

Terms of Reference

Update of Environmental and Social Instruments of Rogun Project and Support to Rogun Implementing Entity

I. Introduction

1. Tajikistan established the Rogun Open Joint Stock Company to own and operate the Rogun Hydropower Project (HPP). By the executive order of the President, Tajikistan also established Projects Management Group (PMG) for Energy Facilities Construction under the President of the Republic of Tajikistan, which is the implementing entity for the construction of the Rogun HPP project and, among other things, it will be carrying out an update of environmental and social (E&S) instruments of the Project, ensuring E&S compliance of the Project with national legislation and relevant E&S requirements of financiers, and supervising E&S performance of contractors. The Project is being constructed on the Vakhsh River about 110 kilometers east of Dushanbe and about 70 kilometers upstream of the Nurek HPP. The dam will be 335 meters high and the facility will have generation capacity of 3,780 MW.
2. The project was first conceived in the 1960s and has been under construction intermittently since 1982, having been interrupted by political and financial changes. The World Bank is not currently providing financing for construction, but it did provide financing for a number of studies in order to contribute to assess technical, economic, environmental and social aspects of the Project. These included the 2014 Techno-Economic Assessment Studies, 2014 Environmental and Social Impact Assessment (ESIA), including an Environmental and Social Management Plan (ESMP), and a 2014 Resettlement Policy Framework (RPF) and Phase 1 Resettlement Action Plan (RAP). In 2021, the World Bank carried out an additional study to identify possible financing options for the Project.
3. Among the major environmental and social issues identified in the ESIA and RPF were impacts on downstream riparian countries from filling of the reservoir and operation of the HPP, social and economic impacts due to resettlement (a total of 6,000 households are expected to be resettled) that began in the 1980s, impacts on aquatic biodiversity, impacts on natural habitats in the future reservoir area, increase in landslides and sedimentation in the reservoir area, and possible impacts on cultural heritage. In addition, potential construction impacts would include risks to workers' occupational health and safety, risks to members of the community from the introduction of a large number of workers from outside the region and also from traffic, and the risk that the river and soils could be contaminated by spills, and other risks common to construction. The ESMP included actions by Rogun JSC, a Resettlement Unit established to handle that program, and Rogun's contractors to avoid impacts reduce them to acceptable levels.
4. Following the disclosure and Tajikistan's acceptance of the ESIA, Rogun JSC committed to implementing the mitigation measures specified in the ESMP and to meeting international environmental and social standards during construction and operation. Rogun JSC then re-started construction of the project, which had been in care and maintenance for several years. This included appointment of contractors to continue construction of the dam, tunnels and underground works, and other project components. As of the autumn of 2021, three Engineering, Procurement, and Construction (EPC) contractors had been appointed for electromechanical works and for the

dam and tunneling (with one EPC contractor for some tunneling works yet to be appointed), and had also appointed a number of non-EPC contractors to prepare the site for major works and support ongoing operation of the partially completed HPP. Rogun JSC was supervising engineering and E&S performance of the non-EPC contractors and had appointed an Employer's Representative to supervise the EPC contractors.

5. Through 2020, the World Bank had not monitored or otherwise assessed the environmental and social performance of the contractors or the Project since 2014, when it had completed an audit of the resettlement program and observed the site at the time of public consultations on the ESIA. In 2021, the World Bank reviewed the ongoing construction to evaluate the adequacy of the mitigation measures in the ESMP to reduce the potential impacts to acceptable levels and comply with the 2018 World Bank Environmental and Social Framework, and also to evaluate the extent to which Rogun JSC and its contractors were implementing the requirements of the ESMP.

II. Objective

6. The objective of this assignment is to assist Rogun PMG in completing the requirements of the updated ESMP, in particular those that require additional studies in preparation for reservoir filling and that require development of management plans and procedures to guide its own supervision of construction and to guide contractors in their planning and performance.

7. Applicable standards include, but are not necessarily limited to, the following:

- a. Tajikistan law, including international agreements to which Tajikistan is a party.
- b. World Bank: Environmental and Social Framework (2018) and World Bank Group General Environmental, Health, and Safety Guidelines (2007)
- c. Asian Development Bank: Safeguard Policy Statement (2009) and associated safeguard documents
- d. Asian Infrastructure Investment Bank: Environmental and Social Framework (2019 or 2021)
- e. European Investment Bank: Environmental and Social Standards (2013), EIB Environmental and Social Principles and Standards (2009), EIB Environmental, Climate and Social Guidelines on Hydropower Development (2019), as well as European Union Directives, including, *inter alia*, the Environmental Impact Assessment Directive, Water Framework Directive, Habitats Directive, Floods Directive.
- f. Islamic Development Bank: Sustainable Development Goals.

III. Scope of Work

8. The Consultant will carry out the following principal tasks:

- a. Assist Rogun JSC with modification of contracts with EPC contractors, non-EPC contractors, and the Employer's Representative to include relevant E&S safeguard requirements that comply with the applicable standards.
- b. Assist Rogun JSC in developing a Contractor Management Plan that will include the details of how Rogun JSC will supervise the E&S performance of EPC and non-EPC contractors. It is expected that few if any non-EPC contractors will be

employed in the Project in the coming years once all EPC contractors are in place. Besides the overall Contractor Management Plan, the Consultant will prepare the following sitewide plans (or update/adapt existing plans) that will serve as templates for use by EPC and other contractors as templates for their own subplans including but not limited to: construction site management, traffic management, excavation spoil/fill management, noise and vibration, waste management, water and wastewater management, hazardous materials management, equipment maintenance, air quality management, site rehabilitation, erosion control, spill prevention and response, gender nondiscrimination, worker accommodations plan, emergency preparedness and response. In addition, the plans will include provisions to prevent sexual exploitation and abuse, and sexual harassment. These plans will include the reference to applicable standards that are to be met and minimum requirements for implementation of mitigation measure to avoid or control impacts in accordance with the result of ESIA documentation and any subsequent assessments. In some cases, such as emergency response, this will involve reviewing existing plans and recommended changes that may be needed to meet requirements of Tajikistan law, international agreements such as ILO, and other applicable standards.. As appropriate, the plans will be developed in consultation with local communities and authorities. As needed and as appropriate, the various plans will account for vulnerabilities of potentially affected people.

