



Project Information Document (PID)

Concept Stage | Date Prepared/Updated: 05-Sep-2023 | Report No: PIDC36208

BASIC INFORMATION

**A. Basic Project Data**

Project Beneficiary(ies) Tajikistan, Tajikistan	Operation ID P181029	Operation Name Sustainable Financing for Rogun Hydropower Project	
Region EUROPE AND CENTRAL ASIA	Estimated Appraisal Date 26-Oct-2023	Estimated Approval Date 31-Jan-2024	Practice Area (Lead) Energy & Extractives
Financing Instrument Investment Project Financing (IPF)	Borrower(s) Ministry of Finance, Republic of Tajikistan	Implementing Agency Rogun Project Management Group for the Power Plant Construction under the President of the Republic	

Proposed Development Objective(s)

The project development objective is to increase supply of affordable and clean energy for consumers in Tajikistan and Central Asia region.

PROJECT FINANCING DATA (US\$, Millions)**Maximizing Finance for Development**

Is this an MFD-Enabling Project (MFD-EP)?

Is this project Private Capital Enabling (PCE)?

SUMMARY

Total Operation Cost	2,440.00
Total Financing	1,920.00
of which IBRD/IDA	200.00
Financing Gap	520.00

DETAILS**World Bank Group Financing**

International Development Association (IDA)	200.00
IDA Grant	200.00

Non-World Bank Group Financing



Counterpart Funding	1,260.00
Borrowing Agency	300.00
Borrower/Recipient	960.00
Other Sources	460.00
Asian Infrastructure Investment Bank	200.00
Islamic Development Bank	60.00
EC: European Investment Bank	200.00

Environmental and Social Risk Classification	Concept Review Decision
High	The review did authorize the preparation to continue

Other Decision (as needed)

B. Introduction and Context

Country and Regional Context

1. **The under-construction Rogun Hydropower Plant (HPP) is a transformative project, very large compared to the size of Tajikistan’s economy.** Rogun HPP (the project) is located on the Vakhsh River in Tajikistan. Upon completion, it will have an installed capacity of 3,780 MW, 335-meter-high dam, 13.3 km³ reservoir, and expected average annual generation of 14,400 GWh, about 70 percent of current total generation in Tajikistan or 7 percent of total for Central Asia. In 2007-2022, the Government spent about US\$3.3 billion on Rogun HPP (or close to 39 percent of US\$8.5 billion GDP on average in 2017-2022, in current US\$), which was largely financed by the Government budget including the 10-year US\$500 million Eurobond¹ issued in 2017. Latest estimates suggest that the Government needs another US\$6.1 billion² (or 58 percent of US\$10.5 billion 2022 GDP, in current US\$) to complete its construction. Except for the Government direct funding, there was limited interest from development partners (DPs) or commercial banks to finance Rogun HPP mainly due to the lack of a credible and fiscally sustainable financing plan, commercial arrangements for electricity sales, need to ensure that project meets international standards on environment and social sustainability, and the lack of a lead development partner to play a convening role for the required financing.

¹ With annual coupon rate of 7.125 percent.

² Completion cost estimate as of Jun 1, 2023 under the scenario of unconstrained annual spending and completion date of 2032. The ongoing update of the Overall Implementation Program (OIP) will be finalized to make it macro-fiscally sustainable once the ongoing Bank-IMF analysis of annual state budget and external borrowing limits is finalized. The US\$6.1 billion is capital cost only and does not include the financing costs of the project.



2. The project will become the main pillar of Tajikistan’s electricity system and have a significant potential to contribute to decarbonization of electricity systems of Central Asian countries. The project will ensure reliable electricity supply to meet the growing domestic demand at affordable cost, which has been confirmed through detailed least-cost generation planning. The large reservoir would also provide electricity network balancing services and improve the resilience of the entire Vakhsh cascade of HPPs, which account for 95 percent of total hydro generation in Tajikistan, through mitigation of flooding risks. At the regional level, the project is expected to play a crucial role in decarbonizing the electricity grids of Central Asian electricity networks, which currently heavily rely on coal and gas for electricity generation. Rogun HPP is an export-orientated project, expected to export about 70 percent of total generation and therefore offers several advantages: (i) its green and reliable energy will contribute to reducing the costs of energy transition in Kazakhstan and Uzbekistan; (ii) it will promote the integration of renewable energy sources such as solar and wind (domestically and regionally); and (iii) it will enhance energy security through the development of the Central Asia regional power market, including the signing of long-term power purchase agreements (PPAs) for electricity supply. Substantial increase in availability of firm clean energy supply would also contribute uptake of green hydrogen and derivate products industry in Tajikistan and the broader Central Asia region as per the assessment completed by the Bank in 2021-2022.³ This export-oriented approach of the project has the potential of contributing to accelerated GDP growth due to larger exports of electricity and, potentially, green hydrogen and derivate products with positive impacts on social, educational, and healthcare sectors due to greater availability of public resources.

