

India's First Geothermal Energy Plant in Ladakh



The Energy Contained Beneath The Earth's Surface In Rocks And Fluid Is Called Geothermal Energy, Which Is A 100% Green And Clean Renewable Energy Source.

India is going to get its first geothermal power project in Ladakh. On February 7, 2021, an agreement for establishing the first geothermal Power Project was announced. It would help it tap the potential of natural geysers touching the Puga area, which happens to be 170 km east of Leh in Ladakh. The project would be undertaken by leading Indian Public Sector Undertaking (PSU) ONGC's Energy Research Centre.

IISD Research and Knowledge Support Centre for Sustainable Development Centre, Ladakh is arranging an Special Discussion Session, with National and Internal Experts and with MNRE, Government Of India & UT Ladakh Administration Officials, United Nation Experts and LAHDC Officers and IISD Policy Advisers and Experts, on the Occasion of the it's Ladakh International Conference (LIC), proposed in August 2021, in post COVID 19 period at Leh.

Phases of the Proposed Power Plant at Puga, Ladakh

- **First Phase:**
ONGC would drill upto 500 metres to tap the steam and hot sulphur water that spews out of the geysers. It would help in running the power plant with a capacity of one megawatt.

- **Second Phase:**
Drilling would be a bit deeper to explore the potential of the thermal reservoir.
- **Third Phase:**
A commercial plant would be set up in this phase. The estimated power supply would be of 250 MW.

MoUs signed between:

- Union Territory of Ladakh
- Ladakh Autonomous Hill Development Council- Leh
- Oil and Natural Gas Corporation Energy Centre



What is Geothermal Energy?

- Thermal Energy is the energy that determines the temperature or generates heat of the matter.
- Geothermal energy is found beneath the rocks and fluids of the earth.
- It is also found in the shallow ground to several miles, below the surface of the Earth reaching up to Magma.

How is geothermal energy produced?

- To produce the geo-thermally generated electricity, wells, 1.6 kilometres deep or more holes are drilled into underground reservoirs.
- These wells tap steam and hot water to drive the turbines. The turbines are in turn linked to electricity generators.
- The geothermal electricity production was done in Larderello Italy in 1904.

Types of Geothermal Power Plants:

- **Dry Steam Plants:** It takes the steam out of fractures in the ground and uses it to directly drive a turbine.

- **Flash Plants:** In this, they pull deep, high-pressure hot water into cooler low-pressure water. The steam then resulting from this process is used to drive the turbine.
- **Binary Plants:** The hot water is passed by a secondary fluid with a lower boiling point than actual which makes it turn into vapour. This then drives the turbine.

Facts about Geothermal Energy:

- Geothermal energy's largest producer is the United States. It is also generated in more than 20 countries.
- The largest of geothermal development in the world in the Geysers north of San Francisco in California.

Potential Geothermal Reservoirs in India:

- Puga- Ladakh
- Tatapani- Chhattisgarh
- Godavari
- Manikaran- Himachal Pradesh
- Bakreshwar- West Bengal
- Tuwa- Gujarat
- Unai- Maharashtra
- Jalgaon- Maharashtra
- Rajgor and Munger- Bihar

Benefits of the project:

- It would be providing round the clock power supply in the territory
- Hot water from the spring would come handy for space heating
- Establishing hot swimming pools would be good as a tourist attraction
- Ladakh would be self-sustaining economy and it would emphasize the Government's Vocal for Local calls.
- Establishment of this kind of plant would open new work avenues for locals.
- The renewed focus is on the perpetual form of energy as it is considered to be extremely environment friendly and would lead to a carbon-neutral Ladakh.