GEF-6 REQUEST FOR PROJECT ENDORSEMENT/APPROVAL

PROJECT TYPE: Full-sized Project
TYPE OF TRUST FUND: GEF Trust Fund

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PART I: PROJECT INFORMATION

Project Title: PCB-free electricity distribution in Georgia			
Country(ies):	Georgia	GEF Project ID:[1]	9227
GEF Agency(ies):	UNIDO (select) (select)	GEF Agency Project ID:	150214
Other Executing Partner(s):	Ministry of Environmen and Natural Resources Protection	Submission Date:	09/11/2017
GEF Focal Area (s):	Chemicals and Wastes	Project Duration (Months)	48
Integrated Approach Pilot	IAP-Cities ☐ IAP-Commodities ☐ IAP-Food Security ☐	Corporate Program: SGP ☐	
Name of Parent Program	[if applicable]	Agency Fee ($)	371,450

A. FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAM STRATEGIES[2]

Focal Area Objectives/Programs	Focal Area Outcomes	Trust Fund	(in $) GEF Project Financing	(in $) Co-financing
(select) CW-2 Program 3 (select)	Outcome 3.1: Quantifiable and verifiable tons of POPs eliminated or reduced	GEFTF	3,910,000	56,095,000
(select) (select) (select)		(select)		
(select) (select) (select)		(select)		
(select) (select) (select)		(select)		
(select) (select) (select)		(select)		
(select) (select) (select)		(select)		
(select) (select) (select)		(select)		
(select) (select) (select)		(select)		
	Total project costs		3,910,000	56,095,000

B. PROJECT DESCRIPTION SUMMARY

Project Objective: Ensuring sound PCB management in Georgian electricity distribution network

Project Components/ Programs	Financing Type[3]	Project Outcomes	Project Outputs	Trust Fund	(in $) GEF Project Financing	(in $) Confirmed Co-financing
Component 1. Legal, institutional and capacity strengthening	TA	1.1 Regulatory instruments and guidelines for safe PCB management adopted	1.1.1 Development of PCB specific amendments in waste legislation 1.1.2. Development of technical guidelines covering all stages of PCB life-cycle 1.2.1. Training of PCB holders and state inspectors in implementing the	GEFTF	500,000	3,700,000

[1] Project ID number remains the same as the assigned PIF number.
[2] When completing Table A, refer to the excerpts on GEF 6 Results Frameworks for GETF, LDCF and SCCF and CBIT programming directions.
[3] Financing type can be either investment or technical assistance.

		1.2. Capacity for PCB regulation enforcement created.	guidance. 1.2.2. Upgrading government capacity to enforce PCB regulations, including PCB information management 1.2.3. Undertake targeted awareness raising for high-risk population groups.			
Component 2. Management and disposal of equipment containing high concentration PCB oils	TA	2.1 Process for managing high-risk PCBs established. 2.2. Reduction of health and environmental risks locally and globally	2.1.1.Verify pure or high concentration PCB equipment and manage them safely until replacement 2.2.1.Transportation and disposal of 300 tons of PCB oils including associated equipment.	GEFTF	1,000,000	15,000,000
Component 3. Technology transfer for long lasting PCB management capacity in the electricity distribution sector	TA	3.1 PCB holders fully competent in PCB management 3.2 workers health and and environmental performance of sector increased	3.1.1. Detailed inventory of the PCB containing transformers in all industrial sectors 3.2.1. Updated transformer maintenance with PCB management in place	GEFTF	400,000	25,000,000
	Inv	3.3.Technology transfer capacity established 3.4 Sustainable PCB processing introduced in Georgia..	3.3.1. Procurement and testing of mobile PCB de-contamination technology 3.4.1 1,000 tons of PCB containing oils rendered harmless in electricity distribution network..	GEFTF	1,700,000	11,100,000
Component 4 Monitoring and Evaluation	TA	4.1 Assessment of the impact of project activities including lessons learned	4.1.1 Project impact indicators designed, applied and project implementation monitored and evaluated	GEFTF	130,000	600,000
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
			Subtotal		3,730,000	55,400,000
			Project Management Cost (PMC)[4]	GEFTF	180,000	695,000
			Total project costs		3,910,000	56,095,000

[4] For GEF Project Financing up to $2 million, PMC could be up to10% of the subtotal; above $2 million, PMC could be up to 5% of the subtotal. PMC should be charged proportionately to focal areas based on focal area project financing amount in Table D below.

C. CONFIRMED SOURCES OF CO-FINANCING FOR THE PROJECT BY NAME AND BY TYPE

Please include evidence for co-financing for the project with this form.

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Amount ($)
Recipient Government	Ministry of Environment and Natural Resources Protection	In-kind	900,000
Recipient Government	Ministry of Energy	In-kind	300,000
Private Sector	Georgian State Electro System JSC	Equity	2,850,000
Private Sector	Georgian State Electro System JSC	In-kind	6,650,000
Private Sector	JSC Energo-Pro*	Equity	5,860,000
Private Sector	JSC Energo-Pro*	In-kind	39,460,000
GEF Agency	UNIDO	Grants	75,000
Total Co-financing			56,095,000

* Represents 4 year contribution (length of project) of the co-financing letter from JSC Energo-Pro

TRUST FUND RESOURCES REQUESTED BY AGENCY(IES), COUNTRY(IES), FOCAL AREA AND THE PROGRAMMING OF FUNDS

GEF Agency	Trust Fund	Country Name/Global	Focal Area	Programming of Funds	(in $)		
					GEF Project Financing (a)	Agency Fee[a)] (b)[2]	Total (c)=a+b
UNIDO	GEF TF	Georgia	Chemicals and Wastes	POPS	3,910,000	371,450	4,281.450
(select)	(select)		(select)	(select as applicable)			0
(select)	(select)		(select)	(select as applicable)			0
(select)	(select)		(select)	(select as applicable)			0
(select)	(select)		(select)	(select as applicable)			0
(select)	(select)		(select)	(select as applicable)			0
(select)	(select)		(select)	(select as applicable)			0
(select)	(select)		(select)	(select as applicable)			0
(select)	(select)		(select)	(select as applicable)			0
(select)	(select)		(select)	(select as applicable)			0
Total Grant Resources					3,910,000	371,450	4,281.450

a) Refer to the Fee Policy for GEF Partner Agencies

D. PROJECT'S TARGET CONTRIBUTIONS TO GLOBAL ENVIRONMENTAL BENEFITS[5]

Provide the expected project targets as appropriate.

Corporate Results	Replenishment Targets	Project Targets
78. Maintain globally significant biodiversity and the ecosystem goods and services that it provides to society	Improved management of landscapes and seascapes covering 300 million hectares	*hectares*
79. Sustainable land management in production systems (agriculture, rangelands, and forest landscapes)	120 million hectares under sustainable land management	*hectares*
80. Promotion of collective management of transboundary water systems and implementation of the full range of policy, legal, and institutional reforms and investments contributing to sustainable use and maintenance of ecosystem services	Water-food-ecosystems security and conjunctive management of surface and groundwater in at least 10 freshwater basins;	*Number of freshwater basins*
	20% of globally over-exploited fisheries (by volume) moved to more sustainable levels	*Percent of fisheries, by volume*
4. Support to transformational shifts towards a low-emission and resilient development path	750 million tons of CO_{2e} mitigated (include both direct and indirect)	metric tons
82. Increase in phase-out, disposal and reduction of releases of POPs, ODS, mercury and other chemicals of global concern	Disposal of 80,000 tons of POPs (PCB, obsolete pesticides)	*1,100 metric tons oils consisting of 100 tons pure PCBs in approximate 300 tons of equipment and 1,000 tons of PCB contaminated oils.*
	Reduction of 1000 tons of Mercury	*metric tons*
	Phase-out of 303.44 tons of ODP (HCFC)	*ODP tons*
6. Enhance capacity of countries to implement MEAs (multilateral environmental agreements) and mainstream into national and sub-national policy, planning financial and legal frameworks	Development and sectoral planning frameworks integrate measurable targets drawn from the MEAs in at least 10 countries	*Number of Countries:*
	Functional environmental information systems are established to support decision-making in at least 10 countries	*Number of Countries:*

F. DOES THE PROJECT INCLUDE A "NON-GRANT" INSTRUMENT? NO

(If non-grant instruments are used, provide an indicative calendar of expected reflows to your Agency and to the GEF/LDCF/SCCF/CBIT Trust Fund) in Annex D.

[5] Update the applicable indicators provided at PIF stage. Progress in programming against these targets for the projects per the *Corporate Results Framework* in the *GEF-6 Programming Directions*, will be aggregated and reported during mid-term and at the conclusion of the replenishment period.

PART II: PROJECT JUSTIFICATION

A. DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN WITH THE ORIGINAL PIF[6]

N/A

A.1. *Project Description.* Elaborate on: 1) the global environmental and/or adaptation problems, root causes and barriers that need to be addressed; 2) the baseline scenario or any associated baseline projects, 3) the proposed alternative scenario, GEF focal area[7] strategies, with a brief description of expected outcomes and components of the project, 4) incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, CBIT and co-financing; 5) global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF); and 6) innovativeness, sustainability and potential for scaling up.

A.1.1) the global environmental and/or adaptation problems, root causes and barriers that need to be addressed

1. Polychlorinated biphenyls (PCBs) are among the first 12 substances classified as POPs and are listed in the Stockholm Convention under Annex A (elimination). These substances have been commonly used for almost 50 years after their first commercial synthesis as dielectric fluid, heat exchanger, hydraulic fluid, due to their excellent stability, fire repellency, and dielectric properties. The toxicity of PCBs was first reported in 1937, in a study published in the Journal of Industrial Hygiene and Toxicology. However it was only after the massive accidents of Kyushu, in Japan, that the concern raised by the scientific community was started to be considered seriously by the chemical industry. In 1977 Monsanto stopped the production of PCBs and in the subsequent decade, the production use of PCBs was banned in many countries. In 2004 the Stockholm Convention entered into force. In March 2013 PCB were classified by the International Agency for Research on Cancer (IARC) as human carcinogen.

2. PCB have been mostly used as dielectric fluid in transformers and electric equipment, under several commercial trade names like Arochlor, Pyranol, Clophen, Askarel, Sovtol, etc. In Georgia the PCBs were introduced up-to1980's as in various equipment and products mainly as Sovtol. Considering the long technical life of the equipment notably in transformers, capacitors and circuit breakers, the need for proper PCB management is still relevant. One of the major issues of PCB is that even equipment designed to work with non-PCB dielectric oil result often contaminated by PCB due to "cross-contamination" occurred during improper maintenance operations. This aspect is very evident in Georgia, where the contamination of dielectric oil in transformer is very widespread (around 20% of the transformers are PCB contaminated) however the majority of the transformers have a contamination below 1000 ppm.

3. Like in other countries, there are a number of barriers preventing a safe management of PCB in Georgia:

- Lack of sound regulatory framework for management of PCBs in Georgia. As the hazards and risks of PCBs were fully acknowledged only at ratification of the Stockholm Convention, the regulatory framework with obligations and guidance for the PCB holders have not been developed. This has hampered the initiation of action as well as basis for enforcement of safety in operations

- Lack of awareness concerning the issue of PCB in dielectric oil. This lack of awareness is particularly poor among potential PCB holders, electricity utilities and industries. This relates both to the knowledge of the

[6] For questions A.1 –A.7 in Part II, if there are no changes since PIF , no need to respond, please enter "NA" after the respective question.

[7] For biodiversity projects, in addition to explaining the project's consistency with the biodiversity focal area strategy, objectives and programs, please also describe which Aichi Target(s) the project will directly contribute to achieving..

risks, how to manage these and particularly on having a knowledge of PCBs and PCB contamination in the equipment in use. Testing for PCB is not carried out in the electric generation or distribution companies in Georgia.

- Financial constraints. As in many countries the electricity and industry sectors are struggling with various constraints from both crumbling infrastructure and difficulties in collecting fees with high enough margins. Due to the costs potentially associated to the treatment and/or disposal of PCB contaminated transformers, and in the absence of the enforcement of a legislation on PCBs, the budget allocated by the electric power sector to the PCB issue is minimal.

- Technical barriers. The above barriers have prevented the technical knowledge concerning the identification, management, treatment and disposal of PCBs contaminated equipment to evolve and develop. Consequently, the key stake holders do not have an understanding and preparedness to undertake and set-in place cost effective safe PCB management, including identification and treatment of PCB contaminated equipment through decontamination and disposal .

2) the baseline scenario or any associated baseline projects,

2.1. Baseline scenario and projects relevant to Project Component 1 (Legal, Institutional and Capacity Strengthening)

2.1.1 International treaties relevant to POPs and PCBs

4. Georgia signed the Stockholm convention on May 23, 2003. The Convention was ratified by the Georgian Parliament on October 4, 2006. The convention entered legally into force in Georgia since January 2, 2007.

5. Georgia also ratified a number of other conventions, namely:

    - The Basel Convention (entered into force in Georgia on August 18, 1999)
    - The Rotterdam Convention (entered into force in Georgia on May 28, 2007)
    - The Minamata Convention (signed on October 10, 2013)

6. In June 2014, the EU and Georgia signed an Association Agreement, which entered into force on July 1 2016. The Association Agreement envisages the removal of customs tariffs and quotas, and the approximating of the Georgian regulation – including environmental regulation – with the EU.

7. Environmental protection including waste and chemicals management is described in Chapter 4, section 6, article 306 of the Association agreement, as well in the amendment XXVI, which infers the laws be coherent to the relevant Euro directives and regulations.

8. With the intent of accomplishing the above-mentioned aim, active work is being done in developing legislation for regulating waste and chemical management, which would be in compliance with international standards.

2.1.2) Institutional arrangement and capacity in the field of POPs and PCBs management

9. Based on assessment and analyses of the Georgian legislation related to Management/Regulation of Chemical Substances the following public institutions are primarily responsible for management of POPs, including polychlorinated biphenyls (PCBs):

    - Ministry of Environment and Natural Resources Protection (MOENRP) of Georgia

- Ministry of Labour, Health and Social Affairs of Georgia
- Ministry of Energy of Georgia
- Customs Department of Georgia Revenue Service under the Ministry of Finance of Georgia

10. The Ministry of Environment and Natural Resources Protection (MOENRP) of Georgia is responsible to set and implement the state policy concerning the protection and rationale use of Natural Resources in the Country.

The main competences of the Ministry in the field of waste and Chemical management are:

- To organize and support sustainable development of the country and environmental planning system;
- To elaborate and implement the state policy, targeted programmes in the field of environment, Sustainable Environmental Development Strategy, National Action Programmes and Management Plans;
- To implement the State Management (regulation, licensing, accounting, supervision and control) function in the field of air, water, land, mining and biodiversity, waste and chemicals management;
- To organize and implement the monitoring on environmental pollution;
- To ensure the access to the environmental information;
- To support the Environmental education and environmental awareness;
- To elaborate the national report on the State of Environment (SOE);
- To elaborate National Environmental Action Programme (NEAP);
- To implement the regulation on environmental impact assessment and environmental permits;
- To monitor, in the Georgian territory, the substances causing ozone layer depletion;
- To organize the waste management;
- To define the priorities for cooperation with international organizations and foreign countries, and to coordinate and monitor the commitments and liabilities under the international environmental treaties.

The structural units of MOENRP involved in Waste and Chemicals management are:

- Wastes and Chemical Agents Management Service;
- National Environment Agency;
- Department of Environment Protection Policy and International Relations;
- Water Resources Management Service;
- Atmospheric Air Protection Service;
- Department of the Environmental permits and licenses;
- Environmental Supervision Department;
- Natural and Anthropogenic disaster risk management Service;
- LEPL Environmental Information and Education Center.

13. Ministry of Labour, Health and Social and Social Affairs of Georgia has the role is to ensure state policy concerning labour, employment, health and social protection of the population.

The responsibilities of the Ministry regarding the management of chemicals, including POPs, are:

- Elaboration, implementation and control the state programmes concerning the protection of health;
- Assess and monitor the health condition of population;
- Develop and implement priority activities in the field of maternal and child health and social protection;
- Ensure healthy environment in the whole territory of the country, develop, adopt and control of sanitary norms and rules

The main structural units of the ministry regarding the chemicals management are public health department and. Sakvarelidze National Centre for Disease Control and medical statistics national center.

14. Ministry of Energy. The role of the Ministry of Energy is to implement energy policy, analyze the existing situation and prepare recommendations, develop TORs in the field of energy; promote implementation of projects of cleaner production mechanisms. Ministry of Energy carries out the state policy in energy sector, participates in adoption of the state strategy and programs, studies their implementation and draws up the relevant recommendations. Ministry of Energy develops and implements short-, medium- and long-term strategies and priorities for the power sector of the country. One of the main objectives of the Ministry is to create the competitive environment in the energy market. Ministry has the right to make decisions on deregulation or partial deregulation of a specific segment of the sector. In addition, the Ministry is responsible for the environmental safety and ecological aspects during the project design.

15. The Revenue Service Customs Department of the Ministry of Finance of Georgia is the transboundary transportation custom's department in charge of cargos including waste and chemicals.

2.1.3) Legislation on POPs and PCBs

16. The Law of Georgia on Environmental protection regulates the relationship between the bodies of the state authority and the physical persons or legal entities in the scope of environmental protection and the use of nature on all Georgia's territory including its territorial waters, airspace, continental shelf and special economic zone. All the requirements of the multilateral treaties on Environmental protection are integrated in this law.

17. The law sets the standards of quality of the state of the environment, maximum permissible levels of pollutant and pathogenic microorganism in all the environmental media. Every five year the standards are reassessed and published in the document "On the Standards of Quality of the State of the Environment" which is elaborated and approved by the Ministry of Health Care, in compliance with the Ministry of Environment and Natural Resources Protection.

18. Resolution of Government of Georgia "On adoption the National Action Plan on POPs". Based on the Georgia National Implementation Plan of the Stockholm Convention, the Government of Georgia adopted the National Action Plan on POPs for the years of 2011-2015. The National Implementation Plan (NIP) is a strategic document set for the period of 2011-2015, aiming at an efficient and sustainable management of POPs in Georgia, so that to ensure protection of human health and the environment. According to this plan 3 priorities have been identified:

    - Priority No 1 – management of stockpile of obsolete pesticides;
    - Priority No 2 – management of equipment and wastes containing Polychlorinated biphenyls (PCBs);
    - Priority No 3 – reduction of U-POPs releases, with particular reference to emissions of PCDD/F.

19. The POPs management plan has been developed based on the identified priority areas, in consultation with the stakeholders. The plan contains the short- and medium-term activities. It sets goals, objectives, activities, expected results, responsible parties, timeframes, approximate costs and potential funding sources.

20. The Law of Georgia "Code on Waste Management" stipulates the "Polluter pays" principle and introduces the extended producer responsibility. The Law also introduces the obligation for legal or natural entities producing more than 200 tons of non-hazardous waste, 1000 tons of inert waste, or any amount of hazardous waste annually to prepare a detailed waste management plan. In accordance to this law the series of by-laws on waste classification, registration, collection, transportation, pre-treatment and temporary storage of hazardous waste have been developed.

21. The Code also stipulates elaboration of different action plans: "Action plans on the management of individual waste types such as – but not limited to – POPs, mercury, healthcare and animal waste, asbestos waste may be adopted additionally. These plans must be in conformity with national waste management plan".

22. Law on Transit and Import of Wastes on the Territory of Georgia (1997) and subsequent amendments regulates transit and import of wastes on the whole territory of Georgia. It prohibits import and disposal of wastes on the territory of Georgia. This law is under revision and amendment is expected until end of the year to ensure full compliance with the provisions of the Basel's convention. The need for the update of the law was also necessary for fulfillment of the obligations of Georgia under the Deep and Comprehensive Free Trade Agreements (DCFTA) and EU-Georgia association agreement.

23. Resolution of the Government of Georgia N145 on approval of technical regulations for special requirements of hazardous waste collection and processing determines special requirements of hazardous waste collection and processing as stated in the waste management codex article 20 part 2, as well as mechanisms of traceability mechanisms of hazardous up to the point of final deposition, requirements of individual waste stream management in regard to packaging, labeling and temporarily storing of hazardous material, like POPs, Asbestos, and oil. Aside from general requirements in individual waste streams, there are also some specific requirements.

    - According to the waste inventory, a producer of hazardous waste is obliged to prepare hazardous waste information sheet as soon as waste is classified as hazardous. The information sheet should comprise information about waste generation, classification and hazard characteristics, safety measures in case of accident and first aid procedures.

    - Waste packaging requirements are also defined by the Resolution. Packaging of waste should ensure minimization of the impact on human health and environment. The package of the waste must be resistant to its content. The responsibility on selecting appropriate packaging is the owner's responsibility.

    - The Resolution also implies requirements for temporary storage of hazardous waste. Facilities, where waste is stored in large quantity (more than 10 tons), required environment impact permission; facilities storing small quantities (2-10 tons) need only registration.

    - Facilities of temporary storage should be located on a place not exposed to natural disasters (floods, landslides).

24. Technical regulation on dielectric oil, PCBs, and electrical equipment.

In Georgia, there are a number of technical regulations which are impacted by the Stockholm Convention requirements on PCBs, or which should be considered in the implementation of the project with specific reference to activities like the regeneration of dielectric oil after PCB decontamination, or the replacement of PCB containing transformers:

- Georgian governmental resolution N 434 "Technical regulation – on approving the rules for technical operation of electric stations and networks"

- A number of technical standards inherited from the previous soviet administration, which are outdated and require significant amendment to make them compliant with the Stockholm Convention and the EU regulations or international requirements/standards:

    - Standard- ГОСТ 12869-77 Electrical insulating synthetic fluid oil. Specifications

    - Standard - ГОСТ 5775-68. Condenser Oil. Specification

o Standard - ГОСТ 10121-76. Transformer oil of selective purification. Specifications

o Standard - ГОСТ 13076-67. Synthetic oil ВНИИ НП 50-1-4ф. Specifications.

o Standard - ГОСТ 1282–79. Capacitors for power factor correction of electrical equipment with alternating current of 50 and 60 Hz

o Standard - ГОСТ 21791-76. Oils synthetic МАС-30НК. Technical requirements

o Standard - ГОСТ 16555-75. Three-phase oil-filled hermetic power transformers. Specifications

o Standard - ГОСТ 14209-69. Oil-immersed power transformers. Specifications.

o Standard - ГОСТ 10577-63. Petroleum products. Method for the determination of mechanical impurities.

