?
V.6. Are Project activities and results being replicated elsewhere and/or scaled up?
V.7. What are the main challenges that may hinder sustainability of efforts?

Future directions for the Project

V.8. Which areas/arrangements under the project show the strongest potential for lasting long-term results?
V.9. What are the key challenges and obstacles to the sustainability of results of the project initiatives that must be directly and quickly addressed

ANNEX VI: RATING SCALES

Ratings for Outcomes, Effectiveness, Efficiency, M&E, I&E Execution	***Sustainability ratings:***	***Relevance ratings***
Highly Satisfactory (HS): no shortcomings Satisfactory (S): minor shortcomings Moderately Satisfactory (MS) Moderately Unsatisfactory (MU): significant shortcomings Unsatisfactory (U): major problems Highly Unsatisfactory (HU): severe problems	Likely (L): negligible risks to sustainability Moderately Likely (ML): moderate risks Moderately Unlikely (MU): significant risks Unlikely (U): severe risks	Relevant (R) Not relevant (NR) ***Impact Ratings:*** Significant (S) Minimal (M) Negligible (N)
Additional ratings where relevant: Not Applicable (N/A) Unable to Assess (U/A		

ANNEX VII: EVALUATION CONSULTANT CODE OF CONDUCT AGREEMENT FORM – MRS. HILDA VAN DER VEEN

Evaluators:

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

Evaluation Consultant Agreement Form (www.unevaluation.org/unegcodeofconduct)

Agreement to abide by the Code of Conduct for Evaluation in the UN System
Name of Consultant: Hilda van der Veen
Name of Consultancy Organization (where relevant)**:** NA
I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.
Signed at **New York City, U.S.A.** on **5 December, 2014**

Signature: _  _____

ANNEX VIII: EVALUATION CONSULTANT CODE OF CONDUCT AGREEMENT FORM-MS. OLGA KLIMANOVA

Evaluators:

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

Evaluation Consultant Agreement Form (www.unevaluation.org/unegcodeofconduct)

Agreement to abide by the Code of Conduct for Evaluation in the UN System
Name of Consultant: Ms. Olga Klimanova
Name of Consultancy Organization (where relevant)**:**
I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.
Signed at _____on **10.04.2015**

Signature: 

ANNEX IX: NATIONAL AND INTERNATIONAL EXPERTS ENGAGED BY THE PROJECT

Table 31: National and International Experts recruited to provide TA

No.	Consultant		Scope of the Contract
	Last Name	**First Name**	
1	Yeskendirov	Nurlan	Project Manager
2	Beibitova	Amina	PCB Expert
3	Kim	Marina	Project Assistant
4	Wagner	Urs K.	Policy & Legal Consultant, PCB Expert
5	Mickovski	Aleksandar	PCB Consultant
6	Aaltonen	Markku	PCB Storage & Disposal Consultant
7	Abenov	Almat	Transportation & Logistics Expert
8	Askanbekova	Perizat	Regulatory Expert
9	Astanina	Lidia	Awareness Advisor
10	Ishankulov	Marat	Expert on Chemical Safety Policy
11	Kadissov	Murat	IT Expert
12	Kalmykov	Dmitry	Waste Management Expert
13	Maikenova	Gaukhar	Training & Capacity Building Expert
14	Orazalina	Kazken	Government Relations Expert
15	Tlegenova	Aliya	Environmental Monitoring Expert
16	Kumarov	Айдар	PCB Equipment Expert
17	Berdykhanova	Dinara	Project Assistant
18	Umirshina	Assem	Project Assistant

