ELECTRICITY DEPARTMENT **PORT BLAIR**

STATE DEVELOPMENT REPORT FOR A&N ISLANDS

VISION FOR NEXT 25 YEARS.

The Electricity department provides Electric power to meet the requirement of all the consumers in the A&N Islands. In addition, the renewable energy sources are also required to be developed, so as to reduce dependency on diesel generating sets presently used for power generation. The following is the vision for next 25 years with specific projects and future policies to meet the above requirements.

A. CONVENTIONAL POWER SUPPLY

1. The present installed capacity in these islands is around 65 MW which consists of 39MW DG sets in various Power Houses with the Electricity department, 20MW DG sets of the independent power producer at South Andaman and 5.25 MW Hydro Power Plant in North Andaman. The Central Electricity Authority has conducted the 16th Annual Electric Power survey and have projectedfor the year 2015-16 a peak demand of 111 MW and an energy consumption of 591 MU which would need an installed capacity of 158MW. Considering this rate of growth as assumed by the CEA while projecting the future requirement, the capacity required by 2021-22 and 2026-27 would be 226 MW and 323 MW respectively. The following future programmes and projects have been considered on the basis of above projections. Different sources of power generation have been considered, so as to reduce dependency on HSD oil presently used, whose cost is likely to increase considerably and which results in air pollution.

2. 100 MW Nuclear Power Generation.

The Govt. of India could consider establishing 100MW nuclear power generation capacity in Andaman group of islands and inter-connecting South Andaman, Middle Andaman and North Andaman by a 110 KV grid for load transfer. A detailed study would have to be considered for this purpose.

3. **Natural gas to be used for power generation - 100 MW**

Exploration for natural gas is being taken up in A&N group of islands and this natural gas could be utilised for establishing Diesel Generating sets and gas turbines of around 100 MW capacity for power generation at suitable locations which would feed power to the 110 KV Andaman grid. Once the availability of Natural gas is confirmed, the existing DG sets would be converted to operate on Natural gas specially the 20MW DG sets at IPP power house, by suitable modification, to reduce operating costs.

4. **110 KV Andaman Grid**

A 110 KV 300 km long Andaman Grid would be constructed linking South Andaman, Middle Andaman and North Andaman which will transfer power from the Conventional/Gas based Power Houses, OTEC and Nuclear Power Houses.

5. **HT Submarine cabling**

HT Sub-marine cabling for power transfer would be done in a large way for connecting Little Andaman with South Andaman, Niel, Havelock and Long Island with South and Middle Andaman, Smith Island with North Andaman and inter-connecting Teressa and Chowra Islands and Katchal, Kamorta, Nancowry, Trinket Islands etc. so that less number of Power Houses need to be operated, and round the clock power supply is provided to all the areas.

6. **Under ground cables and multiple feeders for T&D system.**

The Overhead lines for transmission and Distribution would be converted to underground systems for avoiding interruptions during monsoons, due to falling of tree branches and for beautification. This would be done initially at Port Blair, other major towns and in areas having large tree covers. Multiple sources of distribution feeders will be established for providing reliable power during failures and for carrying out routine repair and maintenance.

7. **Computerisation and office Automation**.

Office automation with computerised revenue records, pre-paid billing, etc. would be implemented for providing better services to the consumers. This would help in reducing human error, billing and timely revenue utilisation.

8. **Energy Conservation**.

Energy efficient appliances only will be permitted in these islands, due to high cost of generation, approved by relevant standardization organisations. Inefficient and energy intensive equipments such as incandescent bulbs, immersion heaters, fans, motors etc. would be banned in these islands for energy conservation.

B. RENEWABLE ENERGY.

9. All available non-conventional energy sources in the islands, such on sea, wind, sun, bio-mass etc. would be exploited to the fullest extent, so as to reduce dependency on conventional energy sources/fossil fuels etc. and for providing clean and environment friendly electrical power.

