

# Environmental Monitoring Report

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Project No.: 47017-003  
Bi-annual report (January – June 2017)  
November 2017

## Tajikistan: Wholesale Metering and Transmission Reinforcement Project

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For Open Joint Stock Company Barki Tojik

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## Contents

1. INTRODUCTION .....	3
1.1 General information about the Project .....	3
2. Documents relevant for Environmental Safeguard .....	4
3. Construction activities and Project progress during the last 6 months.....	5
4. Changes in project organization and environmental management team .....	7
4.1. Relationships with Contractors and PMU .....	10
5. ENVIRONMENTAL MONITORING .....	10
6. ENVIRONMENTAL MANAGEMENT.....	12
6.1. The environmental management system (EMS), site-specific environmental management plan (SSEMP), and work plans.....	12
6.2. Site inspections and audits .....	12
7. Planned site visits for the July-December 2017 .....	14
7.1 Non-compliance notices .....	14
7.2. Corrective action plans .....	15
7.3. Consultation and complaints .....	18
Annex 1: Non-Compliance Notice.....	21
Annex 2: Photographs.....	24
ANNEX3 :Conclusion of State Environmental Expertise .....	44



## ABBREVIATIONS

ADB	Asian Development Bank
AMI	Advanced Metering Infrastructure
CEMMP	Contractor's Environmental, Health and Safety Management and Monitoring Plan
CT	Current Transformer
EDM	Energy Data Management
EHS	Environment, Health & Safety
EMP	Environmental Management Plan
HSE	Health, Safety and Environment
IEE	Initial Environmental Examination
IT	Information Technology
kV	Kilovolt
LAN	Local-Area Networking
MDM	Meter Data Management
MVA	Megavolt Ampere; unit used to measure apparent power
OHL	Overhead Transmission Line
PIC	Project Implementation Consultant
PLC	Power-line Communication
PMU	Project Management Unit
PPE	Personal Protective Equipment
SDH	Synchronous Digital Hierarchy, International Standard for Data Transmission
VT	Voltage Transformer



## 1. INTRODUCTION

### 1.1 General information about the Project

1. The Republic of Tajikistan has received financing (grant) from the Asian Development Bank (ADB) towards the cost of Wholesale Metering and Transmission Reinforcement Project. Parts of this financing is being used for payments under the contract for Rehabilitation of Substation Rudaki, Extension of Substation Ayni and Construction of new 220 kV OHL between SS Ayni 220 kV and SS Rudaki; replacement of electricity meters, several current transformers and several voltage transformers, introduction of an advanced metering infrastructure, and introduction of a settlement system. BT, ADB and the Consultant has agreed on a preliminary alignment of the 50 m wide right-of-way (RoW) of the TL based technical considerations and the need to avoid traversing human settlements and private landholdings.
2. It is expected that the proposed project will improve electricity supply to households and industries in the country by reducing losses through metering entire high and medium voltage transmission grid and expand transmission capacity in Panjakent region presently suffering from load shedding.
3. This Compliance report has been prepared by the social and environmental safeguards monitoring department of the PMU Barqi Tojik to assess whether the implementation of the Addendum to the Land Acquisition and Resettlement Plan of the power transmission line project complied with the stipulations of the approved addendum to LARP and ADB Involuntary Resettlement safeguards requirements. A satisfactory implementation of the LARP is a condition for ADB no objection to the start of physical civil works in the project sections with additional impact on land and income of the local communities.
4. The Projects components include:
  - a) Installation of 1,682 wholesale meters and settlement system including 846 current transformers and 744 voltage transformers (Lot A);
  - b) Construction of approximately 95 km of new single circuit single conductor 220 kV transmission line interconnecting Rudaki and Ayni Substation with rated capacity of 320 MVA (Lot B).
5. The location of the Project component Lot B is presented below in Figure 1 in the scale of the Country.



**Figure 1.** Location of the Project (Lot B).

6. The present Bi-Annual Environmental Monitoring Report is the first report concerning the 'Wholesale Metering and Transmission Reinforcement Project' and it covers the period from January to June 2017.

7. The report aims to provide information on the progress of implementing the Environmental Management Plan (EMP) and to evaluate the implementation of EMP for necessary improvement if needed. The purpose of Environmental Monitoring Report is to satisfy the environmental safeguard requirements of the Government of Tajikistan, BarqiTojik (through PMU) and ADB.

8. BarqiTojik is the vertically integrated state owned electric power utility in Tajikistan. BarqiTojik is in the process of organizational restructuring to form three separate business units. The three business units will comprise generation, transmission and distribution. The transmission business unit will operate 500/220/110 kV systems and the distribution unit will be responsible for operating systems at 35 kV and below.

## 2. Documents relevant for Environmental Safeguard

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



10. Initial Environmental Examination (IEE) for Wholesale Metering and Transmission Reinforcement Project, September 2014;

- Updated Initial Environmental Examination (IEE) for Wholesale Metering and Transmission Reinforcement Project, December 2016;
- Project Administration Manual (PAM) to Wholesale Metering and Transmission Reinforcement Project, November 2014;
- Grant Agreement between Republic of Tajikistan and ADB dated 27 of January 2015. Schedule 4, clauses 16,21 and 22 ;
- Appendix H of the Special Conditions of the Contract Agreement between Mercados and Barki Tojik;

11. The IEE 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 <https://www.adb.org/projects/documents/taj-wholesale-metering-and-transmission-reinforcement-dec-2016-iee>.

12. In May 2017, the national Committee of Environmental Protection (CEP, State ecological expertise (SEE)) issued the environmental approval (No. 421-15 dated 18th of May 2017) to the Project based on this IEE/EMP report.

### **3. Construction activities and Project progress during the last 6 months**

13. The Metering sub-Project (Lot A) was delayed from the original plan. The contract with the Contractors (TBEA and Huawei) has been signed in September 2016. Kick-off for the Project was in November 21st, 2016. According to the updated work plan, the implementation of the Lot A will take 19 months, and operational acceptance is expected to be admitted in April 2019 .

14. Currently CC Huawei/TBEA conducts the observation of the Substations to define the scope of activity of the power system. Work documents are being designed and will be submitted to the PMU. The Contractors are implementing the works on repairing the premise to accommodate the Data Center in the building of “Barqi Tojik” .

15. Transmission Reinforcement sub-Project (Lot B) is more or less following the original Work Plan. The contract Between BarqiTojik and the Contractor (TBEA) has been signed in December 2015. Kick-off with the Contractor was held in January 2016. TBEA has sub-contracted “Broadtec” company for the construction works.

16. At the Sub-Stations (SS Rudaki and SS Ayni) design phase has been executed. At Rudaki Substation – up to date the foundations under the equipment of the Switchyard-220kV and AT1 are excavated. The equipment for the Switchyard 220kV and the AT1 was received. At Ayni Substation all foundations for bay equipment of the Switchyard-220kV are completed.



17. Construction activities on Lot A for the reporting period are described in, no construction activities in this period.

18. Anticipated schedule for the next phases of Substations' works is the following:

- Reconstruction of Rudaki Substation is scheduled to be fully completed in December 2017.
- Ayni Substation. The extension of the Ayni Substation is scheduled to be ready for operation in the end of August 2017

12. The start of the construction of the Transmission line was delayed but all works are now proceeding according to the Work Plan. The situation of the progress of the works is presented in Table 1 below.