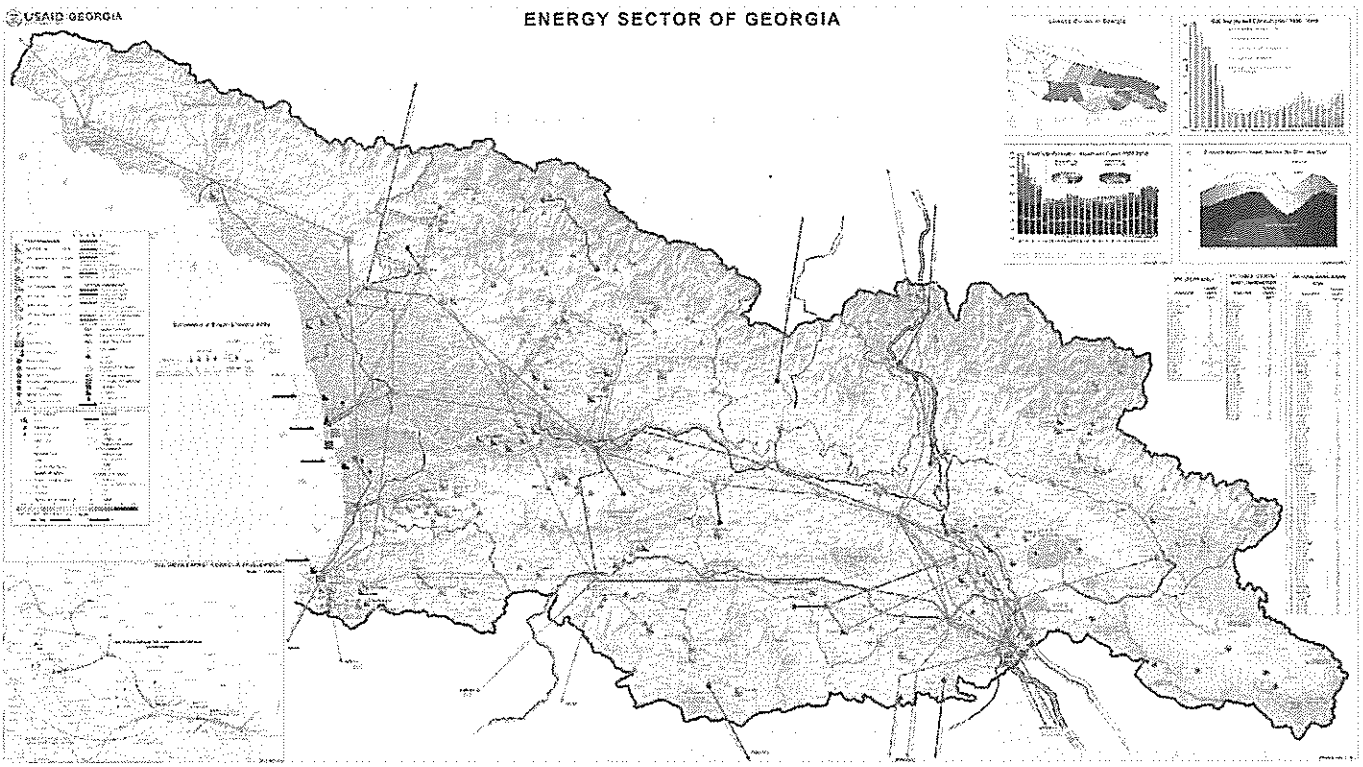
o Manual for electrical equipment testing volumes and norms

25. Gaps of the current legislation system with reference to the Stockholm Convention on Persistent Organic Pollutants.

- Georgia is a Party to the Stockholm Convention, however, at the moment no legislation addressing POPs exists, after the repealing of the former "Law on Hazardous Chemical Substances".
- Georgia lacks clear, coherent, implementable and enforceable legislation on most issues related to the handling and supervision of hazardous wastes and on (hazardous chemicals which includes POPs and Pesticides (as long as these are not wastes).
- A number of commitments under the POPs Convention as well as in comparison with existing EU legislation have not been transposed into Georgian legislation yet. This goes in particular for the legal national regime on POPs which is virtually no existent. Unfortunately, also the legal regimes on hazardous chemicals fall short.

2.2) Baseline scenario and projects relevant to Project Component 2 (Management and disposal of equipment containing high concentration PCB oils) and to Project component 3 (Technology transfer for long lasting PCB management capacity in the electricity distribution sector)

2.2.1) The structure of the electric power sector in Georgia



26. After Georgia became independent from the USSR in 1991, the inherited electric power system got into a deep financial crisis. That was caused by mismanagement, corruption, and the unavailability of previous subsidies, resulting in poor maintenance of the electric system and difficult access to fuel supply. In 1994 the availability of reliable electricity throughout the country was very low. In 1995, as a consequence of country stabilization, the electric power sector underwent a first reform. That resulted in the adoption of the four principles: (i) unbundling, (ii) establishment of an independent regulatory regime, (iii) commercialization, and privatization. In 1997 the Georgia Law on Electricity established the basis for the separation of the production, distribution and regulatory function of the electric system, and for a more transparent electricity market.

27. Telasi, the main distribution company in Tbilisi was privatized, and the US power company AES entered the Georgian market bringing more modern technologies on metering and billing. However, although Telasi improved dramatically its collection rates, the regional distribution units continued to suffer major inefficiencies and to experience quite frequent power interruption.

28. Therefore, after a number of restructuring involving the merging of small regional distribution companies in few companies large enough to attract foreign investment, in 2004 the Government undertake a second reform of the electric power system. The key point of this second reform were the assignment to MOE (Ministry of

Energy) the role of the regulatory entity of the energy market. Under this scheme MOE approves the energy balance for both electricity and power gas and issues decision on the extent of deregulation, while Georgian National Energy and Water Supply Regulatory Commission,GNERC, approves tariffs, supply and consumption rules, and fees for the Electricity System Commercial Operators (ESCO). Starting from 2008, ESCO was allowed to negotiate electric supply contracts with hydropower plants in conjunction with the government. Several new hydropower plants were built, and Georgia became a net exporter of electricity in the period 2007 to 2011.

29. In 2013 Georgia had an installed electricity generation capacity of about 3,339 megawatts (MWconsisting of 20 medium-large power plants and around 40 small hydropower plant. Hydro power generation is by far the largest source of power supply with 2657 MW, whilst natural gas is the second source 682 MW. Oil powered plant has become insignificant.

30. The power grid consists of a network of 6-, 10-, 35-, 110-, 220-, 330-, 500-kilovolt (kV) lines covering all the Georgia territory with the exception of some remote mountainous villages, and is interconnected with Armenia, Azerbaijan, the Russian Federation (through Abkhazia), and Turkey.

31. The transmission system belongs to three companies—JSC Sakrusenergo, Georgian State Electrosystem (GSE), and JSC Energo-Pro Georgia: Sakrusnergo owns 330-kV to 500- kV lines, GSE owns and operates 110-, 220-, and 330-kV lines, and several facilities down to 35-kV lines; JSC Energo-Pro Georgia has been involved with transmission since late 2014 with the completion of the 110kV Nigvziani line, which serves Poti and Ureki regions and low-voltage transmission lines. It is also constructing the Batumi-Muratli transmission line to Turkey, with commissioning expected soon.

32. The distribution network consists of 6-, 10-, 35- and 110-kV lines and substations, supplying electricity to about 1.45 million consumers. Power is supplied to small residential and commercial consumers at 220/380 volts and to large consumers at higher voltage.

33. Power is distributed by three distribution companies. JSC Energo-Pro Georgia is the largest distribution company, with high (35–110 kV), medium (6–10 kV), and low (0.4 kV) networks throughout most of the country (except in Tbilisi and the Kakheti region).

34. JSC Telasi is the second largest distribution company in Georgia, and owns high (35–110 kV), medium (6–10 kV) and low (0.4 kV) voltage networks in Tbilisi and surrounding areas, supplying about 2 billion kWh per year to its 492,813 customers. JSC Kakheti Energy Distribution is a distribution company operating in the Kakheti region, providing 200 gigawatt-hours of electric energy annually to its 138,872 consumers (GNERC 2014). The three companies currently serve almost 99% of Georgia, except for the disputed territories and a small population in remote mountain villages. All three distribution companies also buy electricity and sell it to their customers; under present legislation, distribution and supply are not unbundled.

2.2.2) PCB management in the power sector

35. Georgian State ElectroSystem (GSE): 4,270 tons of transformer oil are used in power transformers and oil circuit breakers owned by GSE. Oils are used in accordance with the pre-designed and approved schedule and volumes.

36. Oils are tested in the company's chemical laboratory in accordance with normative standards, voltages classes (10, 35, 110, 220, 330 and 500 kV), in terms of oil sampling points (main tank, contactor's tank, measuring transformers, oil circuit breakers) and oil conditions (new, regenerated, from dismantled equipment, etc.).

37. Based on the results of testing, oils with unsatisfactory dielectric characteristics, such as acidic, moist, dirty etc. undergo chemical regeneration using special regeneration equipment owned by the company and operated by the GSE staff. The new oils, which the company purchases through electronic tendering, are examined at regular standard intervals in the GSE chemical laboratory; while the secondary oils (removed from dismantled equipment) undergo chemical testing to assess the need for regeneration.

38. The company has a transformer repair group, which carries out current and capital repairs of transformers in accordance with the plan. The company also has an annual plan for maintenance of transformers, replacement / purchase, oil change /addition, etc.

39. According to the obtained data, oils removed from malfunctioning equipment and oils inappropriate for use are not being utilized. Oil testing on PCB content has not been conducted (PCB content testing has never been done in the company).

Table 1. Electrical equipment operating at GSE

Number of transformers							**Number of oil circuit-breakers**		**Total amount of oil, (tons)**
6 kv	10 kv	35 kv	110 kv	220 kv	330 kv	500 kv	35 kv	110 kv	4,270
9	91	34	56	34	3	16	71	53	

40. JSC Energo Pro Georgia's distribution network facilities: Equipment containing 8,997 tons of transformer oil is being used by Energo-Pro Georgia personnel in compliance with normative documents and predetermined plan. Oils are regenerated using degassing and centrifugation method to remove mechanical impurities, reduce humidity and acid, however, again, the regeneration of oil does not include determination or removal of PCB. Regenerated/treated oil is re-used in electrical devices, whilst oil not satisfying the technical standard in force is not used and is wasted in accordance with the Code of Waste Management.

41. Usually, the parts of out of order equipment that can be re-used in other equipment are kept in a storage workshop as spare parts for similar type of equipment (mainly circuit breakers). The equipment that cannot be used anymore for any purposes is sold out based on tender announcements. Usually all kinds of oil coming from the network are mixed together in tanks stored in the storage facility. After its regeneration, this oil is distribted back in the network without checking for PCB content, therefore the risk for cross contamination is high.

42. PCB oil-filled transformers have not been operating in Energo-Pro Georgia facilities, but there are 14 elements of КС2–10.5-67-2У3 PCB capacitors which stood idle since 1990 in substation Borjomi 2. Oil testing for PCB content has never been conducted by the company.

Table 2. JSC Energo Pro Georgia's Electrical equipment under operation

Number of transformers				Number of oil circuit-breakers		Total amount of oil (tons)
6 kv	10 kv	35 kv	110 kv	35 kv	110 kv	8997
28 42	8146	294	167	534	243	

43. JSC Telasi. Transformers containing 2,234 ton of dielectric oil are under operation in Telasi power facilities. Oil checks are carried out in accordance with predetermined plan at Telasi chemical laboratory. Oil unsuitable for use is regenerated in a special aggregate. Telasi periodically imports new Swedish and Russian oils via Ltd Jenti Trading.

44. Telasi has a transformer repair workshop where the overhaul of transformers is carried out. Oil testing on PCB content is not conducted. The equipment which is out of order is mainly repaired (6-10 kw transformers) within the company workshop. The company purchases in advance all necessary materials that are needed for repairing purposes and recovers transformers by its own means. In case the equipment cannot be recovered it is sold based on tender announcement as scrap metal. There is no procedure in place to prevent the selling of PCB contaminated equipment. The oil that is considered useful for further treatment is given to sub-contractor companies that recover or treat such oil. Afterwards, recovered oil is used back in the system mainly for topping up electric equipment. As there are no strict requirements for circuit breakers, such recovered oil mainly goes there.

Table 3. JSC Telasi Electrical equipment under operation

Number of transformers			Number of oil circuit-breakers		Total amount of oil (tons)
6-10 kv	35 kv	110 kv	35 kv	110 kv	2234.6
2032	22	46	40	65	

45. JSC Kakheti Energy Distribution. JSC Kakheti owns transformers containing an overall amount of 313 tons of dielectric oil. The company does not have a dedicated structure for oil management, or a chemical laboratory. Therefore, no systemic examination of oils is performed. Consequently, no testing of PCB in dielectric oil has never been conducted by the company. According to surveys, there are no PCBs in Kakheti Energy Distribution.

Table 4. JSC Kakheti Energy Distribution Electrical equipment under operation

Number of transformers 10 kv	Total amount of oil (tons)
1170	313

2.2.3) Preliminary data on the amount of equipment containing or contaminated by PCBs in the electric power system (NIP inventory)

46. In 2004-2005, as part of Stockholm Convention implementation, the program on "Preparation of the Persistent Organic Pollutants (POPs) National Implementation Plan under the Stockholm Convention'' was implemented in Georgia. The program was funded by the Global Environment Facility (GEF). The program covered the initial inventory of POPs, including PCBs, throughout the country and preparation of a National Implementation Plan for the implementation of the Stockholm Convention.

- The PCB inventory aimed at identifying and registering equipment and wastes contaminated or containing PCBs, as well as identifying their owners and exact location.
- Methodological guidelines and criteria developed by UNEP were used for the compilation of that inventory. The inventory was focused on electrical equipment filled with dielectric oil.
- The data collection concerning transformers has been carried out in 2,130 companies/enterprises, covering state, municipal and private sectors, functioning in various fields such as energy, metallurgy, chemistry and petrochemistry, transport, agriculture and food, timber processing.
- The inventory was carried out both in regional big capacity sub-station transformers (35, 110, 220, 500 kV) and distribution network small capacity transformers (6 and 10 kV).
- Analytical methods for identification of PCB contents (qualitative colorimetric analysis, quantitative gas-chromatograph method) were used. Each regional department selected transformers suspected of being PCB contaminated from their territories and tested their oil them by Chlor-N-Oil quick test-kits for PCB contents.
- Quantitative analyses were conducted for 45 samples, detecting PCB concentration from 120 to 1,000ppm.
- The results can be summarized as follow - 216 transformer with PCB contamination were identified. Out of the 216 identified PCB containing transformers, 46 are not anymore in use. The total tonnage of PCB oils in transformers is 632 tons in some 2,000 tons of equipment.

47. The below tables describe countrywide (per regions) inventory of transformers and its PCB containing oil

Region	Number of Transformers In use/not used	Total amount of oil, tons	Volume of oils found to be PCB contaminated	Number of PCB containing transformers
Tbilisi	2327 / 292	1200	186.17	23
Shida Kartli	858 / 110	300	7,5	3
Khashuri	623 / 73	165	49,5	21
Kvemo Kartli	1440 / 143	650	137	111
Imereti	2792 / 248	1500	90	8
Mtskheta-Mtianeti	891 / 93	350	8,0	3
Samtskhe-Javakheti	747 / 80	250	34,5	14
Poti	327 / 22	110	46	2

Guria	853 / 112	280	_	_
Kakheti	1257/ 53	430	4,8	2
Samegrelo-Zemo Svaneti	2103 / 174	1625	18,4	4
Kvemo-Svaneti-Lechkhumi	192 / 21	130	17,1	3
Achara	1026 / 95	350	17,5	19
Racha	324 / 26	65	16	3
Total:	**15760 /1542**	**7405**	**632,47**	**216**

48. Based on the extrapolation carried out during the NIP from the chemical analysis, it can be estimated that some 20-25% of the existing medium to small size transformers, totalling some 2000 pieces of equipment, are contaminated with PCBs. At that time, the amount of PCB contaminated oil was estimated to approximately 1,200 tons and the total volume of the PCB contaminated equipment at around 4,300 tons.

2.2.4) Quantitative data on the amount of equipment containing or contaminated by PCBs in the electric power system (sampling and analysis of dielectric oil carried out during project preparation)

49. In the course of the project preparation, additional analyses of dielectric oil sampled from electrical equipment were undertaken for the quantitative determination of PCBs. In total, 110 samples were tested.

50. As the manufacturing year reported in the nameplate of the electrical equipment is not always a reliable indicator of the age of the oil (which may have been replaced several times during the transformer lifecycle), the samples were photographed and classified by colour code to check whether a darker colour (theoretically caused by a longer exposure to the internal environment of the transformer) would be also associated with a higher frequency / concentration of PCB contamination.

51. In the table below, the results of the analysis conducted is summarised. Totally, out of 110 samples, 22 were found contaminated over 50 ppm. The underpinning overall amount of PCB contaminated oil was in the order of 84 tons, with an average concentration of 380 ppm and a maximum concentration exceeding the linearity range of the analyser (3000 ppm).

52. Samples classified as "brown" or "dark" were characterized by the higher percentage (respectively 21% and 48%) of positive (i.e. >50 ppm) cases and by the highest average PCB concentration (respectively 36 ppm and 241 ppm),

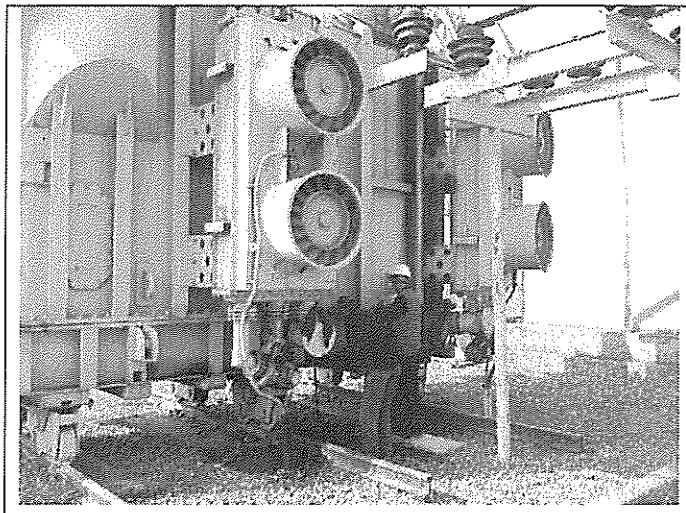
53. Assessed as per age of the transformer, the older transformers (manufactured before 1990) showed the higher percentage of positive cases (around 26% for transformers manufactured before 1980, and around 23% for transformer manufactured between 1980 and 1990) with a respective average PCB concentration in the order of 65 and 136 ppm. Detailed data of PPG stage sampling and analyses can be found in Annex H.

PCB concentration (ppm) by colour of the oil sample							
	% over 50 ppm	Positive samples	PCB min.	PCB avg	PCB max	Total samples	Average age (yrs)
Colourless	8.33	1	ND	7	64	12	6
Pale yellow	8.33	1	ND	31	351	12	29
Yellow	0.00	0	ND	11	27	12	32
Orange	0.00	0	ND	8	23	19	38
Brown	20.83	5	ND	36	245	24	40
Dark	48.39	15	ND	241	>3000	31	37
PCB concentration (ppm) by manufacturing year of the sampled equipment							
	% over 50 ppm	Positive samples	PCB min.	PCB avg	PCB max	Total samples	Average age (yrs)
Until 1980 included	25.58	11	ND	65	354	43	45
From 1981 to 1990	23.08	9	ND	146	>3000	39	31
From 1991 to 2000	0.00	0	ND	5	12	4	22
After 2000	12.50	2	ND	29	350	16	6
Unknown (breaker or oil in storage)	0.00	0	9	16	27	8	N/A

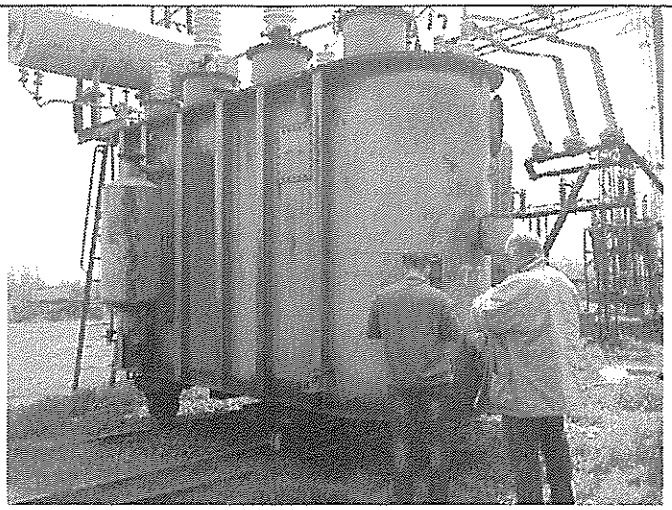
54. In summary, these data confirm the outcomes of the previous inventories of PCBs containing equipment, providing additional insights:

- The expected percentage of PCB transformer contaminated with a PCB concentration exceeding 50 ppm is in the order of 20%. The average PCB concentration for these transformers is in the order of 381 ppm.
- Older transformers (manufactured before 1990) have a higher probability of being PCB contaminated than relatively new transformers, however a significant probability of cross-contamination affects also relatively new transformers.
- The majority of the PCB contaminated transformers may be considered cross-contaminated (20 transformers with concentration between 50ppm and 1000ppm). The relevance of the cross-contamination issue is also revealed by the fact that out of the 110-transformers sampled, 60 were found with a level of PCB contamination higher than 5ppm
- However, in line with data from much wider inventories in other countries, around 10% of the contaminated transformers (2% of overall number of tested transformers) show a concentration greater than 1000 ppm.

