

Supplementary Initial Environmental Examination

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Loan 2671 & Grant 0218-KGZ: Power Sector Improvement Project

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Acronyms

CAEN	Central Asian energy network
CDO	Central dispatching office
ChHVENE	Chui high-voltage electrical networks enterprise
CSEIEVPT	Central Service for Electrical Equipment Insulation, Excess-Voltage Protection and Testing
CSOI	Complete switchgear for outdoor installation of the type
DDPSSES	Department for disease prevention and State sanitary-epidemiology surveillance
EA	Environmental assessment
EMD	Environment monitoring department
EMMP	Environmental monitoring and management plan
EMP	Environmental management plan
ESC	Environmental safety concept
GN	Hygiene Regulations
GOKR	Government of the Kyrgyz Republic
GRG	Grievance Redress Group
GWP	Global warming potential
HVENE	High-voltage electrical networks enterprise
IEE	Initial environmental examination (IEE)
IEC	International Electric technical Commission
IHVENE	Issyk-Kul high voltage electrical networks enterprise
IPL	Indicative permissible level
ISIL	Indicative safety impact level
JHVENE	Jalalabad high voltage electrical networks enterprise
KR	Kyrgyz Republic
LEPF	Local environment protection fund
LSEIEVPT	Local Service for Electrical Equipment Insulation, Excess-Voltage Protection and Testing
LSG	Local Self-Government
MES	Ministry of Emergency Situations
MNR of the RF	Ministry of natural resources of the Russian Federation
MPC	Maximum Permissible Concentration
MoEI	Ministry of Energy and Industry
NIP	National Implementation Plan
NLA	Normative legal acts
NEGK	National Electric Grid of Kyrgyzstan
NGO	Non-State organization
NHVENE	Naryn high-voltage electrical networks enterprise
OHVENE	Osh high-voltage electrical networks enterprise
OMS	Operations and Maintenance Service
OPGW	Optic cable placed in the ground wire
PCB	Polychlorinated biphenyls
PCB Management Plan	PCB Management Plan
PPE	Personal protection equipment
RGKR	Resolution of the Government of the Kyrgyz Republic
RPS of the Mol of the KR	Road Patrol Service of the Ministry of Interior of the Kyrgyz Republic
SAEPF	State Agency for Environmental Protection and Forestry
SanPiN	Sanitary and Epidemiological Rules and Standards
SEAS	State Environment Assessment Service

SIETS	State Inspection on environmental and technical safety
SCADA	Supervisory Control And Data Acquisition
SPNR	Strictly Protected Nature Reserves
SPS	Safeguard Policy Statement
SRS	State Registration Service
THVENE	Talas high-voltage electrical networks enterprise
TPD	Technical Planning, Analysis and Production Development Division
VT	Voltage Transformer
CT	Current Transformer
UNFCCC	UN Framework Convention on Climate Change
UWC	Unfavorable weather conditions
VT	Voltage transformer
WHO	World Health Organization

1. INTRODUCTION

1.1. Background

1. This Supplementary Initial Environmental Examination Report (SIEE) has been prepared as part of the Asian Development Bank supports for the Project “Energy sector development in the Kyrgyz Republic” (L2671/G0218) in undertaking of Supplementary works for the cost savings of this project includes replacement of high-voltage current transformers, voltage transformers and switches at **25 substations**.
2. This SIEE is supplementary for the main IEE prepared in June 2014¹. The status of the main IEE is valid, and SIEE is just a supplementary assessment for the installation of the additional equipment at the same sub-stations.
3. The SIEE addressed the possible environmental impacts of additional works to be undertaken at pilot sub-stations. The project proponent is JSC National Electric Grid of Kyrgyzstan (NEGK).
4. The objective of the study is to help the Government to fulfill the goal of the project on enhancing effectiveness of energy consumption, to strengthen energy security of the country and to facilitate regional energy trade.
5. Original Project plans to (i) modernize substations, and (ii) establish Supervisory Control and Data Acquisition (**SCADA**) system to manage the energy system.

2. POLITICAL, LEGAL AND INSTITUTIONAL FRAMEWORK

6. An overview of the policy and legislative framework as well as the environmental assessment guidelines of Kyrgyzstan that apply to the proposed project are described in details in IEE for Project dated June 2014. The document also identifies relevant Asian Development Bank Safeguard Policies that will apply. The project will be required to comply with all relevant national and international environmental and social policies and guidelines.
7. Constitution of the Kyrgyz Republic sets forth the fundamental principles of natural resources and environment management. Kyrgyzstan has developed a legal framework that regulates ongoing management of natural resources and environment and legal relationship between the nature users and the state. Current legislation regulates protection of and use of all types of resources: land, water, air, biodiversity, mineral resources.
8. Environment Security Concept, approved by the President in 2007, is now the country's leading policy paper in terms of environmental policy. It sets forth the basic principles of environmental policy and identifies global, national and local environmental challenges; sets priorities for environment protection at the national level, as well as tools for environmental safety and the expected results of the ESC.
9. Legislation provides for procedures and management mechanisms, such as the basic norms and rules for the use of resources, including the rules and regulations of charging for the use of natural resources and environmental pollution, environment monitoring, impact assessment, environmental standards, environmental assessment, environmental monitoring, etc.

2.1. Legal framework for environment protection

10. These are the major laws governing environmental protection activities in the Kyrgyz Republic:
 - (i) The Law “On Environment Protection” (1999);
 - (ii) The Law “On Environmental Assessment” (1999);
 - (iii) The Law “On Air Protection” (1999);
 - (iv) Land Code (1999);
 - (v) The Law “On Production and Consumption Waste” (2001);

¹ <https://www.adb.org/sites/default/files/project-document/81256/43456-023-iee-01.pdf>

- (vi) The Law “On Access to Information Retained by State Agencies and Local Authorities of the Kyrgyz Republic” (2006);
- (vii) The Law “On State Regulation and Policy on Emission and Absorption of Greenhouse Gases”(2007);
- (viii) The Law “On the Procedure for Inspections of Businesses” (2007);
- (ix) The Law “General Technical Regulations on Environmental Safety in the Kyrgyz Republic”(2009);
- (x) The Law “On the Procedures for Consideration of Citizens’ Complaints” (2013);
- (xi) Law “On Licensing and Permit System in the Kyrgyz Republic” (2013).

11. **Framework Law “On Environment Protection”** (1999) sets forth the basic principles of environmental protection. It also contains a brief description of the main basic aspects under regulation that form the basis for development of new legal instruments in certain areas of environmental protection.

12. **The Law “On Environmental Assessment”** (1999) regulates in detail the procedure for environmental impact assessment and the EIA and covers both current and new programs, plans and legislation in the field of environmental protection. The goal of this act is to prevent negative impacts on human health and the environment, occurring as a result of economic or other activities, and ensuring compliance with the environmental requirements of such activities in the country.

13. This law is widely applied to “development projects” that may have an impact on the environment, including the Feasibility Study, as well as construction, reconstruction, development, refurbishment projects, other projects, implementation of which may affect the environment, regardless of their estimated cost, affiliation or type of property.

14. Under this Act the project initiators are responsible for providing the necessary documentation for the project and its environmental impact for public environmental assessment. SAEPF expert commission reviews submitted documentation. SEAS-positive statement is a prerequisite for project funding or implementation. Negative statement serves as the basis for banning project implementation.

15. **The Law “On General Technical Regulations on Environmental Safety in the Kyrgyz Republic”** defines the basics of technical regulation of environmental safety and establishes general requirements for environmental safety at the design stage and in the process of production, storage, transportation and disposal of produce by business and other enterprises. Requirements of these technical regulations are operative on the territory of the Kyrgyz Republic in relation to the processes of production, storage, transportation and disposal of products and are mandatory for all legal entities and individuals involved into these processes.

16. **The Law “On Production and Consumption Waste”** dated November 13, 2001, N 89. The Law outlines the state policy in the areas of production and consumption waste management and is aimed at preventing the negative impact of production and consumption waste on environment and human health when handling it, as well as their maximum engagement in economic turnover as an additional source of raw materials.

17. **The Law “On Licensing and Permit System in the Kyrgyz Republic”** establishes licensing for certain types of activities to prevent the harmful impact on human life, health, environment, property, public and state security, as well as to manage limited public resources. The Law envisages obtaining of licenses and permits aimed at ensuring environmental security.

- (i) Article 15: transportation (including across borders) of toxic production waste (including from production of radioactive substances);
- (ii) Article16: utilization, storage, burial, destruction of toxic materials and substances, including radioactive ones;
- (iii) Article 17: a permit for (i) placement of waste in environment, (ii) transportation of hazardous cargo; (iii) import and export from the Kyrgyz Republic of production waste and laboratory samples to conduct analytical studies.

18. **Regulations.** Key aspects of regulatory measures of the laws are reflected in the regulations approved by the Government resolutions and agency ordinances, registered with the Ministry of Justice. In accordance with the Law “On Regulations” (2009) all the regulations approved below the Government resolution level have been terminated. At the moment they have no legal force, but are applied. These include regulations governing waste management and hygiene regulations and standards.

19. **Regulation “On State Environmental Assessment in the Kyrgyz Republic”** approved by the Government resolution #212 dated 12.04.1994 were drafted as a follow up to the 1991 Law “On

Environment Protection” and establishes rules and mechanism for environmental impact assessment. Regulations have not been brought in compliance with the Law “On Environment Protection” of 1999.

20. Regulations that have no force but are applied:²

- (i) Guidelines for the assessment of proposed activities on the environment (EIA), Ministry of Justice of the Kyrgyz Republic, # 386 dated 04.07.1997;
- (ii) Instructions on rationing waste management, Ministry of Justice of the Kyrgyz Republic, # 73 dated 01.10.1999;
- (iii) Procedures for accumulation, transportation, disposal and dumping of toxic industrial waste, Ministry of Justice of the Kyrgyz Republic, # 27-05 dated 08.02.2005;
- (iv) Procedures for initial recording of interaction with toxic waste, Ministry of Justice of the Kyrgyz Republic, # 27-05 dated 08.02.2005;
- (v) Instructions for determining the criteria for classifying hazardous waste based on the level of hazard for the environment, Ministry of Justice of the Kyrgyz Republic, 27-05 dated 08.02.2005;
- (vi) Instructions for determining the ceiling for accumulating toxic industrial waste on the enterprise premises, Ministry of Justice of the Kyrgyz Republic, # 27-05 dated 08.02.2005;
- (vii) SanPiN 2.1.7.010-03 "Hygienic Requirements to Placement and Processing of Production and Consumption Waste", the MoJ of the KR, 11.11.2003, No. 115-03;
- (viii) Other regulatory and legal acts and standards.

21. **The Kyrgyz Republic is a party to several international conventions, including:**

- (i) Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1996);
- (ii) United Nations Framework Convention on Climate Change (2000);
- (iii) The Kyoto Protocol to the UNFCCC (2003);
- (iv) The UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus) (2001);
- (v) The Stockholm Convention on Persistent Organic Pollutants (2006);
- (vi) The Espoo Convention on Environmental Impact Assessment in transboundary context (2001);
- (vii) The Rotterdam Convention on the Procedure of securing Prior Informed Consent in International Trade for Certain Hazardous Chemicals and Pesticides (2000).

22. Ratification of international legal acts implies implementation of international requirements in the national legislation and harmonization of the Kyrgyz and international legislation. However this process is not moving forward at a sufficient rate, therefore international requirements are considered as a framework and are difficult to implement in the Kyrgyz Republic.

23. **PCB management in the Kyrgyz Republic.** The Kyrgyz Republic has joined the Stockholm Convention on Persistent Organic Pollutants in 2002. In 2006 the National plan for implementation of the Stockholm Convention on Persistent Organic Pollutants has been drafted and approved by the resolution of the Government of the Kyrgyz Republic.

Box 1. Liabilities of the Kyrgyz Republic on Decommissioning of PCB Containing Equipment³

- (i) The termination of the use of PCB containing equipment (at or above 5 liters capacity and with the concentration of > 10%, 5 liters > 0.05 %, 0.05 l and > 0.005) up to 2025;
- (ii) Prohibition of direct reuse of PCB containing substances (at concentrations > 0.005 %);
- (iii) Identification and environmentally safe management of other PCB containing products (> 0.005 %);
- (iv) Promote measures to reduce exposures and risks associated with the use of PCB containing equipment.
- (v) Preparation of sites for storage of PCB containing equipment and oil. Collection and transportation of PCB containing equipment and oil to storage sites.

24. State program “Utilization of production and consumption waste” approved by the resolution of the Government of the Kyrgyz Republic #389 dated 19 August 2005 was designed for 2005-2011 and provided for development of the system of separate collection of different types of waste including PCB and

²Was terminated in accordance with the Article 36 of the Law “On Normative Legal Acts” # 241 dated 20 July 2009, but is applied at the working level.

³ NIP of the KR of the Stockholm Convention on Persistent Organic Pollutants, 2006;

development of potential of environment protection conventions including those related to waste accumulation problems. However the measures set forth in the Program haven't been implemented.

25. There are no special legal requirements for PCB treatment. E.g. PCB standard content in the environment or assessment of hazard thereof for human health are non-existent. PCB management requirements are regulated by the general waste management legislation, which is partially ineffective.

26. **ADB policy on PCB management.** ADB Safeguard Policy (SPS 2009), Addendum 5, contains the list of investment activities prohibited by ADB. That includes the works that are considered illegal, prohibited in accordance with the local legislation or international conventions and agreements or are in the process of gradual exclusion from production at the international level; that also includes polychlorinated biphenyls.⁴

2.2. Institutional Framework

27. The Kyrgyz Republic has the basis for institutional structure for implementation of tasks on environment protection. There is a non-government sector which actively participates and often times takes the lead in addressing environmental problems in the country. The Government of the Kyrgyz Republic had tasked certain agencies with coordination of actions and ensuring compliance with international obligations.

28. State agency on environment protection and forestry management under the Government of the Kyrgyz Republic is a leading State environment protection agency responsible for government's policy in this area and for coordination of similar activities of the other State agencies. SAEPF is responsible for implementation of the Stockholm Convention on Persistent Organic Pollutants.

29. SAEPF is responsible for the environment protection policy, regulation and coordination, for assessment and issuance of permits. These are some of the functions of the Agency:

- (i) Development of the environmental policy and its implementation;
- (ii) Public environmental assessment;
- (iii) Issuance of environmental licenses;
- (iv) Environmental monitoring;
- (v) Environmental information services.

30. State Inspectorate on environmental and technical safety under the Government of the Kyrgyz Republic is comprised of the following units:

- (i) Environmental safety department
- (ii) Industrial safety and mining oversight department
- (iii) Energy safety department

31. SIETS operates in accordance with the Law "On the procedures for inspecting business entities". SIETS ensures surveillance in accordance with the established procedures to ensure compliance with the:

- (i) Environment protection legislation, set rules, limits and norms of nature utilization, norms of emissions and dumping polluting substances and placement of waste in the natural environment;
- (ii) Industrial safety requirements in the process of construction, expansion, technical re-equipment, operation, conservation and elimination of hazardous production facilities;
- (iii) Requirements of land laws;
- (iv) Requirements for safety of equipment and means for storage and dispensing oil products and gas, freight-carrying cranes;
- (v) Safety rules in the process of construction, assembling and setting up electric networks and electric equipment.

32. Department of Disease Prevention and State Sanitary and Epidemiological Surveillance of the Ministry of Health oversees sanitary- epidemiological situation to ensure safety of products, environmental objects and conditions, prevention of harmful effects of environmental factors on human health. DDPSSSES develops MPC for chemicals in the environment to ensure safety for human health.

33. Ministry of Energy and Industry is the central State executive authority responsible for the State policy in the area of fuel and energy sector and industry development, including electricity.

⁴ Polychlorine dyphenils, a group of highly toxic chemical substances is contained in oil and electric transformers, condensates and switches manufactured between 1950 and 1985, SPS 2009

3. PROJECT DESCRIPTION

34. Original project works on upgrade of 107 substations and Establishing the system of Supervisory Control And Data Acquisition (SCADA) to link together seven large substations and control centers via optical fiber. Currently works are on final stage of completion. For the cost savings of the project, NEGK will continue upgrade of substations to replace high-voltage current transformers, voltage transformers and switches at 25 substations, which will allow enhancing reliability of the system operation by replacement of remaining obsolete switches and transformers, since Kyrgyz Republic is indirectly linked to CAEG, upgrading substations increases the reliability of the regional system, which serves the basis for the regional power trade.

