UNIDO
May 2013

Environmentally Sound Management and Disposal of Polychlorinated biphenyls (PCBs) in the Republic of Azerbaijan (GF/AZE/10/001)

"Environmental consciousness adopting environmentally sound technologies should be the principle of the entire industrial world**."**

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Picture 1. Some samples of oil to check their PCB content at the laboratory of MENR.

Acknowledgment

The Evaluation Team thanks the staff of the project and all other persons involved for the planning and support of the data collection during the development of this report.

The professionalism of all the staff involved in the project implementation have supported the Evaluation Team in fulfilling its tasks.

Finally, the Evaluation Team wishes to express sincere thanks to Mr. Baghir Hidayatov, the National Project Director, the staff and experts of the project for clarifying the technical details and questions the Team had during its visit in Baku.

The Evaluation Team trusts that the proposed recommendations will allow the management of the project to optimize the activities, with the objective to complete the implementation of the foreseen outcomes of the project.

Environmental consciousness adopting environmentally sound technologies should be the principle of the entire industrial world.

This report is the product of independent team acting in its personal capacity. It is up to the evaluators to make use of the comments received by the parties involved and to reflect them as they consider it is the most precise way. However, the evaluation team is responsible for correcting any factual errors brought to their attention prior to the finalization of the report.

Picture 2. The laboratory of analysis at the MENR.

Abbreviations and Acronyms used

AR	Azerbaijan Republic
Azerenergy	State Energy Authority of Azerbaijan
AZN	Manat - Currency of Azerbaijan
BAT	Best Available Technologies
BEP	Best Environmental Practices
BP	British Petroleum
CTA	Chief Technical Advisor
EIA	Environmental Impact Assessment
ESM	Environmentally Sound Management
EST	Environmentally Sound Technologies
ET	Evaluation Team
GEF	Global Environment Facility
IA	Implementing Agency
JSC	Joint Stock Company
MENR	Ministry of Ecology and Natural Resources
MIE	Ministry of Industry and Energy
M&E	Monitoring and Evaluation
MSP	Medium Sized Project
NFP	National Focal Point
NGO	Non Governmental Organization
NIP	National Implementation Plan
NPD	National Project Director
NTA	National Technical Advisor
PCB	Polychlorinated Biphenyl
PET	Project Expert Team
PIO	Project Implementation Office
PMO	POPs Management Office
POPs	Persistent Organic Pollutants
PPG	Project Preparatory Grant
ppm	parts per million
PSC	Project Steering Committee
PSSCC	Project Steering and Stakeholder Coordination Committee
SC	Stockholm Convention
SOCAR	State Oil Company of the Azerbaijan Republic
TOR	Terms of Reference
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization
USD	United States Dollar

1 Executive Summary

Main Observations and more urgent Recommendations

The most important institutional barrier for the implementation of the activities of the project is that the NIP for Azerbaijan was prepared and completed in 2007, but so far it is not yet officially ratified by the Council of Ministers.

The management team of the project has developed the necessary documents that need to be endorsed by the Government of Azerbaijan. The documents were sent to the Council of Ministries and are still waiting for signature.

The Cabinet of Ministers has still pending the approval of the NIP, which has already been signed by all concerned Ministers.

It is strongly recommended that the Council signs it as soon as possible to give the NIP the status of a legally approved document.

It turned out that due to the fact that the NIP has not yet obtained the final endorsement of the Council of Ministers of Azerbaijan, this situation does not allow the Ministry of Finance to approve the co-financing of the budget, which was defining the financial obligations of the Republic of Azerbaijan at the signing of the Project document in 2010.

The concern of the Evaluation Team is due to the fact that after more than three years of the Project implementation, the budget commitments on the co-financing are still not defined. It means that in the time remaining before the end of the project, some expenditures of the budget may not be approved, and therefore, the results of the project may differ from the ones originally specified in the project document.

The matter concerning the official approval and ratification of the NIP has to be promptly settled, because there is the risk that should the GEF and Stockholm Convention Secretariat notice that the documentation is not completed, being the NIP the basis for financing the project in line with the objectives of the Stockholm Convention, the activities could be jeopardized.

The sustainability of the project is strongly related to the government co-financing the project, because the stakeholders have already asked for the payment of the reagents for the analysis. Therefore, this matter deserves absolute priority.

The project has identified the place for constructing the facility for the PCBs decontamination. Therefore, the E.T. recommends to the management of the project to assure that all necessary permissions and certifications requested by the national regulations be timely obtained.
It is further recommended that the project establish and receive the written agreements of the owners of the contaminated equipment to supply it for disposal and that the owners allow access for the decontamination at their sites.

The expenditures for the installation of the equipment, its transport and the training of the operating personnel will be paid by the budget of the project. However, to avoid further misunderstandings the project should give through the MENR written confirmation to UNIDO.

The time for the construction of the facility, once the provider of the equipment has been selected, is estimated by the management of the project to be maximum of one and half months.

The construction work of the technological area for treatment facilities will be started after receiving the tender results. Besides, negotiations with stakeholders on plans for transportation of the phase-out PCB equipment will be continued. A plan has to be developed and approved.

The E.T. recommends to the competent responsible government authorities of the Republic of Azerbaijan to accelerate the approval of the rules and laws prepared by the project on matters concerning the guidelines on PCBs safety measures, legal aspects and disposal of waste.
The advice by the related Ministries on the draft guidelines was quite fast, but then the approval of the Council of Ministers is quite slow.

Picture 3. Transformer of 125 megawatt at Azerenergy. Installed in 1993. Content 47 tons of oil without PCB.

1.1 Background

The field assessment of the project "Environmentally Sound Management and Disposal of Polychlorinated Biphenyls (PCBs)" was conducted in Baku from the 21 to the 26 of April 2013.

The purpose of the project is to create the necessary capacity to implement national action plans on identification, labelling, and environmentally sound removal, storage and disposal of targeted PCBs- containing oil and equipment in fulfilment of Azerbaijan's commitments under the Stockholm Convention.

At the same time executing the foreseen activities the project has enhanced the regulatory infrastructure and strengthened the institutions at national and local levels to identify, monitor, manage, and treat PCBs in an environmentally sound manner.

Strengthening the capacity for an appropriate environmental sound management (ESM) of PCBs has offered the opportunity to consider the review of the discarded equipment and of the equipment remaining in use. In this manner a continued operation and maintenance of that equipment does not create a global environmental risk in accordance with the principles of the Convention.

PCBs have never been produced in Azerbaijan. PCB-containing equipment and oil was mainly imported from Russia but smaller quantities originated from over 40 other different countries in the world.
PCB-containing equipment and oil is mainly used in Azerbaijan for the power sector (power generation and transmission).

At the start of the project statistical data were not available on quantities of out of service PCB-containing electrical equipment. Most of the broken down transformers are generally recycled and reused after proper repair and the oil and residues are sent back to the oil refineries of the State Oil Company (SOCAR).

The Cabinet of Ministers in Decree No.120 dated 20 October 1997 approved the list of ecotoxicologically particularly hazardous pesticides and agrochemicals in Azerbaijan. The PCBs were added later to the list.

According to the Project Document the Ministry of Ecology and Natural Resources (MENR) is the government coordinating agency for the project and the Ministry of Industry and Energy (MIE) is a counterpart agency, responsible for assisting in the implementation of the activities and introducing measures for elimination and monitoring of import and use of the PCB-containing equipment.

The key stakeholder in the execution of the project is **Azerenergy JSC**, which is the owner of the largest amount of PCB-containing equipment and wastes. Therefore, it is the major stakeholder in conducting the inventory of PCBs in use.
The two other main stakeholders of the project are, **SOCAR** (The State Oil Company) and **Bakielektrikshebeke** (the electricity supplier company of Baku), both own to implement their activities some old transformers and capacitors containing PCBs with more than 50 ppm (parts per million) chlorine and therefore subject to the regulations of the Stockholm Convention.

The staff of these companies has participated in the activities providing the support for inventory and analysis. The responsible person was identified in each organization usually in the chiefs of the technical departments.

In the country there are no disposal facilities for environmentally sound destruction of POPs wastes and PCB containing equipment and wastes. At the time of preparing the Project Document incineration plants did not exist in Azerbaijan, a part some small incinerators privately owned.
Presently there is an incineration plant for municipal solid waste near Baku and another incineration plant is been built by the BP company near the landfill area for hazardous wastes of the National Center for Waste Management in Perekishkul.

1.2. OBJECTIVES OF THE PROJECT

Overall Objective.

The project's overall objective is to create capacity for environmentally sound management (ESM) of PCBs, preventing PCBs releases from electrical equipment, avoiding cross contamination of electrical equipment and disposing of at least 540 tons of PCB-containing oil, equipment and wastes. This objective has to be achieved through a combination of strategies, including legislative development, capacity building, public education and awareness, technology transfer, training and technical support.

Immediate Objectives

- Strengthen legal and regulatory framework for ESM and disposal of PCB oil, equipment and wastes.
- Improve institutional capacity at all levels of PCBs waste management and disposal.
- Remove PCBs wastes from targeted contaminated sites and transport them to a disposal unit.
- Decontaminate PCB oils existing in in-service transformers and capacitors.
- Dispose of wastes in an environmentally sound manner.

Quantified objectives of the project were to create awareness and building capacities, Inventorying, labelling, collection and environmentally sound disposal of at least 540 tons of PCB-containing oil, equipment and wastes.

Public awareness activities have also been important pillars of the project, jointly with legislative development, technology transfer and training of the concerned staff regarding the safety measures.
The beneficiaries of the awareness have been the environment related organizations of the Government, PCB owners, such as the main electrical utilities, hazardous waste management authorities and disposal facilities.
Meetings, workshops, training and study tours in several part of the world have been part of the project implementation.
The project has also provided, besides the training, some laboratory equipment to the selected stakeholders.

1.3. PROJECT RESOURCES

The project started in April 2010 for a foreseen duration of four years. According to the Project Document received in Vienna by the Evaluation Team the budget has been provided as follows:

In cash (USD 2,226,000 including the including Project Preparatory Grant of US$ 106,000) by **GEF (Global Environment Facility)**

UNIDO (executing Agency) US$ 100,000 in kind,

MENR *US$ 386,500 (cash); US$ 337,000 (in-kind),*

MIE *US$ 164,000 (cash); US$ 171,320 (in-kind),*

Other Government Agencies *US$ 104,370 (cash); US$ 19,700 (in-kind),*

Stakeholder participants *US$ 2,040,500 (cash); US$ 1,937,400 (in-kind),*

For a **Total Co-financing:** ***US$ 5,260,790 in cash and kind*** and

***Grand Total of US*$ 7,380,790** (excluding support cost and PPG [Project Preparatory Grant])

Therefore, to sum up, according to the document, the total budget of the project is divided as follows:

USD 2,695,370	As contribution in cash from the counterparts
USD 2,565,420	As contribution in kind of UNIDO and Counterparts
USD 2,120,000	As GEF grant, without support costs and PPG
Grand Total	**USD 7,380,790**

The Evaluation Team tried to get a meeting at the Ministry of Industry and Energy (MIE), which according to the Project Document is the other official government counterpart and is offering to the project some contributions in cash and kind. The E.T. wanted to clarify whether and when these contributions have been allocated to the project.
However, it has not been possible to arrange this meeting because the National Project Director informed that the person responsible in the Ministry for the activities of the PCB project was on leave during the time of the evaluation exercise.

1.4. Results of the implementation of the activities

So far 6,326 capacitors have been identified by the project as containing pure PCB. While a total of 4,561 transformers have been analyzed to establish the quantity of PCB contained. Among those, 564 pieces have been identified as transformers containing > 50 ppm chlorine. (See Annex IV)

The project is a good example of cooperation among authorities of the State sector to achieve global environmental benefits. However, at the present stage, only partially the targeted objectives have been reached.

This is the first project dealing with the inventory of PCB-containing equipment in the territory of the former Soviet Union. It is the first time that the necessary regulations and documents that focus on the treatment of persistent organic pollutants are developed. Such an experience could be successfully extended to the countries of the former Soviet Union, especially for the equipment containing PCBs - oils, produced and supplied from Russia to the countries that are now included in the CIS.

The project has strengthened the laboratories of the MENR and of the three stakeholders for the analysis of PCB samples collected and has provided some equipment, providing awareness and the necessary training on the utilization for the analysis of the PCBs.

One of the outcomes of the project has been to create the capacity building for implementing PCBs related measures of Stockholm Convention and preparing for the signature of the respective government authorities the corresponding national legislation to implement the legal obligations taken by Azerbaijan. The laws and regulations drafted have been about standards, guidelines, regulations and norms. Worker safety was neglected during PCB management. No classification of PCB containing equipment was done. Laboratory facilities were unable to meet SC requirements.

To regulate and try to solve all these problems, below there are some of the main laws and policies prepared by the staff of the project for the approval of the governmental authorities:

- Order of the Minister of Ecology and Natural Resources on wastes inventory guidelines and classification system. Approved by the Minister on 28.02.2013
- Order of the Minister of Ecology and Natural Resources approving of Methodical Indicators on work with PCB containing equipment and wastes. Approved on 18.02.2013
- Guidelines on safety measures during PCB equipment and liquid (oil) wastes labelling process in stations and substations. Approved by Azerenergy (State Energy Authority) on 29.10.2012
- Guidelines on PCB electric equipment inventory in Azerbaijan Energy System. The norms have been elaborated and prepared by the inventory group of Azerenergy. The legal aspects have been adjusted by the legal experts of the project. Approved by Azerenergy on 13.09.2012
- Preparation of the draft Presidential Degree of the Republic on the amendments related to PCBs on the “Regulations of import- export operations”. The draft was sent to the Cabinet of Ministers. The amendment was including PCB oil and wastes to be added to the “List of the Specific goods export and import operations of the relevant state bodies” approved on 24 June, 1997
- Order of the Head of the Committee on Standardization, Metrology and Patents regarding the amendments to the State standard AZS 391-2010 of Technical terms for T-1500 transformer oil of the Republic of Azerbaijan. The document was sent to the joint sub commission on harmonization of national environmental legislation with EU legislation.
- Preparation of the draft National Law on amendments to the AR Law on Industry and domestic wastes. Document sent to the Cabinet of Ministers.
- Preparation of the draft AR Law on amendments to the AR Law on Protection of Environment. It was submitted to the Cabinet of Ministers

- Also the draft Decision was submitted to the Cabinet of Ministers concerning the amendments to the Inventory guidelines of wastes originated during the production processes.

It should be noted that some of the legislation proposed by the project is still pending for final approval with the competent government authorities.

During the discussion the evaluation team has noted that the NIP (National Implementation Plan) of the SC on POPs and which is one of the mandatory conditions of GEF to assist in developing strategies and action plans, had been prepared, completed, submitted and approved in 2007 by all involved Ministries of the Republic.

However, still today it has not been signed and ratified by the Council of Ministers of Azerbaijan.

The NIP was instrumental to identify:

(i) weaknesses of the current hazardous waste management practices of out of service PCB-containing electric equipment and waste oil,
(ii) to establish the need for institutional and regulatory development,
(iii) to create capacity building requirements and public awareness in POPs management.

The Project Document states that "The Cabinet of Ministers has approved and endorsed the NIP and submitted to the Stockholm Convention Secretariat". However, as pointed out above, this document has to be legally completed to enter into force.

The training process for the operating staff in the activities of the project has been successfully completed.

The four laboratories of the MENR and of the three stakeholders have been strengthened with methodologies, procedures and information management systems for analytical data processing and the technicians trained in collecting and labelling the samples.

Just the chromatography analysis have not been carried out on time due to the late purchasing of necessary reagents and some additional equipment, which will be bought from the Project budget and delivered in the near future. Therefore, the operations for the chromatography have not yet completed the activities for the quantitative analysis of the samples. Presently only the testing chromatography analyses have been conducted.

The PCB inventory has been developed and is going on**.** The staff of the stakeholders has implemented the exercise on inventory and analysis. The responsible persons were identified in each organization and usually they have been the chiefs of the technical departments. The conduction of the analysis is going on. However, being some resources still not available (such as reagents), at present only half of the 10,000 analysis forecasted have been completed.

The evaluation Team recommends strengthening the capacity of companies performing the analysis.

The technical training for the operators of the PCB containing material end-users has been done. Some training and study tours have been accomplished in Italy, France and Philippines. Furthermore, several meetings and seminars have been held in Baku with the participation of international experts recruited by UNIDO.

The objective has been the formulation of appropriate solutions for the treatment of PCBs in Azerbaijan concerning:

- Technologies
- Operating entity (permit, resources, facilities)
- Disposal cost and pricing
- Disposal timeframe

Finally in December 2012 a mission of two international experts has prepared the draft TORs for the acquisition of PCB treatment facilities. UNIDO is in the process of organizing the bidding procedure. The location has already been selected and is located at 30 km from Baku at the landfill of the National Centre for Hazardous Waste Management in the Abscheron region Perekishkul. The Centre is an Ltd company with the participation of the MENR.

The construction works of the technological area for treatment facilities will start after the direction of the project has received the tender results. The project intends to contact the winner of the bidding to get from him which construction facilities are needed for the installation of the equipment and the operations. All the expenses for the necessary infrastructure will be supported by the MENR, while the costs for the installation, transport of material and training on the job of the concerned staff will be paid out of the budget of the project. The project has also to develop and approve the plans for the phase-out of the PCB equipment.

The management of the project has stated that they already received all the necessary permissions, registrations and certifications by the governmental authorities for the operation of the selected technology.

As far is concerned the administrative structure, the project has established the Project Implementation Office (PIO) and appointed the staff and the national experts.

The Project Steering and Stakeholder Coordination Committee (PSSCC) has been constituted with the participation of 8 members.

The monitoring activities are performed according to the plans and reports have been sent to UNIDO Headquarter.

The assistance of the international experts sent by UNIDO is rated globally as positive, because they have provided:
Experience of the international management of PCBs
Appropriate treatment technology for PCB disposal
Suggestions for the legal basis of the PCB operations
Qualified experience on the establishment of a centralized database system.

To conclude the evaluation team assess that the project has been a positive start for developing the activities for raising awareness, collection, labelling, analysis and disposal of PCB and has increased the safety for people and environment in general.

1.5. IMPACT

The project has demonstrated its relevance for the safety and general health situation in the country and has obtained a considerable impact that can be stated as follows:

- An important impact has been the awareness campaign.
- Extremely important and a concrete outcome has been that the project has selected the approach to face the PCB disposal according the obligations of the Stockholm Convention.
- Locally available disposal technology for the PCB decontamination has been developed thanks to the project which has procured equipment for its operation.
- Occupational safety measures for the people involved and exposed to the hazards of this exercise are now known and established according to the international legislations and standards.
- The project has demonstrated the effectiveness of the ESM system in its operations.
- The project has allowed the country to develop a mechanism for the implementation of the Stockholm Convention on collecting samples of PCBs, with the opportunity to expand this experience to other POPs and getting other funds from international institutions for environmental actions.

Picture 4. The labelling of the capacitors. When the label is red it means that after the analysis is discovered that the capacitor contains PCB oil. The label is green when it is ascertained after the analysis that the capacitor is free of PCB.

Picture 5. A capacitor labelled with content of PCB.

1.6. Recommendations

According to its findings the Evaluation Team presents the following recommendations:

The matter concerning the official approval and ratification of the NIP has to be promptly clarified and settled with the signature of the Cabinet of the Council of the Ministers. During an interview with the chief of the Legal Department at the MENR it resulted that they do not have any copy of the original project Document signed and apparently no official documents on this project are in this department.
The matter has to be urgently solved because there is the risk that should the GEF notice that the documentation is not completed , being the NIP the basis for financing a supporting a project in line with the objectives of the Stockholm Convention, the activities could be jeopardized.

The shipment of the equipment procured for the project should be properly organized. The chromatography purchased by UNIDO for the laboratory of the MENR remained over two months at the customs. In fact, the UNDP office in Baku, who received the equipment, did not know for which project it was.
To avoid problems with import duties, the supplier sent the equipment directly to UNDP in Baku, but without specifying the beneficiary. Apparently the situation has improved with the following deliveries, however should be kept in mind for future deliveries for the project, particularly for the chemical reagents that may have short life and cannot be blocked for long time at the customs.

During the visits at the laboratories has been noted that the equipment procured by UNIDO is not identified with an appropriate label. It is recommended that like in other field project the equipment has the UNIDO label on the side to allow easily its identification. The Evaluation Team recommends strengthening the capacity of the laboratories performing the analysis.

The matter concerning the sustainability of the project is strongly related to the government co-financing of the project, because the stakeholders have already asked the delivery of reagents for the analysis. Therefore, on the side of the UNIDO project manager this matter deserves priority.

The project has identified the site for the PCBs decontamination. Therefore, the E.T. recommends the management of the project in Baku to assure that all necessary permissions and certifications requested by the national regulations be timely obtained for the construction of the facility.