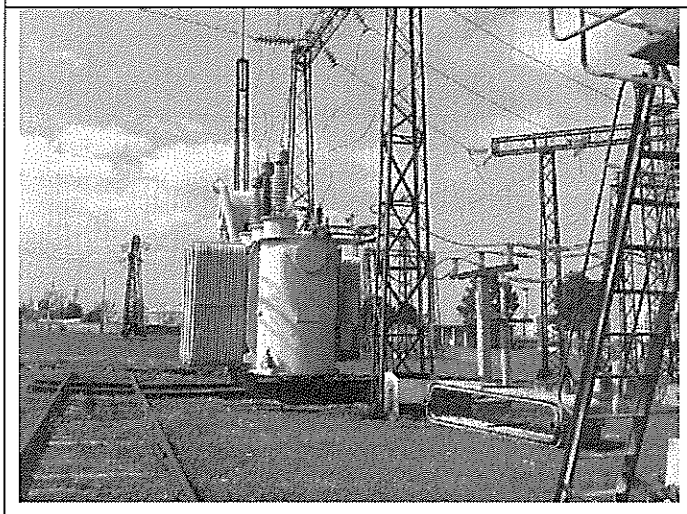
55. Based on the updated inventory of transformers from the four companies (GSE, JSC Energo Pro, Telasi and Kakheti), an overall number of around 15,000 transformers have been listed. Applying the proportion of 20% of low contaminated transformers and 2% of high contaminated transformer deriving from the sampling and testing of dielectric oil carried out at PPG stage, it may be estimated that around 2,500 tons of oil is contaminated with a PCB concentration up to 1,000 ppm, and that around 250 tons of oil is contaminated with a PCB concentration higher than 1,000 ppm.



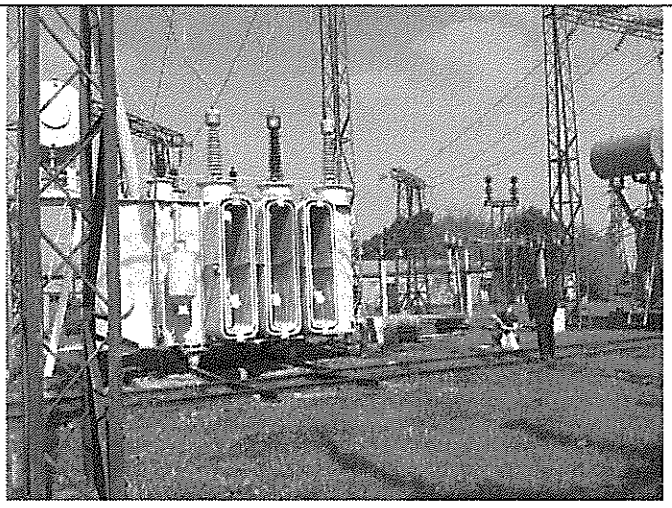
Inspection before sampling a large transformers in Georgia at GSE facility



Inspection before sampling a large transformers in Georgia at GSE facility



Transformer at an Energo Pro facility



Transformer at an Energo Pro facility

56. Based on the data above, it is confirmed that the country needs two types of technologies for the treatment or disposal of PCB contaminated oil and equipment:

- a dehalogenation technology for the treatment of PCB cross-contaminated oil, with the destruction of the PCB contained therein and the regeneration of the oil after decontamination.
- disposal services for the destruction of dielectric oil with high level of PCBs

57. Based on the information gathered on the management modality adopted by the power companies related to obsolete transformers, it is evident that there are no measures adopted to prevent PCB contaminated equipment being sold to scrap recyclers; similarly, there is no practice in place to prevent cross-contamination during transformer maintenance. For this reason, training of the personnel in maintenance workshop, as well as awareness raising and training of recyclers will be an important activity to be carried out during project implementation to prevent the further circulation of PCB contaminated equipment and oil.

1.3) the proposed alternative scenario, GEF focal area[8] strategies, with a brief description of expected outcomes and components of the project,

58. The initiative is well in line with the GEF Focal area strategies particularly Program 3: Reduction and elimination of POPs, which assists eligible parties to reduce and eliminate POPs listed in the Stockholm Convention. Projects in this program must propose activities that bring about measurable reduction of POPs. The program is aimed at supporting the application of technologies, techniques and approaches for eliminating stockpiles of POPs, POPs in products, and POPs containing waste.

59. The proposed project activity areas are in line of the obligations under the Stockholm Convention and have been thoroughly consulted with Government counterparts and national stakeholders.

Component 1. Legal, institutional and capacity strengthening

60. This component addresses the regulatory gaps to bring in the Georgian legislation in line with the Stockholm Convention requirements. Further specific technical and enforcement guidelines are developed and adapted to the local circumstances and rolled out through a capacity building program. This program is extended to raise awareness among high-risk groups including recyclers and women's groups that are either more likely to get exposed to PCBs or who need special protection due to the transfer of these toxins. These project activities are executing many of the activities under the regulatory, enforcement and control functions of the Ministry of Environment and Natural Resources Protection.

Outcome 1.1 Regulatory instruments and guidelines for safe PCB management adopted

Output 1.1.1 Development of PCB specific amendments in waste legislation.

61. As explained in section A.1.2, although Georgia ratified the Stockholm and Basel Conventions, and its legislation on waste is being harmonized with the EU regulations, specific rules on the management of PCB containing waste are still missing. The project will therefore develop specifically activities:

- Amendment to the existing legislation on waste aimed at the classification of PCB waste based on the PCB concentration (either if above or below 50 ppm). Moreover, obligations of companies on regular testing of dielectric oils and its cleaning/treatment against of PCB contamination

[8] For biodiversity projects, in addition to explaining the project's consistency with the biodiversity focal area strategy, objectives and programs, please also describe which Aichi Target(s) the project will directly contribute to achieving..

- Amendment to the existing legislation to clearly define, based on the rules of the Basel convention, whether a PCB contaminated transformers has to be considered as a waste;
- Allowed disposal modalities based on that classification;
- Inclusion of plants for the destruction of PCBs in the list of plants subjected to Environmental Impact Assessment
- Development of a national legislation concerning the PCB identification, inventory, labeling and phasing out, in compliance with the Stockholm Convention regulation.

Output 1.1.2. Development of technical guidelines covering all stages of PCB life-cycle

The project will develop the following technical guidelines to be integrated in the existing technical regulation on PCBs (see section 2.1.3):

- Technical guidelines for storage, handling, transportation, dismantling and decontamination of transformers.
- Technical guidelines for sampling dielectric oil from electrical equipment (online / offline; ground mounted and pole mounted transformers)
- Technical guidelines for the quantification of PCB in dielectric oil (screening and laboratory testing)
- Technical guidelines for the management of online transformers contaminated by PCB or containing pure PCB, including criteria for preventing PCB cross contamination
- Technical guidelines concerning the treatment / disposal of highly contaminated transformers
- Technical guidelines concerning the treatment of low PCB contaminated transformer by dehalogenation and retro-filling: concentration limit, quality criteria and quality checking modality
- Technical guidelines concerning standards, operation modality and selection of the main PCB dehalogenation technologies.
- Technical guidelines for the decontamination of transformer carcasses: quality and "end of waste" criteria for the recycling of metal components.
- Allowable PCB concentration in oil: new dielectric oil, fuel oil, waste oil for co-incineration as well as "end of waste" criteria for regenerated oil after decontamination.

Outcome 1.2. Capacity for PCB regulation enforcement created.

Output 1.2.1. Training of PCB holders and state inspectors in implementing the guidance.

62. As the development and enacting of new regulation and technical guidelines is not sufficient for ensuring that a proper PCB management is put in place and sustained, the project will at the same time perform training for the key stakeholders, which are the owners of PCB equipment and the environmental authorities. The training will be developed in two stages:

- The first stage is Training of Trainers (ToT), where the key technical staff of the environmental authority and power companies will be instructed on practical and theoretical aspects of the legislation and guideline developed (as outputs 1.1.1 and 1.1.2) and will be provided with all the training material; this ToT will be conducted by project staff (national and international consultants) through classroom and on-site training. It is envisaged that at least 20 trainers will be trained at the beginning of the project. Moreover, the selected representatives of Supervision Department (including regional office staff) of the Ministry of Environment and

Natural Resources Protection will be trained as trainers with relevant modules of training. The ToT will also include trainings of relevant representatives of power generation and distribution companies who will be able to make further follow up on it. The ToT will be preceded and followed by specific tests aiming at measuring the level of knowledge achieved by the attendants. Only the attendants achieving a minimum score (to be set at project implementation) will be certified as a trainer.

- The second stage is the Training replication stage, where the trainer certified in the ToT will train their staff on the relevant legislation and technical guideline. The replication stage of the training will include the development of periodic training programmes for environmental authorities, electric power generation and distribution companies. It is envisaged that in the course of project life, at least 150 staff will be trained but the certified trainees and at least 4 periodic training programmes will be developed. During project implementation some of the trainings within the replication stage will be attended by the project personnel to monitor and assess the information delivery in an efficient way.
- Training will involve also workers in the maintenance workshop, to teach them how to reduce the risks associated with the PCB contaminated equipment, and how to prevent cross- contamination during maintenance operation.
- Recyclers will also be involved in the training, in order to increase their knowledge on the potential risk brought by the presence of contaminated oil in transformer, how to minimize that risk during recycling operations, and on what type of information they have to receive from the sellers of transformer to ensure that these are not contaminated.

Output 1.2.2. Upgrading government capacity to enforce PCB regulations, including PCB information management.

63. One of the issues hindering the sustainability of a sound PCBs management system is the lacking of the capacity of the government to properly enforce the regulation. Therefore, under the project, assistance will be provided to ensure that clear roles, reporting obligations, inspection schedule for each party are properly identified and carried out. Procedures for the inspection of transformers, either online, stored pending maintenance or offline, will be demonstrated in at least 10 sites. The government will be provided with equipment for sampling and testing which will make it self-sufficient in undertaking inspections. In addition to that, the development of the PCB database, including the positioning of the PCB containing transformers, made available on the web through specific and password-protected access policies, will facilitate the prioritization of the inspections.

64. In addition to revamping the authority inspection capability, a number of measures will be studied to promote the implementation of the PCB regulation even from the side of the PCB owners:

- Development financial incentives to promote the replacement of PCB contaminated transformers, through the development of green funds (i.e. loans with a very low interest rate based on the fulfillment of specific environmental criteria by the applicants);
- Facilitation of the recycling of scrapping material (copper, lead, aluminum, steel) through the definition of proper standards and regulation (see output 1.1.2, technical guidelines 8) and 9)). It should be noticed that the recycling of copper can generate up to 7USD for each kg of copper, therefore representing a relevant financial source for the replacement of old transformers.

Output 1.2.3. Undertake targeted awareness raising for high-risk population groups.

65. Different population groups, which will be targeted by awareness raising initiatives, include:

- At-risk groups that are in increased risk of being exposed to PCBs in case of accidents or leaks. These activiites will have specific focus on the population living nearby PCB contaminated transformers

- Workers in transformers maintenance workshop or in charge of the operation on transformers; this will include specifically the workers of the GSE and JSC company who have transformer maintenance facilities; these workers will be informed on how to reduce risk associated with the PCB contaminated equipment, and how to prevent cross- contamination during maintenance operation.
- Recyclers, who would possibly purchase the obsolete transformers dismissed by the power companies. Recyclers will be informed on the potential risk brought by the presence of contaminated oil in transformer, and will be informed on how to prevent that risk and on the type of information they have to receive from the sellers of transformer to ensure that these are not contaminated. In this way, cross-contamination and re-circulation of PCB contaminated equipment will be avoided.
- The general population, which may be exposed to PCB released accidently by PCB contaminated transformers, particularly women's group for reaching out to current or future mothers regarding risk of exposure.
- Students in technical universities,
- Staff from the environmental authorities.

66. An awareness raising tool will therefore be developed in such a way to deliver information tailored to the specific target group. This will be made through:
    - Project staff holding lectures and conferences at schools or universities;
    - Publishing booklet and information pamphlets on the project and related issues to be delivered to the relevant staff of the power electric companies and the government
    - Developing a website, to be integrated in that of MoENPR, with different levels of information, including the technical documents generated during the project, accessible through customized access policies (also as part of Knowledge Management activities)
67. All awareness raising initiatives will be undertaken in such a way to ensure the access to women to any information generated by the project, and to develop information on POPs related issues specific for women and children.

Component 2. Management and disposal of equipment containing high concentration PCB oils

68. This project component will establish a process of identifying, phasing out and managing the pure and high concentration containing PCB equipment. The activities will ensure a safe management until phase-out of such equipment as well as build capacity and demonstrate steps for disposal of such high-rick equipment and wastes through international disposal operations. These processes will be undertaken under close oversight of the Ministry of Environment and Natural Resources Protection and in close cooperation with the electricity distribution companies cooperating in the project.

Outcome 2.1. Process for managing high-risk PCBs established.

Output 2.1.1. Verify pure or high concentration PCB equipment and manage them safely until replacement

69. In addition to equipment containing pure PCB (like capacitors or transformers originally filled with PCBs), there will be cases when the decontamination by means of chemical dehalogenation could be not feasible or not cost-effective. This is in general the case for all the pure-PCB containing capacitors (an amount of 150 tons of PCB capacitors containing around 50 tons of PCB has been identified so far) as well as for transformer with very high concentration of PCB at the end of their technical life. In the course of the preliminary inventory, around 2% of the transformers where found with a contamination level exceeding 1000 ppm, all manufactured in 1981.

70. The identification of pure PCB equipment will be preliminarily made through inspection in the Georgia electric power substation, considering that:

- A number of capacitor models produced prior to1990at Ustkamenogorsk and Serpukhov plants (former USSR) are PCB filled;
- For transformers, emphasis will be continuing on identifying equipment made in the Chirchik and Yekaterinburg Plants and models that were known to be filled with PCBs (sovtol).
- Identification of highly PCB contaminated equipment will continue through the inventory activities planned under output 3.1.1.

71. Once pure or high concentration PCB equipment is identified, they will be labelled and management with extreme care either through the disposal operation established under 2.2.1. or a phase-out schedule and risk mitigation scheme until their retirement.

Outcome 2.2. Reduction of health and environmental risks caused by PCBs locally and globally

Output 2.2.1. Transportation and disposal of 300 tons of PCB oils and associated equipment.

72. In the PPG phase it was preliminarily estimated, based on similar activities and inquiries with disposal service providers, that the transportation and disposal of 300 tons of pure PCB oil /equipment or of equipment highly contaminated with PCB would cost in the order of 3 to 5 USD/tons, for an overall amount of 0.9 to 1.5 million USD. As an alternative option, the shipment and disposal of only the oil and the local treatment of the carcasses could cost less, however this option would be only feasible if locally, the capacity for treatment of contaminated carcasses is available and sustained. Although that will be confirmed at project implementation stage through proper feasibility analysis, it is envisaged that the following strategy will be adopted:

- Pure and highly PCB transformers and capacitors would as well as highly contaminated oil already stored and also shipped abroad for disposal at facilities adhering BAT and BEP as defined in the Basel and Stockholm Conventions and their technical guidance for POPs disposal .
- The project will develop capacity for the treatment of carcasses of PCB highly contaminated PCB transformers to ensure that the recycling of copper and steel which could potentially bring a significant income – is carried out in an environmentally safe way.

73. Procurement of the transportation and disposal services will be carried out in compliance with conducted by/through UNIDO Procurement. All the activities will be carried out in compliance with the Basel Convention on the control of transboundary movements of hazardous waste and their disposal, the regulation of the country crossed during transportation, the Basel convention's "Updated technical guidelines for the environmentally sound management of wastes consisting of, containing or contaminated with polychlorinated biphenyls (PCBs), polychlorinated terphenyls (PCTs) or polybrominated biphenyls (PBBs)" and the relevant guidelines developed under the project.

Component 3. Technology transfer for long lasting PCB management capacity in the electricity distribution sector

74. Under this component a thorough process for transformer PCB detection and management of PCB containing equipment is established. The steps will include a thorough inventory taking, sampling and analysis for PCB content in parallel with setting up transformer maintenance and practices that will prevent further cross-contamination of transformers. With this capacity built at participating electricity companies technology for decontamination of PCB containing oils will be transferred and during a demonstration period 1,000 tons of such PCB containing oils will be processed. The main cooperating partners for this are the private electiricty distribution companies participating in the project as well as a dedicated operating entity that will be selected through a process lead by Ministry of Environment and Natural Resources Protection.

Outcome 3.1. PCB holders fully competent in PCB management

Output 3.1.1. Detailed inventory of the PCB containing transformers in all industrial sectors

75. At least 3000 transformers will be checked for the content of PCB in their dielectric oil, by means of screening quantitative testing with a portable chlorine-specific analyser, laboratory confirmation of the positive results, labelling, GPS positioning of the contaminated equipment, and data entering in a data base. In carrying out an inventory survey, specific attention would be given to the possible risk related to sampling activities and the countermeasures to be adopted, either in term of personal protective equipment or procedures. This activity will also envisage a strict quality control and quality check at all the different stages: during sampling, procedures will be established to ensure that sampled transformers can be traced back once the analysis is complete (chain of custody including establishment of a univocal sampling code and geo-referenced photos). The analytical step will include blind rechecking of a certain percentage of samples (around 2%) to verify the reliability of the analytical method and GC/ECD testing of around 10% of the samples analysed with a chlorine ion electrode, Doubtful samples will be prioritized and re-sampled as necessary. Around 2% of random re-sampling will be carried out to verify the reliability of sampling operations. This process will raise the capcity of the

Outcome 3.2. Workers health and environmental performance of sector increased

Output 3.2.1. Updated transformer maintenance with PCB management in place

76. This output envisages the establishment of procedures aimed at preventing the release of contaminated oil in the environment, the cross contamination of transformers during maintenance, and the identification of specific safety procedures to be adopted for PCB contaminated equipment in case of accident. A specific training module in the field will be delivered to ensure that transformer maintenance operators are trained on all the aspects related to the cross contamination of transformer and how to avoid it, from manufacturing, to ordinary maintenance, to major maintenance, to disposal. The training activities will be carried out specifically in the premises of the Electric Power Companies where infrastructure for transformer repairing and maintenance are in place, tentatively at GSE, which own both repairing and maintenance facilities and a laboratory, and JSC Energo pro, which is equipped with storage and maintenance facilities In addition , scrap recyclers, as potential buyers of obsolete electrical equipment contaminated by PCB, will be involved in the training.

Outcome 3.3. Technology transfer capacity established

Output 3.3.1. Procurement and testing of mobile PCB de-contamination technology.

77. A technology for the treatment of PCB oil and transformers will be identified and procured by/through UNIDO Procurement. The rationale for the treatment will be as following:

- Transformers with a level of contamination not greater than a few hundred ppm can be safely decontaminated through draining of the contaminated oil followed by a single cycle of refilling with clean oil. The drained PCB contaminated oil could then be treated by means of a dehalogenation technology capable to destroy the PCB contained in the oil and to regenerate the oil up to the requirements of ISO-IEC 60296 and ISO-IEC 60422 standards for dielectric oil. In this case, it would be more cost-effective to mobilize only the oil to be decontaminated, without mobilizing the PCB disposal technology. The treatment of this class of equipment would only generate a small amount (around 1kg/ton) of non-POPs waste (mostly oily sludge containing polyphenols and salts) with a level of PCB below 5 ppm.
- Transformers with a higher level of contamination could require more than one cycle of draining and retrofilling. Based on the remaining residual lifetime for the transformer, it will be assessed what is the more cost-effective option between phasing out of the transformer and subsequent treatment of the oil and of the

carcasses and multiple-cycle retrofilling. The phasing out of these transformers would produce a stream of solid waste contaminated by PCB which needs to be exported for treatment (contaminated wood and paper) plus a stream of recyclable scrap which can generate a significant income.

- Large PCB contaminated transformers (for instance, power step up transformers) need to be treated on site, as their transportation may be problematic. In these cases, a portable technology could present significant technical and financial benefit. The same applies for transformers which treatment would require multiple cycles of draining and retrofilling.

78. Based on that, the procurement of the technology for PCB decontamination will envisage the following:

- A technology with a capacity of at least 500 t/ year for the treatment of PCB contaminated oil.
- A regeneration unit capable of bringing the treated, PCB free oil up to the ISO 60296 and ISO 60422 standards.
- Portable pumps for draining PCB contaminated oil from electrical equipment and refilling electrical equipment with treated, PCB free oil.
- Reagents and the spare parts for the treatment of not less than 1000 tons of PCB contaminated oil.
- Technical assistance and training on the use of the technology by the technology vendor.

Outcome 3.4. Sustainable PCB processing introduced in Georgia.

Output 3.4.1. 1,000 tons of PCB containing oils rendered harmless in electricity distribution network.

79. Around 1000 tons of PCB oil will be treated by means of the technology procured under output 3.3.1. It is expected that the technology would be operated by an operating entity. The operating entity will be selected through an open process lead by MoENPR and is envisaged to continue the operation on a cost recovery basis after the project demonstration phase. During the demonstration phase the operating entitiyt will be in charge of the following:

- Transportation of PCB contaminated electric equipment and oil and of decontaminated electric equipment and oil from-to the facility; trucks for the transportation;
- Transportation of the PCB destruction equipment to the transformer site, when needed and only if the equipment provided is a mobile equipment;
- Safe storage of PCB contaminated equipment and oil pending treatment;
- Draining of PCB contaminated dielectric oil from transformers;
- Operating the PCB decontamination technology;
- Regeneration of decontaminated oil to be used for retrofilling transformers;
- Carrying out transformer refilling with PCB free regenerated oil

Component 4 Monitoring and Evaluation

Outcome 4.1. Assessment of the impact of project activities including lessons learned

Output 4.1.1. Project impact indicators designed, applied and project implementation monitored and evaluated

79. The monitoring and evaluation activities are described in detail in section C of this document. This includes the mandatory mid-term and terminal evaluations.

4) Incremental / additional cost reasoning and expected contribution from the baseline, the GEFTF and Cofinancing.

