

SFG1722

Republic of Uzbekistan

UZBEKENERGO

Modernization and Upgrade of Transmission Substations

Environmental and Social Management Framework

Tashkent

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1. Project background and scope of the ESMF

1. *Project scope and objectives.* The project development objective is to increase the efficiency and reliability of electricity supply in the selected areas covered by the Project in Uzbekistan.

2. *Project background.* In the transmission sub-sector in Uzbekistan, there are about 75 HV (220-500 kV) electricity transmission substations. According to a conducted technical audit, 17 substations commissioned between 1947 and 1970 are fully worn out; and 35 between 1971 and 1985 are obsolete. The failures of substations cause unreliable and poor quality electricity supply, increased losses, and higher maintenance costs. The occurrence of electrical equipment failures has doubled in recent years from about 35 per year in 2001-2008 to about 76 per year in 2008-2013. As a result, it is estimated that UE has been losing approximately US\$24 million per year due to higher maintenance cost, and foregone revenues. In order to ensure efficient and reliable operation of the power system, UE has identified that 62 substations require modernization and replacement of electrical equipment. The proposed project will modernize part of the HV substations identified in need of replacement/rehabilitation.

3. *Project Components.* The proposed project consists of two components with the following estimated costs: (i) Electricity Transmission System Upgrade (US\$160 million); and (ii) Institutional Development, TA, and Project Implementation Support (US\$17 million).

Component 1: Electricity Transmission System Upgrade. This component will support rehabilitation, upgrade, and expansion of existing and priority substations (and associated lines) in major load centers. An indicative list includes 22 substations located in Andijan, Bukhara, Jizzakh, Kashkadarya, Navoiy, Surkhandarya, Samarkand, Fergana, Namangan, and Tashkent regions. Depending on the emerging conditions of the power system, the substations to be supported under the proposed project may change during project implementation. Technical requirements will be finalized by appraisal. Precise location for the installation of equipment within the substation site and/or the scope of accompanying works (e.g. electrical connections or busbar extensions, a control building, feeders for the dedicated outgoing lines, new transformer) will not be known until detailed engineering design work is undertaken by the contractor. All works are expected to occur within an existing secured substation perimeter. Proposed investments which might have some environmental impacts are the following: (a) replacement of different types of electrical equipment (transformers; circuit breakers; main cables; shunting reactors; excess voltage suppressors; outdoor switchgears, etc.; and (b) some civil works necessary for renovation of foundations for: new transformers; for oil collectors, oil drain and oil receivers; concrete tranches for electrical cables; and for replacing of several old and installing of new concrete pillars for circuit breakers.

Component 2: Institutional Development, Technical Assistance, and Project Implementation Support. This component will provide studies, capacity building, training, and project implementation support activities designed to support policy and regulatory reforms, institutional development, and further development of the energy sector. A provisional list of activities include: (i) design, procurement, and supervision; (ii) key sector studies in the areas

such as utility reforms and management, power system planning, least cost power development plan, cost of service, system operations, data management; and (iii) further strengthening of UE and the Project Management Unit (PMU)'s capacity, including planning, technical, fiduciary, project management, M&E, and other aspects.

4. *Potential environmental issues and project environmental category.* The proposed activities would generate some adverse impacts which would be minor, of limited duration, influence a relatively small area, and occur primarily during the construction phase. While replacing old transformers, there might be also some health and environmental impacts related to PCBs which represent Persistent Organic Pollutants. In accordance with the Bank's safeguard policies, the project is placed into the Bank's Category B which is applied to all proposed projects that have a potential environmental impact. As at this stage are not yet identified what concrete activities on selected electrical stations to be financed, the Bank requires that client has to prepare an Environment and Social Management Framework (ESMF) which should guide the EA process during the project implementation phase.

5. *Scope of the Environment and Social Management Framework.* Overall the main goal of the ESMF is to avoid, minimize or mitigate, potential negative environmental and related social impacts caused by implementation of the project. The ESMF has to ensure the identified subprojects are correctly assessed from environmental and social point of view and that a subproject-specific Environmental Management Plan is designed and implemented addressing site specific environmental impacts. Respectively, this ESMF outlines environmental assessment procedures and mitigation requirements for the subprojects which will be supported by the project. It provides details on National and WB EA rules and procedures, emphasizing existing differences and how they will be solved; potential impacts and main mitigation activities; details on the Environmental Management Plan Checklist to be prepared for all selected for modernization electrical substations; requirements for conducting monitoring and supervision activities as well as institutional responsibilities for EMPs implementation. In order avoid/minimize the PCBs risks before old transformers' dismantling it is necessary to conduct oil testing on these substances. For this purpose the ESMF provide necessary guidance on conducting transformer oil testing for identification of the PCBs.

2. EA policies, rules and procedures

2.1 National EA legal and institutional framework

6. *EA Legislation.* Relevant to EA laws and regulations include:

Law on Environmental Protection (1992), establishing a legal, economic and organizational framework for environment protection, ensuring sustainable development and defining principles including State Ecological Expertise (SEE);

Law on Ecological Expertise (2001) provides for mandatory expert assessment of impacts on the environment and human health, as well as a legal basis for conducting expert assessments; and,

Law on Ecological control (2013) regulates relations in the field of environmental control. The main objectives of environmental control are prevention, detection and suppression of violations of environmental regulations; monitoring of environmental situations that may lead to environmental pollution, unsustainable use of natural resources, endangering the life and health of citizens.

7. *EIA rules and procedures*: The EIA rules and procedures (known in the country as State Environmental Expertise (SEE)), i.e. preparation of or the review and approval (or rejection) of developments on environmental grounds, are regulated *Law on Ecological Expertise* (2000) and by Decree of the Cabinet of Ministers No 491.31.12.2001: “*On approval of the Regulation of the State Environmental Expertise*”, amended in 2009, in particular in terms of projects included in different environmental categories. According to the article 3 of the abovementioned law Ecological expertise is carried out in order to determine: (a) compliance of projected economic and other activities with environmental requirements in the stages preceding decision making on its implementation; (b) level of ecological danger planned or carried out business and other activities, which may have or had a negative impact on the condition of the environment and public health; and (c) adequacy and reasonableness of the measures provided for the protection of the environment and rational use of natural resources.

The Regulation stipulates 4 project environmental categories:

Category I – Corresponds to World Bank category A;

Category II – Corresponds to World Bank category B;

Category III – Corresponds to World Bank category B and “low” B;

Category IV - Corresponds to World Bank category “low” B of the Bank.

All other projects that are not specified in the list of different categories are considered as projects without environmental impacts and for them no need to pass State Ecological Expertise and get any environmental authorizations.