- c. Support Rogun JSC in updating the 2014 ESIA, including a nontechnical executive summary. This will include incorporating at least preliminary results of new information acquired under all other tasks of this TOR, including an updated characterization of baseline conditions to reflect current conditions (and practices) and an update of the cumulative impact assessment to meet applicable requirements, including EIB's requirements. The Consultant will prepare two drafts of the updated ESIA, a review draft for review by Rogun JSC and others identified by Rogun JSC, and a disclosure draft that is suitable for public review and comment. At present, update of the ESIA is not expected to include detailed investigations other than those called for in the tasks of this assignment, but the Consultant may recommend additional investigations if they are considered to be necessary in order to characterize current baseline conditions. The Consultant will also ensure the management plans under task b and d, and other new plans and programs, include the new or additional mitigation measures that may be required to meet applicable standards. The updated ESIA will meet the requirements of the applicable standards for impact assessment and include the elements in Annex 1 of this TOR. Although the impacts of Associated Facilities will be addressed in separate assessments under another TOR, the ESIA will need to identify those Facilities and describe at least high-level impacts. It will also include an assessment of transboundary impacts that would result from changes in river flow that would result from operation of Rogun HPP. Following completion of the draft ESIA, the Consultant will assist Rogun JSC in planning disclosure of the ESIA for public review and comment, and support consultation meetings held locally, in Dushanbe, and with riparian countries. Following the review and consultation period, the Consultant will prepare a summary of comments and recommended responses to revisions. Based on Rogun JSC acceptance of recommendations, the Consultant will then prepare the final ESIA for review and approval by Rogun JSC.

- d. Assist Rogun JSC and the Resettlement Unit in developing, or revising if plans already exist, the following plans: Child Care Plan, Skills Development Plan, and Retrenchment Plan. The plans will be designed to apply to Rogun HPP and its workforce, and should be suitable for application to contractors, or for use as models for their own plans. Each of these plans should be consistent with the recommendations of the 2014 ESIA and ESMP and should be developed in consultation with local communities and employees and/or employee organizations. The Plans should comply with the requirements of the applicable standards.
- e. Assist Rogun JSC in reviewing and commenting on E&S management plans and procedures of the non-EPC contractors. The Consultant should assume that up to five contractors will each prepare and submit up to ten plans (plans could include any or all of the topics listed above under task (b)). These plans and procedures will be required to conform to the sitewide plans and will include requirements for controlling the risks that are specific to the respective contractor's activities and comply with applicable standards.
- f. Assist Rogun JSC in supervising the performance of the Employer's Representative, which will itself be supervising E&S performance of the EPC Contractors. This will involve quarterly visits of approximately one week's duration for one year and semiannual visits for three additional years. Each visit will include pre-visit reviews of monthly or quarterly (whichever is required) engineering and E&S progress reports, correspondence and advice to Rogun HPP and the Employer's Representative as needed, review of Rogun and Employer's Representative records of their respective E&S supervision responsibilities and accompanying Employer's Representative specialists in their routine inspections and observations. Each visit will conclude with a debriefing of Rogun and the Employer's Representative to review positive and negative findings, including recommendations for improving supervision and contractor performance. This debriefing will be presented in PowerPoint presentation and summarized in a report to be submitted following the visit. The presentation and report will identify any findings of noncompliance with applicable standards and include recommendations for changes in practices and conditions to achieve compliance.
- g. Provide advice to Rogun JSC, Employer's Representative, and contractors as to staffing recommended to implement each of their E&S management programs, and on designing and implementing the technical requirements of their respective management programs. This will include identifying and ensuring that contractors' activities are complementary and do not conflict with one another.
- h. Assist Rogun JSC in developing a Watershed Management Plan with the intent of reducing erosion upstream of the dam in the watershed basin that drains to the reservoir area, improving pastureland and meadows, especially those above the reservoir high-water mark, developing improved habitat, revegetating barren

erosion features¹ with native species, and restoration of areas disturbed by road construction. The overall purpose, other than improving the area, will be to extend the life of the Rogun reservoir by reducing erosion and sedimentation. Development of the Plan will need to be preceded by a biodiversity assessment to identify the areas and types of improvements and revegetation that would be appropriate and feasible. The Plan should be equivalent to an Integrated Water Resources Management Plan that considers water availability and uses in the watershed, and downstream to the extent that availability and uses would be affected. The Plan should evaluate and include appropriate mitigation of significant impacts on river flows, quality, and morphology at the scale of the basin in order to protect ecological flows and water users.”

- i. Assist Rogun JSC in preparing a Biodiversity Management Plan that will quantify the loss of natural (and/or critical) habitat and that will demonstrate through offsets and/or restoration efforts how the project will achieve no net loss of natural habitat and/or net gain of critical habitat. The Plan will include at least the following
 - Assist Rogun JSC in designing and conducting biodiversity surveys of two floodplain areas, identified in the 2014 ESIA, that will be flooded by the Rogun reservoir. These surveys will, identify flora and fauna species and populations of conservation concern (IUCN or Tajikistan Red List, or endemic), and in general identify biodiversity values that will be lost. The Consultant will determine the category of habitat, as defined by applicable standards, that will be lost, whether critical, natural, or modified (the 2014 ESIA suggests the habitats were natural). Surveys will cover at least two seasons and possibly more, as recommended by the Consultant.
 - As a potential offset required by the loss of natural habitat (and/or critical habitat) in the floodplain areas, consult with the authorities and managers responsible for the downstream Tigrovaya Balka to identify ways in which their efforts to protect and restore the protected area could be augmented or improved with the support of Rogun HPP. This will include working with Rogun and Tigrovaya Balka experts to assess the feasibility of having Rogun release water in a pattern and amount that at least partially mimics previously naturally occurring floods, which ended with the construction of Nurek HPP. If this is not feasible, the Consultant will work with Tigrovaya Balka experts to identify other ways to improve conditions in that area. The effort will conclude with a Biodiversity Offset Plan/Report that describes the results of the surveys of task (g), activities that have been undertaken under this task, and feasible measures that can be implemented, with the support of Rogun, to improve conditions in the protected area.
 - Alternatively, if it is not considered feasible to improve conditions in Tigrovaya Balka as an offset, the Consultant will assist Rogun JSC in

¹ It is important to note that this vegetation program is part of the watershed management plan, intended to reduce sedimentation into the reservoir. A side benefit will that it will improve habitat where land that may have previously been used for grazing or crops, or is otherwise subject to erosion, will now be vegetated and have stable soils.

identifying other offsets for the loss of natural habitat and will prepare a Biodiversity Offset Plan/Report for the identified measures to be taken.