Component 1. Legal, Institutional and capacity strengthening

Baseline project/gaps identified	Alternative Scenario with GEF project
In June 2014, the EU and Georgia signed an Association Agreement, which entered into force on July 1 2016. An important component of this association agreement includes the harmonisation of the environmental protection regulations, including waste and chemicals management. The country is therefore undertaking active work in developing legislation for regulating waste and chemical management, to be aligned with the EU regulation. That should also include a regulation on POPs and PCBs. However, as of today, a number of commitments under the POPs Convention, related to existing EU regulation on POPs as well, have not been transposed into Georgian legislation yet. This goes in particular for the legal national regime on POPs and PCBs which is virtually no existent. As a consequence, there is not a permanent structure in the Government dedicated to the management of POPs, which is also reflected to the lack of interest in relevant stakeholders (in this case, the owners of electric equipment potentially contaminated by PCBs) to address the issue.	The project intends to speed up the adoption and enforcement by the Georgian government of provisions related to the management of PCBs. More specifically, under component 1, the project intends to assist the country in the development and enforcement of specific rules and standards on the management of PCB containing waste, as well as development of technical guidelines concerning all stage of the lifecycle of equipment containing or contaminated by PCBs. This support is highly catalytical, as it benefits the high commitment of the country to align its regulation with the international conventions and EU regulation. Project component 1 envisages the following outputs. 1.1.1 Development of PCB specific amendments in waste legislation 1.1.2. Development of technical guidelines covering all stages of PCB life-cycle 1.2.1. Training of PCB holders and state inspectors in implementing the guidance. 1.2.2. Upgrading government capacity to enforce PCB regulations, including PCB information management 1.2.3. Undertake targeted awareness raising for high-risk population groups.
Co-financing associated to component 1. Ministry of Environment and Natural Resources USD 900,000 Ministry of Energy: USD 300,000 Private sector 2,500,000	GEF grant related to this component. USD 500,000

Components 2 and Component 3. Management and disposal of equipment containing high concentration PCB oils and Technology transfer for long lasting PCB management capacity in the electricity distribution sector

Baseline project	Alternative Scenario with GEF project
Most of the power generation or distribution companies have policies related to the quality check of dielectric oil, laboratories, workshops and dedicate and experienced staff for the maintenance of transformers, as well as policies aimed at replacing obsolete or old transformers. These capacities and infrastructures may be considered as a valuable resource which can be of support in case procedures and technologies for the environmentally sound management of PCBs are established. However, there is currently no policy in place in the electric sector for verifying the content of PCB in dielectric oil of transformer or capacitors, and for handling PCB contaminated equipment. The situation is also caused by the lack of a proper regulation on PCB management, and will likely continue to remain unchanged until this regulation will be not enacted enforced and enforced. In Georgia, there are no available technologies for the destruction or treatment of electrical equipment contaminated by PCB. As the knowledge of power companies on the PCB decontamination technology is very low, the risk is that company may be asked to pay for PCB destruction service is disproportionately high. As far as cross-contamination issues are concerned, this problem is relatively unknown in the power sector; as PCB concentration in the dielectric oil is not tested, what may happen is that oil drained from transformers under maintenance is mixed together in oil reservoir and then used to refill the transformers. The result is a widespread contamination of the transformers which underwent maintenance. Currently, based on the preliminary inventories carried out, it can be estimated that in Georgia around 20% of the transformers are contaminated by PCB at a level exceeding 50 ppm, out of which around 10% have a concentration of PCBs exceeding 1000 ppm. Therefore, the need to address the PCB issue is quite urgent.	The project will complement the existing capacity of the companies in term of transformer maintenance by upgrading it with routine checks for PCBs and by technology and technical capacity to destroy PCBs in the most cost-effective way. This will occur through the identification of the best technology based on the level of contamination of PCBs. Equipment filled with pure commercial PCB mixtures or with dielectric oil with very high concentration of PCB will be therefore selected for final disposal in international facilities compliant with the BAT/BEP established under the Stockholm convention and the Basel convention, at no cost for the owners, for an amount estimated maximum in 300 tons. For transformers t or oil contaminated with a lower level of PCB (higher than 50 ppm but lower than few thousands ppm) the project envisages the identification of a proper chemical dehalogenation technology which will be used to destroy the PCB contained in dielectric oil and to regenerate the dielectric oil up to the international standards set for dielectric oil. Project component 2 envisages the following outputs: 2.1.1. Verify pure PCB equipment and manage them safely until replacement 2.2.1. Transportation and disposal of 300 tons of PCB oils including associated equipment. Project component 3 envisages the following outputs: 3.1.1. Detailed inventory of the PCB containing transformers in all industrial sectors 3.2.1. Updated transformer maintenance with PCB management in place 3.3.1. Procurement and testing of mobile PCB de-contamination technology 3.4.1 1,000 tons of PCB containing oils rendered harmless in electricity distribution network.

Baseline co-financing from current capacity of Electric Companies in term of staff, equipment and infrastructures dedicated to transformer maintenance. JSC "Georgian State Electro System" equity co-financing of approximately 2,850,000 USD and in-kind support of approximately 5,650,000 JSC "Energo Pro": equity co-financing of approximately 6,860,000 USD and in kind support of approximately 37,960,000 USD	GEF grant related to component 2 GEF grant related to component 3

5) Global environmental benefit

80. As an immediate benefit, the project intends to ensure the removal and destruction of around 1000 tons of oil cross-contaminated by PCBs and around 300 tons of pure or highly contaminated PCB oil including its associated equipment.

81. The project will ensure the sustainability and replicability of global environmental benefits in several ways:

- By developing, adopting and enforcing regulations and guidelines on the management of PCBs, compliant with the Stockholm Convention and the EU regulation;
- By enhancing the capacity of the Environmental Authorities to monitor and control the management of PCBs undertaken by the owners of PCB containing equipment;
- By demonstrating technologies for the decontamination of dielectric oil capable to destroy the PCB content of the oil and to regenerate the oil up to the proper IEC standard: this will ensure that treating oil in an environmentally safe manner is financially sustainable;
- By training PCB owners on the Environmentally Sound Management of PCB equipment.

6) Innovativeness, sustainability and potential for scaling up

82. Dehalogenation technologies can no longer be considered innovative as they are commercially available worldwide and indeed they now represent the standard for PCB destruction. Indeed, PCB are the only POPs for which a specific set of technologies have been designed, tested and commercialized. The innovativeness here lies in the fact that PCB dehalogenation technologies have never been used before in Georgia.

83. A certain level of innovation may be however explored with some specific aspect of the dehalogenation technologies, among which the following are of specific interest for Georgia:

- For Georgia, it will be the first time that the transfer of a technology for destroying POPs takes place. The project will provide the authorities and PCB holders with the knowledge to use and improve the technology in the most cost/effective way. This may also include exploring, in addition to metallic sodium, which is the most used reagent in dehalogenation, other reagents or reagent mixtures for the dehalogenation of PCB oil, allowing

to reduce both the environmental risk associated with the high reactivity of metallic sodium, and the financial risk associated the cost of this reagent, representing often the highest operational cost for dehalogenation operation. Currently this trend is explored by the main vendors of dehalogenation technologies and if it will reach a commercial status before project implementation, it will be considered as one of the requirements of the technical specification for bidding purposes.

- Adopting innovative and cost-effective technologies for the regeneration of dielectric oil after the PCB contained therein has been chemically destroyed. There are currently a number of approaches that can be considered for the regeneration of dielectric oil, developed by different vendors. Considering that the regeneration of oil after PCB destruction is one of the main ways to ensure the sustainability of PCB decontamination of the transformer, specific attention will be paid to this technology component.

84. Concerning the scaling up of the project, it is expected that once demonstrated from the technical and financial standpoint, the PCB decontamination service will become the preferred system in Georgia for the treatment of PCB contaminated transformers. Within Georgia, however, the scaling up will rely not only on the availability of a technology for the destruction of PCB, but also on the existence of a clear regulatory framework, containing clear obligation for the industries, timelines, incentives and penalties, as well as an intensive enforcement program. Therefore, to ensure the replication of project activities, the long-term sustainability of the technology, and their scaling up, the project is working simultaneously on the regulatory framework and on the implementation of a reliable PCB disposal technology. The involvement of the project executing entity or its subcontracted entity in charge of managing the PCB disposal operation, which will continue the operation on commercial basis even after project closure, is also a key aspect in ensuring that the project activities can be successfully scaled up.

A.2. Child Project? If this is a child project under a program, describe how the components contribute to the overall program impact.
N/A

A.3. Stakeholders. Identify key stakeholders and elaborate on how the key stakeholders engagement is incorporated in the preparation and implementation of the project. Do they include civil society organizations (yes ☒ /no☐)? and indigenous peoples (yes ☐ /no☒)? [9]

- No indigenious people will be involved in the project

Institution	Function / role in the project
Ministry of Environment and Natural Resources Protection (MOENRP) of Georgia	**Main functions:** Ministry of Environment and Natural Resources Protection (MOENRP) of Georgia is responsible to carry out the state policy in the protection and rationale use of Natural Resources in the Country. Its competence is to coordinate the management of chemicals/waste (including POPs) in Georgia and to implement relevant policy. The MENRP is a DNA for the following conventions: Basel, Roterdam, Stokholm, Minamata conventions and Monreal protocol. The main structural unit of the ministry responsible for the chemicals management (including POPs management) is the Wastes and Chemical Management Service **Role in the project:** MOENRP will be the lead national partner of the project. It will also lead the project steering committee (PSC).

[9] *As per the GEF-6 Corporate Results Framework in the GEF Programming Directions and GEF-6 Gender Core Indicators in the Gender Equality Action Plan, provide information on these specific indicators on stakeholders (including civil society organization and indigenous peoples) and gender.*

Ministry of Labour, Health and Social Affairs of Georgia	**Main functions:** Competence of the Ministry is to draft and enforce the state policy of the labour, employment, health and social protection of the population. In particular this Ministry is in charge of the elaboration, implementation and control the state programmes of health protection; assessment and monitoring the health condition of the population; development and implementation of priority activities in the field of maternal and child health and social protection; ensure healthy environment at the whole territory of the country, development, adoption and control of sanitary norms and rules- **Role in the project:** MoLHSA will be a member of the PSC with the key role to provide indication on the risk management measures and personal protection equipment (PPE) adopted by the operators involved in PCB management.
Ministry of Energy of Georgia	**Main functions:** Implementation of energy policy, analyze the existing situation and prepare recommendations, development TORs in the field of energy; promote implementation of projects of cleaner production mechanisms. **Role in the project:** MOE is a key partner of the project. It will be a member of the PSC and will take part in the development of regulation concerning PCB in dielectric oil and electric equipment, and will coordinate with the electric power industry.
Customs Department of Revenue Service under the Ministry of Finance of Georgia	**Main functions:** Management of control of Transboundary movement and custom's clearance of goods including waste and chemicals. **Role in the project.** The custom department will be a member of the PSC, with the main task to provide support in the drafting of rules concerning import and export of electrical equipment and oil. The custom department will be of support also in the clarification of procedures for the import of equipment related to the project.
Local Administrations (Municipalities)	**Main functions:** Municipalities are responsible for collection and processing of municipal waste, and the control of environmental pollution in their territory. Municipalities adopt a Municipal Waste Management Plans for the management of the municipal waste produced within their territory. **Role in the project:** Municipalities have to be informed on the activities to be carried out in their territory, with special reference to the establishment of PCB treatment technology and storage of PCB contaminated equipment. Their role in the awareness raising activity is very important.
JSC "Georgian State Electrosystem" (GSE), JSC "Telasi", JSC "Energo Pro", JSC "Kakheti Energy Distribution"	**Main functions**: JSC GSE is one of the largest transmission companies (there are three other transmission licensees in Georgia) providing the electricity transmission from hydro, thermal and wind power plants to power distribution companies (JSC "Telasi", JSC "Energo-Pro Georgia", JSC "Kakheti Energy Distribution") and direct customers (large companies). GSE provides power transmission and dispatch services all over the country. In this status, GSE provides the overall coordination of the country's electricity system and balancing of electricity supply and demand. Company also regulates the exchange of electricity with neighboring countries and is actively cooperating with network operators in neighboring countries. JSC "Telasi" is one of the major network companies of Georgia, carrying out distribution and sale of electric power in Tbilisi. The main kinds of activity: purchase and sale of electric power; operation and maintenance of power grids; services for electric power transit; administration of integrated and coordinated system of power supply. JSC "Telasi" serves the capital of Georgia.

	Annual power consumption in Tbilisi makes approximately 2 billion kilowatt-hours. JSC "Energo-Pro Georgia" is one of the largest transmission companies in Georgian energy market that, except Tbilisi and Kakheti regions, owns high (110kv) voltage , the medium (35-10kv) voltage and the low (6-0,4kv) voltage networks on the whole territory of Georgia. The main features of company activities: Distribution of electric energy; Production of electric energy; Electric energy transit; Technical service of its subscribers. Energo-Pro Georgia provides 2.150 billion electric energy in a year and distributes to 850 000 subscribers. Thus, companies' sales amount of electric energy is equal to 40 percent of electric energy use in Georgia JSC "Kakheti Energy Distribution" is the only distribution company in Kakheti region established on April 15, 2003. The main tasks of the company are: distribution of electric energy; provide services and bill collection through the 8 service-centers located in every administrative region in Kakheti. Kakheti Energy Distribution serves 117 058 subscribers. Its average use in a year use is 200 million kilovolt per hour. **Role in the project**: As owners of a large number of transformers, some of which are PCB contaminated, these JSCs are key beneficiaires of the project and a co-financing partners. As co-financing the private sector companies are providing their staff both for capacity building, inventory taking as well as ensuring PCB and potentially PCB containing equipment are safely handled. The investment co-financing is towards setting up facilities for separate and safe PCB handling and maintenance as well as investment in non-PCB replacement equipment and changes in the distribution infrastructure as a part of the replacement. Private sector entities will also be provided technical assistance in all the operation related to the handling of transformers, including sampling, draining, retro-filling, packaging and transportation, and will participate in training activities with their technical competence on the management of electric assets. These companies have also a key role in the project's awareness raising activities.
The Regional Environmental Centre for the Caucasus (RECC)	**Role in the project :** Project Executing Entity (PEE) on an interim basis
Greens Movement of Georgia	**Role in the project:** Facilitate distribution of PCB risks related information and awarenness through its channels
Black Sea Eco Academy	**Role in the project:** Provide assistance and support in PCB related capacity building and awareness activities
Women's groups	**Role in the project :** Provide advise and facilitate dissemination of PCB risk related information through their channels.

A.4. Gender Equality and Women's Empowerment. Elaborate on how gender equality and women's empowerment issues are mainstreamed into the project implementation and monitoring, taking into account the differences, needs, roles and priorities of women and men. In addition, 1) did the project conduct a gender analysis during project preparation (yes ☒ /no☐)?; 2) did the project incorporate a gender responsive project results framework, including sex-disaggregated indicators (yes ☒ /no☐)?; and 3) what is the share of women and men direct beneficiaries (women 30%, men 70 %)? [10]

85. A gender analysis was conducted during project preparation, and is attached as Annex E. Among others, the gender analysis generated the following recommendations:

- To develop an organizational structure and HR guidelines incorporating specific gender mainstreaming considerations (particularly relevant for the Public entities and JSC "Telasi" and JSC "Georgian State Electro System");
- To pay attention and analyze gender equality related legal acts being reflected in sectorial laws.
- To prepare a communication strategy campaign for raising awareness about the gender issues related to energy sector and its effect on life of men and women;
- To hold gender training for target groups and risk population groups;
- To hold gender training for the staff of the target stakeholders (energy companies, ministries);
- Make gender assessment of final outcomes.

86. These recommendations have been integrated in the project as follows:

- Based on the outcome of that analysis, the project framework integrated gender mainstreaming activities and specific gender mainstreaming indicators.
- In addition, the monitoring and evaluation component will specifically assess the impact on gender mainstreaming activities with reference to the gender-specific indicators.
- In terms of environmental and health benefit, the project will ensure that a source of environmental risk (PCBs) is removed. This will positively impact both male and female population. Incidentally it shall be noticed that is well known that PCBs accumulates in breast milk, therefore the elimination of PCB sources from the environment could have proportionally a wider beneficial impact on pregnant women and infants during the lactation period of their life.
- The project staff will endeavour to ensure that the new job posts made available under this project, or as an effect of the project implementation, are equally shared among female and male.
- In the course of the development of training and raising awareness modules, the project staff will endeavour to ensure that training is equally participated by male and female, and that it includes women-specific aspect related to the impact of PCB on the health and the adoption of proper PPE.

[10] Same as footnote 8 above.

A.5 Risk. Elaborate on indicated risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, the proposed measures that address these risks at the time of project implementation.(table format acceptable):

Type of risk	Description	Level	Probability	Counter measures adopted.
Financial	The allocated budget is not sufficient for achieving the expected disposal target	M	L	The expected budget is in line with current international market prices for PCB destruction. However, prices for PCB disposal will be carefully monitored through inquiries with vendors and proper procurement.
Financial	PCB holders not willing to cover their part of operational cost of PCB decontamination technologies.	L	L	Compared with the market situation, which will arise after the enacting and enforcement of the PCB regulation in Georgia, thanks to the GEF contribution, the cost for disposal of PCB will be only a fraction of the cost the enterprises would be asked to pay without the project. Therefore, the technological option set up by the project will be the most cost effective for PCB owners, even if they will be to cover part of the operational cost.
Improper management of PCB equipment	PCB holders starting to get rid of PCB equipment in improper way before project implementation.	H	L	A successful cooperation has been already secured with electric enterprises owning most of the PCB contaminated equipment. The project will however envisage the enforcement of custom surveillance and inspection carried out by the authority to prevent any improper disposal or export of PCB contaminated transformer.
Management	Timing for enacting a new legislation on PCB too long for having the regulation in place during project implementation.	M	M	The project will prepare a Sub-legislation under the Waste Framework Law, which will be the most effective and fast way to establish a new regulatory tool for managing PCBs. In this way, the PCB regulation can be enacted within one year from project starting
Management	Weak coordination among stakeholders	M	L	The project management modalities and institutional arrangement, with the establishment of a PEE and a PSC, will ensure a proper and continuous

				coordination among stakeholder.
Environmental (climate change)	Climate change induced flooding making transport and handling of PCBs riskier	L	L	Ensure that the PCB Management plan takes into account weather disturbances during its execution. This will be further addressed in the project's Environmental and Social management plan (attached)
Environmental (climate change)	Increased flooding episodes making previously safe transformer sites more risky operations	L	L	This risk will be included in the priority setting criteria, when deciding on the equipment to be targeted
Environmental (pollution)	Leaking of PCB during project operation	H	L	This risk will be minimized through proper adoption of international best practices aimed at preventing any PCB spillage and establishing a sound accident preparedness.
Environmental (human exposure)	Project staff exposed to PCB during project operation	H	L	This risk will be minimized through proper adoption of internationally approved risk management measures including PPE and Standard Operational Practices aimed at avoiding any direct exposure to PCBs. The technical staff will be trained on proper handling of PCB wastes and equipment. Relevant guidelines will be developed or adjusted and introduced at the technical facilities of the project.

A.6. Institutional Arrangement and Coordination. Describe the institutional arrangement for project implementation. Elaborate on the planned coordination with other relevant GEF-financed projects and other initiatives.

87. The institutional arrangement for project implementation is provided in Figure 4 below. UNIDO is the GEF Implementing Agency (IA) for the project. A project manager will be appointed in UNIDO HQ to oversee the implementation of the project, assisted by a support staff.

88. The Ministry of Environment and Natural Resources Protection (MOENRP) of Georgia, and in particular it's Waste and Chemical Management Service (WCMS) will be the lead executing agency for the project. Co-executing institution will be the Ministry of Energy of Georgia.

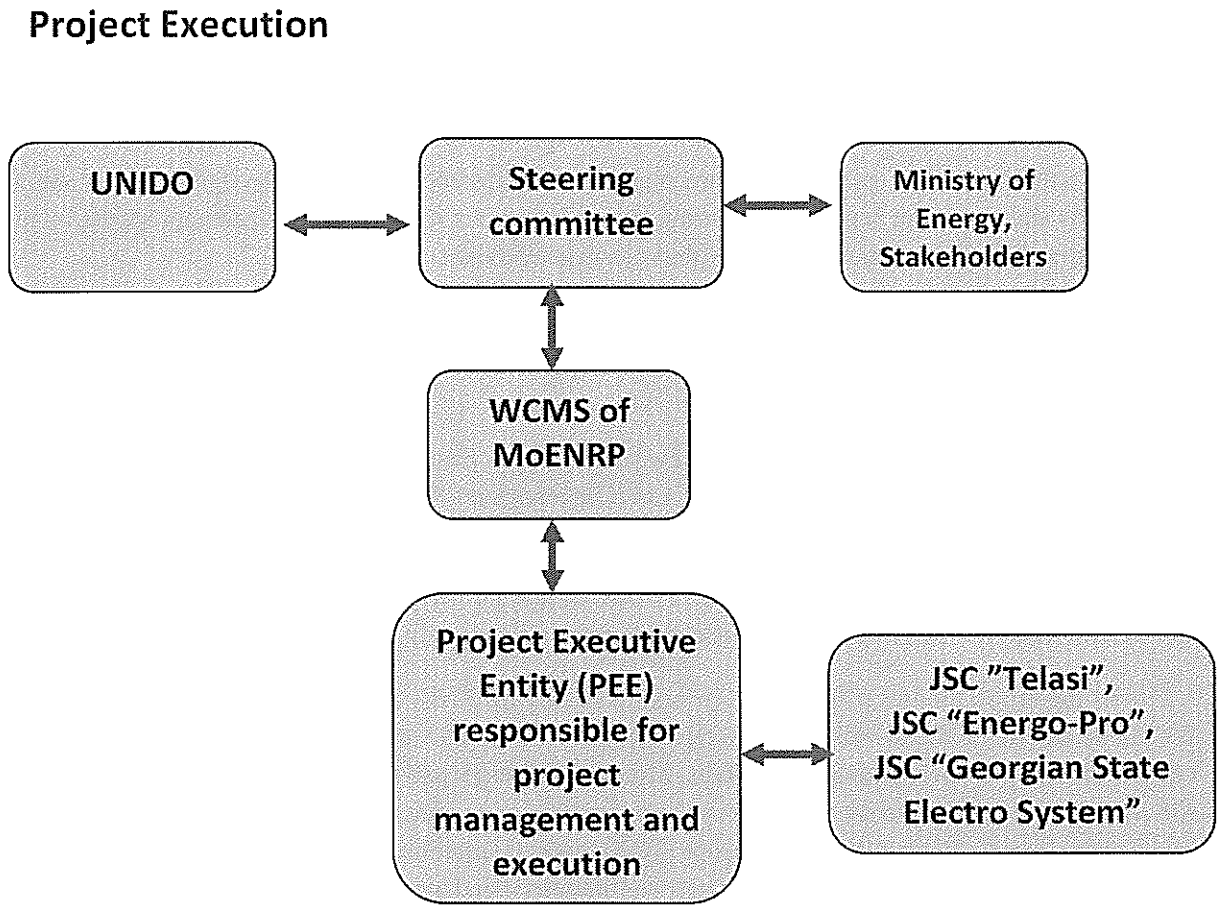


Figure 4. Project implementation structure

89. A National Project Director (NPD) will be appointed from WCMS of the MEPNR and would chair the Project Steering Committee.