According to the paragraph 11 of the Regulation, evaluation stages of the environmental impact should include the following (depending on the type and nature of work):

a) Draft statement on environmental impacts which includes: (a) environmental conditions prior to the implementation of the planned activities, population of the territory, land development, analysis of the environment’s features; (b) situational plan showing existing recreational areas, settlements, irrigation, reclamation facilities, farmland, power lines, transport communications, water, gas pipelines and other information about the area; (c) envisaged major and minor objects, used technique, technology, natural resources, materials, raw materials, fuel, analysis of their impacts on the environment, environmental hazards of their products; (d) expected emissions, discharges, wastes, their negative impact on the environment and ways of neutralization; (e) warehousing, storage and disposal of wastes; (f) analysis of the alternatives of the proposed or existing activity and technological solutions from the perspective of environmental protection, taking into account the achievements of science, technology and best practices; (g) organizational, technical, technological solutions and activities, excluding the negative environmental impacts and mitigating the impact of the expertising object on the environment; (j) analysis of emergency situations (with an estimate of probability and scenario of the prevention of their negative impacts); and (i) forecast environmental changes and environmental impacts as a result of the implementation of the expertising object.

b) Statement on environmental impact which should include the following in addition what was in the draft statement on environmental impacts the following: (a) assessment of environmental problems of the chosen site on the results of engineering- geological

investigations, modeling and other necessary researches; (b) environmental analysis of technology applied to the issues identified on the site; (c) the results of the public hearings (if necessary); and (d) reasoned investigations of the nature-conservative measures to prevent the negative consequences of the expertising object.

c) Statement on Environmental Consequences: (a) correction of the design decisions and other taken measures on the consideration of the DSEI by the bodies of Goskompriroda, as well as on the proposals made at the public hearings; (b) environmental regulations governing the activities of the expertising object; (c) requirements for the organization of work and the implementation of measures for environmental guiding of the operation of the object; and (d) main conclusions about the possibility of business activities.

8. *Project environmental Category per Uzbek EA legislation.* Modernization of existing electrical substations is not directly specified in any of lists of projects with different Categories. The revised version of list of project with different environmental categories approved in 2009 includes under Category III a new types of projects dealing with “assembling; repairing of electrical equipment” which was considered by Tashkent oblast SEE as the basis for giving to the electrical stations modernization this Category. Thus for 4 selected electrical stations Tashkent oblast SEE have reviewed and approved the “Draft Statement on Environmental Impacts”, requiring also at the commissioning stage to present to the SEE the “Declaration of Environmental Impacts”.

9. *State Organizations Responsible for Environmental Assessment and Management:* the State Committee for Nature Protection (*Goskompriroda*)¹ is the primary environmental regulatory agency, reports directly to the *Oliy Majlis* (Parliament), and is responsible, at central, oblast and raion levels, for coordinating the environmental and natural resources actions of other national government bodies. Goskompriroda also issues permits for pollution discharge emissions and may prohibit projects and construction works that do not comply with (international) legislation. In Terms of EA this body has a specialized unit on State Ecological Expertise (*Glavgosexpertisa*) at central and oblast level. The SEE for Category I and II is the main responsibility of the Central SEE unit while for Category III and IV – for oblast level of SEE.

10. *Public involvement:* The National EIA Regulation prescribes the project beneficiary is responsible for conducting at least one public consultation(s) for category I and II projects and no requirements for public consultation or EIA disclosure for Category III and IV projects. These responsibilities include: (a) public notification, (b) conducting the consultation and (c) recording the significant findings, conclusions, recommendations and next steps. The purpose of public consultation(s) is (are) to solicit views of groups or individuals who may be affected by the Sub-project regarding their environmental concerns. Affected groups or people should identify the environmental issues they believe to be significant. Any significant issues, established during the public consultation, should be incorporated into the EA document.

2.2 World Bank EA rules and procedures

¹ In English translations also called ‘State Committee for Nature Conservation’, ‘State Committee for Natural Resources’, ‘Committee of Nature Control’, etc.

11. *Main provisions of the EA.* Per the WB safeguards policies Environmental Assessment (EA) is a process of the pre-implementation stage which evaluates a project’s potential environmental risks and impacts in its area of influence; examines project alternatives; identifies ways of improving project selection, siting, planning, design, and implementation by preventing, minimizing, mitigating, or compensating for adverse environmental impacts and enhancing positive impacts; and includes the process of mitigating and managing adverse environmental impacts throughout project implementation. EA is mandatory for projects, which may potentially have negative impacts. Furthermore, a well-organized public participation is mandatory in all the stages of the process. In the case when the projects activities to be financed are not identified at the design stage, the Bank applies an Environmental Management Framework (EMF) which should: provide details on procedures, criteria and responsibilities for subproject screening, preparing, implementing and monitoring of subproject specific EIAs. The EMF should also include Environmental Guidelines for proposed subprojects, containing an assessment of potential impacts and generic mitigation measures to be undertaken for identified subprojects in all stages - from identification and selection, through the design and implementation phase, to the monitoring and evaluation of results.

12. *World Bank’s Safeguard Policies and their relevance to project.* There are key 10 Environmental and Social World Bank Safeguard Policies which are intended to ensure that potentially adverse environmental and social consequences of projects financed by Bank are identified, minimized and mitigated. World Bank’s Safeguard Policies and their relevance to the project are presented in the *Table 1* below.

Table 1. World Bank’s Safeguard Policies and their relevance to project

Safeguard Policies	Relevance
<p><i>Environmental Assessment (OP/BP 4.01)</i> This Policy aims to ensure that projects proposed for Bank financing are environmentally and socially sound and sustainable; to inform decision makers of the nature of environmental and social risks; to increase transparency and participation of stakeholders in the decision-making process</p>	<p>Yes. This OP is triggered as the project will generate some adverse environmental and social impacts related to: soil degradation; water and air pollution; labor safety issues and health impacts, etc. It is also expected these potential impacts will be mostly temporary by nature and site specific. To address these impacts the client prepared the ESMFs which specify the rules and procedures for subprojects Environmental Assessment as well as advises for testing of transformer oil on PCBs.</p>
<p><i>Natural Habitats (OP/BP 4.04)</i> This Policy aims to safeguard natural habitats and their biodiversity; avoid significant conversion or degradation of critical natural habitats, and to ensure sustainability of services and products which natural habitats provide to human society</p>	<p>No. This OP is not triggered as all activities will be implemented on areas of existing electrical stations.</p>
<p><i>Forestry (OP/BP 4.36)</i> This Policy is to ensure that forests are managed in a sustainable manner; significant areas of forest are not encroached upon; the</p>	<p>No. This OP is not triggered as all activities will be implemented on areas of existing electrical stations.</p>