ANNEX X: LIST OF PROJECT PARTNERS

Table 32: List of Project Partners

Stakeholder	Mandate Related to PCB Management	Role in the Project
Central Government		
Ministry of Environment and Water Resources (MEWR)	MEWR was a National Implementing Agency for the Project until 2014 when it was completely abolished as a result of the Government restructuring reform. The Minister of MEWR used to be a political Focal Point for all environmental Conventions. Operational functions of the Project were delegated to the Division of the Management of Hazardous Chemicals and Waste. MEWR is responsible for producing, enforcement of legislation and controlling its compliance.	▪ Supervision of the Project implementation and monitoring on behalf of the Government. ▪ Chairing of the project Steering Committee meetings. ▪ Approval of the operational documents, including AWPs, annual budget, budget revisions. ▪ Discussion and approval of strategic decisions. ▪ Intersectoral coordination of the issues related to Project implementation, including legislation, capacity building. PCB disposal and other. ▪ Support of the Project activities.
Ministry of Energy (ME)	Governing of the energy sector of Kazakhstan. In 2014 after the MEWR was abolished, ME has took on the responsibilities of the MEWR and was appointed as a Focal Point for all conventions and GEF. The Division of the Management of Hazardous Chemicals and Waste that used to be under the MEWR was transferred to ME and continued to perform as an operational contact for the Project on behalf of the Government as described above.	▪ Supervision of the Project implementation and monitoring on behalf of the Government. ▪ Chairing of the project Steering Committee meetings. ▪ Approval of the operational documents, including AWPs, annual budget, budget revisions, project extension. ▪ Discussion and approval of strategic decisions. ▪ Intersectoral coordination of the issues related to Project implementation, including legislation, capacity building. PCB disposal and other. ▪ Support of the Project activities mainly through the Division of chemicals and waste, including legislation, PCB disposal.
Ministry of Economy and Budget Planning (MEBP)	Planning of the national Budget based on the annual applications of the central government. Is a Focal Point for all issues related to Customs Union and Eurasian Economic Union.	Participated in discussions related to PCB transportation through Russia and harmonization of national legislations related to hazardous waste management in CU and EEU.
Ministry of Justice (MJ)	Approval and registration of all new legislation and amendments.	▪ Approved all newly developed amendments.

		▪ Rejected some of them (e.g. PCB MAC in food and other media). ▪ Project through the Ministry of Energy still maintains communications with the MJ on pending amendments.
Ministry of Health (MH)	Governing health sector in Kazakhstan. Develop and Lobby relevant legislation and controls its implementation.	▪ MH was represented in the Project Steering Committee. ▪ Representatives of the MH participated in trainings and workshops. ▪ MH supported the Project in developing the MACs in food and other media. ▪ Supported and coordinated the process of approval of the new legislation with the Ministry of Justice, but failed so far.
Ministry of Defense (MD)	Management of hazardous chemicals and waste.	▪ Was represented in the Project Steering Committee. ▪ Participated in trainings. ▪ Carried out inventory in subordinate organizations and facilities.
Ministry of Industry and New Technologies	Governing industrial sector in Kazakhstan. Develops and Lobbies relevant legislation and controls its implementation.	Although the Ministry was represented in the Project Steering Committee, they were not engaged in the Project activities much.
National Customs Committee under the Ministry of Finance	Regulation of the legislation, standards, procedures and services in the country.	▪ Set in the Project Steering Committee. ▪ Participated in the trainings that were organized by the project and were adapted specifically for their needs. ▪ Supported the process of PCB transportation abroad. ▪ Participated in revision of relevant legislation harmonization of the relevant standards for the Customs Union countries.
Regional Governments		
Regional Environmental Departments (RED) under the Ministry of Energy (formerly MEWR) of 14 regions and 2 cities (Astana	Control over the implementation of environmental measures and compliance with relevant legislation. In relation to PCB Regional Departments are in charge for regular checks that now include PCB inventory, condition of the equipment.	▪ Participated in development and discussions on proposed revisions in legislation. ▪ Participated in trainings provided by the project. 3 trainings were organized specifically for the departments' staff. ▪ Karaganda Environmental Department supported the Project in organizing PCB disposal, storage and transportation.