35. **Location.** All supplementary project activities will be carried out across the country at 25 substations in Chui, Issyk - Kul, Talas, Naryn, Osh and Jalal-Abad provinces. Safeguard Policy Statement that ADB adopted in 2009 (SPS, 2009) serves the basis for the development of IEE. In accordance with the Safeguard Policy Statement ADB project belongs to category B.

36. **Category B:** Proposed project belongs to Category B when its potential adverse impact on the environment is limited to certain project sites; there are few or no irreversible effects, in most cases measures taken to mitigate adverse effects are easier to develop than for Category A projects. One should conduct Initial Environmental Examination (IEE).⁵ This Initial Environmental Examination (IEE) has been prepared as part of the Technical assignment within the agreement on IEE development.

3.1. Upgrading of substations.

37. **Supplementary works for the cost savings of this project** includes replacement of high-voltage (500 kV – 110 kV) current transformers 3 sets (**9 units**), voltage transformers 20 sets (**60 units**) and Switches 110 kV (**61 units**), Switches 110 kV (**7 units**): oil, air and vacuum at **25 substations**, (see Annex 9). Totally 140 equipment units will be replaced, out of it **47 units** are oil-immersed; the total volume of oil is **456,6 tons** and list of Equipment containing oil is shown at Table 1. The schedule of rapid analysis in oil-filled equipment for PCB content was developed (Annex 1), oil-filled equipment sampling activities will run simultaneously with supplementary construction works at previously indicated substations.

⁵ Regulations on Safeguard Policy statement. June 2009, ADB

Table 1. Equipment containing oil that will be replaced under additional works of the ADB project⁶

Object	550 kV			220 kV			110 kV			Amount of oil replaced in tons	
	Switches	VT	CT	Switches	VT	CT	Switches	VT	CT	Transformer	Switches
2	3	4	5	6	7	8	9	10	11	12	13
CHVENE				1 set			11 sets		4 sets (12 items)	-	169
IHVENE							7 sets			-	128
THVENE	3 sets	6 sets (18 pieces)	6 sets (18 pieces)				3 sets			-	-
NHVENE							5 sets				24.6
OHVENE							7 sets			-	-
JHVENE				5 sets			7 sets			-	135
Total for NEGK	3	6 sets (18 pieces)	6 sets (18 pieces)	6 sets			40 sets		4 sets (12 pieces)		
										456,6 tons	

⁶ Information provided by the OJSC NEGK



Photo 1. Substation “Kara-Balta”. Oil switch in concrete oil catcher



Photo 2. Substation “Kara-Balta”. Oil transformer in concrete oil catcher

38. During supplementary works, morally and physically obsolete equipment will be replaced by new one that conforms to international environmental standards in accordance with the safe environmental requirements. Obsolete replaceable equipment will be replaced by equipment manufactured in Turkey, which conforms to international standard of the IEC ⁷ (see Table 2).

Table 2. The new equipment that will be installed to replace outdated equipment⁸

Equipment to be replaced		Standards for the new equipment	Type of insulation	Environmental standard of the new equipment
CT	550	IEC 60044-1	Oil	Equipment of 1998 IEC standard, in 2001 confirmed the ISO 9001 certificate. In 2002 ISO 14001 certificate was confirmed ⁹
	220	IEC 60044-1	Oil	
	110	IEC 60044-1	Oil	
	35	IEC 60044-1	Oil	
VT	550	IEC 60044-5/ IEC 358	Oil	
	220	IEC 60044-5/ IEC 358	Oil	
	110	IEC 60044-5/ IEC 358	Oil	
	35	IEC 60044-2	Oil	
	6-/10	IEC 60044-2	With insulating epoxy resin inside the unit	
Switches		IEC 62271-100:2001	Sulfur hexafluoride SF6+CF4	

39. Technology for replacement of current and voltage transformers includes the following consecutive works.

Table 3. A sequential technological process of replacing the current transformers and voltage transformers for the existing concrete-made power transmission poles¹⁰

#	Operations	Operations, technological requirements and standards
1.	Delivery of the new transformer to installation site	Transformer is delivered to installation site by motor vehicles
2.	Removing old transformer	2.1. Install auto crane to replace the transformers 2.2. Secure the straps to remove the old transformer from the structure 2.3. Fasten the label indicating the output index on the wires connected to the low voltage winding terminals 2.4. Disconnect the bus-bar and wire 2.5. Unplug the transformer from the structure 2.6. Remove the transformer from the structure and move it to the truck.
3.	Installing a new transformer	3.1. lift up the new transformer on the structure using auto crane 3.2. Set up the transformer on the structure and secure 3.3. Release straps and remove the derrick
4.	Connecting a new transformer	5.1. Measure the insulation resistance between the windings and ground and between the windings 5.2. Connect the bus-bar and wire 5.3. Test the reliability and correctness of all connections and fastenings.
5.	Removing old transformer from the site	Relocate removed transformer out of the site by truck

⁷International electric technical commission – international non-commercial organization on standardization in the area of electric, electronic and neighboring technologies. Some of the IEC standards are designed jointly with the International Standardization organization (ISO). Equipment is imported from Turkey which is a member of IEC

⁸ Information provided by the OJSC NEGK

⁹ ISO 9000 and ISO 14001 – international standard that contains requirements to the system of environmental management system) certification is based on

¹⁰Technology cards were provided by the OJSC “National Electric Grid of Kyrgyzstan”

Table 4. A sequential technological process for replacing equipment in case of replacement of old concrete-made pole with a new concrete-made pole

#	Operations	Operations, technological requirements and standards
1.	Delivery of the new transformer to installation site	Transformer is delivered to installation site by motor vehicles
2.	Dismantle existing concrete-made pole	Mechanical destruction of old concrete-made pole
3.	Construction of new concrete-made pole	3.1. Deliver concrete to the construction site 3.2. Prepare the place for construction of new concrete-made pole (excavation) 3.3. Construction of new concrete-made pole
4.	Installing a new transformer	3.1. lift new transformer to the construction using a mobile crane 3.2. Set up the transformer to the construction and secure 3.3. Release straps and remove the derrick
5.	Connecting a new transformer	5.1. Measure the insulation resistance between the windings and ground and between windings 5.2. Connect the bus-bar and wire 5.3. Test the reliability and correctness of all connections and fastenings.
6.	Removing old Transformer from the site	6. Relocate removed transformer out of the site by motor vehicles 6.1. If PCB would be detected in oil, Management Plan for PCB contaminated oil, and Management Plan for PCB contaminated equipment will be implemented; 6.2. If PCB would not be detected in oil or equipment, Plan for management of non-toxic substances will be implemented
	Cleanup from construction debris	Clean the site from construction debris

Table 5. A sequential technological process for replacing oil switch

#	Operations	Operations, technological requirements and standards
1.	Delivery of the new switch to installation site	Switch is delivered to installation site by motor vehicles
2.	Removing old switch	2.1. Set up auto crane to replace switches 2.2. Disconnecting switch from tires and drive 2.3. Before removing the switch to drain oil 2.4. Secure the straps to remove the old switch from the construction 2.5. Disconnect the bus-bar and wire 2.6. Unplug the switch from the construction 2.7. Remove the switch from the construction and move to the motor vehicles.
3.	Setting up new switch	3.1. Lift new switch to the construction using an auto crane 3.2. Set up the switch to the construction and secure 3.3. Fill with oil 3.4. Release straps and remove the derrick
4.	Removing old switch from the site	4. Relocate removed switch out of the site by motor vehicles 4.1. If PCB would be detected in oil, Management Plan for PCB contaminated oil, and Management Plan for PCB contaminated equipment will be implemented; 4.2. If PCB would not be detected in oil or equipment, Plan for management of non-toxic substances will be implemented

4. CURRENT STATE OF ENVIRONMENT

4.1. General information about the Kyrgyz Republic

40. Kyrgyzstan, a mountainous country particularly exposed to natural and anthropogenic impacts is located in the center of the Eurasian continent, on the mountainous massif of the Tien Shan and Pamir-Alai, between 39 ° and 43 ° north latitude and 69 ° - 80 ° east longitude..

41. The territory of the Kyrgyz Republic is 199.9 km². The Kyrgyz Republic consists of seven administrative units. Almost 90% of the territory is located at 1500 m above sea level with Pobeda Peak as the highest point (7439 m). There were 5 million 478 thousand people permanently residing in the Kyrgyz Republic as of January 1, 2011.

4.2. Climate

42. Kyrgyz climate is sharply continental, with cold winters and hot summers. Winter temperatures, especially in the mountains and hollows of the mountains are quite low ranging from - 20 to - 30 ° C below zero. In July average temperatures range from +25 ° C to +37 ° C in Fergana Valley, while at the same time not exceeding +4 ° C at an altitude of 3600 meters. In Central Tien Shan average temperature changes to 0,6° every 100 meters.

43. The highest annual rainfall is on the western slope of the Fergana Range - 1090 mm, the lowest - in the western extremity of the Issyk-Kul hollow – 144 mm. Typically, the average rainfall ranges from 300 to 600 millimeters. Most precipitation falls as snow in the period from October to April. Sunny weather is more typical for Kyrgyzstan (247 days a year).

4.3. Atmospheric air¹¹

44. Emission of pollutants into the atmosphere mainly depends on the economic state of the industry that makes the greatest impact on the environment. The main sources of air pollution in the Kyrgyz Republic include energy industry, mining and processing industries, construction materials, utilities, private sector, as well as motor vehicles.

45. There is a wide variety of harmful substances released to the air. Substances such as dust, sulfur dioxide, and nitrogen dioxide, carbon monoxide which in many countries are called classical pollutants are released in the air. From the standpoint of public health impact these major specific pollutants are the most harmful - formaldehyde, benzo(a)pyrene and heavy metals, including lead -toxic salts and solids.

4.4. Water resources¹²

46. Kyrgyzstan has significant resources of groundwater and surface water. The total reserves of surface water and groundwater in the Kyrgyz Republic are about 2460 km³ and are unevenly distributed across the country. The total flow of rivers in different years ranges from 44 to 50 km³ (including return water). Only 20-25 % of river flow is used for domestic water use, the rest flows to the territory of the neighboring states.

47. Total area of glaciers is about 8.17 thousands of km² or 4.2 % of the country's territory. Supply of fresh water in the mountain glaciers is estimated in 650 km³. Global climate warming causes a reduction in the glacier surface, which by 2025 can reduce by 30-40%. Reserves of water, concentrated in the lakes are estimated at 1745 km³ or about 71 % of the total national water reserves.

48. The qualitative composition of water is formed in the upper watersheds under the influence of natural factors, in the transit zone and flow dispersion - under the influence of anthropogenic factors. Water quality in rivers downstream of zone formation mainly conforms to regulatory requirements for various types of water use.

4.5. Land resources

49. The total land area amounts to 19,994.9 thousand hectares which includes agricultural land - 5674.9 thousand hectares, residential areas - 272.9 thousand hectares, protected areas - 707.3 thousand hectares, lands of the State forest fund - 2617.8 thousand hectares, lands of water fund - 767.3 thousand hectares, the reserve lands - 9730.5 thousand hectares.¹³

50. Land degradation is one of the environmental problems in Kyrgyzstan. Farmlands are highly susceptible to overexploitation and business pressure. Loss of biological productivity of land is caused by deforestation, water logging, salinity, alkalinity and erosion processes. Waste management remains an outstanding challenge for the country. No specific sites or locations were designated for the disposal of toxic waste.

¹¹ National paper on the state of environment in the Kyrgyz Republic, SAEPF, 2012

¹² Draft water strategy, WD, Bishkek, 2011

¹³ Department for inventory and registration of title for real estate under the GRS of the Kyrgyz Republic, 2012

Existing dumps of toxic waste are spilling over; they do not meet health, and environmental standards, which contributes to pollution of land and groundwater.

4.6. Biodiversity

51. Kyrgyzstan is a unique place in Central Asia with high concentration of wild animals and plants a lot of which are precious, rare and endemic species. Fauna is diverse and variegated, mainly represented by the species typical for Central Asian and Mediterranean regions.

52. However, constantly growing pressure of anthropogenic impact on the environment makes it difficult to preserve most of the animals in nature. Felling of trees and shrubs, plowing up large land areas, drying ponds, poaching – all of that significantly damages populations and their habitats.

53. Flora of Kyrgyzstan has more than 4,500 species of higher plants. About 1,600 species have economic and practical value, including sources of fodder - 450 species, honey - 300 species, medicinal - 200 species, attar - 62 species, food - 50 species. Such variety of plants presents a rich gene pool that ensures continuity of flora despite rapidly changing conditions of sharply continental climate and the use of its resources. For the relatively small size of the country, its biocenose diversity is rather rich.

54. Implementation of the project will have no impact on biodiversity, because all the works will take place at existing sites. No soil or vegetation will be removed or trees cut. Animals may experience small disturbance if happen to be near vehicles delivering equipment to the construction site or taking waste oil and equipment out of the site. The impact will be unsubstantial in its extent and duration.

4.7. Strictly Protected Nature Reserves¹⁴

55. Establishment of the strictly protected nature reserves facilitates preservation of forests and biodiversity in general as it either fully bans all types of economic activity or introduces regime of regulating in accordance with zone differentiation (reserves, recreation zones, economic activity zones). Such zones are regulated by the special Law "On strictly protected nature reserves". Total area of the strictly protected nature reserves takes 6,006 % of the country's territory.

56. There are several protected areas around in the wider area of the Kyrgyz Republic includes: 10 State reserves, 9 national parks, 68 wildlife sanctuaries. Reserves include Issyk-Kul'skiy, Sarychat-Ershat in Issyk-Kul province, Sarychelek, Besh Aral and Padyshata in Jalal-Abad province, Naryn and Karatal-Japyryk in Naryn province, Kulunata in Osh province, Kara-Buura in Talas province, Surmatash in Batken province, Issyk Kul biosphere territory. However, all of the 25 substations are located in such a distance that any impact caused by the rehabilitation measures (including impact by truck movements) can be excluded and supplementary works will be conducted strictly on the substations' territories. Particularly in Issyk-Kul oblast biosphere territory the substations belong to the rehabilitation zones of the Biosphere Territory, where industrial activities are allowed according to the Law on Biosphere Reserves (1999).

4.8. Natural Disasters

57. The Kyrgyz Republic due to its unique natural-climatic conditions caused by mountainous landscape is exposed to numerous natural disasters. Ranging altitudes and temperature, variations of precipitation, water balance and groundwater aquifer, soil geomorphology, tectonics and seismic activity pose serious threats to development sustainability and have permanent negative effects on the population and economy of the republic.

58. Spread, recurrence, damage from all of the disasters vary from year to year, however one can state that from perennial prospective these disasters are the most dangerous for the population and economy: earthquakes, mudflows and floods, landslides, avalanches, spring frosts and snowfalls, forest and grass fires, tornadoes and squally winds. Natural processes are of seasonal nature. Winter-spring periods bring avalanches, mudflows and floods start in the spring, landslides activate in summer time, August - September can bring wildfires. Earthquakes can occur year round, but they also have seasonal differences.

5. POTENTIAL ENVIRONMENTAL IMPACT BY THE PROJECT

¹⁴SAEPF

59. The IEE is to identify environmental impacts by the proposed project and specify relevant preventive and mitigation measures to prevent, minimize or exclude the expected adverse impacts. The potential environmental impact will be of the local and temporary nature. The EMP has been developed to mitigate the environmental impact.

5.1. Upgrading of Substations

60. Activities, which may have an environmental impact:

- (i) Delivery of equipment to the site and removal from the site;
- (ii) Destruction of old and construction of new concrete saddles;
- (iii) De-installation and installation of equipment;
- (iv) Use of devices to de-install and install equipment;
- (v) Handling of waste oil;
- (vi) Handling of waste electrical equipment (current and voltage transformers, switches, CSOI);
- (vii) Handling of other waste and waste of auxiliary production (construction waste, packaging, rags, sorbents, etc.).