Safeguard Policies	Relevance
rights of communities to use their traditional forest areas in a sustainable manner are not compromised	
<p><i>Pest Management (OP 4.09).</i> This policy is to ensure pest management activities follow an Integrated Pest Management (IPM) approach, to minimize environmental and health hazards due to pesticide use, and to contribute to developing national capacity to implement IPM, and to regulate and monitor the distribution and use of pesticides</p>	N/A
<p><i>Physical Cultural Resources (OP/BP 4.11)</i> This policy is to ensure that: Physical Cultural Resources (PCR) are identified and protected in World Bank financed projects; national laws governing the protection of physical cultural property are complied with; PCR includes archaeological and historical sites, historic urban areas, sacred sites, graveyards, burial sites, unique natural values; implemented as an element of the Environmental Assessment</p>	No. This OP is not triggered as all activities will be implemented on areas of existing electrical stations.
<p><i>Indigenous Peoples (OP/BP 4.10)</i> IP – distinct, vulnerable, social and cultural group attached to geographically distinct habitats or historical territories, with separate culture than the project area, and usually different language. The Policy aims to foster full respect for human rights, economies, and cultures of IP, and to avoid adverse effects on IP during the project development.</p>	No. This Policy is not applicable under the Program in the Central Asia countries
<p><i>Involuntary Resettlement (OP/BP 4.12)</i> This policy aims to minimize displacement; treat resettlement as a development program; provide affected people with opportunities for participation; assist displaced persons in their efforts to improve their incomes and standards of living, or at least to restore them; assist displaced people regardless of legality of tenure; pay compensation for affected assets at replacement cost; the OP Annexes include descriptions of Resettlement Plans and Resettlement Policy Frameworks</p>	No. This OP is not triggered as all activities will be implemented on well fenced areas of existing electrical stations and no need for land acquisition.
<p><i>Safety of Dams (OP/BP 4.37)</i> This Policy is to ensure due consideration is given to the safety of dams in projects involving construction of new dams, or that may be affected by the safety or performance of an existing dam or dams under construction; important considerations are dam height & reservoir capacity</p>	N/A
<p><i>Projects on International Waterways (OP/BP 7.50)</i> The Policy aims to ensure that projects will neither affect the efficient utilization and protection of international waterways, nor adversely affect relations between the Bank and its Borrowers and between riparian states</p>	N/A
<p><i>Disputed Areas (OP/BP 7.60)</i> The Bank may support a project in a disputed area if governments concerned agree that, pending the settlement of the dispute, the project proposed for one country should go forward without prejudice to the claims of the other country</p>	N/A
<p><i>Disclosure Policy (BP 17.50)</i> supports decision making by the borrower and Bank by allowing the public access to information on environmental and social aspects of projects and has specific requirements for disclosure</p>	Yes. The ESMF will be disclosed and consulted in the country before project appraisal and will be also disclosed in the WB

Safeguard Policies	Relevance
	Infoshop.

13. *Environmental screening.* The Bank undertakes environmental screening of each proposed project to determine the appropriate extent and type of EA. The Bank classifies the proposed project into one of four categories, depending on the type, location, sensitivity, and scale of the project and the nature and magnitude of its potential environmental impacts.

14. *World Bank Public Consultation and Disclosure requirements.* For all Category A and B projects proposed for WB financing, during the EA process, the borrower consults all involved parties, including project-affected groups and local nongovernmental organizations (NGOs) about the project's environmental aspects and takes their views into account. For meaningful consultations between the borrower and project-affected groups and local NGOs, the borrower provides relevant material in a timely manner prior to consultation and in a form and language that are understandable and accessible to the groups being consulted. Any Category B EIA report for a project proposed for WB financing is made available to project-affected groups and local NGOs. Public availability in the borrowing country and official receipt by the Bank of Category A and B EA report for projects proposed for WB funding, are prerequisites to Bank appraisal of these projects.

2.3 Comparison of National Legislation and World Bank Environment Assessment requirements

15. *Overview.* While the basic provisions of the National EA rules and procedures are to some extent similar to the WB requirements, there are several important differences. These differences are related primarily to the following: (a) project environmental screening categories; (b) Environmental Management Plan; and (c) EA disclosure and public consultation.

16. *Differences in screening categories.* The National EIA Regulation stipulates 4 project categories: Category I (High Risk), Category II (Middle Risk), Category III (Low Risk), and Category IV (Local Impact). As specified above, while in the case of Category I and II they correspond to WB Category A and B, in the case of Category III some of the projects might correspond to WB Category “low” B. The differences between project categories can be identified in the case of Category IV per national classification when such projects are not subject to EA but have to prepare a short memo with the Statement of Environmental impacts. To this category are qualified also small scale construction of buildings or those which might involve hazardous materials such as asbestos or OCBs. Such projects per WB classification should be qualified as Category B and for them it would be necessary to be prepare an EMP. Taking this into consideration and knowing within the project such activities are proposed, the project is qualified as Category B and a special EMP should be prepared for all selected for rehabilitation electrical stations (as proposed in the ESMF there should be prepared an EMP Checklist).

17. *Differences concerning EMP.* While the national legislation requires for all projects with potential environmental impacts relevant mitigation measures and monitoring activities to be implemented, it doesn't require a special EMP which should specify, along with the proposed mitigation activities a monitoring plan and reporting requirements, institutional arrangements

for EMPs implementation as well as doesn't require needed capacity building activities and necessary expenses in this regard. Taking this into account the project will require the borrower to prepare not simply a set of mitigation measures but an EMP for all involved electrical stations to comply with these World Bank requirements.

18. *Differences with regard to disclosure and public consultation.* As specified above, according to national legislation, the EA disclosure and public consultation is mandatory only for category I and II. At the same time, per WB Ops, the borrower is responsible for conducting at least one public consultation also for all Category B projects. Taking this into account the borrower have for all Category B project to disclose and organize EA public consultations, involving in the discussion all project-affected groups and local NGOs.

3. Project Potential Environmental Impacts

19. *Potential adverse environmental impacts.* The main potential adverse are the following:

Dust and noise: These impacts occur during the civil work activities and in particular during the earthmoving, cranes operations, during electrical equipment dismantling or installation.

Waste handling and oil spill response: Routine civil works and welding operations will generate solid and liquid wastes. Also minor spills of fuel and other materials are likely to occur. Respectively, improper handling of on-site wastes and response to spills could result in adverse effects on the local environment including groundwater.

Asbestos: at this stage it is not known if asbestos has been used in premises located at the electrical stations to be proposed for rehabilitation, but taking into account its large usage in the former USSR it is possible to find such material used as roofing material. In the case of inappropriate handling of asbestos this material might be a real health concern for the construction workers, and the general public in the vicinity of the rehabilitated premises in particular when it is inhaled;

Labor safety during civil works as well as during electrical equipment dismantling or installation and during welding operations. The health risks and risks of various accidents are common for these activities that's why it is strictly imperative to obey the existing national regulations on conducting these activities.

Health impacts of the PCBs. PCB (Polychlorinated Biphenyl) is one of the leading members in the group of POPs and has serious health and environmental effects, which can include carcinogenicity, reproductive impairment, immune system changes and also the loss of biological diversity. Human exposure to PCBs may occur through ingestion of contaminated food and/or water, inhalation of PCB vapors in the air and through direct dermal contact. After absorption, PCBs circulate in the blood throughout the body and are deposited in fatty tissues and a variety of organs, including liver, kidneys, lungs, adrenal glands, brain, heart and skin. Although generally immediate risks posed by PCBs are very rare, the PCBs can bioaccumulate in the human body and are only excreted to a very small extent even over many years. Therefore extensive safety measures must always be taken when testing the transformer oils on PCBs.

All these impacts can be effectively dealt with, if they are recognized through the EA process and reflected in an EMP in the design phase in a form of special mitigation measures.

20. *Potential social and economic impacts.* The project will also bring positive economic and social impacts as the proposed activities would increase efficiency and reliability of electricity supply for the population and economy of the large area of the country.