It is also recommended that the project establish and receive the written agreements of the owners of the contaminated equipment to supply the oil for disposal and that the owners allow access for the decontamination at their sites.
The ET takes note that the management of the project has already initiated the procedure for the permissions. However, before starting the construction of the facility, the management of the project wants to receive by the winner of the bidding the exact specifications needed. The necessary infrastructures for the facility (water, electricity, generators, gas connections, etc) are already present in the area. It is understood that the expenditures for the infrastructure will be at the charge of the MENR.
The expenditures for the installation of the equipment, its transport and the training of the operating personnel will be paid by the budget of the project.
It is recommended that to avoid further misunderstandings the project gives through the MENR written confirmation to UNIDO. The time for the construction of the facility, once the provider of the equipment has been selected, is estimated by the management of the project to be maximum of one and half months.

Since the starting of the project in April 2010 the management of the project has sent to the UNIDO Headquarters three technical reports on the status of the progress of the project. It is recommended to submit these reports every six months, filling completely the formats for this purpose in all its parts and possibly in English language.
On the other side the local management would appreciate receiving comments from the project manager of UNIDO on the quality of their implementation efforts. This procedure should be carefully monitored.

The E.T. recommends to the competent responsible government authorities to accelerate the approval of the rules and laws prepared by the staff of the project on matters concerning the guidelines on PCBs safety measures, legal aspects and disposal of waste. The project claims that when they are submitting the drafts the advice from the related Ministries are quite fast, but then the approval of the Council of Ministers is quite slow.

High political and technical level personnel of the Ministries involved in the activities of the project should be invited at the workshops concerning the danger of PCBs and POPs in general. The positive achievements of the project should be brought to the attention of official channels of the Azerbaijan authorities to further disseminate awareness and promote the possibility of further cooperation under the GEF portfolio.

The training and upgrading of skills and capacities should not stop at the end of the training course or seminar, but be reinforced periodically through refreshing courses and continuous

professional advice. The continuous progresses of the technology impose to adhere to this principle, in order to perform a work with high parameters and standards of efficiency.

The laboratory capacity, created by the project, should be maintained, updated and utilized for the inventories of newly added POPs under the Stockholm Convention.

The Evaluation Team has requested in writing to the local management of the Project and the main Stakeholders some clarifications regarding the inputs to the budget of the project.
According to the management of the project, the 27 persons of the MENR and of the Stakeholders who worked in the activities of the project during the period September 2010 - April 2013 have been offered to the project. So far, their participation has not been considered as contribution in kind. The eight national experts and the two staff of the project instead have been paid out of the cash budget of the project, through the UNDP office in Baku.

Picture 6. National experts, representatives of main Stakeholders at final presentation meeting in Baku.

2 PRESENTATION AND ANALYSIS OF THE PROJECT

2.1 Project description

2.1.1 Project general information

Project Title	Environmentally Sound Management and Disposal of Polychlorinated Biphenyls (PCBs)
Project's GEF ID Number	3543
Project number	GF/AZE/010/01
Country	Azerbaijan
Thematic area code	GEF
Implementing Agency	UNIDO
Duration	Four years
Project site	Baku, Azerbaijan
Date of Project start	April 2010
Total Project Cost	USD $ 7,380,790 (excl. support costs)
GEF Grant Amount	USD $ 2,226,000 (including Project Preparatory Grant of $ 106,000)
Government Ministry Responsible for the Project	Ministry of Ecology and Natural Resources (MENR)
Government Counterparts	MENR Ministry of Ecology and Natural Resources MIE Ministry of Industry and Energy MLSS Ministry of Labour and Social Security MOH Ministry of Health
Government and National Counterparts inputs (according to the Project Document)	US$ 2,465,420 in kind and US$ 2,695,370 in cash
UNIDO Inputs	USD $ 100,000 in kind

This project is financed by the GEF (Global Environment Facility) implemented by UNIDO (United Nations Industrial Development Organization).

2.1.2 General context

The Global Environment Facility (GEF) was established in October 1991 as a US$ 1 billion pilot program inside the World Bank. The purpose was to assist in the protection of the world global environment and to promote environmental sustainable development.

The GEF provided new and additional grants and concessional funding to cover the additional costs associated with transforming a project with national benefits into one with global environmental benefits. UNDP, UNEP, and the World Bank were the three initial partners implementing GEF projects.

In 1994, at the Rio Earth Summit, the GEF was restructured and moved out of the World Bank system to become a permanent, separate institution.
As independent financial organization, the GEF provides grants to developing countries and countries with economies in transition for projects in selected focal areas related to

biodiversity, climate change, international waters, land degradation, the ozone layer and persistent organic pollutants.

The GEF is today the largest funder of projects to improve the global environment. So far, the GEF has allocated US$ 8.8 billion, supplemented by more than US$ 38.7 billion in co-financing more than 2,400 projects in over 165 countries.

As part of its restructuring, the GEF was entrusted to become the financial mechanism for several international conventions such as the Stockholm Convention.

The GEF subsequently was also selected to serve as financial mechanism for The Stockholm Convention on Persistent Organic Pollutants (2001) and, therefore, in this framework, is financing this project.

The Republic of Azerbaijan accessed to the Stockholm Convention on POPs on 13 January 2004. Pursuant to Decree No. 329 dated 29 July 2004 by the President of the Republic of Azerbaijan, the Ministry of Ecology and Natural Resources (MENR) was assigned as National Focal Point concerned with the development the National Implementation Plan (NIP) of the Stockholm Convention on POPs.

The NIP was prepared and completed in 2007 reviewing particular POPs issues, considering the provisions of relevant international commitments, developing detailed strategies and action plans, including timetables and costing of their implementation. The NIP identified the elimination of PCBs as one of the key objectives in implementing the country's obligations under the Stockholm Convention. It also identified the need for continued improvement of PCBs inventory, gradually withdrawing the PCBs-containing equipment and their final disposal.

The NIP also identified the following situation:

(i) Weaknesses of the current hazardous waste management practices, particularly in the storage sites of out of service PCB-containing electric equipment and waste oil,
(ii) Need for institutional and regulatory development,
(iii) Need of capacity building requirements
(iv) Necessity of public awareness in PCBs management in particular and POPs management in general.

The NIP signed by the Ministries involved with the project was submitted to the Stockholm Convention Secretariat.

The National Implementation Plan (NIP) was detailing the legislative, management and the technical needs for the reduction and elimination of POPs.

Aiming at strengthening the national institutional framework, the POPs Management Office (PMO) was established in MENR in 2007 during the NIP development. However, the implementation of the Stockholm Convention as far as PCBs is concerned had not yet started.

There were no regulations specifically addressing PCBs and the management of PCB-containing electrical equipment. There were no specific standards and guidelines either for storage of out of service PCB-containing equipment and waste oil or for a progressive phase-out and elimination of PCBs and PCB-containing electrical equipment.

The NIP also identified that public awareness in management of POPs was low and consequently public participation was lacking.

There was a need for extensive targeted capacity building to enhance the decision-making, managerial, and technical capabilities of government officials to implement NIP provisions and provide guidance to public and private enterprises in environmentally sound PCB management.

The NIP implementation at the country level required developing adequate capacities at central and local levels.
The number of qualified human resources for the enforcement of the existing and future regulations avoiding non-compliance of legislations and improper management of PCBs had also be enlarged.
Human and technical capacities for PCBs monitoring, especially the proper laboratory services for PCBs analysis had to be strengthened as well.
The necessary methodology, national standards and accreditation procedures were also lacking.

2.1.3 Situation of PCB-containing equipment and oil in the country

PCBs have never been produced in Azerbaijan. PCB-containing equipment and oil was mainly imported from Russia but smaller quantities originated from over 40 other countries all over the world. PCB-containing equipment and oil is widely used in the power sector (power generation and transmission).
In May 2006, the preliminary inventory of PCBs has identified 6,000 pieces of PCB-containing equipment with a total weight of 384 tonnes Over 90 percent of PCB-containing capacitors and about 80 percent of PCB-containing transformers are at the facilities of Azerenergy JSC, Baki Electric Shabaka and Sumgait Elektric Shabaka.

The quantities of PCBs used in transformers range between 160 to 2,980 kg depending on the size of the transformer and the average quantity of PCBs in capacitors were about 17.2 kgs/each.
In the Active Substances Plant, a chemical complex in Sumgait City, an estimated amount of 30 tons PCBs waste oil was stored in underground barrels, the amount of which had to be verified and added to the inventory.

During the Enabling Activity preliminary inventory, oil samples were analysed quantitatively in the Environmental Physics and Chemistry Center (AzEcoLab) of the National Academy of Sciences. This is the only laboratory in the country that had the accreditation to determine PCBs in oil samples, using chromatographic method identifying 9 different PCB compounds.

During the execution of the NIP, 500 Test Kits CHLOR-N-OIL-50 were procured for qualitative testing/screening of PCB-containing transformers containing above 50ppm of PCBs. However, it should be noted that the test kit method used for the survey might have underestimated the PCBs content in the oil.

The on-going inventory made after the NIP completion identified additional 3,000 pieces equipment that contained PCBs. Based on the above figures the project document stated the aim at treating at least 540 tons of PCB-containing equipment and waste oil.

Awareness on the harmful effects that PCBs pose on human health and the environment was generally low.

At the start of the project technical staff and workers concerned that had direct contacts with electric equipment and materials containing contaminated fluids without knowing the associated health risks.

Statistical data are not available on quantities of out of service PCB-containing electrical equipment. Most of the broken down transformers are recycled and reused after proper repair and the oil and residues are sent back to the oil refineries of the State Oil Company.

The out of service capacitors are stored at the facilities of their owners. However, the PCB-containing equipment and oil is not managed on an environmentally sound manner as hazardous waste.

The lack of proper management may result in social costs for the health of population, deterioration of the environment and excessive expenditures for late mitigation measures. The assessment of such costs is crucial for government decision-making. Capacity for economic and social costs/benefits assessments concerning POPs related measures were not available at the beginning of the project and they needed to be created.

This GEF Full-Sized Project may enable the Republic of Azerbaijan to comply with the requirements of the Stockholm Convention to reduce and eliminate PCBs.

The project will focus on the reduction or elimination of PCBs in the power sector through:

(a) developing appropriate legislation,
(b) providing capacity building for key stakeholders,
(c) developing an Environmentally Sound Management (ESM) system for PCB-containing electrical equipment and incorporating it into a national policy framework,
(d) gradual phase-out of PCB-containing equipment (transformers and capacitors),
(e) disposal of all PCB-wastes,
(f) strengthening of environmental monitoring capacities and
(g) identifying the most appropriate mitigation measures to reduce social costs of complying with the Stockholm Convention.

In addition the project is contributing to the creation of a national inventory of non-electrical equipment and other articles containing more than 0.005 percent of PCBs as required by the Stockholm Convention.

Project operations have the purpose to create the required appropriate laboratory capacity, the labelling system as part of the environmentally sound PCBs management and to complete the inventory for PCB containing electrical equipment.

The phasing out and dismantling of 540 tons of PCB-containing equipment and final disposal of PCB-contaminated wastes is among the objectives of the project to eliminate a significant portion of PCBs from the electric network.

The project has the purpose to enable the Government of Azerbaijan to duly report on the progress in eliminating PCBs pursuant to Annex A, Part II, subparagraph (g) of the Convention according to Part C of the format reporting under Article 15 of the Stockholm Convention (Annex to Decision SC-2/18 of the Conference of the Parties).

2.1.4 Analysis of concept and design of the project

a) Context

Project objectives and activities are consistent with the Constitution of the Republic of Azerbaijan, which entered into force on 27 November 1995. According to Article 39 of the Constitution "*Each man has the right to live in sound environment. Each man has the right to get information on environmental condition and to get compensation for damage on health and property caused by destruction of environmental rights"*. According to Article 78 of the Constitution related to environmental protection "to *protect the environment is the duty of every man"*.
Among the national programs that have direct relevance to the PCBs management and disposal are the National Program of Environmentally Sustainable Socio-economic Development approved in 2003, the National Strategy for Management of Hazardous Wastes prepared in 2004, and the Complex Action Plan on Improvement of Ecological Situation in Azerbaijan Republic for 2006 – 2010 (Presidential Decree No. 1697 dated 28 September 2006).

The legal system of Azerbaijan consists of 6 laws that directly or indirectly regulate chemicals management.
These laws are:

1 Constitution of Azerbaijan 1995
2 Law on Environmental Protection 2001
3 Law on Environmental Security 2001
4 Law on Industrial and Municipal Wastes 1998
5 Law on Environmental Information 2002
6 Law on Specifically Protected Natural Areas and Objects 2000

The Law on Environmental Protection, adopted on 8 June 1999 and revised on 30 March 2001, is the basic legislation on national ecology.

A wide range of environmental areas is addressed in this law, such as:

· Rights and responsibilities of government, citizens, public associations and local authorities;
· Use of natural resources;
· Monitoring, standardization and certification;
· Economic regulation of environmental protection (environmental economy);
· Ecological terms required for implementation of economic activities;
· Education, scientific research, statistics and information;
· Extreme environmental situations and zones of ecological disasters;
· Monitoring and evaluation of environmental protection;
· Ecological inspection;
· Liabilities for destruction of environmental (polluter pays);
· International cooperation in this sector.

The Cabinet of Ministers in Decree No.120 dated 20 October 1997 approved the list of ecotoxicologically particularly hazardous pesticides and agrochemicals in Azerbaijan. The PCBs have to be added to the list or alternatively a similar regulation should be promulgated for PCBs.

Although basic legal background has been established to address POPs issues in the country, the capacity of national institutions to coordinate implementation, control and monitoring activities is at a low level.

The institutions lack comprehensive knowledge on various issues like concepts of each article of the Convention, obligations of the party, sources of POPs chemicals and professional staff to use identification toolkits. Instructions or guidelines on general and specific tasks of the collaborating national institutions and the unified structure to reduce and dispose of the POPs are not available.

b) Institutional settings

Organizations/institutions lack well experienced professionals on POPs related areas and equipment and laboratory facilities to analyse these chemicals. One of the first steps for developing such comprehensive knowledge is the issuance of the "1996 Handbook on the Environmental Impact Assessment (EIA) Process in Azerbaijan".

An effort in the country to raise the awareness at all levels was done through a series of training programs on general concept of the Stockholm Convention, POPs risk to human health and environment and preliminary inventory of the POPs chemicals. These programs were carried out in framework of the "Enabling Activities project by governmental, inter-governmental and non-governmental stakeholders".
The Government issued a leaflet on "POPs, Health and Environment".

The Ministry of Ecology and Natural Resources (MENR) is the government coordinating agency for the project.

In addition, two other key stakeholder agencies play crucial roles in the project.

The first is the Ministry of Industry and Energy (MIE), the counterpart agency, which is responsible for assisting in the implementation of the activities and measures for limitation, elimination and monitoring of import and use of PCB-containing equipment and reduction of unintentional production of POPs chemicals.

The other key stakeholder is the Azerenergy JSC, which is the owner of the largest amount of PCB-containing equipment and wastes, hence it is a major stakeholder in conducting inventory of PCBs in use and introducing and applying alternatives of POPs-containing products and equipment and environmentally sound technology.

Other stakeholders that own PCB-containing electrical equipment include but are not limited to the State Oil Company SOCAR, Baki Elektric Shabaka electricity Distribution Company, Sumgait Elektric Shabaka electricity Distribution Company, Ministry of Transport, Ministry of Justice, State Property Committee and Azerkimya State Company.

The POPs Management Office (PMO) was established in 2007 at MENR during the NIP development. However, after the completion of NIP and waiting for its approval by the Cabinet of Ministers, PMO has not been very active.
The unit leads the implementation of the Stockholm Convention and manage the post-NIP POPs program in Azerbaijan by coordinating activities of individual projects with other stakeholders and provide technical advice and guidance.

2.1.5 Disposal of POPs wastes at the starting of the project

Azerenergy JSC, Baki Elektric Shabaka, and Sumgait Elektric Shabaka are the largest PCB owners in the country holding over 90 percent of PCB-containing equipment and wastes.
However, the company does not test PCBs content of oil. When taking transformers out of service the oil is reclaimed or otherwise sent back to the oil refinery, used for other electrical equipment or used as lubricant. For in-service transformers, the oil is changed every 10 years or so. The company does not have any supervisory services for tracking oil as the State
Oil Company is in charge of supplying and reclaiming oil. The transformers are repaired only if they are damaged, and in case they cannot be repaired (e.g. burnt out), the company recycle their parts and reuse them for other purposes.
In the past, the scrap metal used to be sent there under a specific quota, but now it is sold to small companies to process it further, but no information about it was available.
At Azerenergy JSC capacitors were not treated or disposed of and only a small number of out of service capacitors are kept in storage facilities.
Azerenergy JSC has contracted Energy complex-F MMC, a private company specialized for transformers maintenance and repair, to provide this type of services. Energy complex-F MMC has a workshop in Baku and a mobile team for maintenance and repair.

According to the NIP of Azerbaijan (paragraph 2.3.5.3) PCBs are among the most significant group of chemicals that are the main pollutants of contaminated sites.
In the country there are no disposal facilities for environmentally sound destruction of POPs wastes in general and PCB containing equipment and wastes in particular.

Even sanitary landfills did not exist. This point is being addressed by the Azerbaijan Absheron Rehabilitation Program (AARP)/Integrated Solid Waste Management Project that should support the reform of the Greater Baku solid waste collection and disposal operations into an effective and sustainable system with the purpose of:

(i) improving environmental conditions at the existing waste disposal sites;
(ii) building-up operational, management and communication capabilities;
(iii) rollout of collection services; and
(iv) data collection and planning.

These are the five components of the project:

· Institutional reform, capacity building and project management;
· The Balakhani landfill rehabilitation and management;
· Closure and management of other dumps;
· Procurement of collection equipment for under-served Baku districts; and
· Technical preparation of post-project investments.

Picture 7. Project management and the Evaluation Team visiting the Electrostation of Azerenergy in Baku

Picture 8. The new Landfill of the National Center for Waste Management in Abscheron region

Industrial incineration plants do not exist in the country. The Ministry of Economic Development (MED) of Azerbaijan has prepared a contract with France's CNIM for the combustion plant that would be located on a 10-hectare area in Balakhani, settlement nearby Baku. The State Investment Programme 2008 envisaged an allocation of over AZN manat 100 million.

The site for the PCBs decontamination has been selected, its location is at 30 km from Baku at the Landfill of the National Centre for Hazardous Waste Management.

The plant should incinerate 750,000 tons of wastes a year, and could be developed to incinerate hazardous wastes as well.

The Garadagh Cement Plant was established in the 1950s. The plant, near settlement Sahil, saw its productivity falling in the early 1990s. By the time it was privatized by the Swiss-based Holcim Group in 1999, the technology was obsolete.

Since 2004, it has invested about US$40 million in modernizing the plant. Garadagh Cement OJSC, which now has capacity for 1.3 million tons per year, making it the industry leader in Azerbaijan.

The plant currently is consisting of four kilns and nine cement mills and has established environmental management system complying with ISO 14001 standards. It co-incinerates alternative fuels such as sewage wastes and slurry but not PCBs.

The plant is open to consider proposals from the governmental institutions for utilization of industrial wastes.

The Steering Committee of the project in consultation with UNIDO has recruited the National Technical Advisor (NTA) to fine tune the progress and the performance of the project and select the national consultants.

The overall implementation of the project has been supported and monitored by UNIDO, who had the responsibility of the day-to-day overlook of the project management.

2.1.6. Institutional barriers existing at the start of the project

The following were the institutional barriers at the start of the project activities.

Inspectors unfamiliar with PCB obligations and database entry/use requirements

The NIP development created general understanding and awareness on the SC at the policy development level inside the MENR. However the awareness raising activities of the enabling activities project of the NIP development could not be extended to the inspectors at the regional departments of the MENR. Therefore the level of awareness of inspectors on the requirements of the SC is generally low.

No inspection program for PCB using equipment

Since the PCB related regulations of the SC have not yet been adopted, there are no targeted inspections to increase the compliance to the PCB related inventory taking and reporting requirements.

Lack of worker safety inspection methodology governing PCB exposure
MLSS is responsible for monitoring that worker safety requirements are met. Since PCB related occupational health risks are not recognized and consequently the necessary worker safety requirements are missing, the occupational safety inspectors are not authorised and lack the tools to undertake safety inspections at workplaces where there is likelihood for workers for direct PCB contact.

No certified PCB laboratory at MENR
There is one existing certified PCB laboratory at the National Academy of Science (Azeco Lab), but the Ministry's access to their facility is limited and expensive. Existing laboratory facilities at MENR and Azerenergy cannot analyze PCBs according to international standards. These laboratories do not have capacity to allow for the PCB analysis requirements of the inventory exercise. Both laboratories lack the specific analytical equipment and in house procedures necessary for certification of PCB analysis.