61. **The key expected environmental impact** is related to replacement of electrical equipment and resulting waste: obsolete current and voltage transformers, Switches, ECS, waste transformer oil, which may contain PCB¹⁵, and other possible associated production waste (ceramics, ferrous and non-ferrous metals, etc.).

62. **Replacement of concrete saddles.** The equipment to be replaced: Switches and current and voltage transformers installed on concrete saddles. In case the old concrete saddles are prone to destruction, they will be replaced with new ones. To determine the stiffness of concrete saddles, the NEGK engaged the Kyrgyz Research and Design Institute of Seismic Construction (KyrgRDISC). The construction of new saddles will have a local short-term impact related to dusting when demolishing the old saddles. The mitigation measures to reduce the environmental impact are described in the Table.

63. **The new equipment** meets the standards of the International Electrotechnical Commission (IEC). First of all, the removal from service of waste transformer oil, which can potentially contain PCB will have a positive influence on the environment. All installation works will be conducted at the existing sites and will not require any special construction sites.

64. **Electronegative gas (SF₆ – sulphur hexafluoride) Switches.** The project will replace air and oil circuit Switches with electronegative gas Switches. Electronegative gas will be delivered to the site in bottles to be pumped to the Switches. Electronegative gas will be pumped into the Switches by the equipment supplier “Alstom Grid & Ulusoy Elektrik”, which will also install it. Taking into account a high GWP sulphur hexafluoride, continuous monitoring will be required to prevent leakages, visual inspections of equipment and equipment maintenance. Mitigation measures to reduce the impact of sulphur hexafluoride are presented in Table 6. Storage of bottles with electronegative gas is described in Section 7.

Box 2. Sulphur hexafluoride SF₆ (electronegative gas)

Electronegative gas or sulphur hexafluoride (SF₆) is colorless, non-toxic, incombustible heavy gas, which in normal conditions is 6 times heavier than air. It is extremely chemically inert. It does not interact with alkali, acids, oxygen carriers, deoxidizing agents. Sulphur hexafluoride is not ozone-depleting, however, it is among so-called “new gases” of the Kyoto Protocol – with a global warming potential (GWP) – 24900.¹⁶ Sulphur hexafluoride possesses high electroinsulation and blow-out properties, high breakdown voltage, and is practically nonreactive. It resolves at temperature above 1100 °C. Gaseous products of electronegative gas decomposing are poisonous and have acute specific odor. When accumulated in production premises it can result into oxygen lack. In our case, the equipment is installed outside the premises, which reduces the risk of hazard for human health. Taking into account a high GWP sulphur hexafluoride, continuous monitoring will be required to prevent leakages, visual inspections of equipment and equipment maintenance.

¹⁵ PCB - Polychlorinated biphenyls, toxic organochlorine compounds containing diphenyl molecule coupled with chlorine atoms - isomers, homologues or congeners (among them including polychlorinated terphenyls, tetraclordifenil monomethyl methane, mono-dichloro-diphenyl methane and mono-dibromo-diphenyl methane, and other types of substances polychlorinated terphenyls, tetraclordifenil monomethyl methane, mono-dichloro-diphenyl methane, monomethyl-dibromo-diphenyl methane, any mixture containing one of these substances is greater than in whole 0,005% (50mg/kg= 50ppm);

¹⁶ IEC 60376:2005. Technical conditions for electronegative gas (SF₆) of a technical grade for electrical equipment.

65. According to hygienic standards of the Kyrgyz Republic GN 2.2.5.1313-03 "Maximum allowable concentration (MAC) of harmful substances in the air of the working area", in terms of the extent of impact on the body, sulfur hexafluoride relates to hazard class 4, that is moderately hazardous substance. The maximum allowable concentration (MAC) in the working area of industrial premises is 5000 mg/m³. There is no MAC for populated places in the KR. Hygiene regulations GN 2.1.6.1339-03 set forth Approximate safety impact level (ISIL)¹⁷ of sulfur hexafluoride in air of residential areas is 20mg/m³.

Box 3. Standard of sulfur hexafluoride in atmospheric air

Sulfur hexafluoride (SF6)	Standard of the Kyrgyz Republic MAC in atmospheric air	Best international standard	Acceptable standard for the project
MAC in the working air	5000 mg/m ³ 18	5000 mg/m ³	5000 mg/m ³
MAC in residential areas	-	0,001 mg/m ³ 19	0,001 mg/m ³
ISIL of residential areas	20 mg/m ³ 20	-	

66. General Sulfur Hexafluoride (SF6) Guidelines

Some guidelines for proper handling of SF6 are given below (there are other equivalent guidelines existing that can be used depending from which country the supplier is coming):

- IEC (DIN EN)10 60376 'Specification and acceptance of new sulfur hexafluoride'
- IEC (DIN EN) 60480 'Guide to the checking of sulfur hexafluoride (SF6) taken from electrical equipment'
- IEC 61634 'High-voltage switchgear and controlgear – Use and handling of sulfur hexafluoride (SF6) in high-voltage switchgear and controlgear'.

The amount of SF6 emitted during the operational phase by GIS stations will be absolutely minimized if:

- Best Available Technique (BAT) is used;
- The guidelines mentioned above are followed;
- ISO 14040 is followed;
- Detectors indicate immediately any leak from which SF6 will be emitted.

¹⁷ISIL – provisional hygienic normative for substances polluting atmosphere set after calculation for the purposes of design of industrial objects

¹⁸Hygienic normative of the Kyrgyz Republic GN 2.2.5.1313-03 "Maximum allowable concentration (MAC) of harmful substances in the air of working zones"

¹⁹ Maximum allowable concentration in the air, Standard set by the International electro-technical commission (IEC)

²⁰Hygienic normative of the Kyrgyz Republic GN 2.2.5.1313-03 "Maximum allowable concentration (MAC) of harmful substances in the atmosphere air of residential areas"



Photo 3. Substation Ala-Archa. Electronegative gas Switches.

5.2. Environmental Impact of the Project

67. **Atmospheric air.** Implementation of the project will have a minor, temporary impact on the atmosphere associated with emissions from vehicles that deliver equipment to the construction site and remove old equipment, dusting from destruction of old concrete-made poles and during the operation from the work of vehicles for equipment maintenance. Preventive measures in the EMP will mitigate the impact.

68. **Water resources.** Implementation of the project will not impact surface water sources. Potential hazard for groundwater may arise from leakage of transformer oil and oil spills along the way of transporting equipment and during removal of equipment and waste from the site. Preventive measures in the EMP will mitigate or prevent exposure.

69. **Land resources.** Impact of the project on land will be limited to the existing production sites and will not affect the new lands. There is a possibility that there will be oil spills along the transportation routes. Mitigation measures in the EMP will help to reduce the impact or prevent it.

70. **Biological diversity.** Implementation of the project will not have an impact on biodiversity, because all the works will take place at the existing sites. No soil or vegetation will be removed or trees cut. Animals may experience small disturbance if happen to be near vehicles delivering equipment to the construction site or taking waste oil and equipment out of the site. The impact will be unsubstantial in its extent and duration.

71. **Strictly protected nature reserves.** Implementation of the project will cover 6 substations of the Issyk-Kul region, which is in accordance with the Law "On the Biosphere Reserve" is strictly protected. Taking into account that all them are existing substations located in rehabilitation zone of IKBR and do not require land transformation, the environmental impact will be minor and localized. EMP implementation will mitigate or prevent exposure.

72. Given that the refurbishment sites are outside of sanitary protection zones of residential areas, the impact on the social environment will be minimal. Noise and electromagnetic effects made by vehicles during delivery and removal of equipment will be localized within substations and beyond the site.

73. Noise and electromagnetic impacts will be of a local and temporary nature within the substations and outside the site from vehicles when delivering and removing equipment. There will be no impact on historical and cultural values either, as these are existing substations.

6. ENVIRONMENT MANAGEMENT PLAN (EMP)

74. The EMP will cover the whole project implementation period. The EMP reflects:

- (i) Measures proposed to mitigate the impact;
- (ii) Management of oil waste;
- (iii) Management of waste equipment;
- (iv) Institutional conditions and measures to build up capacity for EMP implementation;
- (v) Monitoring of environment and reporting;
- (vi) Preliminary assessment of costs for conducting environmental activities.

75. **Proposed mitigation measures.** Compliance with the environmental legislation of the KR will contribute to a reduction of the project environmental impact. According to the Law “On Environmental Expertise”, the reconstruction of the facility requires to prepare a project design and its agreement with the SAEPF. The NEGK plans to develop subprojects independently. The NEGK will be responsible for obtaining relevant permits as envisaged by the environmental legislation of the KR. To reduce the environmental impact certain Environmental Mitigation Actions have been developed to be undertaken during project implementation, which are reflected in Table 6.

76. Construction and insulation works will be implemented by the NEGK independently. The equipment will be installed by the equipment supplier “Alstom Grid Enerji Endustrisi & Ulusoy Elektrik Imalat Taahhut Ticaret A.S (Alstom Grid & Ulusoy Elektrik)”.²¹ The key responsibility for compliance with environmental legislation and implementation of the EMP will be that of the NEGK. The external supervision over construction will be conducted by International Consultant of NEGK. The NEGK may engage an independent laboratory for monitoring purposes.

77. The laboratory test to identify the PCB contained in the used transformer oil and equipment will be conducted by the laboratory selected for this purpose by the NEGK. The ToR has been prepared to select the laboratory (Annex 3).

Box 4. Permits required for EMP implementation

Type of permit	Legislative requirements	Issuing agency	Timeframe
1. SEAS statements	Law “On environmental assessment”	SAEPF	Up to 3 months
2. License for disposal, storage, destruction of waste, toxic materials and substances	Law “On licensing-permit system in the Kyrgyz Republic”	SAEPF	30 calendar days
3. Permit for placement of waste in environment	Law “On licensing-permit system in the Kyrgyz Republic”	SAEPF	30 calendar days
4. Permit for environmental emissions (burning of oil not containing PBC and not subject for further use)	Law “On licensing-permit system in the Kyrgyz Republic”	SAEPF	30 calendar days
5. Permission to import to and export from the Kyrgyz Republic samples of ores and rocks, concentrates, waste production and laboratory samples for analytical studies	Law “On licensing-permit system in the Kyrgyz Republic”	SAEPF	30 calendar days

²¹ Contract No. 166-43/0013 as of 05.03.2013 between the OJC “NPGK” and “Alstom Grid Enerji Endustrisi A.S & Ulusoy Elektrik Imalat Taahhut Ticaret” Consortium.

Table 6. Measures to Mitigate the Environmental Impact during Project Implementation

Works conducted	Expected impacts	Extent of impact			Measures to prevent/mitigate adverse impacts
		R ²²	D ²³	P ²⁴	
1	3	4	5	6	7
Delivery of new equipment (transformer/circuit breaker, ECS) to the installation site	1) Vehicle exhaust as a result fuel combustion; 2) Spillage of oil products; 3) Noise impact.	I M I	T P B	On-R On-R On-R	1) Using high-grade fuel for vehicles to reduce exhaust; 2) Regular inspection of vehicles; 3) Compensation of damage to environment by paying fees for emission of exhaust into the atmospheric air ²⁵
Draining oil from the equipment and demounting old equipment	1) Generation of waste in the form of oil (potentially containing PCB), oil-filled equipment, scrap metal, ceramics, packing, construction waste, etc.; 2) Potential spillage of oil and oil products; 3) Lorry-crane exhaust as a result of fuel combustion.	S M M	P T T	L L L	1) Installation of a tray to catch oil in case of spillage; 2) Obtaining a permit for placement of non-hazardous waste; ²⁶ 3) Implementation of the Waste Management Plan for PCB-free waste ²⁷ ; 4) Implementation of a Plan for management of PCB-containing transformer oil, equipment and waste ²⁸ ; 5) Using high-grade fuel for vehicles to reduce exhaust; 6) Regular inspection of machinery to be used; 7) Environment monitoring ²⁹ .
Disassembling the used equipment into components: 1) Draining oil from equipment 2) Equipment disassembling	1) Generation and utilization of transformer oil potentially containing PCB; 2) Generation and utilization of solid waste from equipment (ferrous and non-ferrous metals, ceramics, etc.);	S S	P T	L L	1) Implementation of the Plan for management of oil, equipment and waste containing PCB; 3) Implementation of the Plan for management of PBC-free waste; 4) Environmental monitoring.

²² Impact relevance: S – significant, M – medium, I – insignificant;

²³ Impact duration: P - permanent, T – temporary;

²⁴ Place of impact: On-R – on-route of traffic, L – local;

²⁵ The payment for environment contamination is applied based on the Methodology to Determine the Fee for Contamination of Environment in the Kyrgyz Republic, Resolution of the KRG dated September 19, 2011, N 559;

²⁶ The Law "On the Licensing and Permit System in the KR" as of 19.10.2013, No. 195;

²⁷ The Plan for management of PCB-free waste is presented in Chapter 6.1.

²⁸ The Plan for PCB-containing oil, equipment and waste is presented in Chapter 6.2.

²⁹ The Environment Monitoring Plan is presented in Table 9.

Works conducted	Expected impacts	Extent of impact			Measures to prevent/mitigate adverse impacts
		R ²²	D ²³	P ²⁴	
Removal of old equipment from the project site	1) Vehicle exhaust as a result of fuel combustion when transporting equipment from the project site; 2) Spillage of oil products; 3) Noise impact.	I M I	T P T	On-R On-R On-R	1) Using high-grade fuel for vehicles to reduce exhaust; 2) Regular inspection of vehicles.
Removal of electronegative gas the equipment	Generation of waste containing electronegative gas	I	P	L	1) Storing of electronegative gas as the standby equipment; 2) Regular measurements to detect possible electronegative gas leaks.
Removal of air and vacuum Switches	Non- toxic waste of electrical equipment	I	T	L	Implementation of Plan for Management of Waste Electrical Equipment ³⁰
Demolition of old concrete saddles	1) Dust when destructing saddles 2) Exhaust from operating machinery 3) Generation of construction debris (destructed concrete, metal waste, etc.) 4) Potential spillage of oil products	I I I I	T T T T	L L L L	1) Undertaking dust-reducing measures; 2) Using high-grade fuel; 3) Regular inspection of machinery and tools; 4) Obtaining permits for placement of waste; 5) Implementation of the Plan for management of non-toxic substances
Construction of new concrete saddles	1) Dusting when executing earth works; 2) Exhaust from machinery during construction; 3) Potential spillage of oil products.	I I I	T T T	On-R L L	1) Undertaking dust-reducing measures; 2) Using high-grade fuel for vehicles; 3) Regular inspection of machinery;
Installation and connection of new equipment	1) Exhaust from fuel combustion during equipment installation 2) Potential spillage of oil and oil products; 3) Leakage of sulfur hexafluoride (SF6)	I I I	T T T	L L L	1) Using high-grade fuel for vehicles to reduce exhaust; 2) Regular inspection of machinery; 3) Installation of a tray to catch oil in case of spillage; 4) Prevention of emission of greenhouse gas SF6: check of breaker connections and operating mechanism for air-tightness;

³⁰ Implementation of Plan for Management of Waste Electrical Equipment, Chapter 6.3.

Works conducted	Expected impacts	Extent of impact			Measures to prevent/mitigate adverse impacts
		R ²²	D ²³	P ²⁴	
					5) Measurement of electronegative gas to prevent leakages.

6.1. Identification of PCB-Containing Oil and Equipment

78. Identification of obsolete equipment in terms of presence/absence PCB contamination.

Identification of oil contamination by PCB under the project will be based on “the Guidelines for Identification of PCB and Materials Containing PCB” (UNEP, 1999). The direct evidence of PCB presence in oil and oil-filled equipment includes (i) manufacturer’s labels on the equipment and technical documentation, which directly indicate to the presence of PCB, as well as (ii) results of chemical and analytical identification of PCB content in samples.

