

# Bi-Annual Environmental Monitoring Report

---

Project Number: 44198 – KGZ  
ADB Loan/Grant Number: L2869/G0294-KGZ  
Reporting period: January–June 2018

## **Kyrgyz Republic: Power Sector Rehabilitation Project, Phase 1**

Prepared by the Open Joint Stock Company Electric Power Plants, with the assistance of the Project Implementation Consultant (Fichtner GmbH & Co. KG –Energy, Germany) for the Kyrgyz Republic and the Asian Development Bank.

This environmental monitoring report is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature.

In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status of any territory or area.

## Table of Contents

<b>1. Introduction</b>	<b>5</b>
1.1. Project background	5
1.2. Project Description of Phase 1	5
1.3. Documents relevant for Environmental Safeguard	6
1.4. Construction activities and project progress during the reporting period	7
1.5. Actual project organization and environmental management team	10
1.6. Relationship between Contractors, Project Owner and Lender	12
<b>2. Instrumental Environmental Monitoring</b>	<b>13</b>
2.1. Water quality monitoring	13
2.2. Air quality monitoring	13
2.3. Noise and vibrations monitoring	13
2.4. Flora and fauna monitoring	13
<b>3. Environmental Management</b>	<b>14</b>
3.1. Environmental Safeguards Program	14
3.2. The Environmental Management System (EMS), Site-Specific Environmental Management Plans (SSEMPs), and work plans.	14
3.2.1. Contractor's Health and Safety (H&S) Plan and SSEMPs	14
3.2.2. Main mitigation measures implemented as stipulated in the IEE/EMP	14
3.3. Site Inspections and Audits	15
3.4. Results from On-Site Inspections	15
3.5. Oil testing for PCB	26
3.6. Non-compliance Notices	30
3.7. Corrective Action Plan	31
3.8. Grievance Redress Mechanism	31
4. Conclusions	32

### List of Annexes

Annex 1. Certificate of completion of Lot 1 works.	33
Annex 2. The environmental approval on IEE developed for the Project Phase 1 issued by SAEPF	34
Annex 3. The environmental approval on Supplementary IEE developed for Lot 4 issued by SAEPF	37
Annex 4. Certificates of draining of cable oil received from Cascade of THPP dated 21/02/2018 and 28/02/2018.	44
Annex 5. Automatically generated report (protocol) of the oil analyses for PCBs made at the Analyzer L2000DX.	48

### List of Tables

Table 1: Activities implemented during reporting period for Lot 2	7
Table 2: Activities implemented during reporting period for Lot 3	9
Table 3: Status of environment documentation on the Project	14
Table 4: Site visits and audits in the reporting period	15
Table 5: Results of the chemical analyses for PCBs in cable and transformer oil	29

Table 6. Corrective Action Plan

31

## List of Pictures

Picture 1. Location of Toktogul HPP in the scale of the country	5
Picture 2: Workers are removing tiles as they dismantle the wall in (front of main transformer 1	7
Picture 3. Oil taken from main preparatory work to transformer 1 and stored in tanks	8
Picture 4. Main transformer 2 in operation (Status in April 2018)	8
Picture 5. Main activities comprised the installation of T1 Transformer (Status in May 2018)	8
Picture 6. Works at transition point (Status in April 2018)	9
Picture 7. Removal of oil from HV cable of Unit 1 (Status in April 2018).	10
Picture 8. Works at cable tunnel (Status in June 2018).	10
Picture 9. Downloading of barrels with cable oil to trucks at Toktogul HPP oil storage facility (Status in February 2018).	16
Picture 10. Unloading of barrels with cable oil at Osh TPP (Status in February 2018)	16
Picture 11. Cable oil draining from barrels to oil facility of Osh TPP (Status in February 2018)	16
Picture 12: Extraction point of cable oil Unit 1 (Status in April 2018)	17
Picture 13: Hose in which cable oil is pumped to the drums (Status in April 2018)	18
Picture 14. Using plastic tarpaulin and saw dust to prevent minor oil pollution (Status in April 2018).	18
Picture 15. Workers filling of cable oil into the drums wearing PPE and proper gloves (Status in April 2018).	18
Picture 16. Worker in assembly hall and workers in the cable tunnel wearing proper PPE (Status in April 2018).	18
Picture 17. EPP storage site outside the fenced HPP area. In foreground containers oil with cut dismantled cable, in background tanks with used transformer oil (Status in April 2018)	19
Picture 18. Tanks with used transformer oil (Status in April 2018)	19
Picture 19. Old dismantled T22 Transformer (Status in April 2018).	19
Picture 20. Some small oil leaks nearby containers storing cut cable pieces (Status in April 2018).	20
Picture 21. A worker performing welding works (Status in May 2018).	20
Picture 22. Barrels with oil from the cable line 1 with empty barrels on the top (Status in May 2018).	21
Picture 23. Construction waste in bags temporarily stored at site (Status in May 2018).	22
Picture 24. Wooden container next to the oil storage area temporarily stored at site (Status in May 2018).	22
Picture 25. Fire extinguisher, with specified dates and instructions for use, from the manufacturer (Status in May 2018).	23
Picture 26. Containers where dismantled cable is kept. (Status in May 2018).	23
Picture 27. Containers with cable cut pieces kept at warehouse (Status in June 2018).	24
Picture 28. Small oil leaks on the asphalt coverage near the containers with cable (Status in June 2018)	24
Picture 29. Warning signs placed in cable tunnel (Status in June 2018).	24
Picture 30. Workers at transformer installation wearing proper PPE (Status in June 2018)	25
Picture 31. Workers at cable tunnel wearing proper PPE (Status in June 2018)	25
Picture 32. Meeting with Chinese contractor in their field office on the issues of OHS compliance (Status in June 2018).	26
Picture 33. Construction waste temporarily placed at the site (Status in June 2018).	26
Picture 34. Oil sampling from Unit 1 main transformer of Toktogul HPP (Status in April 2018)	27
Picture 35. Oil sampling from auxiliaries' transformer 21 of Toktogul HPP (Status in April 2018)	27
Picture 36. Oil sampling from Unit 1 Cable Line 500 kV of Toktogul HPP (Status in April 2018).	28
Picture 37. Cable and transformer oil samples ready for test by L2000 Analyzer DX (Status in April 2018).	28
Picture 38. Performing of oil test for PCBs by Toktogul HPP personnel (Status in April 2018).	28
Picture 39. The automatically generated reports of the analyses made by L2000DX (Status in April 2018).	30
Picture 40. Compliance Books in the field offices of the Construction Contractors and are easily accessible.	31

## List of Schemes

**Scheme 1:** *Environmental management of the Power Sector Rehabilitation Project, Phase 1 (as on June 2018)*

12

## Abbreviations

ADB	Asian Development Bank
BA-EMR	Biannual Environmental Monitoring Report
CC	Construction Contractor
Db	Decibel(s)
EMP	Environmental Management Plan within IEE
EPP	Electric Power Plant Company
ERP	Emergency Response Plan
ES	Environmental Specialist
FOC	Fiber Optic Cable
GRM	Grievance Redress Mechanism
HPP	Hydro Power Plant
H&S	Health and Safety
HSE	Health, Safety and Environment
kV	Kilovolt
IPID	Investment Projects Implementation Department within EPP
IEE	Initial Environmental Examination
JOC	JOC Technical Engineering Co.Ltd
LV	Low Voltage
LS & SM	LS Cable & System SM Powertech
OHL	Overhead Line
PAM	Project Administration Manual
PCB	Polychlorinated Biphenyl
PIC	Project Implementation Consultant = FICHTNER
PIU	Project Implementation Unit within EPP for 'Power Sector Rehabilitation Project'
PIG	Project Implementation Group
ROV	Remotely Operated (underwater) Vehicle
SAEPF	State Agency of Environment Protection and Forestry
SF6	Sulphur Hexafluoride
SPS	Safeguard Policy Statement
SSEMP	Site Specific Environmental Management Plan
XLPE	Cross-Linked Poly Ethylene
WB	World Bank

# 1. Introduction

## 1.1. Project background

1. The backbone of Kyrgyz power generation is the Naryn River with its several hydropower plants (HPP), namely Kambarata 2, Toktogul, Kurpsai, Tash-Kumyr, Shamaldy-Say and Uch Kurgan.
2. Electricity demand in Kyrgyz Republic is highly seasonal with two thirds of domestic consumption taking place in autumn and winter. Although electricity generation capacity has nearly doubled since the Soviet era, load shedding is frequent. This is especially the case in winter, when hydropower output is limited due to low river discharge, while cuts arise from problems due to technical failures in the outdated generating equipment.
3. Hydroelectric power generation from the Naryn Cascade is central to the present and future economic development of the Kyrgyz Republic, with an aim to have electric power generation and transmission system regionally managed and shared among the Central Asian Countries in the future.
4. However, the future security of its electric generation capacity is to be doubted somehow because of the age of most of the named facilities. These facilities are over 50 years old, obsolete and many spare parts are no longer available.
5. The Kyrgyz Republic has received funding from the Asian Development Bank for Power Sector Rehabilitation Project. The executing agency of this project is the Open Joint-Stock Company Electric Power Plants (EPP).
6. Rehabilitation studies and rehabilitation works are divided into 3 phases. This bi-annual Environmental Monitoring Report covers the construction/ rehabilitation period from January to June 2018 and is tenth in succession during the Power Sector Rehabilitation Project.

## 1.2. Project Description of Phase 1

7. In order to sustain power generation of the Toktogul HPP located near Kara-Kul city, the Asian Development Bank (ADB) is financing the rehabilitation of this hydropower station (Picture 1). For this purpose, an Initial Environmental Examination (IEE) with Environmental Management Plan (EMP) was prepared in 2012 and a final up-date was done on 28.02.2015 reflecting the actual technical measures which have been tendered in three lots:

- Lot 1 - Underwater Inspection;
- Lot 2 - Electrical Equipment;
- Lot 3 - High Voltage Cables.



Picture 1. Location of Toktogul HPP in the scale of the country

8. A supplementary IEE to a fourth lot (supplementary works at Toktogul HPP) was prepared in July 2017 and approved by ADB in October 2017.

- Lot 4 –Rehabilitation of 500 kV Substation and 500 kV Cable Transition Point.

9. Lot 1 - Underwater Inspection- was won by the Korean Consortium BSR Co. Ltd and Aquadron Inc. The works, successfully completed in November 2015, comprised the inspection of all submerged Hydraulic Steel Structures by means of a Remotely Operated Underwater Vehicle (ROV), including the supply of a new ROV, which became the property of the Cascade of Toktogul HPP for future inspections of Toktogul HPP and of the other power plants (Annex 1).