No department within MENR responsible for PCBs
The enabling activities project for NIP development has established a POPs office within the MENR. After completion of the activities of the NIP, the office formally remained in place, however due to the pending approval of the NIP, its responsibilities could not be assigned officially to any of the departments.

Lack of capacity within customs department to ensure compliance with SC
Transformers and other oil containing equipment regularly enter the territory of Azerbaijan. The State Customs Committee is responsible for inspecting and clearing these goods for domestic use. Once the obligations of Article 3 of the SC will be adopted and enacted in the country, the State Customs Committee would need to implement strict control on the import and export of such equipment. Currently, the respective departments do not have the necessary capacity to undertake this duty. The workforce is untrained, the laboratory is lacking equipment for PCBs analyses and the departments are generally understaffed.

Lack of user capability for maintenance of PCB-containing equipment
According to Annex A Part II of the SC, PCB-containing equipment need special maintenance.
Phase out of such equipment should be completed not later than 2025. Azerenergy and Bakuelektrishebeke, two largest owners of electrical equipment currently do not have a PCB phase-out plan for the in-service PCB-containing equipment. Private companies, which own PCBs, lack the capacity to gradually replace PCB-containing electrical equipment as well.
The oil recycling equipment is used to regenerate transformer oils for further use. Due to lack of PCB management SOPs potentially PCB-containing equipment are treated with the same recycling device, thus there is a potential risk of transformer oil cross contamination.

No PCBs analysis is undertaken before any service or maintenance is undertaken on the transformers. Recycled oil is used for topping up transformers or in switchgears, and other partially open oil containing equipment.
Appropriate infrastructure was not provided for the interim storage locations of PCB-containing equipment. The necessary human resources are also missing for running the interim storage location in accordance with international standards.

2.1.7 Project Design

The design of the project has been based on the National Implementation Plan. During its preparation weaknesses of the current legal and organizational aspects of PCBs were identified.
The preparation of the NIP was also supported by a contract stipulated between UNIDO and the Ministry of Ecology in 2004. The contract concerned the provision of services related to "expedite enabling activities to facilitate early action on the implementation of the Stockholm Convention on POPs".
The contract was for a total amount of USD 358,000 to be paid in six instalments and was signed by UNIDO's Procurement Office on 16 November 2004 and by the Ministry of Ecology and Natural Resources on 19 May 2005.
The design of this project is an elaboration of that action plan.
During the phase of developing the project, visits with support of the Stakeholders were launched to collect as much information as possible on the situation and to define the actions.
The preparatory work showed that the legal background for sustainable PCB management was very weak. At that time, the management system for PCBs was lacking.
Many owners of PCB-containing equipment did not have the established procedures and safety measures for servicing, maintenance and disposal of the equipment.
The compulsory guidelines for the procedures for inventory taking, labelling, as well as the guidelines for withdrawal and disposal of PCB-containing equipment and a feasible and sustainable solution for the management of PCBs were to be developed by the government and the project has helped in drafting and preparing the relative legislation.
Therefore, there was the necessity to introduce environmental monitoring measures at the identified locations for the early identification of PCB contaminations.
Due to low awareness and lack of proper instructions for personnel, the maintenance practice had to be designed for preventing a possibility of PCB cross-contamination.
Users of transformers and capacitors containing PCBs would not have been able to cope alone with all the measures required by the Stockholm Convention without proper guidance, management and support. This guidance had to be offered by this project.
The system of certification of hazardous waste management companies have to be developed in order to give the owners of PCB-containing equipment a possibility to receive the qualified assistance.
The first step for managing and resolving the PCB problem is the development of a countrywide detailed inventory.
The project document builds on the PCB action plan prepared thanks to the help of the NIP and addresses outstanding issues such as PCB inventory, resources mobilization to withdraw and dispose PCB-containing electrical equipment and awareness of the public involvement in the implementation process.

The design of the project foresaw the preparation and development of all necessary legislations and guidelines to support the ESM system.

Site inspection tools, methods for PCB testing, laboratories, data reporting formats, maintenance practices of the electrical equipment and field monitoring guidelines have to be developed as parts of the ESM system. Trainings and workshops have to be foreseen at governmental and local levels, in order to build the necessary technical expertise for the practical implementation of the ESM system.

Further, the project aims at the full country inventory.

During the phase of the design of the project, it was concluded that the needs for treatment and handling of PCB containing equipment had to face the following challenges:

- cost-effective separation of different PCB waste types such as liquids, solids, empty transformers or capacitors;
- efficient, competent and trained laboratories had to represent an important and necessary centre of competence and experience for practical handling and testing of PCB devices; this would reduce the risks for human exposure;
- together with the basic elements of training, competence and awareness, treatment of PCBs should establish also an ESM system and protective measures against accidents;
- Continuous regular training including awareness raising and medical check-up of personnel dealing with PCBs should be put into practice and carefully performed.

The project design wants to demonstrate that sustainable cooperation among Ministries and Stakeholders is possible by involving them in the inventory and in the decision making process throughout the development of the ESM system.

The project implementation strategy was based on the following principles:

- established and well-defined cooperation among governmental bodies and stakeholders;
- Clearly defined monitoring indicators and methodologies throughout the implementation.

As part of the project implementation arrangements, UNIDO is the GEF Implementing Agency (IA) for the project.

A project focal point has been established within UNIDO's headquarters to assist with project execution. This focal point consists of core staff, supplemented by the support of staff colleagues on a part-time basis, supervised by a senior professional staff engaged in the management and coordination of UNIDO's POPs and chemical management program. UNIDO makes these services available as part of its in-kind contribution to the project.

ESM of PCBs management and disposal involves a wide spectrum of stakeholders in Azerbaijan. While government environmental sector stakeholders undertake the principal responsibilities, energy sector stakeholders also play an important role in the project.

The project management structure is given below as it is reported in the original Project Document:

The Ministry of Ecology and Natural Resources (MENR) is the National Focal Point for implementing the National Implementation Plan (NIP) in Azerbaijan, as well as of coordinating activities and cooperation between the relevant stakeholders.

MENR shall be responsible for the following issues:

- Coordinate legislative activities while making amendments and additions to relevant legislation and develop regulations and procedures for POPs related activities;

- Facilitate cooperation inter-relations between stakeholders and provide the stakeholders with centralized management;

- Conduct inventories of production and utilization of POPs chemicals;

- Establish a database and an information sharing network;

- Provide individuals, agencies and companies with information;

- Exchange of information with international organizations;

- Organize proliferation activities, trainings, workshops and seminars; and

- Monitoring and assessing the implementation of responsibilities and duties of stakeholders and regularly reporting the progress to the relevant governmental authorities and the Convention Secretariat.

The Ministry of Industry and Energy (MIE) is responsible for providing assistance in conducting the inventory of PCBs in and out of use and for the provision of policy and coordination for introducing and applying alternatives of PCBs-containing products and equipment and environmentally sound technology.
The Ministry will also be responsible for providing assistance in implementing activities and measures for limitation, elimination and monitoring of use of PCB containing equipment and reduction of unintentional production of PCBs. In addition, the Ministry shall be in charge of making amendments and additions to relevant laws and regulation, as well as develop rules and procedures in relation to the above activities and measures.

National Focal Point (NFP): An effective mechanism introduced as soon as the NIP was approved by the Cabinet of Ministers to enable the National Focal Point to coordinate and monitor all activities related to the implementation of the Stockholm Convention. The NFP is located and operated at the MENR.

Project Implementation Office (PIO): The Project Implementation Office (PIO) consists of two full-time professional staff and one support staff, with additional support provided by consultants on an as-needed basis. The PIO is under the supervision of NFP and reports through MENR to UNIDO.

Project Steering Committee: The PSC consists of eight members representing MENR, MIE, NFP, PIO, the NTA, the CTA and major stakeholder companies.

Project Expert Team (PET): The project has recruited the international staff, the local staff, policy experts, PCBs management and disposal industry experts, chemists, monitoring & evaluation experts and other technical experts as required.
These experts form the Project Expert Team that assist the PIO through the following activities:
i) Introduction of successful experiences gained from foreign countries;
ii) Management and coordination of all project activities;
iii) Provision of technical support for policy framework, institutional strengthening, demonstration activities, technology selection, awareness raising and education, results and experience dissemination, project monitoring and evaluation, and project management;
iv) Periodic project implementation progress appraisal; and
v) Support for development of training materials.

Finally, the Project Document foresees in its approach that the private sector stakeholders and other potential project participants will be actively recruited and integrated into the project, through the following procedure:

- Owners of PCB-containing in-service equipment will be educated in EMS, risk minimization and avoidance, supported by new policies and programs;

- PCBs waste owners will be provided with technical assistance and financial support on a cost-sharing basis to adopt ESM in PCBs management and disposal; and

- PCB-containing equipment and oil transporters and disposal facilities will be provided with technical assistance and capacity building support to ensure implementation of environmentally sound PCBs waste management requirements.

2.1.8 POPs, PCBs and their sources

a) POPs Generalities

The **Stockholm Convention on Persistent Organic Pollutants** is a global treaty to protect human health and the environment from chemicals that remain into the environment for long periods and become widely distributed geographically and accumulate in the fatty tissue of humans and wildlife.

POPs are carbon based organic –halogenated substances:

- Highly toxic for the environment, humans and wildlife.
- Persistent in the environment and resisting to biodegradation
- Accumulating in terrestrial and aquatic ecosystems
- Widely distributed throughout the environment as a result of natural processes involving soil, water and, most notably, air
- Accumulate in the fatty tissue of living organisms, including humans, and at higher levels of concentration than in the food through a process called bioaccumulation.

In the nature, these substances affect plants, human and animal development and growth. Exposure to POPs can lead to serious health effects including certain cancers, birth defects, dysfunctional immune and reproductive systems, greater susceptibility to diseases.

This group of pollutants initially consisted of:

- **Pesticides**: aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, hexachlorobenzene, mirex, toxaphene;
- **Industrial chemicals:** hexachlorobenzene, polychlorinated biphenyls (PCBs);
- **By-products** (Unintentionally produced POPs)**:** hexachlorobenzene; polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans and PCBs.

Given to their long range transport, the Stockholm Convention, which was adopted in May 2001 and entered into force 2004, requires the Governments to take measures to eliminate or reduce the release of POPs into the environment.

As a result of releases into the environment over the past several decades, due especially to human activities, POPs are now widely distributed over large regions (including those where POPs have never been used!).

This extensive contamination of environmental media and living organisms includes many foodstuffs and has resulted in the sustained exposure of many species, including humans, for periods of time that span generations, resulting in both acute and chronic toxic effects.

Due to the global risks posed by the long range transport of POPs, they represent a very serious problem that has to be dealt with, not only locally but also at global levels, in order to eliminate the release in the atmosphere, in the waters and in the soil of these chemicals.

Though not soluble in water, POPs are readily absorbed in fatty tissue, where concentrations can become magnified by up to 70,000 times the background levels. Fish, predatory birds, mammals, and humans are high up in the food chain and so absorb the greatest concentrations. When they travel, the POPs travel with them.

Therefore, POPs can be found in people and animals living in regions such as the Arctic, thousands of kilometres from any major POPs source!!

Some POPs are also considered to be endocrine disrupters, which, by altering the hormonal system, can damage the reproductive and immune systems of the exposed individuals.

b) PCBs: sources and their destruction

Polychlorinated Biphenyls are a class of synthetic organic chemicals.

Since 1930 PCBs were used for a variety of industrial uses (mainly as dielectric fluids in capacitors and transformers but also as flame retardants, ink solvents, plasticizers, etc.) because of their chemical stability. PCBs are fire resistant, have a low electrical conductivity, high resistance to thermal breakdown and a high resistance to oxidants and other chemicals.

When researches in the 1970s found out that these characteristics that made them a popular additive, but represented a serious threat to human health and the environment, their production was gradually stopped.

Adverse effects associated to the exposure of PCBs are for the human beings the damages to the immune system, liver, skin, reproductive system, gastrointestinal tract and thyroid gland.

Around 1.7 million tonnes of PCBs were produced between 1929 and 1989 and a lot of the equipment containing PCBs is still in use somewhere in the world or stocked awaiting final disposal.

As PCBs once released into the environment do not break down but they travel over long distances and continue to pose health risks to humans, it is important to remove them from use and destroy the existing stockpiles.

Existing PCBs can be destroyed through the breaking of their molecular bonds by the input of either chemical or thermal energy. The most common method is high temperature incineration, though other non-combustion methods like dechlorination exist.

While manufacture of PCBs has ceased, the potential or actual release of PCBs into the environment has not. Significant quantities of existing PCBs continue to be in use or in storage. Electrical transformers and capacitors are one of such major sources of PCBs.

The extended period of continuing use and the persistence of PCBs, once released into the environment, mean that they pose a very serious threat for decades to come. While most of the chemicals covered by the Stockholm Convention are subject to an immediate ban, the PCBs existing equipment may be maintained in a way that prevents leaks until 2025 (while PCB-free replacements are being introduced).

Many transformers and capacitors use a dielectric fluid based on PCBs. These products, although having fire-resistance and other properties required for use in electrical equipment, present some major disadvantages.
These disadvantages are linked to the toxic nature of PCBs and their potential contamination with or transformation into dibenzo furans. Negative biological effects have been coming to light over many years. Unfortunately PCBs have already been in widespread use for about 40 years in transformers and capacitors and it is now necessary to put forward practical solutions for eliminating PCBs wherever they may occur.

The Stockholm Convention addresses the production, use, import, export, release of by-products, stockpile management and disposal of these POPs.
Under the terms of the Convention, due to the still widespread reliance on PCB-containing equipment, for certain electrical transformers and capacitors an exception is made to allow continued use of such equipment until 2025.

The first problem that countries with PCB transformers still in operation have to face is how to locate and identify this equipment. A decision will then have to be taken as to when and how, the contaminated equipment will be managed, reclassified and eventually eliminated.

It may be noted that, besides electrical transformers and capacitors, PCBs have also been used for a great variety of other applications, such as varnishes, waxes, synthetic resins, epoxy and marine paints, coatings, cutting oils, heat transfer fluids, etc.
In these other cases, it is not of course possible to recover the PCBs and efforts can be made only to prevent the use of PCBs in such applications for the future.

PCBs are among the most stable organic chemicals known. Their low dielectric constant and high boiling point make them ideal for use as dielectric fluids in electrical capacitors and transformers.

Equipment such as transformers, capacitors and, to a lesser extent, heat-exchangers and hydraulic equipment may contain PCBs or fluids with varying levels of PCB contamination.

For example, PCBs may be found in hermetically sealed capacitors ranging in size from those fitted to fluorescent lights, containing a few grams of PCB, to high voltage units containing up to 60 kg of PCB liquid.
Capacitors are maintenance free but may leak at welds. Capacitors contain the lower chlorinated congeners of PCBs, which are therefore more volatile.
PCBs are being gradually phased out for applications in electrical equipment from the early 1980s, depending on the countries.

A distinction can be made however in this present context between transformers and capacitors.

Both these types of equipment can contain PCBs.

However, only **transformers** can be treated so as to remove the PCBs they might contain, and be prepared for re-use.
Capacitors must generally be destroyed to eliminate the PCBs they might hold. However, some technologies allow recovery of some metals before their destruction.

Transformers are devices that increase or decrease the voltage level of the electricity.

Electrical energy is produced in power stations that burn various fuels (oil, coal, gas, etc.) and transform these into electrical energy. This energy is in the form of high voltage electricity that is then distributed to the end-users (factories, homes, mines, railways, schools, etc.), which may be close to or far from the producing power station.
The transfer of this electrical energy is made much more advantageously if the voltage is maintained at a high level. Electrical power cables carry electricity at voltages of several thousand kilovolts.

The voltage must be decreased before use, so as to correspond to industrial requirements of a few thousand volts, or to domestic requirements of a few hundred volts. This voltage reduction is achieved using transformers. Every transformer in electrical sub-stations, in streets, in the countryside, on poles, etc., has the role of reducing the voltage.
These transformers must be adapted to the task to which they are assigned. This means that they can be very large, if dealing with high voltages and currents, or relatively small if placed in the last step in the supply chain to serve for instance a single house.
Transformers, therefore, vary greatly in their design and size. They nevertheless have the same basic design which is that of a magnetic metallic core around which are wound two sets of conducting (copper) wires.

This structure is placed in a metallic container and is supported in this container usually by wooden struts (which have insulating properties). The two electrical circuits are equipped with inlet electrodes allowing electrical connections to the outside. These electrodes are isolated from the metallic case by ceramic insulators.

Lastly, and more important, the empty space inside the transformer casing must be filled with a fluid which will prevent short-circuits and sparking. A transformer, in its final stages of manufacture, is thus filled with an appropriate dielectric fluid, which often is a PCB-base oil mixture.
There are variations in the type of structures of transformers and some other metals can also be found, for example aluminium.

Capacitors have like transformers the characteristic of possibly containing PCBs.

However, their nature is different because they are always in sealed structures. The question of maintenance is therefore not a major issue, as long as the capacitor remains in good condition and does not leak.
However, at the end of their life-time they represent the same potential danger like transformers.
Capacitors are devices that can accumulate and hold an electrical charge. The main structure of a capacitor consists of electrical conducting surfaces (thin metallic foils) separated by a dielectric, i.e. non-conducting, material. These surfaces are coils of metallic foil. The dielectric material is usually a dielectric fluid which or may not contain PCBs.

PCB dielectric fluids can be a blend of polychlorinated biphenyl and, for example, trichlorobenzene (TCB). The purpose of the TCB is to reduce the viscosity of the PCB to enable the fluid to circulate freely through the cooling ducts in the coils.

The design of a transformer can give a good indication as to the presence of PCB oils. Many PCB-containing transformers were at one time hermetically sealed. It is important to identify accurately the PCB fluids in capacitors and transformers.

The analysis of these substances is generally done in a laboratory using various types of chromatography equipments.

Such analytical tests are indispensable if precise dosages of PCBs are required. Field test kits, such as Chlor-N-Oil can provide fast, on-site screening of PCBs in oils.
A more accurate analysis can be undertaken with specialized analytical equipments such as L2000DX, which measures the chlorine content of the oil after destroying the covalent bounds of the PCBs and extracting the chlorine ions into water based buffer.
Highest precision in the analysis of PCBs can be achieved by Gas Chromatography.

To conclude the POPs destruction by combustion in incinerators has been the most used technique worldwide during many years in the past. However, due to the threat they present for the environment (combustion produces by-products even more toxic of the waste disposed, like dioxins) the international community is looking for alternatives to replace combustion technologies.

Several new technologies have been developed for improving the existing ones, based on non-combustion principles. The goal is to develop technologies that apply chemical processes for conversion of the chemical, physical and biological properties of the hazardous wastes.

3) Methodology of the Evaluation

3.1) Purpose and objectives of the evaluation

The tasks of this in-depth evaluation are outlined in the attached job descriptions of the two international evaluators. (Annex I)

The purpose of a final independent in-depth evaluation is to enable the project stakeholders (Donors, Government authorities, national counterparts and stakeholders, the participating regions, industries, GEF and UNIDO) to take final informed decisions on possible reorientation of the activities, through the analysis of the achievements and the shortcomings or weak aspects of the project.

The main focus of the evaluation is to assess the current project situation and to evaluate the alternative scenarios and feasibility for the future sustainability of the operations.

The evaluation process offers the opportunity to the project stakeholders to learn about the possibilities of future re-orientation of the related activities and, in case, reconsider alternative approaches. The evaluation process will provide with lessons and experiences for the eventual future re-design and implementation of similar projects aiming at building capacities for environmentally sound management.

This independent evaluation was foreseen in the original project document, which was endorsed in 2009 by the GEF, as Global Environment Facility, UNIDO, as implementing Agency and the Ministry of Ecology and Natural Resources (MENR), as co-ordinating Agency of the Government of the Republic of Azerbaijan.

Further, this evaluation is trying to determine, as systematically and objectively as possible, the relevance, efficiency, effectiveness, impact and sustainability of the project regarding, among others, also :

- The development in the demand and needs for PCB related obligations in the country
- The application of the concept that aims to strengthen an environmentally sound management system (ESM) of PCBs, based on a consensus between relevant government authorities, the private and public sectors.
- Whether the chosen strategies and target groups have been properly selected or should they had been promoted with different strategies or should other target groups have been selected.
- Whether the goals set in the project document and in the work plan have been reached.
- Whether the inputs provided (expertise, training) have been of good quality.
- Whether the activities have been undertaken in a controlled and coordinated manner by protecting human health and the environment from the harmful effects of PCBs.
- Whether a feasible management system for safe and environmentally sound phase-out and disposal of PCB and PCB-containing equipment has been put into practice.
- The efficiency of the project coordination.
- Which activities of the project have been the most useful and most successful applied (information, awareness raising, training, technical advice, policy advice…).
- The degree that the elements of the environmental management system have been put into practice in the demonstration areas.
- How efficiently the activities of identification, labelling, safe collection, interim storage and disposal of PCBs have been applied.
- How effectively the tangible objectives, such as collection and environmentally sound treatment and disposal of a minimum of 540 tonnes of identified targeted PCB-containing equipment and the inventory of the equipment have been implemented.
- The quality and efficacy of the Public Awareness activities.
- How well has been spread the awareness on PCBs and on of the Stockholm Convention activities in the environment related organizations of the Government and PCB owners, such as the main electrical utilities, the energy intensive industries, the hazardous waste management enterprises and disposal facilities.
- How the institutional strengthening and capacity building have been implemented and the corresponding guidelines developed.
- To what degree the companies continue implementing in good and safe manner the interim storage of PCB-containing equipment.
- Evidence of the application by the enterprises of the safety measures developed by the project as part of the ESM of PCBs document, for avoiding PCB releases out of the working equipment.
- The degree of influence in the implementation of PCB related regulations, rules and legislations.
- How is advancing the gradual elimination of PCB-containing equipment.
- How precisely and efficiently are working the laboratories available for PCB analysis and labelling.

