Ex Ante Evaluation

Private Sector Investment Finance Division,

Private Sector Partnership and Finance Department, JICA

1. Name of the Project

(1) Country: People's Republic of Bangladesh ("Bangladesh")

(2) Project Site / Target Area: Mirsharai, Chattogram District

(3) Project: Mirsharai Steel Plant Development Project ("Project")

(4) Signing Date: October 4, 2023

2. Background and Necessity of the Project

(1) Current State and Issues of Private Sector Development in Bangladesh

In recent years, Bangladesh has been developing large-scale infrastructure such as metros, airports and bridges, using yen loans, and with rising average incomes, the construction of housing, commercial facilities and hotels is also underway. These infrastructure and construction projects are also driving demand for steel products in Bangladesh, with the country's recent steel demand growing at an annual rate of 15-20% (IDLC, 2020). Current per capita steel consumption in Bangladesh is around 50 kg, which is very low compared to the Asian average (283.5 kg) and neighboring countries (India: 70.9 kg) (EBL Securities, 2019）.. Big Mint[1] reported that current production capacity by local steel manufacturers are 9 million tonnes, which is very limited whereas actual demand, viz. production is 8.5 million tonnes. In the light of such circumstances, BigMint projects that steel consumption in Bangladesh will rise by 25 percent to around 10.6 million tonnes in 2027 from 85 lakh tonnes at present due to growing infrastructure development projects and individual consumption[2]. The demand for rebar, a key steel product, is also projected to double from 7 million t/y in 2019 to 14 million t/y by 2030, while wire rod, another key steel product, is expected to increase from 490,000 t/y in 2019 to 980,000 t/y by 2030 (KPMG, 2022). The iron and steel industry in Bangladesh melt scrap iron to reproduce steel, and these furnaces produce the intermediate product, billets[3], which are then processed to produce processed steel products such as rebar and wire rod. While domestic production of billets and rebars, the main processed steel products, has already progressed, domestic production of wire rods is currently not possible, and the industry is dependent on imports.

On the other hand, environmental pollution from the steel industry is a challenge. The average concentration of air pollutants (PM10) in urban areas in Bangladesh is 220-310 μg/m^3 (2021), which is much higher than the WHO guideline level of 45 μg/m^3 and a health

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1 Platform for commodity price reporting, market intelligence and consulting(www.bigmint.co)

2 Reported by The Daily Star on 20th May 2024 (https://www.thedailystar.net/business/news/four-steelmakers-control-53-the-market-study-3613811)

3 Intermediate product in the rolling process of steelmaking, produced by melting scrap iron in an electric furnace, adjusting its composition and casting it.

hazard is a concern. In this context, one of the main causes of air pollution in Bangladesh is considered to be the manufacturing sector. Among manufacturing industries, the brick and cement industries are considered major sources of air pollution, but the steel industry is considered the third largest source of air pollution, emitting 17 tons of PM10 every year[4] (Nature Environment and Pollution Technology, 2020). The Bangladesh Environment Department has stated that air pollution from the steel and cement industries cannot be overlooked and has recommended the introduction of an air pollutant management system for these industries.[5] In addition, the iron and steel industry requires large amounts of water for processes such as iron cooling, and there are concerns that draining this industrial water into rivers will exacerbate water pollution and taking water from groundwater will deplete groundwater supplies. Furthermore, the iron and steel industry consume large amounts of electricity in the process of melting scrap iron in electric furnaces[6], and CO2 emissions from electricity consumption using thermal and diesel power generation dedicated to the iron and steel industry are an issue[7] (Bangladesh Power Development Authority, 2016). The Government of Bangladesh has set out in the Eighth Five Year Plan to reduce air pollutant emissions and industrial wastewater emissions, with a specific target of reducing the average amount of PM10 emissions from 145 μg/m3 in 2017 to 120 μg/m3 by 2025 and is considering taxation on industrial wastewater to reduce the emission levels. Furthermore, the Five-Year Plan also includes the promotion of renewable energy and aims to build 2,014 MW of photovoltaic power generation capacity in the five years from 2021 to 2025.