**Table 1** Work progress of Transmission line construction

	No. of towers/km of OHL*	Progress
Survey	244	100,00 %
Lanes and accesses	244	100,00 %
Foundations	244	100,00 %
Tower erection	234	95,90 %
Stringing	82.6 km	89,78 %
Fiber optic joints	0	0,00 %
WORKS TOTAL	-	89,00 %

\* Total number of towers is 244, total length of the line is 92 km

13. Construction activities for the reporting period are described in Table 2 below.

**Table 2.** Construction activities on Lot B implemented from January to June 2017

N	Month	Construction activities
1	January	Civil Works in OHL(Towers 1-40), Civil Works in Panjakent SS and Ayni SS
2	February	Civil Works in OHL(Towers 41-80), Civil Works
3	March	Civil Works in OHL(Towers 81-120), Civil Works in Panjakent SS and Ayni SS
4	April	Civil Works(Towers 121-160) and Tower Erection(1-80) in OHL, Civil Works and Electromechanical assembly in Panjakent SS and Ayni SS



5	May	Civil Works (Towers 161-200) and Tower Erection(81-160) and Stringing in OHL(Towers 80-1), Civil Works and Electromechanical assembly in Panjakent SS and Ayni SS
6	June	Civil Works(Towers 201-234) and Tower Erection(161-234) and Stringing in OHL(Towers 160-80), Civil Works and Electromechanical assembly in Panjakent SS and Ayni SS

14. Anticipated schedule for the ongoing work and next phases of the Transmission line construction is the following:

- Erection of missing towers; by the end of July, 2017
- Stringing of OHL ; by the end of July, 2017
- Fiber optic joints; by the end of July, 2017

#### **4. Changes in project organization and environmental management team**

15. The Executing Agency for the Project is the Open Stock Holding Company Barqi Tojik. The Executing Agency has set up a Project Management Unit (PMU) to manage daily coordination, implementation, monitoring and administration activities of the Project.

16. The PMU includes the Environmental Sector of the Projects Monitoring Department whose responsibilities include, among other things, the management of all environmental aspects of the project. The Head of the Environmental Sector of the Projects Monitoring Department is Mr. Karimov Sirojiddin. The Chief EHS Specialist at the PMU is Mr. Aziz Holov.

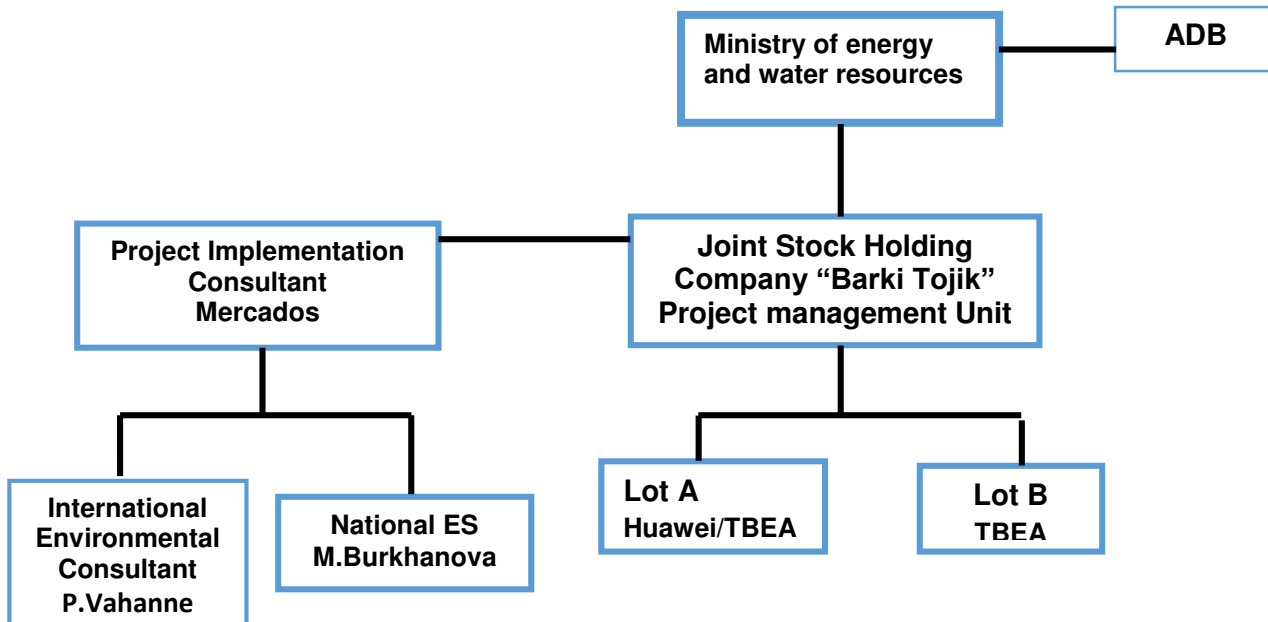
17. The Project Implementation Consultant (AF Mercados) is providing technical assistance to the PMU in the management and reporting of the project. The PIC is responsible for reviewing and endorsing the Contractor's Environmental Management Plan (CEMMP) and, in particular, for supervising and reporting on the Contractor's performance in the implementation of the CEMMP.

18. The PIC is also responsible to establish Environmental Management System as a part of the Project's Management System. This system has been established and all Environmental, Health and Safety documents and reports are filed in the system.

19. PIC's Environmental Specialists are:

- Mr. Pasi Vahanne, International Environmental Safeguards Specialist
- Ms. Muazama Burkhanova, National Environmental Safeguards Specialist



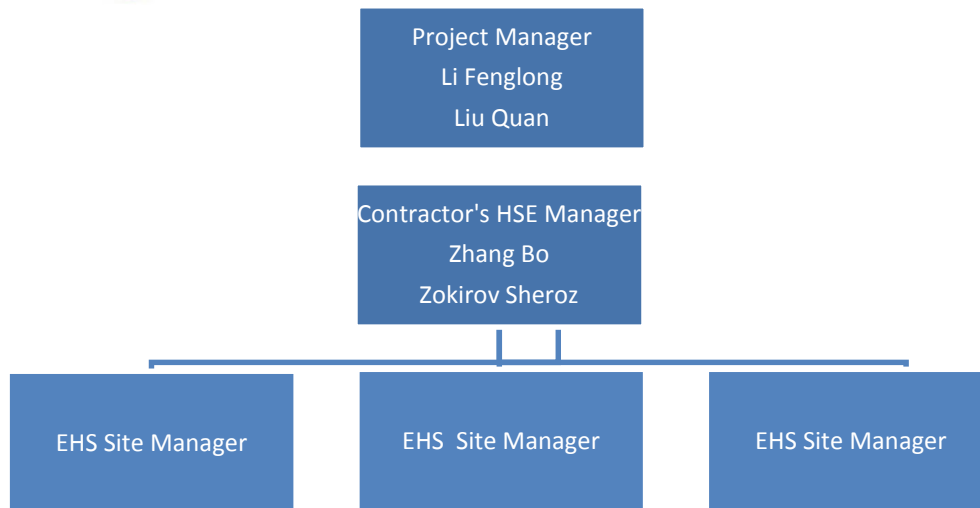


***Scheme 1. Organizational chart for the environmental management of the Project***

20. For Lot A the Contractors' (Huawei/TBEA) Environmental Unit is responsible for the implementation of the Contractor's Environmental Monitoring Plan. The Contractors have named the following persons responsible for EHS issues:

- Mr.Zhang Bo, HSE Manager (TBEA)
- Mr. ZokirovSheroz, HSE Manager Huawei)
- Mr. Jin Dean, EHS Site Manager (TBEA)
- Mr. HuseynovIlhom, EHS Site Manager (Huawei)
- Mr. Guan Yonggang, EHS Site Manager (TBEA)
- Mr. Nazarhudoev, HSE Site Manager (Huawei)
- Mr. ZhurakulovDoshod, HSE Site Manager (Huawei)

21. Organizational structure of the Huawei/TBEA EHS personnel is presented in Figure 2 below.

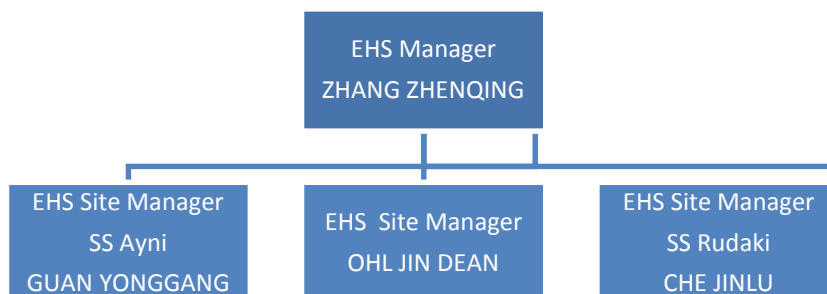


**Figure 2.**EHS management of Contractor on Lot A

22. For Lot B the Contractor (TBEA) is implementing construction works. Contractor's Environmental Unit is responsible for implementation of the CEMMP, monitoring of the construction activities and reporting. The Contractor has named the following persons responsible for EHS issues:

- Mr. Zhang Zhenqing, EHS Manager
- Mr. GuangYonggang, EHS Ayni Site Manager
- Mr. Jin Dean, EHS OHL Site Manager
- Mr. CheJinlu, EHS Rudaki Site Manager

23. Organizational structure of the TBEA's EHS personnel is presented in Figure 3 below.



**Figure 3.** EHS management of Contractor on Lot B



#### **4.1. Relationships with Contractors and PMU**

24. The PIC has continuously advised Contractors on HS&E issues, e.g. on the preparation of Contractor's Environmental Monitoring Plan and Contractor's Monthly Environmental Monitoring Reports.
25. The PIC organized training for the Contractor's and PMU on Environmental and Social Safeguards in December 2016.
26. The National Environmental Specialist of the PIC has discussed regularly with the PMU's Environmental Experts and RETA/ADB National Environment Specialist on environmental safeguards and EH&S issues.
27. The Lot B Contractor has presented the following agreements to PIC:
- An agreement between the Hospital at Ayni and TBEA, no date
  - An agreement between the Environmental Department of Ayni local authorities and TBEA concerning waste management, no date

### **5. ENVIRONMENTAL MONITORING**

28. Environmental Monitoring typically consists of two kinds of activities; visual inspections and audits at the construction sites, and measurements to gain numerical data. Environmental Monitoring of both Lot A and Lot B of the Wholesale Metering and Transmission Reinforcement Project is based on the IEE and EMP attached to it, as well as on Contractor's Environmental Monitoring Plan. These do not contain regular compulsory measurements. Requirements are given for noise levels and electromagnetic field. However, it is up to the Contractor to decide how to monitor these impacts.
29. Electromagnetic field can be measured only after the transmission line is in use. Accepted level has been taken into account during the design phase (distance to houses). Most of the transmission line is situated far away from living areas. Also Ayni Substation is situated in an unoccupied area. There are some houses located near the Rudaki Substation and noise problems may occur in that area.
30. The Contractors have not delivered Contractor's Monthly Environmental Monitoring Reports so far and that is why exact information on the activities of the Contractors is not available. However, during the site visit in June 2017 (Lot B), the Contractor showed documents of internal HS&E inspections.
31. Table 3 below summarizes monitoring observations done during the field visits of PIC Environmental Specialists.



**Table 3** Monitoring observations

Parameter	Remarks
Noise and vibrations	Equipment and vehicles used at the construction sites are for the most part in good condition. Working hours were limited to daytime. No official or unofficial complaints received.
Air quality	Heavy dusting was observed at the access roads. Roads were moistured at Rudaki Substation. Equipment and vehicles used at the construction sites are for the most part in good condition. Contractor has relevant regular maintenance records
Water quality	No impacts on surface water quality noticed.
Flora and fauna	No noticeable impacts on fauna. No cases on illegal pouching recorded in reported period. Vegetation (undergrowth) destroyed at tower sites. No trees cut.
Soil erosion and contamination	Not found
Cultural and archaeologically significant objects	Not found.
Occupational health and safety	According to the PIC's supervision reinforcement of Individual Protective Equipment and Collective Protective equipment was recommended
Soil, ground water and surface water contamination caused by transformer oil	Remarks in Appendix II
Overall Waste management	Remarks in Appendix II
Waste Management; motor oil and other hazardous liquids	Remarks in Appendix II
Waste Management; asbestos	No remarks in this point
Waste Management; scrap metal	Remarks in Appendix II
Waste Management; ceramic waste	Remarks in Appendix II
Grievance Redress Mechanism	No grievances for environmental impact received so far
Environmental documentation track record system	Done



## 6. ENVIRONMENTAL MANAGEMENT

### 6.1. The environmental management system (EMS), site-specific environmental management plan (SSEMP), and work plans

32. The PIC is responsible to establish Environmental Management System as a part of the Project's Management System. This system has been established and all Environmental, Health and Safety documents and reports are filed in the system.

33. The status of Contractor's Environmental Monitoring Plans and Site Specific Environmental Monitoring Plans is presented in Table 4 below.

**Table 4.** Status of Environmental Management Plans

Management Plan	Status	Date of Submission	Notes
Contractor's Environmental Monitoring Plan, including H&S Plan (SSEMP) - Russian version	submitted	July 2016	Not accepted, sent for revision
Contractor's Environmental Monitoring Plan, including H&S Plan (SSEMP) _English version	Submitted	December 2016	Comments done by ADB, preliminary version was approved in February 2017
Contractor's Environmental Monitoring Plan, including H&S Plan (SSEMP)	Submitted revised version	March 2017	sent for revision in April 2017
Emergency response plan	Included in the previous documents		

### 6.2. Site inspections and audits

34. Site inspections and audits performed during January 2017 – June 2017 are the following:

35. PMU Environmental Specialist; PMU has made three field site-visits in 2017: April 15th, May 8th and May 23rd. They conducted inspections on the implementation of the HSE issues by Contractor on the TBEA sites.

36. Supervision Consultant's Environmental Specialists; AF Mercados' National Environmental Specialist Ms Muazama Burkhanova attended the ADB mission on May 23<sup>rd</sup>, 2017. AF Mercados' International Environmental Specialist MrPasiVahanne together with National Environmental Specialist



conducted a field mission during June 7-8<sup>th</sup>, 2017. The purpose of this visit was to check Contractor's response to the ADB National Environmental Specialist's requirements presented on May 8<sup>th</sup>, 2017 to the Contractor (as well as to the Consultant and PMU). Moreover, a general inspection of EH&S issues at the construction sites and documentation was performed. They observed the environmental conditions of Contractor's Panjakent and Ayni camps and Substations, organized a work meeting with Environmental department of the Panjakent Regional Authority, met TBEA employees, discussed the emerging environmental problems and their solutions, checked the official environmental agreements with Local Authorities and the existence of the written documents on environmental monitoring in the work areas of the project, and Contractor's EMP and HSE Reports.

37. Construction Contractor's Environmental Managers; Due to the fact that Contractor's Monthly Environmental Monitoring Reports were not delivered to the Consultant, there is no exact information on the site audits and visits made by Contractor's Environmental Managers.

38. RETA/ADB National Environmental Specialist; ADB National Environmental Specialist (Consultant) Ms Malika Babadzhanova visited construction and accommodation sites on May 12<sup>th</sup>, 2017. The purpose of the visit was to inspect Contractor's EH&S performance. RETA/ADB Consultant has presented key findings, recommendations and required actions for the Contractor, Construction Supervision Consultant and PMU in a memorandum dated May 12<sup>th</sup>, 2017.

39. ADB mission; A site-visit by ADB mission was held on May 23<sup>rd</sup>, 2017. Representatives from the PMU and AF Mercados, 'National Environmental Consultant also attended this site-visit. During the visit the common situation with ADB grant 0417 implementation was observed and the documentation and reporting of the new Transmission Line -220 kV construction, and Ayni and Rudaki Substations were checked.