79. Principles for Identification of Oils Containing PCB:

- (i) Oil and equipment are considered to be contaminated, if PCB concentration in them is > 50 ppm;³¹
- (ii) The availability of reliable documents attesting to the presence or absence of PCB in oil (manufacturer’s labels on equipment, technical documentation for equipment, oil certificates);
- (iii) Results of lab tests on the content of PCB in oil.

6.1.1. Identification of PCB-Containing Equipment Based on Supporting Documents

80. To confirm the absence of PCB in used transformer oil under the Project, the NEGK has been required to provide: (i) passports from manufacturers’ of equipment with the date and place of its production, as well as (ii) certificates for transformer oil used at the time the equipment was operated.

81. The NEGK passports have been provided for determining of the PCBs presence/absence in transformer oil:

- (i) Current Transformers of TFZM series. Transformer filled with GOST 982-68 TKN transformer oil was supplied. When visiting substations, the photographs of labeling on the transformers and switches were made (see photo). 1973 Current Transformer. Made in the USSR. The passport states that the service life is 25 years;
- (ii) NKF 1985 Voltage Transformers. Transformer filled with TKN TU 38-101.890.81 and T 750 transformer oil were supplied;
- (iii) Manufacturer passport for the 1974 MKP-110 M -1000 630-20 oil tank-type switch; Oil was not included in the switch kit supplied;
- (iv) NEGK updated the passport for the 1975 switch;
- (v) Certificates were also provided for the transformer oil imported in 2012-2013.



Photo 4. Substation “Kara-Balta”. Marking on oil switch

³¹ Guidelines for Identification of PCBs and Materials Containing PCBs (UNEP, 1999)



Photo 5. Chui high-voltage electrical networks enterprise. Marking on barrel of transformer oil

82. According to the passports presented by NEGK for equipment under replacement, equipment has been installed in the 70- 80s of the 20th century. In the process of supply current and voltage transformers had been received already filled up with transformer oil, switches had no oil filling, oil was filled after the switch installation. Equipment was under capital repair every 6-7 years according to the technology requirements.

83. During operations, the oil is exposed to thermo-chemical and electrical effect, leading to worsening of its performance characteristics associated with the change in molecular composition of oil. After having reached the limit of performance characteristics, transformer oil in the equipment should be either replaced with a new one, or its original characteristics should be restored by regeneration.³²

84. Waste transformer oil, after regeneration, can be used in any voltage class equipment, and its use in electrical oil-filled equipment depends only on the recovery of insulation characteristics (full recovery of insulation characteristics or partial recovery of insulation characteristics). During repair and maintenance of the equipment, transformer oil has been repeatedly topped up or replaced in accordance with the technological requirements.

Box 5. Supply of transformer oil to the Kyrgyz Republic

Before 1992, the USSR was the main supplier of transformer oil to the Kyrgyz Republic, followed by Russia. Within a short period of time (2 years), additional oil had been bought in Uzbekistan. In Soviet Union, industrial production of PCB-containing oil was launched in 1939. In 1993, Russia stopped production of PCB-containing oils.³³ The USSR produced the "Sovtol", "Sovol" and Gexol" brand PCB-containing oil for capacitors and transformers of a particular type.

However, taking into account the turnover of oil and oil-operating entities and the technology of operations and maintenance of transformers and Switches, potentially transformer oils could have been mixed in the process of regeneration and used in further operations.

85. The passports provided by the NEGK for transformers and Switches, as well as oil certificates do not indicate to the presence of PCB in oil. However, bearing in mind that the equipment to be replaced has been in operation for about 30-40 years and during this period it was subject to capital repairs, as well as

³² Standard of JSC "Electric Grids of Kyrgyzstan" SO 22862713-43-212.1-2008 "Norms of transformer oil loss in the process of purifying, drying or regeneration"

³³ PCB in the Russian Federation: Inventory and proposals for priority remedial actions, AMAP, Oslo. 2000, CIP, Moscow, 2000

taking into account the absence of certificates for transformer oils used at that time, there is a potential probability of oil cross-contamination in oil-operating entities in the process of its regeneration.

86. According to the Guidelines for the Identification of PCBs and Materials Containing PCBs (UNEP 1999), if there is a potential hazard of PCB contamination, the next step for identification of the equipment is conducting lab tests for the presence or absence of PCB contamination in used oil.

6.1.2. Identification of Equipment Contaminated by PCB Based on Lab Tests Results

Box 6. Limitations

- (i) The absence of a laboratory in Kyrgyzstan accredited to identify PCB. Therefore to conduct the studies the NEGK will select an international laboratory accredited for these purposes.
- (ii) The tight schedule for project implementation. The works on replacement of equipment shall commence in May 2014. Taking into account the tight schedule for project implementation, the NEGK will have to expedite the process for selection of the laboratory and conducting studies.

87. **The proposed approach to PCB tests.** During discussions with the NEGK a decision was made to take samples for PCB contamination in oil and equipment in the territory of 6 oil-operated entities and 2 repair shops. This is related to the fact that oil is purified in oil-purification units of these entities and after regeneration is used in the equipment at all substations covered by upgrading.

88. **A comprehensive examination to identify oil-containing equipment, which has never been subject to purification by oil-operating entities.** To provide for a complete coverage of the equipment to be replaced by tests, a comprehensive examination of oil-containing equipment will be conducted. For this purpose the NEGK will have to fill out the Check List (Annex 3). The Check List shall be filled out based on the reports on conducted repairs of the equipment or oil turnover ledgers (replacement or refilling purified oil in the equipment). In case such information is absent, the examination will cover the equipment to be replaced under the Project manufactured before the date when the production of PCB-containing oil was ceased³⁴, which has never been subject to oil replacement at any of 8 sites, but oil was replenished in the process of maintenance.

89. To accelerate construction works, checking of oil in replaced equipment will be carried out in rapid analyzers during construction activities. Equipment, in which rapid tests would show the presence of PCB, will be subject to full laboratory testing. NEGK laboratory will conduct rapid analysis in the presence of external supervisor International Consultant of NEGK.

90. **Laboratory selection.** To conduct studies on PCB content in oil, the NEGK will select a laboratory accredited for these purposes. The Terms of Reference for selection of the laboratory and conducting tests by the selected laboratory has been developed, agreed with the NEGK and is attached to the IEE (Annex 4).

91. **Establishment of a Commission.** To ensure transparency of the conducted works, prior to conducting laboratory tests the NEGK will establish a commission consisting of representatives from NEGK services, the selected laboratory, specialists of the SAEPF and International Consultant of NEGK, which will be responsible for external supervision over implementation of the EMP.

- (i) Commission: is present during sampling;
- (ii) Signs acts of taken samples;
- (iii) Makes decision to conduct further research in case of detection of PCB in oil of oil treatment facilities;

92. **Laboratory analysis in oil treatment facilities:**

- (i) NEGK develops a schedule of laboratory tests in oil treatment facilities, and provides it to members of the commission.
- (ii) Sampling is conducted by the selected laboratory in the presence of created commission under the Terms of Reference, which is the appendix to IEE;
- (iii) Minutes/protocols and acts of taken samples are signed by members of commission;

³⁴ The years when PCB equipment ceased to be produced for the USA and Russia/former USSR are 1987 and 1992 respectively.

- (iv) Laboratory submits results of samples taken and report to NEGK, which informs members of the created commission on the undertaken work;
- (v) If PCB is detected in the taken samples, the Commission makes decision to conduct further laboratory tests.

93. Rapid analysis of oil in oil-filled equipment to be replaced:

- (i) Prior to the start of construction works, NEGK develops schedule of construction works, which includes simultaneously with construction works a rapid analysis in oil-filled equipment for PCB content, and inform the Commission on conducting rapid tests;
- (ii) Rapid tests are conducted by NEGK laboratory in the presence of the commission;
- (iii) Results of rapid analysis will be recorded as minutes/protocols to be signed by commission;
- (iv) The equipment with detected PCB content will be subject to full laboratory tests.

94. When identifying the presence of PCB at examined sites, a chemical analysis of oil will be conducted in the equipment to be replaced to establish the extent of contamination or the equipment will be recognized as PCB-contaminated;³⁵ When establishing the presence of contamination by PCB the Plan for Management of PCB-Containing Waste will be implemented. The Plan has been developed based on requirements of the Stockholm and Basel Conventions and in line with international guidelines.³⁶

6.2. Institutional Capacity for Implementation of the EMP

6.2.1. Current Institutional Structure of the NEGK for the Implementation of the EMP

95. The Technical Planning, Analysis and Production Development Division (TPD). The Regulation on the division and job descriptions for division specialists were approved by the General Director of the OJSC "NEGK" as of 07.02.2014. The number of staff in the division is 7 persons; one specialist is responsible for environment protection issues. The division has two sections:

- (i) Production and technical analysis;
- (ii) Production and technical planning of electrical grids operations;
- (iii) A group of regulatory and methodological support for electrical grids operations.

96. The activities of the division are supervised by the first Deputy General Director of the OJSC "NEGK". The division is managed by the head appointed by the NEGK General Director. In his absence the responsibilities of the division head are performed by the head of the production and technical analysis sector. The TPD has the following functions:

- (i) Issues on environment protection, drafting regulatory and reference and information documents, monitoring environment protection issues;
- (ii) Review and agreement of projects related to environment, energy saving, energy efficiency issues and other norms;
- (iii) Submission of monthly reports on the work to the NEGK management.

97. Operations and Maintenance Service (OMS). The number of staff in the OMS in the head office of the NEGK is 9 persons, including the service head. The OMS is supervised by the Technical Director of the NEGK and the first Deputy General Director of the NEGK. The OMS manages substation services in 6 branches of the NEGK, which supervise equipment operations and maintenance and control leakages on electronegative gas in circuit Switches. Substation services are equipped with portable devices to measure electronegative gas leakages.

98. Local services for insulation, protection from excess voltage and testing (LSEIEVPT) of electrical equipment at HVENE directly report to the Central Service for Insulation, Excess Voltage Protection and Testing (CSEIEVPT) at the NEGK.

The LSEIEVPT performs the following functions:

- (i) The chemical analysis of transformer oil quality control;

³⁵ Updated technical guidelines for the environmentally sound management of PCB- PCT- or PBB-containing or contaminated wastes (par. 66) have been developed under the Basel and the Stockholm Conventions, (2007);

³⁶ Updated technical guidelines for the environmentally sound management of PCB- PCT- or PBB-containing or contaminated wastes (par. 66) have been developed under the Basel and the Stockholm Conventions (2007), "Guidelines for PCB Management", GEF/UNDP Kazakhstan, ETI (Environmental Technology International)

- (ii) Control over the condition and operational capability of high voltage equipment insulation;
- (iii) Identifying defects in substation electrical equipment and making proposals on equipment discarding;
- (iv) The staff from the Central Service shall provide training to LSEEIEVPT staff.

99. **Department of Disease Prevention and State Sanitary and Epidemiological Surveillance (DDPSSES), Ministry of Health of the Kyrgyz Republic.** Department of chemical analysis (laboratory) has accreditation certificate #KS 417/KTSA.I.L.050 valid from 01.06.2013. to 01.06.2017. The laboratory is accredited in accordance with the international standard 17025:2005 (Standard ISO/IEC 17025-2009) for testing a number of chemical parameters. However, this list does not include PCB.

100. UNDP project “PCB Management in the Kyrgyz Republic” allowed purchasing the laboratory equipment for detection of PCB in the environment, products, materials and wastes: (i) a gas chromatograph Shimadzu GC - 2010 and (ii) L2000-Analyzer for instant PCB detecting tests.

101. Currently DDPSSES is waiting for response from the Kyrgyz Accreditation Center to its accreditation application for detection of PCB content. DDPSSES plans to train specialists for the implementation of this kind of research. Costs for laboratory tests have not been approved.

6.2.2. NEGK Capacity building activities for implementation of EMP

102. To increase capacity NEGK it is necessary to:

- (i) To appoint by Order of NEGK Director General the responsible for implementing the EMP: department or division, a particular officer and his deputy;
- (ii) appoint a responsible person, coordinating the works in the event of accidents and emergencies, in project implementation (**p. 6.2.1 Check**)
- (iii) Procure equipment for the rapid tests to determine measurements of petroleum products in soil and water in case of penetration of oils in the environment
- (iv) To organize and conduct training with the involvement of highly qualified specialists:
 - For NEGK staff, involved in EMP for requirements of environmental protection in the Kyrgyz Republic;
 - For NEGK staff, involved in the EMP for requirements of environmental protection in the Kyrgyz Republic, involved in management of PCB-containing wastes;
 - For NEGK staff, involved in emergency response;
 - For staff responsible for carrying out measurements of sulfur hexafluoride leaks;
 - Train the staff to work with rapid analyzers to determine petroleum products in water and soil.

6.3. Monitoring and Reporting

103. Monitoring of the environment situation is aimed at implementation of the EMP, hence, the negative project consequences will be mitigated, other residual impacts will be examined and assessed. Environment monitoring activities are presented in Table 8.

104. The key objective of environment monitoring during construction will include conducting laboratory testing of transformer oil for PCB and the content of PCB in equipment. Laboratory testing will be conducted by the laboratory to be selected by the NEGK for these purposes. Besides, it is possible to conduct monitoring of laboratory soil tests, vehicle exhaust measurements.

105. The process of construction and works performed by the contractor will be closely supervised to make sure that construction works are conducted in line with the project design, and the customer will obtain a functioning and financially viable project. Three levels of control over construction works have been specified for this project:

- (i) The equipment will be installed by the supplier “Alstom Grid & Ulusoy Elektrik”;

- (ii) Technical control will be executed by NEGK engineers;
- (iii) External supervision will be performed by International Consultant of ENGK.

106. Environmental Consultant of NEGK twice a year, not later than three months after the end of each half of the calendar year, will submit to ADB:

- (i) Report on EMP implementation;
- (ii) Report on the state of environment and on environmental monitoring.

Table 7. Monitoring of Environment

Area of monitoring 1	Monitoring site 2	Parameters 3	Frequency 4	Method/ equipment 5	Reporting 6	Responsibility 7
1. Upgrading of Substations						
Atmospheric air	NEGK's vehicle pool	Inspection for smokiness and CO	According to the NEGK's technical inspection schedule	Conducting technical inspection of vehicles	Report on technical inspection	NEGK
Atmospheric air	Equipment operational site	Control over leakage of electronegative gas (sulphur hexafluoride SF6)	Before installing the equipment it shall be checked for air-tightens and conduct measurements of electronegative gas; After installation of equipment measurements of electronegative gas shall be made	Measurements of electronegative gas shall be made using special devices	To keep a ledge with electronegative gas measurements indicating the date, time, reading and the person who conducted measurements	NEGK (LSEEVPT) Alstom Grid & Ulusoy Elektrik
Soil	Locations to store used oil and equipment, other production waste	1) Oil products 2) PCBs in case they are identified in the equipment	1) Taking soil samples in case of oil leakages 2) In case the presence of PCB in used oil is identified, take soil samples from warehouses locations, the Program for taking samples for PCB testing will be developed.	Laboratory tests	1) Ledger on sample taking; 2) Report on sample taking; 3) Results of collected samples.	1) NEGK and laboratories engaged by the NEGK; 2) Laboratory selected by the NEGK for PCB testing
Soil	Areas for conducting works	Oil products	1) During equipment replacement works; 2) In case of oil or oil products leakages from vehicles	Laboratory tests	1) Report on soil sampling 2) Results of soil tests	NEGK and laboratories engaged by the NEGK

6.4. Preliminary Cost Estimated for EMP Implementation

107. Implementation of the EMP will require some financial resources. The IEE indicates some preliminary cost estimates for environmental activities. Specified costs of activities will be presented in detailed projects, which will be prepared for the works to be implemented under the project.