In addition to the above challenges, Bangladesh is increasing its domestic manufacturing capacity for billets and processed steel (rebar, wire rod, etc.), but the value of steel imports has increased at an average annual rate of 14.4% from 172 billion taka in 2015-16 to 295 billion taka in 2019-20, contributing to the country's deteriorating trade balance. This is a negative factor for the country's balance of trade (imports equivalent to about 8% of foreign exchange reserves). If supply cannot keep up with the further increase in demand in the future, there is concern that the trade balance could deteriorate further. In addition, although domestic manufacturing of billets has progressed to a certain extent, the country relies on imports of wire rod, the main processed steel, from India and China, and imports of processed steel are increasing rapidly at an average annual rate of 32%, from 2.7 billion taka in 2017-18 to 4.8 billion taka in 2019-20. Thus, in order to improve the balance of trade, it is important to increase domestic manufacturing capacity in the future. In its budget speech for 2022-23, the Ministry of Finance, the Government of Bangladesh has stated that steel is an important

[4] The brick industry, for example, emits 83 tons of PM10 each year.
[5] Air Pollution Reduction Strategy for Bangladesh, Department of Environment, 2012.
[6] The electricity consumption required for the billet production and rolling processes is approximately 740 kWh/MT; the electricity consumption of the steel industry in Bangladesh, estimated from this figure, is approximately 6.5% of the country's total electricity consumption.
[7] BSRMSL uses Induction Furnaces instead of EAF which requires lesser electricity and thereby have lesser impact to the environment.

raw material to support infrastructure construction projects and that tax support will be provided.

(2) Japan and JICA's Cooperation Policy and Operations in Private Sector Development

Japan's Development Cooperative Policies for the People's Republic of Bangladesh (February 2018) identifies "Accelerating economic growth for the benefit of all citizens toward a middle-income country" as a priority area, specifically targeting the development of industrial infrastructure and the promotion of private-sector activities. In addition, the JICA Country Analysis Paper for Bangladesh (March 2023) also lists diversification into industries other than the garment industry, promotion of private investment and climate change measures. So far, JICA has supported the promotion of Bangladesh's domestic manufacturing industry through the technical cooperation Project for Promoting Investment and Enhancing Industrial Competitiveness" (May 2017 - May 2022) and the technical cooperation Project for Capacity Building of BEZA on EZ Management and Investment Promotion (May 2022 - May 2027), and through the ODA loan Foreign Direct Investment Promotion Project (1st L/A approved in 2015, 2nd L/A approved in 2019) supports the promotion of private investment. Furthermore, BSRM Steels Ltd ("BSRMSL") is promoting infrastructure development through the ODA loan Hazrat Shahjalal International Airport Expansion Project (1st L/A approved in 2017, 2nd L/A approved in 2020) and the Jamuna Railway Bridge Construction Project (1st L/A approved in 2018, 2nd L/A approved in 2020), among others. BSRM Steels Ltd (BSRMSL), the borrower of the Project is supplying steel products as a sub-contractor for these and other ODA loan projects, which will contribute to the implementation of existing and new ODA loan projects.

(3) Other Donors' Activities

The Export-Import Bank of India (India EXIM Bank) is one of the co-financing banks.

3. Project Description

(1) Project Description

① Project Objective

The objective of the Project is to expand Bangladesh's domestic steelmaking capacity in an environmentally friendly manner and contribute to the country's sustainable economic growth by developing an induction furnace and a rolling mill in Bangladesh, which will melt low-quality scrap iron to enable reproduction of steel, as well as solar power generation facilities, air pollution management systems and water treatment/recycling plants, and thereby contribute to the sustainable economic growth of Bangladesh.

② Project Components

The loan will be used to develop a steel mill to be implemented by BSRMSL. Specifically, the funds will be used for (i) billet production facilities using induction

furnaces, (ii) rolling and processing facilities for the production of rebar and wire rod, (iii) roof-top photovoltaic power generation facilities, (iv) air pollutant management systems, (v) materials and construction of water treatment and recycling plants, and (vi) land development costs.

③ Project Beneficiaries (Target Group)
Bangladesh citizens

(2) Estimated Project Cost: About 217 million dollars

(3) Schedule:
June 2024: Completion of Equipment Installation
September 2024: Commercial Operation

(4) Project Implementation Structure
① Borrower: BSRMSL
② Executing Agency: BSRMSL
③ Operation and Maintenance Organization: BSRMSL

(5) Collaboration and Sharing of Roles with Other Donors
1) Japan's Activity:
BSRMSL is a subcontractor for ODA loan projects such as the Hazrat Shahjalal International Airport Expansion Project (1st L/A approved in 2017, 2nd L/A approved in 2020) and the Jamuna Railway Bridge Construction Project (1st L/A approved in 2018, 2nd L/A approved in 2020). Steel materials are being supplied, and cooperation with ODA loan projects is expected. Support for economic zones and the private sector is being provided through the ODA loan Foreign Direct Investment Promotion Project (1st L/A approved in 2015, 2nd L/A approved in 2019) and the technical cooperation Project for Capacity Building of BEZA on EZ Management and Investment Promotion (May 2022 - May 2027).
2) Other Donors' Activity: Co-finance with India EXIM Bank

