



GREEN ENERGY

FOR A BETTER FUTURE

CHERUVAL FLOATING SOLAR PARK

Project Summary.

Project	Solar power plant project.
Proposed Project Location	Cheruval.
Type	Floating solar project.
Proposed power plant capacity	40 MW. .
Type of module	Polycrystalline solar module-Floating island.
District	Thrissur.
Panchayath.	Nenmanikkara.
Taluk.	Mukandhapuram.
State.	Kerala.
Location of place in earth	(i) Latitude:10°25'00"N. (ii) Longitude:76°15'06"E.
Near Town	Thrissur.

Vision

- ❖ To build green energy from nature with zero co2 emission and to achieve energy security for the state.
- ❖ 1000 MW renewable energy from thrissur district from floating solar project.

Mission

- ❖ To become the leader in floating solar plant without harming the environment.
- ❖ To become the leader in exploring new technologies to meet the energy requirement.
- ❖ To meet the unemployment in rural area.

Introduction.

Floating solar photovoltaic (FPV) installations open up new opportunities for scaling up solar generating capacity, especially in area with high population density and competing uses for available land. Floating solar plants consist of an array of solar panels which are set up on a structure that floats on water body. They have advantage over ground-mounted solar plants owing to their cooling effect and negligible land requirement.

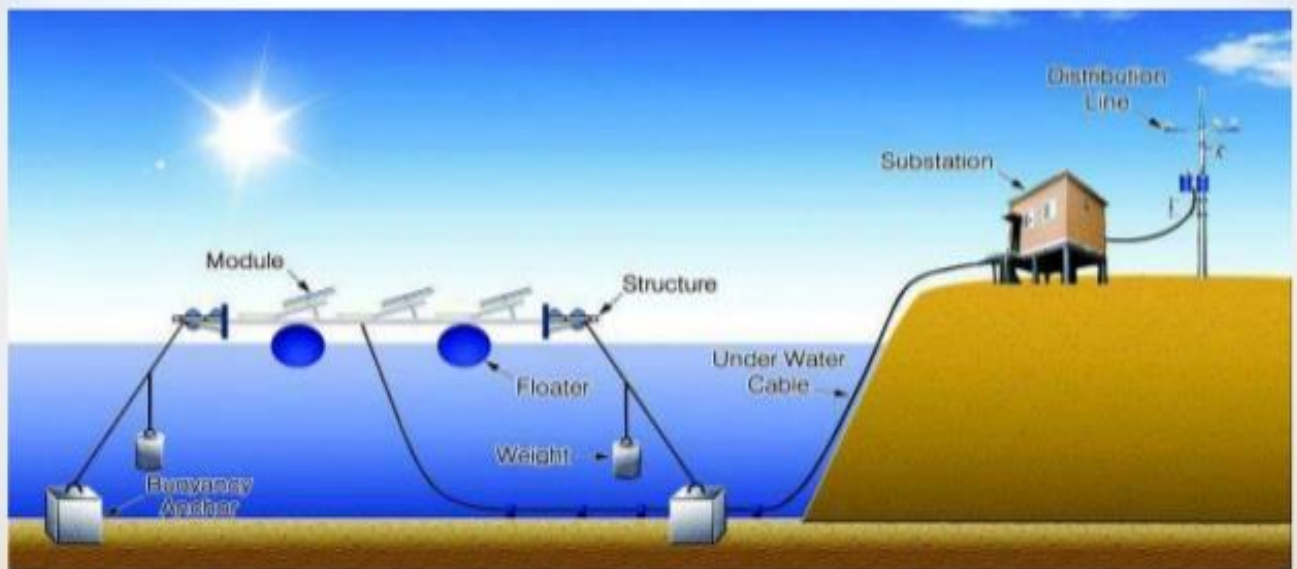
Site Location.

The site is located at cheruval, in thrissur district. This village is surrounded by water pond (Manumkuzhi) after taking out soil for making bricks and tiles factory approximately 4-5 Decades ago. Due to this, acres of farm land turns to artificial ponds. This land cannot be used for any other agriculture purpose due to depth of each ponds. These ponds

serves as water reservoirs and also source of fresh fish for our village. Now a days due to the excess growth of aquatic plants, especially floating plant ,these ponds adversely affect fish growth and villagers used these ponds to dump their household garbage.