3. As it is an integral part of the Vakhsh cascade, located on the tributary of Amu-Darya River, the project also has the potential to promote shared benefits among riparian countries. With commitment of adherence to requirements of existing water sharing agreements among riparians, significant economic benefits may accrue to the region in terms of energy supply, flood mitigation and enhanced reliability of water supply for irrigation and domestic uses. These benefits may be more important considering the context of climate change where the observed impacts on the hydrology (total volumes, flood peaks, seasonal timing due to glacial and snow melt, increased water scarcity), including on downstream riparian water demands, can be mitigated through optimized and agreed operating protocols. However, future operating protocols would require countries to find a workable approach, considering the economic tradeoffs for operating the cascade across flood management, irrigation, and energy generation objectives and for different riparians in the basin. Finally, given the experience already with shared and jointly managed infrastructure in the region, there are opportunities for the Rogun HPP to contribute to the regional water management cooperation in the region.

4. Recognizing the strategic importance of the project and the Government commitment to broader sector reforms and sustainable completion of the project, DPs have provided technical assistance (TA) to strengthen various aspects of the project. The Government has demonstrated commitment to: (a) completing the construction of the project in a macro-fiscally sustainable manner; (b) strengthening the dam safety; (c) adherence to robust environmental and social (E&S) standards; (d) development of sound commercial framework for the project; (e) accelerating implementation of measures to return the electricity sector to adequate financial footing; (f) improvement of overall electricity sector governance; and (g) introducing benefit sharing mechanism to augment development impacts of the project. The Bank, AIIB, and ADB have provided TA for the project. There is an ongoing US\$20 million TA Project (Financing Framework for Rogun Hydropower Project, P178819) financed with US\$15 million IDA grant and US\$5 million AIIB grant (Rogun TA Project), which supports strengthening of the above-mentioned aspects of the project.

5. One of the key development priorities for the Government is to sustainably complete the construction of the project. Considering the progress made with sector reforms and strengthening various aspects of the project and the

³ “Hydrogen and Power-to-X in Central Asia,” World Bank, 2021, and “Hydrogen and Power-to-X in Tajikistan”, World Bank, 2022.



technical risks to the project from further substantial delay in completion, the Government requested DPs to support with financing of construction. Substantial delays in achievement of certain construction milestones and the overall material delay in completion may create technical risks and issues for the project. One of the issues, for example, is the sedimentation if the dam height is not increased to 1,110 meters above sea level (masl) within next few years. This would require significant financing in next 2-3 years (estimated US\$1.2 billion). It should also be noted that non-completion of the project at this stage is not a viable alternative. Specifically, such scenario would require an estimated US\$818 million of additional costs for decommissioning and mitigation of risks to the Vakhsh river cascade (construction of additional spillway at Nurek HPP), and additional US\$2.8 billion to replace the generation from Rogun (to meet the domestic demand). Moreover, this scenario would result in around US\$3 billion of lost revenues from exports and foregone opportunities to contribute to decarbonization of the power sectors in Central Asia, which is valued at around US\$2.6 billion at the shadow price of carbon. Therefore, the Government is highly unlikely to abandon Rogun HPP and will continue constructing it with available resources and external borrowing, which may create macro-fiscal risks if it is not supported by DPs.

6. **There is significant interest from DPs to finance the Rogun HPP and the financiers' platform has gathered momentum with the Bank at its helm.** The Bank is coordinating closely with other DPs through the Rogun Coordination Group (RCG)⁴ to mobilize financing for Rogun HPP, align advice to the Government on key issues related to the project and broader energy sector reforms. The Government has already organized several high-level technical discussions related to various aspects of the project. Several of them have already mentioned their interest in financing of the Program subject to satisfactory progress with improving E&S performance, ensuring strong commercial framework to have predictable revenues, and adherence to competitive procurement principles for new or retendered packages.
7. **A viable financing solution exists to complete construction of Rogun HPP in macro-fiscally sustainable manner while anchoring the project on strong environmental, social, benefit-sharing framework, and reform agenda.** The Financing Options Study, concluded by the Bank in 2021, identified a macro-fiscally viable scenario to finance completion of project through a combination of concessional and non-concessional financing from DPs and the Government budget financing. This interplay of resources is crucial not only for completing the construction of the Rogun HPP, but also for managing the fiscal threshold within debt sustainability parameters and creating room for social spending. The financing is considered concessional if it has a grant element of at least 35 percent. The Government has committed under the Sustainable Development Finance Policy (SDFP) that it would not enter into any contractual obligations for new external public and publicly-guaranteed non-concessional debt during FY21-23. The Government has also made a commitment under the IMF's Rapid Credit Facility (RCF; of May 2020) to limit fiscal deficits to -2.5 percent of GDP annually and avoid non-concessional borrowing until Rogun PPAs have been finalized (while debt remains sustainable over the longer term). Those constraints also assume that the Government can continue spending about US\$200 million/year from state budget and borrowing externally about US\$175 million/year in concessional financing over the period 2020-2022.
8. **Tajikistan's recent economic performance has shown signs of improvement.** In the midst of regional instability and global inflation, Tajikistan experienced significant economic growth and achieved a record low inflation rate in 2022. The country's economic activity flourished, thanks to the influx of remittances and the expansion of both services and industrial production. Real GDP expanded by 8 percent in 2022, following a rebound from the COVID-19 shock in the