- The present situation and how are operating the facilities upgraded for the interim storage of the PCB containing waste.
- The strengthening of the national capacities for environmental sound management (ESM) of PCBs that includes both discarded equipment and the equipment remaining in use, so that continued operations and maintenance of the equipment in use does not create a global environmental risk.
- The quality of the professional and managerial competence utilized to develop and sustain the activities.
- The arrangements that can be made to strengthen the sustainability of the activities implemented by the project
- The efficiency and utility of the success indicators as applied by the project activities.

The primary purpose of any independent evaluation is:

- Assessing the achievements against the objectives and the expected results.

- Identifying factors that have facilitated the achievements of the projects objectives or in case the factors that hindered the fulfilment of these objectives.

- Determining which lessons can be learned from the existing experience, in order to improve the activities in a further phase, with particular regard to the capacity of the structures supported to become self-sustainable.

The Evaluation Team has considered the objectives stated in the Project Document and has analysed the results obtained in the implementation of the activities foreseen.

This report is based on the following:

❖ The Project Document indicating the basis and the strategy for the cooperation in this project, which should have focused, according to the signed document, on

- overcoming the current barriers, which impede upon the implementation of the PCB-related obligations of the Stockholm Convention in Azerbaijan.

- developing capacity building for implementing the PCBs related measures of Stockholm Convention. Capacity building will be carried out in regulatory and institutional development, strengthening PCBs monitoring capabilities, and comprehensive data management.

- implementing environmentally sound management (ESM) of PCB-containing electrical equipment. To achieve this outcome the PCBs inventory will be completed; ESM for PCB-containing equipment in use and PCBs disposal as well as environmental monitoring system for PCBs will be introduced and applied.

- creating increased awareness of PCBs among policy makers, stakeholders, and target affected populations, as well as information dissemination to environmental NGOs and media professionals.

- developing a sustainable mechanism to complete the PCBs disposal in Azerbaijan.

- establishing the management of the project, including the composition of a Steering

Committee composed of national and local stakeholder agencies, the establishment and staffing of the project management team at the national and local levels, the recruitment of national and international consultants, the execution of a management training program for project staff (particularly at the local level), and the periodical monitoring and reporting of the project activities.

The above mentioned activities should be complemented by the project with training, information, capacity building, policy advice, etc.

- The documentation provided by the project parties.
- The Project Progress Reports, which provide the executing agency, the management of the project and the evaluators with a valuable tool regarding the self-appraisal of the implementing parties of the results obtained and of the difficulties or obstacles encountered.
- Discussions with the UNIDO Project Manager, the National Project Coordinator, the national consultants, the national counterparts and the staff of national institutions.
- Meetings with national counterpart institutions, Ministries and high-ranking officials.
- Visits to some target beneficiaries and meetings with their managers, discussing the related problems, technology transfer and its application and, finally, their global experience with the project.

The issues have been analysed in an impartial and objective way, which should be helpful to the responsible authorities and project staff to improve their performance.

The issues have been presented at a final presentation meeting in Baku on Friday 26 April 2013 and have been discussed with the parties involved.

The Evaluation Team has attempted in this report to give a comprehensive image of the activities, analyzing the issues in a way, which hopefully should be helpful for the responsible authorities concerned with the project, to decide how to orient the activities in the future.

Picture 9. The landfill in Abscheron Peninsula licensed for hazardous wastes. The capacity is 250,000 m3.

3.2) Composition and timetable of the mission

The observations and findings of the Evaluation Team are the result of this in-depth evaluation carried out in their own capacity. The views and opinions of the team do not necessarily reflect the views of the Government of Azerbaijan, UNIDO or the management of the project.
The job descriptions of the two evaluators are contained in Annex I.

The mission team was composed of the following members:

Mr. Mario Marchich, international consultant, Team leader, specialized in evaluation of international technical assistance cooperation projects.

Mr. Vladimir A. Maryev, International environmental expert, specialized in waste management 3-R projects for municipal and hazardous industrial wastes.

This composition of the team has assured uniformity, impartiality and the guarantee that the views of the concerned parties have been considered under an informed point of view.

The mission assembled in Baku to start its work. The places visited in Azerbaijan to complete the evaluation have been:

- Ministry of Ecology
- Azerenergy JSC (State Energy Authority of Azerbaijan)
- SOCAR (State Oil Company of the Azerbaijan Republic)
- Bakielektrikshebeke (Electrical Municipal Company of Baku)
- Laboratories of the above four Stakeholders
- Environmental Pollution Monitoring Center
- Landfill Polygon of National Centre for Waste Management at Perekishkul in Abscheron Region

The agenda of the evaluation mission is contained in Annex II.

At the end of its work in Baku, the evaluation team has presented on Friday 26th April 2013 at the Ministry of Ecology and Natural Resources its first draft findings and related recommendations at a general debriefing meeting with the participation of the national stakeholder parties concerned in the implementation of the activities.

The presentation has been followed by interesting discussions with the participants.
The results of these discussions and the comments made by the participants have been taken, as far as possible, into account in the report.

The list of the places visited and of the persons interviewed in the framework of this evaluation is in Annex III.

3.3) Evaluation Terminology and Glossary

There is a generally accepted international evaluation terminology. For this reason, in order to help the readers, it is useful to give here some definitions/explications of the meaning of the words utilized in this report.
This terminology corresponds to the terminology used in the evaluation methodology followed by the major international institutions involved in projects of technical cooperation.
Below are reported the explanations of the terms and terminology used in this report:

Terms	Explanation of Terms
Accountability	Obligation of the project managers to demonstrate that work has been conducted in compliance with defined responsibilities, rules, standards and performance expectations. For the evaluators it indicates the responsibility to provide accurate, fair and credible reports.
Activities	In the context of a project the activities are the main actions implemented to reach the foreseen outputs.
Appraisal	An assessment of the relevance, feasibility, design quality and potential sustainability of a project prior to the decision of approval and funding.
Appropriateness	It is the tailoring of the activities to the local needs, which contributes in increasing the ownership, accountability, and cost-effectiveness of the project accordingly. **Appropriateness,** together with Relevance is a complementary criterion used to evaluate both the wider goal of the intervention and its specific approach in terms of how it is responding to the local context and needs.
Assumptions	Conditions that are necessary to ensure that the planned activities will produce the expected results and that the logical link (effect – relationship) between the different levels of the project results will occur as expected, if not unexpected situations will happen.
Baseline	Facts about the condition of a country's situation and the performance of target institutions and beneficiaries, prior to the provision of the services.
Baseline Data	Data that describe the situation to be addressed by a project and that serve as the starting point for measuring the performance.
Beneficiaries	Individuals, enterprises or organizations/institutions, whether targeted or not, that benefit directly or indirectly from the project.
Best Practice	Operational practices that have proven successful in particular circumstances. Are used to demonstrate what works and what does not work and also to accumulate and apply knowledge.
Capacity Building	It is the activity developed by the project to build a range of technical expertise in the framework of the activities executed and create the possibility of future sustainability.

Cause and Effect of environmental aspects	**Causes** of environmental aspects are the direct consequences at plant level (in terms of emissions or natural resources used), while **Effects** are their impacts on the eco-socio environment.
Client Feedback	Feedback provided from clients and partners receiving the services. The method is used for involving the counterparts in the evaluation process.
Coherence	Assessment of coherence should focus the extent to which policies of different actors are complementary or contradictory. This may involve any type of policy such as on promoting participation, capacity building, disposal of wastes, possibilities of generating revenues, all in relation with the environmental protection.
Conclusions	Conclusions and findings outline the factors of success or failure of the project under evaluation, with special attention paid to the intended and unintended results, in order to point out strengths or weaknesses.
Criteria	Qualitatively expressed "Indicators", when it is not possible to use quantitative data. Criteria against which proposals are assessed by independent experts. The evaluation criteria are generally the same and relate to quality, impact, relevance and implementation.
Critical assumptions	In the context of the logical framework refer to the general conditions under which a development hypothesis will hold true or refer to conditions which are outside the control or influence of implementing parties and which are likely to affect the achievement of results.
Data	Specific quantitative and qualitative information or facts that are collected
Data Collection Tools	Methodologies used to identify information sources and collect information during an evaluation.
Deliverable	A deliverable represents a verifiable output of the project. Normally, each work package or project will produce one or more deliverables during its lifetime. Deliverables are often written reports about the activities, but can also take another form, such as for example the construction of a machine to perform certain activities.
Design	It is an analytical tool for the assessment and description of a project in support to the expressed needs of the counterparts and beneficiaries.
Donor	The funding Organization or Government whose role is to participate in the evaluation, ensuring together with the executing agency, through the lessons learned, the necessary feedback on improvements, reorientation and funding.
Effect	General term to indicate what is changed by the project. It shows what the outputs have produced. It is the change resulting from the production of the outputs.
Effectiveness	The extent to which the outputs of the project are used to achieve the purposes. The extent to which stated intervention objectives are met. Effectiveness is therefore linked to evaluation of impact and long-term effects of the intervention. Implicit within the criterion of effectiveness is timeliness.

Efficiency	The relationship between the inputs utilized and the outputs produced, both in terms of quantity, quality and timeliness. It measures the outputs (qualitative and quantitative) achieved as a result of inputs. Generally requires comparing alternative approaches to achieving an output, to see whether the most efficient approach has been used. The assessment of efficiency measures how economically the inputs (human, financial, technical and material resources) have been converted into outputs.
Evaluation	Analytical and objective feed-back on outputs, outcomes and impact of the implemented Technical Cooperation, used for accountability towards management, donors and counterparts, as well as for learning of lessons. Evaluation results are used to improve the quality of design and delivery of current and future activities. It is a systematic and impartial assessment of an activity, project, program, strategy, policy, or other topics aimed at determining the relevance, impact, effectiveness, efficiency, and sustainability of the interventions and contributions of the involved partners.
Evaluation Feedback	Dynamic process which involves the presentation and dissemination of evaluation information, in order to ensure its application into new or existing Technical Cooperation activities. Observance of this process is ensuring that lessons learned are incorporated into the new operations.
Goal (also Purpose, or Mission)	Attempts at general level.
Impact	The extent to which the improved performance of the counterparts and the solution of the critical issues have produced a positive effect (in quantity and quality) on the target beneficiaries and on the overall development of the country. It means the changes achieved in the targeted beneficiary sector. It is the result of the long-term effect of the project as described in the development objective. However, changes may take months or even years to become apparent.
Impartiality	It means that any assessment must give a comprehensive and balanced presentation of the strengths and weaknesses of the program, project or organizational unit being evaluated.
Independent in-depth evaluation	Independent assessment of performance, outcomes and impact, carried out by independent evaluators.
Indicator	Quantitative or qualitative variable that provides a simple and reliable basis for assessing results and/or performance of the project.
Inputs	Financial, Human, and Time resources that are put at the disposal of the project to implement the activities and produce the outputs.

Lesson Learned	It is a generalization based on the results of the evaluation that abstracts from a specific circumstance to a broader general situation. Normally, the lessons highlight strengths or weaknesses in formulation, design and implementation that affect performance and results. If lessons are to be learned from evaluations, assessment of relevance and appropriateness, it should involve the examination of **why** the interventions made by the project are relevant and/or appropriate in some cases, and not in other cases.
Logical framework	Management tool used to design technical cooperation projects. It identifies inputs, activities, outputs, results and their causal relationships. It includes indicators and the assumptions or risks that may influence the success or the failure in achieving the project objective(s).
Milestones	Important events or concrete results, marking the beginning or progress or end of activities and used to keep track that the activities are implemented as planned and according to the work plan. Controls points where decisions are needed with regard to the next stage of the project and in order to compare the results achieved with the ones foreseen.
Monitoring	Continuing implementation review function to provide the main stakeholders and the management with early indications about the progress or shortcomings in the achievement of outputs and objectives. It can also be defined as a continuous or periodic function using systematic collection of qualitative and quantitative data to keep activities under control, helping to identify implementation issues that warrant decisions at different levels of management.
Objective	It is used as general term for aiming at results at different hierarchical levels (General development objective, immediate objective, specific objective, etc.). It will help the beneficiary in achieving the selected long-term development objective(s).
Outcome	Effects related to the target groups/beneficiaries assisted, showing the positive changes obtained by the counterparts in their performance and behaviour. Indicates the capabilities of the beneficiaries to have benefited of the assistance received.
Output	The final product in terms of activities executed, applying the input resources. It shows the improved capabilities of the Counterparts, after having received the assistance. The expected improved situation of the counterparts (government, institutions, pilot enterprises).

Ownership	Ownership is the participation of the stakeholders who have an interest in a development process in the planning and implementation of the project designed for their benefit. It answers to the question who is the development for and who should be involved, if the development process has the prospect of producing sustainable results.
Performance	The extent to which the project has produced valuable and sound outputs and their contribution to the final impact. Both, efficiency and effectiveness can be considered as measures for the performance of the project.
Project Document	A document that explains in detail and following the logical framework, the context, objectives, expected results, inputs, activities and budget of a project.
Quality Criteria	Evaluation criteria applied in order to assess the project performance. (Relevance, Efficiency, Effectiveness, Impact, Sustainability)
Recommendations	Advisory proposals (not binding or mandatory), aiming at enhancing the quality and the effectiveness of the project, redesigning objectives or suggesting reallocation of resources. Any recommendation should be linked to a conclusion and should be directed to the party responsible for taking the respective action.
Relevance	Is the extent to which the project is consistent with the problem area identified in relation to the country's development goals and constraints and needs of counterparts, beneficiaries and services/expertise. Relevance is concerned with assessing whether the project is in line with local needs and priorities, i.e. the quality of the problem analysis and the project's intervention logic and logical framework matrix, appropriateness of the objectively verifiable indicators of achievement. (**See also Appropriateness**)
Replicability	It is the possibility to repeat the activities and the actions of the project in other parts of the country or of the world, under similar or different circumstances.
Results	General term for the effects that result from the application of the project inputs. It indicates the performance of the project.
Stakeholders	Groups that have a role in the implementation of the project. Include beneficiaries and those responsible for ensuring that results are produced as planned.
Sustainability	Capability of the counterpart (Institution or enterprise) to maintain and further develop outputs and outcomes produced with the support of the project and/or to adjust them in order to ensure the continuation of the benefits to the target beneficiaries, when the assistance of the project has been finished.

Target	A specific objective. The mark at which is aimed by the activities of the project.
Target Groups	The main beneficiaries from the programme or project that are expected to gain improvements and advantages from the results.
Terms of Reference	Definition of purpose, scope, method, team composition and timetable of the evaluation exercise.

Picture 10. The laboratory of Azerenergy. Around 1.000 analyses of oil samples are performed every year.

Picture 11. The ecological laboratory of SOCAR.

4 Analysis of the activities and Findings

4.1 Context, Concept and relevance of the project

The purpose of this chapter is to demonstrate how the implementation of the Project is in demand on the part of the Government of Azerbaijan, as well as from the key project participants, who were selected as Project partners. The report analyzes the main actions of the project participants aimed at achieving the objectives defined by the Stockholm Convention, which was ratified by the Republic of Azerbaijan, as well as the project outcomes and outputs.

4.1.1 Extent to which the institutional barriers have been removed

During the mission of the Evaluation Team the situation of the Project implementation was deeply analysed and the main conclusion is - the Project helped to prepare the main measures for implementing the most important actions of the National Implementation Plan (NIP), which was approved by the main Ministries of Azerbaijan and sent to the Council of Ministers for the final signature.
Some of the existing institutional barriers have been removed:

Existing institutional barriers	Results achieved
Inspectors unfamiliar with PCB obligations and database entry/use requirements	The inspectors of MENR and other stakeholders companies were trained by the UNIDO international experts during the workshops in Baku on how to identify and manage PCB containing equipment, about the PCB obligations and the methods how to use the requirements. The inspectors then trained the personal of the electricity generating supplying companies.
No inspection program for PCB using equipment	The first step for the inspection Programme is providing total inventory for the transformers and capacitors. The inventory form for PCB equipments and wastes was prepared and approved by the main stakeholders of the Project: Azerenergy, SOCAR and Bakielektrikshebeke
Lack of worker safety inspection methodology governing PCB exposure	Worker safety inspection methodologies were developed Worker safety inspectors were trained.
No certified PCB laboratory at MENR	The laboratory at MENR was equipped with L2000dx express – analyser for detecting PCB in oil samples. Training for the laboratories of the stakeholder organizations was provided with the assistance of the international experts.
No department within MENR responsible for PCBs	PCBs group consisting of focal point, national coordinator of the SC, national coordinator of the project and representative

	of legal division of MENR created
Lack of capacity within customs department to ensure compliance with SC	Letter with information was provided; Guidance document for Customs PCB management was prepared
Lack of user capability for maintenance of PCB-containing equipment	The documents regulating the work of staff dealing with PCB - contaminated equipment has been designed and used in the power grid companies.

The most important barrier is that NIP in Azerbaijan was prepared and completed in 2007, but till now it is not yet officially ratified by the Council of Ministers.

The NIP identified the elimination of PCBs as one of the key objectives in implementing the Stockholm Convention's obligations. It also identified the need for continued improvement of PCBs inventory, gradually withdrawing the PCBs-containing equipment and their final disposal. The NIP also identified (i) weaknesses of the current hazardous waste management practices, particularly in the storage sites of out of service PCB-containing electric equipment and waste oil, (ii) the need for institutional and regulatory development, (iii) capacity building requirements, and (iv) public awareness in PCBs management in particular and POPs management in general.
The first GEF Project on PCB inventory was launched in Azerbaijan in 2006. The PCB inventory showed that the total amount of oil containing more than 50 ppm of PCBs was 196.741 tons, out of which 102.122 tons were in capacitors and 64.619 tons in transformers. In that case the need to obtain BAT/BEP technology to eliminate the PCB-contaminated oil and equipment was absolutely clear.

Republic of Azerbaijan began to comply with the requirements of the Stockholm Convention to reduce and eliminate PCBs. The first step – the inventory of the electricity equipment is still under process. It was detected that the most important sector was the power sector, which owns the most amount of transformers, potentially contaminated by PCB.

Thanks to the Project, the main activities towards reduction and elimination of PCB in the power sector are going on through (a) developing appropriate legislation, (b) providing capacity building for key stakeholders, (c) developing an Environmentally Sound Management (ESM) system for PCB-containing electrical equipment and incorporating it into a national policy framework, (d) gradual phase-out of PCB-containing equipment (transformers and capacitors), (e) disposal of all PCB-wastes, (f) strengthening environmental monitoring capacities and (g) identifying the most appropriate mitigation measures to reduce social costs of complying with the Stockholm Convention.

The project team has developed the necessary legal documents that need to be endorsed by the Government of Azerbaijan. These documents were sent to the Council of Ministries and are waiting for the approval. The main project partners formed a package of documents regulating the handling of equipment containing PCBs and made plans for an inventory of all equipment to be labeled in accordance with the requirements of the Stockholm Convention.

4.1.2 Quality of stakeholders and target groups

Qualification of experts and staff who are directly involved into the project implementation is determined by the strategy and objectives of the project.The project's overall objective is to create capacity for environmentally sound management (ESM) of PCBs for preventing PCBs releases from the electric equipment, avoiding cross-contamination of electric equipment and disposing of 1,000 tons of PCBs wastes. This objective has to be achieved through a combination of strategies, including legislative and regulatory development, capacity building, public education, technology transfer, training and technical support.

The base expert team, who began to develop the Project, was well qualified. Experts were appointed by companies – stakeholders, the MENR and recruited by UNIDO, who is responsible for the Project implementation.