and Almaty)	PCB holders submit all reporting (inventories, PCB management Plans, PCB disposal Plans etc.) to the RED, so they are the only source of official information.	▪ Provided full information and official data on completed inventories for updating NIP.
Division of Natural Resources Management of Karaganda Akimat	Authorizes and produces permissions for all projects at local level. Approved EIAs of the local projects.	▪ Issued permissions for storage if PCB oil and equipment. ▪ Support to in preparing all permissions for PCB transportation.
PCB Holders (Potential PCB Holders)		
JSC "Alatau Zharyk Company", Almaty		Training and workshops, disposal of PCB oil or PCB containing equipment
JSC "Arcelor Mittal Temirtau" Coal Department, Karaganda		Training and workshops, disposal of PCB oil or PCB containing equipment
Kazmetizprom LTD, Ust-Kamenogorsk		Training and workshops, disposal of PCB oil or PCB containing equipment
JSC "Kazchrome", Aksu, Aktobe		Training and workshops, disposal of PCB oil or PCB containing equipment
KEGOC, Almaty		Training and workshops
JSC "Arcelor Mittal Temirtau" Steel Department, Temirtau		Training and workshops, disposal of PCB oil or PCB containing equipment
Kazakhmys Corporation LLP		Training and workshops, disposal of PCB oil or PCB containing equipment
"Atyrau Refinery" LLP, Atyrau		Training and workshops, disposal of PCB oil or PCB containing equipment
Stepnogorsk Bearing Plant, Stepnogorsk		Training and workshops, disposal of PCB oil or PCB containing equipment
Eurasian Group, Astana		Training and workshops, disposal of PCB oil or PCB containing equipment
Laboratories		
"EcoNus" LLP, Karaganda		Training and workshops. As a result of the Project intervention's is now able to do PCB analysis in oil and other media.
"EcoEzpert", Karaganda		Training and workshops. As a result of the Project intervention's is now able to do PCB analysis in oil and other media.
Water management Plant, Ust-Kamenogorsk		Training and workshops. As a result of the Project intervention's is now able to do PCB analysis in oil and other media.
National Sanitary and Epidemiological Station, Almaty		Training and workshops. As a result of the Project intervention's is now able to do PCB analysis in oil and other media.
Scientific analytical Center Laboratory, LLP, Almaty		Training and workshops. As a result of the Project intervention's is now able to do PCB analysis in oil and other media.
Laboratory of the Kaz National University after Al-Farabi, Almaty		Training and workshops. As a result of the Project intervention's is now able to do PCB analysis in oil and other media.
East Kazakhstan Department of the state sanitation and epidemiology control of the Ministry of Health, Ust-Kamenogorsk		Training and workshops. As a result of the Project intervention's is now able to do PCB analysis in oil and other media.
"KazEcoAnaliz" LLP, Almaty		Training and workshops. As a result of the Project intervention's is now able to do PCB analysis in oil and other media.
"Batys Ecoproect" LLP, Aktobe		Training and workshops. As a result of the Project intervention's is now able to do PCB analysis in oil and other media.

National Veterinary laboratory of the Ministry of Agriculture, Astana	Training and workshops. As a result of the Project intervention's is now able to do PCB analysis in oil and other media.
NGOs	
Kazakhstan Association of Enterprises for Sustainable Development	Participated in Legislation development and coordination with Association members. Participated in trainings and workshops. Use of guidelines prepared by the Project
EcoMuseum	Legislation revision and development. Consultations to PCB holders on inventory, storage, disposal issues.
Center for Cooperation for Sustainable Development	Training for PCB holders on all issues related to PCB management.
EcoForum of Kazakhstan	Was engaged in the beginning of the project for capacity building issues, but discontinued cooperation because he PCB issue was very specific and out of their regular mandate.
Green Woman	Were involved in the beginning of the Project, but discontinued due to different thematic focus of the organization.
Civil Alliance, Ust-Kamenogorsk	Organization was engaged in the beginning, but later on were not interested.
International Partners	
ReCeTox, Czech Republic	Training of the laboratories in Kazakhstan, development of handbooks and guidelines for labs, organizing study tour to Czech Laboratory
PolyEco, Greece	Organizing complete process of PCB oil and equipment disposal and utilization in EU.
Violia, GB	Was engaged to work out the PCB waste transportation options by land transport. But were not successful because of uncoordinated national legislations.
Center of International Treaties, Russia	Participated in harmonization of the CU legislation and revision of the NIP
Other	
Kaz Gydromet	Training of the staff. Guidelines for POPs monitoring, training for the laboratories.
PromOthod	Training and setting up a temporary storage facility for PCB equipment.
Astana-Nan Chemicals, Stepnogorsk	Negotiation of options to use available storage facilities for PCB equipment. Training of the staff.
Zhasyl Damu	Development of legislation, consultations on Darial-U project, trainings and workshops.
Information Analytical Center under the Ministry of Energy	Development of legislation, organization of trainings.