Proposed Model

PV FLOATING PLANTS OUTLINE



FLOATING SOLAR PLANT INSTALLED IN KERALA.



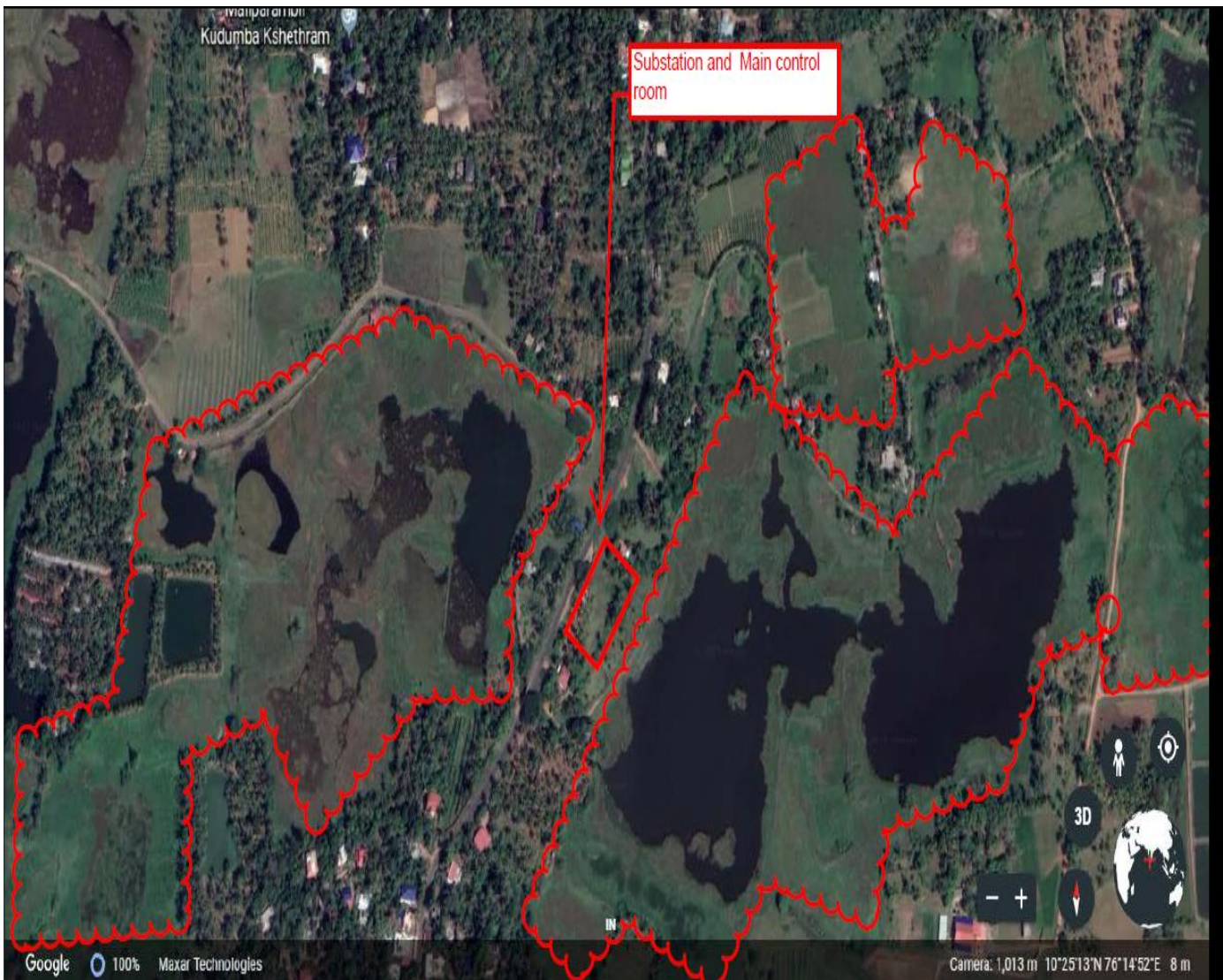
Challenges for installing existing model.