4. Proposed mitigation measures

4.1 Ensuring labor safety during transformer oil testing on PCBs

21. *PCBs properties and main requirements to their elimination according to Stockholm Convention.* Polychlorinated Biphenyls (PCBs) are colorless liquids and a class of chlorinated organic compounds formed by the addition of chlorine to biphenyl. From the technical point of view, the characteristics of PCBs are quite advantageous, thus they found a wide range of applications such as dielectric, cooling and hydraulic fluids as well as fluids for thermal transmission in transformers, capacitors, hydraulic machines etc. According to the Stockholm Convention it is forbidden: (a) to produce, import and trade PCBs; (b) re-use and process PCB waste; and (c) re-fill PCB equipment. Furthermore, the existing PCBs and all equipment contaminated with PCBs have to be eliminated in an environmentally sound manner without producing hazards for humans or the environment until 2025. Currently the Republic of Uzbekistan is not party to this Convention and no legislation which regulates these substances.

22. *Determination of PCBs in transformer oil.* Although during the soviet time there have been produced some amount of the PCBs, based on the inventories done in other countries (for example in Moldova the conducted full inventory of PCBs that involved all electrical transformers shows only less than 1% of oil is contaminated with PCBs) as well as based on some conducted PCBs testing on about UzbekeNERGO 30 transformers (within WB Talimarjan electricity transmission and Energy Efficiency projects) it is possible to qualify the probability of finding PCBs as very low. Nevertheless, to make sure the transformer oils at the electrical stations that would be included in the project are not contaminated with PCBs, it was decided to conduct randomly their testing which would cover about 20% of transformers –on 6 stations, involving two transformers.

23. *Proposed methodology of identifying PCBs.* It is proposed two options while testing transformer oils on PCBs:

(a) *Visual Checks to Determine the PCB Content.* Some former USSR manufacturers identified the dielectric fluid in the type or serial number specifying that on plates on the transformers. These identification plates usually state that the transformer does contain PYROCLOR, ASKAREL, SOVOL or a specific serial no. etc. So, this is the first step to identify the PCBs in transformer oil. In the case if the type of oil is not specified then it is necessary to apply the second option.

(b) *Testing on PCBs.* This would require applying *non-specific methods* to identify classes of compounds such as chlorinated hydrocarbons, to which PCBs belong. These methods include PCB field screening tests like CLOR-N-OIL and CLOR-N-SOIL test kits as well as the L2000 DX field analyzer or *applying the Beilstein Method*. This method is based on identification of the presence of Chlorine in the transformer oils. For that purpose a piece of copper oxide fastened to a platinum wire is moistened with the oil to be tested and held in the outer zone of a

Bunsen flame. As soon as the carbon has burned away, the presence of chlorine is indicated by the greenish or greenish-blue colour of the flame. This colour is produced by volatilizing copper chloride and its intensity and duration depends on the amount of chlorine present. As there is a risk that highly toxic dioxins are unintentionally formed and released during this identification, this test may only be performed in a laboratory by experienced chemists. As Ubbekenergo up to know has used this method previously and its staff is well aware about this method, the PCBs testing will be done based on the further application of this method which is also recommended by the UNEP "Guidelines for the identification of PCBs and materials containing PCBs" "Chlorine presence test".

24. *Safety Rules while PCBs testing.* Access to the potential PCB contaminated equipment in terms of high voltage electrical equipment should be done according to the "Rules for technical usage of electrical equipment" (approved by the Chief of Electrical Inspection of Uzbekistan No. 207 from May 21, 2004). It is necessary to prepare a sampling box that contains basic equipment for sampling activities. This ensures access to essential equipment immediately when required. For that purpose are used only glass bottles which should must be absolutely clean with the capacity of about 20-30 ml. In order to prevent the skin from coming into contact with PCBs, one-way protective gloves must be worn. The eyes must be protected against possible oil splashes by wearing goggles. The sample can be taken by using the drain tap, which usually is at the bottom of the transformer. If a transformer has been disconnected from power for over 72 hours the sample should generally be taken from the bottom, as PCB sinks to the lower level because of its higher density. Sometimes the gasket gets damaged when the drain tap is opened. It is therefore advisable to always have a spare gasket ready. Alternatively transformers can be sampled via the oil filling cap by using a hand pump (consider: a new hand pump must be used for each transformer). Oil samples from the expansion receptacle cannot always be regarded as representative, because the oil does not circulate and thus it is not really mixed.

25. *Steps in PCBs testing.* The following steps must be followed when sampling a transformer:

- Place a drip tray under the drain tap,
- Label the sample bottle with the same serial number as on the inventory form,
- Drain off the required amount of oil into the sampling bottle – quantity depending on the intended analysis, and,
- Carefully retighten the seal.
- Then affix a label on the transformer with the same serial number as on the inventory form and sample bottle.

26. *Testing of Phased Out and Drained Transformers.* Even if a device has been drained, there should be still be some oil present in the passive part of the transformer due to the leaching in the days and week after the draining. Depending on the size of the transformer, the leaching from the solid parts of the device (wood, insulation paper etc.) can leave a few liters of oil at the bottom of the transformer. However, usually there is not enough oil to sample it via the drain tap, as the oil layer is deeper than the valve. In such cases, the device needs to be sampled through an opening in the top. Stiff tubes (e.g. glass or PE) can be used to take a sample of the oil at the bottom of the transformer. The PCB results obtained from drained transformers could be higher than the original contamination in the transformer. This is due to the leaching effect from the core and windings into only a limited volume of oil. If there is no

oil at all left in the device, solid materials from the active part of the transformer could to be sampled and analyzed (wood or insulation paper). However, such analysis can only be performed in a laboratory by gas chromatography. Due to practical reasons it might be advisable to label such drained transformers as PCB-contaminated and note it accordingly in the physical site inspection report (respectively inventory form) and leave it for future investigations.

26. *Recommended actions in the case of contaminated with PCBs transformers.* In the case the PCBs have been founded in transformer oils Uzbekenergo has to follow as prescribed in the “Guidebook on Environmental Sound PCB Management in Electrical Equipment” (prepared under Moldova POPs Stockpiles Sustainable Management and Destruction project) which is based on best international practice in this regard and label the polluted equipment, keeping used oil and contaminated transformers in the tanks in a guarded facility, until when the proper utilization/disposal measures will be in place.

4.2 Overview of mitigation measures during civil works, electrical equipment dismantling or installation

27. *Organizational measures.* Before starting civil activities it is necessary to inform the local construction and environment inspectorates and communities about upcoming activities in the media and/or at publicly accessible sites (including the site of the works). Furthermore, it is necessary to have in place all legally required permits. All works should be carried out in a safe and disciplined manner designed to minimize impacts on neighboring residents and environment. Construction workers should be properly dressed, having when necessary respirators and safety glasses, harnesses and safety boots.

28. *Protection of air quality and dust minimization.* During rehabilitation activities it is necessary to use debris-chutes above the first floor and to keep demolition debris in a controlled area, spraying with water mist to reduce debris dust. It is also necessary to suppress dust during pneumatic drilling/wall destruction by ongoing water spraying and/or installing dust screen enclosures at site. It is strictly prohibited burning of construction/waste material at the site. For the transportation of any other dusty material to the rehabilitation site watering or covering of the cargo should be implemented. Reduction of dust on rehabilitation site during the dry season of the year can be accomplished by watering the ground surface. Workers that perform the works should be vested with protective clothes and respirators.

