

Japanese ODA Loan**Ex-Ante Evaluation (for PSIF Loan)**

**Private Sector Investment Finance Division,
Private Sector Partnership and Finance Department, JICA**

1. Name of the Project

- (1) Country: Republic of Uzbekistan (“Uzbekistan” or “the Country”)
- (2) Project: Zarafshan Wind Farm Project (“the Project”)
- (3) Project Site / Target Area: Zarafshan City, Navoi Region
- (4) Loan Agreement: September 2, 2022

2. Background and Necessity of the Project

- (1) Current State and Issues of the Power Sector and the Priority of the Project in Uzbekistan

Since the country’s independence in 1991, Uzbekistan (Population: 33.5 million (The United Nations Population Fund, 2020), GDP per capita: USD 1,742 (IMF, 2019)) has experienced average annual economic growth of 6.6% between 2010 and 2019, mainly due to exports of cotton, gold and natural gas (World Bank). The country's power sector has supported country’s high economic growth. Thermal power dominates country’s electricity generation (about 90%) and followed by hydro power (10%) (International Energy Agency, 2018). Because of the country’s high production of natural gas and coal, natural gas is the dominant fuel for power generation (accounting for about 75% of the total electricity generated). However, because the majority of natural gas-fired power plants have been in operation since the former Soviet era and have aged significantly, while generation capacity is 14 GW, only 12.5 GW of capacity is actually available for use (Asian Development Bank, 2019). In addition, while electricity demand in 2019 is 66,500 GWh, electricity generation is only 63,500 GWh, resulting in frequent power outages in rural areas, especially in winter when demand is at its peak. Along with economic growth, electricity demand is projected to grow from 65,000 GWh in 2018 to 71,000 GWh in 2028 (annual growth rate of 1.9%). So, the development of new power generation facilities is an urgent issue for the Government.

To address the aforementioned issues, the Government is committed to development of power generation facilities with renewable energy sources such as solar and wind power, which are considered to have high potential in the country, as well as newer, more efficient natural gas-fired power plants with

combined-cycle generators. Development strategy of new Uzbekistan for 2022-2026, published in January 2022, states as Goal 24 “a 20% increase in the energy efficiency of the economy through a stable electricity supply and active implementation of green economy technologies”, and the Power Sector Master Plan (May 2019) targets to install at least 7.2 GW of renewable capacity (6 GW solar and 1.2 GW wind out of 16GW by 2030). Furthermore, the Government is committed, in "Independent Draft Contribution (INDC)" submitted to the 21st session of the Conference of the Parties to the United Nations Framework Convention on Climate Change in 2015, that it would decrease specific emissions of greenhouse gases per unit of GDP by 10% by 2030 from level of 2010. The Government also sets a target to increase the share of renewable energy in total electricity generation from 10% in 2018 to 25% by 2030 in the Strategy on the Transition of the Republic of Uzbekistan to a “Green” Economy 2019 -2030". Lastly, the Government is promoting Public-Private Partnership (PPP) when it comes to the implementation of infrastructure projects in accordance with the PPP Law enforced since 2019. EBRD, World Bank Group and ADB have been supporting the tenders for solar and wind power projects operated by independent power producer (IPP).

Given the above-mentioned circumstances, the project is the first wind power project implemented as PPP in Uzbekistan and it is expected to contribute to the development and diversification of new power sources, climate change mitigation and private investment in the country, and is in line with the Government's policy.

(2) Japan's and JICA's Cooperation Policy and Operations in the Power Sector

Both Japan's Country Assistance Policy for the Republic of Uzbekistan (March 2017) and JICA Country Analysis Paper for the Republic of Uzbekistan (December 2014) set "development of economic infrastructure (especially transport and power infrastructure)" as a priority area. Therefore, this project is consistent with these policies and analyses. JICA has been supporting the country's power sector and implementing non-sovereign projects like “Project for Establishment of the Combined Cycle Gas Turbine (CCGT) Operation and Maintenance Training Center” and “Country-Focused Training for Thermal Power Generation (Gas Turbine Combined Cycle); Training on management of electric company”. Total amount of the projects implemented by JICA up to date is about 314 billion Yen. These projects contribute to the stable supply of

electricity to the country.

(3) Other Donors' Activities

International Finance Corporation, ADB and EBRD, the co-financiers for the project, are supporting the Government of Uzbekistan to conduct tenders for IPPs. The World Bank is providing financial and technical support to NEGU through the project "Electricity sector transformation and resilient transmission project". NEGU is the off-taker of the project and the World Bank's project will contribute to improvement of the capacity and reliability of the transmission system to integrate large scale generation from renewable energy projects.