10. Lot 2 - Electrical Equipment - was won by the Chinese Company JOC Technical Engineering Co., Ltd. These works include the refurbishment or replacement of following electrical components:

- Four new special SF<sub>6</sub> type generator circuit-breakers;
- Replacement of Main Transformers for Units 1, 2, 3 and 4;
- Replacement of the 6 kV switchgear with auxiliaries;
- Replacement of the 0.38 kV unit related switchgear with auxiliaries;
- Replacement of the 0.38 kV general station switchgear;
- Replacement of station auxiliary transformer 15.75/6.3 kV;
- Replacement of LV unit auxiliary transformer 15.75/0.42 kV;
- Replacement of bus ducts;
- New protection equipment and Fiber Optic Cable (FOC) for Line Protection (cable and OHL) between powerhouse and 500 kV switchyard.

The works are ongoing.

11. Lot 3 - High Voltage Cables - was won by the Korean Consortium of LS Cable and System & SM Powertech. These works comprise the replacement of all four oil-filled cable systems by new 500 kV XLPE cable systems.

The works are ongoing.

12. Lot 4 – Rehabilitation of 500 kV Substation and 500 kV Cable Transition Point- was won by the Turkish Company GENSER. It includes the rehabilitation of about 5 km cable channel between substation and powerhouse and the refurbishment of the 500 kV Transition Point. Contract negotiations were conducted and contract signed on 27 December 2017. At present, the detailed design is being prepared by the Turkish contractor GENSER.

### 1.3. Documents relevant for Environmental Safeguard

13. The following documents were prepared for the Project and include environmental safeguards:

- Initial Environmental Examination (IEE) for Rehabilitation of Toktogul HPP. ADB - TA-7704 (KGZ) Power Sector Rehabilitation Project, May 2012;
- Project Administration Manual (PAM) to Power Sector Rehabilitation Project, May 2012;
- Financing Agreement between Kyrgyz Republic and ADB of September 2012. Schedule 5, clauses 16 – 21;
- Appendix B of the Special Conditions of the Contract between Fichtner and EPP;
- Supplementary Initial Environmental Examination (IEE) for Rehabilitation of Toktogul HPP. ADB - TA-7704 (KGZ) Power Sector Rehabilitation: Rehabilitation of 500 kV Substation and 500 kV Cable Transition Point (Lot 4).

14. The IEE (Lot 1 – Lot 3) describing the required actions for the EMP performance monitoring and supervision has been approved by ADB and the latest up-dated version is published on the ADB Website (<http://www.adb.org/sites/default/files/project-document/154930/44198-013-iee-02.pdf>).

15. In April 2012, the national State Agency on Environmental Protection and Forestry (SAEPF) issued the environmental approval (No. 01-21/1083 dated 25th of April 2012) to the Project based on this IEE/EMP report (Annex 2).

16. In December 2017, the SAEPF issued the State Environmental Approval (No 04-01-28/404 dated 15<sup>th</sup> of December 2017) to Lot 4(Annex 3).

#### 1.4. Construction activities and project progress during the reporting period

The status quo of the works by June 2018 was as follows:

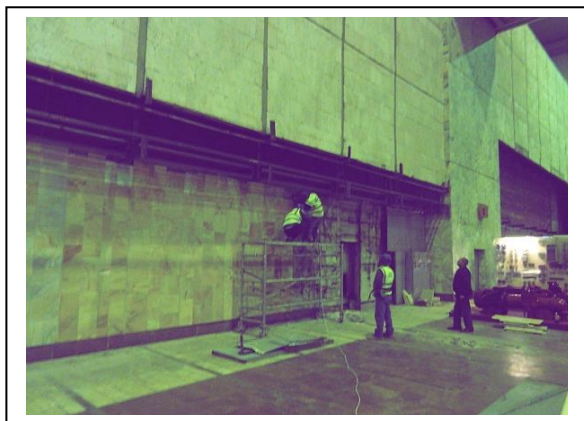
##### **Lot 2, Electrical Equipment:**

17. The following activities were under implementation during the reporting period for Lot 2 works:

Table 1: Activities implemented during reporting period for Lot 2

#	Month, 2018	Activity
1	January	<ul style="list-style-type: none"> <li>Monitoring of newly installed equipment of Unit 2 and Unit 3</li> </ul>
2	February	<ul style="list-style-type: none"> <li>Monitoring of newly installed equipment of Unit 2 and Unit 3</li> <li>Cable oil of Unit 2 and Unit 3 utilization</li> </ul>
3	March	<ul style="list-style-type: none"> <li>Monitoring of newly installed equipment of Unit 2 and Unit 3</li> </ul>
4	April	<ul style="list-style-type: none"> <li>Shut down of Unit 1 on 10 April 2018</li> <li>Removal of oil from main and auxiliary transformers Unit 1</li> <li>Dismantling and removal of existing Unit 1 related equipment, such as main and auxiliary transformers, GCB, unit 1 LV switchgear and related equipment.</li> </ul>
5	May	<ul style="list-style-type: none"> <li>Dismantling and removal of existing Unit 1 related equipment, such as main and auxiliary transformers, GCB, unit 1 LV switchgear and related equipment.</li> <li>Installation of auxiliary transformer T-21</li> <li>Arrival of main transformer of Unit 1 on 24 of May and start of installation</li> <li>Installation of generator circuit breaker of Unit 1</li> </ul>
6	June	<ul style="list-style-type: none"> <li>Installation and testing of auxiliary transformer T-21</li> <li>Installation main transformer of Unit 1 and its cooling system</li> <li>Installation of generator circuit breaker of Unit 1</li> <li>Installation and adaptation of bus ducts on Unit 1</li> <li>Installation of line protection system and other power and control cables</li> </ul>

Pictures of some Lot 2 works during reporting period are shown below (Pictures 2, 3, 4, 5).



Picture 2: Workers are removing tiles as they dismantle the wall in front of main transformer 1 (Status in April 2018)



Picture 3. Oil taken from main preparatory work to transformer 1 and stored in tanks (Status in April 2018).



Picture 4. Main transformer 2 in operation (Status in April 2018)



Picture 5. Main activities comprised the installation of T1 Transformer (Status in May 2018)

**Lot 3, High Voltage Cables:**

18. The activities undertaken in the reporting period for Lot 3 are shown in Table 2:

Table 2: Activities implemented during reporting period for Lot 3

#	Month, 2018	Activity
1	January	<ul style="list-style-type: none"> <li>Monitoring of newly installed equipment of Unit 2 and Unit 3</li> </ul>
2	February	<ul style="list-style-type: none"> <li>Monitoring of newly installed equipment of Unit 2 and Unit 3</li> </ul>
3	March	<ul style="list-style-type: none"> <li>Monitoring of newly installed equipment of Unit 2 and Unit 3</li> </ul>
4	April	<ul style="list-style-type: none"> <li>Removal of oil from HV cable of Unit 1</li> </ul>
5	May	<ul style="list-style-type: none"> <li>Completion of the installation of the metal structure of the end couplings at the 500 kV transition point (TP), T-1 room.</li> <li>Dismantling of old HV cables and respective piping of Unit 1</li> <li>Dismantled cables in containers were delivered to the Storage Area (Base No3) of THPP</li> <li>Start of cable pulling of HV cables of Unit 1</li> </ul>
6	June	<ul style="list-style-type: none"> <li>Completion of pulling of HV cables of Unit 1 (all phases)</li> <li>Completion of pulling of earthing cables of HV cables of Unit 1</li> <li>Start of installation of sealing ends at transition point</li> </ul>

Some pictures of Lot 3 works during reporting period are shown below (Pictures 6, 7, 8)



Picture 6. Works at transition point (Status in April 2018)



Picture 7. Removal of oil from HV cable of Unit 1 (Status in April 2018).



Picture 8. Works at cable tunnel (Status in June 2018).

#### **Lot 4. Rehabilitation of 500 kV Substation and 500 kV Cable Transition Point:**

19. Construction Contractor Turkish Company GENSER is preparing the detailed design of Lot 4 works.

### **1.5. Actual project organization and environmental management team**

20. The Investment Projects Implementation Department (IPID), one of EPP's departments, was specially assigned for implementing projects funded by international development organizations such as the World Bank (WB), the Asian Development Bank (ADB), etc.

21. Currently, IPID is implementing two different projects (including ADB project). Within IPID, EPP established a dedicated Project Implementation Group (PIG) for implementing concerned components of the "Power Sector Rehabilitation Project" in February 2013.

22. The structure of IPID is as follows:

- Head of IPID;
- Deputy Head of IPID;
- 1) Project Implementation Group (PIG) "Toktogul HPP Rehabilitation";
- Head of PIG;
- Deputy Head of PIG;
- Senior financial specialist of PIG;

- Senior engineer of PIG;
- Interpreter of PIG;
- Procurement specialist of PIG “Toktogul HPP Rehabilitation Phase 2 Project” (individual consultant);
- Financial specialist/Accountant of PIG “Toktogul HPP Rehabilitation Phase 2 Project” (individual consultant);
- Environmental safeguards specialist of PIG “Toktogul HPP Rehabilitation Phase 2 Project” (individual consultant);

2) PIU “At-Bashy HPP Reconstruction”;

3) PIU “Kambarata HPP second unit input”.

23. The IPID will administer all consulting and procurement contracts on behalf of EPP. It is responsible for bid evaluation, contract award, construction supervision, and report to the Government and ADB.