(6) Environmental and Social Consideration / Cross-Sectoral Issues / Gender Category
1) Environmental and Social Consideration
① Category: B
② Reasons for Categorization: The Project does not fall under the large-scale industrial development sector listed in the Japan International Cooperation Agency's Environmental and Social Consideration Guidelines (announced in April 2010), as it is judged to have no significant undesirable effects on the environment and does not fall under the sensitive characteristics and sensitive areas listed in the JICA Guidelines.
③ Environmental Permits: The Site Clearance for the project was obtained in 2020. Environmental Impact Assessment for the construction of the steel plant was also prepared and submitted to the Bangladesh Environment Department at the end of

August 2022.

④ Pollution Measures: Impacts on air quality, water quality, waste and noise generated during construction and service are expected to meet Bangladesh national and international environmental standards through mitigation measures. In particular, gas emissions from the induction furnaces during the operation phase will be controlled by an air pollutant management system and waste will be sorted and disposed of by a licensed contractor.

⑤ Natural Environment: The project area does not fall in or around sensitive areas such as national parks, and undesirable effects on the natural environment are minimal.

⑥ Social Environment: The project site is constructed on the existing BSRMSL factory site, and no additional land acquisition or resettlement will occur.

⑦ Other: The project will be monitored by the borrower for air quality, water quality, noise and vibration, soil contamination, impact on waste and noise.

(7) Cross-Sectoral Issues: The project will install roof-top photovoltaic installations, which will reduce greenhouse gas emissions and contribute to climate change mitigation.

(8) Gender Category: GI: Gender mainstreaming needs assessment and analysis Project
Reasons for classification: gender mainstreaming needs were identified, but specific initiatives contributing to gender mainstreaming were not included.

(9) Other Important Issues: N/A

4. Targeted Outcomes

(1) Quantitative Effects:

1) Outcomes (Operation and Effect Indicators)

Indicator	Baseline (2021)	Target (2029) (Five years after the Commercial Operation)
BSRMSL's billet production capacity (tons/year)	780,000 tons/year	1,030,000 tons/year
BSRMSL's production capacity of processed steel products (tons/year)	800,000 tons/year	1,400,000 tons/year
Number of BSRMSL employees (persons)	1,449 persons	1,949 persons
BSRMSL installed renewable energy sources (MW)	0MW	3.0 MW
Installed renewable energy sources of other BSRM Group companies (MW)	0MW	3.2 MW
Greenhouse gas emission reductions (tons CO_2/ year)	N.A..	10,230 tons CO_2/ year
BSRMSL tax payments (million taka)	871 million taka	1,166 million taka

(2) Qualitative Effects: Improvement of the trade balance through import substitution

5. External Factors and Risk Control

N/A

6. Lessons Learned from Past Projects

(1) Evaluation Findings of Similar Past Projects

From the results of the ex post evaluation of the Myanmar Steel Plant Expansion Project, among other things, lessons have been learnt that smooth supply sources of raw materials and spare parts, as well as a stable power supply, are important for achieving stable steelmaking capacity.

(2) Lessons for the Present Project

In light of such lessons learnt, the project confirmed the prospects for the supply of raw materials such as scrap iron and the status of studies to secure stable electricity, gas and other utilities through the screening. With regard to the supply of raw materials, BSRMSL imports most of its scrap iron and steel, with 45% imported from Japan, 20% from the USA, 15% from the UK, 15% from Australia, confirming that the company is limiting raw material supply risks by securing a diverse range of import sources. The use of imported scrap iron is affected by international scrap iron prices and exchange rates, but the company has confirmed that it is able to pass on these raw material price increases to its sales prices, and that it will be able to secure sufficient profits even if raw material prices rise in the future. In addition, the company has confirmed that it has already obtained permits and approvals from the Bangladeshi authorities for utilities such as electricity and gas, and that there are no concerns.

7. Evaluation Results

As described above, the project is in line with Bangladesh's development issues and policies, as well as the cooperation policy and analysis of Japan and JICA, and will contribute to job creation, industrial promotion and environmental conservation through support for Bangladesh's environmentally friendly steel industry, and will also contribute to Goal 8 (Decent Work and Economic Growth), Goal 9 (Industry, Innovation and Infrastructure) and Goal 17 (Partnerships for the Goals) of the SDGs, and therefore support through overseas investments and loans is highly significant.

8. Plan for Future Evaluation

(1) Indicators to Be Used: As shown in Section 4.

(2) Future Evaluation Schedule (estimate): Ex post evaluation to be conducted five years after the commercial operation.

END

Annex: Project Site Map

Annex

Project Site Map