

Briefing Paper: JICA supported energy master plan in Bangladesh, soaked in fossil fuels and not aligned with the Paris Agreement

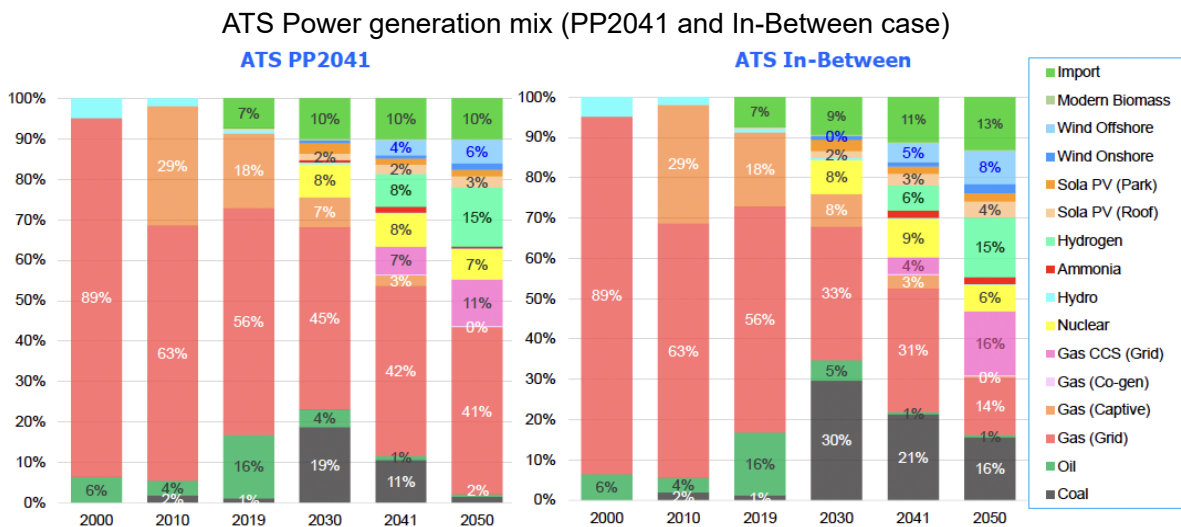
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by Fair Finance Guide Japan

Executive Summary

In March 2021, Japan International Cooperation Agency (JICA), an official aid agency of the Japanese government, started supporting the Bangladesh government for the development of the Integrated Energy and Power Master Plan (IEPMP) Project. However, the energy plan which is suggested in the draft IEPMP relies heavily on fossil fuels, such as coal-fired and gas-fired power generation, which is not consistent with the 1.5 degree goals of the Paris Agreement, lacks economic rationale, and would make Bangladesh more vulnerable to energy security risks. This paper indicates issues and suggestions on the IEPMP, based on the fourth draft released in December 2022.

Issue1: JICA recommended Advanced Technology Scenario (ATS) targeting to achieve net-zero in 2070 is inconsistent with 1.5 degree goals and constitutes a violation of G7 commitment.

ATS, which is recommended by JICA, assumes that Bangladesh will achieve net-zero in around 2070 and that fossil fuel-based power will account for 60% of power generation mix even in 2050. This scenario is not consistent with the 1.5 degree goals of the Paris Agreement. In the G7 agreement of 2022, the Japanese government has committed “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 Agreement¹.” It deviates from the G7 agreement to provide support for IEPMP that is inconsistent with the 1.5 degree goals.



Source: JICA Study Team

Source: IEEJ (2022) “Integrated Energy and Power Master Plan Project in the People’s Republic of Bangladesh Draft Final Report (#4 Draft)”

¹<https://www.g7germany.de/resource/blob/974430/2062292/fbdb2c7e996205aee402386aae057c5e/2022-07-14-leaders-communicue-data.pdf?download=1>

Issue 2: Underestimation of renewable energy installations and deviation from existing commitments

In ATS, renewable energies are assumed to account for 9% and 12% of the power generation mix in 2041 and 2050 respectively. However, this assumption is not consistent with the Mujib Climate Prosperity Plan, which aims to reach 40% renewable energy by 2041 and 100% renewable energy by 2050, and Prime Minister Hasina’s commitment at COP26. Although Prime Minister Hasina announced that “we hope to have 40% of our energy from renewable sources by 2041²”, the declaration is not correctly interpreted in the text of IEPMP, which refers to ‘clean energy’ rather than ‘renewable energy’. Moreover, as a number of research institutes have presented potentials of renewables that exceed the IEPMP’s forecasts of solar and wind energy installations, the amount of renewable energies installed is underestimated in IEPMP.

Comparison of the amount of renewable energy installations in IEPMP and research institutes

	IEPMP ATS *JICA recommended scenario	The Institute for Sustainable Futures (ISF), University of Technology Sydney	SREDA Bangladesh	USAID and NREL
Wind power	20,000MW in 2050	150,000MW	–	30,000WM
Solar power	18,000MW in 2050	191,000MW	20,000MW-40,000 MW	–

Issue 3: Optimistic prospects for the installations of ammonia/hydrogen co-firings which lacks economic rationale

In ATS, it is assumed to introduce ammonia/hydrogen co-firing in thermal power plants, targeting 6% of Bangladesh power generation mix to be covered by gas-fired power generation with hydrogen co-firing and 2% by coal-fired power generation with ammonia co-firing by 2041. However, IEPMP itself estimates the generating cost of ammonia/hydrogen co-firing to be significantly higher than that of renewable energies, and the introduction of ammonia/hydrogen co-firing lacks economic rationale. Ammonia/hydrogen co-firing does not emit CO₂ when generating power. However, little CO₂ emission reductions can be expected from co-firing with thermal power plants, when life-cycle emissions are taken into account^{3,4,5}. Moreover, a report published by CREA shows that the emissions of the PM_{2.5} precursors will increase as the ammonia co-firing rate in coal-fired power plants gets higher⁶. There is a risk that it will exacerbate air pollution and health impacts to facilitate the use of the ammonia co-firing in coal-fired power plants in Bangladesh.