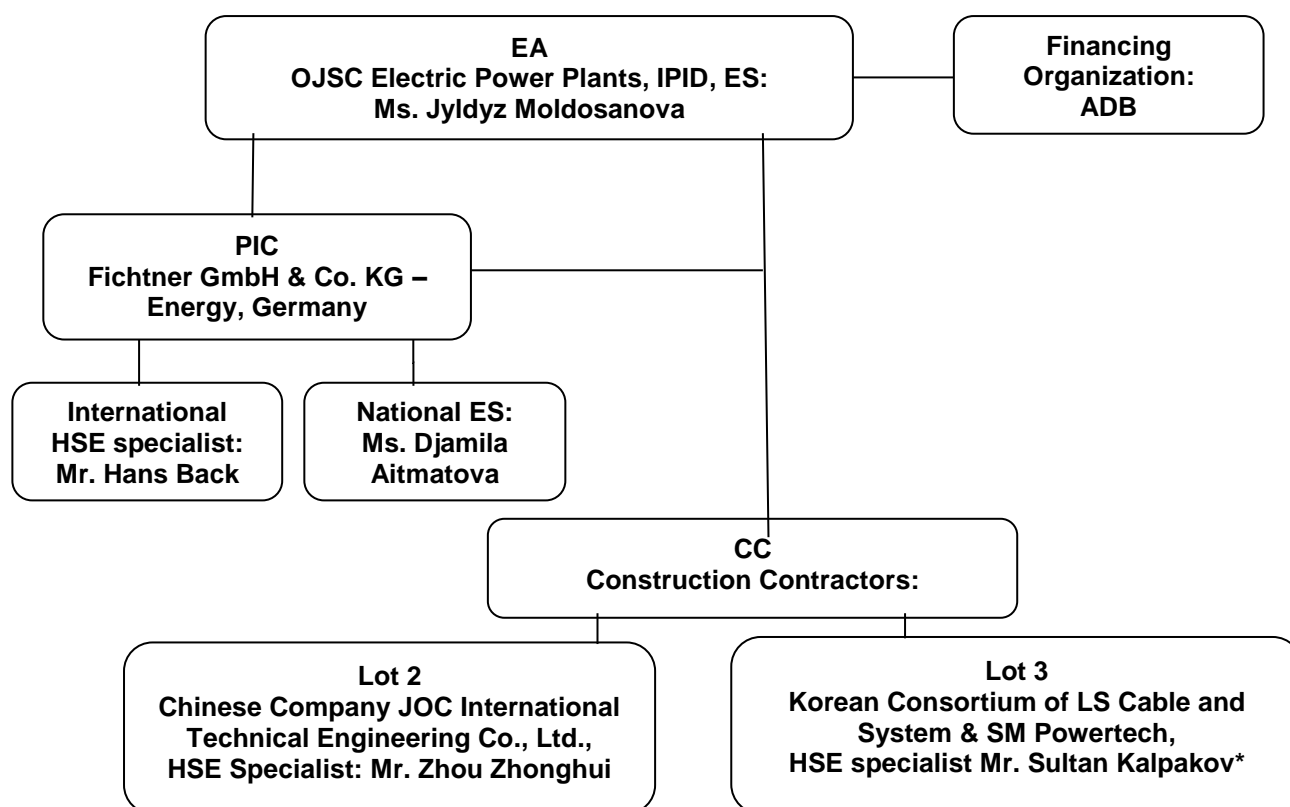
24. The IPID Head reports directly to the Deputy General Director of EPP. The IPID is the main point of contact for working communication between EPP and ADB. The IPID coordinates the consultants and contractors.

25. The IPID, assisted by the PIC, submits necessary project plans, tender evaluation reports, progress reports, applications for withdrawal of funds, and any other required reports to ADB and the Government.

26. Within EPP, a department named ‘Service of Reliability and Safety’ exists. It is the responsible department for dealing with all safety and health issues relevant for workers at the HPPs. Environmental aspects are not covered by this department. The headquarters of this department is based in Bishkek with six people working in it. There are branches of this department established in the Oblasts. In Djalal-Abad Province three of them exist. The one at Kara-Kul is responsible for Toktogul HPP.

27. For construction, EPP as the responsible IPID for the Project, recruited Fichtner as PIC for Phase 1 of the Toktogul Rehabilitation Project (Project Management and Supervision of Toktogul HPP Component). In this sense, the national and international team of consultants assists EPP as project supervision consultant on the rehabilitation of Toktogul HPP.

28. The structure diagram of the agencies involved in the environmental management during implementation of Power Sector Rehabilitation Project Phase 1 is as follows (Scheme 1):



**Scheme1:** Environmental management of the Power Sector Rehabilitation Project, Phase 1 (as on June 2018)

\* - Mr Sultan Kalpakov replaced Mr Altynbek Adbykayimov.

## 1.6. Relationship between Contractors, Project Owner and Lender

29. It should be noted that the connection of the Client, Contractors and Lenders are characterized by their active and productive nature. There were many meetings of EPP/PIU/PIC staff with the construction contractors on site and in the EPP office conducted on a regular basis. Lots of issues were discussed by telephone and by email. The Contractors regularly provide their daily and weekly reports, which are reflected in PIU/PIC bi-annual and quarterly progress reports.

30. The connection of the Project/EPP/IPID/PIC personnel with ADB staff was implemented via regular meetings and discussions of arising issues by email and in person. The ABD staff provided advice and conducted monitoring over the Project activities.

## **2. Instrumental Environmental Monitoring**

31. According to IEE/EMP, it is not planned to measure instrumentally parameters of water, air and noise. During the routine works, adverse impacts to the environment are not expected to occur.

### **2.1. Water quality monitoring**

32. N.A. No instrumental measurements of water quality are foreseen for this Project according to the IEE/EMP. The Project does not impact water bodies as all works will be implemented at a safe distance to water sources.

### **2.2. Air quality monitoring**

33. N.A. No instrumental measurements of air quality are foreseen for this Project according to the IEE/EMP.

34. Significant dust emissions of works done during the reporting period did not occur. Exhausts from trucks transporting cement, gravel and concrete can be considered to be minimal and truck movements are restricted to Toktogul HPP (except for transportation of equipment to the site).

### **2.3. Noise and vibrations monitoring**

35. N.A. A regular instrumental monitoring of noise and vibrations is not foreseen for this Project according to the IEE/EMP. However, the construction contractor is obliged to take care that workers shall wear ear protectors.

### **2.4. Flora and fauna monitoring**

36. N.A. According to the IEE/EMP, monitoring of flora and/or fauna is not foreseen for this Project. All works take place within the fenced area of Toktogul HPP or within existing buildings. All access roads are already paved. Flora and fauna is not affected by the rehabilitation works.

### 3. Environmental Management

#### 3.1. Environmental Safeguards Program

37. The aim to implement the environmental safeguard program is to ensure that the preparation, design, construction, implementation, operation and decommissioning of the Project and all Project facilities comply with (a) all applicable laws and regulations of the Beneficiary relating to environment, health and safety; (b) with the environmental safeguards requirement as set out in the SPS (ADB Safeguard Policy Statement, 2009); and (c) with all measures and requirements set forth in the IEE/EMP, and any corrective or preventative actions set forth in a Safeguards Monitoring Report.

38. The different obligations of the Beneficiary in this regard are given in the Financing Agreement between Kyrgyz Republic and ADB of September 2012 in Schedule 5, paragraphs 16 - 21.

#### 3.2. The Environmental Management System (EMS), Site-Specific Environmental Management Plans (SSEMPs), and work plans.

##### 3.2.1. Contractor's Health and Safety (H&S) Plan and SSEMPs

39. The following table identifies the status of environment documentation on the Project:

Table 3: Status of environment documentation on the Project

Management Plan	Status
Site-Specific EMP (SSEMP) for oil storage facility construction. Lot 3	Submitted on 03.11.2016 and <b>Approved</b> on 13.12.2016.
Site-Specific EMP (SSEMP) for dismantling and installation works of cable systems. Lot 3	Submitted on 20.01. 2017 and <b>Approved</b> on 31.03.2017.
Site-Specific EMP (SSEMP). Lot 2	Submitted on 12.12.2016 and <b>Approved</b> on 02.05.2017
Site-Specific EMP (SSEMP). Lot 4	Under development
Emergency Response Plan (ERP). Lot 3	Submitted on 21.12.2015 and <b>Approved</b> on 29.12.2015
H&S plan. Lot 3	Submitted on 18.05.2016 and <b>Approved</b> on 14.09.2016
H&S plan. Lot 2	Submitted on 06.03.2017 and <b>Approved</b> on 12.05.2017
H&S plan. Lot 4	Under development
Asbestos Management Plan	Under development

##### 3.2.2. Main mitigation measures implemented as stipulated in the IEE/EMP

40. As shown and discussed in previous semi-annual reports, the implementation of the following main installations and processes is finalized:

- Erection of a proper oil storage area;
- Erection of a proper scrap metal storage area;
- Purchase of a PCB measuring device for EPP laboratory on site including teaching and training the use of it;

- The Grievance Redress Mechanism (GRM) is fully implemented.

41. The works mentioned above have been the precondition to fulfill some of the main requirements outlined in the IEE/EMP regarding waste management.

### 3.3. Site Inspections and Audits

42. Site inspections and audits in the reporting period are shown in Table 4 below:

Table 4: Site visits and audits in the reporting period

Organization	Purpose	Performed by	Date
EPP	Osh TPP visit for cable oil utilization	EPP: ES Ms J. Moldosanova	20.02.2018- 23.02.2018
PIC Fichtner and EPP	Site inspection of actual construction sites at Toktogul HPP	PIC Fichtner: International ES Mr. H. Back; National ES Ms. D. Aitmatova EPP: ES Ms J. Moldosanova	12.04. 2018 13.04.2018
PIC Fichtner	Site inspection of actual construction sites at Toktogul HPP	National ES Ms. D. Aitmatova	23.05.2018
PIC Fichtner and EPP	Site inspection of actual construction sites at Toktogul HPP	PIC Fichtner: National ES Ms. D. Aitmatova  EPP: ES Ms. J. Moldosanova	12.06. 2018.

### 3.4. Results from On-Site Inspections

#### Osh TPP visit for cable oil utilization in February 2018

43. Osh Thermal Power Plant was visited by EPP Environmental Specialist Jyldyz Moldosanova in February 2018 and it was devoted to the planned cable oil utilization. As identified in the IEE and EMP of the Project, if cable oil is not contaminated with PCBs, it shall be burned at Osh Thermal Power Plant. The analyses of cable oil revealed there is no contamination with PCBs (see §3.9. of the Project BA-EMR (January – June 2017) and §3.5 of the Project BA-EMR (July – December 2017)).

44. Volume of 54.575 tons of cable oil from cable lines CL-2-500 kV and CL-3-500 kV was transported from Toktogul HPP to Osh TPP by trucks.

45. Downloading of barrels with cable oil to trucks and transporting of them were implemented in compliance with health, safety and environment protection requirements. Transporting of tanks

with oil from Toktogul HPP to Osh TPP was done by two truck rides. No any accident happened on the way (Picture 9).



Picture 9. Downloading of barrels with cable oil to trucks at Toktogul HPP oil storage facility (Status in February 2018).

46. Trucks with cable oil were unloaded at oil facility of Osh TPP for burning: 41.07 tons of cable oil on 21<sup>st</sup> of February 2018 and 13.505 tons of cable oil on 28<sup>th</sup> of February 2018 (

47. Annex 4). Cable oil was drained in to oil facility of Osh TPP and it was implemented in compliance with health, safety and environment protection requirements (See pictures 10, 11).



Picture 10. Unloading of barrels with cable oil at Osh TPP (Status in February 2018)



Picture 11. Cable oil draining from barrels to oil facility of Osh TPP (Status in February 2018)

The empty barrels were transported back from Osh TPP to Toktogul HPP for the next cable oil draining.

### On-Site Inspection in April 2018

48. One site survey was done in April 2018 joined by Fichtner national and international environmental specialists and by EPP Environmental Specialist Ms Jyldyz Moldosanova.

49. A new HSE officer of Korean company LS and SM, Mr. Sultan Kalpakov, is now in place. He replaced Mr. Altynbek Abdykaimov.

50. During this site inspection the main activities have been the removal of oil from cable and from main and auxiliary transformers from Unit 1. It was found that this was done properly, some smaller oil leakages have been observed. The oil was immediately bound by saw dust or hindered to pollute the soil by covering the earth with plastic tarpaulins.