40. Besides, during the year 2016 one Environmental Management audit was performed during 6<sup>th</sup> and 7<sup>th</sup> October (Lot B). The audit covered TBEA office and camp area in Ayni, Broadtec office and camp area in Panjakent district, Broadtec camp and maintenance and storage facility 'Kolhozchiyon'. The participants of the audit were the following:

- Mr. Pasi Vahanne, PIC International Environmental Safeguards Specialist
- Ms. Muazama Burkhanova, PIC National Environmental Safeguards Specialist
- Mr. Aziz Holov, Chief Specialist (PMU)
- Mr. Stefan Rose, Team Leader (AF Mercados)

41. Summary of site visits and audits done by all parties in period from January to June 2017 are shown in Table 5.

**Table 5: Audits and Supervision over the period**

Organization	Purpose	Performed by	Date
PMUES	Multitask visit, supervision of Safeguards fulfilment and social grievances checking.	PMUES ES team	March 2017



			May 2017
PIC Mercados International Specialist	Construction Site inspection to monitor status of environmental performance	Mr Pasi International Environmental Specialist	June 2017
ADB PIC EPTISA; PMES	Country Safeguard Review (Environment)	ADB supervising committee led by Mr Yukihiro Shibuya about LARP and Environmental Subject	May 2017

## 7. Planned site visits for the July-December 2017

42. PIC's National Environmental Specialist has scheduled site-visits (Lot B) as presented in Table 6.

**Table 6.** Scheduled site-visits by PIC's National Environmental Specialist in 2017 (Q3 and Q4)

Activities	Date
Monitor Contractor's compliance with EH&S issues at all construction sites, accommodation/office and maintenance and storage areas; construction works on-going	June, 4 <sup>th</sup> week
Monitor Contractor's compliance with EH&S issues at all construction sites, accommodation/office and maintenance and storage areas; construction works on-going	July, 2 <sup>nd</sup> week
Monitor Contractor's compliance with EH&S issues at all construction sites, accommodation/office and maintenance and storage areas; construction works on-going	September, 1 <sup>st</sup> week
Monitor Contractor's compliance with EH&S issues at all construction sites, accommodation/office and maintenance and storage areas; construction works finalised	After the completion of construction works

### 7.1 Non-compliance notices

43. All corrective actions requested after the monitoring the sites were partly completed by Contractor in reporting period. A Non-compliance notice was issued by Environmental Specialists of AF Mercados to the Contractor of Lot B, dated June 8<sup>th</sup>, 2017, see Annex 1.



## 7.2. Corrective action plans

44. Environmental Compliance Safeguard Review was carried out by ADB National Environmental Specialist with HSE specialists of Contractor on May 12<sup>th</sup>, 2017. Found Non-compliances are presented in Corrective Action Plan in Table 7 below.

**Table 7. Corrective Action Plan (based on site-visit during May 12<sup>th</sup>, 2017 by ADB National Environmental Specialist), performance was checked during PIC's Environmental Consultants' Site-visit during June 7<sup>th</sup>-8<sup>th</sup>, 2017 (see also Table 5)**

No	Description of Non-compliance	Corrective action required	Deadline	Status/ Performance date
<b>Documentation and procedures</b>				
1	EMPSS not updated	To update the EMPSS for the project in accordance with the recommendations of the ADB / PETA expert on protective environmental measures in coordination with the Ecologist of the Construction Supervision Consultant (MERCADOS) and submit to the PMU and ADB	May 23 <sup>rd</sup> , 2017	Not completed
2	Grievance Redress Mechanism not fully functional	To ensure the proper functionality of the Grievance Redress Mechanism - the diagrams and information should be on sites and in jamoats in both regions	2 <sup>nd</sup> Quarter, 2017	Partly completed
3	Contractor's documentation incomplete	To ensure that monitoring reports, EMP / EMPSS documents, permits (for camps, garbage disposal, with hospitals, etc.), complaints book, etc. – it should be available on site- in the field offices of contractors in Ayni and Panjakent	May 23 <sup>rd</sup> , 2017	Partly completed
4	Complaints logbooks not available	Enroll the records in complaints logbook on a daily basis - in both districts	Permanently	Partly completed
5	Contractor's Monthly Environmental	To submit 5 reports on environmental monitoring to	May 22 <sup>nd</sup> , 2017	Not completed





	Monitoring Reports not available	the Ecologist of the Consultant and the Ecologist of PMU for both sites in Panjakent and Ayni districts, starting from December 2016 until April 2017 included		
6	Participation of PIC's Environmental Specialist on monitoring of Contractor's activities	The Consultant's Specialist should be more actively involved in environmental monitoring and work on a regular basis, ensure the implementation of corrective actions	2 <sup>nd</sup> Quarter, 2017	On-going
7	Status of corrective actions	Check the status of corrective actions according to recommendations	May 23 <sup>rd</sup> , 2017	Completed June 7 <sup>th</sup> -8 <sup>th</sup> , 2017
<b>Other Non-compliances</b>				
8	Incomplete firefighting equipment and absence of waste containers	To ensure the availability of firefighting equipment in full set, to install the waste collection containers - in both regions	May 22 <sup>nd</sup> , 2017	Completed
9	Lunch canteen not fully equipped	Provide tables and chairs for workers in Panjakent for normal having of meal during lunch breaks	May 22 <sup>nd</sup> , 2017	Completed
10	Incomplete safety procedures at construction sites	Install the fences and warning signs near the construction sites in Ayni district	May 22 <sup>nd</sup> , 2017	Partly completed
11	Storage of chemicals and raw materials	Canisters with fuel or oil, other materials (cement, etc.) - must be stored in impermeable tanks and covered - in accordance with EMP / EMPSS	Permanently	Completed, except waste oil at Subcontractor's maintenance site
12	Mold problem	To treat the bathroom against mold for the Contractor's employees in Panjakent	May 22 <sup>nd</sup> , 2017	Completed



45. International and National Environmental Specialists of AF Mercados made site-visit on 7-8 June, 2017. Based on their observations a Corrective Action Plan was prepared by PIC, see Table 8 below.

**Table 8 Corrective Action Plan (based on site-visit during 7<sup>th</sup>-8<sup>th</sup> June, 2017 by PIC Environmental Specialists) for July-December 2017**

No	Description of Non-compliance	Corrective action required	Deadline	
<b>Documentation</b>				
1	Site Specific EMP was not finalized	Finalization of SSEMP for Ayni and Panjakent	31 <sup>st</sup> August 2017 at the latest	
2	No agreement on medical care in Panjakent	Delivery of an agreement to the Consultant, if not existing agreement must be done	31 <sup>st</sup> July 2017 at the latest	
3	No agreement on waste management between the Environmental Department of Panjakent local authorities and TBEA	Preparation of an agreement on waste management with Environmental Department of Panjakent local authorities and TBEA	31 <sup>st</sup> July 2017 at the latest	
4	No agreement on used transformer oil handling	Delivery of an agreement to the Consultant, if not existing agreement must be done	31 <sup>st</sup> August 2017 at the latest	
5	Missing Contractor's Monthly Environmental Monitoring Reports (6 pcs; December 2016-May 2017)	Preparation of missing 6 reports	31 <sup>st</sup> August 2017 at the latest	
6	There was no Complaints book in Panjakent office	Complaints book should be present also in Panjakent, and to be filled daily (even if no complaints), also in Ayni	Immediately, July, 2017 at the latest/daily	
<b>Ayni camp</b>				
7	There is mold in the bathroom	Cleaning the mold in the bathroom	Immediately, July, 2017 at the latest	
<b>Transmission line</b>				
8	Warning signs at construction sites were not sufficient, no fences	Improve safety procedures at construction sites, use fences where possible	Immediately/continuously	
9	Waste bins were not available at sites, overall cleanness was poor	Improve waste management and cleanness at sites	Immediately/continuously	
<b>Rudaki Substation</b>				
10	Open manhole on the road	Cover the manhole	Immediately	



<b>Panjakent office/accommodation area</b>				
11	Waste burning	Forbid waste burning, organize proper waste management practices	Immediately	
<b>Subcontractor's storage/maintenance area in Panjakent</b>				
12	Waste management was not well organized, overall cleanness was poor	Organize proper waste management practices	Immediately	
13	Open waste oil canisters were observed at the yard and maintenance area	Organize proper waste management practices	Immediately	

### 7.3. Consultation and complaints

46. According to Contractor's Complaint book (exists only in Ayni) and oral communication with the Contractor, there has not been any complaints.

47. PIC's Environmental Specialists, MrPasi Vahanne (International Environmental Specialist) and Ms. Muazama Burkhanova (National Environmental Specialist) organized a meeting with Environmental Department of Panjakent Local Authority on June 7<sup>th</sup>, 2017 at the office of Environmental Department, Panjakent. Altogether 14 employees of the Environmental Department participated in the meeting. The leader of the organization is Mr. Gafurov Ashraf.