90. The Regional Environmental Centre for the Caucasus (RECC), with technical competence and administrative preparedness for entering into delivery-based contracts, will serve as the Project Executing Entity (PEE). The tasks covered by this contract will be related to project outcomes and outputs 1.1; 1.2; 2.1; 2.2; 2.1.1.; 3.1; 3.2; 4.1 as well as overall project management activities. This arrangement will be reviewed annually based on audits and efficiency assessments. Based on this review, the Project Steering Committee will recommend the continuation or changes in the project execution entities or arrangements.

91. UNIDO will provide mutually agreed grant resources for the project technical and managerial tasks, not covered by co-financing, under this arrangement through a delivery-based subcontract to the project execution entity/ies. As laid down in Annex F GEF Grant Budget, and agreed with the Ministry of Environment and Natural Resources Protection (MOENRP), UNIDO will provide limited technical and administrative execution support in the form of direct recruitment of consultants and procurement. If required and on the request of the government, additional execution support may be provided by UNIDO during the implementation period.

92. Full or partial title and ownership of equipment purchased under the project may be transferred to national counterparts and/or project beneficiaries during the project implementation as deemed appropriate by the UNIDO Project Manager in consultation with project stakeholders

93. PEE will be responsible for drafting all project reporting including progress reports, annual work plans, GEF project implementation report (PIRs), reporting against project and program indicators and country reporting requirements based on the prescribed formats.

94. The project targets and indicators will be reviewed annually as part of the internal evaluation and planning processes. The project will also adhere to the Environmental and Social Monitoring Plan (ESMP) as proposed in the Environmental and Social Management Framework (attached).

95. The NPD is responsible for informing UNIDO of any delays or difficulties during the implementation so that appropriate support or corrective measures can be adopted in a timely and remedial fashion.

96. A Project Steering Committee (PSC) will be established by MEPNR. The PSC will be chaired by the NPD from WCMS of the MEPNR and will comprise representatives from relevant line ministries, including Ministry of Labour, Health and Social and Social Affairs, Ministry of Energy and other relevant stakeholders. The PSC will hold meeting at least once a year throughout the project implementation, but additional meetings can be held if necessary. Technical Working Groups (TWGs) will be established depending on the requirements of the project. The TORs of both PSC and TWG will be formulated and agreed during the project inception phase. The PSC and TWG should make necessary decisions within the rules and regulations of UNIDO and the GEF as per GEF C.39/inf3.

97. Once the PCB decontamination technology is established in Georgia, the project will ensure coordination and regional cooperation with neighbouring countries where similar projects are ongoing, more specifically with Armenia, which is part of the regional project "Regional Demonstration Project for Coordinated Management of ODS and POPs Disposal in Ukraine, Belarus, Kazakhstan and Armenia" (GEF 5300), and Turkey, which is currently in the implementation stage of the project "POPs Legacy Elimination and POPs Release Reduction Project" (GEF 4601)

Additional Information not well elaborated at PIF Stage:

A.7 *Benefits.* Describe the socioeconomic benefits to be delivered by the project at the national and local levels. How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCF/SCCF)?

98. Currently, the cost associated with the management of PCBs is fully externalized, in the sense that PCB contaminated transformers are not managed and the cost associated to the potential environmental pollution would be fully borne by the community.

99. The implementation of an environmentally sound management of PCB apparently does not bring a direct socio-economic benefit: the internalization of the cost associated to an environmentally sound PCB management would be sustained by the owners of PCBs, the government and by the GEF with the financial and technical assistance brought in by this project. Initially, that may be perceived as a pure cost borne by the electric power companies rather than a socio-economic benefit.

100. The socio-economic benefit however became evident when considering that the project would allow to avoid the release of PCB in the environment, by preventing accidents leading to this release, or by establishing an inventory of PCB contaminated equipment. The monetary cost of the health impact and the environmental remediation that would be associated to the release of PCB would be much higher than the cost (GEF grant and co-financing) associated to this project – for the simple reason that prevention is always more cost-effective than remediation.

101. There will be evident social benefit associated to the improvement of the occupational environment for workers in charge of maintenance and operation of transformers, due to the training they will receive and to the progressive elimination or de-contamination of PCB containing equipment.

102. In addition, it should be considered that the project is going to implement technologies for the decontamination of PCB equipment which will allow to achieve the best environmental results at the minimum cost. This result will be obtained in the following way:

- By adopting technologies which can selectively destroy the PCB in the contaminated dielectric oil without destroying the oil. This will typically allow for the recovery of 80% of the dielectric oil up to the ISO standard of brand new oil, with a net saving proportional to the cost of the oil minus the cost of PCB dehalogenation;

- By adopting technologies for the decontamination of PCB transformers (particularly those contaminated in the range of 50 to 500 ppm) without the need to phase out these transformers

- And finally, by ensuring that the valuable material (steel, copper, aluminium) from transformers to be phased out is PCB free so that it can be sold as scrap metal. This will contribute to an additional materials/resource efficiency in the country

103. The replacement of obsolete, PCB contaminated oil with newly regenerated oil compliant with all relevant IEC standard will also have as an effect the increase of the efficiency of electricity transformation, resulting in lower generation and transmission cost and in lower GHG emission per kW of electricity transformed,

104. Obviously, the above will be perceived as a saving by the firms only if a proper regulation is in place and strictly enforced: otherwise the "externalization of costs" will always be considered the most economic option by the enterprises. For this reason, the project envisages the strengthening of the Georgian legislation and the capacity of the authority to enforce as well as an intensive awareness raising campaign.

105. The net economic benefit for the country is, therefore, the difference between the increased cost for the owners of PCB equipment and the reduced cost for the community and the population at large.

A.8 *Knowledge Management.* Elaborate on the knowledge management approach for the project, including, if any, plans for the project to learn from other relevant projects and initiatives (e.g. participate in trainings, conferences, stakeholder exchanges, virtual networks, project twinning) and plans for the project to assess and document in a user-friendly form (e.g. lessons learned briefs, engaging websites, guidebooks based on experience) and share these experiences and expertise (e.g. participate in community of practices, organize seminars, trainings and conferences) with relevant stakeholders.

106. The knowledge management system for this project has several purposes. A platform containing all project generated reports – either technical or monitoring reports – will be built as a part of project monitoring activities will feed into larger networks of information sharing through activities in output 1.2.3.. Information sharing will utilize cloud-based platform with restricted access for project stakeholders to allow differentiated level of access. The platform will be basically built for facilitating the work of the PEE. It will be arranged into technical documents, administrative documents, monitoring and evaluation reports. All the document will be available through a very simple hyperlinked summary – built either in excel or word. The cost of this system will be minimal, and, if built at the very beginning of the project, it will allow for a significant time and resource saving.

107. The knowledge management platform to be created will also be used to disseminate project results. For this purpose, a project website will be built. The website will be established using a blog-type platform, allowing MEPNR, PEE and other project operators to update the website content in real-time. The website – to be hosted under the website of the MoENRP, to maximize the number of accesses - will be initially built with the support of a professional web-site builder. Subsequently, the website will be updated regularly by the MEPNR and PEE – by assigning a person with the specific task of result dissemination. Even for the website, different level of access will be granted depending on the targeted stakeholders.

108. The KM platform will also be utilized to make UNIDO and GEF experience in the field of PCB management and disposal available to the interested operators and project partners. Therefore, a collection of technical documents and reports generated through the implementation of other PCB projects, will be made available to MEPNR, by uploading these documents into the cloud-based folder. These will include, among others, technology specification, templates and guidelines for project reporting, UNIDO policies on environmental and social safeguarding, gender mainstreaming, STAP technical documents, etc. Although several of these documents are available on the web, it has been noticed that even experienced operators are very often unaware of the existence of these materials. Therefore, periodic bulletins – basically simple summaries of the available literature– will be released on a regular basis to inform the stakeholders and project partners of the availability

of these documents. Some of these will be also linked to the website, when relevant for general audience. The MEPNR, PEE and other relevant stakeholders will also be encouraged to participate in relevant webinars, trainings, etc. that will be provided by other entities.

109. The project will also endeavour to utilize available social media platforms like Facebook and Twitter to further disseminate relevant information on the project activities.

110. Although based on simple activities and systems, the knowledge management will be the responsibility of the MEPNR and PEE but may require assistance from a staff who may be recruited on a part-time basis dedicated to maintaining the system, and prompting MEPNR and PEE staff on the deadline for uploading relevant reports into the system.

B. Description of the consistency of the project

B.1 *Consistency with National Priorities.* Describe the consistency of the project with national strategies and plans or reports and assessments under relevant conventions such as NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc.:

111. The project is fully consistent with the second National Environmental Action Programme of Georgia (NEAP-2), the Code on Waste management, the National Waste Management Strategy of Georgia, the Waste Management Action Plan, the National Implementation Plan of the Stockholm Convention and its review and update.

- According to the second National Environmental Action Programme of Georgia (NEAP-2) a strong foundation should be created for ensuring a healthier environment and improved wellbeing of the population, creation of better conditions for economic growth and promotion of a participatory approach.
- NEAP is an official document representing Georgia's agenda for environmental actions for 2012-2016. However, this period of time is not enough to solve all environmental problems. That is why the plan sets long-term goals and, therefore, serves as the foundation for long-term environmental planning. Recognizing the need for economic development, NEAP-2 is a program document emphasizing sustainable development from environment point of view rather than restrictive perspectives.
- NEAP-2 strives to modify and strengthen the legal, administrative and institutional framework at all levels and therefore creates a good platform for the EU approximation process. Partnership and shared responsibility among all economic entities (public and private entrepreneurs, non-governmental organizations) will be promoted during the NEAP-2 implementation process.
- NEAP-2 one of the major sector specific problems is Waste Management that includes:
    - • Littering the environment
    - • Pollution of the environment from landfills
    - • Pollution of the environment from accumulated hazardous wastes
- Moreover, NEAP-2 establishes long-term goal for waste management that is a modern waste management system in the country (including safe waste disposal, use of waste as an energy resource, waste processing, waste recovery, recycling and minimization). In the next five years the following targets should be reached:
    - Target 1 Improvement of household and hazardous waste management (collection, transport, and disposal); and
    - Target 2 Reduction of environmental pollution from accumulated wastes.

112. Several parts of the environmental legislation addresses some parts of the PCB management cycle. The environmental regulation in Georgia which includes sections/chapters, or which is related to the management of POPs and PCBs is include:

- "The Law of Georgia on Environmental protection" (1996);
- "Code on Waste Management" (2015) ;
- "Law on Transit and Import of Wastes on the Territory of Georgia" (1995);
- "Amendment to the Law on Transit and Import of Wastes on the Territory of Georgia" (2016);
- Resolution of the Government of Georgia on adoption of the Adoption of the Action Plan on persistent organic pollutants (POPs) (2011);
- Decree of the government of Georgia N428 on adoption of the regulation on labeling and marking of hazardous chemicals (2013);

- Governmental Decree N184 of 28th September, 2006 "On Statute about Transit Permit Issuance, Limited Circulating Material Production, Transportation, Import, Export, Re-export, and on Approval of the List of Limited Circulating Materials (2006);
- Decree of Government of Georgia N422 "on form and content of waste records to be kept and reports to be made" August 11, 2015;
- Decree of Georgian Government N115 "On determining the list and classification of waste by type and characteristics" (7th of March, 2016);
- Resolution №160 of the Government of Georgia on adoption of the Technical regulation for development of the national waste management strategy and action plan for the years of 2016-2020 (N160, April 1 2016);
- Decree of Georgian Government N145 on approval of technical regulations for special requirements of hazardous waste collection and processing;
- Resolution №144 the Government of Georgia on the rules and conditions for registration of collection, transportation, pre-treatment and temporary storage of waste" (N144, March 29th, 2016);
- Decree of Government of Georgia "on the rules and conditions for registration of collection, transportation, pre-treatment and temporary storage of waste" (№143, March 29th 2016);

113. The "Code on Waste Management" was adopted in 2015 that stipulates the "Polluter pays" principle and introduces the extended producer responsibility. The Law also introduces the obligation for legal or natural entities producing wastes more than defined thresholds to prepare a detailed waste management plan. In accordance to this law the series of by-laws on waste classification, registration, collection, transportation, pre-treatment and temporary storage of hazardous waste have been developed.

114. The Code also stipulates elaboration of different action plans: "Action plans on the management of individual waste types such as – but not limited to – POPs, mercury, healthcare/animal waste, and asbestos waste may be adopted additionally. These plans must be in conformity with national waste management plan".

115. The National Waste Management Strategy of Georgia that is adopted for 2016-2030 and covers a period of 15 years has been prepared in accordance with the Waste Management Code and the EU-Georgia Association Agreement. Strategy complies with the Principles of "Precaution", "Polluter pays", "Proximity" and "Self-sufficiency". The Strategy aims at the development of the Georgian waste management to be in harmony with the European waste management policy. The Strategy complies with the waste management hierarchy:

    - Prevention;
    - Preparation for re-use;
    - Recycling;
    - Other recovery, including energy recovery;
    - Disposal.

    - The National Waste Management Action Plan covers a period of 5 years (2016-2020). The action plan sets a number of actions needed to be implement and to meet overall objectives of the waste management strategy, including time targets, responsible institutions, related cost and potential source of funding.
    - The activities in the action plan are grouped according to the 9 general objectives of the strategy. Activities are designed considering the challenges accumulated in the waste management sector.

- The existing situation and the waste management road map envisaged by the EU-Georgia Association Agreement (AA) are defined in the action plan, considering the potential risk factors and mitigation actions to be undertaken as part of activities.
- The estimated cost for implementation of Waste Management Strategy and Action Plan (2016-2020) of Georgia is 183,381,403 EURO, out of which 25,200,000 Euro has been already secured by the government and is included in the state budget.
- National Implementation Plan on POPs was adopted by the Government of Georgia for the years of 2011-2015. The National Implementation Plan (NIP) is a strategic document aiming at an efficient and sustainable management of POPs in Georgia, so that to ensure protection of human health and the environment.
- According to the NIP three priorities have been identified:

- Priority # 1 – Management of stockpile of obsolete pesticides

- Priority # 2 – Management of equipment and wastes containing Polychlorinated biphenyls (PCBs)

- Priority # 3 – Reduction of U-POPs releases, with particular reference to emissions of PCDD/F

116. The POPs management plan has been developed based on the identified priority areas, in consultation with the stakeholders. The plan contains the short- and medium-term activities. It sets goals, objectives, activities, expected results, responsible parties, timeframes, approximate costs and potential funding sources.

117. Update of NIP on POPs that has recently been accomplished (2015-2017) additionally addresses the POPs listed in 2009, 2011 and 2013. In comparison with the first NIP in 2006, this update NIP has mentioned new remarkable issues as: concentrating on newly listed POPs which are popularly used in industries and other utilities; integrating its objectives and strategies with global and national issues such as climate change, sustainable development goals (SDGs), sustainable production and consumption, etc.; strongly link POPs with environmental health and included gender issue; involving diversity stakeholders, etc.

- This NIP document summarizes the status of implementation on the activities foreseen during the first NIP prepared under the Convention, with a focus on achievements of following main tasks: establishing policies and regulations on POPs management, strengthening capacity of POPs management, promoting researches and applying science and technology solutions in safe management, reduction, destruction and elimination of POPs, enhancing awareness, role and responsibility of levels, sectors, residential community, strengthening and diversifying investment funds and expanding and improving the efficiency of international cooperation.

- The overall objective of the NIP is the safe life-cycle management, pollution control, reduction, treatment and finally elimination of POPs in Georgia to meet the requirements of the Stockholm Convention on POPs, contribute to protecting human health and environment, toward sustainable development in Georgia and international integration. Also, the NIP identified some cross-cutting objectives, namely appropriate institutional capacity, regulatory frame and stakeholder coordination for POPs and hazardous chemical management and substitution; enhanced capacity in science and technology for monitoring, understanding and management of POPs and hazardous chemicals in the life-cycle with appropriate knowledge and information management and related infrastructure; broad stakeholder awareness on POPs and other hazardous chemicals, related environmental health problems and management and phase out solutions; and synergistic implementation of conventions and integration in national chemical and waste management and the sustainable development strategy and SDGs where appropriate. Moreover, the NIP defined specific objectives: controlling and safely manage POPs pesticides; eliminating the use of equipment containing PCBs in concentrations equal

to or greater than 50 mg/kg by 2025; controlling, limiting the use, substituting by sustainable alternatives and safe managing the industrial POPs; controlling the risk, treating, recovering and monitor environment in the area of POPs contamination; continuously reduce the emissions of UPOPs from productions, industries, and livelihoods; controlling risk of UPOPs to the environment and human health; identifying, environmentally sound manage and disposing POPs stockpiles; and identifying, securing and remediating POPs polluted areas.

- The action plans and their activities included in this document are designed taking into account socio-economic and gender implications, the aim of their integration in the overall framework of chemicals and waste management and integrated pollution prevention and control, an integrated approach with other conventions where appropriate, with the implementation of related SDGs. Action plans have been developed for the management of individual POPs and for legislation/policy, stockpiles and wastes, contaminated sites, awareness raising, research capacity and monitoring, and management of environment.

118. POPs related priority issues were set in consultation with all the relevant stakeholders and took into consideration the best interests of the country. The following main areas were identified:

    - Polychlorinated biphenyls (PCBs)
    - POPs pesticides (Iaghluja burial)
    - Polybrominated diphenyl ethers POP-PBDEs
    - Hexabromocyclododecane (HBCD), Perfluorooctanesulfonic acid (PFOS) and related substances
    - U-POPs reduction

119. The project is compliant with the NIP, as it will address the issue of PCB contaminated waste and equipment, and will bring to Georgia the necessary technical and institutional capacity to identify, inventorize, treat and/or dispose PCB contaminated materials. The project will also enhance the general technical knowledge on POPs, as well as the Georgian Environmental regulatory system, so that the capacity to treat other POPs will also increase.

C. DESCRIBE THE BUDGETED M &E PLAN:

120. Monitoring and evaluation will facilitate tracking of implementation progress toward the outcomes and objectives. Likewise, it will facilitate learning, feedback, and knowledge sharing on results and lessons among the primary stakeholders to improve knowledge and performance. This section of the project document presents a concrete and fully budgeted monitoring and evaluation plan of the project.

Type of M&E activity	Responsible Parties	GEF Budget USD*	Co-financing	Time frame
Regular monitoring and analysis of performance indicators	UNIDO PM, PEE, MOENRP and M&E consultants as required	30,000	150,000	Regularly to feed into project management and Annual Project Review
Annual Project Review to assess project progress and performance	PEE, UNIDO PM and Project Steering Committee to review the project performance and make corrective decision	30,000	200,000	Annually prior to the finalization of PIR and to the definition of annual work plans
Mid-term Evaluation	External evaluation consultants supported by UNIDO PM.	25,000	50,000	Mid of project
Terminal Project Evaluation	External evaluation consultants supported by UNIDO PM	25,000	50,000	Evaluation at least one month before the end of the project; report at the end of project implementation
Visits to field sites to monitor progress and assess delivery of services	UNIDO PM, PEE, MOENRP	20,000	150,000	Twice a year; as necessary
Total Indicative Cost		130,000	600,000	

Monitoring responsibilities and events

121. One month before the starting of each implementation year, the PEE in consultation with MOEPNR will draft an Annual Work Plan, complying with requirements and formats established for the first Annual Work Plan (AWP) at Inception Workshop. The AWP will be submitted to PSC for approval. The Annual Work Plan will set the target against which project performance shall be measured at the end of each implementation year.

122. Monitoring of project execution progress will be the responsibility of the National Project Director (NPD) based on the project's Annual Work Plan (AWP) and its indicators. The NPD will coordinate the planning and monitoring activities with the PEE. The MOEPNR, via the NPD, will inform UNIDO of any delays or difficulties faced during execution so that the appropriate support or corrective measures can be adopted in a timely and remedial fashion.

123. UNIDO through meetings (face-to-face or through teleconferencing) with project counterparts as frequent as deemed necessary but not less than twice per year will undertake periodic monitoring of the project

implementation progress. This will allow parties to troubleshoot any problems pertaining to the project in a timely fashion to ensure the smooth execution of project activities. Meetings with counterparts may coincide with the field visits to the project sites.

124. Annual Monitoring will partly occur through PSC meetings, which will take place at least once every year. As part of the GEF Monitoring requirement, the PEE will also prepare a Project Implementation Report (PIR), as per prescribed format. Part of this PIR is the reporting/updating on the UNIDO Stockholm Convention Division indicators.

Key impact indicators for the project

125. As the primary objective of this project is to introduce in the country the system for PCB management and to carry out ESM disposal of PCBs and PCB-containing equipment, oil and wastes, the most direct indicators to characterize the impacts of this project should include the institutional capacities, the nation-wide database of contaminated equipment and wastes and metric tons of decontaminated dielectric oils in PCB-containing equipment and PCB-containing mineral oil and wastes.

126. The key project indicators, are listed in Annex A (Project Result framework). An important indicator is the amount of PCB safeguarded for disposal, which in practical terms is the number of PCBs contaminated equipment labelled and registered in the project database, which is safely kept in storage facilities and has been committed for disposal. This indicator reflects the fact that specific PCB equipment has been identified, kept under control and are currently pending disposal. Securing stockpiles for future disposal is one of the most important tasks in any POPs management project; the amount of PCBs equipment secured for future disposal has to also be considered an indicator of the soundness and practicability of the PCB management plan.

127. The other relevant indicators (regulatory instrument adopted, and PCB identification and disposal facility established and permitted) provide insights not only on project impact, but also on the future sustainability of the project outcomes.

Independent Evaluations

128. The project will be subjected to at least two independent external evaluations as follows:

(a) Mid-term Evaluation. An independent Mid-Term Evaluation will be undertaken at the end of the second year of project implementation. The Mid-Term Evaluation, performed by an independent consultant, will measure progress made towards the achievement of outcomes and will identify corrections if needed. The evaluation will focus on the project performance in terms of relevance, effectiveness, efficiency and timeliness of project implementation; highlight issues requiring decisions and actions; and present initial lessons learned on project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the second half of the project's term. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the parties to the project document. The Terms of Reference for this mid-term evaluation will be prepared by UNIDO in accordance with the generic TORs developed by the UNIDO Office of Independent Evaluation and Quality Monitoring.