51. As planned, the pipeline for draining the cable oil in the barrel was installed. The oil from the upper part of the cable was drained to the barrels via the transfer point. The outcomes of the implemented work demonstrated that the selected way of the oil drain was reliable as it reduced the risks of oil spills and saved the time and effort of the workforce. No significant oil leaks took place and all the works passed sustainably. Possible oil pollution prevention is done by using plastic tarpaulin and saw dust. (Pictures 12-15). Further polluted saw dust was removed to base 3 jointly with other construction waste. And plastic can be reused for the next and final dismantling works of Unit 4's cable line.

52. The visit showed that all the workers at the site wear PPE and strictly observed safety requirements. No accidents happened at sites.



Picture 12: Extraction point of cable oil Unit 1 (Status in April 2018)



Picture 13: Hose in which cable oil is pumped to the drums (Status in April 2018)



Picture 14. Using plastic tarpaulin and saw dust to prevent minor oil pollution (Status in April 2018).



Picture 15. Workers filling of cable oil into the drums wearing PPE and proper gloves (Status in April 2018).

53. The construction sites inside and outside the power house looked quite tidy and clean and have been well organized. Most of Korean and Chinese workers wear all needed PPE (Picture 16).

It was requested again that the HSE officer from Chinese contractor perform daily tours to check that all safety warnings are respected and proper PPE is observed, including wearing ear plugs.



Picture 16. Worker in assembly hall and workers in the cable tunnel wearing proper PPE (Status in April 2018).

54. The dismantled cables of Unit 1 (after having removed the oil) are cut in pieces and stored in existing containers at the HPP storage site outside the fenced power plant area. The dismantled transformer T22 and used transformer oil are stored in this site as well (See pictures 17-19). At picture 18 the smaller tanks with transformer oil are completely new which arrived together with new transformers for Lot 2 works. Bigger tanks are intended for transformer oils. Secondary containment to contain transformer oils is available at Toktogul HPP.



Picture 17. EPP storage site outside the fenced HPP area. In foreground containers oil with cut dismantled cable, in background tanks with used transformer oil (Status in April 2018)



Picture 18. Tanks with used transformer oil (Status in April 2018)



Picture 19. Old dismantled T22 Transformer (Status in April 2018).

55. Nearby the storage tanks for transformer oil and containers with cable, some small oil leakages with sand have been observed on the site (Picture 20). This warehouse has an asphalted foundation.



Picture 20. Some small oil leaks nearby containers storing cut cable pieces (Status in April 2018).

### Site visit in May 2018

56. One site survey was done in May 2018 by Fichtner national environmental specialist Ms Djamila Aitmatova.

57. During the inspection no serious non-compliances were found. Minor ones which were found like domestic waste accumulation, workers working without helmets, were immediately corrected by the relevant HSE staff: waste was removed and workers wore helmets while working.

58. In May, the place for the preparation works to Transformer (T-1) installation has been almost finalized. The delivery of the T-1 transformer was expected soon.

59. All working sites inside the power house building were found in a tidy condition, workers in this sector are all fitted with appropriate clothing and PPE. There were no violations found in this regard.

60. The room for the main transformer T-1 cooling system is fitted with fresh air and exhaust ventilation. It was noted that ventilation does not work steadily. In this regard, the Lot-2 contractor is responsible for the proper operation of ventilation in its sections and the compliance with the air quality standards in the work area. In terms of the OHS compliance, all workers are equipped and constantly use PPE. As an instance, a worker who performing welding works uses appropriate personal protective equipment, a mask, glasses, his head and neck are protected by a special helmet in below picture 21.



Picture 21. A worker performing welding works (Status in May 2018).

61. The consultant visited also the Lot-2 Contractor's office. The documents confirming the holding of EHS briefings were checked.

62. The installation work was launched on cable Unit 1. The cable was pulled from the T-1 side (transformer) to the coupling joint (Phases B and C), grounding from the transition point to the coupling joint (CJ, phase C), and from CJ to T -1 (phases B and C).

63. During the round check, the consultant did not find any significant violations in environmental protection and OHS spheres. Minor remarks were made regarding earlier work, pieces of reinforcement and rope remained on the surface of the cable channel, which is usually used as a pass for the personnel to walk on. These wastes can lead to injuries, especially if taking into account that the cable channel surface is about 1 meter above the basic level of the tunnel. There was not any leakage of oil found on the floor in the tunnel.

64. Oil storage area. The oil from the cable Unit 1 is currently kept at the oil storage area. Manager of the Korean contractor informed, there are 190 barrels of oil with 194 liters of oil in the oil storage area now, summing up to 36,860 liters (31,515.3 kg) of oil. In order to save free space on the oil storage area, where other equipment is temporarily also stored, empty barrels were placed in a second tier on barrels containing oil (Picture 22). With regard to the safety rules, it is permitted to install drums on top of each other, but not more than 2 tiers in height. There were no any leaks found at the oil storage area.



Picture 22. Barrels with oil from the cable line 1 with empty barrels on the top (Status in May 2018).

65. Domestic and construction waste. In the vicinity of the oil storage area, solid municipal and construction wastes, packaged in bags, are placed. Nearby, also scrap metal which might be

reused in future is stored. In addition, used cardboard and plywood containers are kept near the oil storage area (Pictures 23, 24).

66. During the meeting with General site manager of SM Powertech for Lot 3, his attention was drawn to the fact that heaps of garbage, construction waste, and scrap are accumulating around the oil storage area. Garbage removal is carried out on a weekly basis, in accordance with the Contract with the Cascade of Toktogul HPP and responsible for garbage removal and disposal at the official land-fill during Project activities.

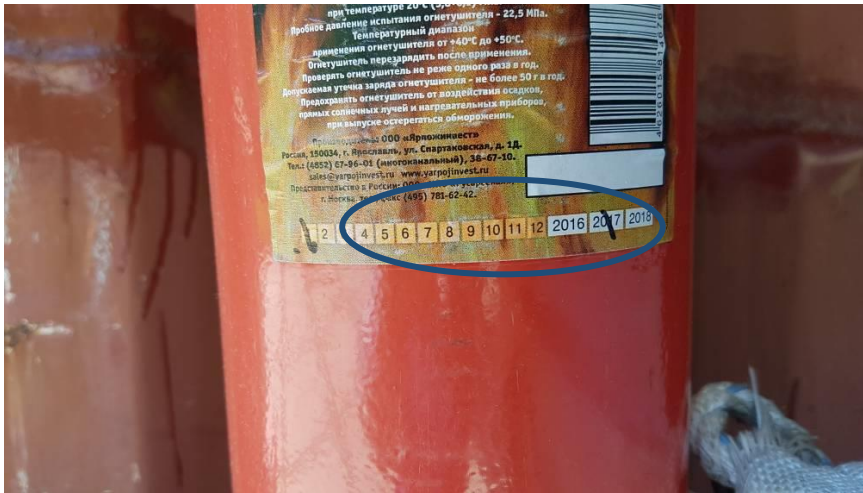


Picture 23. Construction waste in bags temporarily stored at site (Status in May 2018).



Picture 24. Wooden container next to the oil storage area temporarily stored at site (Status in May 2018).

67. Fire shield and fire extinguisher. The consultant checked the fire shield, the presence of all necessary items, and the date of the last verification of the gas-type fire extinguisher. Manager of the Korean contractor informed the fire extinguisher was used only once, after which it was refueled, in March 2018. The date of the last verification, as follows from the fire extinguisher pointer - January 2017. The next verification was planned to take place in June this year (Picture 25).



Picture 25. Fire extinguisher, with specified dates and instructions for use, from the manufacturer (Status in May 2018).

68. During the inspection visit, the consultant visited the warehouse, where the containers are located in which the dismantled cable is stored. Inspection showed that there were no serious oil leaks (Picture 26).



Picture 26. Containers where dismantled cable is kept. (Status in May 2018).

### On site visit in June 2018

69. A site survey was done in June 2018 by Fichtner national environmental specialist Ms Djamila Aitmatova, who visited the site jointly with Ms. Jyldyz Moldosanova, environmental specialist of PIU.

70. They visited the warehouse for storage of scrap metals, some parts of transformer oil, and containers with cable cut pieces (so-called warehouse No 3). Leaks of oil are insignificant, as previously. Those minor leaks which were found by the consultants, were fixed earlier, and were from the old containers. The relevant personnel constantly monitor the state of the containers, and the places with the minor leaks are sanded (Picture 26, 28). Tanks with transformer oil are in good condition.



Picture 27. Containers with cable cut pieces kept at warehouse (Status in June 2018).



Picture 28. Small oil leaks on the asphalt coverage near the containers with cable (Status in June 2018)

71. In the tunnel, the work continues. The grounding installation is under implementation. The Korean contractor was reminded to fasten pointers or lighting tape at the metallic crossbar near the Top Point. But all required warning signs were placed in the cable tunnel (Picture 29).



Picture 29. Warning signs placed in cable tunnel (Status in June 2018).

72. In the turbine shop. When installing a transformer, couple of workers at a scaffolding and on the top of the transformer did not fasten their safety belts. A few of them even worked without

helmets and protective gloves. But it should be noted that all workers are equipped with PPE and wear PPE during works at HPP and strictly follow H&S rules and regulations (Picture 30, 31).



Picture 30. Workers at transformer installation wearing proper PPE (Status in June 2018)



Picture 31. Workers at cable tunnel wearing proper PPE (Status in June 2018)

73. The same issue also applies to workers working at the Point of Transition. A few workers do not always wear safety belts, although absolutely all of them are equipped.

74. Due to this reason, the environmental specialists met with Chinese contractor and reminded how it is important to permanently conduct OHS briefings and instruct the workers on the risks and necessity to be careful and attentively comply with the safety rules. There have been no accidents reported in the sites. After providing explanations from the part of the environmental representatives of PIU and Fichtner, the general manager of Chinese contractor informed that he would start conducting the briefings from the next day and will be keeping the signature lists from now (Picture 32).



Picture 32. Meeting with Chinese contractor in their field office on the issues of OHS compliance (Status in June 2018).

75. Construction waste is a main issue regarding waste management. Construction waste is accumulated (Picture 33), and then it is transported to the site designated for this purpose – to warehouse No3. Construction waste is reused as much as possible at Toktogul HPP. Construction waste will be removed from warehouse No3 to appropriate landfill as there is accumulated enough volume of it. Household garbage is taken out once a week according to the existing last year agreement between Korean contractor and the Cascade of Toktogul HPP responsible for the garbage removal.



Picture 33. Construction waste temporarily placed at the site (Status in June 2018).

76. A protocol for verification of the safety equipment, including the fire extinguisher was demonstrated by a specialist responsible for the issues of OHS in Korean company. He also informed that all the short comings found in May are eliminated. The issue connected to the timely removal of construction waste is related to the delay in preparation of the relevant documents and the corresponding letter from the Toktogul HPP administration.