Issue 4: Risks of overcapacity caused by excessive energy demand forecasts

Although ATS estimates approximately 97GW of the maximum demand in 2050 for PP2041 case and 71GW for In-Between case, both are likely to be excessive energy demand forecasts based on high economic growth projections. In the past, JICA provided support for establishing energy

²https://thecvf.org/wp-content/uploads/2021/10/HPMs_statement_at_COP26_received_from_PMO_23_1021_shortened-1.pdf

³https://www.kiconet.org/wp/wp-content/uploads/2021/10/posision-paper-hydrogen-ammonia_rev2.pdf

⁴ <https://www.iea.org/reports/ammonia-technology-roadmap/executive-summary>

⁵https://static1.squarespace.com/static/63d1607c35efbd5cbfee1529/t/6409d76ba41b6269e03c4df1/1678366590892/TransitionZero_Coal-de-sac_Report_final_Japanese%2Bfull%2Breport-updated+%282%29.pdf

⁶<https://energyandcleanair.org/publication/air-quality-implications-of-coal-ammonia-co-firing/>

master plans in 2010 and 2016, however, both resulted in excessive energy demand forecasts. These past master plans have caused significant overcapacity of approximately 60% in Bangladesh as of April 2022, and the Bangladesh government has been struggling with the significant subsidy payments to non-operational power plants. Center for Policy Dialogue (CPD), a policy think tank in Bangladesh, indicates that the In-Between case used as the main energy demand forecast in the IEPMP is too high and that the lower scenario, the International Monetary Fund (IMF) economic growth forecast, is more appropriate⁷.

Issue 5: Risks of over-dependence on imported fossil fuels vulnerable to international price fluctuations

The international energy price hike due to the Russian invasion of Ukraine has raised the costs of imported fossil fuels in Bangladesh, causing frequent load sheddings throughout Bangladesh. In October 2022, at least 130 million people were affected by blackouts across 75%-80% of Bangladesh⁸. Although the IEPMP assumes to increase coal-fired power generation until the 2030s, the investment costs of Bangladesh coal-fired power generation in 2030 are competitive with solar and onshore wind power generation, and the maintenance cost of solar power is significantly lower⁹. Therefore, there is no economic rationale to newly introduce imported coal-fired power generations. The IEPMP assumes to largely introduce Liquefied Natural Gas (LNG). However, there is a risk that LNG projects become stranded assets in the future, given the declining levelized costs of renewables globally and the continuing high prices of imported LNG¹⁰. The garment industry, accounting for about 80% of Bangladesh's total merchandise exports, have been impacted by increase in electricity and gas tariffs and load sheddings, and have been suffering from declining amounts of production while production costs increase. Further deepening Bangladesh dependence on fossil fuels risks threatening energy security, further hindering citizen's access to energy and weakening Bangladeshi industry.

Recommendations:

Based on the above, the following should be taken into consideration when establishing Bangladesh's energy master plans.

1. The scenario should be set on the basis to target net-zero in 2050.
2. Regarding the prospects for introducing renewable energies, the power mix should be centered on renewable energies, consistent with the Mujib Climate Prosperity Plan (achieving 40% renewable energies by 2041 and 100% by 2050) and the Prime Minister Hasina's commitment at COP26 (achieving 40% by 2041).
3. The introduction of expensive ammonia/hydrogen co-firing which lacks economic rationale should be removed from the scenario. And net-zero by 2050 should be definitely projected to be achieved, considering the risk that the introduction of these technologies is not successful.
4. Taking into account the need to ensure energy security and energy access, energy demand forecasts based on the IMF's economic growth projections should be adopted

⁷<https://cpd-power-energy-study.com/new-integrated-power-and-energy-master-plan-iepmp-should-put-emphasis-on-renewable-energy-in-order-to-achieve-the-clean-energy-targets/>

⁸<https://timesofindia.indiatimes.com/world/south-asia/over-80-per-cent-of-bangladesh-hit-by-power-blackout-after-national-grid-fails/articleshow/94644735.cms>

⁹ <https://www.uts.edu.au/sites/default/files/2019-08/Bangladesh%20Report-2019-8-17.pdf>

¹⁰<https://zerocarbon-analytics.org/archives/energy/bangladeshs-reliance-on-lng-increases-financial-energy-and-climate-risks>

¹¹<https://www.tbsnews.net/bangladesh/energy/unaffordability-lng-may-leave-new-import-terminals-redundant-ieefa-477866>

instead of the PP2041 and In-Between cases, which may result in excessive demand forecasts.

5. Dependence on expensive imported fossil fuels with highly volatile prices should be stopped, in order to secure energy security and energy access.
6. During the establishment of energy master plans, material information should be disclosed and consultation meetings should be held through appropriate timings and measures, with a gender consideration, in order to reflect the broad voices of NGOs and citizens.