Box 7. Acquisition of packing for storage of PCB-containing equipment and wastes:

- 1) **Euro-cubes (IBC-container).** To store 457 tons of oil, or 486,000 liters, in Intermediate Bulk Containers (IBC) with capacity of 1000 liters, we need 486 Intermediate Bulk Containers (IBC). Cost of container is \$330. To procure 486 Intermediate Bulk Containers (IBC) we need \cong \$160,380.
- 2) It is proposed to use IBC-containers for transportation of PCB contaminated equipment. Cost of 1 container is \cong 330 USD. Under the project we will need \cong 486 units (number of oil-filled transformers). Cost will be: 160,380 USD.
- 3) **Polyethylene sleeve made of high-density polyethylene** is suggested for packing the equipment before placing it in euro-cubes. The sleeve can be made to order of any width. The cost will depend on the sleeve size: the film width and thickness and is sold by weight. The average sleeve price per 1 kg is \cong US\$5. To pack 744 units of oil-filled equipment and other potential wastes (cleaning waste, absorbent materials, etc.) may be \cong 500 kg will be required. The cost will be US\$2,500.³⁷
- 4) **PPE.** Acquisition of PPE (insulating coveralls, respirators, rubber boots, gloves, goggles); the cost of 1 set is \cong US\$150. To acquire 5 sets US\$750 will be required; To acquire all mentioned packing items US\$325,000 will be required.³⁸

- (i) Construction of sites for temporary storage of PCB-containing wastes and equipment. The cost to construct concrete-paved areas with tents (size 5 m x 5 m) \cong US\$2,000³⁹. For 6 temporary storage sites – US\$12,000.
- (ii) Transportation of PCB-containing wastes to long-term storage sites;
- (iii) The payment for placement of non-toxic wastes in the environment will be estimated based on the Methodology to Determine the Payment for Contamination of Environment in the Kyrgyz Republic, as approved by the KRG Resolution dated September 19, 2011, N 559, and it will make \cong US\$5,000.
- (iv) The payment for emissions into environment by vehicles during construction works will be \cong US\$2,500\$
- (v) Payment for the delivery of scrap metal is not made

Table 8. Preliminary cost estimation for the implementation of PCB Management Plan

Measures	Cost, US\$	Completion time	Responsibility
Training on hazardous waste management	2,000		NEGK
Construction of storage pads for temporary storing PCB-containing wastes and equipment	24,000	After laboratory testing and detection of PCB presence	NEGK
Purchase of containers to hold PCB-containing equipment and wastes	325,000	After laboratory testing and detection of PCB presence	NEGK
Transportation of PCB-containing wastes and equipment to storage sites	10,000		NEGK

³⁷ The packing price has been collected from web-sites of various Russian companies engaged in production of polyethylene packing;

³⁸ The packing price has been collected from web-sites of various Russian companies engaged in production of specialized packing;

³⁹ Prices have been collected from construction organizations in Kyrgyzstan for construction of concrete-paved areas covered by a tent;

Express-analyzers to identify contamination of soil, water by oil products	5,000	The devices will be procured before the works start and will be used during works and transportation of oil to utilization or purification sites	NEGK
Waste disposal fees	5,000	At the time of obtaining permits for the disposal of the construction and other wastes	NEGK
Fees for the motor vehicles emissions during the construction works	2,500	At the time of obtaining permits for the disposal of the construction and other wastes	NEGK
Total	373,500	410,500	
Contingencies – 10%	37,000		

8. DISCLOSURE OF INFORMATION, CONSULTATIONS AND PUBLIC INVOLVEMENT

108. As provided by the legislation of the Kyrgyz Republic and ADB Safeguards Policy, public non-government organizations were involved in the discussion of IEE (list is attached). Prior to the commencement of IEE development work, consultations were held with the State Environmental Protection Agency – a body responsible for the EIA and POPs Convention implementation.

109. For purposes of informing the public about the implemented project and measures which will be taken to ensure environmental safety, on May 29, 2014, NEGK, with the support of MEI were held consultations with the public. This event was attended by 28 people. For more details of this meeting see Chapter 8 of the main IEE.

8.1. Grievance Redress mechanism (Complaint Administration Arrangement)

110. **Objective.** The key objective of the citizens' complaint and applications administration arrangement (CAA) is to identify, register and facilitate decision-making on complaints by affected parties (AP) in relation to project activities.

111. **CAA Principles.** The key CAA principles are: (i) protection of citizens' rights; (ii) transparency; (iii) accessibility for all persons for free and without further prosecution; (iv) acceptability from the view point of local cultural peculiarities; (v) personal responsibility for execution of duties; (vi) controllability and accountability in consideration of appeals and applications by the OJSC "NEGK".

112. Complaints and appeals filed in accordance with the established procedure shall be mandatorily considered; no rejection is allowed. Complaints and applications by citizens, whose last name and mailing address are not specified, shall be recognized anonymous and shall not be subject to consideration. Citizens have the right to appeal to a court or any other government bodies to address the issues related to violation of their rights in the process of project implementation.

113. Requirements for grievance/complaint handling mechanisms of ADB's Accountability Mechanism Policy (2012) and ADB's Safeguard Policy Statement (SPS, 2009) fundamentally meet the requirements of the Law "On the Procedure for Handling Appeals of Citizens" (2007). The existing differences in the response time for complaints set out as 30 days in the Law of the Kyrgyz Republic, and 14 days in the ADB's Accountability Mechanism Policy are regulated through the Order of Director General of OAO "NEGK" as of May 22, 2014. (Annex 7. See unofficial translation of the Order in Annex 8). The NEGK Order is aimed at prompt responsiveness of NEGK while handling complaints, and it imposes personal responsibility for implementation of the Order.

9. CONCLUSIONS AND RECOMMENDATIONS

114. The project implementation will have a positive impact on the environment. First and foremost, this will involve decommissioning of obsolete transformer oil, which can potentially contain PCB. Ecological environment will improve and social tensions will be mitigated nationwide, because the public at large is informed about the possible content of PCB in transformer oil and equipment.

115. The potential impact could be caused by the use of sulfur hexafluoride as gas causing the greenhouse effect, and possible leakage of oil from transformers. With continuous monitoring for leaks of sulfur hexafluoride and monitoring the technical condition of equipment, the impact can be reduced to zero.

116. Prior to project implementation, to carry out laboratory tests for the presence/absence of PCB contamination in equipment to be replaced. If PCB-containing waste would be found, it is necessary to request the Government to allocate space for construction and long-term storage of PCB-containing wastes. For these purposes detailed design needs to be developed, and construction of a specialized storage facility.

117. Additional environmental surveys will continue during implementation and EMP will be updated in accordance with the newly received data to ensure achievement of the environmental objectives of the project.

Annex 1. Additional list of equipment to be installed using Project savings ⁴⁰

#	Equipment	Total	ChHVENE	OshHVENE	ZhHVENE	IHVENE	NHVENE	THVENE
1	Switcher 500kV	3 sets	-	-	-	-	-	3 sets SS 500KV Tuleberdiev - (New Installation)
2	Currency Transformer 500kV	6 sets (18 pieces)	-	-	-	-	-	6 sets SS 500kV Tuleberdiev - (New Installation)
3	Voltage Transformer 500kV	3 sets (9 pieces)	-	-	-	-	-	3 sets SS 500kV Tuleberdiev (New Installation)
4	Swticher 220kV	7 sets	1 set SS 220 Glavnaya	-	5 sets SS 220 Torobaev	-	-	-
5	Switcher 110kV	61 sets	Total-22 sets: SS 220 Kara-Balta – 9 sets SS 220 Chuyskaya – 11 sets SS 110 Sokuluk - 2 sets	Total – 7 sets: SS 110 Mangyt – 1 set; SS 110 Tepe-Kurgan – 2 sets SS 110 Sopu-Kurgan – 1 set; SS 110 Uch Dobo – 1 set; SS 110 Ozgon – 2 sets.	Total – 7 sets: SS 110 Yug – 2 sets; SS 110 Kozubekov – 1 set; SS 110 Abazbekov – 3 sets. SS 110 Kara-Kul – 1 set;	Total – 17 sets: SS 110 Przhevalsk – 3 sets; SS 110 Issyk-Kulskaya – 10 sets; SS 110 Tyup – 1 set; SS 110 Kun Batysh – 1 set; SS 110 Kadji-Say – 1 set; SS 110 Tamga – 1 set.	Total – 5 sets: SS 110 Naryn-1 – 3 sets; SS 110 Zhany Talap – 1 set; SS 110 Cholpon – 1 set; (New Installation)	Total -3 sets: SS 110 Kara Archa – 1 set; SS 110 – Ozgorush – 1 set; SS 110 Iv. Alekseevka – 1 set.
6	Voltage Transformer 110kV	14 sets	7 sets (21pieces)	-	-	Total – 7 sets (21 pieces)	-	-

⁴⁰ Information provided by the OJSC NEGK

		(42 pieces)	SS 220 Kara- Balta SS 110 Sokuluk (New Installation)			SS 110 Issyk- Kulskaya – 10 sets; (New Installation)		
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Annex 2. Capacity of oil purifying plants and tanks at OJSC NEGK subsidiaries⁴¹

HVENE	Oil purifying plants	Oil vessels and tanks
ChHVENE	MIKAFIL – 6,3 m ³	Oil vessels and tanks at ChHVENE: 1x12m ³ , 2x25m ³ , 1x10m ³ Tanks: Frunze – 1x75m ³ , 1x20m ³ Ala-Archa – 1x75m ³ , 1x20m ³ Chui – 1x20m ³ Kara Balta– 1x10m ³
	MIKAFIL – 0,8 m ³	
	Decontamination plant UVM -2 ⁴²	
	Zeolite installation URMB	
	Oil purifying plant PCM -2-4 (tons)	
	Oil purifying plant PCM1-3000	
Capacity for oil purification		72 m ³
OshHVENE	MIKAFIL – 4,5 m ³	Oil vessels and tanks at: Kara-Suu – 6x40m ³ , 2x10m ³ Alai – 2x20m ³ , Uzlovaya – 2x25m ³ Repair shop of OshHVENE 1X2m ³
	Oil purifying plant PCM -2-4 (tons)	
Capacity for oil purification		260 m ³
JHVENE	MIKAFIL – 4,5 m ³	Oil vessels and tanks: Jalal-Abad – 2x17m ³ , 3x25m ³ , 1x4m ³ Tanks of PS Crystal -2x50m ³ , 2x75m ³
	MIKAFIL – 0,16 m ³	
	Oil purifying plant PCM -2-4 (3 tons)	
	Oil purifying plant PCM -2-4 (4 tons)	
Capacity for oil purification		91 m ³
IHVENE	MIKAFIL – 4,0 m ³	Oil vessels and tanks, repair workshop 4x20m ³ Tanks PS 220 kV Issyk Kul 1x25m ³ , Tamga – 1x1m ³ Karakol – 1x1m ³ Cholpon Ata – 1x1m ³
	Oil purifying plant PCM -2-4 (3 tons)	
Capacity for oil purification		80 ³
NHVENE	MIKAFIL – 0,8 m ³	Oil vessels and tanks NHVENE – 1X1,7m ³ ; 1x1,5m ³ Tanks: 1x25m ³
	Oil purifying plant PCM - 1-3000	
Capacity for oil purification		3,2 m ³
THVENE	MIKAFIL – 4,0m ³	Oil vessels and tanks: 3x25m ³ Tanks: 1x25m ³
Total NEGK capacity for oil purification		506,2 m ³ or 450,518 tons with oil density at (0,89kg/m ³)

⁴¹ Data provided by OJSC NEGK

⁴² Mobile unit for heating, decontamination, filtration, and drying transformer oils

Annex 3. Ledger for Registration of Complaints

	Complaint	Date	Full name	Address/phone/mobile	Outcome/decisions	Complaint consideration date
1						
2						
3						
4						
5						
6						
7						
8						
9						

Annex 4. Terms of Reference

TO CONDUCT LABORATORY ANALYSIS FOR PCB CONTAINED IN TRANSFORMER OIL JSC "National Electrical Grid of Kyrgyzstan"

Objective: Conduct laboratory analysis to establish the presence/absence of PCBs concentration exceeding 50ppm in oil-filled equipment, which should be replaced under the ADB-financed "Power Sector Improvement Project" by sampling in the territory of 6 oil treatment facilities and 2 maintenance departments of JSC "National Electric Grid of Kyrgyzstan" (NEGK).

Justification for the need to conduct PCB test: Requirement to comply with ADB Safeguard Policy Statement (SPS 2009), implementation of the National Plan for the Stockholm Convention on Persistent Organic Pollutants (POPs) in the Kyrgyz Republic, aimed at phasing out the use of PCB-containing equipment till 2025 and banning the direct re-use of PCB-containing substances (with PCB concentrations of > 50ppm).

Scope of work: To conduct laboratory analysis at 6 oil treatment facilities 2 maintenance departments of the JSC "NEGK":

- 1) Take samples and conduct lab analysis of oils from all oil-filled reservoirs and all treatment equipment used during the operations of the 8 oil treatment facilities;
- 2) Equipment, from which samples will be taken, should be marked with the proper labels as a precaution;
- 3) Revise task 3 to: In case, if there is an equipment: (i) manufactured before the PCB cut-off date⁴³ and has never had oil changed by one of the 8 facilities or (ii) has ever had purified oil added during the maintenance, then such equipment requires additional analysis. In this case the Agreement between the JSC "NEGK" and selected Laboratory can be supplemented by a separate Agreement.

Requirements to the laboratories: The Laboratory should have certificate on accreditation in compliance with International Standards of International Organization for Standardization (IOS)/International Electrotechnical Commission (IEC) 17025:2005 "General requirements for the competence of testing and calibration laboratories";

Expected deliverables:

- 1) Detailed procedure for taking samples from 6 oil treatment facilities and 2 maintenance departments of the JSC "NEGK";
- 2) The procedure for taking samples and scope of work (sample numbers) should be agreed with the JSC "NEGK".
- 3) Sampling shall be registered in the Special Journal and an each test shall be certified with a Certificate on sampling;
- 4) Identification of presence or absence of PCB containing substances (with PCB concentrations of >50ppm).
- 5) Submitted deliverables should have 5 hard copies both in Russian and English with their electronic versions, signed and sealed by the laboratory stamp.

Responsibilities:

- Reporting to NEGK
- Ensure timely and qualitative implementation of technical specifications
- Ensure unconditional fulfillment of contract requirements.

⁴³ PCB cut-off date for USA and Russian/former USSR equipment is 1987 and 1992 respectively.

Annex 5. Plan for Management of Waste Oil

1. Plan for Management of Waste Oil

1. As mentioned in Section 6.1.2., the works for replacement of oil-filled equipment will be carried out simultaneously with conducting rapid analysis for PCB content in the oil of oil-filled equipment to be replaced. After the presence and volumes of contamination in oil and equipment would be identified, in accordance with ADB Safeguard Policy Statement (2009), the waste oil, equipment will be considered waste, and regulated according to legislation of the Kyrgyz Republic on toxic waste management, and international requirements for PCB utilization. To ensure environmental safety, see below the developed (i) Plan for Management of Waste Oil, and (ii) Plan for Management of Waste Equipment.

1.1. Management of PCB-contaminated waste oils

Box 8. Safety measures for personnel

All personnel working with PCB, and/or directly involved in clean-up, must wear protective clothing, and use personal protective equipment to avoid contamination of clothing or skin.

2. Drain of oil from oil-filled equipment and dismantling of equipment. According to Operating process chart for equipment replacement, oil from circuit Switches will be drained/discharged before dismantling switches from concrete pillars. Oil from transformers will be drained/discharged after dismantling transformers from pillars. In case of detecting PCB contamination of oil, precautions must be taken against contamination of all the oil used in circulation at the substation and territory. To prevent oil spill to the environment, under the oil-filled equipment to be replaced, concrete oil catchers are installed that correspond to volumes of oil in equipment. This prevents spill of oil into the environment.



Photo 6. Substation “Kara-Balta”. Discharge of oil from switch

3. Before the start of works, it is necessary to prevent entry of oil with PCB-content into the common container where all the oil from substation is collected. For that purpose it is necessary to shut-off the access of oil to the common pipeline by installing a valve at the entry to the pipeline. In case of accidental spill of PCB waste to the storage territory resulting from oil overflow to containers, it is necessary to clean-up the territory by absorbent materials, and the latter to pack in a special container for further utilization at the storage facility.

