Briefing Paper:
JICA support for 13GW LNG power expansion in Bangladesh - MIDI Masterplan inconsistent with the Paris Agreement -

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Executive Summary

In February 2024, the Japan International Cooperation Agency (JICA), Japan's official development assistance agency, started the Moheshkhali-Matarbari Integrated Infrastructure Development project (hereinafter referred to as "MIDI Masterplan"), a comprehensive development plan for the Moheshkhali and Matarbari region. However, the energy plan outlined in JICA's MIDI-related documents relies heavily on fossil fuels, including the introduction of 13GW of new liquefied natural gas (LNG) thermal power generation, and is based on an estimation derived from excessive energy demand forecasts. Consequently, it fails to ensure consistency with the 1.5 degree goals of the Paris Agreement, lacks economic rationality, and risks further exacerbating Bangladesh's fiscal difficulties. This paper raises the following issues and recommendations concerning the energy plan proposed in the MIDI Masterplan.

Issue 1: The estimated installed capacity based on excessive energy demand forecasts, and an inconsistent installed capacity with the IEPMP.

In the MIDI Masterplan, JICA expects the introduction of up to 15GW of installed capacity in the MIDI region (see Table A). However, this figure represents an overestimation of installed capacity, as the energy demand forecast in the Integrated Energy and Power Master Plan (IEPMP), a higher-level plan currently supported by JICA, is based on the demand forecast that significantly exceeds the economic growth forecast of the International Monetary Fund (IMF)[1]. In the IEPMP, JICA has estimated an installed capacity of 15GW for the broader "Chattogram region", which includes the MIDI area. Consequently, the estimates in the two master plans are not consistent, and the estimate of the MIDI Masterplan may be excessive. Such excessive energy demand forecasts and estimates of installed capacity by JICA risk further worsening the already deteriorating financial situation in Bangladesh. Regarding the IEPMP, as of December 2024, it has become apparent that the interim government is revising the IEPMP, and the figures may be subject to review in the future[2].

[1] https://powerdivision.portal.gov.bd/sites/default/files/files/powerdivision.portal.gov.bd/page/4f81bf4d_1180_4c53_b27c_8fa0eb11e2c1/IEPMP%202023.pdf
[2] https://www.thedailystar.net/news/bangladesh/news/govt-revising-energy-master-plan-3774286

Table A: Installed capacity in the MIDI region expected by JICA

	Scenario 1: Risk-factored case	Scenario 2: Base case
Gas	8GW (950mmcfd of LNG to operate, equivalent to 25% of Bangladesh in 2041).	13GW (1,540mmcfd of LNG to operate, equivalent to 41% of Bangladesh in 2041).
Coal[3]	1.8GW	1.8GW
Solar	0.2GW	0.2GW
Installed capacity	10GW (equivalent to 20% of energy demand in Bangladesh)	15GW (equivalent to 30% of energy demand in Bangladesh)

Source: prepared by JACSES based on JICA's "MIDI Strategic Vision Development and Economic Impact Analysis".

Issue 2: JICA proposed a scenario to introduce 13GW of new LNG-fired power generation, which is inconsistent with the 1.5 degree goals of the Paris Agreement, and may violate the G7 agreement.

In the MIDI Masterplan, JICA estimates the introduction of 13GW of new LNG-fired power projects. However, the annual greenhouse gas (GHG) emissions from these LNG power plants are projected to reach approximately 27.3 million tonnes[4], increasing Bangladesh's annual GHG emissions by around 9.7 percent[5]. In the alternative plans of the MIDI power and energy sector, JICA also recommends Options B and C, which plan to utilise the existing Matarbari coal-fired power project (Phase 1) and introduce new LNG-fired power projects (see Table B)[6]. However, IEA states that achieving the 1.5 degree target requires net zero emissions in the power sector globally by 2040[7]. Options B and C are scenarios that are not consistent with the 1.5 degree goals of the Paris Agreement. As the Japanese government committed to the G7 agreement in 2022 to "end new direct public support for the international unabated fossil fuel energy sector by the end of 2022, except in limited circumstances clearly defined by each country consistent with a 1.5°C warming limit and the goals of the Paris Agreement,[8]" supporting MIDI Masterplan, which is inconsistent with the 1.5 goals, violates the G7 agreement. In June 2025, the interim government announced targets to increase renewable energy generation to 20% by 2030 and 30% by 2040. The MIDI Masterplan, heavily reliant on LNG thermal power generation, may run counter to the Bangladesh government's renewable energy policy[9].

