

**AN INNOVATIVE SOLUTION TO RESOLVE THE ISSUE
OF POWER SHORTAGE IN ERNAKULAM DISTRICT
(Through floating solar + Battery Energy Storage
Systems (BESS))**

The internal generation capacity in Kerala is around 27% of the power demand. The balance 73% is imported from outside the state. During day time we sell power to the tune of 600 to 1,000 MW at rates as low as Re 1 per unit. While during peak hours we buy power to the tune of 400 to 600 MW at very high rates say near about ₹10 per unit.

Power availability in Indian market is very low during peak hours because every state is competing for the limited quantum. Power purchased from outside has to be brought to the state through the interstate transmission systems (ISTS), cost per unit for the same 60 plus paise. Further, there will be a transmission loss, which is to the tune of 25 to 30 paise per unit depending upon the distance. If power is generated within Kerala, we can save the transmission charges and the transmission loss totalling to around 90 paise per unit.

Kerala has recently experienced a spell of power shortages, particularly during evening peak hours. The immediate problem is a mismatch between peak demand and power availability, aggravated by weak monsoon conditions, low reservoir storages, unavailability of power in the exchanges and other constraints in procuring additional power.

Ernakulam presents a more complex picture because it is one of Kerala's major electricity-demand centres. The district has a concentration of industries, commercial establishments, IT Parks, Kochi Metro (KMRL) and high-density residential areas. Consequently, interruptions in the district have a disproportionately high economic and social impact.

In this scenario, the Pradhan Mantri Surya Sarovar Yojana (PM- SSY) announced recently by Government of India, assumes greater

relevance to Kerala. This scheme aims at generation of 5,000 MW power plus storage of energy. The total amount earmarked for this scheme is ₹ 5,700 Cr. Kerala can attempt to get a good share of allocation from this for implementation of floating solar power projects with energy storage facility.

West Kallada Floating Solar Project is a model initiated in the Kollam district of Kerala, much before the GoI scheme. It is being implemented on the abandoned clay mines on the Kallada river basin.



Figure: Waterlogged wetland area suitable for Floating Solar PV installation



Figure: Floating solar project marine construction platform and equipment

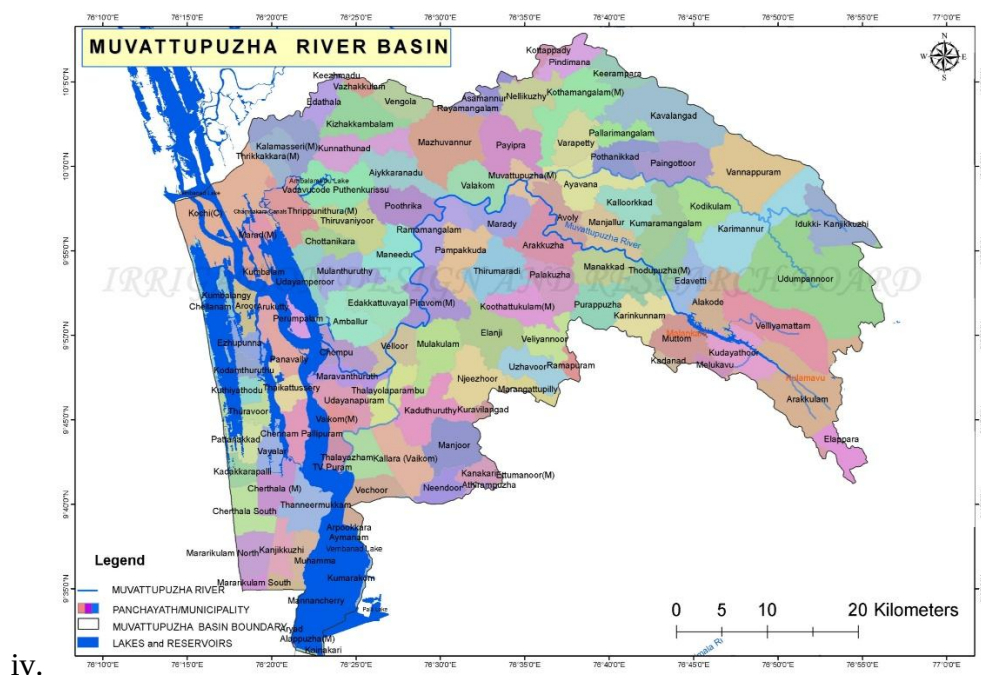
A lot of wasted lands are available on the banks of these rivers, basically abandoned old clay mines and uncultivable wet lands. There is no need of land acquisition or purchase of land. In West Kallada land owners pooled their land together and formed a Company and leased the land to NHPC, the Central PSU. A case study on this unique model for generation of renewable energy (RE) is attached as Annexure.