1.1.1. Packing of PCB-contaminated oil

4. It is necessary to conduct works for packing PCB-contaminated oil to containers for storage and further transportation at specially equipped sites, which must be concreted or must have other moisture-impermeable temporary coating, which later can be packed in a container for storing at the storage facility. Sites must be equipped with spill out collection pits for collecting oil in case of its spill or leakage.


- (i) It is proposed to store PCV containing wastes in UN certified package, in which the waste is allowed to transport according to requirements of European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)⁴⁴ or in containers– durable, resistant to corrosion, without leaks and in good condition;
- (ii) For storage of PCB contaminated oil it is proposed to use of Intermediate Bulk Containers (IBC) of 1000 liters or 200-liter sealed metal containers coated with anticorrosion and antioxidation paint, new or in good condition, or high-density polyethylene (HDPE) barrels with double tongues with clamped ends, and containers for bulk cargo (types 1A1, 1H1, 31H1). At the top of the barrel it is necessary to leave space of 7-10 cm for expansion;

1.1.2. Marking of PCB contaminated oil, and storage facilities

5. PCB-containing oil, as well as storage facilities, shall be marked for prompt effective identification and quick response to accidents related to PCB;

- (i) Taking into account that PCB containing oil will be transported, it is proposed to put the marking in accordance with requirements of Carriage of Dangerous Goods. In accordance with ADR, PCB containing waste during transportation is categorized as class 9 of dangerous goods. For class 9 of hazardous waste the number is assigned UN 2315 PCB liquid, and UN 3432 PCB solid;⁴⁵
- (ii) For each package unit, a sticker is applied according to requirements of the European Agreement concerning the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR), with information about the nature of the cargo (number of UN classification of dangerous goods, the hazard class) and symbol requirements for dealing with it in accordance with instructions in writing - ADR (Box 2);
- (iii) Nonerasable label must be applied to the equipment and be easily readable in the course of inspections, maintenance, and decommissioning;
- (iv) If analysis of the sample showed a PCB content of < 50 mg/kg, it is proposed to hang a green sign "Does not contain PCB! Contents PCB < 50 mg/kg";
- (v) Red label is applied to the oil with concentration of PCB> 50 mg/kg, which was proven analytically. "Danger! Contains PCB!";
- (vi) At the door of premises, where PCB contaminated oil will be stored, there should be a label that indicates the presence of PCB;

Box 9. Marking of PCB containing liquid waste (ADR)

Marking sign or warning sign	Hazard characteristics
Environmentally hazardous substances	Hazardous to the aquatic environment or the sewage system
	
2315 Polychlorinated biphenyls	PCB-liquids

1.1.3. Temporary storage of PCB contaminated oils

⁴⁴ European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR). UNECE, Geneva and UN New-York;

⁴⁵ European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR). Part 2 «Classification»

6. Before PCB contaminated oil will be utilized, it will be temporarily stored in a specially designed storage facilities.⁴⁶ For storing PCB oil, NEGK should obtain a license from SAEPF for storage of hazardous waste.⁴⁷

- (i) The maximum period of stay in temporary storage of PCB contaminated oils is 12 months;⁴⁸
- (ii) It is necessary to assign a unit in NEGK and the person responsible for management of PCB-containing equipment, oil and waste;
- (iii) It is necessary to compile a complete list of PCB-waste in the territory of the storage facility, and update it upon receiving or utilizing the waste;
- (iv) At the entry to the storage facility warning label is posted: "Access denied for outsiders";
- (v) In the territory where the PCB-oil is stored, the flooring must be waterproof and resistant to penetration of oil (covered with a durable epoxy resin, preventing penetration of PCB in cement) and have a slope to collect spills into the pan);
- (vi) The building is continuously ventilated or has good aeration and ventilation;
- (vii) At temporary storage facility there should be enough light to ensure normal working conditions;
- (viii) All floor drains, manholes and other discharge holes in the floor or on the surface shall be closed or sealed to prevent release of the liquid, or be connected with a drainage system in which any spilled liquid is contained and cleaned, and do not create the risk of fire or health hazard and safety.

Box 10. Safety precautions: It is prohibited:

- (i) Sale of PCB-containing oil;
- (ii) Storage of PCB-containing waste and equipment with any other substances;
- (iii) Combustion of PCB-containing waste and/or equipment.

1.1.6. Transportation of PCB oil to the long-term storage place

Box 11. Licensing of activities for transportation of hazardous waste

- (i) For transportation of PCB contaminated oil, a transport company must be licensed for the transportation (including cross-border) of toxic waste, including waste of production of radioactive substances.⁴⁹
- (ii) Transportation of PCB-containing oil will be accompanied by a traffic patrol (DPS) of MIA KR;
- (iii) Itinerary of transportation should be coordinated with DPS.⁵⁰

7. During transportation, there must be accompanying documents for the cargo (number and description according to the list), special clothing/overalls in case of emergency response, and a set of items and materials needed for a cleanup of the territory;

- (i) Transported PCB containing oil must to be transported in an enclosed vehicle or van;
- (ii) All containers and vehicles must be inspected for mechanical damage and leakage;
- (iii) The oil must be properly packaged and labeled (p.6.2.3. and p.6.2.4);
- (iv) Loading and unloading operations should be done with caution to avoid damage, which can lead to leakage or spill;
- (v) To prevent PCB containing liquid waste spill to the ground, it is necessary to put under the waste barrels a tray of impermeable material;
- (vi) Any leaks must be eliminated using absorbents and/or solvents;
- (vii) In case of an accident it is necessary to inform MES or its subordinated units, on the territory of which the accident happened, and DPZGSEN, SAEPF, GETI.

1.2. Management of waste oil not containing PCB

⁴⁶ SanPiN 2.1.7.010-03 "Hygienic requirements for the placement and disposal of production and consumption waste"

⁴⁷ Law "On the Licensing and Permit System in the KR", Art.16. p.4 (2013);

⁴⁸ Guidelines for PCB Management", GEF/UNDP Kazakhstan, ETI;

⁴⁹ «On the Licensing and Permit System in the KR", Art.15. p.31 (2013). Issued by SAEPF;

⁵⁰ Regulations on traffic patrol service of the Ministry of Internal Affairs of the Kyrgyz Republic, approved by GOKR August 14, 2012 No. 560;

8. Waste transformer oils that do not contain PCB, are categorized by the degree of impact on environment as class 3 of hazard.⁵¹ It is allowed to reuse the waste of class 3 of hazard in technological process in the processing at special plants.⁵²

Box 12. Class of hazard of waste transformer oil

Class of hazard of waste for environment	Criteria for classification of hazardous waste as hazardous for environment	Degree of hazardous impact for environment
Class 3- moderately hazardous	Environmental system is broken. Recovery period of at least 10 years after mitigating the harmful effects from an existing source	Moderate

9. There is certain capacity for reuse of transformer oil not containing PCB in NEGK branches. NEGK has developed and applied a set of transformer oil management standards approved by Order of the NEGK Director No. 174 date 16.07.2008:

- (i) The standard of NEGK CO 22862713-43-212.1-2008 "Norms of loss of transformer oil while its purifying, drying or regenerating";
- (ii) The standard of NEGK 22862713-43-212.2-2008 "Instruction on collection of transformer oil for its reuse";
- (iii) The standard of NEGK 22862713-43-212.3-2008 "Norms of spending transformer oil for repair and operational needs of oil-filled electrical substation equipment. Norms of needs in fresh transformer oil".

10. **Drain of oil from dismantled switches.** The technology of dismantling the switches involves oil drain from equipment before dismantling it. To prevent pollution of the environment, the existing building sites meet the safety requirements. They:

- (i) have a gravel surface;
- (ii) are fenced with concrete curbs;
- (iii) are equipped with emergency concrete underground tanks to collect oil spilled from the equipment in the event of an accident;
- (iv) are connected with centralized oil pipe concreted underground oil drain tank;
- (v) oil drain tank outside is sealed and there is a well for pumping out oil. (see photo).

⁵¹ Criteria for classification of hazardous waste as hazardous for the environment. Ministry of Environmental Resources of Russian Federation, dated June 15, 2001 N 511. Instructions for determining criteria for classifying hazardous waste as hazardous for the environment, registered in MJ KR 08.02.2005 No. 27-05 (Repealed by the Law "On normative legal acts");

⁵² Procedure of primary records for treatment of toxic waste. Registered in MJ KR 08.02.2005 No. 27-05.



Photo 7. Substation «Kara-Balta». Manhole on oil drain tank

11. **Oil-filled transformers containing PCB** will be dismantled from the concrete pillars filled with oil. To prevent oil entering the environment while dismantling the transformer, the following safety conditions will be met:

- (i) The site is concreted;
- (ii) An oil drain tank will be installed at the site. The volume will correspond to the volume of oil in the collecting equipment for oil leakage.

12. Waste oil will be sent for purifying, and after cleaning from mechanical impurities and water will be distributed to substations to be reused in technology. Oil residues which cannot be purified, in agreement with KyrgyzZhilkommunSoyuz, NEGK enterprises shall be burnt in boilers of KyrgyzZhilkommunSoyuz. (Annex 7).

Box 13. 1) For burning the transformer oil not containing PCB and not subject to further use, NEGK will receive in SAEPF permit for environmental emissions⁵³;
 2) In accordance with the Law “On Protection of Environment” NEGK will pay for emissions to ambient air and placement of wastes in environment. Payment is made to local funds for protection of environment of SAEPF, which are in each oblast of KR.⁵⁴

13. **Transportation of oils to the place of oil purification.** Waste oil is collected from substations and delivered to oil treatment facilities. NEGK has 6 oil treatment facilities and 2 repair shops, where the oil is purified/cleaned. Waste transformer oil is categorized as hazard class 3, and therefore does not require signage at transporting containers. Safety precautions when transporting oil:

- (i) The oil will be transported in special tanks that are available in all substations (Appendix 2);
- (ii) The vehicle and the container in which the oil is transported, must be technically sound and hermetically sealed.

⁵³Law “On the Licensing and Permit System in the KR”, Art.17, p.20

⁵⁴ Methodology to Determine the Fee for Contamination of Environment in the Kyrgyz Republic, Resolution of the GOKR dated September 19, 2011, N 559.

14. **Storing oil in oil treatment facilities.** In oil treatment facilities, the oil to be purified is collected in tanks. Sites for storage of oil-containing tanks are equipped in accordance with requirements of environmental safety:

- (i) Tanks are installed on concrete pillars and placed at specially environment-focused equipped sites;
- (ii) Sites are fenced, with gravel backfill;
- (iii) In case of emergency, under the tanks there are underground concrete tanks with volume equal to the quantity of oil in the tank in case of emergency spill;
- (iv) From the tanks there is a ground oil line laid in a shallow concreted trench, by which oil goes to oil purifying facilities.
- (v) The tanks are interconnected by pipeline through which oil in case of accidents go to tanks installed in the premise for oil purification.



Photo 8. Chuy enterprise of high voltage electric lines. Storing oil in tanks in oil treatment facility



Photo 9. Chuy enterprise of high voltage electric lines. Storing tanks with oil at a specially diked site



Photo 10. Chuy enterprise of high voltage electric lines. Concrete storage reservoir under the oil tank

15. Purification of oil in oil treatment facilities

- (i) Oil filtering plants are filters through which the oil is purified, then it goes to storage reservoir for dry insulating oil;
- (ii) Mobile oil purifier plant MIKAFIL is drying oil from water;
- (iii) Oil purifier plants are placed in mechanical repair shops with concrete pavement surface;
- (iv) Under the plants concreted underground tanks are placed to capture oil in case of spill.

16. Capacity of oil purifying units in all branches of NEGK is 450.56 tons (Appendix 2), and the amount of waste oil will be 532.5 tons. During the works it is necessary to develop a schedule of sequential replacement of equipment, and provide additional space for placing the released oil. Sites must be

equipped in accordance with the requirements of environmental safety.⁵⁵ After purification the oil is transported to substations and is used in technology. See photo.



Photo 11. Chuy enterprise of high voltage electric lines. Oil purifier plant



Photo 12. Chuy enterprise of high voltage electric lines. Storing of purified oil in tanks

1.2.3. Environmental emergency response plan (ERP) while managing oils

⁵⁵ SanPiN 2.1.7.010-03 "Hygienic requirements for the placement and disposal of production and consumption waste"

17. Environmental emergency response plan is part of EMP. Environmental emergency situations may occur at oil spill:

- (i) When dismantling the old equipment and draining oil from the equipment;
- (i) When transporting oil;
- (ii) When temporarily storing the oil;
- (iii) When transporting oil;
- (iv) During purification of oil, which does not PCB, in oil treatment facilities.

18. Emergency response in EMP is represented by directions: preventive actions and response measures to arising emergencies (i) while managing PCB oils and (ii) when managing oils not containing PCB.

19. **Warning in the case of ERP.** For quick response in case of environmental emergencies, NEGK will appoint a person in charge of the project "Power sector development", as well as responsible persons in the field (substations). In the event of an environmental emergency, responsible persons in the field inform a responsible person in NEGK, who conveys emergency information to the specially authorized state bodies: MES, SAEPF, GETI and DPZGSEN.

1.2.3.1. Emergency response in case of oil spill while dismantling equipment or draining oil before dismantling the equipment

20. To prevent large oil spills to the environment, under the oil-filled equipment oil catchers are installed that correspond to volumes of oil in equipment. Then oil goes to common storage reservoir of the substation, from where it is pumped out and sent for purification.

21. In case of accidental spill of oil to the territory of substation, it is necessary to:

- (i) Pump out the oil to oil storage tanks;
- (ii) Clean-up the territory with absorbents;
- (iii) Collect absorbent material in special plastic bags and dispose of at permission of SAEPF;
- (iv) Take samples of soil of contaminated territory, and to conduct laboratory tests or to determine contamination by Express analysis;
- (v) If oil contamination with PCB is detected, oil will be collected in a special container for PCB oils and disposed of as PCB waste.
- (vi) To treat contaminated surface with absorbent, and then with the solvent. Absorbent material shall be to collected in special plastic bags and disposed of as PCB waste.

Box 14. Kit with necessary items and materials to eliminate the effects of PCB containing oil spills:

- (i) full-body coveralls impervious to PCBs (2),
- (ii) safety knee-length shoes/boots impervious to PCBs (2 pairs),
- (iii) PCB-resistant gloves, goggles (2 pairs),
- (iv) dry-chemical fire extinguisher, 4.5 kg,
- (v) brush for removing the crumbled mixture, oily rag bin,
- (vi) plastic bags for waste, double sealed bottom,
- (vii) the absorbent (sawdust, etc.);
- (viii) container for cleanup of spills for the above equipment and materials,
- (ix) shovel with a long handle,
- (x) First aid kit.

1.2.3.2. Emergency response in case of oil spill while temporary storage of PBC oil

Box 15. For emergencies, the premise, where PCB containing waste will be stored, must have the following equipment:

- (i) Fire extinguishers must be easily accessible;
- (ii) Spill cleanup kit:
 - absorbents (sawdust, activated charcoal);
 - pumps;
 - solvents (the first class liquid fuel or kerosene, etc.);
 - plugs for plugging the drain pipes, and portable fencing;
 - shovel;
 - cleaning cloth.

22. All persons authorized to work in of temporary storage facility or sites for cleanup of PCB, need to know where the "Spill cleanup kit" is, and should be well trained in its use, and to know where the personal protective equipment (PPE) is;

- (i) Besides, they should be familiar with methods of packing and managing PCB-waste generated in the process of cleanup;
- (ii) If PCB waste spills to the territory of storage facility, it is necessary to cleanup with absorbent materials that are packed in a special container for further utilization.

1.2.3.3. Emergency response in case of oil spill while transporting oils

Box 16. Kit with necessary items and materials to eliminate the effects of PCB containing waste

- (i) full-body coveralls impervious to PCBs (2),
- (ii) safety knee-length shoes/boots impervious to PCBs (2 pairs),
- (iii) PCB-resistant gloves, goggles (2 pairs),
- (iv) dry-chemical fire extinguisher, 4.5 kg,
- (v) brush for removing the crumbled mixture, oily rag bin,
- (vi) plastic bags for waste, double sealed bottom,
- (vii) the absorbent (sawdust, etc.),
- (viii) container for cleanup of spills for the above equipment and materials,
- (ix) shovel with a long handle,
- (x) First aid kit,
- (xi) manually-operated pump with hose.

