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FROM THE EDITOR…

Floating solar or floating photovoltaics (FPV), sometimes called floatovoltaics, are solar panels mounted on a structure that floats. The structures that hold the panels usually consist of plastic buoys and cables. They are then placed on a body of water (e.g., Reservoirs, quarry lakes, irrigation canals or remediation and tailing ponds). Sri Lanka, having many internal reservoirs, has a great potential for power generation through FPV. The systems can have advantages over photovoltaics (PV) on land. Water surfaces may be less expensive than the cost of land, and there are fewer rules and regulations for structures built on bodies of water not used for recreation. Life cycle analysis indicates that foam-based FPV have some of the shortest energy payback times (1.3 years) and the lowest greenhouse gas emissions to energy ratio (11 kg CO2 eq/MWh) in crystalline silicon solar photovoltaic technologies reported. FPV can be used to generate electricity for any application as well as to make green hydrogen via electrolysis on the same water they are floating on.

Floating arrays can achieve higher efficiencies than PV panels on land because water cools the panels. The panels can have a special coating to prevent rust or corrosion. Floating SPV also provide shade, slow evaporation and inhibit the growth of algae which in turn increase fresh water fish production.

The market for this renewable energy technology has grown rapidly since 2016. The first 20 plants with capacities of a few dozen kWp were built between 2007 and 2013 in the world. Installed power grew from 3 GW in 2020, to 13 GW in 2022, surpassing a prediction of 10 GW by 2025. The World Bank estimated there are 6,600 large bodies of water suitable for floating solar, with a technical capacity of over 4,000 GW if 10% of their surfaces were covered with panels.The U.S. has more floating solar potential than any other country in the world. Bodies of water suitable for floating solar are well-distributed throughout the U.S. The southeast and southern U.S. plains states generally have reservoirs with the largest capacities.

The construction process for a floating solar project includes installing anchors and mooring lines that attach to the waterbed or shore, assembling floats and panels into rows and sections onshore, and then pulling the sections by boat to the mooring lines and secured into place. While overall costs for a floating system neared parity ground-mounted systems by 2020, installation was about 10-25% higher in 2023. According to a researcher at the National Renewable Energy Laboratory (NREL), this increase is primarily due to the need for anchoring systems to secure the panels on water.

Sri Lanka is rapidly developing floating solar PV projects, with plans for over 3,000 MW capacity across 31 reservoirs to meet 70% renewable energy goals by 2030. Key pilot projects exist in Kilinochchi (42kW-46kW) and the 1 MW projects in Chandrika Wewa and Kiriibban Wewa, setting the stage for utility-scale developments.

The Government has given priority to the development of floating solar projects on the existing water bodies in order to increase the generation of renewable energy. Accordingly, the Sri Lanka Mahaweli Authority of Sri Lanka has identified 03 main reservoirs namely Randenigala, Moragahakanda and Kalawewa for the development of floating solar projects. Feasibility studies have been conducted regarding the aforesaid places. Accordingly, the proposal made by the Minister of Power and Energy to authorize the Ceylon Electricity Board to select investors under the competitive procurement procedure for the development of floating solar projects in the Randenigala, Moragahakanda and Kalawewa reservoirs, has been approved by the government.

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