

DESIGNING AND BUILDING SOLAR POWERED BOATS TO FIGHT WATER AND AIR POLLUTION IN BANGLADESH

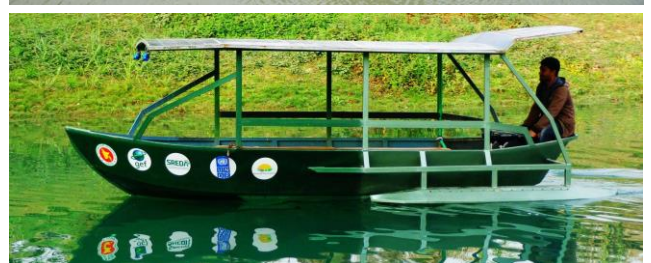
In August 2018 [the website of the UNDP Office in Bangladesh](#) announced that five solar powered boats have been constructed as an experiment to replace conventional fuel-based boats with solar based innovation.

This experiment has been realized as a joint initiative of the [United Nations Development Programme \(UNDP\)](#) and the [Sustainable & Renewable Energy Development Authority \(SREDA\)](#) of the Government of Bangladesh, with funding from the [Global Environment Facility](#).

The project, directed by the engineer Ahmedul Kabir Upal, has designed and built 5 solar boats of different sizes, for transport of 12 to 20 people and with the respective PV solar panel capacities, motor powers and estimated travel distances. Currently all five solar boats are operational and recently they have been used for demonstration activities in Dhaka, Narayanganj and Chittagong.

The showcase of the pilot solar boating project was a great success. Currently, transportation between nearby riverside villages is commonly undertaken by diesel driven boats and the population positively appreciated the idea of replacing them with solar boats considering its cost effectiveness and benefits for the environment and for the improvement of air quality.

[The brochure published by SREDA](#) explains that Bangladesh is a country with almost 800 rivers and total length of waterway is around 24,140 km. River way is one of the major means of transportation in the country. Currently, transportation between nearby riverside villages is commonly undertaken by diesel driven boats as well as a huge numbers of diesel driven boats are used for fishing purpose. Existing engines of diesel driven boats are very energy inefficient and used imported diesel fuel. The Government of Bangladesh is taking various initiatives and implementing measures to reduce energy consumption and GHG emissions. The application of PV solar based boats and increasing use of energy efficiency for water transport sector will provide an important pathway for increasing energy security,



decreasing energy demand and hence reducing GHG emission in Bangladesh.

A sustainable financial model has also been developed based on loan, grant and owner's equity composition. A financial model of 40% grant, 40% loan and 20% owner's equity is recommended for influencing the popularization of PV power integration of passenger boats at the commercial scale. With this business model, the payback period has been calculated to be between 3 to 4 years approximately.

The project highlighted the benefits on both human health and the environment of replacing diesel run boats by solar powered boats as exhaust diesel contains more than 40 toxic air contaminants. Furthermore, the use of diesel engines in waterways inevitably causes the release of diesel fuel into the marine environment. The eco-toxicity of diesel on marine life is well known and the use of diesel driven boats is believed to be one of the reasons for marine life death.

The project showed that there is a potential in Bangladesh to convert about 500.000 diesel-run country boats, including fishing boats, with the new solar powered boats. The CO₂ reduction is calculated in 6 tonnes per solar boat per year.

The initiative is working to cover the whole country and to make a transformational change for promoting greener growth with the support of the Government and other development partners. The role played by the UNDP and the GEF Initiative shows that similar projects can be replicated in other countries with conditions similar to those of Bangladesh and whose governments manage national strategies to implement transport systems reducing environmental contamination and improving the life quality of the population.

To know more

[News and Video in UNDP Bangladesh website](#)

[SREDA brochure](#)

[Information in solar-e-technology.bd.com](#)

[Video in Youtube](#)

[SREDA website](#)

[Global Environment Facility website](#)

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