48. During the meeting the following issues were discussed:

- The existence of formal agreements between TBEA and the Environmental Department of Panjakent Local Authority.
- Department's participation in environmental monitoring, Contractor's compliance with environmental requirements by national legislation and regulations.

49. Employees of the Environmental Department of Panjakent Local Authority expressed their concerns regarding compliance with environmental requirements of the project Contractor. The following examples were given:

- Waste were not exported from the territory of the Contractor's camp in Panjakent, most often waste is burned together with used tires, solid waste, etc.
- Contractor's dust management activities are insufficient on the roads during the transport of building materials.
- During construction and installation works, the construction sites are not always enclosure with fences and there are not enough signal signs.



- Official agreement between TBEA and the Environmental Department of the Panjakent Local Authority on compliance with environmental requirements is available, but it is often not observed.

50. According to the Environmental Department, they have received several complaints orally but not any in written form.



## **ANNEXES:**




**Annex 1: Non-compliance Notice**

**Annex 2: Photographs**

**Annex 3: Conclusion of State Environmental Expertise**



## ANNEX 1: NON-COMPLIANCE NOTICE

<b>Project: Wholesale Metering and Transmission Reinforcement Project</b> <b>Project No: MI 1642</b> <b>Contractor: TBEA</b> <b>Supervision: AF Mercados</b> <b>Reference: Ayni – Panjakent transmission line, Ayni and Rudaki substations, Ayni and Panjakent offices/accommodation sites</b>	<b>Non-compliance Notice</b>
<p>This notice is to advise you, the prime Contractor, on the referenced Project, of the following notice on Health, Safety and Environmental measures to be implemented <b>urgently</b>.</p> <p><b><u>Transmission line</u></b></p> <ul style="list-style-type: none"> <li>- Installation of proper warning signs at working areas.</li> <li>- Waste bins to be used at working sites.</li> <li>- Working areas should be arranged properly internally and cleaned regularly.</li> <li>- Proper site fencing needs to be arranged (where possible).</li> </ul> <div style="display: flex; justify-content: space-around;">   </div> <p><b><u>Rudaki Substation</u></b></p> <ul style="list-style-type: none"> <li>- Open manhole at the road should be covered.</li> </ul> 	



#### **Panjakent office/accommodation area**

- Burning of the waste should be stopped.



#### **Subcontractor office/accommodation/storage/maintenance area**

- Waste management and cleaning of the storage/maintenance area should be organised properly.
- Open waste oil canisters were observed at the maintenance area and at the yard.



#### **Ayni office/accommodation area**

- Mold observed in the bathroom, should be cleaned.





### **Documentation**

- Site Specific EMP was not finalized, it should be finalized according to ADB's comments, one copy should be available in Ayni and one copy in Panjakent.
- There was no agreement on medical care at Panjakent, it should be arranged.
- There was no agreement on used transformer oil handling, it should be arranged.
- There was no Complaints book at Panjakent office, it should be made available and updated daily (even if no complaints).
- There were no Contractor's Monthly Environmental Monitoring Reports available, these should be prepared starting from December 2016 until May 2017 and from June 2017 onwards monthly.



All these conditions have to be corrected immediately (by June 23<sup>rd</sup>, 2017 at the latest) by the prime Contractor (TBEA).

**Site visit date: 7-8.6.2017**

Site visit and monitoring was conducted by:  
Pasi Vahanne – AF Mercados  
Muazama Burkhanova – AF Mercados





## ANNEX 2: PHOTOGRAPHS



Stringing of cables, June 2017



Ayni Substation, construction area, warning signs on the background June 2017



Transmission line towers – Perspective of tower No 3 in Ayni SS surroundings , June 2017



Transmission line tower next to Ayni Substation, June 2017





Waste bins for separate waste fractions at Ayni camp, June 2017



First aid material and medicine at Ayni camp are in place, June 2017



Firefighting equipment at Ayni camp are properly arranged and in compliance. Contractor's trucks on the background, one truck is loaded with water tank – Vehicles are in good condition. No oil spills were detected during the survey June 2017.



Construction works at Rudaki Substation, cleaning of the used construction material, workers provided by appropriate PPE (personal protective equipment) June 2017



Lunch canteen at Rudaki Substation, table and chairs are provided for workers, resting area behind the canteen – in compliance, June 2017





Transmission line on the mountain side – Tower No 8, Ayni District, June 2017



Mold has been removed from the bathroom wall at Panjakent base, June 2017



Waste is burned at the Panjakent base, June 2017



Construction works at the Rudaki Substation, workers are using appropriate PPE, June 2017



Firefighting equipment at the Rudaki Substation, June 2017



Construction works at the Rudaki Substation, workers are using appropriate PPE, June 2017



Maintenance area at Subcontractor's base in Panjakent, June 2017



Warning signs at Rudaki Substation, June 2017



Scrap metal and other waste at Subcontractor's base in Panjakent, June 2017





Transmission line material storage on the yard, June 2017



Towers on the slopes of the mountain, June 2017

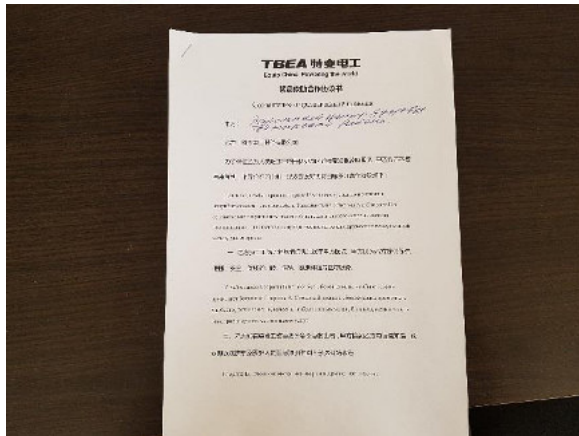




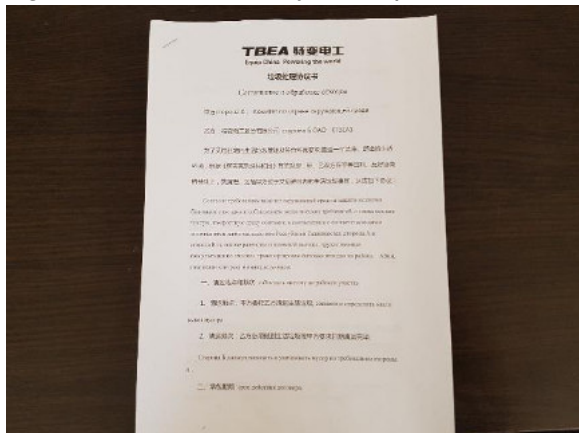
Conservation of a tree, June 2017



Conservation of a tree, June 2017



Agreement between Ayni Hospital and TBEA, June 2017



Agreement on Waste Management (Ayni), June 2017



Moistured road at Rudaki Substation to control dust, Safety hazard; manhole without any cover, June 2017



Ayni district (May, 8, 2017)



Figure 1. Entrance of the Contractor construction camp and general view







Figure 2. Office rooms of Contractor. Extinguishers and warning signs are in place



Figure 3. Storage of materials for transmission line installation – in compliance



Figure 4. Sanitary facilities for workers are properly arranged



Figure 5. Kitchen and dining room for workers – in compliance



Figure 6. Sport facilities and first aid means for workers arranged by Contractor



Figure 7. Instructions, trainings records on EHS issues are in place, but no EMP/SSEMP, no complaints log book were available in this field office of Contractor during site visit on May 8, 2017



Figure 8. Machinery of Contractor is well maintained, no spills or leakages were observed at the area of construction camp



Figure 9. Workers are equipped by PPE – in process of tower parts loading



Figure 10. Installed towers in Ayni district

### Panjakent sub-station



Figure 11. There are warning signs at the entrance of Panjakent sub-station





Figure 12. Welding works are going on at the specila site – workers are equipped by relevant PPE



Figure 13. Constrction materials are stored and containers for wastes are placed at construction site



Figure 14. Contractor workers use small mixing device for preparation of concrete mixture to make foundations of towers



Figure 15. Machinery of Contractor in process of earthworks to prepare area for installation of new sub-station structures



Figure 16. Some empty containers are placed directly on the ground. Bags with wastes are temporarily stored at the construction site.