[3] The 1.8GW of coal-fired power generation capacity appears to be the combined figure for the Matarbari coal-fired power project (Phase 1, 1.2GW) and the Orion coal-fired power plant (0.6GW). However, after the table was created, the Orion coal-fired power plant was cancelled in May 2025, meaning the actual capacity is now expected to be 1.2GW.
[4] CO2 equivalent figures. Calculated based on the following data, assuming a facility utilisation rate of 70%. https://www.asahi.com/sdgs/article/15710272#inner_link_004_1
[5] Calculated using GHG emissions of 281 million tonnes as of December 2023. https://www.ceicdata.com/en/bangladesh/environmental-greenhouse-gas-emissions-annual
[6] Information as of March 2025.
[7] https://www.iea.org/reports/net-zero-by-2050
[8] https://www.mofa.go.jp/mofaj/files/100364051.pdf
[9] https://ieefa.org/resources/bangladeshs-energy-policy-changes-raise-more-questions-they-answer

Table B: Alternative plans of the MIDI power and energy sector (prepared by JACSES based on information from JICA)

	Coal	Gas	Renewables
Option 0	No project (only existing Matarbari 1)	No project	No project
Option A	Coal power (new plants) + Matarbari 1	LNG power (new plants)	Solar + Wind
Option B	Only existing Matarbari 1	LNG power (new plants)	Solar + Wind
Option C	50% ammonia coal co-firing + 50% CCS for Matarbari 1	LNG Power (new plants) including a future potential for 100% Hydrogen gas firing	Solar + Wind
Option D	50% ammonia coal co-firing + 50% CCS for Matarbari 1	No project	Solar + Wind

Source: https://www.jica.go.jp/about/policy/environment/advice/n_files/ban16_SCO_giji.pdf

Issue 3: The risk that Bangladesh's financial difficulties could worsen due to an energy plan reliant on imported LNG, which is subject to significant price fluctuations

In the MIDI Masterplan, JICA recommends introducing imported LNG power generation facilities to the MIDI region. However, Russia's invasion of Ukraine triggered an energy crisis in 2022, causing LNG spot prices to reach record highs. Bangladesh faced frequent failures to import fossil fuels due to soaring prices throughout 2022, which led to fuel shortages, resulting in power cuts across most of the country. Moreover, as of August 2025, only 11 of 51 gas-fired power plants were able to operate due to the gas shortages. The Meghnaghat gas-fired power plant (718MW), in which JERA holds an investment stake, was forced to close just two weeks after commencing operations on 28 July[10]. Power plans reliant on LNG could increase the payback burden on idle power plants, potentially worsening Bangladesh's fiscal difficulties. Conversely, analysis indicates that maximising solar power deployment between 2022 and 2024, in line with the ambitious MCPP-M scenario of the Mujib Climate Prosperity Plan (MCPP) announced by the Bangladesh government in 2021, rather than relying on costly imported LNG, could have reduced LNG import costs by $2.7 billion by 2024[11]. Promoting fossil fuel dependency in the MIDI region risks straining Bangladesh's finances, locking in long-term emissions sources, hindering the transition to renewable energy, and threatening energy security.

[10] https://www.tbsnews.net/bangladesh/energy/how-flawed-policy-keeps-shutting-gas-fired-power-plants-amid-fuel-shortage-1218236

[11] https://ember-energy.org/latest-insights/spot-market-lng-purchases-can-cost-bangladesh-about-11-billion-between-2022-2024/

Issue 4: Prospects for introducing ammonia /hydrogen co-firing, which lacks economic rationality.