⁴ The RCG is led by the Bank and includes European Union (EU), European Investment Bank (EIB), Asian Infrastructure Investment Bank (AIIB), Asian Development Bank (ADB), United States Agency for International Development (USAID) and the US Embassy in Tajikistan, Islamic Development Bank (IsDB), Eurasian Development Bank (EaDB), Kuwait Fund for Arab Economic Development, Saudi Fund for Development, UK Foreign, Commonwealth and Development Office, European Bank for Reconstruction and Development (EBRD), Italian Cassa Depositi e Prestiti (CDP), and Kreditanstalt Für Wiederaufbau (KfW).



previous year. Tajikistan boasted the lowest inflation rate in the region, which was made possible by the implementation of a prudent monetary policy and a strengthened exchange rate. By the end of 2022, the consumer price inflation rate registered at 4.2 percent and continued to decline throughout the first quarter of 2023. Tajikistan has successfully maintained a current account surplus for the third year in a row, achieving a historically high surplus of 15.6 percent of GDP in 2022. However, the trade deficit widened due to increased imports, while exports decreased as the Government chose to retain more gold domestically. Fortunately, the country offset this deficit with remittance inflows, which amounted to approximately 50 percent of GDP.

9. **Tajikistan has managed to reduce its overall fiscal deficit from over 3 percent in 2020 to around 1.2 percent in 2021-2022.** This was achieved through a combination of measures such as expenditure restraint policies, increased development partner grants, and non-tax revenues. On the other hand, the adoption of a new tax code had a negative impact on tax revenues, which fell by 1.5 percent of GDP compared to pre-pandemic levels. Despite this setback, the Government raised public sector wages and social payments, with a focus on capital investment in energy and transport sectors, particularly the Rogun hydropower plant (HPP). The volume of public debt declined from 46.5 percent of GDP in 2020 to 34.8 percent in 2022, thanks to robust economic growth and the appreciation of the Tajik somoni. However, Tajikistan is still at high risk of debt distress due to the planned repayment of Eurobond in 2025-2027. The Government is preparing a new Medium-Term Debt Management Strategy, which will look at how to mitigate risks of the Eurobond payment.
10. **In 2022, the poverty rate in Tajikistan decreased and many vulnerable households relied on labor migration as a significant source of income.** The poverty rate fell to 13.4 percent under the international poverty line of US\$3.65 (2017 PPP). Despite earlier forecasts, labor migration increased significantly with reports of one-third to one-half of households having at least one member working as a migrant abroad. Remittances have played a crucial role in reducing poverty in Tajikistan, with over 80 percent of remittances being used for food consumption and around 10 percent for other basic needs like healthcare, housing, and education. Tajikistan's social assistance program is the smallest in the Europe and Central Asia (ECA) region and reaches only about 15 percent of population. The authorities have recently launched the social assistance reform aimed at increasing benefit amounts and improving equity among the beneficiaries of social transfers, and better identification of poor households.
11. **The proposed Program⁵ supports the Government of Tajikistan to achieve its development vision of accelerating sustainable economic growth and strengthening economic and social resilience to shocks.** The Program will support the implementation of the Tajikistan's National Development Strategy (NDS) 2030 that strives to raise the population's living standards based on sustainable economic development, and is central to the World Bank Group's (WBG) engagement in Tajikistan, in line with the Country Partnership Framework (CPF) – see below for additional details. The Bank is coordinating closely with other DPs through the RCG to mobilize financing for Rogun HPP, align advice to the Government on key issues of reform. Indeed, engaging on this structural project has enabled the Bank and DPs to engage on wider reforms (e.g. the Bank's first Development Policy Operation (DPO, P177930) in ten years), complementing reform efforts supported through the Power Utility Financial Recovery Program for Results (PUFR, P168211). Additional details on key reforms in the energy sector can be found in the subsequent section.