List of experts, involved into the process of the Project implementation

Name	Institution	Location	Title
Mr. Baghir Hidayatov	GEF / UNIDO Project	Baku	National Project Director, responsible for the Project implementation, former employee of MENR
Ms. Gunay Ibrahimova	GEF / UNIDO Project	Baku	Project director Assistant
Mr. Muslem Gurbanov	GEF / UNIDO Project	Baku	Head of Inventory Group, Phd – degree in chemistry, more than 8 years involved in different international Projects
Mr. Gulmail Suleymanov	Ministry of Ecology and Natural Resources (MENR) ,	Baku	Director of Climate Change and Ozone Centre at MENR Official Focal Point of Stockholm Convention on POPs,
Mr. Abdulkhalik Heydarov	GEF / UNIDO Project Azerenergy Stakeholder Consultant	Baku	Main national expert, more than 30 years experience in the electricity supplying companies
Mr. Vugar Heydarov	GEF / UNIDO Project Azerenergy Stakeholder Consultant	Baku	National expert, more than 10 years experience in electricity supplying companies
Mr. Ruslan Salmanov	GEF / UNIDO Project	Baku	National Legal Expert independent, specialist in legislation activity, his main responsibility is to analyse the existing international experience in the POPs management, to form the legal documents and laws for Republic Azerbaijan and together with MENR

Name	Institution	Location	Title
			send it to the Council of ministries.
Mrs. Ulkar Mammadova	GEF / UNIDO Project / Baku elektronet	Baku	National Inventory expert of Bakuelectronet. More than 10 years activity in electricity supplying companies
Mr. Maharram Mehtiyev	GEF / UNIDO Project / SOCAR	Baku	National Inventory Expert. SOCAR Focal Point – Chief of Science and technical division of SOCAR (State Oil Company of Azerbaijan Republic)
Mr. Elibar Guliyev	SOCAR	Baku	Specialist on safety in Ecological Department
Mr. Mehdiyev Chingiz	National Center for hazardous Waste Management	Baku	Director of the hazardouz Waste Management Center at Landfill in Perekishkul. Responsible for the waste management in the landfill, he had to organize the place for the equipment of the Project, which will be installed at the landfill after delivery to Azerbaijan.
Mr. Ekldar Hametov	Bakuelectricity	Baku	Chief of Laboratory and cable testing department. More than 30 years experience in the electricity supplying companies.
Mr. Vasif Aliyev	MENR Laboratory of Environmental Pollution Monitoring Center	Baku	Director of the Environmental Pollution Monitoring Center. The place, where the gas-chromatograph, supplied from the Project budget will be in operational usage.

The experts' qualifications have allowed them to begin an active work on realization of the main objectives of the project, namely:

- the inventory of transformers for the presence of PCB - contaminated oil, labeling, preparation of necessary documentation governing the treatment of PCB - contaminated transformers in the power grid companies, preparing drafts of laws and regulations determining the construction of the system hardware inventory, its decommissioning,
- Collection of PCB - contaminated oil in the special collecting points, the procedure for transportation of contaminated equipment to the site, where the equipment for cleaning PCB-contaminated oil and transformers will be settled.
- Further, the experts have made the laboratories operational, conducting training courses for personnel, involved into the operations with PCB - contaminated equipment.

All the activities allowed the partner companies and MENR, as GEF focal point, to begin the implementation the Stockholm Convention in the Republic of Azerbaijan in the sphere of PCB- treatment.

However, the concern is that the documents developed by the Project team and sent to the Council of Ministers for signature procedure, will take a long approval period.
The Evaluation Team during the mission to Baku had no possibility to meet with any of the main Ministries responsible officials.

The ET did not get answer by the project team especially on the matters relating to the financing of the project. There is a risk of the suspension of funding in the event that the Republic of Azerbaijan does not meet its financial obligations.

4.1.3 Stakeholders' ownership

This section assesses the ownership of stakeholders in the design and implementation of the project.
Ownership includes allocation of resources (staff, office, in-kind contributions, financial contributions), and interaction between the project implementing partners, shared decision making and transparency of planning and funding.

Ownership is the participation of the stakeholders, who have an interest in a development process, in the planning and implementation of the project designed for their benefit.
It answers to the question: for whom the development is for and who should be involved if the development process has the prospect of producing sustainable results.

Stakeholder	**Ownership of stakeholders**
The Ministry of Ecology and Natural Resources (MENR)	National Focal Point for implementing the National Implementation Plan (NIP) in Azerbaijan Responsible for the following issues: - Coordinate legislative activities while making amendments and additions to relevant legislation and develop regulations and procedures for POPs related activities; - Facilitate cooperation inter-relations between stakeholders and provide the stakeholders with centralized management; - Conduct inventories of production and utilization of POPs chemicals; - Establish a database and an information sharing network; - Provide individuals, agencies and companies with information; - Exchange of information with international organizations; - Organize proliferation activities, trainings, workshops and seminars; and - Monitor and assess the implementation of responsibilities and duties of stakeholders and regularly reporting the progress to the relevant governmental authorities and the SC Secretariat.
The Ministry of Industry and Energy (MIE)	- providing assistance in conducting the inventory of PCBs in and out of use and for the provision of policy and coordination for introducing and applying alternatives of PCBs-containing products and equipment and environmentally sound technology; - providing assistance in implementing activities and measures

	for limitation, elimination and monitoring of use of PCB containing equipment and reduction of unintentional production of PCBs; - making amendments and additions to relevant laws and regulation, as well as develop rules and procedures in relation to the above activities and measures.
UNIDO	- Executing agency/GEF agency of the project and with the responsibility of the day-to-day overlook of the project management. UNIDO is committed to assist its developing country Member States with fulfilment of their obligations under the Stockholm Convention. UNIDO has committed considerable effort to build this assistance program, both in support of the Convention implementation and in furtherance of UNIDO's mandate and corporate strategy in support of the Millennium Development Goals.
Azerenergy JSC	- The company generates and supply electricity in Azerbaijan. Owns the largest amount of PCB-containing equipment. Total amount of the transformers in service is about 50, 000. The company has transformers, which operate throughout the Republic of Azerbaijan. Central Laboratory of Azerenergy is located in Baku at the Institute of Energy.
SOCAR (The State Oil Company)	- Oil-producing company, which produces 15% of oil and gas on the territory of the Republic of Azerbaijan. It has the most modern laboratory equipped, including a private gas-chromatograph. The activity of the company is certified according to all international standards ISO.
Bakielektrikshebeke	- Electricity Distribution Company. The company has on its balance transformers, and provides electricity to Baku and suburban areas. The power of the transformers in use is below 110 kV.
Sumgait Elektric Shabaka electricity distributioncompany, **Ministry of Transport,** **Ministry of Justice,** **State Property Committee** **Azerkimya State Company.**	- Potential project partners, who also have electrical transformer equipment. But the amount they have is less than that of the main partners. Currently, these organizations do not participate in the hardware inventory for PCBs, but when the Council of Ministers of the Republic of Azerbaijan will adopt the binding instruments governing the treatment of transformer equipment in accordance with the requirements of the Stockholm Convention, these companies and organizations will have the obligation to fulfill the requirements of the Convention.

4.2 Project strategy

The activity of the project must create the necessary capacity to implement the actions of the National Implementation Plan and on identification, labeling, and environmentally sound removal, storage and disposal of targeted PCBs - containing oil and equipment in fulfilment of Azerbaijan's commitments under the Stockholm Convention. The project must enhance the regulatory infrastructure and strengthen institutions at national and local levels to identify, monitor, manage, and treat PCBs in an environmentally sound manner. Strengthen the capacity for environmental sound management (ESM) of PCBs will include both discarded equipment and equipment remaining in use, so that continued operation and maintenance of that equipment does not create a global environmental risk. The project must follow the demands of the Stockholm Convention and Basel Convention guidelines. The project will also treat a minimum of 540 tons of identified targeted PCBs, including PCB-containing equipment and oil.

4.3 Financial inputs

As already mentioned above, according to the project document, the financing and co-financing of the project has the following ratio:

The GEF, as the financial mechanism for the Stockholm Convention, has provided US$ 2,120,000 (excluding PPG of US$ 106,000), UNIDO provides 100 000 US$ (in-kind);

The Government of Azerbaijan through the MENR (US$ 386,500 (cash); US$ 337,000 (in-kind) and MIE (US$ 164,000 (cash); US$ 171,320 (in-kind); other Government Agencies US$ 104,370 (cash); US$ 19,700 (in-kind); Stakeholders (Azerenergy, SOCAR, Baku electricity supplying Company) US$ 2,040,500 (cash); US$ 1,937,400 (in-kind). These amounts to be used mainly for capacity building for the inventory, training activity, collecting points for PCB-contaminated equipment and oil, demonstration sites, socio-economic programme and part of the monitoring costs.

Total co-financing of the project: **US$ 5,260,790.**

Grand total: US$ 7,380,790 (excluding support cost and PPG).

During the field mission, ET made attempts to clarify the details of co-financing from the Azerbaijan Government and other project stakeholders.

It turned out that due to the fact that the NIP has not yet obtained the final signature of the Council of Ministers of Azerbaijan that does not allow the Ministry of Finance to approve the co-financing of the budget, which was defined as the financial obligations of the Republic of Azerbaijan at the signing of the Project document in 2010.

Due to the inability to get clarification on the part of the Government Authorities, as nobody was able to attend the meetings with the Evaluation Team, which were organized during its mission in Azerbaijan, the Project team prepared the following results regarding the co-financing in- kind of the project:

1. Co-financing of project budget (2010-2013). Expenses In-kind:

- By the **Ministry of Ecology and Nature Resources:**
  - salary of four recruited employees – 47,010 AZN;
  - Office expenses (room, the internet connection, furniture, stationery) – 19,500 AZN;
  - Expenses for preparation of the area for placing the equipment that will be bought for cleaning of oils from PCB -2780 AZN;

  Total: 69,290 AZN (approx. **90, 000 USD**)

- SOCAR
  - salary of five recruited employees – 112,500 AZN;
  - Office expenses (room, the internet connection, furniture, stationery) – 3,600 AZN;
  - Business trip expenses – 3,520 AZN;
  - Transportation expenses – 2,700 AZN.

  Total: 122,320 AZN (approx.**158, 000 USD**)

- "Azerenerji" OJSC
  - salary of seven recruited employees – 65,100 AZN;
  - office expenses (room, the internet connection, stationery) – 25,000 AZN;
  - business trip expenses – 140,400 AZN;
  - Transportation expenses 72,000 AZN.

  Total: 302,500 AZN (approx.**395, 000 USD**)

- "Bakuelektrikshebeke" OJSC
  - Salary of eleven recruited employees – 141,600 AZN;
  - office expenses (room, the internet connection, stationery) - 790 AZN;
  - Transportation expenses 15,205 AZN.

  Total: 157,595 AZN (approx. **205,000 USD**)

Total in kind payments: 652,705 AZN (approximately 850,000 USD)

Thus, the Evaluation Team has obtained the answers to some questions that require further clarification.

The concern of the Evaluation Team is due to the fact that after more than three years of the Project implementation the budget commitments on co-financing are still not defined. That means that in the time remaining before the end of the project, some expenditures of the budget may not be approved, and therefore, the results of the project may differ from the ones originally specified in the project document.

This is particularly evident in the delivery of the gas-chromatograph, which was delivered to Azerbaijan in the second half of the year 2012, but so far it has only been tested and has not

been used due to the absence of additional reagents and equipment, which has not been acquired due to budgetary problems.

The Republic of Azerbaijan will have additional costs associated with the construction of infrastructure for hazardous waste landfill, where equipment will be installed to clean up PCB – contaminated transformers and oil. Currently, the defined place where equipment will be installed has a total area of 400sq.m. At the time of ET mission was in Azerbaijan UNIDO has announced a tender for the purchase of the equipment.

The results of the bidding will be announced by the end of May 2013. After this date, few months will pass for preparing and sending the equipment to Azerbaijan. As assured by the Project coordinator, as well as by the director of the landfill of hazardous waste Centre, the necessary infrastructure on the site will be built within 1.5 months. The costs of these arrangements will be covered by the MENR.

The situation with in-cash co-financing from the part of the Government of Azerbaijan and the project partners still remains unclear.

This point was outlined in the final presentation of the ET and requires an urgent resolution. Moreover, even the volume of the co-financing in-kind differs from earlier commitments.

4.4 Role of the Executing Agency

UNIDO has been the executing agency of the project and had the responsibility of the day-to-day monitoring of the project management.

- UNIDO is committed to assist its developing country Member States with fulfilment of their obligations under the Stockholm Convention.
- UNIDO is executing and developing a range of demonstration and capacity building projects to support the Convention implementation. UNIDO has committed considerable effort to build this assistance program, both in support of the Convention implementation and in execution of its mandate and corporate strategy in support of the Millennium Development Goals.
- Establishing international contacts and collaborations.
- Conducting consultative meetings with other implementing agencies.
- Establishing the project management structure

4.5 Effectiveness of the project

4.5.1 Benefits delivered

- The project has permitted the country to have a better planning to meet compliance with its obligations under the Stockholm Convention on POPs, and through this to contribute to the improvement of the environmental situation in Azerbaijan.

- Good cooperation between the Project team and stakeholders made it possible to start an inventory of transformers to identify PCB-contamination and to plan further activities after the completion of the project. This must be supported by the funds of the project partners and could implement fully the provisions of the Stockholm

Convention.

- The project has allowed the country to develop a mechanism for the implementation of the Stockholm Convention on collecting samples of PCBs, with the opportunity to expand this experience to other POPs and getting other funds from the World Bank and other financial institutions

The project has established business relationships with global oil companies that are operating on the territory of Azerbaijan, in particular, with the company BP, which is building a factory on high-temperature destruction of hazardous waste, two kilometers away from the place where the equipment on the chemical decontamination of PCB-and oil-containing equipment will be installed.

- Eventually the project has contributed to reduce and eliminate POPs pollution burden to human health. The introduction of BAT/BEP strategies in the hazardous wastes management are the key approach to reduce and eliminate POPs and other pollutant releases to the environment that will also result in the measurable regional and global environmental benefits.

- The project helped to strengthen the MENR laboratory capacity with the equipment that will be used for the detection of PCBs as express-methods analyzers, as through the means of the gas – chromatograph, supplied by the Project funding. Currently, the express-analyzers acquired by the project are actively exploited to detect chlorine-containing oils.
- This is the first project on the complex inventory of PCB-containing equipment in the territory of the former Soviet Union. It is the first time that the necessary regulations and documents that focus on the creation and functioning of the treatment of persistent organic pollutants are developed. Such an experience could be successfully extended to the countries of the former Soviet Union, especially for the equipment containing PCBs - oils, produced and supplied from Russia to the countries that are now included in the CIS.
- The project has allowed beginning the education in Azerbaijan about the persistent organic pollutants, which have a serious impact on human health. In the future, the process of training management and education about POPs should be extended to all sectors, and groups of people which could suffer the POPs influence.
- All stakeholders have raised the capacity of technical personnel with professional competencies in managing PCB-contaminated equipment.

4.5.2 Beneficiaries

The evaluation team has concluded that the intended beneficiaries have participated in the project activities.
The behavioural pattern of the beneficiaries and their understanding of the issues have significantly changed during the Project implementation.

Direct Beneficiaries have been:

- Azerenergy JSC - joint-stock company, generating and supplying electricity on the territory of Azerbaijan. The owner of main amount of transformers in Azebaijan;

- SOCAR – State Oil Company. Owns the transformers, supplying the electricity to the oil delivery stations. About 25 % of the oil in Azerbaijan is extracted by SOCAR.

- "Bakuelektrikshebeke" OJSC. Joint Stock Company, responsible for supplying electricity to Baku and suburb.

- Sumgait Elektric Shabaka electricity distribution company, Ministry of Transport, Ministry of Justice, Azerkimya State Company – are other owners of transformers, not involved in the Project, but they must comply with the inventory and settle the system for managing the PCB contaminated transformers

Indirect Beneficiaries:
Azerbaijan Government, especially Ministry of Ecology and Natural Resources; Ministry of industry and energy; Ministry of Health; Azerbaijan population; Government Environment agencies.

4.6 Efficiency of the activities

Initially, all the actions of the project team have been specified in the project document, which contained a detailed road map for the work of the goals and objectives of the Project.
Periodically every expert and the project manager have reported on the implementation of the Project tasks.

During the ET mission the Project Team provided the results on the implementation of the objectives. These are listed below:

4.6.1 Primary outputs

Output 1.1: Development of PCB-related regulations, standards, and norms fulfilling SC requirements

Legal and regulatory review and revision of guidelines to ensure alignment with SC was prepared as follows:

- Order of the Minister of Ecology and Natural Resources on wastes inventory guidelines and classification system. Approved by the Minister of Ecology and Natural Resources on 28.02.2013
- Order of the Minister of Ecology and Natural Resources on approving of Methodical Indicators on work with PCB containing equipment and wastes. Approved on 18.02.2013
- Guidelines on safety measures during PCB equipment and liquid (oil) wastes labeling process in stations and substations. Approved by the chief engineer of Azerenergy on 29.10.2012
- Guidelines on PCB electric equipment inventory in Azerbaijan Energy System elaborated and prepared by the inventory group from Azerenergy and legal aspects corrected by the legal experts of the project. Approved by the chief engineer of Azerenergy on 13.09.2012
- Guidelines on safety measures during sampling. Approved by the chief engineer of Azerenergy on 16.10.2012
- Preparation of the draft Presidental Degree of AR on amendments related to PCBs to the "Regulations of import- export operations in the AR". Sent to the Cabinet of Ministers,

namely the amendment includes PCB oil and wastes that proposed to add to the "List of the Specific goods export and import operations by the judgment of the relevant state bodies" approved on 24 June, 1997

- Order of the Head of the Committee of Standardization, Metrology and Patents on making amendments to the State standard AZS 391-2010 of Technical terms of T-1500 transformer oil of the Republic of Azerbaijan. Sent to joint sub commission on harmonization of national environmental legislation with EU legislation.
- Preparation of the draft AR Law on making amendments to the Administrative Code of AR. Sent to the Cabinet of Ministers
- Preparation of the draft AR Law on making amendments to the AR Law on Industry and domestic wastes. Sent to the Cabinet of Ministers
- Preparation of the draft AR Law on making amendments to the AR Law on Protection of Environment. Sent to the Cabinet of Ministers
- Preparation of the draft Decision of the Cabinet of Ministers on making amendments to the Inventory guidelines of wastes formed during production process. Sent to the Cabinet of Ministers.

The experts of the project provided a lot of work to develop regulations and legislative documents. However, according the ET the biggest issue is the time needed for the approval when the documents are sent to the Council of Ministers.

Output 1.2: Enforcement measures addressing the SC

- Order of the Minister of Ecology and Natural Resources on approving of Methodical Indicators on work with PCB containing equipment and wastes. Approved by the Minister of Ecology and Natural Resources on 18.02.2013
- Train inspectors in PCB inspection obligations and use of electronic PCB database - Familiarizing training was conducted by assistance of the international expert. UNIDO expert Filip Angelovski provided training on 24-26 November 2011 to user representatives from SOCAR, Azerenergy and Bakielektrikshebeke.
- The trainings were provided in the building of the Ministry of Ecology and Natural Resources (general information) and in laboratories of SOCAR, Azerenergy, Bakielektrikshebeke and National Monitoring Department of MENR. During of the trainings local experts from laboratories have been trained for work with analyzers. Two experts from each organization in the presence of the international expert provided the test analysis. All trainings were provided in laboratories located in Baku (central laboratories of each organization)
- Train worker safety inspectors - Worker safety departments dealing with PCB issues were trained by stakeholders

Training process for stakeholders were provided according to the manuals presented by the international expert Aleksandar Mickovski. On the basis of these manuals the instructions have been prepared in local language and the inspectors of the Division of electro-workshop and electric laboratory were trained. Beside their duties as engineers in power stations and technical service's workers in substations, the persons were trained on safety work with PCB equipment. In total about 1000 workers were trained.
Local training was provided by the Azerenergy expert of the project.

Output 1.3: Laboratory strengthened with methodologies, procedures and information management systems for analytical data processing

- Building capacity for certified laboratory analysis and monitoring of PCBs - The mobile analyzer and gas chromatography with EC detector was purchased and given to MENR laboratory (National Monitoring Department). At present the preparation phase for analysis is going to end. The mobile analyzers were purchased by the project and given to stakeholders according to the project work plan (SOCAR – 1 unit, Bakielektrikshebeke – 1 unit, Azerenergy – 2 unit) for providing the inventory process with PCB indicators (in ppm)
- Guidelines on safety measures during sampling have been approved by the chief engineer of Azerenergy on 16.10.2012

Azerenergy is a main electric company in Azerbaijan that produces, distributes and sells the electricity. Activities of other companies include only distribution and sales. As usual they use instructions of Azerenergy as a main document on work with electrical equipment.

Systematic chromatography analysis has not carried out in time due to late purchasing of necessary reagents. The company responsible for establishment and operation of the chromatography has not yet completed the appropriate activities for the quantitative analysis. As result only the testing chromatography analysis were conducted.

