



GHORASHAL UNIT 4 REPOWERING PROJECT

INCREASING
POWER GENERATION
**IMPROVING
EFFICIENCY**

BASIC INFORMATION

APPROVAL DATE:
**December 21
2015**

END DATE:
**March 31
2022**

TOTAL COMMITMENT:
\$217 million

IMPLEMENTING AGENCIES:
Bangladesh Power Development Board

OVERVIEW

In the context of natural gas supply shortages, improving the efficiency of the existing gas-based power plants is a priority of the government. The **Ghorashal Unit 4 Repowering Project** aims to increase the efficiency of an existing power plant and add new generation capacity at Ghorashal Power Station. This will help alleviate the country's power shortages and improve the effectiveness of gas utilization in the power sector.



CHALLENGE

In the last few years, the power sector has grown rapidly with about 92 percent of the population having access to electricity. Current installed generation capacity is about 21,000 MW, while available capacity is about 12,000 MW. Considerable challenges, however, remain to ensure uninterrupted supply of electricity. Supply still lags peak demand resulting in demand curtailment particularly in rural areas. Bangladesh's economy could grow faster, if energy infrastructure develops in line with economic demands.

The country's reserves of natural gas are estimated to deplete from 2020 if no new gas reserves are discovered. Consequently, the share of coal-based generation is expected to grow. Shortage of gas and the growing electricity demand have also resulted in expensive, imported fuel oil-based generation. This has impacted the power sector's financial position due to the huge subsidy for payments to these private generators.

APPROACH

With the shortages in natural gas production, improving the efficiency of gas-based power plants and prioritizing gas supply for higher efficient plants are critical to the power sector. The Ghorashal Unit 4 Repowering Project will improve the efficiency of the Unit 4, one of the four 210 MW gas-fired steam units at Ghorashal power station, by converting it into a combined cycle unit for an upgraded total capacity of 409 MW. A new gas turbine and generator and a new heat recovery steam generator will be added to the current steam turbine unit, dismantling the existing boiler.

The unit 4 was identified for repowering through a feasibility study. A residual Life Assessment was also carried out to understand the technical viability of the project. The results were positive both from the technical and economic return perspectives. The project will increase the generation output will be more than doubled with only 30 percent increase in gas requirement. Consequently, specific fuel consumption (per GWh) will be reduced by 44 Percent. This will reduce greenhouse gas emissions. The project will provide operational flexibility to the Bangladesh Power Development Board (BPDB) as the new gas turbine and existing steam plant will be designed to operate independently.

TOWARDS THE FUTURE

This is the first repowering project in the country and the South Asia region. It is expected that the project will demonstrate the opportunity of repowering of more gas-based steam plants for the existing capacity of 1,600 MW in Bangladesh.



EXPECTED RESULTS

210 MW gas-fired steam unit converted into a 409 MW combined cycle unit

Overall efficiency increased to **54%** from current efficiency level of **30%**

303 PJ fuel savings in projected lifetime

311,936 tCO2e reduction in GHG emissions over project life