(b) Final Evaluation. An independent Final Evaluation will take place after the operational completion of the project, and will focus on the same issues as the mid-term evaluation, with a greater focus on project impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals. The Final Evaluation should also provide recommendations for follow-up activities future

projects, based on lesson learned and success stories. The Terms of Reference for this evaluation will be prepared by the UNIDO in accordance with the generic TORs developed by the UNIDO Office of Independent Evaluation and Quality Monitoring.

129. According to the Monitoring and Evaluation policy of the GEF and UNIDO, follow-up studies like Country portfolio evaluations and thematic evaluations can be initiated and conducted. All project partners and contractors are obliged to (i) make available studies, provide reports or other documentation related to the project and (ii) facilitate interviews with staff involved in the project activities.

Project Management Activities

Inception Phase

130. The project Inception Phase will involve the establishment of a Project Steering Committee (PSC), appointment of the members of the PSC, the project launching through an Inception Workshop (IW) and convening of the first PSC meeting. The IW is aimed at launching the project with the full project team, relevant government counterparts, co-financing partners, key stakeholders, UNIDO and the other related organizations as appropriate. This will provide the platform to disseminate project objectives, general work plan and implementation structure to relevant stakeholders.

131. The 1st PSC is aimed at convening the project team to better understand and assimilate the goals and objectives of the project, as well as to finalize the preparation of the project's first annual work plan on the basis of the project's results framework matrix. This work will include reviewing the results framework as necessary (indicators, means of verification, assumptions), imparting additional detail as needed, and completing an Annual Work Plan (AWP) for the first year of project implementation, including measurable performance indicators. Additionally, the meeting will: (i) introduce project staff to the UNIDO team, which will support the project during its implementation; (ii) delineate the roles, support services, and complementary responsibilities of UNIDO staff vis-à-vis the project team; (iii) provide a detailed overview of UNIDO reporting and Monitoring & Evaluation (M&E) requirements, with particular emphasis on the content and format of the Annual Project Implementation Reviews (PIRs), the Annual Work Plan (AWP), meetings, as well as mid-term and final evaluations. Equally, the IW will provide an opportunity to inform the project team on UNIDO project related administrative and financial procedures, budgetary requirements and reviews and mandatory budget rephrasing. In the course of the project, the structure of the project's Management Information System will be also introduced.

132. The 1st PSC will also provide an opportunity for all parties to understand their roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines and conflict resolution mechanisms. Specific targets for the first-year implementation progress indicators together with their means of verification will be developed and agreed in this workshop. These will be used to assess whether implementation is proceeding at the intended pace and in the right direction and will form part of the AWP. The Inception (Phase) Report will be drafted and circulated for comments and approval by project partners within one month from the meetings.

Project Monitoring Reporting

133. The national project team i.e. project executing entity in conjunction with the UNIDO will be responsible for the preparation and submission of the following reports that form part of the monitoring process.

(a) Inception Report

134. A Project Inception Report (IR) will be prepared immediately following the Inception phase. In addition to reporting on the items listed in paragraph 127 above it will include a detailed First Year Work Plan divided into quarterly timeframes, which detail the activities and progress indicators that will guide the implementation during the first-year phase of the project. The Work Plan will include the tentative dates of specific field visits, support missions from UNIDO and/or UNIDO consultants, as well as timeframes for meetings of the project's decision-making structures. The report will also include the detailed project budget for the first full year of implementation, prepared on the basis of the Annual Work Plan, and including any monitoring and evaluation requirements to effectively measure project performance during the targeted 12-month timeframe.

(b). Project Implementation Report

135. The Project Implementation Report (PIR) is an annual monitoring process mandated by the GEF. It is an essential management and monitoring tool for project managers and offers the main vehicle for extracting lessons from ongoing projects. Once the project will be under implementation for a year, the project team shall complete the PIR. The PIR can be prepared any time during the year (July-June) and ideally, immediately prior to the PSC.

- The PIR includes the following: (a) Analysis of the achievement of project objectives; (b)Analysis of project performance over the reporting period, including outputs produced and information on the status of the outcome; (c) Management of Risks . Expenditure reports, lessons learned and recommendations to address key problems, if applicable, maybe reported.
- The PIR shall also constitute the annual project report of the project. The annual progress report is a UNIDO requirement and part of the UNIDO central oversight, monitoring and project management.
- A Project Management Information System will be established to support the Project Manager and the project management team to ensure that all the project activities be completed on time, in quality and within budget. The MIS will include a database containing (in electronic format or scanned PDF) all the project technical and administrative documentation. The MIS will keep baseline records of Annual Work Plans and contracts with consultants and subcontracts with performance indicators, result reports, responsibilities and budgets, allowing the easy comparison of them with the progress of the activities.

Terminal Project Workshop

136. The terminal project meeting will be held in the last month of project operation. A draft final report will serve as the basis for discussions in the final workshop. This will serve as a venue to consider the implementation of the project as a whole, paying particular attention to whether the project has achieved its stated objectives and contributed to the broader environmental objective. It decides whether any actions are still necessary, particularly in relation to sustainability of project results and acts as a means, which lessons learned can be captured for use in other projects under implementation or formulation.

Legal Context

137. The Government of the Republic of Georgia agrees to apply to the present project, mutatis mutandis, the provisions of the Standard Basic Assistance Agreement between the United Nations Development Programme and the government, signed and entered into force on 1 July 1994.

PART III: CERTIFICATION BY GEF PARTNER AGENCY(IES)

A. GEF Agency(ies) certification

This request has been prepared in accordance with GEF policies[11] and procedures and meets the GEF criteria for CEO endorsement under GEF-6.

Agency Coordinator, Agency Name	Signature	Date (MM/dd/yyyy)	Project Contact Person	Telephone	Email Address
Mr. Philippe R. Scholtès, Managing Director, Programme Development and Technical Cooperation UNIDO GEF Focal Point		09/11/2017	Mr. Klaus Tyrkko	+431-260264261	k.tyrkko@unido.org

[11] GEF policies encompass all managed trust funds, namely: GEFTF, LDCF, SCCF and CBIT

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

Hierarchy of Objectives	Indicators	Baseline	Target	Sources of Verification	Assumptions
Project Development Objective: Ensuring sound PCB management in Georgian electricity distribution network	Key indicators: • Quantity of PCBs safeguarded • Quantity of PCBs disposed of (tons) • Number of people (male and female) trained on PCBs Management. • Enacted and enforced legislation and guidelines on PCB. • Number of jobs (male and female) created in the PCB management sector	Zero capacity currently available for the disposal of PCBs An estimated 20% of all the electrical equipment (transformers) in the country with a concentration of PCB exceeding 50 ppm. An estimated 2% of all the electrical equipment in the country containing PCB in excess of 1000 ppm	Safeguarding and disposal of 300 tons of PCB oils and associated equipment. 1000 tons of PCB containing oil from electricity distribution network disposed of or decontaminated 150 persons undertaken training 50 female 100 male Capacity for the treatment of at least 300 tons / year of PCB oil established in the country At least 20 jobs created in the PCB management sector One specific legislation on PCB and one set of technical guidance on PCB enacted and enforced.	See below	See below
Component 1. Legal, institutional and capacity strengthening					
Outcome 1.1. Regulatory Instruments and guidelines for safe PCB management adopted	Number of regulatory instruments and guidelines relevant to the management and disposal of PCB containing equipment and waste approved /	Georgia ratified the Stockholm Convention on POPs which is legally in force in the country since 02/01/2007. An Association Agreement with EU,	Regulation and guidelines, including provisions on the inventory and management of PCB containing equipment and waste, enacted and	Draft, and official versions of regulation and guidelines Meeting and workshop minutes.	Key stakeholders will actively participate in the process of regulatory improvement. The Government of Georgia committed to improve and approve the

Hierarchy of Objectives	Indicators	Baseline	Target	Sources of Verification	Assumptions
	enacted	entered into force on July 1 2016. The Association Agreement envisages among others the approximating of the Georgian regulation – including environmental regulation – with the EU. Notwithstanding the above, the requirements of the SC convention on POPs are not yet integrated into the Georgian environmental regulation.	approved. Equal opportunities to jobs generated in this component ensured. Equal access to training and information for women and men ensured.		existing regulation on PCB waste within project timeframe.
Output 1.1.1 Development of PCB specific amendments in waste legislation	Number of amendments covering PCB in waste legislation approved / enacted	Currently, the waste legislation is compliant with the Basel convention. However, no specific rules on the management of PCBs containing waste are included.	Chemicals and Waste legislation amended with standard and procedures for the classification of PCB containing waste and their disposal, in compliance with Stockholm Convention, Basel Convention and EU regulation on POPs and PCBs.	Text of amendments drafted and promulgated. Meeting and workshop minutes	GoG committed to update the Waste regulation within project deadline.
Output 1.1.2. Development of technical guidelines covering all stages of PCB life-cycle.	Number of technical guidelines covering different stages of PCB life cycle, including standards on dielectric oil quality, inventory requirements for PCB containing equipment, analytical standards, environmental standards, standards for disposal and treatment technologies approved / enacted.	Technical guidelines on PCB are currently missing.	Technical guidelines covering identification, labeling, storage, transport, treatment and disposal of PCB containing or contaminated equipment enacted / approved. Guidelines concerning environmental quality standards (threshold concentration limit in environmental media) and technical standards on allowed PCB	Draft and final versions of the technical guidelines on PCBs. Workshop and meeting minutes.	Governmental and private stakeholders fully engaged and collaborative in the development and implementation of guidelines on PCB management.

Hierarchy of Objectives	Indicators	Baseline	Target	Sources of Verification	Assumptions
			concentration in oil (dielectric oil, fuel oil, recycled oil) enacted / approved.		
Outcome 1.2. Capacity for PCB regulation enforcement created	Documentary evidence that capacity for PCB regulation enforcement has been created and sustained.	As a specific regulation on PCB is missing, consequently even the capacity to enforce this regulation is lacking.	A team for the enforcement of PCB regulation established and capacitated in the Ministry of Environment and for each electric power company. Equal opportunities to jobs generated in this outcome ensured. .	Training materials, training reports, surveys.	See below
1.2.1. Training of PCB holders and state inspectors in implementing the guidance.	Number of PCB holder and officers successfully trained as demonstrated by training reports and pre-and post-training tests, disaggregated by male and female percentage. Number of trainees Male/female	No training on PCB management and inspection has been ever carried out for PCB holders and state inspectors	At least 100 persons from the electric power and manufacturing sector, and at least 50 persons from the government trained on PCB management and on the PCB regulatory framework established under the Stockholm Convention, the Basel Convention and the EU environmental regulation. Participation to training of 30 % female and 70 % male trainees ensured.	Training materials. Training reports. Results of pre-and post-training tests. Questionnaire survey on training effectiveness.	Training is participated by relevant staff from both government and industry. Trainees will be among the most experienced worldwide on the issue of PCB management. A good quality control system of training effectiveness will be in place.
1.2.2. Upgrading government capacity to enforce PCB regulations, including PCB information management	Availability of a PCB database compliant with UN and EU rules on PCB. Availability of a dedicated staff for the enforcement of PCB legislation at Ministry of Environment and Natural Resources Protection.	The capacity of the government to enforce PCB regulation is missing, as a specific regulation on PCB is missing.	A team dedicated to the enforcement of PCB regulation established at the Ministry of Environment and Natural Resource Protection. A team dedicated to the compliance with PCB regulation established for	Official letter of appointment of the Ministry PCB team. Official letter of appointment of the PCB compliance teams for each electric power company. Reports of the activities of the Ministry and	The government and industry will allocate experienced staff and financial resources to ensure the effectiveness of the PCB management teams established at public and private level. A good cooperation between public and

Hierarchy of Objectives	Indicators	Baseline	Target	Sources of Verification	Assumptions
	Number of inspection carried out to verify compliance with PCB regulation Percentage of men and women involved in the PCB enforcement team.		each one of the key electricity distribution companies (at least 4 teams established) Equal share of 50 % female and 50% male in the enforcement teams.	private PCB teams	private PCB management team will be ensured.
1.2.3. Undertake targeted awareness raising for high-risk population groups	Availability of awareness raising material published in websites, or broadcasted through TV and webinars Number of high risk people, disaggregated by sex and age (workers, people from local communities) informed through awareness raising initiatives. Number of people reached male/female	Limited activities aimed at informing key stakeholders on PCB carried out in the course of NIP and project preparation. Awareness raising on PCB never carried out before.	A website containing the information on PCB and Stockholm Convention, project activities and technical and scientific publications developed. At least one webinar on PCB management hosted on the website. A documentary on the GEF, Stockholm Convention, UNIDO activities and the PCB issue produced and broadcasted on TV at national level.	Awareness raising materials including website, webinar recordings, leaflets, documentary. Questionnaire survey to verify the effectiveness of the raising awareness activity.	A good cooperation between expert on PCBs and communication experts can be established in the preparation of awareness raising materials. High-risk population groups identifiable and receptive to cooperation.
Component 2. Management and disposal of equipment containing high concentration PCB oils					
Outcome 2.1 Process for managing high-risk PCBs established.	Amount of pure PCB equipment safely managed pending disposal and replacement.	An exhaustive inventory of PCB is currently missing. PCB management not covered by the current maintenance procedures established in the power sector, as demonstrated by the survey carried out at project preparation stage.	At least 100 tons of pure PCB identified on the basis of nameplate information or testing of dielectric oil. Equal access to training and information for women and men ensured	Sampling report, PCB analysis report, database containing the PCB inventory.	It is assumed that the electric power sector will ensure a very proactive collaboration in the identification and management of transformers highly contaminated by PCB.
Output 2.1.1. Verify pure PCB equipment and manage them safely until replacement.	Availability of a detailed inventory of pure PCB equipment. Amount of pure PCB equipment listed and	Preliminary inventories carried out at NIP and during project preparation revealed at around 20% of the	Pure PCB identified on the basis of nameplate information or testing of dielectric oil. A set of procedures and	Sampling report, PCB analysis report, database containing the PCB inventory Procedures and	The electric power sector will strict cooperate with project staff to facilitate the identification, and when deemed, the

Hierarchy of Objectives	Indicators	Baseline	Target	Sources of Verification	Assumptions
	safely managed. Availability of reports on the safe management pending disposal for pure PCB equipment.	electrical equipment is contaminated, and 2% heavily contaminated by PCB. However, no safe management of PCB is in place and indeed the risk of cross-contamination due to unsafe management practices is high.	guidelines for the labeling and maintenance of pure PCB equipment developed and implemented.	guidelines for labeling and maintenance of pure PCB equipment.	sampling of transformers containing pure PCB oil. Collaboration will be also needed for the proper tracking and management of these transformers, to ensure that these will be disposed in the course of the project.
Outcome 2.2. Reduction of health and environmental risks locally and globally	Tons of pure PCB equipment safely disposed of.	No highly contaminated or pure PCB equipment disposed of until now.	Transportation and disposal of 300 tons of PCB oils and associated equipment	Hazardous waste manifests. Notification of transport of PCB contaminated equipment. Mission reports	See below
Output 2.2.1. Transportation and disposal of 300 tons of PCB oils and associated equipment	Amount of pure PCB equipment transported for final disposal, certified by Basel convention transport document, hazardous waste manifest, and final disposal certificates	No highly contaminated or pure PCB equipment disposed of until now	At least 300 tons of dielectric oil with high level (over 5000 ppm) of PCB and associated electric equipment transported and disposed of in compliance with Stockholm Convention, Basel Convention and EU regulation. Equal access to job opportunities ensured for women and men.	Procurement documents for disposal services. Hazardous waste manifests. Notification of transport of PCB contaminated equipment. Mission reports	It is assumed that the identified PCB equipment will be secured for disposal until disposal starts.
Component 3. Technology transfer for long lasting PCB management capacity in the electricity distribution sector					
Outcome 3.1 PCB holders fully competent in PCB management	Availability of a detailed inventory of electrical equipment contaminated by PCB. Number of transformers verified for PCBs.	Only a preliminary inventory carried out during NIP and PPG stage	A database with PCB inventory developed. At least 3000 samples of dielectric oil from transformers and other electrical equipment tested by means of quantitative analysis.	PCB database. Sampling report PCB analysis report. Photos of sampled transformers.	See below
Output 3.1.1. Detailed inventory of the PCB containing transformers	Availability of a detailed inventory of PCB containing electrical	Only a preliminary inventory carried out during NIP and PPG	At least 3000 transformers or other electrical equipment	PCB database. Sampling plan Sampling report	PCB holders fully cooperative in facilitating sampling of dielectric oil

Hierarchy of Objectives	Indicators	Baseline	Target	Sources of Verification	Assumptions
in all industrial sectors	equipment, including quantitative PCB concentration data and all data useful to track listed transformers.	stage	tested for PCB concentration, by means of quantitative analysis. A database on PCB inventory developed, accessible on the web for uploading and downloading data upon user specific access policies.	PCB analysis report. Photos of sampled transformers	from electric power equipment. It is assumed that sampling plan will be agreed in cooperation with the electric power company.
3.2 workers' health and environmental performance of sector increased	Documentary evidence that the safe management of PCB contaminated equipment is in place.	Specific procedures for the management of PCB contaminated equipment are missing	A set of procedures and guidelines for the labeling and maintenance of PCB contaminated equipment developed and implemented.	Text of procedures and guidelines for labeling and maintenance of transformers. Minutes of site surveys.	See below
Output 3.2.1. Updated transformer maintenance with PCB management in place	Availability of activity and site-inspection reports on the safe management of PCB Number of persons trained male/female	The electric power sector has procedures and standards for the management of transformers and dielectric oil, which however do not include management of PCB contaminated transformers or oil	Procedures for the sampling and analysis of PCB in dielectric oil added to the current procedures for periodic maintenance of transformers, approved by the Government and the electric power sector, and implemented. Target 150 trainees 100 male/50 female	Text of the updated procedures for transformer maintenance approved by the Government and the electric power companies.	It is assumed that electric power companies as key stakeholders beneficiaries will be keen to cooperate in the preparation of guidelines for sampling and analysis of PCBs
Outcome 3.3. Technology transfer capacity established	Documentary and direct evidence that a suitable PCB treatment technology has been procured, tested, and installed.	No technology for the treatment of PCB contaminated equipment and dielectric oil is currently available in Georgia	A technology for the treatment of transformer with PCB contamination up to 5000 ppm established	Procurement report and activity log of the PCB decontamination technology	It is assumed that the technology is commercially available, can be procured within the available time and financial resources, and that is effective
Output 3.3.1. Procurement and testing of mobile PCB de-	Availability of a PCB decontamination technology	No technology for the treatment of PCB contaminated equipment	Mobile decontamination technology operational	Bidding documents. Bid evaluation report Report of the proof of	Provider of PCB dehalogenation technology or equivalent

Hierarchy of Objectives	Indicators	Baseline	Target	Sources of Verification	Assumptions
contamination technology.		and dielectric oil is currently available or being procured in Georgia.		performance test.	technologies are interested and will submit their financial and technical proposal.
Outcome 3.4 Sustainable PCB processing introduced in Georgia	Amount of PCB contaminated equipment treated.	PCB contaminated equipment not being treated as a technology is missing.	Around 1000 tons of PCB oil treated.	Treatment reports)	See below
Output 3.4.1 1,000 tons of PCB containing oils rendered harmless in electricity distribution network	*Availability of a PCB treatment log with quantity of dielectric oil treated, initial and final concentration of PCB.* *Number of tons of PCBs decontaminated.* *Number of tons of material recycled* *Value of material recycled*	No PCB equipment or PCB contaminated oil treated or disposed of until now.	Around 1000 tons of dielectric oil contaminated by PCB treated, with the destruction of PCBs contained therein and the regeneration of oil in compliance with international standard for dielectric oil. 3,000 tons of material recycled Tariff policies for the treatment of PCB contaminated dielectric oil after project end established.	Treatment reports Analytical reports (before – after treatment) Site visit reports	The selected technology is effective and efficient to treat the expected amount of PCB within the project deadline
Component 4. Monitoring and evaluation					
Outcome 4.1 Assessment of the impact of project activities including lessons learned	Documentary and direct evidence that project management structure, as well as project reporting, monitoring and evaluation procedures are in place. Number of job created (male and female)	Not Applicable	Project management structure in place. Project information system built and implemented. Equal share of female and men ensured for new jobs made available under the project.	Project implementation reports.	It is assumed that the GoG and all the other relevant project stakeholders will be effective and efficient in establishing and appointing the project management structure.
Output 4.1.1 Project	Availability of PIRs,	Not Applicable	Project knowledge	Project website and	It is assumed that the

Hierarchy of Objectives	Indicators	Baseline	Target	Sources of Verification	Assumptions
impact indicators designed, applied and project implementation monitored and evaluated	with UNIDO/GEF rules on project reporting and monitoring. Availability of inception report, MTE and TE report, financial audit. Evidence that the impact on gender mainstreaming has been measured.		management system in place. Inception workshop held within 2 months from project start. PIRs drafted and approved. Mid-term evaluation carried out and approved within 30 months from project starting.	databases. Inception report Annual and quarter progress reports Annual and quarter work-plans Mid-term and terminal evaluation report.	project monitoring procedures in place will be effective in such a way to anticipate any implementation issue so that suitable action can be undertake to keep the project on track.

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

Comments from Council

Georgia - PCB-Free Electricity Distribution in Georgia - UNIDO - GEF ID = 9227
✓ *Germany's Comments*

Germany approves this PIF in the work program but asks that the following comments are taken into account:
This project is considered to be a valuable measure to support the national implementation of the Stockholm convention. It corresponds to urgent needs of action as assessed during the elaboration of the national implementation plan (NIP). The proposal is very well structured, composed of three clearly defined and complementing components, and shows a comprehensive line of argumentation. Synergies and complementing effects with regard to previous or ongoing projects and activities in the field of POPs in Georgia are well elaborated. The proposed measures are well-balanced between capacity building, law enforcement and technical equipment provision.

The considerable investment (co-financing) from the Georgian State Electro System and private electricity distribution companies improves the sustainability of the project.

Suggestions for improvements to be made during the drafting of the final project proposal:

The envisaged Monitoring and Evalution System for project implementation should be elaborated in more detail. The proposal would benefit from considering possible regional cooperation and synergies more thoroughly. Moreover, the possibility and use of a treatment plant for PCB-contaminated equipment/wastes and PCB oils in Georgia could be assessed in more detail with regard to long-term solutions.