ANNEX XI: TRAINING DETAILS

Table 33: Training Details

№	Type of workshop	Date	Topic		Directed towards	Total	W	M	% W	%M
1	Inception workshop	25 June 2010	Introduction to the project	1	All stakeholders	49	29	20	59	41
2	National workshop in Burabay	1-5 Nov.2010	Establishment of the legislative base	1	All stakeholders (Ministries, enterprises, NGO)	24	10	14	42	58
3	Regional educational and awareness raising workshop in Ust Kamenogorsk	30-31 November 2010	Inventory rules and safe PCB handling	2	Region enterprises, ecology Departments, NGOs	17	6	11	35	65
4	Educational and awareness raising workshop for AES	2 Dec.2010	Inventory rules and safe PCB handling	2	Region enterprises, ecology Departments, NGOs	22	10	12	45	55
5	Educational and awareness raising workshop for Kazzinc	3 Dec. 2010	Inventory rules and safe PCB handling	2	Region enterprises, ecology Departments, NGOs	10	0	10	0	100
6	Regional educational and awareness raising workshop in Pavlodar	6-7 December 2010	Inventory rules and safe PCB handling	2	Region enterprises, ecology Departments, NGOs	15	7	8	47	53
7	Regional educational and awareness raising workshop in Karaganda	20-21 December 2010	Inventory rules and safe PCB handling	2	Region enterprises, ecology Departments, NGOs	16	4	12	25	75
8	Educational and awareness raising workshop for the Ministry of Emergency Situations	10 June 2011	Inventory rules and safe PCB handling, Packaging of PCB capacitors	2, 3, 4	Ecology and electrical equipment related workers of the company	13	1	12	8	92
9	Educational and awareness raising workshop for the Ministry of Emergency Situations	28 June 2011	Inventory rules and safe PCB handling	1	Region enterprises, ecology Departments, NGOs	25	6	19	24	76
10	Educational and awareness raising workshop for Arcelor Mittal Temirtau + Kazchrome	21 June 2011	Inventory rules and safe PCB handling, Packaging of PCB capacitors	2, 3, 4	Ecology and electrical equipment related workers of the company	66	15	51	23	77
11	Educational and awareness raising workshop for Aksu Ferro-Alloys Plant	13 September 2011	Inventory rules and safe PCB handling, Pilot inventory	2	Ecology and electrical equipment related workers of the company	14	3	11	21	79

12	Regional educational and awareness raising workshop in Aktau	25 July 2011	Inventory rules and safe PCB handling	2	Region enterprises, ecology Departments, NGOs	43	21	22	49	51
13	Regional educational and awareness raising workshop in Atyrau	27 July 2011	Inventory rules and safe PCB handling	2	Region enterprises, ecology Departments, NGOs	37	16	21	43	57
14	Educational and awareness raising workshop for Karachaganak Petroleum Operating	30 July 2011	Inventory rules and safe PCB handling	2	Ecology and electrical equipment related workers of the company	7	3	4	43	57
15	Regional educational and awareness raising workshop in Kokshetau	1 August 2011	Inventory rules and safe PCB handling	2	Region enterprises, ecology Departments, NGOs	15	6	9	40	60
16	Regional educational and awareness raising workshop in Petropavlovsk	17 August 2011	Inventory rules and safe PCB handling	2	Region enterprises, ecology Departments, NGOs	16	5	11	31	69
17	Regional educational and awareness raising workshop in Kostanai	19 August 2011	Inventory rules and safe PCB handling	2	Region enterprises, ecology Departments, NGOs	10	4	6	40	60
17	Regional educational and awareness raising workshop in Shymkent	15 September 2011	Inventory rules and safe PCB handling	2	Region enterprises, ecology Departments, NGOs	29	13	16	45	55
18	Regional educational and awareness raising workshop in Taraz	17 September 2011	Inventory rules and safe PCB handling	2	Region enterprises, ecology Departments, NGOs	9	3	6	33	67
19	Regional educational and awareness raising workshop in Kyzylorda	19 September 2011	Inventory rules and safe PCB handling	2	Region enterprises, ecology Departments, NGOs	19	5	14	26	74
20	Regional educational and awareness raising workshop in Almaty	26 September 2011	Inventory rules and safe PCB handling	2	Region enterprises, ecology Departments, NGOs	19	10	9	53	47
21	KazMunaiGas	26 October 2011	Inventory rules and safe PCB handling	2	Ecology and electrical equipment related workers of the company	15	7	8	47	53
22	Laboratory trainings in Brno	21-25 Nov. 2011	Introduction to PCB analyses	2	State laboratories	8	8	0	100	0
23	Educational and awareness raising workshop on Petropavlovsk power station	29 Nov. - 1 Dec. 2011	Inventory rules and safe PCB handling, Pilot inventory	2	Ecology and electrical equipment related workers of the company	18	7	11	39	61

