

Low-Temperature Desalination technology

Thermal (LTTD)

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In news- Chennai based National Institute of Ocean Technology(NIOT) is planning to set up green, self-powered desalination plant in Lakshadweep.

Key updates-

- Stepping up from its ongoing initiative of providing potable water in six islands of Lakshadweep using Low Temperature Thermal Desalination (LTTD) technology, the Chennai-based **NIOT is working at making this process free of emissions.**
- **Currently the desalination plants, each of which provides at least 100,000 litres of potable water everyday, are powered by diesel generator sets** – there being no other source of power in the islands.
- LTTD exploits the difference in temperature (nearly 15°C) in ocean water at the surface and at depths of about 600 feet.
- This cold water condenses water at the surface, that is warmer but whose pressure has been lowered using vacuum pumps.
- Such de-pressurised water can evaporate even at ambient temperatures and this resulting vapour when condensed is free of salts and contaminants and fit to consume.
- However, the need for diesel power to reduce the water pressure means that the process is not fossil-fuel free and also consumes diesel, a precious commodity in the islands that has to be shipped from the mainland critical for powering the electric grid.
- For the first time in the world, probably, we are

setting up a [desalination] plant that will also supply power to the plant.

- **Currently there were five desalination plants in operation in the Lakshadweep islands.**
- Four more were expected to be functioning in the coming months.
- The proposed self-sustaining plant the 10th and is expected to be ready by end of 2023.

About NIOT-

- The NIOT, an institute under the aegis of the Ministry of Earth Sciences (MoES), has worked for years on harnessing energy from the ocean.
- It was established in November 1993 as an autonomous society under the Ministry of Earth Sciences in India. NIOT is managed by a Governing Council and is headed by a director.
- The major aim of starting NIOT was to develop reliable indigenous technologies to solve various engineering problems associated with harvesting of non-living and living resources in India's exclusive economic zone, which is about two-thirds of the land area of India.

Further reading:
<https://journalsofindia.com/indigenous-technology-for-conversion-of-sea-water-to-potable-water/>