3. Project Description

(1) Project Description

① Project Objective

The objective of the Project is to promote sustainable economic growth and contribute to the reduction of Greenhouse Gas emissions through increasing the renewable electricity supply in the country by constructing and operating a 500 MW wind farm to be located at Zarafshan, Navoi Region, the Republic of Uzbekistan.

② Project Components

Construction and operation of a wind farm with a capacity of 500 MW, and transmission line and other facilities

③ Project Beneficiaries (Target Group)

Citizens of Uzbekistan

(2) Estimated Project Cost

571 million USD (JICA loan: 42 million USD)

(3) Schedule

The construction started in November 2022 and will be completed in September 2025

(4) Project Implementation Structure

1) Borrower: Shamol Zarafshan Energy Foreign Enterprise Limited Liability Company

2) Guarantor: NA

3) Executing Agency: Shamol Zarafshan Energy Foreign Enterprise Limited Liability Company

4) Operation and Maintenance System : Masdar Specialized Technical Services Company

(5) Collaboration and Sharing of Roles with Other Donors: NA

(6) Environmental and Social Consideration

① Category: A

② Reason for Categorization: The Project falls into the categories of “sensitive characteristics” and “sensitive areas” as per the JICA Guidelines for Environmental and Social Considerations of January 2010.

③ Environmental Permit: The Uzbekistan laws require the implementation of a social and environmental impact assessment (ESIA) for the Project. In July 2021, the Project obtained a license related to environmental and social considerations from the government authorities.

④ Anti-Pollution Measures: Air quality, noise, water quality, waste, shadow flicker generated during construction and operational phases are mitigated by measures that meet national and international standards.

⑤ Natural Environment: The site of the Project is situated near areas that are thought to require careful considerations for the host country or region. 3.5 km from the project site, there is Mount Aktau (Important Bird Area (IBA)) where three EN species, one VU species and 3 NT species on the Red List of the International Union for Conservation of Nature and Natural Resources (IUCN) are confirmed. During the operational phase, the risk of bird collisions is mitigated through the introduction of coloured blades and a system that automatically shuts down wind turbines if birds are detected.

⑥ Social Environment:

The project site is owned by the Government of Uzbekistan and no large-scale land acquisition or involuntary resettlement is envisaged. Part of the project site is leased to five farmers and used as grazing land, so the farmers will be compensated for the loss of their livelihoods in accordance with the JICA Guidelines on Environmental and Social Considerations, in addition to the amendments on the lease agreement. Affected people will also be provided with construction material to build their barns, technical training, specific sheep breed, and financial grants for farmers’ wives as a livelihood restoration support measurement.

⑦ Other/Monitoring: During the construction and operational phases, the EPC contactors and sponsor will monitor noise and shadow flicker and impacts on the ecosystems and socioeconomic conditions.

(7) Cross-Sectoral Issues: The project is expected to contribute to climate change mitigation by the development of renewable energy and diversification of

power sources through the construction and operation of the wind farm.

(8) Gender Category: [Gender Project] GI(S) Gender Activity Integration Project

<Reason for classification>: The project has set gender-sensitive indicators.

(9) Other Important Issues: NA

4 . Targeted Outcomes

As quantitative outcomes, Capacity factor (%), Total maximum output (MW), Net electric energy production (GWh/year) and CO₂ emissions reductions (ton/year) will be monitored. As qualitative outcomes, diversification of power sources, mitigation of climate change, and promotion of private investment in renewable energy sector will be monitored as results of the project.

5 . External Factors and Risk Control

NA

6 . Lessons Learned from Past Projects

The ex-post evaluation of a past renewable energy project of a similar kind noted that aging grid facilities failed to meet soaring demand. This resulted in an inadequate capacity of the existing facilities upon connection to the central energy system, temporarily affecting the amount of electricity transmitted. The lesson learned for future projects is that it will be useful to analyze the grid capacity via a feasibility study or similar study and take such analyses into account during project feasibility assessment. Learning from this lesson, the project appraisal assessed the installed transmission capacity and confirmed that the power grid will not be affected.

7 . Evaluation Results

The Project is consistent with the Country's development issues and policies, as well as Japan and JICA's assistance policies and analyses. It will contribute to achieving SDGs: Goal 7 (sustainable energy), Goal 13 (climate action) and Goal 17 (partnership). Therefore, it is highly necessary for JICA to provide assistance through the Project.

8 . Plan for Future Evaluation

(1) Indicators to be Used

As indicated in Sections 4.

(2) Future Evaluation Schedule

Ex-post evaluation: approximately 3 years after the project completion

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