### 3.5. Oil testing for PCB

77. As identified in IEE and EMP of the Project, a quick test for PCB needs to be done before draining of oil-filled components. Cable and transformer oil test for PCB was implemented in April 12 before draining oil. Unit 1 related facilities were dismantled at reporting period.

78. During sampling the cable and transformer oil, the Cascade of Toktogul HPP Chemical laboratory personnel jointly with Ms Jyldyz Moldosanova took 7 samples from different points and equipment: one sample from Unit 1 main transformer (Picture 34); one sample from auxiliaries

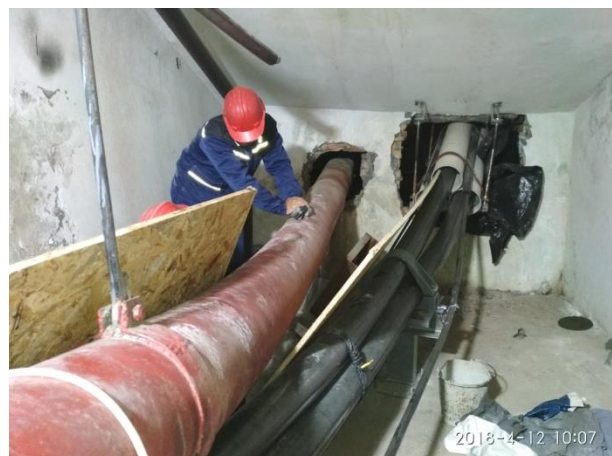
transformer 21 (Picture 35) and five samples from Unit 1 cable line 500kV(Picture 36). Oil testing for PCB was made by L2000DX Analyzer (Picture 38, 39).



Picture 34. Oil sampling from Unit 1 main transformer of Toktogul HPP (Status in April 2018)



Picture 35. Oil sampling from auxiliaries' transformer 21 of Toktogul HPP (Status in April 2018)





Picture 36. Oil sampling from Unit 1 Cable Line 500 kV of Toktogul HPP (Status in April 2018).

79. Oil samples were analyzed at the same day by L2000DX Analyzer at Chemical Laboratory of the Cascade of Toktogul HPP (Picture 37).



Picture 37. Cable and transformer oil samples ready for test by L2000 Analyzer DX (Status in April 2018).

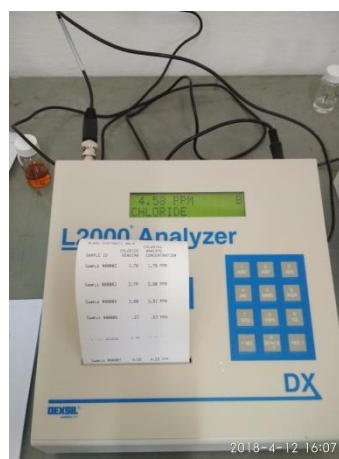
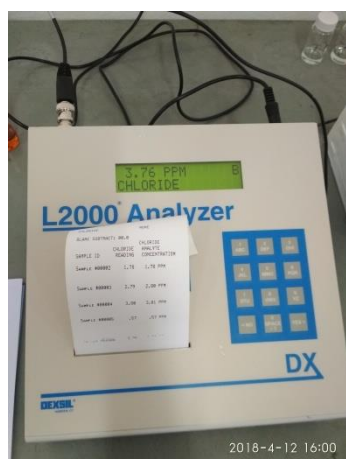
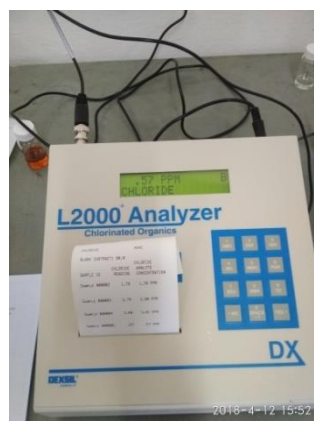
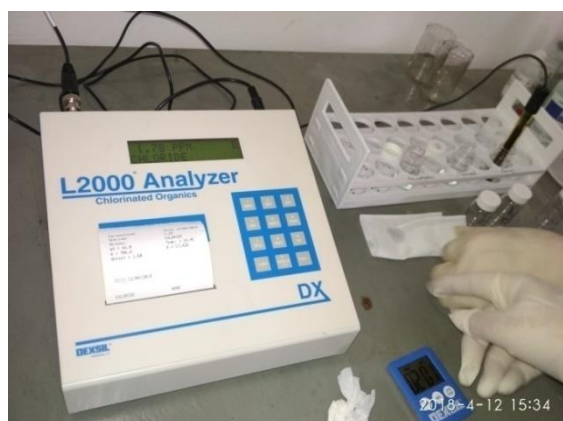
80. All 7 samples were analyzed for PCB by the Chemical Laboratory of Cascade of Toktogul HPP personnel (Picture 38). Results confirmed the previous analyses made in 2014 presented in IEE set up to the Project (see below Table 5). Automatically generated protocols made by L2000DX Analyzer are shown in Picture 39.

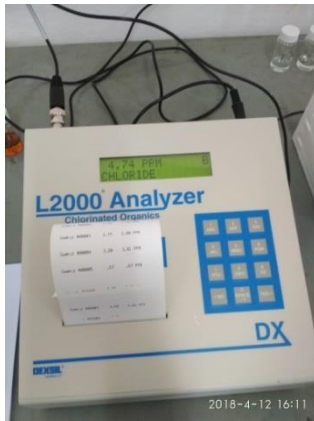


Picture 38. Performing of oil test for PCBs by Toktogul HPP personnel (Status in April 2018).

Table 5. Results of the chemical analyses for PCBs in cable and transformer oil of Unit 1 oil filled equipment of Toktogul HPP (Analyzer L2000DX)

No	Location/equipment/points/code	Number according to Analyzer protocol	Results (ppm PCB)
1	Unit 1 T-1 main transformer tank	(№000002)	1,78
2	Unit 1 T-21 auxiliaries transformer tank	(№000003)	2,80
3	Unit 1 Cable line-1-500 SM-1	(№000004)	3,81
4	Unit 1 Cable line-1 -500 draining point	(№000005)	0,57
5	Unit 1 Cable line-1 -500 UP (Upper point)	(№000006)	3,76
6	Unit 1 Cable line -1-500 SM-2	(№000007)	4,58
7	Unit 1 Cable line -1-500 Phase A	(№000008)	4,74





Picture 39. The automatically generated reports of the analyses made by L2000DX (Status in April 2018).

81. The PCB concentrations in all samples were below 50 µg/kg. Thus, these oils can be considered to be free of PCB and no specific measures in handling or disposing them are needed. The consolidated automatically generated report is attached in Annex 5.

82. It is required to mention that the same oil tests for PCB were performed in 2017 when Unit 3 and Unit 2 oil containing facilities were dismantled. That oil results showed also that cable and transformer oil were free of PCB (PSRP Bi-annual Environmental Monitoring Report covering period January – June 2017 <https://www.adb.org/sites/default/files/project-documents/44198/44198-013-emr-en.pdf> and Bi-annual Environmental Monitoring Report covering period January – June 2017 [https://www.adb.org/sites/default/files/project-documents/44198/44198-013-emr-en\\_0.pdf](https://www.adb.org/sites/default/files/project-documents/44198/44198-013-emr-en_0.pdf)).

### 3.6. Non-compliance Notices

83. Both the Chinese and Korean contractors received notes on personal protective equipment as a few workers forgot to wear PPE like helmets. The contractors' HSE specialists were informed about this fact and requested to take immediate measures and will control it on a daily basis.

84. Construction waste was accumulating at site of Korean contractor's project area. The HSE specialist was requested to control this issue, work with the special Order of the Cascade of Toktogul HPP No 498 dated 03.07.2017 "On construction waste management" and to keep clean site from construction waste and scrap metal as much as possible. As scrap metal and some construction waste will be re-used at Toktogul HPP, they are accumulating and being stored temporarily at project site area until they are graded by Toktogul HPP staff.

### 3.7. Corrective Action Plan

85. In order to comply with the EMP, EPP/ADB agreements as well as ADB and national environmental safeguard requirements, the following corrective actions shall be implemented:

Table 6. Corrective Action Plan

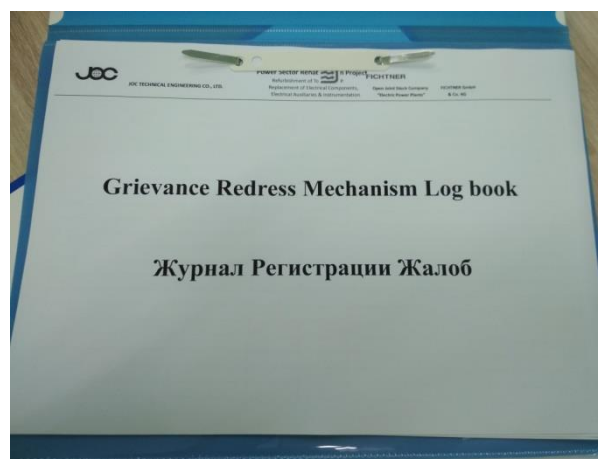
#	Issue	Action required	Due Date as given in last bi-annual report	Status / New Due Date	Responsible for implementation/ monitoring
1.	General survey of the slope at the road, 1km from the HPP's checkpoint regarding possibility of rock fall	Contact with relevant expert community and field trip to the Site	March 2017, before arrival of the trucks with transformer from China	The slope at the road is under daily survey of the PIC and EPP staff. Fallen rocks are removed immediately.	PIC
2.	Analyze oil from the equipment to be replaced for PCB	Analyzes are done if needed	April-May 2018	Implemented in April 2018	EPP, PIC

### 3.8. Grievance Redress Mechanism

86. ADB's safeguard policies require that any persons who may be affected by the adverse effects of the Project activities must be informed in advance about possibilities of making complaints through Grievance Redress Mechanism (GRM), if the Project activity generates any negative impact on their health or create certain inconveniences for their livelihoods. GRM was developed within the scope for preparing the IEE and EMP. This GRM shall be maintained during the whole duration of the Project's implementation. It describes the mechanism how to redress the affected peoples' (AP) grievances in a timely and effective manner. Details of the GRM can be found in the up-dated IEE of the Project. The former GRM has been completely replaced by a GRM applicable for all ADB projects in the Kyrgyz Republic.

87. GRM now is fully implemented. All the required awareness-raising materials were distributed among the local people and the GRM Log Book was arranged.

88. Both Korean and Chinese Construction Contractors have GRM Log Books at sites (Picture 40). There have been no complaints raised so far, neither by workers nor by the population. GRM log books are filled up appropriately.



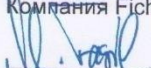
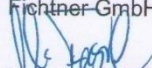
Picture 40. Compliance Books in the field offices of the Construction Contractors and are easily accessible.