Figure 17. Kitchen and rest premise for workers



Figure 18. Fire protection means are not complete – extinguishers are not relevant. This water tap and small pump is part of water supply for Contractor.



Figure19. Toilet facilities for workers



Figure 20. Environmental safeguards were discussed on-site with ES of PMUES and personnel of Contractor



Figure 21. Environmental specialists and field office of Contractor . ES demonstrated training records and instructions, equipment maintenance schedule, however no EMP/SSEMP are in place





Figure 22. Rented house for accomodation of foreign workers



Figure 23. Bathroom does not comply with sanitary requirements – mold was observed on the ceiling



Figure 24. Kitchen for workers – is in order





Figure 25. Installed towers in Panjakent district



## ANNEX3 :CONCLUSION OF STATE ENVIRONMENTAL EXPERTISE



### КУМИТАИ ҲИФЗИ МУҲИТИ ЗИСТИ НАЗДИ ҲУКУМАТИ ҶУМҲУРИИ ТОҶИКИСТОН ЭКСПЕРТИЗАИ ДАВЛАТИИ ЭКОЛОГӢ

734034, Ҷумҳурии Тоҷикистон,  
ш. Душанбе, кӯчаи Шамсӣ, 5/1.  
тел: 2359583, 2359577, факс: 2361353;

№ 421-15

«18» 05 2017 с.



Тасдиқ мекунам:  
Сардори Экспертизаи  
давлатии экологӣ  
Х. Махмадуллоев

#### ХУЛОСАИ

Экспертизаи давлатии экологӣ

Маълумоти умумӣ:

1. Номи ишғолот: Соҳтмони хати интиқоли барқи 220 кВ аз зеристгоҳҳои «Айнӣ-Рӯдакӣ».
2. Мавқеи ҷойгиршавии ишғолот: ноҳияи Айнӣ-шаҳри Панҷакент.
3. Хуччатҳои пешниҳодшуда: Дархост барои гирифтани хулосаи экспертизаи давлатии экологӣ, Ҳисоботи тақмилдодашудаи «Арзёбии пешакии таъсиррасонӣ ба муҳити зист».
4. Дархост ва пешниҳодкунандаи хуччат, лоиҳа: Ширкати саҳомии ҳолдингии қушодаи «Барқи Тоҷик».
5. Санаи қабули хуччат: 20.02.2017.

Экспертизаи давлатии экологӣи Кумитаи ҳифзи муҳити зисти назди Ҳукумати Ҷумҳурии Тоҷикистон Ҳисоботи тақмилдодашудаи «Арзёбии пешакии таъсиррасонӣ ба муҳити зист»-и лоиҳаи соҳтмони хати интиқоли барқи 220 кВ зеристгоҳи «Айнӣ-Рӯдакӣ»-ро, ки аз тарафи ширкати «Фиктнер» таҳия гардида ва ширкати «AF-MERSADOS EMI» бо назардошти ҳолати воқеӣ аз нав дида баромадааст, ҷиҳати гузаштан аз экспертизаи давлатии экологӣ баррасӣ намуд.

Мувофиқи хуччатҳои пешниҳодшуда дарозии хати интиқоли барқи 220 кВ 95 км-ро ташкил дода, дар он сотмони 243 адад пояҳои сими барқӣ (опор) ба нақша гирифта шудааст. Хати мазкур зеристгоҳҳои «Айнӣ» ва «Рӯдакӣ»-ро бо ҳам мепайвандад. Соҳтмони зеристгоҳҳои мазкур дар ҳудудҳои марзӣ маъмурии ноҳияи Айнӣ ва шаҳри Панҷакент ҷойгир мебошанд. Инчунин дар доираи лоиҳаи мазкур ивази 1117 ҳисобкунакҳои барқӣ, ивази якчанд трансформаторҳо ва соҳтмони зеристгоҳҳои «Айнӣ» ва «Рӯдакӣ» ба нақша гирифта шудааст.

Ноҳияи Айнӣ ва шаҳри Панҷакент аз рӯи шароитҳои ботаникӣ-ҷуғрофӣ, релеф, соҳти геологӣ, таркиби олами наботот ва ҳайвонот ва хусусиятҳои фишори экологӣ ба музофоти табиӣи Суғду Зарафшон мансуб аст.





Иқлими Зарафшон нисбатан салқин буда, ҳарорати миёнаи солонаи ҳаво аз 10-11°C баланд намешавад, боришноқӣ дар як сол 400-700 мм аст. Дар қисми баландкӯҳи ноҳия гиреҳи яхбандии Зарафшон ҷойгир шудааст. Кӯлҳои бисёри дар натиҷаи ғурурабии қисмҳои кӯҳӣ пайдошуда вомехӯранд, ки дар байни онҳо Искандаркӯл ва Кӯли калон аз ҳама бузургтар мебошанд. Аз нигоҳи геологӣ ландшафти кӯҳии водии дарёи Зарафшон аз тағшинҳои палеогенӣ ва неогенӣ ташаккул ёфтааст. Аз нигоҳи гидрологӣ роҳи таъмиршаванда дар ҳавзаи дарёи Зарафшон Панҷ ҷойгир шудааст.

Аз наботот бешаҳо ва тоқачангалҳои арчагӣ, нимсаваннаҳои калоналаф, растаниҳои кӯҳию даштӣ бартарӣ доранд. Аз ҳайати олами ҳайвонот намудҳои бешагӣ ва баландкӯҳӣ - барси барфӣ (*Unica unica*), бузи кӯҳии сибирӣ (*Capra sibirica*), ҳуки ёбӣ (*Sus scrofa*), сугур (*Marmota*) ва паррандагон бештар вомехӯранд.

Зеристгоҳҳои барқии «Айнӣ» ва «Рӯдакӣ» бо иқтидори 220 кВ дар ҳудуди ноҳия Айнӣ ва шаҳри Панҷакент ҷойгир шуда, тибқи лоиҳа дар зеристгоҳҳои мазкур корҳои таъмиру таҷдидсозии дастгоҳҳои барқӣ, трансформаторҳо, корҳои ободонӣ ва сохтмонӣ ба нақша гирифта шудааст.

Ҳангоми ҷойгиронии зеристгоҳҳои барқӣ меъёр ва талаботҳои сохтмонӣ бояд ба эътибор гирифта шаванд. Зери зеристгоҳҳо бетонпӯш карда шуда, барои ҷоришавии садамавии рағғани трансформаторӣ ҳавзҳои махсус (бетонпӯш) ҷойгир карда шаванд, ки аз болои он қуму шағал рӯпӯш карда шавад. Ҳаҷми ҳавзҳои махсус аз рӯи намуд ва иқтидори трансформаторҳо муайян карда шуда, ҳангоми эҳтимолияти рехтани рағғани трансформаторӣ (ҳангоми садама) он ба воситаи кубур ба зарфи рағғанчамъкунак равона мегардад, дар лоиҳа пешбинӣ карда шавад.

Ҳангоми гузаронидани корҳои сохтмонӣ дар зеристгоҳҳо ва кашидани хати интиқоли барқ эҳтимолияти таъсир ба намудҳои гуногуни компанентҳои муҳити зист расонида мешавад.

Ба таъсири эҳтимоли ба муҳити зист дохил мешаванд:

- ҳузури физикии техника ва одамон;
- эмиссияи моддаҳои ифлоскунандаи ҳавои атмосфера ва ҷанг;
- ҳосилшавии партовҳои сохтмонӣ, истехсолӣ ва истеъмолӣ;
- таъсири факторҳои физикӣ (садо, рӯшноӣ, ғулғула ва ларзиш).