- j. Assist Rogun JSC in preparing a Fish Stock, Habitat, and Fisheries Study and Plan, as described in the 2014 ESIA and ESMP. This will be prepared as two drafts and a final version.
- k. Assist Rogun JSC in developing a Landslide Management and Monitoring system as described in the 2014 ESIA and ESMP, again with two drafts and a final version.
- l. Conduct a final audit of Phase 1 RAP implementation and an audit of resettlement and livelihood restoration completed to date under the Phase 2 RAP to identify areas where the program has and has not accomplished its goals and been fully compliant with applicable standards. This will involve identifying and assessing the adequacy of measures in the RAPs as implemented on the ground in replacing houses and land, restoring standards of living and livelihoods, and taking measures to correct deficiencies when they are identified (i.e., mid-course corrections). It is noted the 2014 ESIA concluded that downstream communities were not expected to be significantly affected, since operation of Rogun HPP was not expected to change flows downstream in the lower river, which would continue to be controlled by Nurek HPP.
- m. Support the Resettlement Unit in completing a full census of potentially affected households and individuals, updating the compensation matrix, and revising their initial Phase 2 RAP to comply with applicable standards. This will involve, at a minimum, identifying people and property that will be affected, developing an inventory of lost and affected assets, completing socioeconomic surveys and studies of affected people, analyzing surveys and studies to update the, designing appropriate income restoration and sustainable development initiatives, identifying baseline monitoring indicators, and consulting with affected populations regarding mitigation of effects and development opportunities. This RAP is to incorporate a Livelihood Restoration Plan. The Consultant will also assist Rogun HPP in assessing potential impacts on downstream communities and households of reservoir filling, and account for any expected effects on their livelihoods in the Livelihood Restoration Plan². The Consultant will advise and work alongside Resettlement Unit staff to develop the Phase 2 RAP, and will provide guidance at every step. The Consultant will also provide similar support to the next stage of the Phase 2 RAP, which will cover the next phase of reservoir filling. Throughout development of the RAPs, the Consultant will support the Resettlement Unit in identifying and evaluating opportunities for equitable benefit-sharing based on robust and transparent governance and stakeholder engagement processes.
- n. Assist Rogun HPP in developing a Stakeholder Engagement Plan, as described in the 2014 ESIA and ESMP. This Plan will comply with relevant provisions in the applicable standards. As part of the effort, assist Rogun HPP in assessing the effectiveness of the current program for receiving and addressing grievances and

² It is noted that, once the reservoir has filled, operation of Rogun HPP is not expected to modify the downstream flow rate, as Nurek will match flows released by Rogun. Flows from both will be as negotiated and agreed by the multi-national ICWC.

- designing the updated grievance redress mechanism so as to overcome any identified deficiencies and improve its effectiveness. The Plan will include provisions for disclosure and consultations on the updated ESIA prepared under task c, including consultations locally, in Dushanbe, and with riparian countries. Regardless of whether parties are signatories, the above assessment and associated consultation process should be consistent with the principles of the UNECE Convention on EIA in a Transboundary Context (the Espoo Convention) at project level.
- o. Conduct a labor audit of Rogun HPP and of the EPC Contractors and any subcontractors that are working on-site. The audit will be designed to confirm whether employers are meeting the requirements of the Tajikistan Labor Code and other applicable standards.
 - p. Assist Rogun JSC in preparing an Owner's Workforce Management Plan that meets the requirements of World Bank ESS2 and assist in reviewing Plans developed by the EPC Contractors. This will include a Workers' Code of Conduct that meets the requirements of World Bank guidance and that builds upon the existing Code of Conduct. The Code of Conduct will include appropriate requirements, as outlined in World Bank, EIB, AIIB, IsDB, and ADB guidance documents, for preventing gender-based violence, sexual exploitation and abuse, and sexual harassment, and for ensuring that workers are aware of the Worker Grievance Mechanism.
 - q. Review Rogun JSC's existing Occupational Health and Safety Plans (both the operating plant's and the PMG's plans) and recommend changes that may be needed to ensure the safety program meets the requirements of the Tajikistan Labor Code, other applicable standards and other good international industry practices (as represented by standards established by the governing body of a national certification program (UK, US, EU member state, Russia, etc.), as agreed by JSC Rogun and the World Bank. The Plan is also to be consistent with requirements of the 2014 ESIA and ESMP. At a minimum, Plans must address prevention or control of risks from working at height, underground, with chemicals and hazmats, in or near water, in confined spaces, with heavy equipment, on steep slopes, and all other activities that may present risks to workers.
 - r. Review procedures and processes that Rogun JSC has in place to receive and address worker grievances and support revisions that may be necessary to ensure the mechanism and implementation practices meet applicable requirements of World Bank, EIB, ADB, AIIB, and IsDB. The Consultant will also review and comment on the draft mechanism developed by the Employer's Representative. Finally, the Consultant will provide training to Rogun HPP, the Employer's Representative, and possibly EPC Contractors on implementation of their respective grievance redress mechanisms.
 - s. In consultation with relevant authorities and the Resettlement Unit, design ethnographic surveys of households in villages that have been and/or will be resettled to capture oral conditions and other intangible cultural heritage that could be lost when the villages are abandoned. The surveys will be designed to be consistent with recommendations in the 2014 ESIA and ESMP and with requirements of the World Bank, ADB, EIB, IsDB, and AIIB. Once approved by