23. In case of an emergency, it is necessary to immediately notify the person responsible for emergency situations at NEGK, and notify MES, SAEPP, GETI and DPZGSEN;

- (i) The staff working on cleanup must be specifically trained or it should be conducted by a specialized organization (MES);
- (ii) To build a fence around the contaminated area to prevent access by unauthorized persons and vehicles to the territory of the spill;
- (iii) Before the arrival of MES it is necessary to the maximum possible extent to prevent PCB penetration in water sources, soil, including (i) temporary removal of liquid or dike (construction of retaining walls) or, if applicable, (ii) by setting the pan under the leak, or (iii) limit the spill by sealing the hole (using rags or other materials available);
- (iv) Not to allow the flow of water to the contaminated area from water sources or closely spaced irrigation canals;
- (v) In the event of an oil leak, all spilled oil and all materials used for cleanup must be securely placed in barrels and removed from the site;
- (vi) Onto the soil, place oil absorbent (1-1.5 hours), so it absorbed the liquid;
- (vii) Put the used absorbent material and any PCB-contaminated materials or equipment for cleanup of spills into 200-liter barrels for utilization. There is no need to destroy equipment for cleanup, if it can be effectively cleaned;

- (viii) If penetration of PCB in soil cannot be determined, then at least 15 cm of soil of contaminated area must be removed;⁵⁶
- (ix) All surfaces, which came into contact with the leaked fluid, must be decontaminated using brushes with effective solvent such as trichloroethane.⁵⁷
- (x) All contaminated surfaces (steel, wood, etc.), all contaminated objects, including tools, clothing, boots and other equipment, all equipment that could have been contaminated as a result of contact with PCB, should be cleaned with solvent, excluding penetration of solvent into the environment;
- (xi) Take samples of the cleaned-up territory for PCB into containers in which it is necessary to have while transporting. Send samples to determine the PCB to a laboratory accredited for these purposes;
- (xii) If the person was affected by PCB during cleanup or in any other situation, it is necessary to provide first aid measures and notify representatives of the Department of Labor and Health;
- (xiii) For the damage to the environment, NEGK will pay the fee charged by a special authorized state body (GETI) depending on the extent of damage.⁵⁸

1.2.3.4. Emergency response in case of oil spill while cleanup and storage of transformer oil not containing PCB, in oil treatment facilities

24. To prevent penetration of oil to the environment, under the oil-storage tanks and under purifying machines, tanks are installed that correspond to volumes of oil in equipment.

- (i) Pump out the oil to oil storage tanks;
- (ii) Clean-up the territory with absorbents;
- (iii) Collect absorbent material in special plastic bags and dispose of at permission of SAEPF;
- (iv) Take samples of soil of contaminated territory, and to conduct laboratory tests or to determine contamination by Express analysis.

1.2.8. Responsibility and monitoring

25. Responsibility for implementation of the Plan of oil management before placement of waste for a period of permanent storage is with NEGK, external supervision will be carried out by Lahmeyer International;

- (i) During storage of PCB-containing waste, it is necessary to make the routine inspection of storage facility territory for leaks, degradation of container materials, vandalism, integrity of fire extinguishing systems;
- (ii) It is necessary to keep documentation and records for PCB equipment inventory.

⁵⁶ "PCB Transformers and Capacitors. From Management to Reclassification and Disposal". First Issue. May 2002. Prepared by UNEP

⁵⁷ PCB Transformers and Capacitors. From Management to Reclassification and Disposal". First Issue. May 2002. Prepared by UNEP;

⁵⁸ Law «On protection of environment», Art. 54

Table 1. Plan for Management of Waste Oil

Types of activity related to waste generation	Environmental parameters that may be affected by waste generation	Type of waste	Impact mitigation measures	Responsibility	Supervision
Drain of PCB oil from obsolete equipment (switches) before dismantling equipment	Soil	Generation of liquid waste in the form of PCB contaminated waste oil	Utilization of PCB contaminated oil in accordance with requirements of toxic waste management in the Kyrgyz Republic and international requirements for PCB utilization (6.2.1- 6.2.8)	NEGK	Lahmeyer International
Drain of oil from obsolete equipment (switches) before dismantling equipment	Soil	Generation of liquid waste in the form of waste transformer oil	1) Purification of waste oil at existing enterprises in oil purifying plants for consequent use; 3) After purification to re-use oil for the needs of the enterprise; 4) Transfer of oil not subject for use to specialized organizations for safe recycling or incineration (Kyrgyzzhilkomunsoyuz).	NEGK	Lahmeyer International
Dismantling of obsolete equipment	Soil	Generation of solid waste as a result of dismantling of obsolete equipment	1) Hermetically isolated equipment containing oil can be stored at a specially equipped site ⁵⁹ as backup equipment; 2) Dismantled equipment will be used for spare parts; 3) Spare parts, which can be used safely for the environment, will be used as back-up materials; 4) Spare parts as scrap metal will be transferred to a specialized company for recycling under the Agreement between NEGK and the company engaged for these purposes;	NEGK	Lahmeyer International

⁵⁹ SanPiN 2.1.7.010-03 "Hygienic requirements for the placement and disposal of production and consumption waste"

Types of activity related to waste generation	Environmental parameters that may be affected by waste generation	Type of waste	Impact mitigation measures	Responsibility	Supervision
			5) Gas-insulated switches will be kept indoors until their utilization issue is resolved; 4) The packaging of the new equipment will be utilized of with permission of SAEPF.		
Demolition of old concrete pillars	Soil	Construction waste (concrete, reinforcement) and other nontoxic waste	Construction nontoxic waste will be removed from the site to locations agreed with SAEPF and local governments according to legislation of KR	1) NEGK	Lahmeyer International

1.2. Plan for Management of Waste Electrical Equipment

26. Waste electrical equipment will include: electrical equipment (transformers, switches, CSGN) not contaminated with PCB, and (ii) electrical equipment contaminated with PCB (oil-filled transformers and oil switches). If laboratory tests detect that equipment does not contain PCB, then emptied oil switches and oil-filled transformers will be stored on the territory of the substation as a backup. For this purpose, a storage facility should meet environmental safety standards.⁶⁰ Equipment not subject to further use will be dismantled and handed over to specialized companies as waste for recycling

27. Electrical equipment not containing oil will:

- (i) Be dismantled for spare parts for future use;
- (ii) If not usable, spare parts will be handed over for processing as scrap metal;
- (iii) Ceramics will be used in construction.⁶¹

28. **PCB -containing solid waste and materials will include oil-filled transformers,** switches and other waste (rags, absorbents).

- (i) Switches emptied from PCB contaminated oil, after purification can be used as backup equipment because of their minor contamination;
- (ii) Transformers, after draining the PCB contaminated oil, will be utilized as PCB waste.

29. **Dismantling of transformers.** To prevent PCB contamination throughout the territory, and of uncontaminated equipment in the substation, where dismantling of transformer will be carried out, the so-called "dirty zone" should be allocated. Dismantling of transformers should only be conducted in a "dirty zone". This can be a separate isolated premise, preferably.

30. Worktables in "dirty zone" must be covered with an impermeable material with moldings on the edges to prevent spillage. Floors in "dirty zone" should be covered with impermeable material and even have a sump for collecting leakages. Subsequently, the material that covered the tables and floors, will be disposed of as waste.

Box 17. Safety precautions during dismantling PCB transformers for oil drain⁶²

In dismantling sealed transformers (to get to the core) there is probability for formation of PCB vapors, fumes or aerosols. When the temperature increases, the PCB pressure increases, and hence their ability to form vapors increases. This effect can be very pronounced at higher temperatures. Therefore, it is necessary to avoid any plasma flame cutting or welding process, if practicable. Heat of flames will not only cause PCB evaporation from the surface being cut, but also warm up the neighboring areas, increasing the volatility of PCB, in the immediate vicinity. In this connection, shearing works at low speeds are recommended.

1.2.1. Packaging of PCB containing equipment

31.

- (i) It is proposed to store PCV containing wastes in UN certified package, in which the waste is allowed to transport according to requirements of European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)⁶³ or in containers— durable, resistant to corrosion, without leaks and in good condition;
- (ii) It is necessary to place non-flammable PCB-contaminated solid waste, such as transformers, contaminated components extracted from systems such as winding, PCB-contaminated packaging and devices, such as metal containers, pumps, tanks, metal filters, metal scrap, retrofilled transformers if PCB concentration is higher than 20 mg/kg, in a heavy duty metal or high density polyethylene (HDPE) barrels with a removable lid and a gasket made of PCB-resistant material such as nitrile rubber or PTFE;
- (iii) It is necessary to to pack flammable PCB-contaminated solid waste, such as materials for cleaning PCB-equipment, cleanup or absorption of spills, such as sawdust, rags, etc., PCB-

⁶⁰ SanPIN 2.1.7.010-03 "Hygienic requirements for the placement and disposal of production and consumption waste";

⁶¹ Payment for the delivery of scrap metal is not made

⁶² "PCB Transformers and Capacitors. From Management to Reclassification and Disposal". First Issue. May 2002. Prepared by UNEP

⁶³ European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR). UNECE, Geneva and UN New-York;

contaminated PPE, e.g., gloves, pads or garments, used Kits for PCB testing, in heavy-duty and impermeable plastic bags. It is necessary to put plastic bags in the HDPE barrels that are in good condition and have a removable cover (type 1A2, 1H2, 13H3). Barrels must have visible and understandable marking in accordance with ADR;

- (iv) PCB-equipment that does not fit in steel barrels must be packed in HDPE packs that need to be inspected for leaks before the transfer to storage and transportation;

1.2.2. Marking of PCB contaminated equipment, and storage facilities

32. PCB-containing equipment and waste, as well as storage facilities, shall be marked for prompt effective identification and quick response to accidents related to PCB;

- (i) Taking into account that PCB containing waste will be transported, it is proposed to put the marking in accordance with requirements of Carriage of Dangerous Goods. In accordance with ADR, PCB containing waste during transportation is categorized as class 9 of dangerous goods. For class 9 of hazardous waste the number is assigned UN 2315 PCB liquid, and UN 3432 PCB solid;⁶⁴
- (ii) For each package unit, a sticker is applied according to requirements of the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR), with information about the nature of the cargo (number of UN classification of dangerous goods, the hazard class) and symbol requirements for dealing with it in accordance with instructions in writing - ADR (Box 9);
- (iii) Nonerasable label must be applied to the equipment and be easily readable in the course of inspections, maintenance, and decommissioning;
- (iv) At the door of premises, where PCB containing equipment or PCB contaminated oil will be stored, there should be a label that warns of the presence of PCB;
- (v) For each package unit, a sticker is applied according to requirements of the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR), with information about the nature of the cargo (number of UN classification of dangerous goods, the hazard class) and symbol requirements for dealing with it in accordance with ADR instructions in writing.

Box 18. Marking of PCB containing solid waste (ADR)

Marking sign or warning sign
Environmentally hazardous substances



Hazard characteristics
Hazardous to the aquatic environment or the sewage system.

3432 Polychlorinated biphenyls

PCB solid (transformers)

1.2.3. Temporary storage of PCB contaminated waste

33. Before PCB contaminated waste will be utilized, it will be temporarily stored in a specially designed storage facilities.⁶⁵ For storing PCB wasteoil, NEGK should obtain a license from SAEPP for storage of waste.⁶⁶

- (i) The maximum period of stay in temporary storage of PCB contaminated equipment is 12 months;⁶⁷
- (ii) It is necessary to assign a unit in NEGK and the person responsible for management of PCB-containing equipment, oil and waste;
- (iii) It is necessary to compile a complete list of PCB-waste in the territory of the storage facility, and update it upon receiving or utilizing the waste;

⁶⁴ European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR). Part 2 «Classification»

⁶⁵ SanPIN 2.1.7.010-03 "Hygienic requirements for the placement and disposal of production and consumption waste"

⁶⁶ Law "On the Licensing and Permit System in the KR", Art.16. p.4 (2013);

⁶⁷ Guidelines for PCB Management", GEF/UNDP Kazakhstan, ETI;

- (iv) At the entry to the storage facility warning label is posted: "Access denied for outsiders";
- (v) The site to store PCB containing equipment and other solid waste must be embedded in concrete;
- (vi) The building is continuously ventilated or has good aeration and ventilation;
- (vii) At temporary storage facility there should be enough light to ensure normal working conditions.

Box 19. For emergencies, the premise, where PCB containing waste will be stored, must have the following equipment:

- (iii) Fire extinguishers must be easily accessible;
- (iv) Spill cleanup kit:
 - absorbents (sawdust, activated charcoal);
 - pumps;
 - solvents (the first class liquid fuel or kerosene, etc.);
 - plugs for plugging the drain pipes, and portable fencing;
 - shovel;
 - cleaning cloth;
- (v) All persons authorized to work in of temporary storage facility or sites for cleanup of PCB, need to know where the "Spill cleanup kit" is, and should be well trained in its use, and to know where the personal protective equipment (PPE) is;
- (vi) Besides, they should be familiar with methods of packing and managing PCB-waste generated in the process of cleanup.

1.2.4. Transportation of PCB-containing wastes to long-term storage sites

Box 20. Licensing of activities for transportation of hazardous waste

- (i) For transportation of PCB contaminated oil, a transport company must be licensed for the transportation (including cross-border) of toxic waste, including waste of production of radioactive substances.⁶⁸
- (ii) Transportation of PCB-containing oil will be accompanied by a traffic patrol (DPS) of MIA KR;
- (iii) Itinerary of transportation should be coordinated with DPS.⁶⁹

34. Transportation of PCB-containing waste will be accompanied by a traffic patrol (DPS) of MIA KR. Prior to the transportation NEGK will coordinate the itinerary with DPS;⁷⁰

- (i) During transportation, there must be accompanying documents for the cargo (number and description according to the list), special clothing/overalls in case of emergency response, and a set of items and materials needed for a cleanup of the territory;
- (ii) Vehicles, used for transportation of transformers, must have side curbs with height of 80 cm and a rubberized coating for the bottom of a body with a layer of absorbent;
- (iii) Transported materials must be properly packaged and labeled;
- (iv) Transportation of emptied transformers should be on pallets, providing containment of 10% of the total volume of liquid PCBs that were previously in the transformer;
- (v) During transportation in a pallet, transformer must be secured, and protected from precipitation;
- (vi) When transporting not emptied transformers, the pallets must ensure containment of 110% of the total volume of liquid PCBs in transformer;
- (vii) In the packaging/container of oil filled equipment, absorbent material must be placed in an amount sufficient to absorb at least 1.1 times the volume of fluid contained in the equipment;
- (viii) Any leaks must be eliminated using absorbents and/or solvents;
- (ix) In case of an accident it is necessary to inform MES or its subordinated units, on the territory of which the accident happened, and DPZGSEN, SAEPP, GETI.

1.2.5. Environmental emergency response plan (ERP) while managing PCB waste

⁶⁸ «On the Licensing and Permit System in the KR», Art.15. p.31 (2013r.). Выдается SAEPP;

⁶⁹ Regulations on traffic patrol service of the Ministry of Internal Affairs of the Kyrgyz Republic, approved by GOKR August 14, 2012 No. 560

⁷⁰ Regulations on traffic patrol service of the Ministry of Internal Affairs of the Kyrgyz Republic, approved by GOKR August 14, 2012 No. 560

35. Environmental emergency response plan is part of EMP. Environmental emergency situations may occur (i) when transporting PCB containing waste, (ii) when temporarily storing PCB containing waste.

36. **Warning in the case of ERP.** For quick response in case of environmental emergencies, NEGK will appoint a person in charge of the project "Power sector development", as well as responsible persons in the field (substations). In the event of an environmental emergency, responsible persons in the field inform a responsible person in NEGK, who conveys emergency information to the specially authorized state bodies: MES, SAEPF, GETI and DPZGSEN.