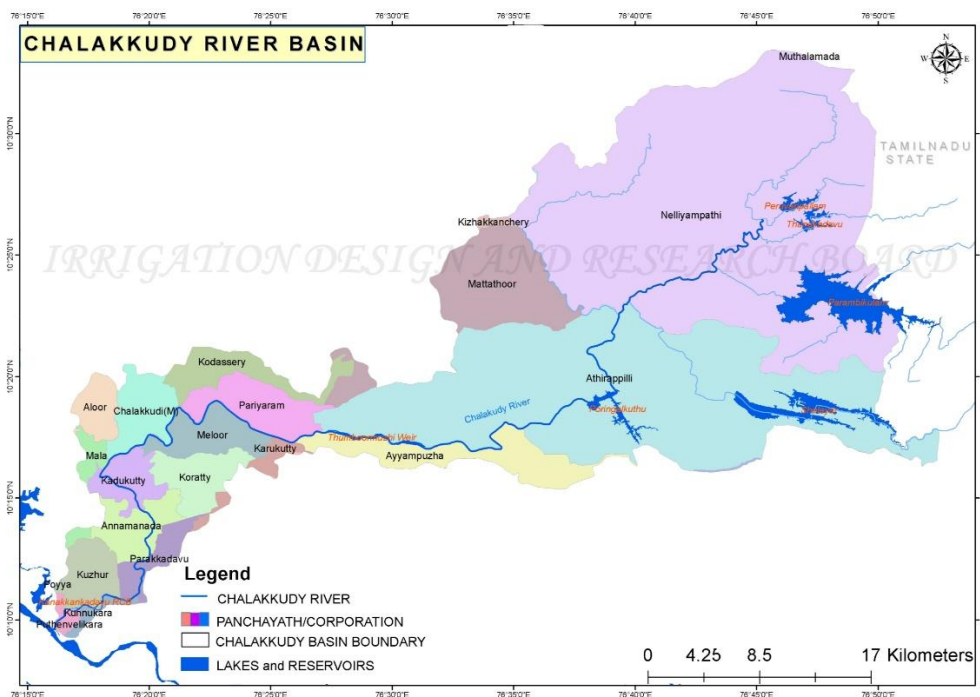
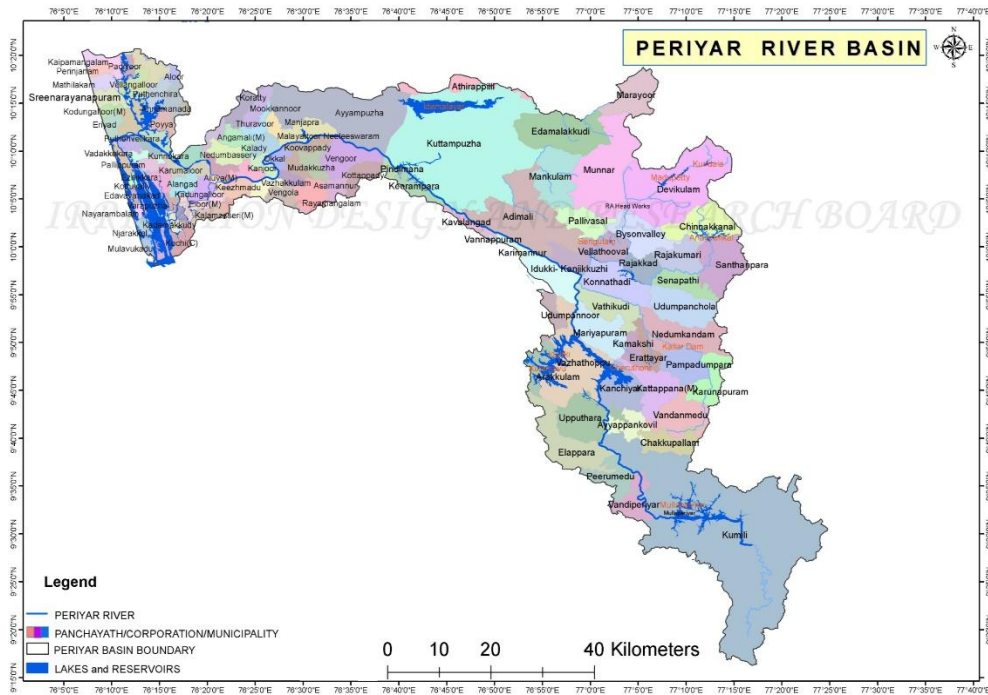
In this context the model of West Kallada Floating Solar Project becomes relevant to Ernakulam district.

Considering geographical landscape of Ernakulam, the floating solar power project is an ideal answer to address partially the issue of power shortages. There are plenty of land parcels which are uncultivable. There also exist many “abandoned clay mines” on the sides of all west flowing rivers in Kerala. All these fields are very much suitable for the setting up of floating solar power projects.

In Ernakulam district we have 3 river basins:

- i. Muvattupuzha river
- ii. Periyar river
- iii. Chalakudy puzha.





Sites ideal for setting up of floating solar power projects can be identified along the banks of these rivers.

The West Kallada project is without a storage arrangement. In order to ensure uninterrupted power supply during peak hour also, storage facility will have to be integrated to the project.

During peak hours, the Renewable Energy regulations, 2025 offers Rs 7.50 per unit of electricity. Therefore, the solar with storage plants will become financially viable much earlier.

It is also to be noted that KSEB sources power during peak hours at rates as high as Rs 10 per unit from the power exchanges.

Major PUSs in the central sector including NHPC, NTPC, SJVN and SECI have already evinced interest in establishing solar projects with storage facility in Kerala. The total capital investment is brought by these developers and they enter into a power sales agreement (PSA) with KSEB Ltd. KSERC has the mandate to ensure reasonable returns on investment and profitable tariff for power generators.

To set up a solar power project with an installed capacity of 1 MW would require 2.5 acres approximately. The total area required for a 500 MW project would be around 1,250 acres. As there are three major rivers flowing through Ernakulam district, adequate area required for installing solar power projects with an aggregate capacity of at least 500 MW can easily be found out.

Kindly alert the Revenue staff to scout for such abandoned clay mines beside the basins of the above mentioned four rivers.