

Dr. Jitendra Singh Reviews “Low Temperature Thermal Desalination (LTTD) plant” in Lakshadweep Emphasises Role of Ocean Technology in Water Security

The Technology Turns Seawater into Drinking Water Using Ocean Temperature Difference, Helped Addressing Drinking Water Shortage in Lakshadweep

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Union Minister for Earth Sciences and Science and Technology Dr. Jitendra Singh visited the Low Temperature Thermal Desalination (LTTD) plant at Kavaratti in Lakshadweep today and reviewed the functioning of desalination facilities that provide drinking water to several islands in the archipelago.

The minister’s visit was part of his official tour of Lakshadweep, during which he held a review meeting with officials and scientists on projects being implemented by the Ministry of Earth Sciences. The LTTD programme has been implemented by the National Institute of Ocean Technology (NIOT), an autonomous institute under the ministry.

Officials said desalination plants based on LTTD technology are currently operational across eight islands of Lakshadweep, including Kavaratti, Minicoy, Agatti, Amini, Kalpeni, Kadamat, Chetlat and Kiltan. The technology converts seawater into potable water by utilising the temperature difference between warm surface water and cold deep-sea water drawn from depths of around 350 to 400 metres.

During the review, the minister was briefed on the functioning of the plants and their role in addressing freshwater shortages in the island territory. Lakshadweep has long faced challenges in securing drinking water due to limited groundwater resources, salinity intrusion and heavy dependence on seasonal rainfall.

Scientists explained that under the LTTD system, warm seawater is flash-evaporated under low pressure and the vapour is condensed using cold seawater from the deep ocean, producing potable water without the use of chemical additives or high-pressure membranes. The process also avoids the discharge of concentrated brine, which can affect fragile coral ecosystems.

The first LTTD plant in Lakshadweep was commissioned in Kavaratti in 2005. Following its initial deployment, similar facilities were set up in other islands over the years.

Officials said the desalination facilities have contributed to improved access to drinking water across the islands. Local authorities also reported a decline in cases of water-borne diseases and greater reliability in year-round water supply, reducing dependence on rainwater harvesting.

The plants are operated with the support of trained local personnel under the Lakshadweep administration. Scientists involved in the project noted that deploying deep-sea pipelines and operating systems in challenging seabed and monsoon conditions required specialised engineering capabilities.

The minister said the experience gained from the Lakshadweep project could inform the use of similar ocean-based technologies in other island and coastal regions facing water stress, as India explores sustainable approaches to ensure long-term water security.





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