Output 1.4: Institutional capacity building for environmentally sound PCB management

- Creation of PCBs group within MENR – PCB group was created at the MENR. PCB Group consisted of the focal point (Gulmali Suleymanov), national coordinator of the SC (Meherrem Mehtiyev), national coordinator of the project (Baghir Hidayatov) and the representative of legal division of the MENR (Teymur Shakaraliyev)
- Development guidance document for Customs PCB management. Preparation of the draft Presidential Degree of AR on amendments to the "Regulations of import-export operations in the AR" - These documents have been sent to the Cabinet of Ministers.

Output 2.1: PCB inventory strengthened and maintained

Development of standardized forms and reporting guidelines for reporting PCB equipment and oil to environmental and statistical agencies - Statistical reporting form was prepared.

Develop centralized database system for PCB information management - Creation of Centralized database system is going on. A responsible person for completion of the central database system establishment is required. The system is prepared, but not in operational use.

Azerenergy , SOCAR and Bakielektrikshebeke are conducting the inventory.

In Azenergy the number of analysis of transformers is 1,331. The number of transformer with above 50 ppm chlorine is 163. The oil weight is 375 tons; the total weight of the equipment is 1,295 tons. The number of PCB containing capacitors is 6,074, the weight of oil is 91 tons, and the total weight of the equipment is 231 tons.

In SOCAR the number of analysis on transformers is 1,514, the number of transformers with above 50 ppm chlorine is 320. The oil weight is 151,2 tons, the total weight of the equipment

is 576,5 tons. The number of PCB containing capacitors is 252, the weight of oil is 4,3 tons, the total weight of capacitors 12,500 tons.

In Bakielektrikshebeke number of analysis of transformers is 1,716, the number of transformers with above 50 ppm chlorine is 83, the oil weight is 155,3 tons, the total weight of equipment 584,6 tons.

The staff of these companies participated in the exercise on inventory and analysis. The responsible person was identified in each organization. Usually they were chiefs of the technical departments.

The performance of analysis is going on. Analysis resources (reagents and etc.) allow conducting about 10,000 analyses. At present only half of the analyses have been conducted. It is required to strengthen the capacity of the companies for providing analysis.

Output 2.2: PCB equipment maintenance

The technical training for PCB containing materials for end-users was conducted as follows:

1. Training during study tour of the end-users and companies 20.03.2011 – 27.03.2011 (Italy – 'Sea Marconi", "Polyeco", "Delco" companies; France – "Tredi" company). Participants – Z. Guliyev (Chief engineer of BakuElektrikshebeke), E.Nezereliyev (Ecological Department of Azerenergy), N.Zamanov (SOCAR Electrical Department). Goal of the training: The acquaintance with PCB oil treatment technology.
2. Training in Philippines National Oil Company – Alternative Fuels Corporation (PNOC -AFC) -Department of Energy (DOE) – 19.03.2012 – 24.03.2012. Participants – Z. Guliyev (Chief engineer of BakuElektrikshebeke), B.Hidayatov (National Project Coordinator). Goal of the training: The acquaintance with PCB oil treatment technology.
3. November 23, 2010. Inception Meeting with participation of UNIDO experts (Valentin Ishenko, Aleksander Mickovski, Gerasymos Spyratos), invited representatives of international PCB companies (Vander Tumiatti (General Partner and President), Alessandro Capo (Commercial and Sales Department Head Manager) – "Sea Marconi" company; Karakolis Giannis (Chemical Engineer, Regional Manager South Europe), Athanasios Polychronopoulos (COE) - POLYECO; Dirk Jan Hoogendoorn (CEO) – Orion company; Christoph Rittersberger - TREDI; Luciano Gonzalez (Project Manager) – Kinetrics company) local participants from MENR, from Ministry of Transport, Ministry of Economic Development, Ministry of Health, State Committee of Customs, State Committee of Standards, Metrology and Patents, project experts from Azerenergy, SOCAR and Bakielektrikshebeke, environmental NGO.

   Total – 32 participants

   Goals of the meeting: Acquaintance with objectives and tasks of the project, cooperation with relevant organizations. Increasing awareness of the UNIDO project, brief description of methodology of inventory, PCB treatment technology and harmonization of national legislation with SC requirements

Meetings with stakeholders and decision makers 01-06 June, 2012

Goal of the meetings – selection of Treatment Technology of PCBs, national specifications and principles of selection

Participants: V.Ishenko –UNIDO, representatives of Ministry of Industry and Energy, SOCAR, Azerenergy, Bakielektrikshebeke, Ministry of Transport, Ministry of Health and national project experts. Total -11 persons.

Local discussion in Bakielektrikshebeke, meeting with senior engineer and head of stock

Participants: V.Ishenko (UNIDO), Z.Guliyev (Senior Engineer), E.Khammetov (Head of Stock), B.Hidayatov (Project National Coordinator), Muslim Gurbanov (head of inventory group)

Local discussion in Azerenergy, meeting with Chief Engineer H.Hassanov

Participants: V.Ishenko, A.Heydarov (inventory expert), R.Salmanov (legal expert)

Local Discussion in SOCAR, meeting with deputy of head of ecological department Eflatun Hassanov

Participants: V.Ishenko, M.Mehtiyev (inventory expert)

4. Workshop on PCB management in Azerbaijan on November 11-12, 2012, Baku

   Participants: International experts on PCB waste management and disposal (Luciano Gonzalez, Sergey Seryy,) UNIDO Consultant Team (Baghir Hidayatov, Muslim Gurbanov), Representatives of stakeholders (Abdulkhalik Heydarov (Azerenergy), Vughar Haydarov (Azerenergy), Ulkar Mammadova (Bakielektrikshebeke), Meherrem Mehdiyev (SOCAR), Environmental Pollution Monitoring Center (Vasif Aliyev), Center of Climate Change and Ozone (Gulmali Suleymanov))

   The main goal was the formulation of a suggested solution for the treatment of PCBs in Azerbaijan concerning:

   - Technologies
   - Operating entity (permit, resources, facilities)
   - Disposal cost and pricing
   - Disposal timeframe

Output 2.3: PCB-containing equipment phase-out

- Developed guidelines for PCB equipment phase-out.

  Order of the Minister of Ecology and Natural Resources on approving of Methodical Indicators on work with PCB containing equipment and wastes. Approved on 18.02.2013

- Preparation of the draft Decision of the Cabinet of Ministers on making amendments to the Inventory guidelines of wastes formed during production process. Sent to the Cabinet of Ministers.

Output 2.4: PCB-contaminated waste decontamination and disposal

- Created facilities for environmentally sound PCB contaminated material transportation and interim storage - Transportation of PCB containing materials will be implemented by the approved guidelines of Hazardous Wastes Landfill. Interim storage of the PCB wastes will

be located at the territory of Hazardous Wastes Landfill, where the treatment equipment of PCB oils will be constructed. The area selected for these activities was discussed with the international experts.

Construction area in the Landfill was agreed with the Ministry of Ecology and Natural Resources

- Selected PCB disposal technology - The training seminar with participation of the stakeholders and PCB owners was provided with the assistance of the international expert and representatives of the relevant international companies. Meeting with the international expert on the subject of PCB disposal technology selection.

Preparation of the draft TORs for acquisition of PCB treatment facilities

The construction work of the technological area for treatment facilities will be started after receiving the tender results. Besides, the discussion with stakeholder's organizations on transportation of the phase-out PCB equipment will be continued. There is also necessity to develop and approve the sector plans for the phase-out PCB equipment.

Output 3.1: Increased awareness of PCBs

- Hold awareness raising workshops - Awareness raising workshop was held with participation of PCB owners.

November 23, 2010

Subjects discussed at the meeting:

- Acquaintance with objectives and tasks of the project,
- Cooperation with relevant organizations.
- Increasing awareness of the UNIDO project,
- brief description of methodology of inventory,
- PCB treatment technology
- Harmonization of national legislation with SC requirements.
- Expected project results and benefits for human health and environment from project implementation.

The national experts of the project: Meherrem Mehdiyev, Muslim Gurbanov, Abdulkhalik Heydarov, Ruslan Salmanov held the relevant presentations.

On February 2013 in Baku, the national inventory expert Muslim Gurbanov made a presentation at the seminar organized by MENR and GIZ on PCB potential in Azerbaijan and its environmental and health impacts.

Output 4.1: Project management structure established

- Established Project Implementation Office (PIO) and project staff appointed.
  National Project Coordinator – Baghir Hidayatov
  Project Coordinator Assistant – Gunay Ibrahimova

- Project Steering and Stakeholder Coordination Committee (PSSCC) - PSSCC was established.
  Members of the PSSCC:
  Tofig Yagubov – Ministry of Transport
  Natig Mammadli – Ministry of Economy Development
  Gasim Aliyev – State Committee of Customs
  Nuraddin Abdullayev – Ministry of Health
  Emil Djavadov – State Committee of Standards, Metrology and Patents
  Fazil Seyidov – Bakielektrikshebeke JSC
  Efsane Cavanshirova – Azereenergy JSC

- Chief Technical Advisor (CTA), National Technical Advisor (NTA), policy experts, and technical experts in POPs waste management and program development recruited.

Experts of the project:
Muslim Gurbanov – inventory expert
Abdulkhalik Heydarov – inventory expert
Meherrem Mehtiyev – inventory expert
Ulker Mammadova – inventory expert
Vugar Heydarov – inventory expert
Teymur Shakaraliyev – legal expert
Bariz Mehdiyev – database expert
Ruslan Salmanov – legal expert
Experts were recruited by the UNIDO project manager. They were selected on the experience of the initial inventory process on POPs during 2006-2007.

- Hold project management training for project management staff - Project management training was provided by the international experts mentioned above with presentation of relevant materials.
- Work with stakeholder project participants to establish PIO and signed project contracts - Project participation contracts prepared and signed.

  The total number of the stakeholder participants is five. Therefore, only the energy sector was subjected to inventory processes. Initial inventory results show that other sectors as transport has not PCB equipment with content more 50 ppm.

  However, some sectors as superphosphate plant has relevant PCB transformers, but this organization doesn't belong to energy sector. During the next operations after PCB technology establishment, the involvement of these organizations is recommended.

  Prepare and hold inception workshop.
- Prepare Annual Project Reports and Project Implementation Reviews - Reports on the results on relevant activities prepared and presented to UNIDO.

Output 4.2: Project results monitored and reported

The project coordinator has always been in contact with the UNIDO Project manager. According to the demands from UNIDO, two reports were sent to UNIDO in June 2012.

Also summary tables on the inventory results in the stakeholder organizations were prepared and sent to UNIDO.

4.6.2 Information dissemination

Training and workshops

No	***Events***	***Time***	***Location***
1	Inception meeting	November 23, 2010	Baku
2	Training study-tour for Project team, partners and stakeholders	20.03.2011 – 27.03.2011	***Italy, France***
3	Training for inspectors in PCB inspection obligations and use of electronic PCB database	24-26 November 2011	***Baku, MENR, laboratories of stakeholders***
4	Training study-tour to Phillippine	19.03.2012 – 24.03.2012	***Phillippine National Oil Company – Alternative Fuels Corporation***
5	Meetings with stakeholders and Ministries representatives	01-06 June, 2012	***Baku***
6	Workshop on PCB management in Azerbaijan	November 11-12, 2012	***Baku***

4.6.3 Monitoring

Project monitoring management structure and evaluation procedures were established. Project reporting has been done as required by UNIDO operational and financial regulations.
The Project Steering and Stakeholder Coordination Committee (PSSCC) meet annually with participation of all relevant parties to review and decide the activities of the project.

4.7 Replicability, Training and Public awareness

This is the first project in the Caucasus Region that aims at the practical establishment of an integrated management of PCB-containing equipment. Therefore, its importance is high. In addition, the project helped to raise awareness about the dangers of persistent organic pollutants for professionals and people of the Republic of Azerbaijan. The project has shown that environmental management in Azerbaijan is committed to a positive international experience in this field. This is important for both the Republic and for international companies that develop business in Azerbaijan.

To achieve replication and to foster knowledge, transfer of information such as training workshops, scientific evaluations and publication, information exchange, have been carried out.

The major elements of the project are summarized below:

- The cooperation with the Director of Climate Change and Ozone Center at MENR, an Official Focal Point of Stockholm Convention on POPs, Mr. Gulmail Suleymanov, allowed to work on the implementation of the provisions of the project in accordance with the requirements of the Committee of the Stockholm Convention and the national strategy to reduce persistent organic pollutants, as required by the NIP. In turn, Mr. Suleymanov in his professional activity as POPs focal point has used the project to divulgate the achievements of the Project team.

- Establishment of the system for inventory, collection and disposal of PCB-containing oil and equipment, will play a role as environmental project, and promote the formation of a pilot project; the results of the project could be used in other industrial sectors in Azerbaijan. For example the training system for technical and administrative staff and the selection of BAT / BEP for POPs destruction of the sample will meet the requirements of international conventions and protocols signed by the Republic of Azerbaijan.

- Training: The project has involved capacity building by developing and delivering training modules. The training modules have been developed together with international experts, and have involved local staff in order that they will be able to serve as resource persons for training beyond the project life, assuring in this way the project sustainability.

- Inventory capacity: One of the most important prerequisites of adopting BAT/BEP for PCB management is the adequate inventory capacity, which has been developed during the project.

This may provide services for many other projects in the country, including BAT/BEP and this capacity might be used in neighbouring countries.

- Scientific and engineering capacity: The project has created the conditions for scientific research in the field of recycling of PCB-containing equipment, using the scientific potential of specialists and specialized institutions, as well as the possibility to further develop for the Academy of Sciences of Azerbaijan. The project has created a system of management of PCBs in the power grid companies, but such an experience could be successfully employed in companies of other profiles. In the project scientific and engineering capacity has been established having understanding of the basic and detailed principles of the applied technology.

- Innovative financing mechanisms: The project has created a system, which should allow for more in-depth analysis and recycling of chemical materials, as well as potentially hazardous waste, which can undoubtedly benefit of the activities of MENR, aimed at improving the environmental situation in Azerbaijan.

This should draw the attention of the project partners that after the project completion the financing activities consistent with the requirements of the Stockholm Convention should be continued.

Therefore, the project team should pay attention to the fact that the partners should analyze the experience of the foreign countries, where the development of such project is carried out within the public - private partnerships and is attracting private capital.

4.8 Long -term impacts of the Project

The project has aimed at solving long-term problems. The Stockholm Convention requires the destruction of PCBs as a chemical compound of Persistent Organic Pollutants by 2025. Therefore the construction of a pilot system for PCBs elimination will be a good example of how to solve problems in the framework of international protocols and conventions.

- The partial inventory of transformers was accomplished by today, but thanks to the efforts of the partners and the project team, the inventory process is going on, it is successful - the staff has been trained and the number of transformers examined is growing steadily. The documents and regulations produced have allowed to make the inventory process required, which means that all prerequisites for the implementation of Azerbaijan's commitments are in place.

- The laboratory equipment supplied thanks to the project may subsequently be applied not only to determine the PCB, but also for other purposes. Especially the gas chromatograph can be used to identify other chemical compounds, which are directed efforts of the Secretariat of the Stockholm Convention. But the sustainability of the project in the future depends on continued financing of the Government and the capability to retain trained staff. The project has however been too small to create wide spread awareness among other national potential partners, which would be necessary for sustainable effects in terms of changed behaviour and reduced POPs releases.

- The project is producing satisfactory and important outputs and strength the cooperation between UNIDO and the Government of Azerbaijan in order to achieve this goal.

- The project is creating an initial structure for BAT BEP application in Azerbaijan adapted to the country needs, global priorities, stakeholders and partners. The main counterparts have been properly prepared for taking over technical and managerial activities.

Picture 12. The laboratory for analyses of SOCAR.

4.9 Rating of the project performance regarding:

The ratings are given by the project management in the self assessment progress reports as follows: *HS=Highly Satisfactory; S= Satisfactory; MS=Marginally Satisfactory; MU=Marginally Unsatisfactory; U=Unsatisfactory; HU=Highly Unsatisfactory.*

4.9.1 Objectives

The project's overall objective was to create capacity for environmentally sound management (ESM) of PCBs for preventing PCBs releases from electrical equipment, avoiding cross-contamination of electrical equipment and disposing of 540 tons of PCB-containing oil, equipment and wastes. This objective had to be achieved through a combination of strategies, including legislative and regulatory development, capacity building, public education, technology transfer, training and technical support.

Immediate objectives	**Ratings**
1. Strengthen the legal and regulatory framework for ESM and disposal of PCB-containing oil, equipment and wastes	S
2. Improve institutional capacity at all levels of PCBs waste management and disposal.	S
3. Remove PCBs wastes from targeted contaminated sites and transport them to disposal unit	?
4. Decontaminate PCB oils in in-service transformers.	?
5. Dispose of wastes in an environmentally sound manner	?

Items 3-5 could not be assessed, as the project is currently in the process of purchasing equipment that will function for cleaning PCB-containing oils and PCB-contaminated equipment.

4.9.2 Outcomes

The project foresees four outcomes which foresaw the production of 14 outputs.
The production of all the outcomes and outputs is rated by the project management in the self assessed Project Progress Reports of 2012 and 2013 as highly satisfactory or satisfactory.
The logical framework was precisely reporting in the project document the indicators of success with their sources of verification.

4.10 Contribution of the project to GEF strategic targets and Global environmental benefits

The project has contributed to global environmental objectives.

- Legal, technical and organizational results of the Project will have a positive impact on the environmental situation in Azerbaijan. This is due to the fact that the system of management

of hazardous wastes requires continuous improvement and the involvement in it of all the stakeholders. Create a waste management system that complies with international standards, will extend this system to other types of waste, especially since such experience in Azerbaijan at the moment does not exist.

- The capacity of strengthening of PCB inventory, monitoring, analysis and elimination will be effectively implemented and it could also be used for other chemical pollutants, indicated in the Stockholm Convention.
The MENR Laboratory (one of the major beneficiaries of the Project, has received by the project appropriate equipment and training) has been highly strengthened receiving the gas – chromatograph that allows to be involved into deep analytical work in the interests of international environmental conventions.

This laboratory now has become one of the strongest state laboratories in Azerbaijan for environment monitoring of emissions and releases.
These are objectives that are supposed to be of crucial concern in all GEF supported projects.

4.11 Possibilities of sustainability.

Project sustainability has four pillars: legal, technical, financial and institutional.

4.11.1 Legal

The project is in line with the objectives of the Policies of the Government of Azerbaijan. The solution for PCB – management, as a part of POPs pollution detecting and disposal can be sustainable with appropriate policies and legal provisions for management of chemicals and hazardous wastes.

4.11.2 Technical

The application of BAT / BEP in the sphere of hazardous wastes management in the design, operation and monitoring is reasonably necessary. The BAT / BEP will actually be one solution benefiting both environment and economy. However, experience and knowledge related to the Stockholm Convention have still a gap: lack of information and specialists.

It is to be noted that new technologies have to be transferred to create the necessary technical capacity for the management of hazardous wastes, but it is not sufficient to cover the needs of all the country, so the system has to be further improved and upgraded.

4.11.3 Financial

As it was mentioned above, the hazardous waste management could be effective and sustainable only when it is supported by the Government's policies. This support must be continuous and appropriate and based on Public and Private Partnership, including, if possible, further donor support. The main stakeholders of the Project have declared to be ready to continue to support the Project results after the Project will be accomplished.

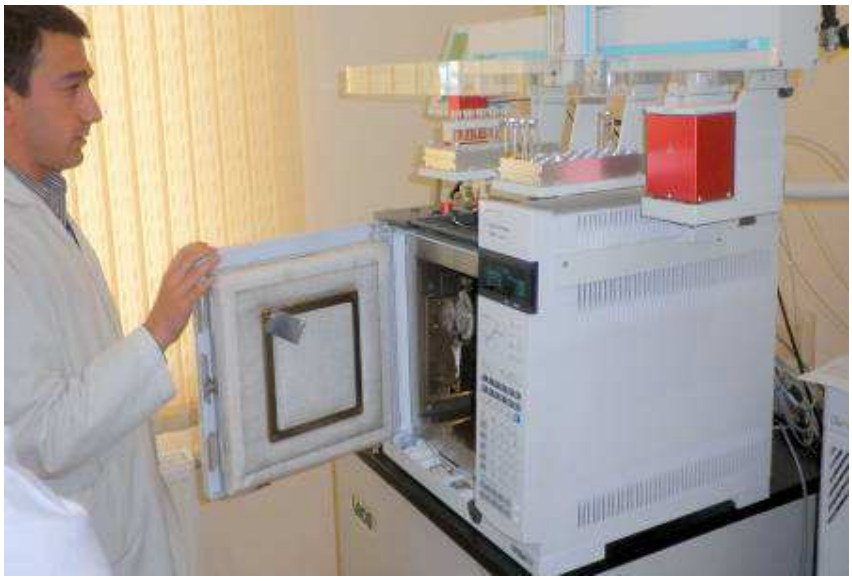
4.11.4 Institutional

The project has introduced for the first time the practical approach for the complex hazardous waste management solution in Azerbaijan. Cooperation with BP will give an opportunity to eliminate PCB wastes in ESM. Expert teams have provided extensive training at different levels of the environment management sector, creating environmental consciousness.