⁵ For the purposes of the Project Information Document, the term "project" or "Rogun HPP project" are general terms referring to the Government's overall Rogun HPP project including the full history. The term "Program" refers to the remaining scope of works under Rogun HPP to be completed, including all phases of the proposed Multi-Phase Approach (MPA); and the term "Project" refers to Phase 1 of the Program.



Sectoral and Institutional Context

12. **Three entities are involved in implementation of Rogun HPP.** Rogun OJSC is the state-owned generation company responsible for construction and operation of the Rogun HPP. In 2012, the Government established the Project Management Group for Energy Facilities Construction (hereinafter referred to as the Rogun Project Management Group (PMG)) for the purposes of supporting implementation of Rogun HPP project. Rogun PMG is a separate legal entity directly reporting to the President of the country. In 2010, the Government also established the State Enterprise Directorate of the Flooding Zone of the Rogun HPP (DFZ), a state unitary enterprise, which is responsible for implementation of the resettlement activities under the Project.
13. **The electricity supply mix of Tajikistan is dominated by hydropower.** The total existing generation capacity is currently 6,100 MW, and hydropower plants account for about 88 percent. The Nurek HPP (3,000 MW), with a seasonal reservoir, is the largest generating plant which currently accounts for about 50 percent of the total annual electricity demand and is also the balancing plant in the system. The generation from HPPs reduces significantly in winter due to reduced river flows. After commissioning of the Rogun HPP with its full installed capacity of 3,780 MW and full supply level of its reservoir, it will be the largest HPP in Tajikistan which will generate annually about 14,400 GWh (about 50 percent of total projected electricity demand). The thermal power plants are primarily operated in winter to supply electricity and heat. The bulk of thermal energy-based generation comes from the new 400 MW coal-fired Dushanbe-2 combined heat and power plant (CHP), which was completed in 2017.
14. **The electricity sector is facing number of challenges, but the Government has made significant progress in addressing those through an ambitious reform agenda.** The main challenges in the electricity sector include: (a) financial distress of the sector due to below cost recovery tariffs, unsustainable levels of debt, high levels of electricity losses, and limited electricity export opportunities; (b) reduction of electricity supply reliability due to dilapidation of main power generation assets; (c) variability of electricity generation given significant reliance on hydropower and increased variability of water flows; and; (d) limited regional connectivity. The Government, with support from DPs, has been addressing those challenges and made significant progress. The following summarizes the key achievements to date on the reform agenda supported through the PUFRR and the Resilient and Sustainable DPO (P177930).
 - **Adoption and implementation of the Program for Financial Recovery of Electricity Sector for 2023-2030.** This Government program, supported by the ongoing PUFRR operation and the DPO, focused on addressing the root causes of financial distress. Since 2017, the Government: (a) increased the end-user electricity tariff by around 50 percent including increase for Tajikistan Aluminum Company (TALCO), which is the largest consumer accounting for about 15 percent of total demand, and committed to accelerate achievement of cost recovery by 2026; (b) reduced the debt burden of BT by restructuring the debts between Ministry of Finance (MOF) and BT, and achieving substantial reduction of interest rates for BT's commercial debt; and (c) initiated measures to improve the sector operational efficiency and governance, including hiring of private management contractor for electricity distribution, introduction of good-practice corporate governance structures at electricity sector state owned enterprises (SOEs), launching of escrow account mechanism for collection and distribution of sector revenues, and improvement of financial information disclosure.
 - **Consistent efforts to rehabilitate electricity generation assets.** The Government initiated projects to rehabilitate the key electricity generation assets, including the Nurek, Qairokkum, and Sarband HPPs that account for over 60 percent of total electricity generation in the country.



- **Diversification of electricity supply mix.** The Government’s Energy Sector Strategy 2030 plans to expand the role of non-hydro resources – solar photovoltaic (PV) and wind. This would allow to mitigate the impacts of hydro generation variability. The Government, with support from the Bank and other DPs, is preparing to construct, with involvement of private sector, about 300 MW of solar PV and wind by 2028.
- **Increase in exports and expansion of regional connections.** Tajikistan made significant progress in increasing the exports from around 1,300 GWh in 2017 (approximately 9 percent of total energy sales) to about 2,500 GWh in 2022 (approximately 16 percent of total energy sales). The Government also made significant progress with further expansion of regional connectivity. Specifically, the project to reconnect with Central Asian Power System (CAPS) is expected to be completed in 2024, which would allow Tajikistan to operate in parallel regime with Central Asian countries and the Government is also pursuing completion of Central Asia-South Asia Regional Interconnection and Power Trade Project (CASA-1000) to allow for exports of electricity to Afghanistan and Pakistan. This project was delayed due to political developments in Afghanistan.