- authorities, the Consultant will assist in conducting the surveys and recording relevant information, and will advise authorities and the Resettlement Unit on how cultural heritage may best be preserved.
- t. Conduct an audit of security practices that are being implemented at the Rogun HPP construction and plant sites and either update existing guidelines, or prepare new guidelines, on the security program. Guidelines are to be consistent with Tajikistan law and other applicable standards. The Consultant will also provide training to security personnel and to Rogun HPP supervisors and managers.
 - u. Assist Rogun JSC in evaluating whether the environmental flow rate established in the ESIA is sufficient to maintain aquatic biodiversity and to support downstream uses in Tajikistan and riparian countries, and, if necessary, in recalculating minimum flow requirements on a seasonal basis. The evaluation should be consistent with requirements of EIB and other international financial institutions.
 - v. Assist Rogun JSC in designing and implementing remedial investigation to identify nature and extent of soil and possible groundwater contamination at the Rogun Tank Farm and other areas where fuel and other hazardous materials are stored and used at the construction and plant sites. This will include an assessment of risks of human exposure to the contaminants and of water contamination when the construction is complete and the site is flooded. Based on the results of the remedial investigation, the Consultant will also design and support completion of a Feasibility Study that evaluates alternative approaches to reducing the risks to humans and environmental receptors (e.g., fish and aquatic biodiversity) to acceptable levels. The findings of the investigation and conclusions of the feasibility study need to be integrated into the relevant ESIA documentation.
 - w. Support Rogun JSC in development or refinement of Cascade Sediment Study and Modeling program, Cascade Dam and Reservoir Operating Plan, Bathymetric Monitoring and Sediment Characterization program, and Residual Flow Monitoring Plan, and Vakhsh/Amu Darya Hydrologic Monitoring program, so they are consistent with recommendations of the 2014 ESIA and ESMP. As part of the modeling effort, assist Rogun HPP in evaluating the adequacy of the 2014 ESIA's cumulative impact assessment in identifying and addressing potential cumulative impacts, and its consistency with the cumulative impact guidelines in the applicable standards. As needed, conduct additional evaluations of cumulative impacts and identify additional measures to mitigate potential impacts, if needed.
 - x. For the operational phase, which is currently underway and will expand until full operation is reached about 2030, assist Rogun HPP in developing the following management plans: Site Maintenance and Housekeeping, Waste Management, Hazardous Materials Management, Wastewater Management, Landslide Management and Monitoring, Pollutant Spoil Prevention, Minimum Flow Release Management, and OHS Plans, to be consistent with the 2014 ESIA/ESMP and the applicable standards. , the World Bank Environmental and Social Framework, the World Bank Group Environmental, Health, and Safety General Guidelines, and Good International Industry Practice. Also, support Rogun HPP's update of the Biodiversity Management Plan to address activities during the various operational

stages, including releasing flood-like flows to support Tigrovaya, if that is retained as part of the Plan.

- y. Prepare a Carbon Footprint Assessment in line with the EIB Environmental and Social Standard on Climate Change, a carbon footprint assessment must be carried out for all hydropower projects, with the exception of cases where those fall below the emissions thresholds given in the Standard. The overarching methodology to be used for calculating the hydropower carbon footprint must be consistent with that out in detail in the EIB’s Methodologies for the Assessment of Project GHG Emissions and Emission Variations (Version 11, December 2018) and other requirements of the World Bank, ADB, AIB, and IsDB.

IV. Reporting and Deliverables

9. All deliverables will be in English (with Russian translation) and provided to Rogun HPP and/or the Resettlement Unit electronically in MS Word, MS Excel, and/or Adobe pdf format.

10. The Consultant will provide a timeline for completion of the assignment, which is expected to last for approximately 3-4 years, with milestones for each task consistent with the table below.

11. The table below shows indicative deliverables and when they will need to be delivered. As can be seen, most of the activities will take place within the first year, with only monitoring and audits in the subsequent time period.

Table 1. Deliverables

<i>Task</i>		<i>Version</i>	<i>Calendar days from the signing of the Contract</i>
a	Recommendations for contract modifications		30
b	Contractor Management Plan and other ESHS Management Plans	Draft	90
		Final	120
c	Updated ESIA	Review draft	240
		Disclosure draft	14 days after comments
		Final	30 days after review period
d	Child Care, Skills Development, Retrenchment Plans	Draft	90
		Final	120
e	Comments on non-EPC ESHS plans (≤50)		30 days after receipt
f	Supervision support reports (≤10)		1 week after visit
g	Advice/support on staffing and coordination		As required
h	Watershed Management Plan	Draft	180
		Final	30 days after comments
i	Biodiversity Management Plan		
i (1)	Biodiversity surveys	Draft	300
		Final	30 days after comments
i (2)	Recommendations based on consultations and surveys of Tigrovaya Balka	Draft	270
		Final	30 days after comments
i (3)	Biodiversity Offset Plan/Report	Draft	360
		Final	30 days after comments
j	Fish Stock, Habitat, and Fisheries Study and Plan	Draft	360
		Final	30 days after comments

<i>Task</i>		<i>Version</i>	<i>Calendar days from the signing of the Contract</i>
k	Landslide Management and Monitoring Program	Draft	180
		Final	30 days after comments
l	Audits of Phase 1 and 2 resettlement and livelihood restoration to date	Draft	180
		Final	30 days after comments
m	Census and Phase 2 RAP	Draft	270
		Final	30 days after comments
n	Stakeholder Engagement Plan and GRM	Draft	270
		Final	30 days after comments
o	Labor audit and report	Audit	90
		Draft report	30 days after audit
		Final report	15 days after comments
p	Owner's Workforce Management Plan	Draft	30 days after draft audit report
		Final	30 days after comments
q	Recommendations on changes to Occupational Health and Safety Plan		90
r	Review of Rogun and ER worker grievance mechanisms		120
	Training on operation of mechanism		180
s	Ethnographic surveys	Draft design	180
		Final design	30 days after comments
		Surveys	360
		Draft report	60 days after surveys
		Final surveys	30 days after comments
t	Audit of site security program	Audit	180
		Draft report	15 days after audit
		Final report	15 days after comments
u	Minimum flow requirements evaluation and report	Draft	180 days
		Final	30 days after comments
v	Remedial investigation and feasibility study for contaminated areas	Draft RI design	180 days
		Final RI design	30 days after comments
		RI support	TBD (scheduled by Rogun)
		Draft FS report	90 days after investigation
		Final FS report	30 days after comment
w	Operations-phase hydrographic/hydrologic studies and plans (6)—advice and support		By 2025
x	Operations-phase ESHS management plans (6)—recommendations for existing plans and/or new plans	Draft plans	180
		Final plans	30 days after comments
z	Carbon Footprint Assessment	Draft	240
		Final	30 days after comments

V. Key Staff Qualifications

12. The key staff is expected to meet the following qualification and experience requirements. Prospective Consultants should identify the specific disciplines, specialty roles, and expertise of each key staff, and the tasks they will be responsible for leading and/or supporting. Consultants may propose more than one key expert with the required qualifications (for example, more than one of each of the types of Environmental Scientists/Engineers identified below).

