

## Feasibility analysis of floating photovoltaic power plant in Bangladesh: A case study in Hatirjheel Lake, Dhaka

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### ABSTRACT

The installation of large-scale photovoltaic (LSPV) power plants is a solution to mitigate the national energy demand in Bangladesh. However, the land crisis is one of the key challenges for the rapid growth of ground-mounted LSPV plants in Bangladesh. The per unit cost of energy from ground-mounted PV systems is rising as a response to numerous difficulties, particularly for large-scale electricity generation. To overcome the issues with land-based PV, the floating photovoltaic (FPV) could be a viable solution. To the aspirations of the Sustainable and Renewable Energy Development Authority (SREDA), this article has investigated the feasibility of constructing a floating solar plant at Hatirjheel Lake in Dhaka, Bangladesh. The lake is an excellent spot to build an FPV plant due to its geographic location and climatic conditions inside the capital city. In this paper, the design of the plant and tariff are carried out using the PVsyst simulator. It is found that the optimum cost of energy for the plant is \$ 0.0959/KWh, which is lesser than the currently operational ground-mounted PV plants in Bangladesh. Additionally, the projected 6.7 MW plant can meet 12.5 % of the local energy demand. Furthermore, the FPV plant is capable to cut off 6685 tons of CO<sub>2</sub> annually. A reduction in power costs and environmental protection would assist the government of Bangladesh in achieving the sustainable development goals and electricity generation target of 6000 MW from solar photovoltaics by 2041 as well.

### KEYWORDS

Case study; Floating PV plant; PV power; Solar energy; Sustainable energy

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