29. *Noise reduction.* Before beginning of any of the work it is recommended to inform all potentially affected parties on the rehabilitation activities. The construction equipment and machinery used should be calibrated according to the Noise Standards.

30. *Construction waste and spills.* A general requirement is that the existing building elements to be rehabilitated (walls, ground cement slabs etc.) should be carefully rehabilitated and the construction waste should be sorted and removed in an organized way and disposed in on authorized land fields. Wastes, wherever possible, should be minimized, separated and handled accordingly. Open burning and illegal dumping of any waste is strictly prohibited.

31. *Temporary storage of material (including hazardous materials).* Stockpiling of construction material should be avoided if possible. If not, construction material should be

stored on the construction site, and protected from weathering. Hazardous materials like paints, oils, and others should be kept on impermeable surface, and adsorbents like sand or sawdust should be kept for handling small spillage.

32. *Asbestos*. The general approach while handling this material is that constructors should avoid crushing/destruction of asbestos plates from the roofs, burying it in a locked location, to ensure people do not remove them for personal use. Also, constructors should avoid releasing asbestos fibers into the air from being crushed. It is also imperative that while working with asbestos plates workers wear special clothing, gloves and respirators. The use of ACM will be not allowed within the selected subprojects. Used asbestos plates have to be buried at an authorized landfill.

33. *Ensuring workers health and safety during civil works*. The personal should have protective equipment, rubber gloves, respirators, as well as helmets. Prior to starting civil works, all workers have to pass labor safety training course. In addition, it is necessary to carry out the routine inspection of the machinery and equipment for the purpose of trouble shooting and observance of the time of repair, training and instruction of the workers engaged in maintenance of the machinery, tools and equipment on safe methods and techniques of work. It is prohibited to distribute faulty or unchecked tools for work performance as well as to leave off-hand mechanical tools connected to the electrical supply network or compressed air pipelines; to pull up and bend the cables and air hose pipes; to lay cables and hose pipes with their intersection by wire ropes, electric cables, to handle the rotating elements of power driven hand tools.

34. *Labor safety during use of cranes and earthmoving machines, welding operations as well as during dismantling or installing electrical equipment*. It is imperative to obey the existing national regulations on conducting these activities. All these activities and especially in the case of construction/rehabilitation of operation of electrical stations are well regulated in the national legislation (part of them remains from the USSR time) and are provided in a series of Regulations, Technical Norms, Instructions and Guidebooks. The table below specifies most important of them that have been designed during the USSR time or currently in Russian Federation which are used also in the Republic of Uzbekistan and are available in the Internet. Most important requirements in that regard are specified in the *Annex 1* below in the proposed mitigation measures of the EMP Checklist.

Table 2. Labor safety documents with regard to various activities that would be undertaken while modernizing electrical stations.

<i>Document Code</i>	<i>Title of the document</i>
ВСН-205-84/ММСС СССР	Инструкция по проектированию электроустановок СА. ТП Источник: http://www.gosthelp.ru/text/RM1417705Instrukciyapomon.html
ГОСТ 12.1.030-81 ССБТ.	Электробезопасность. Защитное заземление, зануление Источник: http://www.gosthelp.ru/text/RM1417705Instrukciyapomon.html
ГОСТ 12.2.007.0-75	Изделия электротехнические. Общие требования безопасности Источник: http://www.gosthelp.ru/text/RM1417705Instrukciyapomon.html
ТОИ Р-15-024-97	Типовая инструкция по охране труда для машинистов-крановщиков кранов всех типов. Источник: http://www.znaytovar.ru/gost/2/TOI_R1502497_Tipovaya_instrukc.html
PM 14-177-05	Инструкция по монтажу электрических проводов систем автоматизации. Часть 1. Опорные, несущие и защитные конструкции

ТО 56947007-29.180.01.048-2010.	Инструкция по эксплуатации трансформаторов
ВСН 342-75	Инструкция по монтажу силовых трансформаторов напряжением до 110 кВ включительно. Источник: http://www.znaytovar.ru/gost/2/VSN_34275_Instrukciya_po_monta.html
	Правила техники безопасности при эксплуатации электроустановок потребителей. УТВЕРЖДЕНЫ приказом начальника Государственной инспекции «Узгосэнергонадзор» от 21 мая 2004 года № 207
	Инструкция по монтажу и эксплуатации сухих трансформаторов типа ТТА-RES - http://www.energo-esco.ru/upload/nublvoonis.pdf
	Инструкция по охране труда при монтаже распределительных устройств, щитов, электрических машин, трансформаторов- http://xn---8sbnaarbiefdksmiphlmncm1d9b0i.xn--p1ai/instrukcii-po-ohrane-truda/250-montag-raspredilitelnyh-ustroistv.html
	Инструкция по мерам пожарной безопасности при производстве электросварочных работ - http://xn---8sbnaarbiefdksmiphlmncm1d9b0i.xn--p1ai/instrukcii-po-ohrane-truda/260-tb-pri-proizvodstve-elsvarochnih-rabot.html ((ГОСТ 12.1.019 измен. 01.8 6).
	Инструкция по охране труда при монтаже трансформаторных подстанций - http://xn---8sbnaarbiefdksmiphlmncm1d9b0i.xn--p1ai/instrukcii-po-ohrane-truda/249-instrukciya-pri-montage-transformatornyh-podstanciy.html

5. Subprojects EA and Environment Management Plan Checklist

35. *EA stages.* Taking into account the EA requirements specified in the National Legislation and the fact the project is qualified as Category III, as well as the WB OPs, the EA process for selected electrical stations would involve three steps: (a) based on the preliminary project description prepare the Statement of the draft Environmental Impacts which should be presented to the SEE for its review and approval; (b) based on the detailed project design prepare the EMP for the project implementation phase (the description of the EMP is presented below); and (c) once the project has been implemented and before its commissioning – prepare the Statement on Environmental Consequences.

36. *Draft Statement of Environmental Impacts.* This document should be prepared by Uzbekenergo and/or by a consultant hired on its behalf. It should specify a large spectrum of environmental issues, based on the technical and economic substantiation of the project and in particular the following: (a) environmental, social and economic baseline; (b) situational plan showing existing recreational areas, settlements, irrigation, reclamation facilities, farmland, power lines, transport communications, water, gas pipelines and other information about the area; (c) description of project activities and used technologies; (d) expected emissions, discharges, wastes, their negative impact on the environment and ways of neutralization; (e) warehousing, storage and disposal of wastes; (f) analysis of the alternatives of the proposed or existing activity and technological solutions from the perspective of environmental protection, taking into account the achievements of science, technology and best practices; (g) organizational, technical, technological solutions and activities, excluding the negative environmental impacts and mitigating the impact of the expertising object on the environment; (j) analysis of emergency situations; and (i) forecast environmental changes and environmental impacts as a result of the implementation of the expertising object. The document has to be reviewed and approved by the oblast SEE which confirms the project Category and specifies the main issues on what the project beneficiary has to be focused during the next steps of the EA process.