Scope of the Rogun Program and Implementation Progress

15. The estimated US\$6.1 billion to complete the Program is comprised of several main contracts and packages, summarized in Table 1⁶.

Table 1: Main Contracts and Packages

Packages and Contracts	Main Scope	Contractor	Estimated Cost ⁷	Contract Status	Progress
Lot 1: Electro-mechanical equipment	Installation of four new generating units; upgrading of the two early generating units; supply of transformers; installation of the balance of plant and control equipment	Voith Hydro (Austria)	EUR 370 million (US\$400 million equivalent)	Under implementation	9 percent of contractual scope
Lot 1A: Additional electro-mechanical equipment and powerhouse works	Installation of runners for Units 5 and 6; supply and installation of new generators for Units 5 and 6; and supply and installation of equipment required for completion of powerhouse	To be procured	US\$130 million	Procurement to start in September 2023	-
Lot 2: Main dam	Construction of an upstream cofferdam; treatment of the salt wedge that exists beneath the dam; construction of the 140 m high Stage 1 dam; and grouting of the foundation and abutments	Webuild (Italy)	US\$2.5 billion	Under implementation	23 percent of contractual scope
Lot 3: Limited right bank structures	Completion of Diversion Tunnel 4 (DT-4), completion of investigations for atypical zone (ATPZ); excavation and lining of grouting galleries 1 and 3.	TGEM (Tajikistan)	US\$200 million ⁸	Under implementation	80 percent of revised scope

⁶ Expected over two phases (US\$2.4 billion in Phase 1, and US\$3.7 billion in Phase 2). See additional details on phasing below.

⁷ With physical and price contingencies.

⁸ To be confirmed as the division of scope between Lot 3 and new Lot 3A is finalized.



Packages and Contracts	Main Scope	Contractor	Estimated Cost ⁷	Contract Status	Progress
Lot 3A: Full scope of right bank structures	Flood-discharging structures, which progressively provide the required discharge capacities as construction of the dam and the impoundment of the reservoir proceeds. They consist of two mid-level outlets (ML01 and ML02/DT5), two high-level outlets (HL01 and HL02), and two surface spillways	To be procured	US\$1.4 billion	Procurement to start in August 2023	-
Lot 4 Early Works (EW)	Works for the permanent intakes of the powerhouse complex and the associated upstream waterways of the plant. Construction is ongoing on excavation and slope stabilization works for the power intake, the headrace tunnels, and the shafts	Various small contractors	US\$100 million	Under implementation	80 percent of contractual scope
Lot 4: Left bank structures	Headrace and tailrace civil works required to provide inflows for the generating units	To be procured	US\$850 million	Procurement to start in July 2023	23 percent of contractual scope
Owner’s costs	Project Management Consultant (PMC) ⁹ ; resettlement and ESMP; technical studies; incremental operating costs	PMC to be procured	US\$250 million	Procurement of PMC to start in July 2023	-

16. Rogun PMG has also been making good progress with implementation of other several preparatory activities that are financed under the ongoing Rogun TA Project. Specifically, good progress has been made on the following:

- a. **Appointment of a highly qualified dam safety panel of experts (DSPOE).** The Project did not have DSPOE in place despite recommendations provided by the Bank-financed studies in 2014 and 2021. In 2022, Rogun PMG appointed a dam safety panel comprised of experienced experts in their respective fields. The DSPOE reviewed the Project design, engineering, and construction solutions and did not identify any major technical flaws that would pose significant dam safety risks. The following main issues were identified: (i) salt wedge in the foundation and abutments of the main dam; (ii) ATPZ in the right bank downstream of the dam; (iii) thickness of upstream filters with due consideration to the dam’s behavior under seismic loads; and (iv) slope stability in the vicinity of the power intakes and the design of these intakes, which Rogun PMG agreed to rectify, and designs solutions are currently being developed to address those. DSPOE also recommended the following additional technical studies: (i) update of hydrology and climate change study; (ii) seismic hazard update study; and (iii) update of sedimentation studies, which are about to commence.

⁹ Often referred to as “Owners Engineer”.