Options C and D of the alternative plans of MIDI Masterplan expect the introduction of a technology of uncertain reliability and a globally unprecedented ratio of 50% ammonia co-firing and 50% CCS at the existing Matabari coal-fired power plant (Phase 1). Furthermore, Alternative Plan C outlines the potential for 100% hydrogen-only firing at the new gas-fired power plants. However, when lifecycle emissions are taken into account, the CO_2 reduction effect achieved through co-firing technology is questionable. The lifecycle emissions of grey ammonia produced from fossil fuels without emission reduction measures – currently the most cost-effective producing method – equate to twice the emissions associated with direct coal combustion[12]. Furthermore, in the IEPMP, the costs of ammonia/hydrogen co-fired thermal power generation are estimated to be significantly higher than those of renewable energy with storage batteries, rendering the introduction of co-firing technology economically unviable. Furthermore, research by the Centre for Research on Energy and Clean Air (CREA), an independent Finnish think tank, concludes that air pollutant emissions increase in proportion to the ammonia co-firing ratio[13].

Issue 5: The risk that development projects in the MIDI region may lead to ecosystem destruction.

In the consideration of alternative proposals for the Environmental Impact Assessment of JICA's Matabari coal-fired power project (Phase 1) and the EIA for Matabari Port Phase 1, several areas were excluded due to concerns over their potential ecological impact. These very areas are now slated for development as project sites in the MIDI Masterplan. Therefore, if these areas become development targets as a result of support for formulating the MIDI Masterplan, there is a risk of significant ecological damage occurring.

Issue 6: Uncertainty on the adequate implementation of compensation for affected residents and insufficient employment opportunities

In the JICA Guideline for Environmental and Social Considerations, it is stated that "Compensations must be calculated at full replacement cost as much as possible, and provided in advance. Project proponents must make efforts for the affected people to improve or at least restore their standards of living, income opportunities and production levels to the pre-project levels."[14] However, in the Matarbari coal-fired power plant project (Phase 1) currently supported by JICA, construction has resulted in impacts on affected residents beyond monetary compensation, including the provision of additional housing free of charge, the blocking of irrigation channels, and the drying up of the Kohelia River, affecting salt pan operators and fishermen[15]. This situation does not meet JICA's guidelines. The MIDI Masterplan involves multiple development projects in the Matarbari and Moheshkhali region, covering 5,241 hectares. While it is estimated that 116,000 residents will be affected, questions remain as to whether their livelihoods will be adequately restored. Furthermore, while JICA has indicated its intention to expand employment opportunities for

[12] https://www.iea.org/reports/ammonia-technology-roadmap/executive-summary

[13] https://energyandcleanair.org/wp/wp-content/uploads/2023/05/CREA_Air-quality-implications-of-coal-ammonia-co-firing_Briefing_2023_JP_FINAL.pdf

[14] https://www.jica.go.jp/about/policy/environment/guideline/__icsFiles/afieldfile/2023/12/25/kankyoEN.pdf

[15] https://sekitan.jp/jbic/en/wp-content/uploads/2021/04/Matarbari-Factsheet_2021_en.pdf

highly skilled workers under the MIDI Masterplan, it has stated that there are no plans to actively increase the employment of local workers, raising questions about whether adequate employment opportunities will be provided for local residents.

Recommendations

In light of the above, JICA should consider the following recommendations when formulating the MIDI Masterplan for Bangladesh.

1. To reconsider the excessive energy demand projections outlined in the IEPMP, and to adopt demand forecasts based on the IMF economic growth projections. To adjust the estimates of installed capacity for the MIDI region to align with the estimates of installed capacity for the “Chattogram region” in the IEPMP.
2. To exclude the introduction of new LNG-fired power generation, which is inconsistent with the 1.5 degree target of the Paris Agreement and violates the G7 agreement, and to center on renewable energy in the power mix.
3. To cease reliance on expensive imported fossil fuels subject to volatile price fluctuations, to ensure energy security and energy access.
4. To exclude the introduction of expensive ammonia-hydrogen co-firing from the scenario, which lacks economic rationality, and to establish a scenario to ensure that achieving net zero by 2050 remains a certainty, even if these technologies fail to be successfully introduced.
5. To conduct a thorough investigation of the environmental impact of the project, and to exclude areas where ecological impact is a concern from the planned development site.
6. In accordance with the JICA Guideline for Environmental and Social Considerations, to conduct frequent information disclosure and consultation with affected communities to ensure appropriate implementation of compensation for affected residents.