37. *The scope and objective of an EMP.* Preparing an EMP is the next step in the EA process. Similarly this document can be prepared by Uzbekenergo or by a local consultant. As mentioned above such document is not required by National Legislation, but is considered by the WB a key element of the EA process as it presents in a concise and very clear format both mitigation measures and monitoring activities and details on their implementation. Also it is considered as a mandatory document which should be followed during the project implementation. An EMP consists of the set of mitigation, monitoring, and institutional responsibility measures to be taken during implementation and operation to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels. As the project would involve typical small scale rehabilitation activities it is proposed to be used a generic EMP checklist-type format (“EMP Checklist”), developed by the World Bank to provide “pragmatic good practice” and designed to be user friendly and compatible with safeguard requirements (see it presented in the Annex 1). The document cover typical avoidance, preventive and mitigation approaches to common civil works contracts and dismantling or installing electrical equipment with localized impacts. It may be drafted/adjusted using the details of the environmental impacts identified during the first stage of the subproject EA.

38. *EMP Checklist structure.* The EMP Checklist has three sections: (a) *Part 1* constitutes a descriptive part (“site passport”) that describes the project specifics in terms of physical location, the project description and list of permitting or notification procedures with reference to relevant regulations. Attachments for additional information can be supplemented if needed; (b) *Part 2* includes the environmental and social screening in a simple Yes/No EMS format as well as specifies mitigation measures; and (c) *Part 3* is a monitoring plan for activities carried out during the rehabilitation activities.

39. *EMP disclosure.* As the proposed activities will be implemented on existing, well fenced electrical stations which usually are located outside of the settlements or which have clear designed sanitary zone of 100 meters, although there is no need for a special public hearing of the EMP, the project beneficiary should provide information to all interested parties about the civil works and electrical stations renovation activities by installing a notice plate placed at the rehabilitation. Furthermore, other specific information related to the project activities and EA should be also publicly available on-line on the project or Uzbekenergo website. Based on that the public consultation can be done virtually receiving relevant questions/proposals on-line and taking them into consideration while finalizing the substations EMPs.

40. *Integration of the EMP into project documents.* The EMP provisions would be used for the following: (a) inclusion of the EMP requirements in the Project Implementation Manual; (b) inclusion of Environmental requirements in construction contracts for individual subprojects, both into specifications and bills of quantities, and the Contractors will be required to include the cost in their financial bids (this might be done by attaching to the contracts part 2 and 3 of the EMPs); (c) highlighting of EMP follow-up responsibility within the PIU; and (d) monitoring and evaluation of mitigation/avoidance measures specified in the EMPs.

41. *Statement on Environmental Consequences.* After commissioning and before the electrical station operation Uzbekenergo and/or on its behalf a hired consultant will prepare this document which should reflect the following issues: (a) correction of the design decisions and other taken measures on the consideration of the SEE decisions, as well as on the proposals

made at the public hearings; (b) environmental regulations governing the electrical stations operation; (c) implementing arrangements for environmental protection measures and monitoring activities; (d) the implementation of measures for environmental guiding of the operation of the object; and (d) conclusions about the possibility of business activities. This document is submitted to the SEE for review and approval.

6. Subprojects Supervision and Monitoring

42. *Environmental monitoring basic requirements.* Environmental monitoring during sub-projects implementation has to provide information about key environmental aspects of the sub-project, particularly its environmental impacts and the effectiveness of taken mitigation measures. Such information enables the implementing agency to evaluate the success of mitigation measures as part of project supervision, and allows corrective action(s) to be implemented in a timely manner, when needed. Part 3 of the EMP Checklist identifies monitoring objectives and specifies the types of monitoring, and their link to impacts and mitigation measures along with specific description, and technical details of monitoring measures, including the parameters to be measured, methods to be used, frequency of measurements.

43. *Monitoring responsibilities.* During the sub-project's implementation, Uzbekenergo PIU would perform regular supervisions of the sites to confirm compliance with EMP requirements. Separately, World Bank experts will also carry out annual site specific visits to review compliance. In the case of non-compliance, the PIU would investigate the nature and reason(s) for non-compliance, and a decision would have to be made on what is needed to bring a sub-project into compliance, or whether financing should be suspended.

44. *Reporting.* The status of compliance with agreed environmental mitigation measures is to be reported by contractors to the PIU and then to the Bank by the PIU in their regular (semi-annual) progress reports. Also, the PIU makes available information on monitoring of environmental management activities and mitigation measures in its routine reporting on sub-project implementation to the World Bank and during periodic Bank implementation support visits.

7. Implementing arrangements

45. *Major responsibilities with regard to project implementation and EA.* The overall responsibility of the project implementation and of appropriate procedures and principles regarding the environmental assessment, monitoring etc., lies with the Uzbekenergo which will be the implementing agency of the project and which currently implements two other WB projects - Talimarjan Transmission and Advanced Electricity Metering Projects. Its EA capacity based on these two projects has been qualified as satisfactory.

46. *Project Implementation Unit major responsibilities.* The day to day project activities will be the major responsibility of the PIU which will be also responsible for ensuring that project activities are being assessed from an environmental point of view and that EMPs are adequately implemented. The main EA PIU duties are as follows: (a) coordination of environmental and EA related issues; (b) based on subproject design preparing EMP Checklist for all selected electrical stations; (c) monitoring environmental impacts within the overall monitoring of the sub-projects EMP implementation; (d) communicating with EIA competent

authorities (MoEn, SEI); and (e) reporting on EMPs implementation.

44. *PIU Safeguards Specialist.* For the purpose of implementing environmental safeguards a Safeguards Specialist (SS) will be hired by the PIU. The SS's main responsibility will be to coordinate all Environmental Assessment activities and ensure adequate implementation of EMPs requirements. Its role will be to ensure the main duties specified above in point 38 are efficiently implemented. One of his most important task would be to selectively visit sub-projects, and ensure proper monitoring of EMPs implementation. To strengthen the SS capacity the WB Environmental Specialist will provide him/her on the job training on implementing environmental safeguards.

8. ESMF Disclosure and Public consultation

45. *EMF disclosure.* Uzbekenergo has disseminated the draft summary of the ESMF to its relevant departments and to other interested parties for review and comments, also posting (on December 31, 2015) it for wide public on its web site (<http://www.uzbekenergo.uz/uz/>) in Russian language. Additionally, Uzbekenergo has announced about the availability of the document for all interested parties and about the timing and venue for the ESMF public consultations.

46. *ESMF consultations.* The draft ESMF was consulted with all key stakeholders. On January 19, 2016 Uzbekenergo conducted a public consultation meeting on the document (see minutes of the consultation in the Annex 2 and several views from the meeting in the Annex 3). The meeting concluded that the draft ESMF document covers practically all potential impacts and possible mitigation measures along with clear procedures for monitoring and implementing arrangements. The draft document was revised after the meeting, taking into account several suggestions made during the consultation. The final version of the ESMF (Russian translation) and its English version will be posted on the Uzbekenergo website and submitted to the World Bank for its disclosure in Infoshop. The ESMF will be used by the PIU during the project implementation.