Table 2. Qualifications and Experience of Key Experts

<i>Key Expert</i>	<i>Qualifications and Experience Requirements</i>
Project Manager	<ul style="list-style-type: none"> - Master's or PhD degree in environmental science or engineering discipline - 15+ years of relevant experience managing multidisciplinary and multilingual teams on international projects involving environmental and social planning and support - 10+ years of experience in applying World Bank and other IFI E&S standards, including at hydropower projects - Fluency in written and spoken English - Experience in Central Asia a plus - Fluency in Russian and/or Tajik a plus
Environmental Scientist / Engineer 1	<ul style="list-style-type: none"> - Master's or PhD degree in environmental science or engineering discipline - 10+ years of relevant experience in developing ESMSs and E&S management plans, including Contractor Management Plans, for large infrastructure construction projects, preferably including hydropower projects - 10+ years of experience in managing and coordinating multidisciplinary and multilingual teams in person and remotely - 10+ years of experience in applying World Bank and other IFI E&S standards, including at hydropower projects - Experience in managing and assessing climate vulnerability assessments - Fluency in written and spoken English - Experience in Central Asia a plus - Fluency in Russian and/or Tajik a plus
Environmental Scientist / Engineer 2	<ul style="list-style-type: none"> - Bachelor's or higher degree in environmental science or engineering discipline - 10+ years of relevant experience in monitoring and/or supervising implementation of ESMSs and E&S management plans for large infrastructure construction projects, preferably including hydropower projects - 5+ years of experience in applying World Bank and other IFI ESHS &S standards, including at hydropower projects - Fluency in written and spoken English - Experience in Central Asia a plus - Fluency in Russian and/or Tajik a plus
Environmental Scientist / Engineer 3	<ul style="list-style-type: none"> - Bachelor's or higher degree in environmental science or engineering discipline - 10+ years of relevant experience in developing ESMSs and ESHS management plans for operational large hydropower projects

<i>Key Expert</i>	<i>Qualifications and Experience Requirements</i>
	<ul style="list-style-type: none"> - 5+ years of experience with World Bank and other IFI ESHS standards at hydropower projects - Fluency in written and spoken English - Experience in Central Asia a plus - Fluency in Russian and/or Tajik a plus
Environmental Scientist / Engineer 4	<ul style="list-style-type: none"> - Master's or PhD degree in environmental science or engineering discipline - 10+ years of relevant experience in investigating soil and groundwater contamination at large sites due to spills and leaks of fuel and other hazardous materials - 10+ years of relevant experience in designing remedial programs to reduce contamination of soil and/or groundwater to legal or otherwise acceptable levels - 10+ years of experience in managing and coordinating multidisciplinary investigation and remediation teams in person and remotely - 10+ years of experience in applying World Bank and other IFI E&S standards, including at hydropower projects - Fluency in written and spoken English - Experience in Central Asia a plus - Fluency in Russian and/or Tajik a plus
Environmental Scientist/Engineer 5	<ul style="list-style-type: none"> - Master's or PhD degree in environmental or social science or degree in engineering - 10+ years of relevant experience in developing and managing development of ESIA's to meet World Bank and/or other IFI requirements, including for large hydropower projects - 10+ years of experience in managing and coordinating multidisciplinary teams in person and remotely - Fluency in written and spoken English - Experience in Central Asia a plus - Fluency in Russian and/or Tajik a plus
Resettlement and Livelihood Restoration Specialist	<ul style="list-style-type: none"> - Bachelor's, Master's, or PhD degree in social science, law, or other discipline relevant to physical and/or economic displacement - 10+ years of relevant international experience in developing and monitoring large resettlement plans and livelihood restoration plans, leading censuses, conducting audits of implementation, all to meet World Bank and/or other IFI standards - Proven experience in working with multidisciplinary and multinational teams - Fluency in written and spoken English - Experience in former Soviet Union countries a plus - Fluency in Russian and/or Tajik a plus
Local Resettlement and Livelihood Restoration Specialist	<ul style="list-style-type: none"> - Bachelor's, Master's, or PhD degree in social science, law, engineering, or other discipline relevant to physical and/or economic displacement - 10+ years of relevant experience with developing, implementing, and/or monitoring resettlement plans and livelihood restoration plans

<i>Key Expert</i>	<i>Qualifications and Experience Requirements</i>
	<ul style="list-style-type: none"> - In-depth knowledge of World Bank, other IFI, and Tajikistan standards for economic and/or physical displacement, - Fluency in written and spoken English and Russian (or Tajik)
Erosion Control Specialist (Watershed Management Expert)	<ul style="list-style-type: none"> - Bachelor's or higher degree in geology, hydrologic or civil engineering, and/or other relevant discipline - 10 years' experience in designing erosion control programs at large infrastructure projects in mountainous terrain - In-depth knowledge of best practice engineering requirements for reservoir preparation and erosion control, including slope stabilization - Fluency in written and spoken English - Fluency in Russian and/or Tajik a plus
Terrestrial Biodiversity Specialist	<ul style="list-style-type: none"> - Bachelor's, Master's, or PhD degree in biology or related discipline - 10+ years of relevant experience in designing and implementing field surveys to characterize riparian biodiversity, including island habitats in freshwater rivers and lakes - 10 years of relevant experience with World Bank/international standards for habitat categorization and in developing Biodiversity Management Plans and Action Plans, preferably for hydropower power projects - 5+ years of experience in managing and coordinating multidisciplinary and multilingual teams in person and remotely - Fluency in written and spoken English - Experience in Central Asia a plus - Fluency in Russian and/or Tajik a plus
Local Biodiversity Specialist	<ul style="list-style-type: none"> - Bachelor's or higher degree in biology or related discipline - 10 years of relevant experience in implementing field surveys to characterize terrestrial biodiversity and habitats - 5+ years of relevant experience with riverine and riparian habitats and biodiversity in Tajikistan, - Detailed knowledge of conditions of Tigrovaya Balka is a plus - Fluency in written and spoken English and Russian (or Tajik)
Aquatic Biologist/Fisheries Specialist	<ul style="list-style-type: none"> - Master's or PhD in aquatic biology, fisheries science, or other relevant discipline - 10 years in evaluating in fish stocks and lacustrine habitat and designing programs to develop/restore fisheries in large deep reservoirs - Fluency in written and spoken English - Fluency in Russian and/or Tajik a plus
Local Aquatic Biologist	<ul style="list-style-type: none"> - Master's or PhD in aquatic biology, fisheries science, or other relevant discipline - 5+ years in evaluating fish stocks and aquatic habitat and designing programs to develop/restore fisheries in large deep reservoirs - Fluency in written and spoken English and Russian (or Tajik)
Geological Engineering Specialist	<ul style="list-style-type: none"> - Master's or PhD in geologic science or engineering - 10 years of experience in evaluating landslide potential of mountain slopes similar to those of Central Asia and designing programs to minimize earth movement and landslides - Fluency in written and spoken English