- b. **Appointment of a highly qualified E&S panel of experts (ESPOE).** The Project did not have ESPOE in place despite recommendations provided by the Bank-financed studies in 2014 and 2021. The main findings and recommendations of ESPOE relate to update of E&S instruments of the Project. These updates are ongoing and expected to be completed by Project appraisal, with any outstanding tasks expected to form part of the E&S commitment plan (ESCP).
- c. **Government commitment to retender the critical scope of work for right bank structures.** The technical review of the procurement process and existing Lot 3 contract with TGEM (Tajikistan) concluded that the contractor was selected through direct contracting and that the contractor was not qualified for the given scope. Therefore, financing of this contract would not have been possible by potential financiers. Thus, the Government committed to retender the main scope of right bank structures (Lot 3A), with exception of DT-4 and some other works that are underway. This is an important progress and would ensure the Program has a viable financing plan because there is strong interest from DPs to finance Lot 3A.
- d. **Commencement of audit of quality control (QC) and quality assurance (QA) systems of the Program.** This would generate information regarding the robustness of completed civil works, which is an important decision factor for financiers considering that they are entering the Program mid-stream. Specifically, it will be focused on audit of the quality assurance (QA) and quality control (QC) systems and associated procedures that have been followed for the works constructed at Rogun HPP since the construction assessment carried out under the TEAS so as to identify any significant deficiencies that could have impacted the construction quality of these works and prepare a draft framework of an integrated Construction Supervision and Quality Assurance Plan covering the entire Program.
- e. **Progress with development of commercial framework for the Program.** The Government has already signed memoranda of understanding (MOUs) for supply of Rogun's electricity to Uzbekistan and Kazakhstan and started preparation of long-term PPAs for exports of electricity. Works are also underway to prepare corporate PPAs for supply to large domestic industrial consumers. Those would enable to ensure the adequacy and predictability of cash flows to service the debt.
- f. **Design of benefit sharing program.** The design of the Program is underway and would contribute to equitable development and sustainable socio-economic growth at the local and national levels, which would allow to use part of the Rogun HPP revenues from electricity sale for various economic and social activities and initiatives.
- g. **Update of E&S instruments of the Program.** The update of E&S instruments, which were finalized as part of TEAS in 2014, is underway and the advanced drafts are expected to be ready for review of DPs by mid-July.

Relationship to CPF

17. **The proposed Project is fully aligned with World Bank Group's Country Partnership Framework (CPF) for Tajikistan for FY2019-23 (Report No. 135875-TJ).** Specifically, the Program will contribute directly to the achievement of objectives under the following CPF Focus Areas:

- **Focus Area I (Human Capital and Resilience).** Reliable electricity supply is an essential prerequisite for enhanced educational, social and healthcare services. It is not possible to ensure quality delivery of educational, social and healthcare service if there are frequent electricity outages and supply interruptions. This creates not only significant additional costs for public and social facilities, but also significantly impacts the quality of the services.



- *Focus Area III (Enabling Private-Sector Growth and Creating Markets)*. Reliable electricity supply is an important precondition for improved economic opportunities and, thus, private sector led economic growth. The Program would also contribute to the expansion of electricity export opportunities.

18. **The proposed Project is aligned with Tajikistan's NDS 2030.** The Government is committed towards achievement of its goal of diversifying the energy mix, increasing exports of clean energy and achieving energy independence. The primary objectives are to: (i) increase generation capacity of the hydropower plants to 10,000 MW inclusive of Rogun HPP; (ii) expand non-hydro energy sources (solar and wind) to at least 10 percent of the total share contributing to diversification of the supply mix; and (iii) expand electricity exports to at least 10,000 GWh per year.

19. **The proposed Project is consistent with the principle of Maximizing Finance for Development.** In particular, preparation and adoption of the project financing plan, which needs to be macroeconomically sustainable, would allow to maximize utilization of public financing by raising resources from DPs in the short to medium-term as well as leverage commercial financing once the macro-fiscal situation allows.

20. **The proposed Project is consistent with the World Bank Group's Climate Change Action Plan 2021-2025 (CCAP).** Specifically, the CCAP recognizes the role of hydropower as a clean source of electricity and an enabler to integrate more solar photovoltaic and wind generation capacity. Thus, the World Bank will be supporting countries in developing sustainable and resilient hydropower, while not damaging the ecosystems, and the associated water storage needed, including through regional cooperation to advance complementary investments across countries. The ongoing ADB-financed project for reconnecting Tajikistan to CAPS would enable larger electricity trade within Central Asia and therefore exports of Rogun HPP electricity. The Bank has also started an ongoing dialogue with Central Asian countries to gradually introduce an electricity market, which would also promote trade through use of standardized contracts among market's participants.

21. **The proposed Project is also aligned with the World Bank Group's Energy Sector Directions Paper and the Sustainable Development Goal No. 7** – ensuring access to affordable, reliable, sustainable, and modern energy for all. It would also contribute to the World Bank's twin goals of reducing the extreme poverty and increasing shared prosperity.