Annex 1. Draft format for EMP Checklist for modernization of electrical stations

PART 1: INSTITUTIONAL & ADMINISTRATIVE				
Country				
Project title				
Scope of project and activity				
Institutional arrangements (Name and contacts)	WB (Project Team Leader)	Project Management	Local Counterpart and/or Recipient	
Implementation arrangements (Name and contacts)	Safeguard Supervision	Local Counterpart Supervision	Local Inspectorate Supervision	Contactor
SITE DESCRIPTION				
Name of site				
Describe site location			Attachment 1: Site Map []Y [] N	
Who owns the land?				
Geographic description				
LEGISLATION				
Identify national & local legislation & permits that apply to project activity				
PUBLIC CONSULTATION				
Identify when / where the EMP has been disclosed and the results of the virtual public consultation				
INSTITUTIONAL CAPACITY BUILDING				
Will there be any capacity building?	[] N or [] Y if Yes, Attachment 2 includes the capacity building program			

PART 2: ENVIRONMENTAL /SOCIAL SCREENING		
ACTIVITY	ENVIRONMENTAL ISSUE/ PARAMETER	MITIGATION MEASURES CHECKLIST
A. Contractor mobilization (General Conditions)	Notification and Worker Safety	<ul style="list-style-type: none"> • The local construction and environment inspectorates and communities have been notified of upcoming activities • The public has been notified of the works through appropriate notification in the media and/or at publicly accessible sites (including the site of the works) • All legally required permits have been acquired for construction and/or rehabilitation • All work will be carried out in a safe and disciplined manner designed to minimize impacts on neighboring residents and environment. • Workers' PPE will comply with international good practice (always hardhats, as needed masks and safety glasses, harnesses and safety boots) • Appropriate signposting of the sites will inform workers of key rules and regulations to follow.
B. Rehabilitation and /or Construction Activities (civil works)	Air Quality	<ul style="list-style-type: none"> • Keep demolition debris in controlled area and spray with water mist to reduce debris dust • Suppress dust during pneumatic drilling/wall destruction by ongoing water spraying and/or installing dust screen enclosures at site • Keep surrounding environment (side-walks, roads) free of debris to minimize dust • There will be no open burning of construction / waste material at the site • There will be no excessive idling of construction vehicles at sites
	Noise	<ul style="list-style-type: none"> • Construction noise will be limited to restricted times agreed to in the permit • During operations the engine covers of generators, air compressors and other powered mechanical equipment should be closed, and equipment placed as far away from residential areas as possible
	Waste management	<ul style="list-style-type: none"> • Waste collection and disposal pathways and sites will be identified for all major waste types expected from demolition and construction activities. • Mineral construction and demolition wastes will be separated from general refuse, organic, liquid and chemical wastes by on-site sorting and stored in appropriate containers. • Construction waste will be collected and disposed properly by licensed collectors • The records of waste disposal will be maintained as proof for proper management as designed. • Whenever feasible the contractor will reuse and recycle appropriate and viable materials (except asbestos)
C. Wastewater	Water Quality	<ul style="list-style-type: none"> • The site will establish appropriate erosion and sediment control measures such as e.g. hay bales and / or silt fences to prevent sediment from moving off site and causing excessive turbidity in nearby streams and rivers. • The approach to handling sanitary wastes and wastewater from building sites (installation or reconstruction) must be approved by the local authorities • Before being discharged into receiving waters, effluents from individual wastewater

		<p>systems must be treated in order to meet the minimal quality criteria set out by national guidelines on effluent quality and wastewater treatment</p> <ul style="list-style-type: none"> •Monitoring of new wastewater systems (before/after) will be carried out; •Actions of contractors must be accomplished in a way to prevent accidental spilling of waste water from entering the reservoirs or into groundwater during processing and mixing of concrete. They must not fall into the water courses/canals without special settling in dams (pools), and without passing through special gravel filters and other processing.
D. Toxic Materials/Substances	Asbestos management	<ul style="list-style-type: none"> •If asbestos is located on the project site, mark clearly as hazardous material •When possible the asbestos will be appropriately contained and sealed to minimize exposure •The asbestos prior to removal (if removal is necessary) will be treated with a wetting agent to minimize asbestos dust •Asbestos will be handled and disposed by skilled & experienced professionals •If asbestos material is be stored temporarily, the wastes should be securely enclosed inside closed containments and marked appropriately •The removed asbestos will not be reused and should be buried
	Toxic / hazardous waste management	<ul style="list-style-type: none"> •Temporarily storage on site of all hazardous or toxic substances will be in safe containers labeled with details of composition, properties and handling information •The containers of hazardous substances should be placed in an leak-proof container to prevent spillage and leaching •The wastes are transported by specially licensed carriers and disposed in a licensed facility. •Paints with toxic ingredients or solvents or lead-based paints will not be used
	Oil substances/wastes	<ul style="list-style-type: none"> •Car washes and places of mechanisms and machines service must be equipped with sumps and oil and petrol catchers; •Used oil and technical liquids should pour off into containers and then should send to the recovery; •Exclude leakage of petroleum products during transportation; •All the oil wastes of operational materials of maintenance should be collected and stored in specially designated areas with following cleaning in established order.
	Polychlorinated Biphenils (PCBs)	<ul style="list-style-type: none"> •Strictly obey the regulatory documents in terms of getting access and operating while taking oil samples and in particular the “Safety rules for maintaining of electrical equipment” the II edition issued on 1989, Moscow; •Used only glass bottles for oil sampling; •In order to prevent the skin from coming into contact with PCBs, use one-way protective gloves. •Protect eyes against possible oil splashes by wearing goggles; •The sample should be taken by using the drain tap, located at the bottom of the transformer; •As there is a risk that highly toxic dioxins are unintentionally formed and released during the Chlorine identification by using applying the Beilstein Method, testing should only be

		<p>performed in a laboratory by experienced chemists.</p> <ul style="list-style-type: none"> • In the case the Chlorine testing show the transformers contain PCBs it is necessary to follow the rules prescribed in the Guidebook on Environmental Sound PCB Management in Electrical Equipment, labelling the polluted equipment, keeping used oil and contaminated transformers in the tanks in a guarded facility, until when the proper utilization/disposal measures will be in place.
<p>E.Dismantling/installing old/new equipment and conducting earthworks</p>	<p>Crane/excavators/bulldozers operations</p>	<ul style="list-style-type: none"> • It is strictly imperative to obey the existing national regulations on conducting these activities; • While approaching to the air electrical lines under tension the works should be carried out under the supervision of electricians; • The cranes should be installed and fixed in a stable position to prevent their tipping or spontaneous displacement under the action of its own weight, and the engine. • For mechanized management of earthworks it is necessary to check the serviceability of machineries, availability of their fencing and safety devices. Working on defective machines is not permitted; • To exclude injuries members of mechanized brigades operating cranes and bulldozers should know and strictly follow all safety engineering rules during operations of relevant machines; • Workers serving machines should be provided with instructions, comprising following: (a) Machine controlling instruction and caring about the workplace; (b) Safety engineering requirements; (c) Guidance of signals system; (d) The maximum loads and speeds of machines; (e) The measures have to be taken by the worker in the case of accident or malfunction of the machines. • To control the machines are allowed people specially trained and have certificate of competence of controlling machines. • The basic requirements of cranes and bulldozers operations are as follows: (a) All rotating parts of machines - gears, chain and temporary transfer, fans, flywheels, etc. must be fenced by casing. Turning on the mechanisms without fences is prohibited; (b) Examination, adjustment, tightening bolts, lubrication and preventive maintenance of the equipment during their work is banned; and (c) In areas where these machines work implementation of any other works and existence of people are not allowed. If in exploit soil will be found large stones, stumps or other objects the machine must be stopped and the objects which can cause an accident should be removed.
	<p>Welding activities</p>	<ul style="list-style-type: none"> • Strictly imperative to obey the existing national regulations on conducting these activities; • The personal should have protective equipment, rubber gloves, special boots, as well as special helmets. • Prior to starting welding operations, all workers have to pass labor safety training course. • Use the protective gear which as minimum includes: (a) Respirator/Welders Mask; (b) Protective clothing: All skin areas need to be protected to protect against molten metal and