Now there is an appropriate level of knowledge to continue the project activities in the country. Of course the Government should provide adequate financial support or incentive.

The Project team, POPs focal point and MENR may support the activity on promoting the Project results among the specialists and the media.
The recommendation to extend the training and education in this sphere must be attentively followed.

Picture 13. The head of the Inventory Group, Mr. Gurbanov, explaining some procedures at SOCAR lab.



Picture 14. The Gas chromatography equipment at the Laboratory of SOCAR.

5. CONCLUSIONS AND RESPECTIVE RECOMMENDATIONS ON GENERAL OUTCOMES AND SPECIFIC OUTPUTS

Based on the observation and the analysis on the achievements of the project, the Evaluation Team came up with the following conclusions and recommendations concerning:
General outcomes concern the effects, the implementation of the activities, monitoring and reporting, awareness rising and training.

CONCERNING GENERAL OUTCOMES ABOUT EFFECTS, related to the target beneficiaries, pointing out the positive changes obtained in their performance and behaviour.			
No	**Conclusions**	No	**Recommendations**
1	The general capacity has been established for the environmentally sound management of PCBs through the adoption of international standards and practices. Technical awareness on ESM concerning PCBs has been created among the national technical stakeholders.	**1**	**For Ministry of Ecology and Natural Resources, UNIDO and the GEF:** Ministry of Ecology shall publish the ESM system for eliminating PCBs and assure its enforcement. UNIDO and the GEF should disseminate the results of the project in other countries for possible replication.
2	The Republic of Azerbaijan accessed to the Stockholm Convention on POPs on 13 January 2004. Pursuant to the Decree No. 329 dated 29 July 2004 by the President of the Republic of Azerbaijan, the Ministry of Ecology and Natural resources was assigned as the National Focal Point for developing the National Implementation Plan (NIP) of the Stockholm Convention on Persistent Organic Pollutants. The NIP was prepared and completed in 2007 reviewing particular POPs issues, considering the provisions of relevant international commitments, developing detailed strategies and action plans. The NIP identified eliminating PCBs as one of the key objectives in implementing the Stockholm Convention's obligations. Following the usual routine administrative procedures for establishing an international project at national level, the activities started officially in April 2010, with some delay on the foreseen start in September 2009.		
3	The NIP also identified the need for continued improvement of PCBs inventory, gradually withdrawing the PCBs-containing equipment and their final disposal. The NIP also identified (i) weaknesses of the current hazardous waste management practices, particularly in the storage sites of out of service PCB-containing electric equipment and waste oil, (ii) the need for institutional and regulatory development, (iii) capacity building requirements, and (iv) public awareness in PCBs management in particular and POPs management in general.	**2**	**For the Council of Ministers:** The Cabinet of Ministers is still reviewing the NIP, which has been signed by all concerned Ministers. **It is recommended that the Council signs it as soon as possible to constitute the NIP a legally approved document**.

4	Replication of a project is an evident consequence of the results achieved. The project is the best demonstration of the efforts done for the improvement of the global environment and has proved the existence of national capacities that could be able to continue the activities.	**3**	**For the Ministry of Ecology and Natural Resources :** It is imperative that Ministry continues the monitoring of the PCB inventory and disposal activities. The Stockholm Convention requires regular national reporting on PCB inventory.
5	According a technical experts mission of December 2012, PCB-containing equipment and oil was mainly imported from Russia and smaller quantities originated from over 40 other countries all over the world. PCB-containing equipment and oil is widely used in the power sector (power generation and transmission). The PCB inventory estimated in May 2006 that the total amount of oil containing more than 50 ppm of PCBs was 196.741 tons, out of which 102.122 tons were in capacitors and 64.619 tons in transformers. Over 90 percent of PCB-containing capacitors and about 80 percent of PCB-containing transformers are at the facilities of Azerenergy JSC, Baki Electric Shabaka, and Sumgait Elektric Shabaka. In addition to the PCBs present in transformers and capacitors, there is about 30 metric tons of oil in Sumgait city, stored in underground barrels.	**4**	**For the Project Management:** The project shall regularly inform the Director of Climate Change and Ozone Center, located at the same Ministry, as official Focal Point of the Stockholm Convention on POPs regarding the PCB inventory and phase-out activities, so that all concerned parties could be informed and kept updated on the situation.

Specific Conclusions and Recommendations concerning the Outputs and the Outcomes foreseen by the project:

Output 1.1 Development of PCB-related regulations, standards, and norms fulfilling the Stockholm Convention requirements

N	Conclusions	N	Recommendations
6	The project has created awareness for best available technologies for disposal of PCBs and PCBs containing equipment. However, so far the targets established for treatment of 540 tons of identified targeted PCBs, have not yet been started after three years of activities. According to the last project progress report the conducted inventories in Azerenergy , SOCAR and Bakielektrikshebeke are as follows: 1) In Azernergy 1,331 analyses of transformers have been made. The transformers with above 50 ppm chlorine are 163. Oil weight is 375 tons; total weight of equipment is 1,295 tons. The total amount of PCB containing capacitors is 6,074, weight of the oil is 91 tons, and total weight of equipment is 231 tons. 2) In SOCAR 1,514 analyses of transformers have been made. The transformers with above 50 ppm chlorine are 320. Oil weight is 151,2 tons; total weight of equipment is 576,5 tons. The total amount of PCB containing capacitors is 252 pieces, weight of oil is 4,3 tons, total weight of capacitors 12,500 tons.	**5**	**For Stakeholders, Ministry of Ecology, UNIDO and GEF:** Companies dealing with hazardous wastes management should continue to adopt BAT/BEP. State-of-the-art technologies can further reduce the costs of disposal of not only PCBs, but also of other POPs. UNIDO and GEF should continue supporting projects in the area of POPs, particularly considering that new chemicals have been added to the list of the Stockholm Convention.

	3) In Bakielektrikshebeke 1,716 analyses of transformers have been made. The transformers with above 50 ppm chlorine are 83. The oil weight is 155,3 tons, total weight of equipment is 584,6 tons. The company does not have capacitors.		
No	**Conclusions**	**No**	Recommendations
7	The promotion of institutional capacity building for PCB management and implementation of PCBs related measures of Stockholm Convention has been carried out by the activities of the project developing and strengthening PCBs monitoring capabilities, inventories and comprehensive data management. Owners of PCB-containing equipment have been made aware, through specific training, of their obligations for inventory, phase-out, and disposal. The project has helped the Government in overcoming the lack of appropriate legislation, standards, and guidelines. PCB owners did not adhere to the regulations and norms. Worker safety was neglected during PCB management. There was no classification of PCB containing equipment. The laboratory facilities were unable to meet the SC requirements and thanks to some measurement equipment provided by the project have upgraded their facilities. Some samples were compromised during inventory procedure due to the lack of properly trained persons. The project, with the support of some international experts provided by UNIDO, has provided specific technical training and also upgraded the equipment of the laboratories of the stakeholders.	**6**	**For the management of the Project and the Ministry of Ecology:** The project has to continue the awareness raising activities through meetings and workshops with policy makers in order to gain support and speed up enactment procedures. Extensive training, also with the support of international experts, has to be provided for the environment inspectors to create the necessary expertise and assure that owners of PCBs comply with regulations. Draft of new or updated laws and regulations have to be designed by the management of the project for the signature of the Government Authorities, considering the development of new technologies for PCB decontamination and new POPs inserted in the list of the SC. Worker safety guidelines have to be updated, developed and divulgated. Worker safety inspectors have to be continuously trained, due to new and updated technologies. National methodologies have to be established promoted. Laboratory capacity has to be increased in terms of quantity and quality. Procedures have to be developed for sample taking and labelling, The Information Centre at MENR has to act as a training resource for new staff.
Output 1. 2: ***Enforcement measures addressing the Stockholm Convention***			
8	The project has developed a control system to improve the enforcement of regulations for proper disposal of PCB-contaminated wastes. The PCB containing waste is transported and disposed of with appropriate tracking documentation. Inspectors have been trained in PCB inspection obligations and use of electronic PCB database. Worker safety inspectors were trained and Working safety inspection guidelines established. Periodical inspections of owners of PCB oil containing Equipment have been conducted.	**7**	**For Ministry of Ecology and the Management of the Project:** The preparation of the draft of the laws should continue. The assistance given so far in this sphere has been easier due to the existence of the safety departments in all stakeholder organizations and the prepared guidelines which are part of the safety measures of the electrical equipment. However, the training and assistance is not completed, also due to the continuous

	Stakeholders owning PCB containing equipment have been trained. The preparation of the draft of the law for the Council of Ministers decision on PCB management is on going. The preparation of the draft of the law for the Council of Ministers decision on PCB management is on going. Regulations on PCB containing equipment and wastes have been prepared and presented to the Ministry of Ecology and Natural Resources. UNIDO has recruited an international expert to train in 2011 user representatives of SOCAR, Azerenergy and Bakielektrik. Trainings were provided in the building of MENR and in the laboratories of SOCAR, Azerenergy, Bakielektrik and National Monitoring Department of MENR. The lab technicians have been trained in working with analyzers. Staff of each organization, at the presence of the international expert, provided test analyses. All trainings were provided in laboratories located in Baku. Training process for stakeholders were provided according to the manuals presented by the international expert Beside the duty engineers in power stations, technical service's workers in the substations were trained on safety work with PCB equipment. In total about 1000 workers have been trained.		technological development. It is recommended to continue the training and the inspections.
Output 1. 3: ***Laboratory strengthened with methodologies, procedures and information management systems for analytical data processing***			
No	**Conclusions**	**No**	Recommendations

9	Laboratories have been strengthened for PCBs analysis; PCBs have been analyzed according to prescribed standards and methods. PCB analysis capacity has increased to 60 samples per day Five analysers have been purchased and distributed among stakeholders. The training for the laboratory staff was provided. Provision of PCB monitoring and testing equipment for the stakeholders was provided. Official sampling collection and analysis methodology conducted. Laboratory certification for PCB analysis obtained.	**8**	**For MENR and the Management of the Project:** It is recommended to continue the laboratory training according to the prescribed standards and methods. Due to the fact that the training for quantitative analysis and systematic chromatography analysis have not been carried out in time due to the late purchasing of necessary reagents and additional equipment, only the testing chromatography analysis have been conducted.
Output 1. 4: *Institutional capacity building for environmentally sound PCB management*			
No	**Conclusions**	**No**	Recommendations
10	Creation of a PCBs group at MENR. The group consists of the focal point of POPs, the national coordinator of the SC, national coordinator of the project and a representative of the legal division of the MENR.	**9**	**To the Management of Project:** Organize and establish implementation of customs procedures for obtaining without long delays the chemical reagents for PCB inventory process.
Outcome 2: Sustainable and safe management of PCB stockpiles and wastes. **Output 2.1 PCB Inventory strengthened and maintained**			
No	**Conclusions**	**No**	Recommendations

11	A big part of PCB containing equipment has been inventoried. Completely in the Stakeholders of the project. The labels have been applied, several entries of PCB inventory made on the database. Standardized forms and reporting guidelines for reporting PCB equipment and oil to environmental and statistical agencies have been developed. A centralized database system for PCB information management has been started. In Azerenergy the establishment of electronic database and prepared Manuals have been prepared . In Bakielektrik the labelling of PCB containing equipment (transformers) with more than 20 Kv has been completed. Two tables with PCBs contained in capacitors and transformers of the three Stakeholders of the project is attached as Annex IV. It is planned to establish two interim storage locations, one at Azerenergy and a second at an independent enterprise so as to ensure access to all partners concerned, also if not belonging to the main stakeholders.	**10**	**For the MENR and the management of the Project:** To achieve this outcome (a sustainable and safe management of PCBs) the PCBs inventory should be completed; ESM for PCB-containing equipment in use and PCBs disposal, as well as environmental monitoring system for PCBs, has to be further applied. Inventory guidelines have to include personal safety instructions; The inventory teams have to be trained on worker safety procedures; Inspections have to take regularly. The database has to be thoroughly tested before the official start-up. PCB owners have to be requested to submit the required data on PCB-containing equipment. The inventory has to report and include information on PCB contaminated equipment and wastes in order to allow tracking of those materials until disposal, so as to ensure management and disposal in accordance with SC requirements.
Output : 2.2 PCB equipment maintenance **Output : 2.3 PCB equipment phase out** **Output: 2.4 PCB contaminated waste decontamination and disposal**			
No	**Conclusions**	**No**	Recommendations

12	Technical training for PCB containing material has been conducted through training courses and study tours. - Preparation of the draft TORs for acquisition of PCB treatment facilities has been done. - MENR with the National Center for Waste Management has offered the landfill (50 hectars) for the disposal of hazardous waste. The site has been identified and MENR will build the facilities for PCBs cleaning decontamination. When the project will know the winner of the bidding MENR will contact him to know which are the construction facilities needed for the operations. All the expenses for the infrastructure will be paid by MENR, while the expenditures for the installation, transport and training of operators have to be paid out of the budget of the project. - Agreement with stakeholders' organizations on developing guidelines for PCB equipment phase out is continuing. - Labelling of transformers: All transformers from which samples were taken have been labelled. According to the information received from the NPD at the end of the reporting period (i.e. March 2013) the total number of labelled transformers was 1,021 pieces. 1. Number of analysis performed 359, including 257 from "Azneft" Production Unit and 102 in the refinery plants. 2. Number of samples taken and analyzed with more than 50 ppm chlorine are 93. The total weight of the oil with more than 50 ppm chlorine is 40,457 tons. At least 540 tons of PCB containing equipment and waste disposed of or decontaminated.	**11**	**For the management of the Project:** It is recommended that the management of the project together with MENR prepare timely all the facilities for setting up and commissioning the technology provided, i.e. : - To receive all necessary bureaucratic permissions and registrations required. - To receive the agreement of the owners of contaminated equipment to supply the material for decontamination. - To build the place for the installation of the necessary machinery needed for the operations. Implementing timely the above will allow Azerbaijan to operate with the best available technology to comply with the obligations of the Stockholm Convention.
Outcome 3. Awareness raising among private and public stakeholders for PCB management. **Output 3.1.** ***Increased awareness among concerned stakeholders for PCB management***			
13	The project has created increased awareness of PCBs among policy makers, stakeholders, and target affected populations, as well as done information dissemination to environmental NGOs and media professionals. The project activities have targeted key stakeholders and vulnerable population groups and awareness has been created among targeted groups The risks to population groups with direct contacts with PCBs should have been reduced by the awareness campaign, by labelling equipment and by implementing ESM practices. PCBs related information was difficult to reach the targeted groups. Human and environmental are suffering risks due to handling of PCBs. The risks are	**12**	**To the MENR and the Management of the Project:** The awareness campaign should continue but it is recommended that MENR and Project delegate it to the stakeholders, who have been specifically trained also for this purpose.

	Immediate for the population groups in direct contacts with PCBs or who live close to PCB contaminated areas. Project activities have targeted key stakeholders and vulnerable population.		
OUTCOME 4. Project management and monitoring **OUTPUT 4.1 *Project management structure established*** **OUTPUT 4.2 *Project results monitored and reported***			
No	Conclusions	No	Recommendations
14	Project Implementation Office and Project Steering Committee have been established with representatives from national and local stakeholder agencies; Project expert team established; Training workshop held on project management; MIS established. Detailed work plans prepared; Data and information collected for MIS; MIS established; Project information, experience and lessons disseminated through website. The project inputs are inadequate to accomplish stated objectives; the project activities are inadequate to allow the identified barriers to be overcome.	**13**	**For UNIDO, MENR and the Project management:** Regular meetings should be periodically held to track and evaluate the project progress. Annual audited financial reports and technical reports have to be prepared. Project work plans and budget reviews have to be confirmed each year. Technical staff has to receive continuously training in proper handling of PCB wastes and equipment, due to the standing progress of the technology. It is strongly recommended that protective clothing and equipment be provided to the staff involved with PCB waste and equipment.
		14	**For the Project management:** It is recommended that the NPD send reports to UNIDO on a bi-annual basis. Follow this procedure would give UNIDO the possibility to have a better monitoring. The degree of achievement of the objectives should be indicated for each output in each progress report. The regular and continuous training of personnel involved in sound environmental management, at all working levels, should be a standard educational element for all the environment related projects. Exchange of information regarding analysis, results and methodologies applied has to be disseminated to assure the general application of the best environmental practices.

6. Lessons Learned

(Lessons learned are generalizations, positive or negative, based on evaluation experiences with projects. The lessons derived can abstract from specific circumstances to broader situations.
Frequently the lessons highlight strengths or weaknesses in formulation, design and implementation that can affect performance and results. Therefore, the lessons can be retained for improving quality and effectiveness of the assistance in future projects.
However, it has to be considered that the lessons learned in the evaluation of a project are not always applicable to other countries or projects, which can have a different situation under the political or industrial point of view.)

The following lessons have been derived from this evaluation:

1) Implementation or adaptation of technological changes normally involves investments and consequently it originates the problem of financing for the interested enterprises. Technology development may reduce the prices for the proper disposal of the waste and this approach is more sustainable than subsidizing the disposal costs of the wastes.
2) The upgrading of local disposal capacity for waste is helping in resolving the national disposal problem. Further, improving the available national technological capabilities it is a considerable help for the country for having a safer and healthier environment and reduce the medical risks.
3) Proper and regular monitoring of the project gives the opportunity to adjust timely the outcomes foreseen according to the initial planning.
4) At the end of the field evaluation exercise the national stakeholders and the members of the project have to be invited well in advance and in writing by the management of the project to the final presentation of the preliminary conclusions and recommendations by the Evaluation Team. It is very important for the parties involved to have the opportunity to present their views and, in case, to comment immediately regarding the observations of the Evaluation Team.
5) It is absolutely necessary that the members of the management team of the project have official business cards that should be presented to the evaluation team members and to the participants in the meetings. Particularly in a country where the official language is not a language of the United Nations and the names are difficult to be understood by a foreigner, presenting a business card is a business practice and also a kind of courtesy.
6) During the formulation of a project particular attention should be paid to the quantitative figures of the outputs to be accomplished, in order to avoid that when evaluating the results achieved, these may result less than expected in relation to the target indicators expressed in the project document. In some cases, unrealistic indicators may indicate that the logical framework of the project was planned in a way too optimistic or too pessimistic. The project document should always include precise indicators for the outputs to be produced, in order to facilitate the monitoring of the achievements.
7) Positive and satisfactory results obtained by a project may create opportunities for developing mechanisms at national level to promote the utilization of co-financed resources.
8) Relevance: a long long-term approach is needed to achieve full application of the concept of PCBs elimination and disposal according to the Stockholm Convention.

This may result in environmental benefits for the country and healthier life conditions for the population.

9) Awareness rising should be always followed by training and continuous implementation. In this way, the management of the project can transpose the corresponding consciousness and knowledge of the problem to the workers involved directly in the operations and generally to the population.
10) Updating of technology and use of appropriate methodology requires genuine willingness for cooperation between the parties involved.

Picture 15. One of the transformers at Bakuelektrik.

ANNEXES

ANNEX I

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

Project of the Government of Azerbaijan

Environmentally Sound Management and Disposal of Polychlorinated Biphenyls (PCBs)

DRAFT JOB DESCRIPTION

Post Title: International consultant – Team Leader for mid-term evaluation of project's results/achievements

Duration: three weeks over a period of six weeks

Date Required: March /April 2013 (Two weeks home base, one week in Baku)

Duty Station: Home base and Baku (Azerbaijan)

Counterparts: Ministry of Environment and Natural Resources of Azerbaijan

Purpose of the Mission: The assessment of the results/achievements of the project. The mid-term evaluation will review impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals.

The consultant will be the team leader of the mission; he/she should coordinate the mission activities with the other members of the team, the NPC and the project stakeholders. The consultant will work in close coordination with the other international consultant member of the team and with the national project team. The consultant should present the draft report to the Project Manager in UNIDO, outlining the results achieved by the project, including conclusions and recommendations. The report should be a looking forward assessment, basing its conclusions and recommendations on the results obtained by the project during its activities and the possibilities of future sustainability/replication, once the project is completed. The final version of the report, after having discussed in draft with the UNIDO Project Manager, shall be submitted to UNIDO.

Details on the specific duties are indicated below. For the smooth development of the activities, the consultant will receive the necessary support from the Project Manager, the project staff in the field and the National Counterparts of the project.