1) Due to the unequal ground level and less depth, the above model may fail steady level at low water level (Summer time). Most of these ponds have a depth of 5-12 meter only : **We can fix this issue by ground leveling before installation.**

2) Forecasting the drought condition in coming future is unavoidable situation: **Proposed site is very close to Manjamkuzi check dam and we can use the existing canal to fill this pond during extreme condition.**

- 3) Evacuation of produced power: **An unused Overhead line 66KV line is passing nearer to the proposed site connecting pudukkad 110KV with Kattur substation. We can use this overhead line and do necessary modification at both substation for power evacuation.**
- 4) Possibility of flood in Monsoon season: **Existing canal from these ponds connecting nearby rivers to be modified and maintained properly to avoid flood in proposed site.**

Proposed Site: 40MW Satellite View



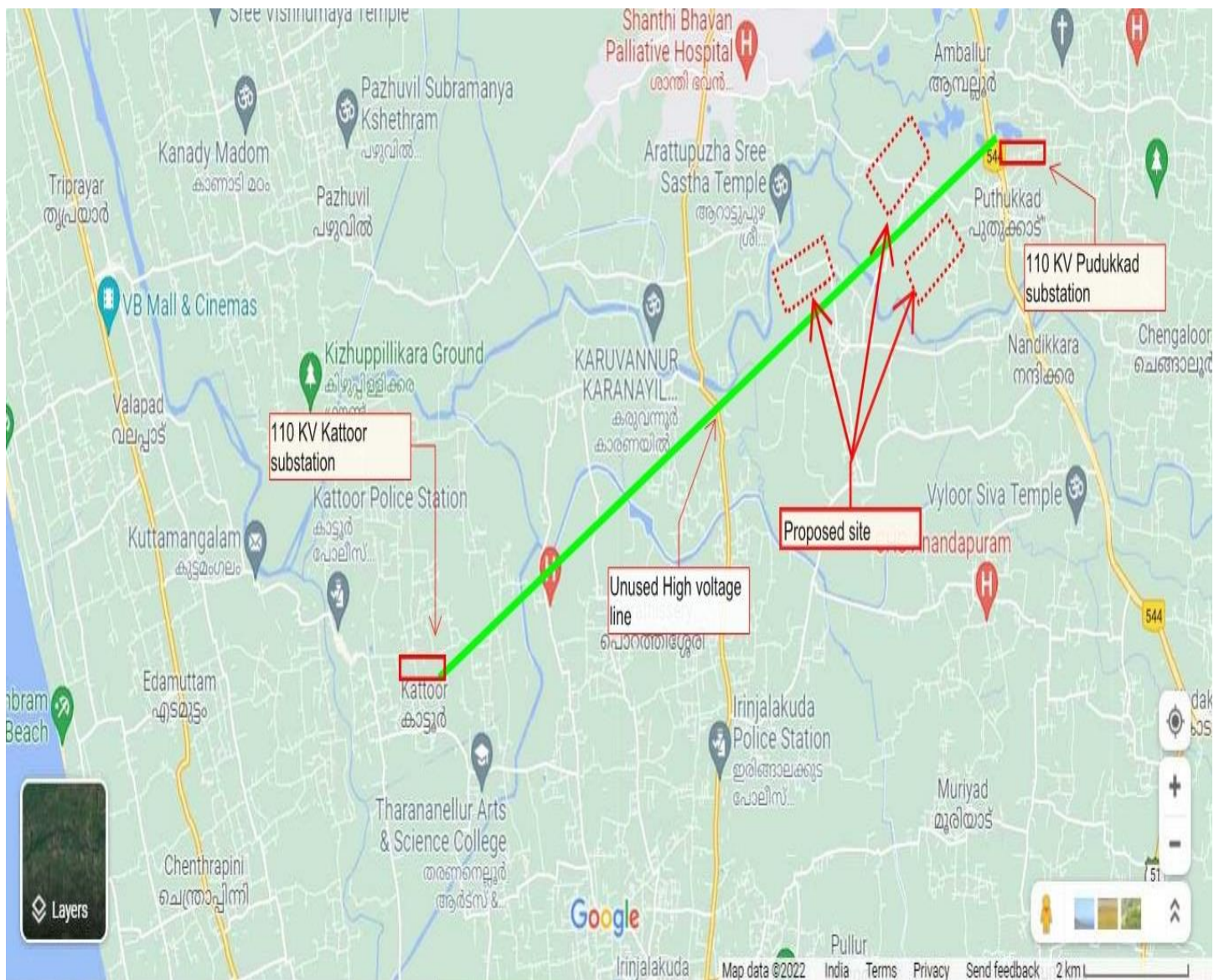
We can install solar plant in red marked area