Ҳангоми гузаронидани корҳои сохтмонӣ ва татбиқи лоиҳа бояд чунин ҳолатҳо ба инобат гирифта шаванд:

- то ҳади имкон нагирифтани манзилу заминҳои шахсони воқеӣ;
- кӯшиши намудан ҷиҳати кам намудани биноҳои иншоотӣ баргарафшаванда;
- ҳифзи олами наботот ва ҳайвоноти маҳали лоиҳа;
- ҳифзи захираҳои об;
- талабот оид ба таъмини беҳатарии ҳаракат.
- риояи минтақаи муҳофизати санитарӣ

Ҳангоми фаъолияти воситаҳои нақлиёт ва рафти иҷрои корҳои сохтмонӣ ба ҳавои атмосфера партовҳои зерин партофта мешаванд: ҷанг, диоксиди нитроген, оксиди нитроген, бенз(а) пирен, дуда, диоксиди





сулфур, алдегидҳо, карбогидрадҳои C12 – C19, оксиди карбон.

Дар минтақае, ки лоиҳа татбиқ мешавад консентратсияи фонӣ ба қиматҳои зерин соҳиб аст:

- чанг 1,2мг/м<sup>3</sup>;
- оксидҳои нитроген 0,1мг/м<sup>3</sup>;
- ангидриди сулфур 0,1мг/м<sup>3</sup>;
- оксиди карбон 1,5мг/м<sup>3</sup>

Дар хусусиятҳои иқлимии минтақаи мазкур ҳам омилҳои мусбат ва ҳам манфӣ, ки ба сатҳи ифлосшавии ҳаво таъсир мерасонанд, мавҷуданд.

Ҳамзамон ҳангоми қорҳои сохтмонӣ пайдо шудани партовҳои сохтмонӣ дар назар аст, ки ҳаҷми он аз ҳаҷми қорҳои сохтмонӣ вобаста мебошад. Таркиби ин партовҳо аз боқимондаҳои маҳсулотҳои асфалту бетонӣ, аз қабили оҳанпора, кубур, ноқилҳо, партовҳои изолятсионӣ ва амсоли онҳо иборат мебошад. Партовҳои сохтмонӣ баъд аз анҷоми қорҳои сохтмонӣ ба навъҳо ҷудо карда шуда, дар мувофиқа бо мақоми ваколатдори давлатӣ ҳифзи муҳити зист ва санитарияро эпидемиологӣ аз минтақаи сохтмон бароварда мешаванд.

Инчунин ҳангоми аз ҳудуди иншооти сохтмонӣ берун рафтани техникаҳо ва воситаҳои нақлиётҳои боркаш чанг ба амал меоянд бинобарон нақлиётҳо тибқи қоида шустушӯӣ карда шуда, тозагии онҳо таъмин карда шавад.

Ҳангоми гузаронидани қорҳои сохтмонӣ ҳамчунин садо ва ларзиш ба вучуд меояд, ки оромии минтақаро муваққатан ҳалалдор месозад. Аз ин лиҳоз ҳангоми гузаронидани қорҳои сохтмонӣ речаи муайяни қорӣ муқаррар карда шуда, аз техникаю механизмҳои замонавӣ бояд истифода бурда шавад.

Тибқи лоиҳа чунин қорабиниҳои ҳифзи муҳити зист пешбинӣ шудаанд, ки бояд ҷиҳати амалишавии қорабиниҳо аз тарафи мақомоти маҳаллӣ ҳифзи муҳити зист назорат карда шавад:

- рекултиватсияи қитъаҳои замин, ки дар раванди сохтмони хати интиқоли барқи 220 кВ вайрон мешаванд;
- андешидани қораҳои зарурӣ ва пешгирии ифлосшавии ҳифзи муҳити зист ҳангоми сар задани садамаи эҳтимолии трансформаторҳо ва қорӣ шудани равғанҳои молидани;

Бо мақсади ҳифзи аҳоли аз таъсири мавҷҳои электромагнитӣ, ки дар натиҷаи интиқоли барқи баландшиддат ба вучуд меоянд бояд хати муҳофизати санитарӣ муқаррар карда шавад.

Тибқи талаботи СН 245-71 минтақаи муҳофизатии санитарии хати барқи ЛЭП – 220 кВ бо самти уфуқӣ аз ду тараф 16 метр муайян карда шудааст, ки бояд ҳангоми татбиқи лоиҳа ба инобат гирифта шавад. Агар майдони электромагнити аз ҳади ҷоиз (ПДУ) зиёд бошад, бояд қораҳои зарурӣ оиди ҳифзи аҳоли (дур кардани биноҳои истиқоматӣ аз минтақаи ЛЭП-220 кВ) андешида шавад.

Ҷойгиронии биноҳои истиқоматӣ ва ҷамъиятӣ, ҳамагуна иншоотҳо, қорхонаҳои нақлиётӣ ва нуктаҳои нафтӣ ва ғайра дар минтақаи муҳофизатии хати интиқоли барқ ва майдони электромагнитӣ манъ аст.





Бо мақсади ҳифзи муҳити зист пешниҳодҳои зерин барои иҷро дода мешаванд:

- ҳангоми татбиқи лоиҳаи мазкур талаботҳои қонунгузориҳои Ҷумҳурии Тоҷикистон дар баҳши ҳифзи муҳити зист ва талаботи Меёёр ва қоидаҳои сохтмонӣ, меёёр ва қоидаҳои санитарӣ қатъиян риоя карда шаванд;

- аз болои фаъолияти зеристгоҳҳои барқӣ назорати идоравӣ қорӣ карда шавад;

- вобаста ба тавоноии зеристгоҳҳои барқӣ хати санитарӣ-муҳофизатӣ риоя карда шавад;

- ҳангоми рух додани ҳолатҳои садамавӣ оқибатҳои он сари вақт бартараф карда шуда, ба рехтари равшан ба манбаҳои обӣ ва замин роҳ дода нашавад.

- дарахтоне, ки ба рафти сохтмон ҳалал мерасонанд, дар мувофиқа бо мақоми ваколатдори давлатӣ дар соҳаи ҳифзи муҳити зист бартараф карда шаванд;

- шинонидан ва кӯчонидани ниҳолон тибқи лоиҳа ва қоидаҳои агротехникӣ амалӣ карда шавад;

- корҳои техникӣ сохтмон тибқи риояи талаботҳои меёёрҳои экологӣ ва таъсири ҳадалимкон ба муҳити зист амалӣ карда шаванд;

- нақша чорабиниҳо оид ба ҳифзи муҳити зист таҳия ва бо тартиби муқараршуда таҳия гардида, бо мақоми ваколатдори давлатӣ дар соҳаи ҳифзи муҳити зист мувофиқа карда шавад;

- бо тартиби муқараршуда аз болои риояи талаботи чорабиниҳо дар баҳши ҳифзи муҳити зист назорати идоравӣ қорӣ карда шавад;

- партовҳои сохтмонӣ баъд аз анҷоми корҳои сохтмонӣ ба навҳо ҷудо карда шуда, дар мувофиқа бо мақоми ваколатдори давлатӣ дар соҳаи ҳифзи муҳити зист барои коркарди дуввумбора ё ин ки ба партовгоҳи расмӣ бароварда шавад;

- бо мақсади пешгирӣ намудани манбаҳои захираҳои обҳои рӯизаминӣ ва зеризаминӣ аз ифлосшавӣ чораҳои зарурӣ андешида шавад;

- ҳангоми аз ҳудуди иншооти сохтмонӣ берун рафтани техникаҳо ва воситаҳои нақлиётҳои боркаш тибқи қоидаи шустушӯӣ карда шуда, тозагии онҳо таъмин карда шаванд;

- нусхаи ҳулоаси мазкур ба Бахшҳои ҳифзи муҳити зисти ноҳияи Айнӣ ва шаҳри Панҷакент барои назорат пешниҳод карда шавад.

Назорат аз болои риояи қонунгузориҳои Ҷумҳурии Тоҷикистон ба Бахшҳои ҳифзи муҳити зисти ноҳияи Айнӣ ва шаҳри Панҷакент Душанбе гузошта шавад.