Project Objective: The project will create the necessary capacity to implement national action plans on identification, labeling, and environmentally sound removal, storage and disposal of targeted PCBs- containing oil and equipment in fulfilment of Azerbaijan's commitments under the Stockholm Convention. The project will enhance the regulatory infrastructure and strengthen institutions at national and local levels to identify, monitor, manage, and treat PCBs in an environmentally sound manner. Effective and efficient enforcement capacities will ensure that PCB-related laws and regulations are followed. Strengthened capacity for environmental sound management (ESM) of PCBs will include both discarded equipment and equipment remaining in use, so that continued operation and maintenance of that equipment does not create a global environmental risk.

The project will also directly provide for treatment of a minimum of 540 tons of identified targeted PCBs, including PCB-containing equipment and oil in accordance with the Stockholm Convention and Basel Convention guidelines.

The immediate objectives of the project are:

The immediate objectives of the project are to:

- Strengthen the legal and regulatory framework for ESM and disposal of PCB-containing oil, equipment and wastes.;
- Improve institutional capacity at all levels of PCBs waste management and disposal.
- Remove PCBs wastes from targeted contaminated sites and transport them to disposal unit.
- Decontaminate PCB oils in in-service transformers.
- Dispose of wastes in an environmentally sound manner.

Project Implementation arrangements:

UNIDO is the GEF Implementing Agency (IA) for the project. A project focal point is established within UNIDO to assist with project execution. This focal point consists of dedicated core staff, supplemented by support from support staff colleagues on a part-time as required basis, supervised by a senior professional staff engaged in the management and coordination of UNIDO's POPs and chemical management program. UNIDO makes these services available as part of its in-kind contribution to the project.

The Ministry of Ecology and Natural Resources (MENR) is the National Focal Point of implementing the National Implementation Plan (NIP) of the Stockholm Convention in Azerbaijan, as well as of coordinating activities and cooperation between relevant stakeholders of the NIP. MENR is responsible for the following issues:

- Coordinate legislative activities while making amendments and additions to relevant legislation and develop regulations and procedures for POPs related activities;
- Facilitate cooperation inter-relations between stakeholders and provide the stakeholders with centralized management;
- Conduct inventories of production and utilization of POPs chemicals;
- Establish a database and an information sharing network;
- Provide individuals, agencies and companies with information;
- Exchange information with international organizations;
- Organize proliferation activities, trainings, workshops and seminars; and
- Monitor and assess the implementation of responsibilities and duties of stakeholders and regularly report to relevant governmental authorities and the Convention Secretariat.

Ministry of Industry and Energy (MIE) is responsible for providing assistance in conducting inventory of PCBs in and out of use and for the provision of policy and coordination to introducing and applying alternatives of PCBs-containing products and equipment and environmentally sound technology. It is responsible for providing assistance in implementing activities and measures for limitation, elimination and monitoring of use of PCB-containing equipment and reduction of unintentional production of PCBs. In addition, the Ministry

Azrenergy, the prinsiple owners of transformers, will establish the dismantling facility at one of their maintenance workshop, where the BEP for safe and efficient handling of transformers will be demonstrated. A dechlorinating mobile unit will be rented for the initial stage of the project to demonstrate its advantages. It demonstrates that in addition to other environmental and health-related advantages of utilizing the installation, additional savings will be reached from extended operational life of the old transformers. The successful application of the technology will permit the company to consider the buying option to continue the operations after the termination of the project. Highly chlorinated wastes, such as pure PCBs will disposed of through export incineration. During the implementation discussions will be initiated with the management of the local cement kiln to upgrade/license the facility to be a local alternative to export incineration.

Main duties	Expected duration w/m	Location	Expected Results
1. Study project documentation, including experts and progress reports, work plans, relevant notes of meetings, specific project plan, meeting notes etc. The project staff in the field as well as the UNIDO project manager will facilitate to the team the available information. Review the mission plan and suggest eventual adjustments if needed. Discuss mission strategy with the Project Manager. Consider the elements of UNIDO evaluating procedures to be observed during the exercise.	During the assignment	Home base Azerbaijan	Expert briefed and fully provided with the project documentation. Mission in Azerbaijan started.
2. Hold briefing/meetings in the field with project authorities and selected stakeholders on relevant issues related to the project: validity in local context, development, ownership, relevance to the future development and sustainability of the activities undertaken. Examine project impact and relevance. Discuss the elements of the report with the other team members	During the assignment	Azerbaijan	Assessment completed.
3. Visit some sites of project components, especially selected enterprises. Meet local counterpart authorities. Assess the achievements and possible needs for improvement within the available financial and human resources.	During the assignment	Azerbaijan	Assessments done. Achievements and possible shortcomings documented.
4. Preparation of the first draft of the assessment report in cooperation with the other members of the team. Discuss with UNIDO project manager the draft of findings and subsequent possible recommendations. Prepare jointly this draft for submission to UNIDO, before the preparation of a final version.	During the assignment	Home base	Draft document including findings, conclusions and recommendations, discussed with other team members and submitted to UNIDO PM.
5. Prepare the final report including findings, conclusions and recommendations and submit it to UNIDO.	During the assignment	Home base	Mission completed. Final report presented.

Qualifications: Qualified expert experienced in project results assessment, monitoring and evaluation, with knowledge of waste management, environmental problems and familiar with the UNIDO project activities. The consultant should be familiar in assessing achievements, success and shortcomings of technical cooperation projects. The consultant should be capable to perform objective evaluations and presenting recommendations. Minimum 10 years of experience in implementing UNIDO evaluation methodologies required.

Language: English

Background Information: The Stockholm Convention on persistent organic pollutants (POPs) recognizes that POPs including polychlorinated biphenyls (PCBs) "*possess toxic properties, resist degradation, accumulate and are transported through air, water and migratory species, across international boundaries and deposited far from their places, where they accumulate in terrestrial and*

aquatic ecosystems". Exposure to PCBs, which are of a major public health concern, in particular impacts upon women and, through them, upon future generations.

The Republic of Azerbaijan accessed to the Stockholm Convention on POPs on 13 January 2004. Pursuant to Decree No. 329 dated 29 July 2004 by the President of the Republic of Azerbaijan, the Ministry of Ecology and Natural Resources (MENR) was assigned as the National Focal Point for developing the National Implementation Plan (NIP) of the Stockholm Convention on POPs. The NIP was prepared and completed in 2007 reviewing particular POPs issues, considering the provisions of relevant international commitments, developing detailed strategies and action plans, including timetables and costing of their implementation. The NIP identified the elimination of PCBs as one of the key objectives in implementing the country's obligations under the Stockholm Convention. It also identified the need for continued improvement of PCBs inventory, gradually withdrawing the PCBs-containing equipment and their final disposal. The NIP also identified (i) weaknesses of the current hazardous waste management practices, particularly in the storage sites of out of service PCB-containing electric equipment and waste oil, (ii) the need for institutional and regulatory development, (iii) capacity building requirements, and (iv) public awareness in PCBs management in particular and POPs management in general. The Cabinet of Ministers has approved and endorsed the NIP and submitted to the Stockholm Convention Secretariat.

Aiming at strengthening the institutional framework, the POPs Management Office (PMO) was established in MENR in 2007 during the NIP development. However, the implementation of the Stockholm Convention as far as PCBs is concerned has not yet started. There are no regulations specifically addressing PCBs and the management of PCB-containing electrical equipment. There are no specific standards and guidelines either for storage of out of service PCB-containing equipment and waste oil or for a progressive phase-out and elimination of PCBs and PCB-containing electrical equipment. The NIP also identified that public awareness in management of POPs is low and consequently public participation is lacking.

There is a need for extensive targeted capacity building to enhance the decision-making, managerial, and technical capabilities of government officials to implement NIP provisions and provide guidance to public and private enterprises in environmentally sound PCB management. NIP implementation at the country level requires developing adequate capacities at central and local levels. The number of qualified human resources for the enforcement of the existing and future regulations avoiding non-compliance of legislations and improper management of PCBs should also be enlarged. Human and technical capacities for PCBs monitoring, especially the proper laboratory services for PCBs analysis has to be strengthened as well. The necessary methodology, national standards and accreditation procedures are also lacking.

ANNEX I

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

GF/AZE/10/001/ SAP 104030

Environmentally Sound Management and Disposal of Polychlorinated Biphenyls (PCBs)

JOB DESCRIPTION (Mr. Vladimir Maryev)

Post Title: International consultant – Technical Environmental Consultant for mid-term evaluation of project's results/achievements

Duration: Three weeks

Date Required: 15 April 2013 (Three weeks home base, one week in Baku)

Duty Station: Home base (Moscow) and Baku (Azerbaijan)

Counterparts: Ministry of Environment and Natural Resources of Azerbaijan

Purpose of the Mission: Assessing the results/achievements of the project. The mid-term evaluation will review impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals.

The consultant will cooperate with the team leader of the mission. He should contribute giving technical advises in the preparation of the mid-term evaluation report. The report should be a looking forward assessment, basing its conclusions and recommendations on the results obtained by the project during its activities and the possibilities of future sustainability/replication. The final version of the report, after having discussed in draft with the UNIDO Project Manager, shall be submitted to UNIDO.

Details on the specific duties are indicated below. For the smooth development of the activities, the consultant will receive the necessary support from the Project Manager, the project staff in the field and the National Counterparts of the project.

Project Objective: The project will create the necessary capacity to implement national action plans on identification, labeling, and environmentally sound removal, storage and disposal of targeted PCBs- containing oil and equipment in fulfilment of Azerbaijan's commitments under the Stockholm Convention. The project will enhance the regulatory infrastructure and strengthen institutions at national and local levels to identify, monitor, manage, and treat PCBs in an environmentally sound manner. Effective and efficient enforcement capacities will ensure that PCB-related laws and regulations are followed. Strengthened capacity for environmental sound management (ESM) of PCBs will include both discarded equipment and equipment remaining in use, so that continued operation and maintenance of that equipment does not create a global environmental risk.

The project will also directly provide for treatment of a minimum of 540 tons of identified targeted PCBs, including PCB-containing equipment and oil in accordance with the Stockholm Convention and Basel Convention guidelines.

The immediate objectives of the project are:

- Strengthen the legal and regulatory framework for ESM and disposal of PCB-containing oil, equipment and wastes.;
- Improve institutional capacity at all levels of PCBs waste management and disposal.

- Remove PCBs wastes from targeted contaminated sites and transport them to disposal unit.
- Decontaminate PCB oils in in-service transformers.
- Dispose of wastes in an environmentally sound manner.

Project Implementation arrangements:

UNIDO is the GEF Implementing Agency (IA) for the project. A project focal point is established within UNIDO to assist with project execution. This focal point consists of dedicated core staff, supplemented by support staff colleagues on a part-time as required basis, supervised by a senior professional staff engaged in the management and coordination of UNIDO's POPs and chemical management program. UNIDO makes these services available as part of its in-kind contribution to the project.

The Ministry of Ecology and Natural Resources (MENR) is the National Focal Point of implementing the National Implementation Plan (NIP) of the Stockholm Convention in Azerbaijan, as well as of coordinating activities and cooperation between relevant stakeholders of the NIP. MENR is responsible for the following issues:

- Coordinate legislative activities while making amendments and additions to relevant legislation and develop regulations and procedures for POPs related activities;
- Facilitate cooperation inter-relations between stakeholders and provide the stakeholders with centralized management;
- Conduct inventories of production and utilization of POPs chemicals;
- Establish a database and an information sharing network;
- Provide individuals, agencies and companies with information;
- Exchange information with international organizations;
- Organize dissemination activities, trainings, workshops and seminars; and
- Monitor and assess the implementation of responsibilities and duties of stakeholders and regularly report to relevant governmental authorities and the Convention Secretariat.

Ministry of Industry and Energy (MIE) is responsible for providing assistance in conducting inventory of PCBs in and out of use and for the provision of policy and coordination to introducing and applying alternatives of PCBs-containing products and equipment and environmentally sound technology. It is responsible for providing assistance in implementing activities and measures for limitation, elimination and monitoring of use of PCB-containing equipment and reduction of unintentional production of PCBs. In addition, the Ministry

Azrenergy, the principle owners of transformers, will establish the dismantling facility at one of their maintenance workshop, where the BEP for safe and efficient handling of transformers will be demonstrated. A dechlorinating mobile unit will be rented for the initial stage of the project to demonstrate its advantages. It demonstrates that in addition to other environmental and health-related advantages of utilizing the installation, additional savings will be reached from extended operational life of the old transformers. The successful application of the technology will permit the company to consider the buying option to continue the operations after the termination of the project. Highly chlorinated wastes, such as pure PCBs will disposed of through export incineration. During the implementation discussions have been initiated with the management of the local cement kiln to upgrade/license the facility to be a local alternative to export incineration.

Main duties	Expected duration w/m	Location	Expected Results
The main duty of the consultant will be to assist the Team Leader in collecting,, reviewing and evaluating information and results on the project. In particular the consultant will: 1. Study project documentation, including experts and progress reports, work plans, relevant notes of meetings, specific project plan, meeting notes etc. providing comments on the achievements/short comings of the project implementation to the Team Leader. The project staff in the field as well as the UNIDO project manager will facilitate to the team the available information. Review the mission plan and suggest eventual adjustments if needed. Discuss mission strategy with the Project Manager. Follow the UNIDO evaluating procedures during the exercise.	During the assignment	Home base Azerbaijan	Expert briefed and fully provided with the project documentation. Mission in Azerbaijan started.
2. Participate jointly with the Team Leader in briefing/meetings in the field with project authorities and selected stakeholders on relevant issues related to the project validity in local context, development, ownership, relevance to the future development and sustainability of the activities undertaken. Present to the Team Leader his assessments of the project impact and relevance. Discuss the elements of the report.	During the assignment	Azerbaijan	Assessment completed.
3. Visit some sites of project components, especially selected enterprises. Meet local counterpart authorities. Assess the achievements and possible needs for improvement within the available financial and human resources.	During the assignment	Azerbaijan	Assessments done. Achievements and possible shortcomings documented.
4. Contribute towards preparation of the first draft and the final version of the evaluation report as required by the Tem Leader.	During the assignment	Home base	Draft document including findings, conclusions and recommendations, discussed with team members and submitted to UNIDO PM.

Qualifications: Qualified environmental expert. Consultant should be familiar in assessing achievements, success and shortcomings of technical cooperation projects. He/She should be capable to perform objective evaluations and presenting recommendations. Minimum 10 years of experience in environment management projects.

Language: English

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

The Republic of Azerbaijan accessed to the Stockholm Convention on POPs on 13 January 2004. Pursuant to Decree No. 329 dated 29 July 2004 by the President of the Republic of Azerbaijan, the Ministry of Ecology and Natural Resources (MENR) was assigned as the National Focal Point for developing the National Implementation Plan (NIP) of the Stockholm Convention on POPs. The NIP was prepared and completed in 2007 reviewing particular POPs issues, considering the provisions of relevant international commitments, developing detailed strategies and action plans, including timetables and costing of their implementation. The NIP identified the elimination of PCBs as one of the key objectives in implementing the country's obligations under the Stockholm Convention. It also identified the need for continued improvement of PCBs inventory, gradually withdrawing the PCBs-containing equipment and their final disposal. The NIP also identified (i) weaknesses of the current hazardous waste management practices, particularly in the storage sites of out of service PCB-containing electric equipment and waste oil, (ii) the need for institutional and regulatory development, (iii) capacity building requirements, and (iv) public awareness in PCBs management in particular and POPs management in general. The Cabinet of Ministers has approved and endorsed the NIP and submitted to the Stockholm Convention Secretariat.

Aiming at strengthening the institutional framework, the POPs Management Office (PMO) was established in MENR in 2007 during the NIP development. However, implementation of the Stockholm Convention, as far as PCBs is concerned, has not yet started. There are no regulations specifically addressing PCBs and the management of PCB-containing electrical equipment. There are no specific standards and guidelines either for storage of out of service PCB-containing equipment and waste oil or for a progressive phase-out and elimination of PCBs and PCB-containing electrical equipment.

The NIP identified that public awareness in management of POPs is low and consequently public participation is lacking.

There is a need for extensive targeted capacity building to enhance the decision-making, managerial, and technical capabilities of government officials to implement NIP provisions and provide guidance to public and private enterprises in environmentally sound PCB management. NIP implementation at the country level requires developing adequate capacities at central and local levels. The number of qualified human resources for the enforcement of the existing and future regulations avoiding non-compliance of legislations and improper management of PCBs should also be enlarged. Human and technical capacities for PCBs monitoring, especially the proper laboratory services for PCBs analysis has to be strengthened as well. The necessary methodology, national standards and accreditation procedures are insufficient.

ANNEX II

Agenda of evaluation mission for project UNIDO GEF GF/AZE/09/XXX
"Environmentally Sound Management and Disposal of Polychlorinated Biphenyls (PCBs)"

Sunday 21 April 2013	
9:00-19:00	Arrival of the Evaluation Team in Baku and Hotel accommodation. First meeting with the National Project Director and discussion of agenda
Monday 22 April 2013	
10.00-17.00	Meeting at the Ministry of Ecology and Natural Resources (MENR) with the staff of the project and the National Stakeholders. Review of the mission programme and suggest eventual adjustments. Discussion on project's results. Lunch.
Tuesday 23 April 2013	
9:00-12:30	Meeting at the MENR with two other National Stakeholders SOCAR (State Oil Company of Azerbaijan Republic) and Bakuelektrik (Municipal Electroprovider of Baku)
12:30-13:30	Lunch break
13:30-14:30	Visit to laboratory of company Azerenergy.
15:00-17:00	Visit and discussions with director and laboratory staff at the Environmental Pollution Monitoring Centre of MENR.
Wednesday 24 April 2013	
9:00-12:00 13.30-15.00 16.30-18-00	Visit to the Landfill of the National Centre for Waste Management at Perekiishkul in Abscheron Region. Interview with Centre Director. Visit to company Bakuelektrik and meeting with the manager chief of laboratory. Lunch and further discussions.
Thursday 25 April 2013	
10:00-10:30	MENR
11:00-12.30	Visit to the ecological laboratory of SOCAR.
13:00-14.00 14.00-14.30 14.30-17.00	MENR. Meeting with the Chief of Legal Department Lunch MENR. Meeting with the staff of the project to discuss about some aspects of the project like validity in local context, development and relevance of the activities.
Friday 26 April 2013	
10:00-13:00	Final presentation by evaluation team of draft preliminary findings, conclusions and recommendations. General discussion and observations.
13:30-15.00	Lunch with National Project Director

ANNEX III

List of Persons interviewed and Companies visited

Name	Institution	Location	Title
Mr. Baghir Hidayatov	GEF / UNIDO Project	Baku	National Project Director
Ms. Gunay Ibrahimova	GEF / UNIDO Project	Baku	Assistant
Mr. Muslem Gurbanov	GEF / UNIDO Project	Baku	Head of Inventory Group
Mr. Gulmail Suleymanov	Ministry of Ecology and Natural Resources (MENR) ,	Baku	Director of Climate Change and Ozone Center at MENR Official Focal Point of Stockholm Convention on POPs,
Mr. Abdulkhalik Heydarov	GEF / UNIDO Project Azerenergy Stakeholder Consultant	Baku	Main national expert
Mr. Vugar Heydarov	GEF / UNIDO Project Azerenergy Stakeholder Consultant	Baku	National expert
Mr. Ruslan Salmanov	GEF / UNIDO Project	Baku	National Legal Expert independent
Mrs. Ulkar Mammadova	GEF / UNIDO Project / Baku elektronet	Baku	National Inventory expert of Bakuelectronet
Mr. Maharram Mehtiyev	GEF / UNIDO Project / SOCAR	Baku	National Inventory Expert. SOCAR Focal Point – Chief of Science and technical division of SOCAR (State Oil Company of Azerbaijan Republic)
Mr. Namig Guliyev	Azerenergy	Baku	Chief engineer of Nizami SS 220 KV
Mr. Elibar Guliyev	SOCAR	Baku	Specialist on safety in Ecological Department
Mr. Mehdiyev Chingiz	National Center for hazardous Waste Management	Baku	Director of Waste Management Center at Landfill in Perekishkul
Mr. Ekldar Hametov	Bakuelectricity	Baku	Chief of Laboratory and cable testing department
Mr. Vasif Aliyev	MENR Laboratory of Environmental Pollution Monitoring Center	Baku	Director of Environmental Pollution Monitoring Center

ANNEX IV

Table 1 **Summary of PCB containing Capacitors**			
Company	Number of equipments	Weight of oil in tons.	Total weight of the Capacitors
AZERENERGY	6,074	90,756	231,38
SOCAR	252	4,278	12,500
BAKUELECTRONET	-	-	-
TOTAL	**6,326**	**95,034**	**243,880**

Table 2 **Summary of chlorine containing Transformers**				
Company	Number of analysis	Number of Transformers with >50 ppm chlorine	Weight of the oil in tons	Total weight of oils with the transformers in tons
AZERENERGY	1,331	164	375	1,294,9
SOCAR	1,514	320	151,2	576,5
BAKUELECTRONET	1,716	83	155,3	584,6
TOTAL	**4,561**	**564**	**681,5**	**2,456**