Proposed pond view.



Overhead line from solar park to substation.

110 KV Substation is located at pudukkad, 4 km from the proposed solar park. Unused High voltage line is passing near to the proposed ponds from Pudukkad substation to Kattur substation. We can use this lines for transmission of power from this project to 110 kv substation.



Blending Aquaponics with Solar Power plant.

Water is available throughout the year in this proposed project site. With this water we can effectively implement aquaponics in unused area of the proposed site.

Aquaponics.

Aquaponics is a sustainable method of raising both fish and vegetables. Furthermore, with this type of farming, we can grow substantially more food with less water, land and labor than traditional agriculture.

Aquaponics is a great example of year 'round, farming. It can be done anywhere, providing fresh local food that is free of pesticides, herbicides and chemical fertilizers. It is safe, easy and fresh.



Eco-tourism

Ecotourism is a popular way to enjoy water resources while still conserving the integrity of nature. Ecotourism is tourism directed toward exotic, often threatened, natural environments, especially in order to support conservation efforts and to observe fresh water bodies. The fastest growing segment of the world's tourism business, ecotourism is expanding at a rate of 30 percent a year worldwide. Many tourism experts believe that this increase is due to people becoming more knowledgeable about ecosystem values.

Spot fishing is enjoyed in fresh water. Tourist can enjoy fishing in designated area assigned by project department. We can include spot fishing to attract more tourist to this place.

Project Execution plan.

- 1) Ground Leveling inside the ponds.
- 2) Concrete base and leg installation for anchoring.
- 3) Installation of Mechanical structure and solar panel.
- 4) Installation of substation 110 KV.
- 5) Modification of Overhead line.
- 6) Modification of Canals for draining and filling of ponds.

Technical Assistance.

NTPC or NHPC India had commissioned similar projects across the India. We need technical assistance from NTPC/NHPC for detailed studies before the final execution.

Project execution team.

Our state is rich in water reservoirs and we need a separate team which comes under KSEB or ANERT to explore floating solar energy. Yearly target to be given to this team to find this energy source and successfully completion of the project.

Advantages.

- 1) This will reduce dependence on fossil fuel plants.
- 2) Increased output from solar PV system- Various studies have confirmed that there is an increase in electricity generation from floating solar PV plants owing to reduced operating temperature of solar modules. This is on account of the natural cooling effect of water. Also when installed on huge water bodies the settled dust on the panels would be less, resulting in increased generation.
- 3) Water savings- Installation of floating solar PV plants would reduce the water loss on account of evaporation. Additionally, cleaning a typical ground-mounted solar PV plant requires huge amount of water. Normally 7,000-12,000 litres of water per MW is required in the cleaning of regular plants, but in floating solar PV plants the water utilized for cleaning can be reused and so, a large quantity of water can be conserved.
- 4) Improvements in water quality, through decreased algae growth or other water plants.
- 5) Reduction or elimination of the shading of panels by their surroundings
- 6) Elimination of the need for major site preparation, such as leveling or the laying of foundations, which must be done for land-based installations.

- 7) Easy installation and deployment in sites with low anchoring and mooring requirements, with a high degree of modularity, leading to faster installations.

Disadvantage.

- 1) However, it is much more expensive than ground-mounted projects. The land-related costs for large-scale solar plants in India average under seven percent of the total project cost. But the cost of the floating platform on which the plants are mounted and the anchor cost to keep the plant fixed is estimated to be 20% of the total plant cost. Also, the transportation costs associated with floating devices are five times the costs of solar panels.

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