Response: Monitoring and Evaluation System has been further developed and elaborated. As paragraph 94. States regional synergies will be sought particularly with Armenia which under "Regional Demonstration Project for Coordinated Management of ODS and POPs Disposal in Ukraine, Belarus, Kazakhstan and Armenia" (GEF 5300) will now establish adetailed inventory guiding whether PCB volumes justify separate decontamination.

For Georgia the additional sampling and analyses confirmed the vialibility of in-country contamination. The PCB contaminated oil situation is indetail elaborated in paragraph 35-57. The quantities well justify establishment of decontamination technology which will run several years after project demonstration completed. The legal obligation and embedding of this technology with the main PCB holders will provide a sustainable long-term solution.

STAP Comments

FULL SIZE PROJECT GEF TRUST FUND
GEF PROJECT ID: 9227
PROJECT DURATION: 4
COUNTRIES: Georgia
PROJECT TITLE: PCB-Free Electricity Distribution in Georgia
GEF AGENCIES: UNIDO
OTHER EXECUTING PARTNERS: Ministry of Environment and Natural Resources Protection
GEF FOCAL AREA: Chemicals and Waste
II. STAP Advisory Response *(see table below for explanation)*
Based on this PIF screening, STAP's advisory response to the GEF Secretariat and GEF Agency(ies):
Concur

III. Further guidance from STAP

This is a cleanly written and thought out document, with a clear description of the problem and logical proposal of solutions. The STAP would only make one small comment as relates to potential stakeholders omitted for training. It was not mentioned (and indeed may not be relevant), but there may be small and medium-sized repair establishments who contribute to cross contamination of equipment that they repair. This is usually the case in PCB projects. Therefore, the STAP would suggest confirming whether or not this is a source of cross contamination in Georgia, and amending the recipients of training to suit.

Response: The question raised by STAP was investigated during PPG. No external transformer maintenance companies have been identified. The electricity distribution companies sometimes use each others services, but no external specialized maintenance companies in Georgia. However, material and oil recycliers were identified as potential actors for release and in some cases possible mixing of oils. They have been included in the project activities for identifying and managing risks.

ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS[12]

A. Provide detailed funding amount of the PPG activities financing status in the table below:

PPG Grant Approved at PIF: USD 150,000			
Project Preparation Activities Implemented	*GETF/LDCF/SCCF/CBIT Amount ($)*		
	Budgeted Amount	*Amount Spent Todate*	*Amount Committed*
Identification and engagement of key stakeholders in public and private sectors	30,000	18,734	11,266
Baseline data collection at participating industries and analysis for project document preparation	40,000	40,000	0
Preparation of environmental and social management plans	30,000	19,827	10,173
Gender assessment	10,000	10,000	0
Development of project workplan and project document	30,000	30,000	0
Total	**140,000**	**118,561**	**21,439**

KEY DATES AND ACTIVITIES DURING PPG

Date	Actvity
21. September 2016	Stekeholder workshop
October-December 2016	Additional sampling and analyses
1.February	Preliminary Draft of project structure
30. April	Gender assessment
15. May	Environmental and Social Safeguards Report
1. June 2017	Institutional assessment for project execution
13-15 June 2017	Validation workshop

[12] If at CEO Endorsement, the PPG activities have not been completed and there is a balance of unspent fund, Agencies can continue to undertake the activities up to one year of project start. No later than one year from start of project implementation, Agencies should report this table to the GEF Secretariat on the completion of PPG activities and the amount spent for the activities. Agencies should also report closing of PPG to Trustee in its Quarterly Report.

ANNEX D: CALENDAR OF EXPECTED REFLOWS (if non-grant instrument is used)

Provide a calendar of expected reflows to the GEF/LDCF/SCCF/CBIT Trust Funds or to your Agency (and/or revolving fund that will be set up)

N/A

ANNEX E. GENDER IN GEORGIA

With the purpose to respond to gender issues within the scope of project interventions the following aspects have been assessed in the brief survey reported in this annex

- The Georgia context, in term of legislation, access to resources, education and knowledge.
- Inequality in the division of labor, and any differential risk associated with the different roles and responsibilities of men and women in labor.

Overview of Gender situation in in Georgia

Georgia acceded to The Convention on the Elimination of all Forms of Discrimination Against Women, CEDAW, in accordance with a decision of its Parliament of 22 September 1994, thereby assuming the obligation to implement its requirements. According to article 6 of the Constitution of Georgia, "the legislation of Georgia conforms with universally recognized principles and norms of international law; international treaties or agreements of Georgia which are not against the Constitution of Georgia have superior legal force in relation to internal normative acts".

Very significant change occurred in 2009 when The Parliament adopted the law about Gender Equality which stands for the standards and principles of gender equality in economic, political and social life. But according Public Defender's annual yearly reports raising awareness about gender equality, combat gender violence and reach equal access to opportunities for men and women is still a concern.

Article 7 of the Constitution states: "Georgia recognizes and protects universally recognized human rights and freedoms as inalienable and supreme human values. The exercise of power by the people and the State are restricted by these rights and freedoms as direct active law". 9. Chapter II of the Constitution includes a spectrum of rights that relate, to a greater or lesser extent, to the provisions of the Convention. The Constitution "does not reject other universally recognized rights, freedoms and guarantees of the person and citizen which are not specified in it but arise from the principles of the present Constitution" (art. 39).

There are in Georgia approximately 60 non-governmental organizations that deal to a greater or lesser extent with women's issues. The scope of their activities is rather broad (charity, job placement, cultural and educational work and so on). There are still few exclusively feminist organizations/movements in Georgia.

Demography

Women make up about 52 percent of the population in Georgia. Women-headed households are common in Georgia: Nearly 27 percent of the population and 30 percent among the poorest 40 percent live in households headed by a woman.
The wide variation in demographic composition across different age groups in Georgia is striking. There are twice as many women as men over the age of 65. This may be due to male migration and lower life expectancy for men. Imbalances also are evident at the bottom of the population pyramid: for every 100 girls born in Georgia, 112 boys are born –although not as high as the neighboring South

Caucasus countries still are one of the highest sex ratios at birth in the world. This high sex ratio results from parental preference for sons in a context of declining family sizes and perceptions of economic uncertainty. Availability of prenatal sex-selection technology has facilitated this demographic trend. These skewed sex ratios at birth has led to "missing girls" - a lower number of girls in a generation whose absence poses significant demographic (exacerbating fertility slowdown) and social challenges. Policy efforts must encompass the several fronts which shape the underlying preference for sons, from influencing norms to promoting the value of girls and ensuring equal access to opportunities. Women in Georgia have longer life expectancy than men –78 years compared to 71 years for men. Georgian men are at a greater risk of developing diabetes, heart disease and other complications. Men are also at a greater risk of death due to violence, injuries, and the effects of prolonged use of alcohol and tobacco.

Moreover, women have seen improvements in maternal and child health outcomes, antenatal care, adolescent fertility rates and contraceptive use.Also marriages under 18 are still prevalent among minority groups living in Georgia, where girls do not have equal access to intellectual resources.

Access to education

Under the Education Act, everyone has the right to receive an education (art. 3), and the State is obliged to ensure equal conditions for receiving an education throughout the territory of the country (art. 39, para. 2). The principles of non-discrimination are also included in other acts of the Republic of Georgia.

Yet in Georgia's educational system, there is no special training or educational programmes aimed at overcoming negative stereotypes of the role of women in the family and society, since the generally accepted view is that problems of this kind are not typical for the country. Consequently, no consideration has been given to a review of school textbooks for gender stereotypes or to the gender-based differentiation of the learning process.
In education, women also show a slight advantage. Primary school enrollment is high among both girls and boys. Girls consistently outperform boys in reading, mathematics and science, and they are more likely than boys to enroll in tertiary education.

There is a significant divide in selection of areas of study in tertiary education. Men are more likely to major in engineering, manufacturing, agriculture or services. Women tend to graduate in the arts, humanities, education or healthcare. This segregation in fields of study reflects gender norms that define appropriate activities for men and women, and contributes to the concentration of women in certain sectors of the labor force.

Division of labor and equality of right in the workplace

Under the Constitution, both men and women have the right freely to choose an occupation. In the field of employment, discrimination on the basis of sex is prohibited. The sex of a person is taken into account only in job placement and employment in categories of jobs in which female labour is prohibited. Such jobs are specified in the Labour Code. Workers are promoted or transferred to other jobs in accordance with their qualifications and merits. In the remuneration of labour, restrictions on the basis of ethnic origin, language, sex or other attributes are prohibited.
After a decade of strong economic progress, Georgia was heavily affected by the global financial crisis in 2008-09. Between 2010 and 2014, the economy rebounded rapidly. Annual growth averaged 6.9 percent, service delivery and infrastructure improved, and the poverty rate fell from 42.7 to 32.3 percent. Yet, this growth did not translate in to greater economic opportunity or participation in decision-making for women.

Despite concrete governmental actions to prevent gender- based discrimination and provide women with equal rights under the law, gender inequality is still visible in many outcomes in Georgia. Supporting the equality of women and men is a smart development strategy for the country: the potential gains of closing the existing gaps are important not only for women and their families, but for the whole economy.

Women are less likely to be employers than men. Almost two thirds of women are self-employed and over half of women who are employed work in the agriculture sector. A third of all agriculture holdings are owned and managed by women.

In addition to agriculture, women are overrepresented in education, health care and social work, which are viewed as better suited for women who need to balance household work with paid employment. This concentration of women in certain sectors plays a role in the gender wage gap which was 37 percent in 2014.
Women in Georgia are more likely than men to experience long-term unemployment. In recent years also more women are leaving the country to search for employment making up about half of all labor migrants from Georgia to Western Europe, Greece and Turkey.

Women are underrepresented in entrepreneurship and it would be important to understand reasons. Access to credit is reported to be a constraint by Georgian entrepreneurs but there appears to be no significant difference by gender. There could be gender differences in assets accumulated in practice even though women and men have equal inheritance and ownership rights.

Women, leadership and political decision-making

Georgian legislation contains provisions that guarantee equality between men and women in the exercise of all civil and political rights. However, only an insignificant number of women hold administrative positions and posts in legislative and executive bodies. Only 16 women are members of Parliament (6.4 per cent of all deputies); one of those women is the leader of a coalition of factions of the parliamentary majority. One woman is Minister of the Environment and Ecology, five women are deputy ministers (culture, education, communications and postal service, finance, health) and one woman heads a district administration. Georgia has 70 women judges, who comprise 48 per cent of the entire judiciary. The Deputy Secretary for Human Rights on the National Security Council (an advisory body under the President of Georgia) is a woman, as is the Deputy People's Defense Counsel of Georgia.

Women's share of leadership roles in the public and private sector is still limited. However, since 2000, Georgia has made progress increasing the number of women as managers, executives, senior officials and legislators. In the Constitutional Court in 2016, three out of nine judges are women.

Progress has been made through changes in legislation, but gender inequality still persists in many areas.
Yet unfortunately none of the sectorial laws or by-laws reflects the gender equality related legal acts. No budgetary or other type of funding is envisaged. There have been no "Gender Budgets" introduce.

Gender in the Electricity Distribution Sector

Legal issues

Despite high importance of the energy sector for the country, the legal bases currently regulating the sector are rather scarce and outdated:
- Law of Georgia "on Electricity and Natural gas" (1997)
- Law of Georgian "on Oil and Gas", (1999)
- "Main direction of the State Policy in Energy Sector of Georgia"

Unfortunately none of the sectorial laws or by-laws reflects the gender equality related legal acts. No budgetary or other type of funding is envisaged. There have been no "Gender Budgets" introduced, an issue that needs to be addressed

Also no environmental regulation in Georgia which includes sections/chapters, or which is related to the management of POPs and PCBs reflects gender issues:

- "The Law of Georgia on Environmental protection" (1996)

- "Code on Waste Management" (2015)
- "Law on Transit and Import of Wastes on the Territory of Georgia" (1995)
- "Amendment to the Law on Transit and Import of Wastes on the Territory of Georgia" (2016)
- Resolution of the Government of Georgia on adoption of the Adoption of the Action Plan on persistent organic pollutants (POPs) (2011)
- Decree of the government of Georgia N428 „on adoption of the regulation on labeling and marking of hazardous chemicals "(2013)
- Governmental Decree N184 of 28th September, 2006 "On Statute about Transit Permit Issuance, Limited Circulating Material Production, Transportation, Import, Export, Re-export, and on Approval of the List of Limited Circulating Materials (2006)
- Decree of Government of Georgia N422 "on form and content of waste records to be kept and reports to be made" August 11, 2015
- Decree of Georgian Government N115 "On determining the list and classification of waste by type and characteristics" (7th of March, 2016)
- Resolution №160 of the Government of Georgia on adoption of the Technical regulation for development of the national Waste management strategy and action plan for the years of 2016-2020 (N160, April 1 2016)
- Decree of Georgian Government N145 on approval of technical regulations for special requirements of hazardous waste collection and processing
- Resolution №144 the Government of Georgia on the rules and conditions for registration of collection, transportation, pre-treatment and temporary storage of waste" (N144, March 29th, 2016)
- Decree of Government of Georgia "on the rules and conditions for registration of collection, transportation, pre-treatment and temporary storage of waste" (№143, March 29th 2016)

Assessment of the PCB situation as well as the planned project intervention indicates that the majority of POPs handlers as well as workers in companies holding POPs are men. This is because traditionally the electricity distribution maintenance jobs have been male dominated. The same goes for the heavy industries that are potentially holders of PCB containing equipment.

In this respect it should be noted that man exposure is more direct due to handling of oils while female PCB exposure is predominantly indirect through environment and food. However, a more direct exposure to women may be from functioning PCB containing transformers potentially found in public spaces including hospitals and other strategic locations.

Since reproductive function may be disrupted by exposure to PCBs and neurobehavioral and developmental deficits occur in newborns and continue through school-aged children who had in utero exposure to PCBs, young women are more susceptible group.

Public Sector entities engaged in the project

Closer survey of the key stakeholders involved that will be mostly affected by the project showed that the gender balance in the principle stakeholders, The Ministry of Environmental Protection and Natural Resource (particularly the Waste and Chemicals Service Unit) and The Ministry of Energy staff gender balance is maintained - 51% women and 48% men on average.

Yet the is not due to the gender policy or clear vision of the State. According to the recent studies this is a trend in the public sector. Yet it should be noted that in the managerial positions situation is significantly different – 34% women and 66 % men.

Private Sector entities engaged in the project

Situation is quite different in the private sector – in particular we discussed the issue with the three companies that will be involved in the Project - JSC"Telasi", JSC "Energo-Pro Georgia", JSC "Georgian State Electro System" etc.

On average male and female distribution in the companies is the following:

1. Total staff - male 87% / female 13%
2. Management: male 70% female 30 %

This is partially causes by the fact that men get education in the areas where there is more demand at power and electricity distribution companies:

JSC"Telasi" and JSC "Georgian State Electro System" could not provide much information about gender policy or clear gender vision in the companies,which will need to be addressed in the course of the project.

Situation is quite different and improved at JSC "Energo-Pro Georgia" (EPG). Since September 2015 the company is involved in an USAID funded project - Improving Gender Diversity in Power Sector Utilities - The Program focuses on improving information about and knowledge of gender in power sector utilities at the distribution level.

As a result improvement of gender balance, promotion of professional development of female workers at the company, implementation of equal career opportunities – all these are the issues on which EPG works actively.

Yet professions and vacancies in the field of power engineering are more attractive for males as they are associated with physical labor. Despite this EPG revised priorities and made decision to engage actively into the process of gender balance improvement in the company.

In this regards, a number of regulations and procedures have been implemented in the company. With the purpose to foster popularity of power engineering and electricity fields and attract more females, since 2016 company launched a project in frames of which female employees visited up to 50 schools around Georgia and held classes to 8th and 9th grade pupils on the methods of generating electricity, their importance and prospects. The lessons were held by the female employees which was a clear message for the pupils especially girls that the field is attractive for all gender representatives. In total 1500 pupils attended the classes. The project will be of a permanent character.

On the basis of the existing regulations, the filtering of the persons searching for the job is not carried out according to the gender. For the absolute majority of the positions the company applies professional testing methods, which excludes any subjectiveness. In case of an interview, the selection committee evaluates candidates based on the preliminarily defined criteria. The selection committee is being composed in view of gender balance.

The company pays great attention to the professional training of the employees and offers them various courses in English language and computer science; when selecting the students, gender balance is maintained.

In the end of 2016 EPG participated in the 3rd global forum "Business for Gender Equality" (Panama), where company achievements in the direction of gender were discussed and evaluated highly.

Lessons learnt from the JSC Energo-Pros are valuable to extract in order to introducing successful practices in gender aspect and hiring in the electricity distribution sector in Georgia.

ANNEX F. GEF GRANT BUDGET

GEF Outcome / Outputs		Year 1	Year 2	Year 3	Year 4	Total	Execution Modality
		US$	US$	US$	US$	US$	
Output 1.1.1 Development of PCB specific amendments in waste legislation	International consultants	6000	11000			17000	UNIDO Technical Execution Support
	Nat. Experts	10000	12000	10000		32000	Execution Agreement with national Project Execution Entity
	Sundries					0	Execution Agreement with national Project Execution Entity
	Project staff travel	4000	4000			8000	Execution Agreement with national Project Execution Entity
	Equipment					0	Execution Agreement with national Project Execution Entity
	Workshops / training	5000	10000	5000		20000	Execution Agreement with national Project Execution Entity
	Subcontracts	2000	2000	2000		6000	Execution Agreement with national Project Execution Entity
	Sub-total for this output	27000	39000	17000	0	83000	
Output 1.1.2. Development of technical guidelines covering all stages of PCB life-cycle.	International consultants	2000	6500			8500	UNIDO Technical Execution Support
	Nat. Experts	10000	18000	7000		35000	Execution Agreement with national Project Execution Entity
	Sundries					0	Execution Agreement with national Project Execution Entity
	Project staff travel	2000	8000	2000		12000	Execution Agreement with national Project Execution Entity
	Equipment					0	Execution Agreement with national Project Execution Entity
	Workshops / training		10000			10000	Execution Agreement with national Project Execution Entity
	Subcontracts	1500	5000			6500	Execution Agreement with national

							Project Execution Entity
	Sub-total for this output	15500	47500	9000	0	72000	
1.2.1. Training of PCB holders and state inspectors in implementing the guidance.	International consultants		2000	2000	2000	6000	UNIDO Technical Execution Support
	Nat. Experts		6000	6000	6000	18000	Execution Agreement with national Project Execution Entity
	Sundries					0	Execution Agreement with national Project Execution Entity
	Project staff travel		3000	3000	3000	9000	Execution Agreement with national Project Execution Entity
	Equipment	30000	5000	5000	5000	45000	UNIDO Technical Execution Support
	Workshops					0	
	Subcontracts					0	
	Sub-total for this output	30000	16000	16000	16000	78000	
1.2.2. Upgrading government capacity to enforce PCB regulations, including PCB information management	International consultants		22000	8000		30000	UNIDO Technical Execution Support
	Nat. Experts	18000	18000	18000		54000	Execution Agreement with national Project Execution Entity
	Sundries	1000	1000	1000	1000	4000	Execution Agreement with national Project Execution Entity
	Project staff travel	5000	6000	6000	5000	22000	Execution Agreement with national Project Execution Entity
	Equipment		5000		5000	10000	Execution Agreement with national Project Execution Entity
	Workshops					0	Execution Agreement with national Project Execution Entity
	Subcontracts	15000	15000			30000	Execution Agreement with national Project Execution Entity
	Sub-total for this output	39000	67000	33000	11000	150000	
1.2.3. Undertake targeted awareness raising	Intenational Consultants	3000	5000	5000		13000	UNIDO Technical Execution

for high-risk population							Support
	Nat. Experts	7000	8000	5000		20000	Execution Agreement with national Project Execution Entity
	Sundries	3000	3000	3000		9000	Execution Agreement with national Project Execution Entity
	Project staff travel	5000	5000	5000		15000	Execution Agreement with national Project Execution Entity
	Equipment					0	Execution Agreement with national Project Execution Entity
	Workshops					0	Execution Agreement with national Project Execution Entity
	Subcontracts		20000	20000	20000	60000	Execution Agreement with national Project Execution Entity
	Sub-total for this output	18000	41000	38000	20000	117000	
Subtotal for Component 1		102500	171500	96000	47000	500000	
Output 2.1.1. Verify pure PCB equipment and manage them safely until replacement.	International Consultants		22000	22000		44000	UNIDO Technical Execution Support
	Nat. Experts	2000	2000	2000	2000	8000	Execution Agreement with national Project Execution Entity
	Sundries	1000	1000	1000	1000	4000	Execution Agreement with national Project Execution Entity
	Project staff travel	1000	1000	1000	1000	4000	Execution Agreement with national Project Execution Entity
	Equipment	2000	2000	2000	2000	8000	UNIDO Technical Execution Support
	Workshops					0	Execution Agreement with national Project Execution Entity
	Subcontracts		20000	20000		40000	Execution Agreement with national Project Execution Entity
	Sub-total for this output	6000	48000	48000	6000	108000	
Output 2.2.1. Transportation and disposal of	International consultants		25000	25000	5000	55000	UNIDO Technical Execution

300 tons of PCB oils and associated equipment							Support
	Nat. Experts	2000	12000	12000	2000	28000	Execution Agreement with national Project Execution Entity
	Sundries	500	500	500	500	2000	Execution Agreement with national Project Execution Entity
	Project staff travel	1000	2000	2000	2000	7000	Execution Agreement with national Project Execution Entity
	Equipment					0	Execution Agreement with national Project Execution Entity
	Workshops					0	Execution Agreement with national Project Execution Entity
	Subcontracts		400000	400000		800000	UNIDO Technical Execution Support
	Sub-total for this output	3500	439500	439500	9500	892000	
Subtotal for Component 2		9500	487500	487500	15500	1000000	
Output 3.1.1. Detailed inventory of the PCB containing transformers in all industrial sectors	International Consultants		25000			25000	UNIDO Technical Execution Support
	Nat. Experts	10000	10000	10000	10000	40000	Execution Agreement with national EA 1
	Sundries	1000	1000	1000	1000	4000	Execution Agreement with national EA 1
	Project staff travel	1500	3000	2000	1500	8000	Execution Agreement with national EA 1
	Equipment					0	Execution Agreement with national EA 1
	Workshops		2500	2500		5000	Execution Agreement with national EA 1
	Subcontracts		200000			200000	UNIDO Technical Execution Support
	Sub-total for this output	12500	241500	15500	12500	282000	
Output 3.2.1. Updated transformer maintenance with PCB management in place	International Consultants	4000	4000		4000	12000	UNIDO Technical Execution Support