#### 4. Conclusions


- The construction sites of both Korean and Chinese contractors look clean and well organized. All construction areas out of Toktogul HPP building are monitored on constant basis by video camera. Fire-protection and first aid means are complete and in compliance.
- Construction Contractor LS&SM Power Tech Co. is implementing SSEMP/EMP requirements on a relevant level: all construction materials, dismantled pipes from cable, liquid and other materials are stored properly; only very minor leakages could be observed. Equipment of Contractor is in good status. Workers are very well equipped with PPE. Warning signs and information boards were properly placed.
- H&S instructions are done on a daily basis. In addition, workers receive milk as a prevention of risks on health.
- Environmental documentation of LS&SM Power Tech Co. is in order; complaints log book is in place. Contractor submits to EPP environmental monitoring reports every month. No records about accidents on construction sites were made.
- Construction Contractor JOC mostly fulfils the requirements of EMP/SSEMP: Environmental documentation is in order; workers are equipped with PPE, work areas are fenced. H&S instructions are going on daily basis. In some cases violations of health and safety rules were detected. Immediate corrective measures have been taken. Warning signs and information boards were properly placed. No major oil spills could be detected. Waste is handled properly.
- Contractor submits to EPP environmental monitoring reports every month. No records about accidents on construction sites were made.

## ANNEXES

## Annex 1. Certificate of completion of Lot 1 works.

<p><b>СЕРТИФИКАТ</b> о завершении работ</p> <p><b>CERTIFICATE</b> of completion of works</p>	
<p>Дата « <u>11</u> » <u>ноября</u> 2015 г.</p> <p>Лот № 1 «Подводное обследование гидромеханического оборудования и сооружений Токтогульской ГЭС с поставкой аппарата дистанционного управления со вспомогательным оборудованием».</p> <p>Настоящий Сертификат выдан консорциуму BSR Co.Ltd и AQUADRON Inc. в подтверждении того, что все работы*, предусмотренные по Контрактному соглашению № Д34-26/235 от 18.05.2015 г. полностью завершены. По качеству выполненных работ претензий не имеется.</p> <p>Руководитель проекта Заместитель главного инженера Каскада Токтогульских ГЭС</p> <p> Курманалиев Т.С.</p> <p>Представитель Консультанта Компания Fichtner GmbH &amp; Co.KG</p> <p> Мартин Фасил</p> <p>*Детали выполненных работ прилагаются</p>	<p>Date « <u>11</u> » <u>November</u> 2015</p> <p>Lot 1 "Underwater inspection of hydro-mechanical equipment and civil structures of Toktogul HPP and provision of ROV system and associated equipment"</p> <p>This certificate is issued to the Consortium of BSR Co.Ltd and AQUADRON Inc. to confirm that all works*, required by Contract agreement № D34-26/235 dated 18.05.2015 has been fully completed. There are no complaints regarding the quality of performed works.</p> <p>Project Manager Deputy Chief Engineer of Cascade of Toktogul HPP's</p> <p> Tokon Kurmanaliev</p> <p>Representative of the Consultant Fichtner GmbH &amp; Co.KG</p> <p> Martin Fasil</p> <p>* Details of the performed works are attached</p>

## Annex 2. The environmental approval on IEE developed for the Project Phase 1 issued by SAEPP

<p><b>КЫРГЫЗ РЕСПУБЛИКАСЫНЫН ӨКМӨТҮНӨ КАРАШТУУ КУРЧАП ТУРГАН ЧӨЙРӨНҮ КОРГОО ЖАНА ТОКОЙ ЧАРБАСЫ МАМЛЕКЕТТИК АГЕНТТИГИ</b></p> <p>720001, Бишкек ш., Токтогул көч. 228 тел.: (996-312) 35-27-27, факс: 35-31-02</p>		<p><b>ГОСУДАРСТВЕННОЕ АГЕНТСТВО ОХРАНЫ ОКРУЖАЮЩЕЙ СРЕДЫ И ЛЕСНОГО ХОЗЯЙСТВА ПРИ ПРАВИТЕЛЬСТВЕ КЫРГЫЗСКОЙ РЕСПУБЛИКИ</b></p> <p>720001, г. Бишкек, ул. Токтогула, 228 тел.: (996-312) 35-27-27, факс: 35-31-02</p>
---	---	---

---

25.04 2012 г. № 01-21/1083

**ОАО «Электрические станции»**

Государственное агентство охраны окружающей среды и лесного хозяйства при Правительстве Кыргызской Республики рассмотрев представленный отчет о предварительной экологической оценке (ПЭО) проекта АБР «Реабилитация сектора энергетики КР» сообщает.

Зона реализации проекта находится в Джалал-Абадской области.

Проектом предусмотрено провести следующие реабилитационные работы на Токтогульской ГЭС:

- Реабилитация периферийных отделов генераторов;
- Замена четырех выключателей генератора, работающих на масле современными выключателями SF6;
- Замена четырех заполненных маслом кабелей на 500 кВ длиной приблизительно в 1 150 метров каждый. Эти кабели содержат все вместе приблизительно 250 000 литров старого отработанного кабельного масла, от которого нужно освободиться;
- Возобновление противопожарной системы главных трансформаторов. Старая система основана на системе распыления с использованием воды для того, чтобы охладить систему. Она будет заменена системой, с использованием N<sub>2</sub> (газообразный азот), который вдувается в трансформаторы при пожаре.

При реализации проекта предполагаемые воздействия на окружающую среду могут быть связаны с:

- Откачкой старого масла и кабельной бумаги, пропитанной маслом, возможно содержащей ПХД;
- Удаление стали, меди, керамики и других отходов.

Все мероприятия по реабилитации будут производиться в пределах зданий и сооружений электрических станций.

В рамках ПЭО разработано План мероприятий по охране окружающей среды (ПМООС). В этом плане предусмотрены проведение мониторинга и

принятие мер по сокращению воздействия на окружающую среду во время реабилитационных работ.

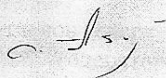
Отходы металлолома сдаются в ГП «Темир», а отходы промасленной бумаги и 250 000 литров отработанного кабельного масла в результате замены кабеля на 500 кВ. сдаются в Ошскую ТЭЦ.

Все меры по уменьшению воздействия во время реабилитационных работ должны быть осуществлены подрядчиком согласно природоохранного законодательства Кыргызской Республики.

ОАО «Электрические станции» регулярно поводит мониторинг выполнения предложенных мер по уменьшению воздействия на окружающую среду во время всего периода реализации проекта.

Рассмотрев представленные материалы, Государственное агентство охраны окружающей среды и лесного хозяйства при Правительстве КР согласовывает представленный отчет о предварительной экологической оценке (ПЭО) проекта АБР «Реабилитация сектора энергетики КР».

Директор



С.Агаджанов

УГЭЭиП  
568 986

**Annex 2. The environmental approval on IEE developed for the Project Phase 1 issued by SAEPP**

**State Agency on  
Environmental Protection and Forestry under the  
Government of Kyrgyz Republic**

720001, 228 Toktogul str., Bishkek  
Ph.: +(996-312) 35-27-27; Fax: +(996-312) 35-31-02

25.04.2012 #01-21/1083

**JSC “Electric Power Plants”**

The State Agency on Environmental Protection and Forestry under the Government of the Kyrgyz Republic having observed the submitted inception report on the Initial Environmental Examination (IEE) of ABD project “Rehabilitation of the power sector of KR”, would like to inform.

Project implementation zone is located in Djalal-Abad oblast.

It is envisioned by the project to implement the following rehabilitation works at Toktogul HPP:

- Rehabilitation of the periphery sectors of generators;
- Replacement of four oil operated generator circuit breakers by the modern SF6 circuit breakers;
- Replacement of four oil-filled 500 kV cables of a length of approx. 1,150 m each. These cables contain all together about 250,000 l of old oil that has to be disposed of;
- Renewing of the fire fighting system of the main transformers. The old system is based on a sprinkler system using water for cooling and will be replaced by a system using N<sub>2</sub> (gaseous nitrogen) that is blown into the transformers in case of fire to quench it.

Possible impacts on environment, during the project implementation can be related with:

- Disposal of old oil and oil impregnated paper possibly containing PCB;
- Disposal of steel, copper, ceramics and other wastes;

All rehabilitation measures will be implemented within the facilities and building constructions of the EPP.

An Environmental Management Plan (EMP) has been developed within the IEE. The Plan envisages monitoring and mitigation measures during rehabilitation works.

Metal scrap wastes are disposed at “Temir” State Enterprise, while oil paper wastes and 250,000 l of old cable oil, caused by 500 kV cable replacements, are disposed at Osh TPP.

All mitigation measures during rehabilitation works shall be implemented by the contractor in accordance with the legislation on Environmental Protection of the Kyrgyz Republic.

Joint Stock Company Electric Power Plants shall regularly conduct monitoring of the proposed impact mitigation measures in full duration of the project implementation period.


After observation of the submitted materials, the State Agency on Environmental Protection and Forestry within the Government of KR reconciles the submitted report on the Initial Environmental Examination (IEE) of ABD project on “Rehabilitation of the power sector of the Kyrgyz Republic”.

Director

S.Atadjanov

УГЭЭнП  
568 986

### Annex 3. The environmental approval on Supplementary IEE developed for Lot 4 issued by SAEPF

<p><b>КЫРГЫЗ РЕСПУБЛИКАСЫНЫН ӨКМӨТҮНӨ КАРАШТУУ КУРЧАП ТУРГАН ЧӨЙРӨНҮ КОРГОО ЖАНА ТОКОЙ ЧАРБАСЫ МАМЛЕКЕТТИК АГЕНТТИГИ</b></p> <p>720001, Кыргыз Республикасы Бишкек ш., Горький көч., 142 тел.: 996(312) 54-50-57; факс: (312) 54-50-91 <a href="http://www.ecology.gov.kg">www.ecology.gov.kg</a> e-mail: nature_kg@mail.ru; ecokg@aknet.kg Биринчи май МСК 004, ПИН: 02001200610051 э/с: 4402011101019163, БИК: 440001, Банк: КР КМ алдындагы Борбордук Казына ОКПО: 23994204</p>		<p><b>ГОСУДАРСТВЕННОЕ АГЕНТСТВО ОХРАНЫ ОКРУЖАЮЩЕЙ СРЕДЫ И ЛЕСНОГО ХОЗЯЙСТВА ПРИ ПРАВИТЕЛЬСТВЕ КЫРГЫЗСКОЙ РЕСПУБЛИКИ</b></p> <p>720001, Кыргызская Республика г. Бишкек, ул. Горького, 142 тел.: 996(312) 54-50-57; факс: (312) 54-50-91 <a href="http://www.ecology.gov.kg">www.ecology.gov.kg</a> e-mail: nature_kg@mail.ru; ecokg@aknet.kg Первомайский ГНС 004, ИИН: 02001200610051 р/с: 4402011101019163, БИК: 440001, Банк: Центральное Казначейство при МФ КР ОКПО: 23994204</p>
<p>15.12.2017. № 01-01-28/409</p> <p>На № _____</p>		
<p>Утверждаю Заместитель директора Государственного агентства охраны окружающей среды и лесного хозяйства при Правительстве КР А.А. Рыспеков «___» _____ 2017 г.</p>		

**ЗАКЛЮЧЕНИЕ  
ГОСУДАРСТВЕННОЙ ЭКОЛОГИЧЕСКОЙ ЭКСПЕРТИЗЫ**

на «Дополнительный отчет о предварительной экологической оценке. Реабилитация открытого распределительного устройства (ОРУ) 500 кВ и пункта перекидки»  
Проекта реабилитации сектора энергетики Фаза 1. АБР-44198 (KGZ)

На рассмотрение в Государственное агентство охраны окружающей среды и лесного хозяйства при Правительстве Кыргызской Республики (далее – ГАООСЛХ) на государственную экологическую экспертизу представлен «Дополнительный отчет о предварительной экологической оценке. Реабилитация открытого распределительного устройства (ОРУ) 500 кВ и пункта перекидки» Проекта реабилитации сектора энергетики Фаза 1. АБР-44198 (KGZ) (далее – Отчет), разработанный компанией «Фихтнер» в 2017 году по заданию АБР и ОАО «Электрические станции».

