

**Ex-Ante Evaluation(for Private Sector Investment Finance)**  
**Private Sector Investment Finance Division,**  
**Private Sector Partnership and Finance Department, JICA**

**1. Name of the Project**

- ( 1 ) Country: Republic of Azerbaijan
- ( 2 ) Project: Alat (Garadagh) Solar Power Project
- ( 3 ) Project Site / Target Area: Garadagh district, Baku
- ( 4 ) Signing Date:: August 2<sup>nd</sup>, 2022

**2. Background and Necessity of the Project**

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

Azerbaijan (population: approx. 10.2 million: UN Population Fund, 2021) is an oil and natural gas exporting country, and after gaining independence in 1991, its per capita GDP increased from USD 1,237 in 1990 to USD 5,398 in 2021 (International Monetary Fund, "IMF") due to oil and natural gas development and export of these resources through promotion of foreign capital investment. The per capita GDP is projected to increase from USD 1,237 in 1990 to USD 5,398 in 2021 (International Monetary Fund ("IMF") estimate). The electricity generation that supports this economic development is composed of 92.5% gas-fired, 6% hydropower, and 1.5% other types of power, resulting in a high degree of dependence on fossil fuels and a high environmental burden (International Energy Agency (IEA) estimates, 2019). The amount of electricity generated in 2020 is 25,840 GWh, which is higher than the amount consumed (22,700 GWh), but many of the power generation facilities have aged significantly, as more than 30 years have passed since their construction, and there is an urgent need to improve and renew power generation facilities. On the other hand, the new coronavirus infection ("COVID-19") and the temporary decline in crude oil prices have caused the demand for power generation facilities to increase. On the other hand, the economy and public finances are highly volatile due to dependence on commodities, such as the GDP growth rate of -4.3% in 2020 (which will rebound to 5.6% in 2021, IMF) due to the impact of the new coronavirus infection ("COVID-19") and a temporary drop in oil prices. Under these circumstances, the challenge is to urgently develop and upgrade new power generation facilities that are not derived from fossil fuels, while curbing the fiscal burden.

The Azerbaijani government intends to reduce greenhouse gas emissions by 35% by 2030 compared to 1990 levels in accordance with the Paris Agreement, while aiming to diversify the economy from its dependence on fossil fuels. The National Sustainable Energy Action Plan, which the Azerbaijani government formulated in 2019, calls for the construction and renewal of not only new gas-fired power plants, which have been the main source of electricity, but also renewable energy generation, such as solar and wind power, by taking advantage of the characteristics of the country's land, to meet electricity demand that is expected to increase at a rate of 3.4% per year. The plan also calls for the development of renewable energy sources, such as solar power and wind power, to meet the expected increase in electricity demand, and aims to increase the ratio of renewable energy sources to 35%-40% by 2030. The plan also mentions the importance of private sector investment in the power sector.

Under these circumstances, this project is the first solar power generation facility to be constructed and operated by a private company in Azerbaijan, which will contribute to the diversification of the country's power sources, climate change mitigation, and private investment, and is in line with the government's policy.

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

The "Country Assistance Policy for the Republic of Azerbaijan" (January 2021) defines "economic infrastructure development" as a priority area, with particular emphasis on support for the energy sector. Therefore, this project is in line with this policy. JICA has more than 20 years of experience in providing assistance to the power sector in Azerbaijan, including the completion of the Simar Thermal Power Plant Unit 2 in September 2019, which was supported by a yen loan, and the completion of the Simar Thermal Power Plant Unit 1 in October 2003, also supported by a yen loan. As of 2019, JICA's assistance will have contributed to approximately 10% of the country's power generation capacity.

#### (3) Other Donors' Activities

ADB and EBRD are providing assistance in this country, including financial support and technical assistance for renewable energy and various power transmission facilities.

### **3. Project Description**

#### (1) Project Description

##### ① Project Objective

This project is located in the Karadag district of Baku, Azerbaijan, in the

southeast of Azerbaijan (hereinafter referred to as "Azerbaijan"). By constructing and operating a solar power plant (230 MW) and related facilities in Arat, Garadagh district, Baku, located in the southeast of the country, the project will promote the spread of renewable energy, thereby contributing to the mitigation of climate change through the reduction of greenhouse gas emissions and the revitalization of private investment.

