GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
RAJYA SABHA
UNSTARRED QUESTION NO. 518
ANSWERED ON 24/07/2025

DEEP OCEAN MISSION

518. Shri Kartikeya Sharma:

Will the Minister of **Earth Sciences** be pleased to state:

(a) the progress and timeline of the Samudrayaan mission, particularly Matsya 6000's crewed and uncrewed trials and the expected schedule for 6,000 meters operations;
(b) the manner in which six thematic pillars of the Deep Ocean Mission, are being integrated to advance India's Blue Economy goals, along with details of funds allotted and progress made under each such project; and
(c) the collaborative measures being undertaken with international bodies like the International Seabed Authority (ISA) and domestic partners for sustainable resource extraction, marine conservation and capacity-building to benefit coastal communities and industries?

ANSWER

THE MINISTER OF STATE (INDEPENDENT CHARGE) FOR
MINISTRY OF SCIENCE AND TECHNOLOGY
AND EARTH SCIENCES
(DR. JITENDRA SINGH)

(a) Ministry of Earth Sciences (MoES), through the National Institute of Ocean Technology (NIOT), Chennai, launched the Samudrayaan project under the Deep Ocean Mission (DOM). Under this project, NIOT is developing a manned submersible, MATSYA 6000, which aims to carry three people to a depth of 6000 meters in the ocean with a suite of scientific sensors for ocean exploration and observation. The design for the MATSYA 6000 is complete, and crewed and uncrewed trials were completed from 22nd January 2025 to 14thFebruary 2025. The design for 6000 m has been completed, and components are being realised for the trials.

(b) DOM encompasses six verticals: (i) development of technologies for manned submersible, deep-sea mining and underwater vehicles and underwater robotics, (ii) development of ocean climate change advisory services, (iii) technological innovations for exploration and conservation of deep-sea biodiversity, (iv) deep ocean survey and exploration (and research ship), (v) energy and freshwater from the ocean, and (vi) Advanced Marine Station for Ocean Biology. Activities of the mission augment the country's blue economy by supporting deep-sea man-rated vehicle development for exploration, enhancing strategic access to critical marine resources, building long-term scientific infrastructure, supporting India's role in international seabed governance, and laying the foundation for sustainable marine resource exploration, conservation, and management for both deep-sea living and non-living resources. Apart from the benefits of scientific research and technological empowerment, this mission is to have immediate spin-offs in underwater engineering innovations, asset inspection and the promotion of ocean literacy to promote blue economy. Details of funds allotted and progress made under each DOM vertical are presented below.

DOM vertical	Thematic area	Funds allotted*	Progress
1	Development of technologies for manned submersible, deep-sea mining and underwater vehicles and underwater robotics	1497	The design for the MATSYA 6000 is complete, and crewed and uncrewed trials were completed from 22nd January 2025 to 14th February 2025. The design of the self-propelled deep-sea nodule collector/deep-sea mining machine is complete, and a successful demonstration of the collection of over 100 kg of Cobalt-rich deep-sea polymetallic nodules from a depth of 1173m was conducted in the Andaman Sea in 2024.
2	Development of ocean climate change advisory services	98	A suite of ocean models for downscaling of sea level, wave, storm surge and biogeochemical projections of the Indian Ocean, GIS-based inundation maps for select vulnerable coastal locations, Genesis Potential Index for cyclones for the Bay of Bengal, and a wave model for Indian Ocean wave climate analysis, have been completed. Further, 10 Deep Sea Slocum, 38 drifters and 50 physical and biogeochem-ARGOS have been deployed. Eleven glider missions have been completed.
3	Technological innovations for exploration and conservation of deep-sea biodiversity	415	Detailed profiling/characterisation studies, including genomic analysis and screening for industrially useful molecules and preservation of select deep-sea microbial samples, have been done. Several (~1300) deep-sea organisms have been collected, studied, and vouchered through sampling across 19 seamounts in the Arabian Sea and Bay of Bengal.
4	Deep ocean survey and exploration (and research ship)	1277	Deep-sea expeditions in the Central and Southwest Indian Ridges have been conducted, leading to the discovery of four active hydrothermal vent fields and two mineralised zones, including India's first imaging of an active vent. A contract has been awarded for the construction of a new multipurpose all-weather ocean research vessel.

5	Energy and freshwater from the ocean	98	A detailed project report for a high-capacity offshore Ocean thermal Energy Conversion (OTEC)-powered desalination plant is being prepared.
6	Advanced Marine Station for Ocean Biology	692	Scientific collaborative research projects are being facilitated with more than fifty national institutions, including universities, colleges, and laboratories, in various areas of ocean/marine sciences.
Total		4077	

Rs in Crores. For 2021-2026.

(c) As part of India's contract with the International Seabed Authority (ISA), the country aims to conduct scientific survey and exploration activities within the 75,000 sq km region in the Central Indian Ocean and the 10,000 sq km area in the Central Indian Ridge and Southwest Indian Ridge. Further, expansion of capacity building with domestic partners in marine biology under the DOM in the country is being prioritised through collaborative research projects in various fields of marine sciences with national institutions, including government and private universities, colleges, and laboratories.

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