Экспертизаи давлатии экологии Кумитаи ҳифзи муҳити зисти назди Ҳукумати Ҷумҳурии Тоҷикистон Ҳисоботи тақмилдодашудаи «Арзёбии пешакии таъсиррасонӣ ба муҳити зист»-и лоиҳаи сохтмони хати интиқоли барқи 220 кВ зеристгоҳи «Айнӣ-Рӯдакӣ»-ро бо назардошти риояи қонунгузорӣ дар самти ҳифзи муҳити зист, риояи талаботи ҳулоаси мазкур ва иҷрои ҳатмии пешниҳодҳои зикршуда мувофиқа менамояд.

Эксперт

И. Шукуров



**COMMITTEE ON ENVIRONMENTAL PROTECTION  
UNDER THE GOVERNMENT OF THE REPUBLIC OF TAJIKISTAN  
STATE ENVIRONMENTAL EXPERTISE**

**Confirmed by:**  
**Head of State Environmental Expertise**  
**H. Mahmadulloev**

**CONCLUSION**  
**of State Environmental Expertise**  
*General information:*

1. *Facility name:* Construction of TL 220 kV from “Ayni-Rudaki” SS.
2. *Facility location:* Ayni region, Panjakent city.
3. *Submitted documents:* Request for receiving the state environmental expertise conclusion, the updated "Preliminary Environmental Impact Assessment".
4. *Request and submission of documents, the project of:* Open Stock Holding Company “Bargi Tojik”.
5. *Date of documents receipt:* 20.02.2017.

State Environmental Expertise of the Committee for Environmental Protection under the Government of the Republic of Tajikistan, has considered the updated report of the “preliminary state environmental impact assessment” on the Construction of 220 kV transmission line at the Ayni-Rudaki Substation, which was prepared by Fichtner and further reviewed with taking into account the actual environmental status.

According to the submitted documents, the length of the 220 kV transmission line is 95 km, 243 towers are planned to be assembled by this construction. This line connects “Ayni” and “Rudaki” Substations. The construction of these substations is located in Ayni region and Panjakent city. And also within the framework of this project it is planned to replace 1117 electric meters, to replace several transformers and to construct “Ayni” and “Rudaki” substations.

According to the botanical-geographical conditions, relief, geological structure, composition of flora and fauna, as well as the environmental stressors associated with the natural features, Ayni and Panjakent are related to Sughd and Zerafshan regions.

Zerafshan climate is relatively cool, the average annual air temperature is no higher than 10-11°C, and the rainy season is 400-700 mm per year. In the mountainous area of the district there are nodes of Zerafshan glaciations. Many lakes appeared due to the collapse of mountainous area, among which Iskanderkul and Large Lake are the largest. From the geology point of view, the mountainous landscape of Zerafshan River was formed from the polygenes and neogene



sediments. From the hydrology point of view, the reconstructed road is located on the river Zerafshan, in Pyanj.

The plant world mainly consists of single pine forests, semi-herbaceous large grasses, and mountain and steppe plants; from the wildlife of the highland and forest, snow leopards, mountain Siberian goats, wild boars, marmots and birds are most often found.

Ainy and Rudaki SS with a capacity of 220 kV are located in the territory of Ayni and Panjakent. According to the project, at the abovementioned substations, the modernization of electrical devices and transformers, construction and repair work are planned.

During the placement of electrical substations, the construction norms and requirements should be taken into account. Substations were concreted, for emergency flow in the transformer oil pools (concreted), could be used to hide from the top of the sand and gravel. Farming the special ponds and identified potential transformers, to be provided in the project when the possibilities of shedding of transformer oil (during accident) through the pipe to the oil storage tank.

During the construction of substations and transmission lines, there is likely to be an impact on various types of environmental components.

Probable impact on the environment:

- Physical presence of people and equipment;
- Emission of pollutants into the atmosphere and dust;
- Accumulation of construction, industrial and consumer waste;
- The impact of physical factors (noise, and vibration).

During the construction and implementation of the project, such situations should be taken into account:

- If possible, do not take house and land of population;
- Reduce the quantity of sites and premises which are knocked down;
- Protection of flora and fauna located on the territory of the project area;
- Protection of water resources;
- Security requirements.
- Compliance with the sanitary protection zone.

During the movement of vehicles and construction works, the following emissions to the atmosphere occur: dust, nitrogen dioxide, nitrogen oxide, benz (a) pyrene, dotted line, sulfur dioxide, aldehyde, carbohydrates C12-P19, and carbon dioxide.

In the area where the project will be implemented, the concentration of properties will have the following values:

- Dust 1.2mg / m<sup>3</sup>;





- Oxide nitrogen - 0.1 mg / m<sup>3</sup>;
- Anhydride sulfur - 0.1 mg / m<sup>3</sup>;
- Carbon dioxide - 1.5mg / m<sup>3</sup>

In the climatic characteristics of this region, there are both positive and negative factors that affect the level of air pollution.

At the same time, during the construction works appears construction wastes, their size is depending from the construction works scope. The composition of this waste consists of residues of asphalt concrete products, such as fragments, pipes, easily wireless, insulation waste. Construction waste was divided into types after the completion of construction work, in agreement with the authorized state environmental protection agency and sanitary and epidemiological to be removed from the construction site.

Also when the trucks and equipment leave the construction sites, dust forms, therefore, according to the rules, you must thoroughly wash the trucks and keep them clean.

During construction works, noise and vibration occur, which temporarily hamper the peace in the region. From this point of view, it is necessary to establish a certain schedule during construction, and use modern technical mechanisms.

According to the project, it is necessary to take such measures, which should be monitored for implementation of measures by local authorities for environmental protection:

- Recultivation of land plots, which constitute a violation of 220kV TLs during construction;
- Take the necessary measures to prevent environmental pollution and protect the cap causing of possible transformer failure and the introduction of lubricating oils;

In order to protect the population from the effects of electromagnetic waves, which arise as a result of OHL transmission, sanitary protection must be installed.

In accordance with the requirements of CC 245-71, the sanitary protection zone of the 220 kV OHL of the power transmission line - with a horizontal direction is determined from two sides of 16 meters, which should be taken into account in the implementation of the project. If the electromagnetic field exceeds the maximum allowable limit, security measures must be taken to ensure the protection of the population (residential buildings from the OHL-220 kV).

Accommodation of apartment houses and public buildings, all types of structures, transport organizations and oil points in the protective zone of the power transmission line and the electromagnetic field is prohibited.

In order to protect the environment, the following proposals are provided:

- During the project implementing, legislation requirements of the Republic of Tajikistan for the protection of the environment and construction norms and rules, sanitary norms and rules should be strictly observed;



- Administrative control over electric substations should be performed;
- According to the capacity of the substation, the sanitary protection line must be provided;
- During the accident, its consequences should be eliminated in a timely manner to avoid oil ingress into land and water resources.
- Trees that are obstructed during construction, in consultation with the authorized state body in the field of environmental protection, should be eliminated;
- Resettlement and planting of seedlings should be carried out in accordance with the project and agrotechnical rules;
- Technical construction works must be carried out in accordance with the requirements of environmental standards and as possible impact to the environment;
- planned measures on environmental protection was submitted in accordance with the established procedure, in agreement with the authorized state body in the field of environmental protection;
- According to established order over the activities requirements compliance in the field of environmental protection should be introduced;
- Construction wastes should be separated after completion of construction works and in agreement with the authorized state body in the field of environmental protection should be provided for reworking or should be moved to official waste place;
- To prevent pollution of ground and groundwater sources, take appropriate measures;
- During departure from the construction site, cargo vehicles must be cleaned of dirt and dust and kept clean;
- A copy of this report should be submitted to the environmental protection sector of Ayni and Panjakent for monitoring.
- Control over compliance with the legislation of the Republic of Tajikistan will be entrusted to sections on environmental protection of the Ayni and Panjakent and Dushanbe city.

The State Environmental Expertise of the Committee for Environmental Protection under the Government of Tajikistan coordinates the updated report on "Preliminary Environmental Impact Assessment" of the 220 kV transmission line construction project at the Ayni-Rudaki substation taking into account the enforcement of environmental legislation, compliance with the requirements of this Conclusions and mandatory implementation of these proposals.

Expert  
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