22. **Paris Alignment.** The proposed Project is consistent with the country's climate strategies. Namely, Tajikistan's revised Nationally Determined Contributions (NDC, 2021) commits to a 40-50 percent reduction in emissions by 2030 compared to 1990 levels, conditional on international support and an unconditional emissions reduction target of 30-40 percent by 2030 compared to 1990 levels. It also expands adaptation in the energy, water, agriculture, forestry, and transportation sectors. Moreover, the proposed investment is consistent with mitigation co-benefits resulting from the adaptation actions identified in the revised NDC namely, modernization of existing and construction of new HPPs, and ensuring the functioning of the energy infrastructure under any climatic condition are aligned with the national policies of the Republic of Tajikistan. Moreover, the Rogun HPP would provide affordable, reliable, and sustainable energy, and enhance the resilience of the entire energy production of the country. In addition, Rogun HPP would also serve to decarbonize the electricity grids of Kazakhstan and Uzbekistan, enhance energy security, and provide a building tool to revive the Central Asian regional power market.

23. **The proposed Project is aligned with the World Bank Group's Global Crisis Response Framework.** Under the ongoing Bank-financed Rogun TA Project a commercial framework of Rogun HPP will be developed to identify climate risks and availability of water resources. Therefore, it contributes to Pillar 3 on Strengthening of Resilience. Moreover, the Rogun HPP Project contributes to Pillar 4 on Strengthening Policies, Institutions, and Investments for Rebuilding Better through its (a) contribution to further greening of electricity sector in Tajikistan and the broader Central Asia region by supplying low-cost firm renewable energy and (b) strengthening of the institutional capacity of the Rogun OJSC in operation and management of large hydropower projects and dams.



C. Proposed Development Objective(s)

The project development objective is to increase supply of affordable and clean energy for consumers in Tajikistan and Central Asia region.

Key Results (From PCN)

24. The key outcome indicators of the proposed Project, which will be measured across all Program phases, include¹⁰:

- **Indicator One (Custom): Electricity supplied from Rogun HPP to domestic consumers. (GWh/year).** This indicator would measure the annual supply of electricity from Rogun HPP to all domestic consumers.
- **Indicator Two (Custom): Increase of electricity exports from Tajikistan to Central Asian countries (in GWh/year).** This indicator would measure the volume of electricity exported to the Central Asian market.
- **Indicator Three (Custom): Cost of electricity from Rogun HPP compared to alternatives (US\$/kWh).** The indicator would measure the cost of electricity from Rogun HPP compared to alternatives with similar generation profile in order to determine that it remains part of the least-cost supply options for Tajikistan and Central Asian countries.

D. Concept Description

25. **The ongoing update of the Overall Implementation Program (OIP) of the project suggests that the cost of remaining works would be at least US\$6.1 billion.** The purpose of the OIP is to update the overall schedule and cost estimate taking into account macro-fiscal debt sustainability considerations. The first iteration of OIP update, drafted May 2023, was carried out assuming there are no macro-fiscal constraints on annual spending and external borrowing and those will be driven purely by technical considerations with the plan to complete the construction of the Project by 2032. This has resulted in Project completion cost estimate of US\$6.1 billion including around US\$275 million of physical contingencies and US\$660 million of price contingencies. It should be noted that the construction completion is different from Project implementation completion because the latter also includes additional 6 years (2038) required for filling of the reservoir to full supply level, with water withdrawals to be compliant with existing water sharing agreement among riparians. It should be noted that the US\$6.1 billion does not include: (a) the increase in the cost of Lot 1 contract due to retrofitting to align it with most recent requirements of Fédération Internationale Des Ingénieurs-Conseils (FIDIC) General Conditions of contracts and alignment of E&S requirements with the Bank's E&S Framework (ESF); (b) increase in the cost of other ongoing contracts due to additional E&S requirements and time extension driven by the modified OIP to make it macro-fiscally viable; and (c) the financing costs of the project, which will be known with greater level of clarity once the financing plan is finalized and the financial model of the project is updated. The OIP is expected to be finalized by the end of September 2023 taking those and external debt sustainability considerations into account, as well as.

26. **The construction completion schedule will most likely need to be revised and pushed out by number of years** based on the results of ongoing analysis to determine the annual maximum state budget financing and external borrowing while

¹⁰ Intermediate indicators will be defined during pre-appraisal stage.



maintaining macro-fiscal stability. For the purposes of the preliminary definition of Phases under the MPA, construction completion is assumed to be extended from 2032 under the preliminary version of the OIP, to 2035 under the constrained OIP. These timelines will be reviewed and revised during project appraisal as the OIP is finalized.

27. **The Program phasing is expected to be structured in two phases, around two major milestones identified in the revised OIP.** The phasing will be further updated as OIP is finalized taking into account macro-fiscal sustainability considerations.

- a. **Phase 1** includes achieving by 2028 (i) dam height of 1,185 masl; and (ii) installed capacity of 1,660 MW (400 MW for units 5 and 6, 1260 MW for Units 3 and 4). The estimated cost of Phase 1 is US\$2.44 billion.
- b. **Phase 2** includes achieving by 2035 (i) dam height of 1,300 masl.; and (ii) installed capacity of 3,780 MW (630 MW in all six Units). The estimated cost of Phase 2 is US\$3.66 billion, for a total Program cost of US\$6.1 billion.