Согласно Отчету, дополнительные работы напрямую связаны с Фазой 1 Проекта реабилитации Токтогульской ГЭС, для которой была разработана Предварительная экологическая оценка (ПЭО) в 2012/2014, которая в 2015 году одобрена ГАООСЛХ № 01-21/1083 от 25 апреля 2012 года.

Дополнительные работы разработаны как Лот 4 Проекта Фазы 1.

В ходе работ на Токтогульской ГЭС предусматривается выполнить следующие работы:

- Открытое распределительное устройство:
  - Замена размыкающих переключателей 500 кВ (включая переключатели заземления и рабочих механизмов);
  - Замена трансформаторов тока на 500 кВ и 35 кВ;

008866  
1

- Замена трансформаторов напряжения на 500 кВ;
- Замена ограничителя перенапряжения (ОПН) на 500 кВ;
- Замена ОПН на 500 кВ для реактора линии L509 и L554;
- Замена реакторов высокочастотной связи (ВЧ-заградитель на ЛЭП) для линии L509 и L554;
- Замена трансформаторов собственных нужд сухого типа низкого напряжения на 6,3/0,42 кВ/ 400 кВА;
- Замена конденсаторов связи для линии L509 и L554;
- Замена фильтров присоединения для линии L509 и L554;
- Замена распределительного устройства (РУ) постоянного тока;
- Установка новой системы бесперебойного электроснабжения;
- Замена основного РУ переменного тока;
- Замена вспомогательных РУ переменного тока №6 и 7;
- Замена вспомогательных РУ дополнительного распределения переменного тока;
- Система защиты распределительного устройства (за исключением защиты линии для двух воздушных линий на 500 кВ);
- Система управления распределительным устройством (управление, сигнализация, синхронизация, блокировка, рабочий ток);
- Замена системы управления пожаротушением станции (для ОРУ и здания управления), включая замену всех приводных клапанов;
- Замена высоковольтной системы переменного тока по управлению здания;
- Реконструкция системы освещения;
- Новая система видеонаблюдения для ОРУ и здания управления;
- Реконструкция заземляющей сетки распределительного устройства;
- Новые бетонные фундаменты для предоставленного оборудования распределительного устройства и удаления неиспользуемых частей;
- Испытательное оборудование для испытания основного оборудования ОРУ (ТТ, ТН, выключатели, разъединители и т.д.) и для вспомогательного оборудования (систем защиты);
- Компактная мобильная корзина с высотой расширения 22 м, электромобили;
- Пустые защитные панели;
- Замена всех кабелей питания и управления, связанных с новым оборудованием, в т.ч. противопожарное уплотнение;
- Реконструкция кабельного канала между подстанцией и электростанцией (около 5 км).

#### Пункт перекидки на 500 кВ:

- Замена размыкающих переключателей 500 кВ (включая заземлители и рабочий механизм); проверить риск короткого замыкания;
- Замена ограничителя перенапряжения 500 кВ;
- Новые бетонные фундаменты для предоставленного оборудования распределительного устройства и удаления неиспользуемых частей.

При выполнении указанных реабилитационных мероприятий могут быть следующие возможные воздействия на окружающую среду:

- утилизация и повторное использование металлолома;
- вторичное использование старого масла оборудования;
- утилизация материала, содержащего асбест;
- вопросы безопасности и здоровья во время строительства;

- увеличение движения грузовиков в период строительства также через жилые районы;

- утилизация керамики, бетона и других строительных отходов.

В рамках Дополнительного отчета о предварительной экологической оценке предусмотрены воздействия предлагаемых работ на окружающую среду и определены соответствующие меры по снижению или исключению неблагоприятных воздействий.

Согласно Отчету, потенциальное экологическое воздействие от проектных работ будет локальным и временным. Для смягчения отрицательного воздействия на окружающую среду разработаны меры по снижению последствий для строительного этапа, где предусмотрены сбор, хранение и реализация металлолома; повторное использование масла из заменяемого оборудования; сбор, хранение и утилизация асбестосодержащего материала соответствующим образом и др.

Также, в рамках дополнительной ПЭО разработан План управления окружающей средой (ПУОС). В этом плане предусмотрены проведение мониторинга и принятие мер по сокращению воздействия на окружающую среду во время фазы строительства. Основное внимание уделяется образовавшимся отходам (металлолом, масло, асбестосодержащие материалы). Все меры по уменьшению воздействия во время строительства должны быть осуществлены подрядчиком. Мониторинг выполнения предложенных мер по уменьшению воздействия на окружающую среду во время всего периода строительства будет проводиться Консультантом по реализации Проекта (КРП).

Металлолом немасленный и образовавшийся в результате замены старых трансформаторов, должен храниться на участке Токтогульской ГЭС, который предусмотрен в ПЭО для реабилитации Токтогульской ГЭС, Фаза 1. ОАО «ЭС» позаботится о дальнейшем использовании этого металлолома для последующей переработки.

Согласно Отчету, старые трансформаторы тока и напряжения, которые будут использоваться в качестве запасных частей без извлечения масла, должны храниться на бетонном и обвалованном участке, уже подготовленном для Лота 2 и Лота 3 Фазы 1 на площадке Токтогульской ГЭС, чтобы избежать загрязнения почвы маслом.

Если масло из трансформаторов будет извлекаться, его нужно хранить для дальнейшего повторного использования на маслохранилище, уже предусмотренного в ПЭО по реабилитации Токтогульской ГЭС, Фаза 1 на площадке Токтогульской ГЭС. Для того, чтобы верифицировать результаты предыдущих анализов, каждая партия масла должна быть проанализирована на наличие ПХБ с помощью мобильного устройства до того, как оно будет слито с существующего оборудования. При обнаружении ПХБ, Отчетом предусматривается проведение экспертного исследования для решения по его экологически обоснованному удалению по согласованию с ГАООСЛХ.

Для утилизации бетонных отходов предусматривается заключить договор с местной организацией.

Для утилизации асбестосодержащих материалов по согласованию с местными органами ООС, МСУ будет разработан план управления асбестом в соответствии с международными конвенциями и стандартами, включая подготовку специализированных работников.

Во время реабилитационных работ может потребоваться отключение электроснабжения на короткое время, при котором будет разработан план по снабжению населения электричеством, получая электричество от других электростанций или из-за границы.

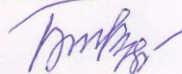
Согласно Отчету, все затраты на реализацию смягчающих мер включены в контракт на строительство и мониторинг осуществления мер по смягчению последствий, указанных в ПУОС будет осуществляться вместе с мониторингом Фазы 1 общего проекта.

Согласно результатам данной дополнительной Предварительной Экологической Оценки (ПЭО), дополнительные реабилитационные работы по ОРУ 500 кВ подстанции Токтогульской ГЭС и пункте перекидке 500 кВ будут выполнены, не вызывая никакого существенного неблагоприятного воздействия на окружающую среду.

Рассмотрев представленные материалы, Государственное агентство охраны окружающей среды и лесного хозяйства при Правительстве Кыргызской Республики выносит положительное заключение государственной экологической экспертизы на «Дополнительный отчет о предварительной экологической оценке. Реабилитация открытого распределительного устройства (ОРУ) 500 кВ и пункта перекидки» Проекта реабилитации сектора энергетики Фаза 1. АБР-44198 (KGZ).

При этом ОАО «Электрические станции» необходимо представить проектную документацию по реабилитации открытого распределительного устройства (ОРУ) 500 кВ и пункта перекидки на государственную экологическую экспертизу в ГАООСЛХ в соответствии с законодательством Кыргызской Республики.

Председатель экспертной комиссии,  
начальник управления государственной  
экологической экспертизы и природопользования  
(УГЭЭП)



Б.С.Секиев

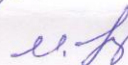
Члены экспертной комиссии:

Начальник отдела УГЭЭП



Н.К.Абдыласова

Ведущий специалист отдела УГЭЭП



И.М.Сарыбаев

Тел: (0312) 900814

**Annex 3. The environmental approval on Supplementary IEE developed for the Lot 4 issued by SAEPF**

**State Agency of Environmental Protection and Forestry  
under the Government of Kyrgyz Republic**

Date: 15.12.2017

No. 04-01-28/404

I Approve  
Deputy Director of the  
State Agency of  
Environmental Protection  
and Forestry under the  
KR Government  
/seal affixed/ signed/ A.A. Ryspekov  
“ ” 2017.

**CONCLUSION  
OF THE STATE ENVIRONMENTAL APPROVAL**

**To the “Supplementary Initial Environmental Examination. Rehabilitation of 500 kV switchyard and transition point”. Power Sector Rehabilitation Project. Phase 1.  
ADB- 44198 (KGZ).**

“Supplementary Initial Environmental Examination of 500 kV switchyard and transition point 500 kV”. Power Sector Rehabilitation Project. Phase 1. ADB-44198 (KGZ)” (hereinafter - “Report”) was submitted for consideration to State Agency on Environmental Protection and Forestry under the Government of Kyrgyz Republic (SAEPF), worked out by Fichtner company as per requests of ADB and OJSC “Electric Power Plant”.

As per this Report supplementary works are linked directly with Phase 1 of Rehabilitation of Toktogul HPP Project, for which Initial Environmental Examination was developed on 2012/2014, and approved by SAEPF # 01-21/1083 dated 25 of April 2012.

Supplementary works were developed as LOT 4 of Phase 1 Project.