<i>Key Expert</i>	<i>Qualifications and Experience Requirements</i>
	<ul style="list-style-type: none"> - Fluency in Russian and/or Tajik a plus
Social and Stakeholder Engagement Specialist	<ul style="list-style-type: none"> - Bachelor's degree in communications or other relevant discipline - 10 years of experience in developing stakeholder engagement programs to meet the requirements of IFIs, including the World Bank, including community grievance mechanisms - Fluency in written and spoken English - Fluency in Russian and/or Tajik is a plus
Human Resources Specialist	<ul style="list-style-type: none"> - Bachelor's degree in law, social science, or other relevant discipline - 10+ years of relevant experience in human resources labor force management under Tajikistan law, and with World Bank and other IFI requirements for labor force management - Familiarity and experience with World Bank and other IFI requirements for worker grievance management - Experience in training managers and workers in labor-related obligations of employers and workers under Tajik law and IFI standards - Fluency in written and spoken English - Fluency in Russian and/or Tajik recommended
Occupational Health and Safety Specialist	<ul style="list-style-type: none"> - Bachelor's degree in technical discipline - 10+ years of relevant experience in designing and evaluating implementation of occupational health and safety programs for large construction projects - Certification by a national or international governing body in occupational health and safety, as agreed by World Bank and JSC Rogun - Fluency in written and spoken English - Fluency in Russian and/or Tajik a plus
Cultural Heritage Specialist	<ul style="list-style-type: none"> - Master's or PhD in anthropology or other relevant discipline - Experience in conducting ethnographic surveys in rural communities to capture and record oral histories and traditions and other intangible cultural heritage and in designing programs to preserve such heritage - Fluency in written and spoken English - Fluency in Russian and/or Tajik recommended
Hydrogeology / Sediment Specialist	<ul style="list-style-type: none"> - Master's or PhD degree in relevant science or engineering discipline - 10+ years of relevant experience in sediment characterization and transport modeling in large rivers and reservoirs, including bathymetric studies of reservoirs - Relevant experience in designing and reviewing reservoir operating plans - Fluency in written and spoken English - Experience in Central Asia a plus - Fluency in Russian and/or Tajik a plus
Environmental Flow Specialist	<ul style="list-style-type: none"> - Master's or PhD degree in hydrology, biology, or other relevant science or engineering discipline - 10+ years of relevant experience in designing and evaluating adequacy of environmental flow regimes at large hydropower projects, including hydrologic modeling of river flows

<i>Key Expert</i>	<i>Qualifications and Experience Requirements</i>
	<ul style="list-style-type: none"> - Intimate knowledge of good international industry practice for establishing environmental flows in hydropower cascades - Fluency in written and spoken English - Experience on central Asia and specifically on Vakhsh River a plus - Fluency in Russian and/or Tajik a plus
Security Specialist	<ul style="list-style-type: none"> - Bachelor's or higher degree in criminal justice, law, construction management, or relevant discipline - 5+ years in providing security and/or advising large clients on security needs - Fluency in written and spoken English - Experience in Central Asia a plus - Fluency in written Russian and/or Tajik a plus
GIS Specialist	<ul style="list-style-type: none"> - Bachelor's or higher degree in physical geography, geographic information systems or other relevant field - 10+ years of relevant international experience in management and coordination of GIS teams and systems, 3D and spatial analysis, processing data, data provenance and implications, - Experience in managing large databases constructed of data from multiple sources, - Experience with ArcGIS platform, WebGIS, 2D CAD, and Metadata standards - Fluency in written and spoken English - Experience in Central Asia a plus - Fluency in written Russian and/or Tajik a plus
<ul style="list-style-type: none"> - For most positions, four years' experience and professional certification may substitute for Bachelor's degree. - If higher degree is required, two years' experience beyond a Bachelor's degree may substitute for Master's degree and four for PhD. 	

VI. Materials to be Provided by Rogun JSC

13. The following materials will be provided to short-listed consultants by Rogun JSC.

- a. Rogun HPP ESIA: Environmental and Social Impact Assessment for Rogun Hydro Power Plant. Prepared by Pöyry for OSHPC "Barki Tojik". 2014.
- b. Final Report of the Environmental and Social Panel of Experts. 2014. Prepared by T. Clausen, T.J., R. Fuggle, F. Giovanetti, E. Helland-Hansen, and E. Todini.
- c. Final Report of the Engineering and Dam Safety Panel of Experts for Rogun Hydropower Project 2014. Prepared by R. Gill, L. Spasic-Gril, P. Marinos, E. Todini, J. Gummer, and G. Morris.
- d. Resettlement Audit of the Flooding Zone of Rogun HPP Stage I. Prepared by Baker Tilly Tajikistan.
- e. Household-Level Resettlement Audit (Intermediate). 84pp. Prepared by E. Rossi, F. Ferretto, and P. Khakimov (HLA Team) for OSHC "Barqi Tojik". 2015 (December).

- f. Key Issues for Consideration on the Proposed Rogun Hydropower Project. 2014. Prepared by the World Bank.
- g. 4th Riparian Information-Sharing and Consultation Process on the Assessment Studies of a Proposed Rogun Hydropower Project, 29 September – 4 November, 2013. Prepared by World Bank, Central and East Asia Region.
- h. 5th Riparian Information-Sharing and Consultation Process on the Assessment Studies of a Proposed Rogun Hydropower Project, 16 June – 29 July, 2015. World Bank, Central and East Asia Region.
- i. Final Reports of Techno-Economic Assessment Study for Rogun Hydroelectric Construction Project (2014).