	Nat. Experts	12000	12000	12000	12000	48000	Execution Agreement with national EA 1
	Sundries	1000	1000	1000	1000	4000	Execution Agreement with national EA 1
	Project staff travel	6000	6000	6000	6000	24000	Execution Agreement with national EA 1
	Equipment					0	Execution Agreement with national EA 1
	Workshops					0	Execution Agreement with national EA 1
	Subcontracts	5000	5000	5000	5000	20000	Execution Agreement with national EA 1
	Sub-total for this output	28000	28000	24000	28000	108000	
Output 3.3.1. Procurement and testing of mobile PCB de-contamination technology	International Consultants		30000			30000	UNIDO Technical Execution Support
	Nat. Experts	5000	5000	5000	5000	20000	Execution Agreement with national EA 2
	Sundries	1000	1000	1000	1000	4000	Execution Agreement with national EA 2
	Project staff travel	1000	8000	1000	1000	11000	Execution Agreement with national EA 2
	Equipment		1200000			1200000	UNIDO Technical Execution Support
	Workshops		5000		5000	10000	Execution Agreement with national EA 2
	Subcontracts		20000	2000	2000	24000	Execution Agreement with national EA 2
	Sub-total for this output	12000	74000	14000	19000	1299000	
Output 3.4.1 1,000 tons of PCB containing oils rendered harmless in electricity distribution network	International Consultants		30000	30000		60000	UNIDO Technical Execution Support
	Nat. Experts	10000	10000	10000	10000	40000	Execution Agreement with national EA 2

	Sundries	1000	1000	1000	1000	4000	Execution Agreement with national EA 2
	Project staff travel	2000	4000	4000	2000	12000	Execution Agreement with national EA 1
	Equipment		20000			20000	UNIDO Technical Execution Support
	Workshops	2500			2500	5000	Execution Agreement with national EA 2
	Subcontracts			140000	130000	270000	UNIDO Technical Execution Support
	Sub-total for this output	15500	1245000	185000	145500	411000	
Subtotal for Component 3		68000	1588500	238500	205000	2100000	
Output 4.1.1 Project impact indicators designed, applied and project implementation monitored and evaluated	International Consultants		17500		17500	35000	UNIDO Technical Execution Support
	Nat. Experts	12000	12000	12000	12000	48000	UNIDO Technical Execution Support
	Sundries	1000	1000	1000	1000	4000	UNIDO Technical Execution Support
	Project staff travel			3000		3000	UNIDO Technical Execution Support
	Equipment					0	UNIDO Technical Execution Support
	Workshops	5000	5000	5000	5000	20000	UNIDO Technical Execution Support
	Subcontracts	5000	5000	5000	5000	20000	UNIDO Technical Execution Support
	Sub-total for this output	23000	40500	26000	40500	130000	
Subtotal for Component 4		23000	40500	26000	40500	130000	
Project total		203000	2288000	848000	308000	3730000	
Project Management	International Consultants					0	
	Nat. Experts	34000	34000	34000	34000	136000	Execution Agreement with national

							Project Execution Entity
	Sundries	1000	1000	1000	1000	4000	Execution Agreement with national Project Execution Entity
	Project staff travel	5000	5000	5000	5000	20000	Execution Agreement with national Project Execution Entity
	Equipment					0	Execution Agreement with national Project Execution Entity
	Workshops	5000	5000	5000	5000	20000	Execution Agreement with national Project Execution Entity
	Subcontracts					0	
	Sub-total for this output	45000	45000	45000	45000	180000	
Project total including PM		248000	2333000	893000	353000	3910000	

ANNEX G. PROJECT TIMEFRAME

	TIMELINE FOR COMPONENT 1	Year 1				Year 2				Year 3				Year 4			
		1q	2q	3q	4q	1q	2q	3q	4q	1q	2q	3q	4q	1q	2q	3q	4q
Component 1.:	Legal, institutional and capacity strengthening																
Outcome 1.1.:	Regulatory instruments and guidelines for safe PCB management adopted																
Output 1.1.1:	Development of PCB specific amendments in waste legislation																
Activity 1.1.1.1:	Amendment to the existing legislation on waste aimed at the classification of PCB waste																
Activity 1.1.1.2:	Amendment to the existing legislation to define the status of contaminated transformers (waste or equipment)																
Activity 1.1.1.3:	Allowed disposal modalities for PCBs																
Activity 1.1.1.4:	Inclusion of PCB disposal plant in EIA																
Activity 1.1.1.5:	Development of national legislation on inventory and reporting																
Output 1.1.2:	Development of technical guidelines covering all stages of PCB life-cycle																
Activity 1.1.2.1:	Development of technical guidelines for the management of PCB contaminated equipment																
Activity 1.1.2.2:	Development of technical guidelines for the management of PCB contaminated oil																
Activity 1.1.2.3:	Development of technical standard, sampling and analysis of dielectric oil																
Outcome 1.2.:	Capacity for PCB regulation enforcement created.																
Output 1.2.1:	Training of PCB holders and state inspectors in implementing the guidance.																
Activity 1.2.1.1:	Conduction of Training of Trainers																
Activity 1.2.1.2:	Conduction of replicated Training by certified trainers																
Output 1.2.2:	Upgrading government capacity to enforce PCB regulations, including PCB information management																
Activity 1.2.2.1:	Assistance to inspection authority on carrying out inspections																
Activity 1.2.2.2:	Identification of financial incentives to promote replacement of PCB transformers																
Activity 1.2.2.3:	Technical assistance on the environmentally safe recycling of steel and copper from end of life transformers.																
Output 1.2.3:	1.2.3. Undertake targeted awareness raising for high-risk population groups.																
Activity 1.2.3.1:	Development of awareness raising materials and tools for specific target group,																
Activity 1.2.3.2:	Carrying out awareness raising activities																

	TIMELINE FOR COMPONENT 2	Year 1				Year 2				Year 3				Year 4			
		1q	2q	3q	4q	1q	2q	3q	4q	1q	2q	3q	4q	1q	2q	3q	4q
Component 2.	Management and disposal of equipment containing high concentration PCB oils																
Outcome 2.1.:	Process for managing high-risk PCBs established.																
Output 2.1.1:	Verify pure PCB equipment and manage them safely until replacement																
Activity 2.1.1.1:	Identification and inventory of transformers and capacitors containing pure PCB mixtures																
Activity 2.1.1.2:	Confirmation of PCB content for transformers and capacitors based on laboratory testing																
Outcome 2.2.:	Reduction of health and environmental risks locally and globally																
Output 2.2.1:	Transportation and disposal of 300 tons of PCB oils including associated equipment.																
Activity 2.2.1.1:	Transportation and disposal of capacitors, transformers and PCB oil																
Activity 2.2.1.2:	Decontamination of the carcasses of transformers previously containing highly contaminated PCB oil																

	TIMELINE FOR COMPONENT 3	Year 1				Year 2				Year 3				Year 4			
		1q	2q	3q	4q	1q	2q	3q	4q	1q	2q	3q	4q	1q	2q	3q	4q
Component 3.:	Technology transfer for long lasting PCB management capacity in the electricity distribution sector																
Outcome 3.1.:	PCB holders fully competent in PCB management																
Output 3.1.1:	Detailed inventory of the PCB containing transformers in all industrial sectors																
Activity 3.1.1.1:	PCB Inventory design and inventory service procurement																
Activity 3.1.1.2:	Carrying out sampling of dielectric oil and PCB analysis of at least 3000 transformers																
Outcome 3.2.:	Workers health and environmental performance of sector increased																
Output 3.2.1:	Updated transformer maintenance with PCB management in place																
Activity 3.2.1.1:	Development of procedures aimed at preventing oil release and cross contamination																
Activity 3.2.1.2:	Development of accident preparedness and emergency response																
Outcome 3.3.:	Technology transfer capacity established																
Output 3.3.1:	Procurement and testing of mobile PCB de-contamination technology																
Activity 3.3.1.1:	Technical specification and TOR for procurement of equipment drafted																
Activity 3.3.1.2:	Procurement and testing of PCB de-contamination technology, including regeneration of de-contaminated dielectric oil																
Outcome 3.4.:	Sustainable PCB processing introduced in Georgia																
Output 3.4.1:	1,000 tons of PCB containing oils rendered harmless in electricity distribution network..																
Activity 3.4.1.1:	Selection of the local operating entity																
Activity 3.4.1.2:	Decontamination activity resulting in the destruction of PCB contained in dielectric oil carried out, with treatment of at least 1000 tons of oil																

	TIMELINE FOR COMPONENT 4	Year 1				Year 2				Year 3				Year 4			
		1q	2q	3q	4q	1q	2q	3q	4q	1q	2q	3q	4q	1q	2q	3q	4q
Component 4.:	**Monitoring and evaluation**																
Outcome 4.:	**Assessment of the impact of project activities including lessons learned**																
Output 4.1:	**Project impact indicators designed, applied and project implementation monitored and evaluated**																
Activity 4.1.1:	**Establish the project management team**																
Activity 4.1.2:	**Establish the Project Steering Committee and hold inception meeting**																
Activity 4.1.3:	**Measure impact indicators on an annual basis**																
Activity 4.1.4:	**Prepare Annual Project Implementation Reports and Work plans.**																
Activity 4.1.5:	**Hold annual Project Steering Committee meetings**																
Activity 4.1.6:	**Carry out mid-term external evaluation**																
Activity 4.1.7:	**Carry out final external evaluation**																
Activity 4.1.8:	**Complete the Terminal Report**																
Activity 4.1.9:	**Establish a project management information system (MIS).**																

ANNEX H. DETAILS OF TRANSFORMER OILD SAMPLING AND ANALYSIS CARRIED OUT DURING PPG STAGE.

Sample id	Object Location	Type of equipment	Equipment Number	Power	Volume of oil	Production Date	PCB ppm
1	Tbilisi, Bagebi	Breaker 110 KV МКП	N7734-3		2660 kg		12,23
2	Tbilisi, 9139	Transformer 10 KV,	N67792	630	435 kg	1978	136,84
3	Tbilisi, Bagebi	Breaker МКП 110 KV	N7734-1		2660 kg		19,59
4	Tbilisi, 9123	Transformer 10 KV	N65274	630	435 kg	1978	15,91
5	Tbilisi, 9121	Transformer 10 KV	N64402	630	435 kg	1983	ND
6	Tbilisi, Bagebi	Breaker 110 KV МКП	N6451-3		2660 kg		15,91
7	Tbilisi, Bagebi	Breaker 110 KV МКП	N7734-2		2660 kg		26,94
8	Tbilisi, 9122	Transformer 10 KV	N44945	630	435 kg	1979	ND
9	Tbilisi, 0502	Transformer 6 KV	N6484	630	435 kg	1988	8,55
10	Tbilisi, Bagebi	Breaker 110 KV МКП	N6451-2		2660 kg		26,94
11	Tbilisi, Bagebi	Breaker 110 KV МКП	N6451-1		2660 kg		8,55
12	Tbilisi, 0684	Transformer 6 KV	N9086	630	435 kg	1988	12,23
13	Tbilisi, Arsenali	Transformer N2 110/6	N5651	16000	16400 kg	1973	ND
14	Tbilisi, Navtlughi	Transformer N2 35/6	N76414	25000	14700 kg	1969	1,19
15	Tbilisi, Navtlughi	Transformer N1 35/6	N75350	25000	14700 kg	1969	ND
16	Tbilisi, Orxevi	Transformer N2 110/10/6	N160098	16000	21000 kg	2009	ND
17	Tbilisi, 0392	Transformer 6KV	N511245	630	435 kg	1972	8,55
18	Tbilisi, Saburtalo1	Transformer N2 35/6	N119289	25000	14700 kg	1983	ND
19	Tbilisi, Arsenali	Transformer N1 110/6	N160097	16000	16400 kg	2009	ND
20	Tbilisi, Sanapiro	Transformer N1 35/6	N93352	16000	10700 kg	1975	ND
21	Tbilisi,	Transformer N2	N108629	16000	10700	1979	ND

Sample id	Object Location	Type of equipment	Equipment Number	Power	Volume of oil	Production Date	PCB ppm
	Sanapiro	35/6			kg		
22	Tbilisi, Orxevi	Transformer N1 110/10/6	N122183	25000	23100 kg	1984	1,19
23	Tbilisi, Navtlughi 2	Transformer N2 110/10/6	N1959	63000	34400 kg	1990	ND
24	Tbilisi, 0502	Transformer 6KV	N17238	630	435 kg	2000	12,23
25	Tbilisi, Lilo 1	Transformer N1 35/6	N0079	10000	8900 kg	1962	19,59
26	Tbilisi, Saburtalo1	Transformer N1 35/6	N1420041	32000	15200 kg	2014	ND
27	Tbilisi, Navtlughi 2	Transformer N1 110/10/6	N180377	63000	34400 kg	1988	4,87
28	Tbilisi, Lilo 3	Transformer N1 110/35/6	N112666	25000	23100 kg	1991	ND
29	Tbilisi, Lilo 1	Transformer N2 35/6	N62100	10000	8900 kg	1965	1,19
30	Tbilisi, Lilo 3	Transformer N2 110/35/6	N127914	25000	23100 kg	1985	26,94
31	701-059. Rustavi Gachisni1	TTU-AI 630/6.			620kg	1976	23,27
32	701-066. Rustavi Gachisni1	TNOSN 1000/6.			455kg	2008	4,87
33	701-146. Rustavi S/s Marjvena Sanapiro	TM3 1000/6.			1072kg	1983	136,84
34	701-064a. Rustavi Gachisni1	TM 400/6.			431kg	1987	26,94
35	S/s Breti T1 #840	TM 2500/10.			2210kg	1982	4,87
36	S/s Alhaltsikhe 110KV	МКП-110			8400kg	1962	19,59
37	S/s Kaspi 110 T1	ТРДН-40000/110/35/6			23300kg	1989	4,87
38	S/s Metekhi Tseva 110KV Brecker	МКП-110Б			8400kg	1985	1,19
39	S/s Poti 4	40 110/10.			20000k	2005	63,66

Sample id	Object Location	Type of equipment	Equipment Number	Power	Volume of oil	Production Date	PCB ppm
	Transformer #1	#316550.			g		
40	S/s Bakisubani Transformer #2	ТРДН-40000/110/35/10 #125002			23200kg	1985	1,19
41	S/s Auto factory Transformer #2	ТДТН-31500/110/35/6 #412			35500kg	1965	8,55
42	S/s Kutaisi 4 Transformer #2	ТМ 6300 110/6. # 57518			9500kg	1964	15,91
43	S/s Tchiatura 1 Transformer #1	ТАМ 5600 35/6. # 31152			6040kg	1960	8,55
44	S/s Savane Transformer #1	ТМ 4000 35/10. # 134606			2150kg	1988	15,91
45	S/s Zestaphoni Transformer #1	ТДТН-25000/110/35/6. #19494			17250kg	1990	63,66
46	S/s Vani Transformer #2	ТД-10000/35/10. # 505			5000 kg	1989	4,87
47	S/s Sadmeli Transformer #2	ТАМ 1800/35/10. # 27321			3130kg	1960	8,55
48	S/s Kutaisi 6 Breaker of Transformer #1-110KV B	У-110			8400kg	1986	1,19
49	701-145. Rustavi S/s Marjvena Sanapiro #26	CZCKCO 1000/6.			475L	2013	1,19
50	S/s Aphtaun T-1	IEC-60076 25 MVA			8800 kg	2011	ND
51	S/s Saguramo T-1	ТРДН-25000/110-79У1			15000kg	1985	4,87
52	S/s Metekhi Tseva T1	ТДН-16000/110-79У1			17200kg	1977	8,55
53	S/s Mukhrani Veli T-3	ТМН-6300/35			5250kg	1983	4,87
54	S/s	МКП-110М			9000kg	1967	8,55

Sample id	Object Location	Type of equipment	Equipment Number	Power	Volume of oil	Production Date	PCB ppm
	Saguramo Breaker of 110 KV						
55	S/s Khashuri Tseva Breaker of T2 110KV	МКП-110			8400kg	1960	12,23
56	S/s Tetritskaro 110 KV T1	TRN 6300-123/B			5.2 t	2015	ND
57	701-147. Rustavi S/s Marjvena Sanapiro #26	ТМ 630/6.			775kg	1975	1,19
58	S/s Lomisi Transformer -2	ТМН-6300/35-У1			3920 kg	1987	4,87
59	S/s Zahesi Transformer -2	ТД-10000/35-74У1			5000 kg	1984	1,19
60	S/s Natakhtari Transformer -1	ТРДН-40000/110-80У1			16220kg	1986	ND
61	Tbilisi S/s Navtlughi-220	АТ-1 АТДЦТН-125000/220/110/У1	147721		48 t	1992	1,19
62		Т-1ТДТН-40000/110/35/6	108135		28t	1980	1,19
63		Т-2ТДТН-31500/110/35/6	1251		32t	1967	ND
64	Tbilisi S/s Didube-220	Т-1ТДТН-80000/110	142274		28,9t	1980	4,87
65		АТ-1 АТДЦТН-125000/220/110-У1	142636		48t	1990	12,23
66	Tbilisi S/s Gldani-220	АТ-2 АТДЦТН-125000/220/110/У1	139533		48t	1988	15,91
67		Т-2 ТДТН-16000/110/35-80У1	13496		14,5t	1983	8,55
68	Imereti S/s Kutaisi-220	АТ-2 АТДЦТН-125000/220/110/10	89685		63,5t	1974	ND
69	Imereti S/s Zestaphoni-500	АТ-1 5 ARZ 200 000-245	318212		45t	2005	1,19
70		АТ-2 АТДЦТН-200000/220/110/-68У1	101925		76t	1977	15,91

Sample id	Object Location	Type of equipment	Equipment Number	Power	Volume of oil	Production Date	PCB ppm
71	Shida Kartli S/s Ksani-500	AT-3 АОДЦТН-167000/500/220-У1	133334		40t	1987	ND
72		Reactor РОМБС М-60000/500 У1	1519338		14,1t	2015	ND
73		Reactor РОМБС М-60000/500 У1	1519337		14,1t	2015	19,59
74		Reactor РОМБС М-60000/500 У1	1519336		14,1t	2015	4,87
75	Adjara – Guria Samegrelo S/s Menji 200	AT-1 YTR-125000/245 K-0	68104		57t	2016	ND
76	Adjara – Guria Samegrelo S/s Khorga 200	AT-1 MLPN 8354+GLAK 6242	D 41 8018		56t	2015	8,55
77	Kvemo Kartli S/s Gardabani - 500	AT-4. АОДЦТН-267000/500/220/У1	159958		51t	2008	1,19
78		Reactor РОДЦ-60000/500	1425847		47,295t	1997	4,87
79		AT-1 АТДЦТН-125000/220/110-У1	144188		48t	1990	1,19
80	Kakheti S/s Telavi - 110	T-1 ТДТН-10000/110/35/10	101273		23,51t	1979	173,30
81	Used Transformer oil Storage Container 1				3t		8,55
82	Kakheti S/s Bochorma - 35	T-1 P-320/35	441355		1,18t	1936	15,91
83	Used Transformer oil Storage Container 2				12t		12,23
84	Kakheti S/s Napareuli - 35	T-1 ТМН-4000/35	124830		4,97	1985	23,27
85	Kakheti S/s Paldo - 35	T-1 TM-2500/35	93025		2,58	1980	8,55
86	Kakheti S/s Kurdghelauri - 35	T-2 ТМН-6300/35	105460		5,09	1979	4,87
87	Kakheti S/s Udabno - 35	T-1 TM-1600/35	10214		1,68 t	1977	26,94
88	Kakheti S/s	Breaker ВМТ-110	2689		0,08t	1988	63,66

Sample id	Object Location	Type of equipment	Equipment Number	Power	Volume of oil	Production Date	PCB ppm
	Telavi - 110	of 100kv ikalto					
89		Breaker - BMT-110 of T-2 110kv	3336		0,08t	1988	26,94
90		Breaker BM-35 35kv Gulgula	14449	10 KV	0,1t	1961	136,84
91	Gurjaani	Transformer N5-162		10 KV	1750 L	1978	354,32
92	Sighnaghi	Transformer N59		10 KV	1180 L	1981	173,30
93	Gurjaani	Transformer N5-159		10 KV	1180 L	1982	354,32
94	Telavi	Transformer Abano 8178		10 KV	890 L	1972	354,32
95	Gurjaani	Transformer „Keramika“		10 KV	630 L	1975	8,55
96	Gurjaani	Transformer N5-160		10 KV	1750 L	1978	4,87
97	Sighnaghi	Transformer N3021		10 KV	1750 L	1985	ND
98	Gurjaani	Transformer N5298		10 KV/400 KVA	1750 L	1988	26,94
99	Lagodekhi	Transformer „ Fire protection”		10 KV	1750 L	1983	245,96
100	Telavi	Transformer „Centre“ 8193		10 KV	890 L	1969	245,96
101	Telavi	Transformer „Kurdgelauri“ 8145		10 KV	890 L	2010	350,72
102	Sighnaghi	Transformer 3020		10 KV	1750 L	1981	0ver limit
103	Telavi	Transformer „Kurtebi“ 8133		10 KV	890 L	1970-1980	63,66
104	Gurjaani	Transformer N5294		10 KV/630 KVs	1750 L	1983	354,32

Sample id	Object Location	Type of equipment	Equipment Number	Power	Volume of oil	Production Date	PCB ppm
105	Kvareli	Transformer		10 KV	1798 L	1979	354,32
106	Sighnaghi	Transformer N63		10 KV/160 KVs	1798 L	1976	63,66
107	Kvareli	Transformer		10 KV	890 L	1980	4,87
108	Sighnaghi	Transformer N69		10 KV	1180 L	1982	1057,05
109	Gurjaani	Transformer N5293		10 KV	1798 L	1980	354,32
110	Kvareli	Transformer Kvareli		10 KV	1750 L	1976	282,16