Legal Operational Policies	Triggered?
Projects on International Waterways OP 7.50	Yes
Projects in Disputed Area OP 7.60	No

Summary of Screening of Environmental and Social Risks and Impacts

The environmental risk are High. The Rogun HPP involves significant civil works related to the completion of the dam; right bank structures and spillways; left bank structures, headrace tunnel, and powerhouse; and access roads and camps. Rogun will entail permanent inundation of a reservoir with gross storage of 13.3 km³ with the reservoir surface area of about 110 km². These are expected to have significant adverse and long term risks and impacts on the biophysical and cultural environment. Occupational and community health and safety risks and impacts are also expected to be adverse and significant considering the large number of workers to be deployed at the site during construction. Rogun HPP also requires substantial security measures to protect the large site. The works and inundation of the reservoir area are expected to have potential adverse risks and impacts on both terrestrial and aquatic ecosystems and biodiversity, including potential cumulative and transboundary impacts.

The social risks are High. Key direct social risks and impacts challenges include: (1) stakeholder and citizen engagement in an HPP project that will have profound socio-economic impacts on project-affected peoples (PAPs) – including vulnerable groups – due to economic and physical displacement, worker retrenchment, establishment of new communities and restoration of livelihoods (e.g. agriculture, fisheries, light manufacturing, service occupations, etc.); (2) large resettlement (some 47,000 people); (3) establishment of an effective grievance mechanism for handling a potentially large volume of complaints; (4) labor management challenges, including working terms and conditions, OHS, and the establishment of safe and effective work camps; (5) community health and safety issues, including labor influx, with attendant risks related to social conflict, gender-based violence, sexual exploitation and abuse/sexual harassment (GBV/SEA/SH), transmission of disease and security issues. The Rogun HPP may have some adverse impacts on tangible and intangible cultural heritage. In addition to GBV/SEA/SH risks, the ban on women



participation in certain jobs and professions across various sectors of the economy has a direct implication for Rogun HPP (Government Resolution No. 179). For example, there are several jobs related to power plants and network that are banned for women. The management of social risks and impacts will be addressed in the updated environmental and social instruments, namely the ESIA, Resettlement Policy Framework (RPF), including a draft livelihood restoration framework, Resettlement Action Plan and livelihood restoration plan, as well as the Labor Management Procedures (LMP), Stakeholder Engagement Plan (SEP), a Cultural Heritage survey, a gender gap assessment and action plan, a benefit-sharing study and other plans and studies, as necessary.

Sexual Harassment: No specific statute bans sexual harassment in the workplace. While the recent passing of the law on Equality and Elimination of all forms of discrimination (2022) recognizes sexual harassment at workplace as an offence, it doesn't provide effective mechanisms through which it can be addressed and penalized. The Committee for Women and Family Affairs (COWFA) operates a call center for survivors of sexual harassment in the workplace through which a specialist could provide legal and psychological assistance to the survivors. However, COWFA itself is under resourced and needs institutional strengthening to be able to deliver on its mandate. Survivors often do not report incidents because of fear of social stigma. Women reporting sexual harassment face retaliation from their employers as well as scrutiny from their families and communities. At the organizational level, the World Bank is working with Barqi Tojik through its Nurek Hydropower Rehabilitation Project Phase 2 (P177609) to put in place an anti-harassment policy. This is work in progress. However, in the absence of a national legislation, the progress made through organizational policies is limited. **Domestic violence:** Gender-based violence (GBV) in Tajikistan is on the rise. According to the Demographic and Health Survey of 2017, 21 percent of ever-married women reported that they had experienced domestic violence, a 7 percent increase since the DHC was conducted in 2012. The rate of violence is higher in the rural areas (e.g. 16 percent in Dushanbe versus 43 percent in rural regions of Khatlon). This implies higher GBV risks for Rogun project and its resettled communities that are largely rural. Tajikistan's law on Prevention of Domestic Violence exists but has critical gaps. It doesn't criminalize domestic violence and lacks a comprehensive strategy to combat all forms of GBV. After a decade of civil society advocacy, the Government did approve the Law on Prevention of Domestic Violence. However, the Law does not criminalize domestic violence, marital rape, or sexual harassment and views domestic violence as an act with administrative punishment. The World Bank is working with the Government on a prior action for a future DPO and will continue to support measures against domestic violence, where possible. Services for domestic violence survivors are severely limited and key actors' roles and responsibilities for service provision, as well as GBV monitoring, are not clearly defined.

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