VII. Rogun JSC Support

14. The following support will be provided to the Consultant by Rogun CJSC:

- Contracts of EPC and other construction contractors and Employer’s Representative, including pricing schedules.
- Office space for specialists while on site.
- Access to offices and the project site to allow evaluation of performance.
- Progress reports and other records that document environmental and social performance and plans.
- Existing ESHS management plans and relevant method statements.
- Access to Rogun HPP and contractor managers and workers concerning their responsibilities and company performance.
- Assistance in setting up interviews with national and local officials and community members.
- Advice and assistance with in-country travel and logistical arrangements to and from Dushanbe and the site if needed.
- Invitation letters and visa assistance for international travelers.

Table 3. Estimated Labor to Complete Tasks

<i>Task</i>		<i>No. persons</i>	<i>Person-days on site</i>	<i>Total person-days</i>
a	Recommendations for contract modifications	2	0	14
b	Contractor Management Plan and other ESHS Management Plans (12)	4+	10	120
c	Updated ESIA (see note)	5+	50	500
d	Child Care, Skills Development, Retrenchment Plans	3+	5	36
e	Comments on non-EPC ESHS plans (≤50)	3+	0	50
f	Supervision support reports (≤10)	2	100	180
g	Advice/support on staffing and POE	1+	12	24
h	Watershed Management Plan	3+	21	90

<i>Task</i>		<i>No. persons</i>	<i>Person-days on site</i>	<i>Total person-days</i>
i	Biodiversity Management Plan			
i (1)	Biodiversity surveys	3	30	90
i (2)	Recommendations based on consultations and surveys of Tigrovaya Balka	2+	30	90
i (3)	Biodiversity Offset Plan/Report	2+	12	180
j	Fish Stock, Habitat, and Fisheries Study and Plan	1	10	45
k	Landslide Management and Monitoring Program	2+	24	90
l	Audits of Phase 1 and 2 resettlement and livelihood restoration to date	2+	30	180
m	Census and Phase 2 RAP	4++	120	360
n	Stakeholder Engagement Plan and GRM	2	10	90
o	Labor audit and report	2+	20	90
p	Owner's Workforce Management Plan	1	3	10
q	Recommendations on changes to Occupational Health and Safety Plan	1	0	3
r	Review of Rogun and ER worker grievance mechanisms	1	5	15
	Training on operation of mechanism	1	5	15
s	Ethnographic surveys	2+	30	120
t	Audit of site security program	1	5	15
u	Minimum flow requirements evaluation and report	1	5	30
v	Remedial investigation for contaminated areas	3++	30+	180
	Feasibility study for contaminated areas	2++	24+	180+
w	Operations-phase ESHS management plans (8)—recommendations for existing plans and/or new plans	4+	45+	180
x	Operations-phase hydrographic/hydrologic studies and plans (6)—advice and support	4+	45+	180
y	Operations-phase ESHS management plans (6)—recommendations for existing plans and/or new plans	6+	36	240
z	Carbon Footprint Assessment	4+	24	90
Totals			741	3,487
Note: Consultants should assume that key experts under other most or all tasks will provide support to updating the ESIA under task c.				
Bidders should propose a month-by-month timeline for completion of the various tasks, and the estimated number of days by key personnel that will be required to complete each task.				

Annex: ESIA Outline

The ESIA should meet the requirements for impact assessments in the applicable requirements, including, *inter alia*, the following:”:

- a. Full *environmental and social baseline assessment* of the project area of influence, to be established and adjusted during consultant’s scoping efforts as needed to reflect local topography and land uses and any Associated Facilities, the impacts of which would be addressed in separate documents prepared under another TOR. The ESIA should include the following, as appropriate for the assessment of impacts and development of mitigations:
 - *Physical environment*, including topography, geology and geomorphology, slope stability inventory (to include identification of landslide or erosion-prone areas), hydrology and water resources, unique features (rocks, waterfalls etc.), air quality, surface water/ ground water quality, noise level etc.
 - *Existing land uses*, including areas for cultivation, grazing areas, hilly areas, forested areas, industrial areas, urbanized areas, common properties etc.
 - *Climate Conditions and projected climate change*: Compile available historical and present-day data on average annual and monthly temperature and precipitation, as well as record highs and lows, and available information on flood levels and areas of influence (including flood maps where available, identification of areas susceptible to flash floods from snowmelt, runoff, etc., including glacial lake outburst floods) in the study area for storm events of various intervals (for example, 5-year, 20-year, and 100-year storm events). Compile available information on climate change projections for the area of study. Make a conclusion on the potential effects of temperature/rainfall/snowfall and storm intensity variations – from both present variability and with the anticipated effects of climate change.
 - *Biological environment*, including key data on flora and fauna in the project area (both aquatic and semi-aquatic including fish, macrobenthos, amphibians and reptiles, as appropriate, and terrestrial, and identification of any endangered, threatened or legally protected species as well as species of economic or cultural importance), areas of natural habitat and critical natural habitats as defined by applicable standards (including but not limited to legally protected areas, and areas of particular significance to species of conservation importance), forest cover and quality, and description of aquatic or terrestrial wildlife habitat and movement including any zones or locations of known wildlife migration within project’s area of influence, including downstream areas. If key data are not available, and are not considered critical to the assessment, this will be noted and justified in the ESIA along with recommendations to verify uncertain (but non-critical) conclusions with additional data collection prior to construction or other impacts.
 - *Recommendations for additional studies*: based on the baseline data available, the Consultant will recommend any additional studies needed (i.e., a biodiversity assessment, environmental flow assessment, etc.) and suggest a timeline for producing those studies, including suggested outcomes of the studies, but without detailed methodologies. The Consultant shall provide justification for the timing

