

IIT Madras rides sea waves for power, aims to market it by 2024

Innovation may help India's climate goal pursuit of 500 gigawatt RE by 2030

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In a development that might help India achieve its climate change-related goal of generating 500 Gw (gigawatt) of renewable energy by 2030, researchers at Indian Institute of Technology Madras (IIT Madras) have invented an "ocean wave energy converter" that can generate electricity from sea waves.

Researchers expect to commercialise the innovation by 2024, in a move that could offer substantial gains for islands such as Lakshadweep and Andaman and Nicobar, which can produce 40-50 Gw of wave energy. "India has a 7,500 km-long coastline capable of producing 54 Gw of power, satisfying a substantial amount of the country's energy requirement. Seawater stores tidal, wave and ocean thermal energy, making the harnessing of 40-Gw wave energy possible in India," said Abdus Samad, Department of Ocean Engineering, IIT Madras.

The trials on the converter were completed in the second week of November. The device was deployed at a location about six km off the coast of Tuticorin, Tamil Nadu, at a site with a depth of 20 metres. IIT Madras aims to use the converter to generate 1 Mw of power from ocean waves in the next three years.

If successful, this project will help fulfil several objectives such as the UN Ocean Decade and sustainable development targets, and India's own goals such as deep water missions, clean energy and blue economy. "Many countries and companies globally have done this



before. Nations like the US, UK and Israel are generating energy through this route. However, this is for the first time that the technology is in the process of being proven in India. We are planning to go commercial by 2024," Samad, who leads the mission, told *Business Standard*.

The device is targeted at remote offshore locations that require reliable electricity and communication either through the supply of electric power to payloads that are integrated directly in the device, or located in its vicinity, such as on the seabed and in the water column. The targeted stakeholders are oil and gas, defence and security installations and communication sectors.

'Even single devices in locations along the Indian coastline can generate large quantities of clean power,' said Abdus Samad, who leads the project

Samad has been working for over a decade on wave energy and has established a state-of-the-art Wave Energy and Fluids Engineering Laboratory at IIT Madras. The lab is also researching other applications for this technology such as producing power for smaller devices like navigational and data buoys.

"Even single devices in different locations along the Indian coastline can generate large quantities of clean power. We are also contemplating placing multiple devices in an array of configuration for maximum wave power extraction from the location. Our vision is to make India sustainable by tapping marine energy and net-zero carbon emission to mitigate cli-

MAKING WAVES

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mate impact," Samad said.

The project received funding support through the "Innovative Research Project" of IIT Madras, TBI-KIET under the Department of Science and Technology's Nidhi Prayas Scheme and Australian Alumni Grant Scheme 2022 of the Department of Foreign Affairs and Trade, Australia, a statement said.

IIT Madras partnered with a start-up, Virya Paramita Energy, and Motilal Nehru National Institute of Technology Allahabad for the test. The electrical storage system was designed by GKC Institute of Engineering and Technology and MCKV Institute of Engineering, West Bengal. Waterfront Engineering and Infrastructure Pvt Ltd assisted in deploying the system in the ocean. Samad said Virya Paramita Energy may be looking into the project's commercial aspects.