37. In case of emergency situation during transportation of PCB containing equipment:

- (i) All surfaces, which came into contact with PCB, must be decontaminated using brushes with effective solvent such as trichloroethane.⁷¹
- (ii) All contaminated surfaces (steel, wood, etc.), all contaminated objects, including tools, clothing, boots and other equipment, all equipment that could have been contaminated as a result of contact with PCB, should be cleaned with solvent, excluding penetration of solvent into the environment;
- (iii) Take samples of the cleaned-up territory for PCB into containers in which it is necessary to have while transporting. Send samples to determine the PCB to a laboratory accredited for these purposes;

1.3. Management of other nontoxic waste

38. Nontoxic waste generated during construction will include: construction waste, rags, unfit packaging, sorbents, etc.

Construction waste, rags, unfit packaging, sorbents will be utilized in accordance with the requirements of environmental safety:

- (i) non-toxic construction waste is removed from the site in coordination with the Authority for Protection of Environment and the municipal authority to in a specially allocated space for waste burial;
- (ii) unfit packaging will be recycled with permission of SAEPF: paper and wood transferred to "Kyrgyzzhilkomunsoyuz" for burning in boilers;
- (iii) sorbents, used for cleanup of sites when oil got to the soil, will be air-tightly packed together with contaminated soil to be stored on the premises until the issue is resolved regarding recycling on a dedicated site.

Box 21. Requirements of legislation of the Kyrgyz Republic in waste management

- 1) Prior to removal of waste from site, NEGK will obtain permit for placement of waste in the environment at territorial departments of environmental protection that are in each oblast;⁷²
- 2) In accordance with the Law "On Protection of Environment" NEGK will pay for emissions to ambient air and placement of wastes in environment, except PCB subject to complying with requirements of environmental safety. Payment is made to local funds for protection of environment of SAEPF, which are in each oblast of KR.⁷³

1.3.1. Responsibility and monitoring

39. Responsibility for implementation of the Plan of waste management is with NEGK, external supervision until placement of waste for a period of permanent storage will be carried out by Lahmeyer International;

- (i) During storage of PCB-containing waste, it is necessary to make the routine inspection of storage facility territory for leaks, degradation of container materials, vandalism, integrity of fire extinguishing systems;
- (ii) It is necessary to keep documentation and records for PCB equipment inventory.

⁷¹ "PCB Transformers and Capacitors. From Management to Reclassification and Disposal". First Issue. May 2002. Prepared by UNEP;

⁷² Law «On the Licensing and Permit System in the KR», Art.17, p.18;

⁷³ Methodology to Determine the Fee for Contamination of Environment in the Kyrgyz Republic, Resolution of the GOKR dated September 19, 2011, N 559.

Table 2. Plan for Management of electric equipment

Types of activity related to waste generation	Environmental parameters that may be affected by waste generation	Type of waste	Impact mitigation measures	Responsibility	Supervision
Dismantling of oil circuit breaker containing PCB oil	Soil	Solid PCB waste	1) Cleaning of circuit breaker to minimum content of PCB; 2) Use of oil circuit breaker as spare parts; 3) If it is impossible to reuse, transfer to specialized companies for utilization as metal scrap	NEGK	Lahmeyer International
Dismantling of PCB contaminated transformers	Soil	Solid PCB waste	1) Drain of PCB oil from transformer; 2) Utilization of transformer as PCB containing waste	NEGK	Lahmeyer International
Dismantling of electric equipment not containing PCB	Soil	Generation of solid waste as a result of dismantling of obsolete equipment	1) Hermetically isolated equipment containing oil can be stored at a specially equipped site ⁷⁴ as backup equipment; 2) Dismantled equipment will be used for spare parts ей; 3) Spare parts, which can be used safely for the environment, will be used as back-up materials 4) Spare parts as scrap metal will be transferred to a specialized company for recycling under the Agreement between NEGK and the company engaged for these purposes; 5) Gas-insulated switches will be kept indoors until their utilization issue is resolved;	NEGK	Lahmeyer International

⁷⁴ SanPiN 2.1.7.010-03 "Hygienic requirements for the placement and disposal of production and consumption waste"

Types of activity related to waste generation	Environmental parameters that may be affected by waste generation	Type of waste	Impact mitigation measures	Responsibility	Supervision
			4) The packaging of the new equipment will be utilized of with permission of SAEPF.		
Demolition of old concrete pillars	Soil	Construction waste (concrete, reinforcement) and other nontoxic waste	Construction nontoxic waste will be removed from the site to locations agreed with SAEPF and local governments according to legislation of KR	2) NEGK	Lahmeyer International

1.4. Further utilization of PCB contaminated oils and equipment

40. There is no opportunity to safely dispose of PCB-containing waste in KR. Transportation of PCB-containing wastes for disposal by incineration at high temperatures to special licensed plants in Europe by land is not yet possible due to prohibition of entry of hazardous waste into the territory of the Customs Union (Russia , Kazakhstan and Belarus).⁷⁵

41. The issue with PCB waste disposal (oils and transformers) or long-term storage until full utilization will be resolved by GOKR jointly with the concerned government agencies. On May 7, 2014 the Government instructed SAEPF, MES, MEP to give suggestions on addressing the issue with the disposal of PCB containing waste in the Kyrgyz Republic. Currently, the Ministry of Energy is working on the issue of allocating a land plot for construction of a storage facility for storing PCB waste.

Box 22. Requirements of legislation of the Kyrgyz Republic

- (i) detailed design for construction of a storage facility for long storage of PCB-containing wastes;
- (ii) draft the section "Protecting environment" to the detailed design;
- (iii) obtain the positive opinion of the state ecological examination and other public examinations;
- (iv) obtain a license for storage of PCB-containing wastes.⁷⁶

42. As mentioned in Section 6.3., in case of detecting PCB contamination in equipment, the switches after cleaning can be reused, and transformers will be released from oil, dismantled, packed in accordance with international requirements for further storage in dedicated storage facility.

43. According to NEGK data, 570 oil-filled transformers should be replaced, with 532 tons of oil released. In case of detecting PCB pollution, for storing the waste, which may occur during the project, we will need the following space to store them. Given the density of oil at 2° C not more than 0.9 kg/m³, 592,000 liters of oil will be released. Given the spill of oil in 1000 liters IBCs and IBCs safety placement with height of one IBC, we need an area of ~ 7000 m², or ~ 0.7 hectares.

44. **For PCB contaminated transformers.** As mentioned above, transformers will be dismantled, packaged in polyethylene, then in IBCs or metal containers. For 570 transformers of various sizes (length) we factor 570 IBCs. Size of the area is based on placement of transformers along the height in 2 IBCs will be ~ 6000 m² or 0.6 ha. The total area of the storage facility will be ~ 1.5 ha. The detailed design for construction will take into consideration details of requirements of environmental safety while designing such facilities.

Box 23. Intermediate Bulk Container (IBC) standard size –

Length: 1200 +/- 10 mm,
Width: 1000 +/- 10 mm,
Height: 1160 +/- 10 mm.

⁷⁵ Single list of goods subject to bans or restrictions on importation or exportation of by states - members of the Customs Union within the Eurasian Economic Community in trade with third countries, and Regulation on application of restrictions". Approved by board of ECE on August 16, 2012 No. 134.

⁷⁶ «On the Licensing and Permit System in the KR», Art.15. p.31 (2013r.). Issued by SAEPF;

Annex 6. Observing Safety Procedures When Conducting Equipment Replacement Works

1. Works should be carried out in accordance with the Technical Regulations “On the Electrical safety”, Technical Regulations “On the Safety of Moving and Handling Equipment and Processes of Its Operation.”
2. Technical and organizational measures should be performed prior to start of operations to ensure safety of workers. These include: (i) power outage in the area allocated for the production and prevention of erroneous switch on of power; (ii) installation of temporary fencing and hanging caution posters; (iii) check for no voltage on the part of the plant designated for work.
3. Any works should be preceded by issuance of work orders or permits for work; taking a break from work, transition to another work place, completion of works, supervision in the work process. Work order is a written order to work with the electric installations specifying the location, start and end time of works, safety conditions, team members and persons responsible for occupational safety.
4. Work order specifies for full or partial removal of the voltage from repair object, as well as works performed without removing voltage near conductive parts and on conductive parts under voltage. One does not need written or verbal work order registered in the log to perform works that do not require voltage removal far from conductive parts under voltage, as well short term and minor works carried out by personnel or under supervision.
5. Persons issuing work orders are responsible for occupational safety: responsible manager; allowed to work (operating personnel member); works producer; watcher, members of work team. The right to issue work orders to work with electric appliances can be granted to members of electrical plant team (heads of electric workshop, operation service, masters) that are authorized to issue work orders by chief engineer. They should have qualification group # V (or at least IV for the plants with voltage up to 1 kV).
6. Records of work including completion date and time should be signed by supervisor (or in his absence by works producer). Manual drives and remote control key switchgear should have caution posters “Do not switch on. Work in progress”.
7. Technical works are carried out by the person granting access to work upon permission of the person issuing work order – electrician-member of operational staff with at least IV qualification group for plants with voltage up to 1 kV or qualification group # III for plants with voltage below 1 kV.
8. When removing the old and installing new equipment, work will be performed with the use of moving and handling equipment. Safety of operations on moving and handling mechanism is regulated by the Technical Regulations “On the safety of moving and handling equipment and operation processes”.
9. Prior to the beginning of moving and handling operations, crane truck operator must obtain admission and work permit. Moving and handling equipment must be registered with the State Inspectorate for environmental and technical safety, have certificate of annual tests to ensure safe operation during its service life.
10. In the process of installation works related to hanging OPGW, to comply with safety one should use only high-quality fastening materials that are guaranteed to provide the most reliable recording of installed cable.
11. In potentially possible welding processes one should use heat protection shields (for the localization of thermal sources, reduction of radiation exposure in the workplace, as well as to reduce the temperature of surfaces surrounding the workplace). The heat radiation shields reflect one part and absorb another part of thermal radiation.
12. **Safety measures when handling electronegative gas equipment during its installation**
 - (i) When handling the electronegative gas breaker it is prohibited to disassemble the breaker’s columns if there is gas under pressure;
 - (ii) It is absolutely prohibited to leave vessels filled with electronegative gas open;
 - (iii) The leakage of electronegative has from the breaker installed in the open air does not represent a hazard for maintenance personnel.⁷⁷
 - (iv) If there is a need to perform works in the premise the air of which is contaminated by electronegative gas degradation products, one shall use a gas mask instead of a respirator.

⁷⁷ IEC 60376:2005: Technical conditions for electronegative gas (SF₆) of the technical grade for electrical equipment.

- (v) When performing any works with electronegative gas or electronegative gas equipment (filling, refilling, taking samples for tests, etc.) it shall be prohibited to smoke, use heating devices and open flame inside the premises.
13. Bottles filled with electronegative gas shall be handled with caution, as bottles under pressure.
- (i) They must be stored in a cool, dry, well-ventilated premises away from flammable or explosive materials.
 - (ii) Bottles shall be protected from direct sunlight, placed on a clean and flat surface in a vertical position with the faucet facing upwards and protected from falling.
 - (iii) Bottles shall have a label with clear indication of their contents.
 - (iv) Bottles with market-grade electronegative gas shall be separated from bottles with used electronegative gas.


Annex 7. Letter from Kyrgyzzhilkommunsoyuz on possibility of burning oil

FROM :

FAX NO. :

8 Jul. 2013 10:05AM P1

КЫРГЫЗ РЕСПУБЛИКАСЫНЫН
ЭНЕРГЕТИКА ЖАНА ӨНӨР ЖАЙ
МИНИСТРЛИГИ
"КЫРГЫЗТУРАКЖАЙКОММУНСОЮЗ"
МАМЛЕКЕТТИК ИШКАНАСЫ



МИНИСТЕРСТВО ЭНЕРГЕТИКИ
И ПРОМЫШЛЕННОСТИ
КЫРГЫЗСКОЙ РЕСПУБЛИКИ
ГОСУДАРСТВЕННОЕ ПРЕДПРИЯТИЕ
«КЫРГЫЗЖИЛКОММУНСОЮЗ»


MINISTRY OF ENERGY AND INDUSTRY OF THE KYRGYZ REPUBLIC
«KYRGYZHOUSCOMMUNION» GOVERNMENT ENTERPRISE

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« 08 » 04 2013 г. № 102-3/И-765

ОАО «Национальная электрическая
сеть Кыргызстана»
На №102-3/И-765 от 5.07.2013г.

ГП «Кыргызжилкоммунсоюз» имеет возможность сжигания отработанного
трансформаторного масла в небольших котельных работающих на мазуте.

Директор  М.Мурзаев

«КЫРГЫЗСТАН ЭНЕРГЕТИКА ЖАНА ӨНӨР ЖАЙ» ААК
ОАО «НАЦИОНАЛЬНАЯ ЭЛЕКТРИЧЕСКАЯ СЕТЬ КЫРГЫЗСТАНА»
Кирини
Входящий № 102-3/И-765
« 08 » 04 2013 г.

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"КЫРГЫЗСТАН
УЛУТТУК ЭЛЕКТР ТАРМАГЫ"
АЧЫК
АКЦИОНЕРДИК КООМУ



ОТКРЫТОЕ
АКЦИОНЕРНОЕ ОБЩЕСТВО
"НАЦИОНАЛЬНАЯ ЭЛЕКТРИЧЕСКАЯ СЕТЬ
КЫРГЫЗСТАНА"

БУЙРУК ПРИКАЗ

Бишкек ш.

22.05.2014

№ 154

О рассмотрении жалоб

В целях успешной реализации проекта «Развитие сектора энергетики, финансируемого АБР, руководствуясь Законом Кыргызской Республики «О порядке рассмотрения обращения жалоб» от 04.05.2007 г., со внесенными изменениями в 2008 и 2013 гг. и типовой инструкцией по делопроизводству, утвержденной Постановлением ПКР от 23 июля 2012 года за № 517, при обращении граждан (предложения, заявления, жалобы),

ПРИКАЗЫВАЮ:

Начальнику ОО Бекторгоевой Э.Ж., обеспечить работу:

1. По незамедлительной регистрации поступивших заявлений и жалоб в журнале учета;
2. Незамедлительно передавать поступившие жалобы и заявления руководству на рассмотрение;
3. Оперативно передавать ответственному руководителю отдела и службы в чью компетентность входит рассмотрение поступившей жалобы в соответствии с резолюцией руководителя, а также направлять копию жалобы в Азиатский Банк Развития;
4. Обеспечить контроль за сроками рассмотрения жалоб и ответами заявителю (в течение 14 дней);
5. Своевременно направлять ответ в адрес заявителя и АБР, о чем фиксировать в журнале;
6. Контроль за исполнением возложить на Бородину А.В.- первого заместителя генерального директора.

Генеральный директор

М.А.Айткулов

Рассылка в дело: Бородину А.В., ОО, ОВС и РП, ПТО, ЮГ, ГК

Исп. ОВС и РП 43 -40

011938

Annex 9. Unofficial translation of the Order of NEGK No. 154 dated 22.05.2014 "On grievance/ complaint handling"

OJSC "NEGK"

ORDER: #154

Date: May 22, 2014

Re: Grievance Review Process

To contribute to an effective implementation of the Power Sector Improvement Project, financed by the Asian Development Bank, and referring to the Law on Grievances of the Kyrgyz Republic (2007, with amendments as of 2008 and 2013), as well as the Instructions on Records Management, endorsed by the Governmental Resolution # 517, 23 July 2013, in case complaints (comments, inquiries, grievances) are lodged from the general public,

INSTRUCT:

to Ms Boktorgoeva E.J., Head of General Office, to ensure:

1. Immediate registration of the complaints and queries in the Grievance Log;
2. That any complaints or queries are brought to the attention of the NEGK's management;
3. Immediate delegation of the complaint review functions to the head(s) of the relevant of unit or department within the NEGK, depending on the nature of queries or complaints, and with proper clearance from the management, and to inform the ADB;
4. That all complaints and queries are reviewed and responses are provided within legally stipulated timelines – 14 days;
5. Timely communication with the aggrieved party and registering it in the Grievance Log;
6. That the responsibility for implementing the provisions of the Order is vested with Mr Borodin A.V. – First Deputy to General Director.

General Director: M.A. Aitkulov

CC: Borodin A.V., General Office, other relevant units