

REPORT ON SUITABLE AND VIBLE ALTERNATIVE MEANS
OF POWER GENERATION USING RENEWABLE ENERGY

KSEBL has proposed to implement the Valanthode Small HE Scheme with an installed capacity of 7.5 MW as a run-of-the river scheme utilizing the inflow of Kurumanpuzha, in Chaliyar basin, which is located in Akampadam Village of Chaliyar Panchayat of Nilambur Taluk in Malappuram District of Kerala state.

A forest land diversion of 0.9354 ha from the Nilambur North Forest Division is required for implementing Valanthode Small HE Scheme. The application for diverting 0.9354 Ha of Forest Land was submitted with the recommendations of Forest Department and State Government for the consideration of Regional Empowered Committee, Ministry of Environment, Forest and Climate Change (MoEF&CC), Regional Office, Bengaluru. The Regional Empowered Committee considered the proposal and subsequently requested the State Government to review the proposal in consultation with the experts with special reference to:

1. The loss of Bio-diversity and effect on special habitats such as nesting sites, spawning sites and special breeding ground for fishes and other fauna
2. The vulnerability of the structures proposed to be developed under this project, to damage by flash floods which have been earlier reported in this area.
3. To assess suitable and viable alternative means of power generation using renewable energy sources.

This office has explored the feasibility assessment study in setting up a renewable energy generating sources viz. Solar and Wind. The findings are summarized as follows.

WIND POWER

The average wind speed in this region is not sufficient for setting up a viable wind power generating station. The site does not experience consistent high winds required for efficient operation of wind turbines. Moreover, the proposed Valanthode Small Hydro Electric Project site is a hilly terrain located adjacent to forest and having topography of very steep slopes and undulating nature. This topography often creates air turbulence and may adversely affect the wind turbine performance.

Based on the reasons explained above it is very much evident that, the alternative power generation using renewable energy sources like Solar, Wind etc. are not feasible in lieu of the proposed Valanthode Small Hydro Electric Project.

SOLAR POWER PLANT

The proposed Valanthode Small Hydro Electric Project site is a hilly terrain located adjacent to forest area and having topography of very steep and undulating terrain. The tree canopy of the area and the general slope of the terrain is not suitable for installing Solar PV modules. The area is also experiencing frequent cloud cover and solar irradiation availability is not sufficient to set up major solar plant of this capacity.

About 14 ha of plain land is required to set up a solar plant of 7.50 MW capacity in lieu of the Valanthode Small Hydro Station where it is only 4.68 ha

of land is needed. There shall not be any intervening hills in the southern side of the panel mounting area. Since the proposed project site is thickly vegetated with big trees and plants, the entire area shall be cleared by felling trees and vegetation for the implementation of the solar plant which affect the greenery of the area.

Moreover, in solar power plant the generation is possible only in day time between 10AM to 3PM whereas the Small Hydro station can generate power around the clock basis with the availability of sufficient inflow in river. Hence the substitution of a Solar plant in lieu of Small hydro station will cause more environmental concerns and wastage of resources.

Further, as solar power plants are only work during the day time on sunny days and not able to meet the peak energy demand during the evening time. But Small HEPs can work as complementary to the solar power plants as they work during monsoon period and available during peak hours. Further Kerala is having two major monsoon seasons viz. South-West Monsoon (June to September) and North-East Monsoon (October to December) and the availability of the solar power during the above seasons are very limited and it works to its full potential during the day time of summer months between January to May. On the contrary, the Small HEPs, which works at full swing during the monsoon months shall be treated as the best renewable complementary system. Small HEPs did not store water and creating any huge submergence.

Valanthode SHEP – A Renewable Energy Source

MoEF & CC vide memo F. No.1-9/2007 WL-I (pt) dated 9th February 2011 issued Guidelines for declaration of Eco-Sensitive Zones around National

Parks and Wild Life Sanctuaries. Annexure – I of the above memo gives a detailed list of identified activities to be prohibited/regulated/permitted in the above areas and “use of renewable energy sources (as per item 10)” is the permitted activities and the MoEFCC remarked that “should be actively promoted.”

In India, Hydro Power plants with capacity of 25 MW or below are classified as Small Hydro. Small HEPs are identified by Ministry of New and Renewable Energy (MNRE), Government of India as one of the leading renewable energy solutions and offering Central Financial Assistance for the same. The Small HEPs (SHEP) are also categorized under Renewable Energy source which utilizes the Potential energy of water stored in a higher level for power production. Two factors are involved for hydro power generation. One is availability of water flow and the second is “head or fall” in topography. These two factors are available mainly in the hill ranges and therefore all hydro power projects are invariably located in the hilly terrain of the Western Ghats.

The stated policy of MNRE about SHEPs say inter alia as follows:

“Small Hydro Power (SHP) projects are environmentally friendly because they do not encounter the problems of large-scale land acquisition/deforestation and displacement of human settlements. Being located in remote locations and at the tail end of the transmission network, they help in improving voltage levels and can also feed into the local grid in case of a major grid failure, thereby avoiding complete black out. They improve the socio-economic condition of the adjoining areas as well as a large chunk of the investment made in the projects feeds into the local economy. Further, they lead to creation of permanent jobs for operation and

maintenance for at least 35 to 40 years. Moreover, Micro Hydel Projects (MHP) and Watermills also have the potential to meet the power requirements of remote areas, helping the local people in developing small scale industries and supporting livelihood projects in areas like handicrafts, carpet manufacturing, food processing, textiles, etc. Hence, these projects can play a crucial role in India's sustainable development and energy security as it meets the criteria of sustainability, availability and reliability."

Further, it may be noted that Kerala is abundant in water resources, blessed with 44 rivers, but we have so far not even harnessed about 1/3rd of the identified hydropower potential in the state. Even though effort had been spared for the planning of major hydroelectric projects, due to involvement submergence of huge forest land, the projects were not taken up respecting the environmental and ecological considerations. Instead, KSEBL has decided to implement small hydroelectric projects also in the energy generation mix to reduce the carbon emission for a clean environment. Please note that Kerala State is planning Net Zero Emission by 2040, for which hydro power generation from the Renewable Energy sources including SHEPs are of prime importance.

The proposed Valanthode Small Hydro Electric scheme is a run-of-the river scheme, envisages construction of a diversion weir of maximum height 8.50m and length 101m across the Kuruman Puzha, a tributary of Chaliyar. This will result in submergence of only 0.222 ha of forestland in river bed itself and the total forestland required for the Project is less than 1 ha, i.e., 0.9345 ha. While the total area of the Nilgiri Biosphere Reserve is 5,520 sq. km, the forestland required for the Valanthode SHEP is 0.9354 ha, which comes just 0.00017% of the area of biosphere, which has virtually any impact on the biosphere.

Further, as the man-animal conflict is now a major issue in North Kerala, the Forest Department actively pursuing to create small water bodies inside the forest to enable the wild animals to drink water during lean seasons. Here, the small pondage of Valanthode SHEP, which will help Forest Department in this front also.

Further, the project execution will not directly or indirectly affect the forest dwelling communities. By implementing this scheme, the power shortage of the locality can be addressed to great extent.

Hence, the proposed Valanathode SHEP with installed capacity 7.5 MW is observed as more suitable renewable energy source, which is in resonance with the policies of the MNRE as well as MoEF &CC.



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