

## Chapter 9 Power

### 9.1 Present status of power development in the state / region

The present installed capacity of 1484 MW in Kerala is entirely from hydroelectric projects and there are no thermal or gas based projects existing in the state. The maximum power that was available in the grid so far was 1600 MW during the year 1994.

### 9.2 Future plan of power development in Kerala

#### 9.2.1 Schemes under construction

The details on the hydroelectric projects which are under execution stage are furnished below:

#### Details of On-going Hydro-Power Project

Sl.No.	Name of Project	Installed capacity MW	Firm Power MW	Energy Potential MU
1)	Kakkad	50.0	30.0	262.0
2)	Kallada	7.5	7.5	65.0
3)	Lower Periyar	180.0	57.0	500.0
4)	Kuttiyadi Augmentation	-	27.5	175.0
Total		237.5	122.0	1002.0

#### 9.2.2 Future plans of power development in Kerala

The Govt. of Kerala has plans to implement 280 MW diesel plants, 1200 MW gas-fired thermal plants and 2840 MW Coal based Thermal Plants.

### 9.3 Assessment of Power benefit of the proposed project

#### 9.3.1 Nature of multipurpose project

The Pamba-Achankovil-Vaippar link project is a multi-purpose project envisaging irrigation benefits to an area of 91400 ha and production of 508.37 MW besides mandatory releases downstream to the extent of 150 Mm<sup>3</sup> during lean season.

A powerhouse of 500 MW installed capacity is proposed at the toe of Achankovil Kal Ar reservoir for production of peaking power. This power house consists of 5 generating units of 100 MW each, out of which three turbines are reversible and all the 5 units put together utilise 10 Mm<sup>3</sup>/day of water released from Achankovil Kal Ar round the year for power generation during 6 hours peak period and the same water will be pumped back to Achankovil Kal Ar in the remaining 16 hours. The FRL of Achankovil Kal Ar reservoir is 210 m and the maximum tailrace level is 65 m. Hence there is a theoretical head of 145 m available which can be used for power generation. In addition to the power house at Achankovil Kal Ar, two power stations are proposed one at the inlet of Interconnecting tunnel between Punnamedu and Achankovil Kal Ar, which utilises the releases of Punnamedu to Achankovil Kal Ar for power generation and the other is located at the toe of Achankovil pumped storage scheme to utilise the water released from Achankovil dam downstream to combat salinity intrusion during the lean season period of October to May.

The power that can be generated from the project is 500 MW for a period of 6 hours in a day round the year from the power house located at the toe of Achankovil Kal Ar dam and 1.5 MW during lean season from October to May at the power house located downstream of Achankovil reservoir. Since the powerhouse located at the inlet of interconnecting tunnel utilises water diverted to Achankovil Kal Ar, for power generation, no firm power generation is proposed at this powerhouse.

In addition to the three powerhouses located at the dam sites, four more power stations are proposed along the canal to utilise the drops available. These power stations will have an installed capacity of 1.125 MW (2 Nos.) and 0.810 MW (2 Nos.).

The reservoir operation tables are prepared for thirteen years from 1978-79 to 1990-91. Detailed simulation studies for power that would be generated and power required for pumping has not been made. However the peaking power station was found to produce 500 MW round the year.

### **9.3.2 Installed Capacity**

The powerhouse located at the toe of Achankovil Kal Ar dam will have an installed capacity of 500 MW, with 5 generating units of 100 MW each. The power plants proposed at the inlet of inter-connecting tunnel and downstream of Achankovil dam will have installed capacities of 3 MW and 1.5 MW with one generating unit respectively. The power stations on main canal at canal

drops will have four generating units with installed capacity of 1.125MW (2 Nos.) and 0.810 MW (2 Nos.).

To generate the power indicated above following civil and electrical works are proposed:

#### **I. Civil works.**

- a) Trash rack structure at the head of non-overflow dam.
- b) Power house to accommodate 5 Nos. generating units of 100 MW each with necessary equipment and tail pool structures
- c) Switch yard
- d) Embedment of 12.0 m dia penstock in the non- overflow dam
- e) An access tunnel of 1150 m length for attending to the inspection and repairs of the powerhouse.
- f) A suction tunnel of 1025 m length to pickup water from Achankovil reservoir to powerhouse for pumping to Achankovil Kal Ar reservoir.

#### **II. Electrical works.**

- a) Power station, generating plant and control equipment
- b) Power station auxiliaries.
- c) Power transformers and switchyard equipment.

### **9.3.3 Annual energy generated**

The designed annual energy generated from the project is 1114 MU as indicated earlier.

### **9.3.4 Cost of generation**

The total cost of power component based on detailed estimate is estimated to amount Rs. 295.53 crores for the installation of 508.37 MW. The cost of installation works out to Rs. 58.13 lakh/MW of installed capacity.