Following works will be carried out during the works on Toktogul HPP:

Outdoor switchyard:

- Replacement of disconnecting switches 500 kV (including earthing switches and operating mechanism);
- Replacement of current transformers 500 kV and 35 kV;
- Replacement of voltage transformers 500 kV;
- Replacement of surge arrester 500 kV;
- Replacement of surge arrester 500 kV for reactor of Line L509 and L554;
- Replacement of High Frequency Communication Reactors (Line Traps) for Line L509 and L554;
- Replacement of LV dry type auxiliary transformers 6.3/0.42 kV / 400 kVA
- Replacement of capacitors of communication for Line L509 and L554;
- Replacement of connecting filters for Line L509 and L554;
- Replacement of DC distribution switchgear;
- Installation of new UPS System;
- Replacement of main AC distribution switchgear;
- Replacement of auxiliary AC distribution switchgears no. 6 and 7;
- Replacement of auxiliary AC sub-distribution switchgears;
- Switchyard protection system (excluding line protection for two 500 kV overhead lines);
- Switchyard control system (control, alarm, synchronization, interlocking, operating current);
- Replacement of station firefighting control system (for switchyard and control building), including replacement of all motorized valves;

- Replacement of HVAC system of control building;
- Refurbishment of lighting system;
- New CCTV system for switchyard and control building;
- Refurbishment of grounding grid of switchyard;
- New concrete foundations for provided switchyard equipment and removal of unused ones;
- Test equipment for testing of primary switchyard equipment (CT's, VT's, circuit breakers, disconnecting switches etc.) and for secondary equipment (protection systems);
- Compact mobile basket, with expansion height of 22 m, electro cars;
- Empty protection panels;
- Replacement of all power and control cables related to new equipment incl. fire sealing;
- Refurbishment of cable channel between substation and powerhouse (approx. 5 km).

#### 500 kV Transition Point:

- Replacement of disconnecting switches 500 kV (including earthing switches and operating mechanism); check for short circuit risk;
- Replacement of surge arrester 500 kV;
- New concrete foundations for provided switchyard equipment and removal of unused ones.

During implementation of above mentioned rehabilitation works, impact on environment can be as followings:

- Utilization and reusing of scrap metal;
- Reusing of old equipment oil;
- Utilization of asbestos containing material;
- Health and safety during construction;
- Increase of track movement during construction through residential area.

According to this Supplementary Report of IEE the impact on environment of supposed works has been considered and appropriate measures for reducing and exclusion of adverse effects has been indicated. As per Report the potential ecological impact will be local and temporary. For the less negative impacts for environment the measures were developed for reducing consequences at the construction level such as collection, storage and sale of scrap metal, reuse of oil from the replaced equipment, collection, storage and disposal of the asbestos-containing material in the appropriate manner etc.

And, Environment Management Plan was developed within the IEE. There are monitoring and taking measures for reducing impact for environment there in this Plan. The focus is on the waste generated (scrap metal, oil, asbestos-containing materials). All the measures for decreasing the impact should be implemented by Contractor. The Monitoring of implementing of supposed measures for the whole period of construction will be done by Consultant of Project Realization.

Oil free scrap metal, generated as a result of old transformers replacement, should be kept on site of Toktogul HPP, where envisaged the IEE for Rehabilitation of Toktogul HPP Phase 1. OJSC EPP shall take care of it of the further use.

As per Report, old current and voltage transformers, which can be used as spare parts without oil extraction, should be stored on a concrete and dumped site already prepared for LOT 2 and LOT 3 of Phase 1 on the site of the Toktogul HPP in order to avoid soil pollution with oil.

If oil from the transformers will be extracted once, it shall be stored for future refining and reuse in the storage area already foreseen in IEE for Power Sector Rehabilitation Project, Phase 1 at Toktogul HPP. In order to verify the findings of the previous analyses each batch of oil shall be tested for PCB before it is drained from the existing equipment. The report is envisaged the expertise investigation to take the solution for the ecological deleting according to SAEPP if PCB is found in the oil.

For the utilization of concrete waste, it is envisaged to conclude an agreement with a local organization.

For the utilization asbestos containing material with the accordance to the local authorities of Protection of environment and local authorities of government, the Asbestos Management Plan will be developed as per international conventions and standards, including preparation of specialists.

Within the rehabilitation works the electricity can be switched off for short time, where the Plan for providing the electricity for population will be developed with the solution to get it abroad or provided from other electrical power plants.

With the consideration of the Report all the costs for realization the measures included to the contract for construction and monitoring of the measures, mentioned in Environment Management Plan will be implemented with Monitoring of Phase 1 of General Project.

According to the results of the existing IEE, additional rehabilitation works for Outdoor switchgear 500 kV of substation Toktogul HPP and transition Point 500 kV will be done without any negative impact for environment.

Having considered the submitted materials, State Agency on Environmental Protection and Forestry (SAEPF) under the Government of Kyrgyz Republic is issuing the positive State Environmental Approval for “Supplementary Initial Environmental Examination. Outdoor switchgear 500 kV of substation ToktogulHPP and transition Point 500 kV” of the Power Sector Rehabilitation Project. Phase 1. ADB-44198 (KGZ).

Wherein, OJSC EPP should submit the design of rehabilitation outdoor switchgear 500 kV of substation ToktogulHPP and transition point 500 kV to SAEPF for the State Environmental Approval according to the legislation of Kyrgyz Republic.

Chairman of the Expert Commission,

Head of the Department of State

Environmental Expertise and Nature Management      /signed/      Sekiev B.S.

Members of commission:

Head of Department UGEPP

/signed/

Abdylasova N.K.

Senior specialist of Department UGEPP

/signed/

Sarybaev I.M.

Tel.: (0312) 900814

**Annex 4. Certificates of draining of cable oil received from Cascade of THPP dated 21/02/2018 and 28/02/2018.****АКТ****слива кабельного масла, поступившего из Каскада ТГЭС.**

Дата: 21.02.2018г.

г.Ош

Мы, нижеподписавшиеся, подтверждаем о том, что 20.02.2018-21.02.2018г. был произведен слив кабельного масла КЛ-2-500кВ и КЛ-3-500кВ в сливную эстакаду мазутного хозяйства ТЭЦ г.Ош в объеме 41,07 тонн по накладной №6 от 19.02.2018г. ОАО "Электрические станции"- филиала Каскад ТГЭС, поступившее на четырех автотранспортных средствах с государственными номерами: 219 DK, 133 DK, 115 DT, 04 KG 459 AC.

Данное мероприятие выполнено согласно пп.1.8.; 2.1.; 2.2 Приказа ОАО "Электрические станции" №39 от 15.02.2017г.

Начальник котлотурбинного цеха ТЭЦ г.Ош



Л.И.Мельников

Заведующий мазутным хозяйством  
котлотурбинного цеха ТЭЦ г.Ош

А.Жээнбеков

Специалист по охране окружающей  
среды ГРП "Реабилитация Токтогульской ГЭС"

Ж.А.Молдосанова

Инженер Службы реконструкции  
и модернизации оборудования КТГЭС

К.Ж.Бечелов

## CERTIFICATE of draining of cable oil received from Cascade of THPP

Date: 21.02.2018.

City of Osh

We, the undersigned, confirmed that 41.07 tons of cable oil from CL-2-500 kV and CL-3-500 kV was drained in to fuel oil facility of Osh TPP based on a consignment note No 6 dated 19/02/2018 of Cascade of Toktogul HPP, OJSC EPP's branch. The cable oil was transported by tracks with following state registration plates: 219 DK, 133 DK, 115 DT, 04 KG 459 AC.

This measure was implemented according to following paragraphs 1.8; 2.1, 2.2 of OJSC EPP Order No 39 dated 15/02/2017.

Head of boiler-turbine department of Osh TPP	/signed/	L.I. Melnikov
Head of boiler-turbine department oil facility of Osh TPP	/signed/	A.Jeenbekov
Environment Protection Specialist of PIU "Toktogul HPP rehabilitation HPP"	/signed/	J.A.Moldosanova
Engineer of CTHPP Equipment reconstruction and modernization Department	/signed/	K.J.Bechelov

## АКТ

## слива кабельного масла, поступившего из Каскада ТГЭС.

Дата: 28.02.2018г.

г.Ош

Мы, нижеподписавшиеся, подтверждаем о том, что 27.02.2018г.-28.02.2018г. был произведен слив кабельного масла КЛ-2-500кВ и КЛ-3-500кВ в сливную эстакаду мазутного хозяйства ТЭЦ г.Ош в объеме 13,505 тонн по накладной №8 от 26.02.2018г. ОАО "Электрические станции"- филиала Каскад ТГЭС, поступившее на двух автотранспортных средствах с государственными номерами: 133 DK, 115 DT.

Данное мероприятие выполнено согласно пп.1.8.; 2.1.; 2.2 Приказа ОАО "Электрические станции" №39 от 15.02.2017г.

Начальник котлотурбинного цеха ТЭЦ г.Ош  Л.И.Мельников

Заведующий мазутным хозяйством  
котлотурбинного цеха ТЭЦ г.Ош

 А.Жээнбеков

Начальник штаба гражданской защиты КТГЭС

 К.С. Беделбаев

Инженер Службы реконструкции  
и модернизации оборудования КТГЭС

 К.Ж.Бечелов

## CERTIFICATE of draining of cable oil received from Cascade of THPP

Date: 28.02.2018.

City of Osh

We, the undersigned, confirmed that on 27/02/2018-28/02/2018 13,505 tons of cable oil from CL-2-500 kV and CL-3-500 kV was drained in to fuel oil facility of Osh TPP based on a consignment note No 8 dated 26/02/2018 of Cascade of Toktogul HPP, OJSC EPP's branch. The cable oil was transported by two trucks with following state registration plates: 133 DK, 133 DK, 115 DT.

This measure was implemented according to following paragraphs 1.8; 2.1, 2.2 of OJSC EPP Order No 39 dated 15/02/2017.

Head of boiler-turbine department of Osh TPP	/signed/	L.I. Melnikov
Head of boiler-turbine department oil facility of Osh TPP	/signed/	A.Jeenbekov
Head of Civil Protection Headquarter of CTHPP	/signed/	K.S.Bedelbaev
Engineer of CTHPP Equipment reconstruction and modernization Department	/signed/	K.J.Bechelov

**Annex 5. Automatically generated report (protocol) of the oil analyses for PCBs made at the Analyzer L2000DX.**

15:21 12/04/2018

CHLORIDE NONE

BLANK SUBTRACT: 00.0

SAMPLE ID	CHLORIDE READING	CHLORIDE ANALYTE CONCENTRATION
SAMPLE #00002	1.78	1.78 PPM
SAMPLE #00003	2.79	2.80 PPM
SAMPLE #00004	3.80	3.81 PPM
SAMPLE #00005	.57	.57 PPM
SAMPLE #00006	3.76	3.76 PPM
SAMPLE #00007	4.58	4.58 PPM
SAMPLE #00008	4.73	4.74 PPM

2018-4-16 13:57