24	International workshop	12-14 March 2012	PCB life-cycle management, disposal technologies	1, 3, 4	State bodies, enterprises, NGOs, research institutions (with participation of international consultants and 5 international disposal companies)	65	28	37	43	57
25	Laboratory trainings in Almaty	29 May- 31 June 2012	Practical trainings on PCB analyses	2	State and private laboratories	27	24	3	89	11
26	Laboratory trainings in Astana	4-6 June 2012	Practical trainings on PCB analyses	2	State and private laboratories	12	11	1	92	8
27	Monitoring workshop	6 June 2012	Review of world system and discussion and design of the POPs monitoring system for Kazakhstan	1, 2	Interested Ministries: MEP, MH, MA, Kazhydromet	10	8	2	80	20
28	Packaging training in Stepnogorsk	12 September 2012	Inventory rules and safe PCB handling, PCB equipment packaging	4	Workers of AstanaNan company (storage facility for capacitors' tender)	16	5	11	36	79
29	Ministry of Defense	18 October 2012	Inventory rules and safe PCB handling	2	Representatives of the Ministry of Defense (responsible for inventory in regions)	37	16	21	43	57
30	MEP, ecology departments	19 October 2012	Inventory rules and safe PCB handling	1	State inspectors of the regional ecology departments of Ministry of environmental protection	13	5	8	38	62
31	Laboratory trainings in Almaty	25-26 Sept.2013	Practical trainings on PCB analyses	2	State and private laboratories	15	12	3	80	20
32	Laboratory trainings in Ust-Kamenogorsk	3-4 Oct. 2013	Practical trainings on PCB analyses	2	State and private laboratories	39	34	5		
33	MEP, ecology departments	29 November 2013	Inventory rules, Approaches for controlling the enterprises on compliance with the Rules	1, 2	State inspectors from each regional ecology department along Kazakhstan of Ministry of environmental protection	32	11	21	34	66
34	Inventory workshop in Atyrau	10 May 2014	Inventory rules and safe PCB handling	2	Region enterprises, ecology departments, NGOs	10	2	8	20	80
					TOTAL	**792**	**355**	**437**	**44.8**	**55.2**

ANNEX XII: SUMMARY OF FIELD VISITS & FIELD VISIT PHOTOS

One (1) field visit to *Promothod* took place during the Terminal Evaluation on Monday 15 December. The field visit took place in Karaganda, where the company had rented and upgraded a storage facility for the interim storage of packed PCB containing capacitors.

The storage facility (see photo no. 2) was guarded by a security guard and a dog and the storage facility was locked to avoid unauthorized people able to gain access.

In the storage facility 200 pallets were stored, each containing 4 drums, each drum containing 3 capacitors (see photos 3 – 12). Each drum was a UN approved drum, and (although this was not verified during the evaluation) should contain a large plastic bag, into which absorbent pellets have been poured, into which the PCN capacitors are placed. 4 drums are placed onto one pallet and secured. Drums were labeled and numbered in accordance with UN requirements.

The floor of the interim storage facility was inclined as well as painted with a paint that prevents PCB oil from penetrating the floor, so that in the event of a leak, PCB oil would run towards the middle of the facility (lowest point where a narrow small canal was constructed) and then towards the back of the facility, where it would be captured in a receptacle.

Fire extinguishers, absorbent and personal protection equipment were available in a metal box next to the front entrance. In addition, absorbent and fire extinguishers where placed at certain intervals throughout the storage facility (see photos).

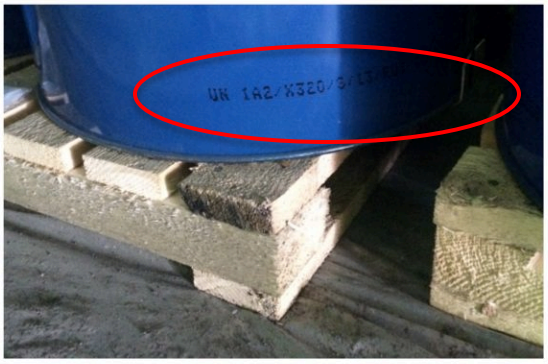












ANNEX XIII: MANAGEMENT RESPONSES

ANNEX XIV: REPORT CLEARANCE FORM

(to be completed by CO and UNDP Technical Advisor based in the region and included in the final document)

Evaluation Report Reviewed and Cleared by UNDP Country Office Name: _____ Signature: _____ Date: _____ UNDP GEF RTA Name: _____ Signature: _____ Date: _____