	Dismantling/installing electrical equipment	<p>sparks. This includes: Long sleeve shirts; Pants that cover the tops of shoes; Gloves; Shoes or boots; (c) Eye protection devices against injuries from debris and from the effects of the ultraviolet light; (d) Helmets.</p> <ul style="list-style-type: none"> • Fire protection: prepare and use extinguishers as well as sand and water. • Strictly obey the existing national regulations on conducting these activities; • Carry out the routine inspection of the machinery and equipment for the purpose of trouble shooting and observance of the time of repair; • Organize training and instruction of the workers engaged in maintenance of the machinery, tools and equipment on safe methods and techniques of work; • It is prohibited: to distribute faulty or unchecked tools for work performance as well as to leave off-hand mechanical tools connected to the electrical supply network or compressed air pipelines; to pull up and bend the cables and air hose pipes; to lay cables and hose pipes with their intersection by wire ropes, electric cables, to handle the rotating elements of power driven hand tools.
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PART 3: MONITORING PLAN							
Phase/project activity	What (Is the parameter to be monitored?)	Where (Is the parameter to be monitored?)	How (Is the parameter to be monitored?)	When (Define the frequency / or continuous?)	Why (Is the parameter being monitored?)	Cost (if not included in project budget)	Who (Is responsible for monitoring?)
During project implementation							
<i>Transformer oil testing on PCBs</i>	Presence of Chlorine/ safety rules of PCBs testing	At the stations taking samples from transformers and testing the laboratory	Using Belstien method	Once in the beginning at the project implementation	Avoiding health impacts	Covered by Uzbekenergo	Uzbekenergo Environmental Protection Department
<i>Civil works (construction/ rehabilitation)</i>	Parameters given in construction permit - all special conditions of construction issued by different bodies	Project documentation, Construction permits	A part of regular inspection by Uzbekenergo	During construction and prior to issuance of the Operation permit	Regular review stipulated in the construction permits to ensure compliance with the specified by national legislation and EMP environmental requirements	Included in the costs of Contractors	Supervision Uzbekenergo Engineer and PMC Environmental Specialist
	Air quality and noise	At the construction site	Visually	During construction phase	To avoid environmental pollution and workers health impacts	PMC expenditures as part of the project implementation costs	Uzbekenergo Environmental Department and PMC Environment Specialist
	Waste water	At the construction site	Visually	During construction phase	To avoid environmental pollution and workers health impacts	PMC expenditures as part of the project implementation costs	Uzbekenergo Environmental Department and PMC Environment Specialist
	Construction waste management, hazardous	At the construction sites and	Visual observations and analysing supporting	During the construction phase and after reporting on waste	Avoiding environmental pollution and health impacts	Expenditure of the Uzbekenergo PMC and operating costs	PMC Environmental Specialist

	materials and asbestos		documents for waste collection and transportation, which is submitted to the competent communal enterprise; Reporting documents from landfills	management	and needed in accordance with the waste-related national regulations	for the Contractor	
<i>Dismantling/installing new electrical equipment/welding operations</i>	Labor safety	At the construction site (for dismantling or installing of equipment)	Visual observation and analysis of presented report on conducted works, accidents, if any, reports on conducted training	Before and during construction and per national requirements in terms of ensuring labour safety	Avoiding accidents and health impacts	Contractors expenditure on training and ensuring labour safety, including costs for protective gear; Supervision costs of PMC Environmental Specialist	PMC Environmental Specialist
During operation							
<i>Electrical station operation</i>	Labor safety	At the electrical stations	Protective gears, obeying of safety rules, conducted training	Periodically per specified in national norms and standards procedures and timing	Avoiding accidents and health impacts to station workers	Uzbekneftgo own expenses	Chief Engineer of the station

Annex 2. Report on Consultation on the Draft Environmental and Social Management Framework

Date: January 19, 2016; 2.30 PM

Location/ venue	Objective	Invitees	Participants	Summary, conclusions and comments
Tashkent Uzbekenergo: Istiqlol Street 6.	To describe the project activities, ESMF and EMP Checklist and solicit feedback on the draft document	There were not sent personal invitations. The invitation to participate in Consultation was sent electronically to the following institutions: State Committee for Nature Protection; Tashkent city and Tashkent oblast State Committee for Nature Protection; State Ecological Expertise; Ecossiklash company; and Uzbekenergo.	Ms. Rahimova D. Gender Specialist, Talimarjan Electricity transmission project; Ms. Iskandarova D. Uzbekenergo Environmental Specialist Ms. Muminova M. Chief, Uzbekenergo Environmental Department; Ms. Tadjieva D. Chief Specialist, Tashkent city Committee for nature protection; Mr. Krivishvili R. Technical Director, “Ecossiksozlash” company; Mr. Siddikov J. Environmental Specialist, PIU, “Sun” Mr. Saidov Z. Procurement Specialist; Mrs. Beloedova N. Technical Specialist, Talimarjan project; Mr. Sharapov A. Chief, State Ecological Expertise, State Committee for Nature Protection; Mr. Capcelea A. World Bank, Senior Environmental Specialist; Mr. Irgashev U. Economist, PIU Mrs. Halmirzaeva Sh. Environmental Specialist, PIU.	Mrs. Halmirzieva has presented the project scope and proposed activities as well as the ESMF provisions with a focus on potential impacts, proposed mitigation and monitoring activities and implementing arrangements. The attendees asked several questions with regard to the following: (a) when the project is supposed to be approved and implemented; (b) what are the proposed activities to deal with PCBs; (c) what are the measures to prevent water pollution; and (d) what would the procedures for EMPs public consultation? Mr. Sharapov, Chief of State Ecological Expertise has fully supported the draft ESMF document and made several suggestions: checking the Russian translation of the document and make sure the used terms are same as specified in the National EA regulatory documents; Check one more time with the National and oblast Committee for Nature Protection the project category; provide guidance on further PCBs disposal in the case of their identification. Overall all participants at the consultation agreed the ESMF is well prepared and can be approved. After the meeting, on the basis of input from participants the Draft ESMF was revised and posted on Uzbekenergo website.

Annex 3. Views from the ESMF public Consultation