② Project Components

The project involves the construction and operation of a 230 MW solar power plant and related facilities in Arat, Garadagh district of Baku, located in southeastern Azerbaijan.

③ Project Beneficiaries (Target Group)

Azerbaijani citizens

(2) Estimated Project Cost

261.9 million USD (JICA loan: 21.4 million USD)

(3) Schedule

August 2022: Commencement of the construction,

January 2024: Completion of the construction

(4) Project Implementation Structure

1) Borrower: "Masdar Azerbaijan Energy" Limited Liability Company

2) Guarantor: NA

3) Executing Agency: "Masdar Azerbaijan Energy" 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: B

② Reason for Categorization: The project does not fall under the sensitive sectors/characteristics and sensitive areas listed in the "JICA Guidelines for Environmental and Social Considerations" (promulgated in April 2010), and the undesirable effects on the environment are not considered to be significant.

③ Environmental Permit: The Environmental and Social Impact Assessment (ESIA) report for the project was approved by the Azerbaijani authorities (Ministry of Ecology and Natural Resources) in February 2022.

④ Anti-Pollution Measures: The impacts on air quality, water quality,

noise, and waste generated during construction and operation have been confirmed to be mitigated by measures that meet domestic and international environmental standards.

⑤ Natural Environment: The impacts on air quality, water quality, noise, and waste generated during construction and operation have been confirmed to be mitigated by measures that meet domestic and international environmental standards.

⑥ Social Environment: No involuntary resettlement will occur as a result of this project. The site is confirmed to be land owned by the Azerbaijani government and leased to the borrower. The land is being used without a permit by farmers and herders employed by farmers, both of which have been confirmed to be eligible for livelihood restoration assistance.

⑦ Other/Monitoring: Based on the environmental monitoring plan, the EPC contractor will monitor impacts on air quality, water quality, noise and vibration, waste, ecosystems, and livelihood restoration support before and during construction, and the O&M contractor will monitor impacts during service.

( 7 ) Cross-Sectoral Issues: NA

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

<Reason for classification>: The project has gender-sensitive indicators set by the co-financing partner

( 8 ) Other Important Issues: NA

#### **4 . Targeted Outcomes**

As quantitative outcomes, maximum power (MW), power generation at sending end (MWh/year) and CO<sub>2</sub> Reduction (tCO<sub>2</sub>/year) will be monitored.

As qualitative outcomes, diversify power sources, mitigate climate change, and promote private investment in renewable energy markets will be monitored as results of the project.

#### **5 . External Factors and Risk Control**

NA

#### **6 . Lessons Learned from Past Projects**

The lessons learned from similar projects in the renewable energy sector in the past were that the capacity of existing facilities after linking to the central power system was insufficient due to the aging of power system facilities and the

inability to increase capacity to keep up with rapidly growing demand, which temporarily affected the amount of electricity transmitted. The lesson learned is that it is useful to analyze the situation in advance and incorporate it into the decision on business feasibility. The technical advisors have confirmed that the transmission grid to be connected to the project is adjacent to the 850 ha Alat Free Economic Zone and was originally designed to handle large power generation capacity, and that the grid can sufficiently absorb the power generation capacity of the project, taking into account the existing power generation facilities. The technical advisor has confirmed that the grid is capable of absorbing the capacity of the project, taking into account the existing generation facilities.

## **7 . Evaluation Results**

This project is highly significant because it is consistent with the country's challenges, development policies, and cooperation policies of Japan and JICA, and because it is expected to contribute to SDG Goals 7 (Affordable and Clean Energy), 13 (Climate Action), and 17 (Partnerships for the Goal).

## **8 . Plan for Future Evaluation**

### ( 1 ) Indicators to be Used

As indicated in Section 4.

### ( 2 ) Future Evaluation Schedule

Ex-post evaluation:3 years after the project completion

END