

Geothermal Energy Resources of India: Ongoing and Future Developments

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By 2012 India plans to increase the generation capacity to 215,000 MWe from the present 100,000 MWe bringing India's energy demand to zero. Although renewables have a potential of generating 54,000 MWe, the present generation stands at 7843 MWe. With 20- 60 % of efficiency factor, this can not bridge the gap between supply and demand unless geothermal source is tapped. M/s GeoSyndcate Power Private Ltd., at the Indian Institute of Technology Bombay, is planning to generate a merge 50MWe from its Puga geothermal field. Like Australia, India has tremendous potential to generate power from its hot dry rock sources.

The heat flow values of wet geothermal varying from 75 mW/m² to > 110 mW/m². This is due to the presence of granites with heat producing capacity from 1.5 micro Wm³ to 8.2 microWm³. INDEPTH project identified seismic bright spots generated due to granitic melts at shallow depths contributing to high heat flow (> 180mW/m²). The central and northern India fall under the stress province characterized by NNE-ENE oriented SHmax, induced due to the northward compression of the Indian plate and the net resistive forces arising from the Himalayan collision zone. Tectonic force acting on the Indian plate is about 7 x 10¹²N/m. In the geothermal belts, SHmax, in the high heat producing granites, increases at the rate of 55 MPa/km while the global average is about 29 MPa/km. These are excellent sites to create hot dry rock geothermal reservoirs. HDR project may reduce India's carbon trade burden.