10. **OTEC - 50 MW**

The tropical sea around A&N islands offers few attractive locations for establishing OTEC plants as per studies conducted by I.I.T, Chennai. Few such plants in the range of 10 to 50 MW could be set up at South Andaman, Chingue Island & Tillang chong Island for providing cheap power which could be connected to the main grid through submarine cable. In addition to improving aqua farming, cold storage facilities could also be established along with OTEC plant. This plant could be used for generation of Hydrogen, which would be used as an energy source.

11. **Wind**

The wind potential at different islands/locations will be exploited by establishing offshore wind farms to feed power to the local grid. Though the present wind data is not very attractive, except at one location at Car Nicobar, still this would become cost effective in future, when cost of conventional fuels increase, and would supplement the conventional power, as and when wind is available.

12. **Hydro**

All available Hydro potential at various islands will be exploited for generation of power considering the large annual rainfall of 3500mm. The hydro generation would be designed to be utilised to its fullest extent during rainy season, so as to reduce consumption of HSD oil. During summer months, the conventional sources would feed power. The tailrace water would be used for irrigation and drinking purposes.

13. **Solar PV - 10 MW**

Solar Photo Voltaic Power Plants in the range of 10MW will be established at various islands, to supplement the conventional power during sunny days. All individual house holds & institutions would be encouraged to establish roof top SPV systems, by providing some initial incentives, so that they could meet their own power requirement and export the surplus to the local grid at agreed rates.

14. **Solar thermal**

Solar thermal energy will be utilised for water heating and hot air drying of different products at all suitable locations. This would be made attractive by providing initial incentives so as to avoid use of conventional power for this purpose.

15. **Solar Air-conditioning and Refrigeration**.

Pilot projects under R&D will be taken up for establishing centralized air conditioning of different buildings by utilising solar thermal energy to meet the air-conditioning requirements. R&D projects for solar refrigeration and cold storages will be established for storage of fish, meet, vegetables, ice production etc.

16. **Geothermal**

The geothermal energy at Barren island and Methane in the mud volcanoes at Baratang islands would be studied under R&D projects to utilise them for power generation.

17. **Tidal**

Tidal difference power stations as pilot projects on R&D would be established at few identified locations at Kamorta, South Andaman and Middle Andaman. These were studied and found feasible by CEA around 10 years back but were not cost effectivethen, as the tide difference was around 2 mtrs., but will become so in future.

18. **Sea Currents.**

The sea currents between islands, due to change of tides, would be studied under R&D projects for utilising them for power generation.

19. **Energy Plantation.**

These islands receive very high rainfall and are having tropical climate, which is very conducive for growth of Bio-mass/trees. Large chunks/areas, of degraded forests could be utilised for energy plantation i.e. plants which grow very fast and have high energy content. Some forest areas could also be converted and dereserved for energy plantation which would be analysed. The bio-mass available would be utilised for operating

steam boilers and turbine generators for power production so as to be self-sufficient in our energy requirements. The bio-mass could also be used in gassi fires for operating DG sets for reducing HSD oil consumption. A 10 MW thermal power plant on bio-mass/wood firing would need an area of around 2000 Hect. for continuous operation. Regeneration of the land area by tree/energy plantation and cutting, transportation, processing of the trees would result in large employment generation.

20. **Mangrove Plantation.**

These islands have got large mangrove reserves and the mangrove wood is having very good calorific value and was utilised for operation of steam turbines through boilers till 1980 . Mangrove farming and scientific cultivation of mangrove in the bays/creeks would be done so as to utilise mangrove wood fuel for operation of boilers and steam turbine generators for power production. This would also encourage crab and aqua farming and also would result in large employment generation.

21. **Manpower Training.**

Training Programme in association with technical and vocational institutions would be organised so that required trained skilled manpower is available to meet the requirement, both for the department and in the private sector to whom many of the areawise consumer services would be outsourced.

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