- (both within the project timeline and considerations of seasonality and duration) of additional field and other studies and an estimate of the number of weeks or months required for the studies.
- b. *Physical Cultural Resources*, historical, religious, or architectural as well as socially sensitive areas within or project's area of influence.
 - c. *Summary of socioeconomic and cultural baseline* such as demographic and population information; income and livelihoods based on household survey data; *land* holding and tenancy, agricultural and subsistence activities, and use of forest resources; identification of any vulnerable groups, household socioeconomic survey data for communities; land acquisition and resettlement needs, etc. The study must identify all communities and/or other groups that might be affected, and undertake informed and meaningful stakeholder consultation with them, throughout the area affected. Baseline information should include sex-disaggregated data to the extent that is available and impact on vulnerable communities.
 - d. *Environmental and social alternatives analysis*, including (a) summary of analysis options carried out during feasibility stage, (b) a summary of additional *adjustments* to design aspects to minimize environmental and social risks and impacts carried out during detailed design studies; (c) alternatives for construction techniques/timing and technology selection, and (d) the "no project" alternative. Alternatives shall be compared in terms of potential environmental and social impacts; expected capital and recurrent costs for mitigation and/or management of impacts (including training and monitoring aspects), economic and social benefits of each option, and social acceptability.
 - e. *Overview of environmental and social legal and regulatory framework* applicable to the project (including national requirements as well as requirements of financing institutions).
 - f. *Quantitative Modelling* studies may be prepared when data are sufficient to support such modeling and such modeling results are critical to conclusions regarding potential impacts and/or the identification of required mitigation and monitoring measures. Such modeling to quantify potential impacts could include, inter alia, noise modelling (if required), air quality modeling, traffic flow modeling, hydrological modelling including climate change scenarios, etc. If such assessments and conclusions are based on qualitative or semi-quantitative modeling rather than quantitative modeling, the ESIA will describe why this approach is sufficient. If deemed necessary, the ESMP will include recommendations for further quantitative modeling, and if possible thresholds of the variables that would trigger such a need.
 - g. *Impact Assessment* for pre-construction, construction and post-construction/operation of the project covering direct, indirect, induced and cumulative impacts, related to key issues identified. The issues, for example, could be related to the following (but not limited to):
 - Construction impacts such as noise, dust, waste and wastewater management and disposal, quarry, crusher plant and spoils management, use of explosives and other

- hazardous materials, contractor / labor camp management, impacts to water sources, etc.
- Occupational health and safety risks and issues during construction and operation in compliance with applicable standards.
 - Environmental and social impacts during operation (e.g., air pollution, noise, traffic safety, and impacts on wildlife, water flow & quality, sediment flushing, etc.
 - Labor management issues, including grievance management, recruitment, child and forced labor, etc.
 - Impacts on population (e.g., physical resettlement, economic displacement, fishing & irrigation activities, right of way etc., including differential impacts on women and men, and differential impacts on vulnerable households and people).
 - Traffic safety during construction.
 - Impacts to natural habitats and wildlife (including aquatic and terrestrial species, migratory species known to exist/move in the project's area of influence).
 - Deforestation.
 - Eutrophication potential of the reservoir and mitigation measures incorporated into the project design where the risk of eutrophic conditions is assessed as significant.
 - Climate risk and vulnerability assessment, as a standalone assessment or as part of the ESIA.
 - Carbon footprint assessment
 - Slope stability and erosion.
 - Ecological flows.
 - Cumulative environmental and social impacts, if any, taking into account current and proposed activities in and near the project's Area of Influence (e.g., other energy facilities, transmission lines, substations, other land uses, etc.)
 - Summary of impacts in terms of gender equality and women's empowerment issues in the region.
 - Consideration and mitigation of significant impacts on river flows, quality and morphology in order to protect ecological flows and water users,
 - Summary of community health, and safety concerns, particularly those related to labor influx including introduction of HIV and other sexually transmitted diseases, gender-based violence and the sexual exploitation of children.
 - Any additional environmental and social impacts, if any.
- h. *Environmental and Social Management Plan (ESMP)*, based on the findings of the impact assessment and feedback from public consultations. For each potentially significant impact identified, mitigation measures should be required to reduce potentially significant adverse environmental and social impacts to acceptable levels in accordance with applicable standards. The capital and recurrent costs of the measures, and institutional, training and monitoring requirements to effectively implement these measures shall be estimated. The ESMP shall also outline different

environmental and social enhancements including landscaping around proposed project, considerations to aesthetical appeal, provision pathways for species, greening the area, and, if necessary, development of cultural properties or improving access. In addition, the ESMP should identify the need for further environmental or social studies or detailed plans for issues that cannot be fully dealt with during the project preparation stage but should be undertaken at a later time (e.g., prior to construction, prior to contractor demobilization, prior to operation, etc.). The ESMP should contain the comprehensive set of mitigation, management and monitoring measures, requirements, and institutional responsibilities for both construction and operation stages to address potentially significant impacts:

- Each mitigation and management measure should be briefly described regarding the impact to which it relates, as well as the required timeline for its implementation, indicators for measuring success, and budgetary requirements. Where appropriate, the ESMP will require PEC and/or contractor(s) to prepare detailed management plans and procedures to address specific risks. These could include occupational health and safety plan, community health and safety plan, emergency management plan, traffic management plan, erosion control plan, etc.
- The ESMP does not need to include specific or sample plans, such as for management and redevelopment of quarries, borrow areas and construction camps, but rather should identify such plans and procedures as are necessary to control risks and identify the party (e.g., PEC, EMEC/procurement contractor, construction contractor, etc.) who will be responsible for preparing the plans and the party/ies responsible for approving.
- The ESMP does not need to include detailed specification, bill of quantities, execution drawings and contracting procedures for execution of the environmental and social mitigation and enhancement measures suggested for the pre-construction, construction and operation periods, but should include appropriate requirements for consideration and inclusion in designs, procurement, and implementation.
- In addition, the ESMP may include references to relevant good practice guides related to construction and upkeep of plant and machinery where these are relevant to the avoidance or reduction in potential environmental or social impacts.
- Responsibilities for execution and supervision of each of the mitigation and enhancement measures shall be specified in the ESMP.
- A plan for continued consultation, communications, and grievance management to be conducted during implementation stage of the project shall also be appended. The project SEP will constitute this plan.
- All mitigation and management measures shall be consistent with national requirements and other applicable standards.
- Summary of the grievance management, consultation and communications aspects) shall also be included.

- A monitoring program including indicators, parameters/thresholds, and locations, frequency and methodology for monitoring should also be included, to enable verification that mitigation measures have been successful.
- Identification of institutions and organizations responsible for carrying out, monitoring, supervising and reporting on compliance with each mitigation and monitoring measure, and requirements for coordination between the various agencies responsible for implementation and management of the project.

Enhancements or other changes to capacity of the entities responsible for ESMP implementation, and recommendations for capacity-strengthening, training programs, etc. as needed.