GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
RAJYA SABHA
UNSTARRED QUESTION NO. 1322
ANSWERED ON 30/07/2026

PROGRESS OF EXPLORATION CONTRACTED WITH ISA

1322. SMT. SUDHA MURTY:

Will the Minister of **EARTH SCIENCES** be pleased to state:

(a) whether the initial five-year budgetary allocation of ₹4,077 crore for the Deep Ocean Mission (2021-2026) is slated for a formal long-term financial renewal;
(b) the progress made by the country in exploring its two distinct contracted areas with the International Seabed Authority (ISA), specifically for Polymetallic Nodules in the Central Indian Ocean Basin and Polymetallic Sulphides along the Carlsberg Ridge;
(c) whether the Ministry has commissioned an Independent Ecological Impact Assessment regarding potential deep-sea mining activities; and
(d) the details of safeguards being established to protect fragile marine biodiversity and hydrothermal vent ecosystems from commercial exploitation?

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

(a) Yes. The proposal from the Ministry of Earth Sciences (MoES) for a no-cost extension of the Deep Ocean Mission (DOM), for two years up to March 2028, has been submitted. A 'No Objection' to the no-cost extension for DOM Phase-I has been conveyed.

(b) India holds three contracts with the International Seabed Authority (ISA), one for exploration of polymetallic nodules (PMN) at the Central Indian Ocean Basin (CIOB) and two for exploration of polymetallic sulphides (PMS) at the Central (CIR) and South West Indian Ridge (SWIR) and Carlsberg Ridge in the Indian Ocean. The Indian PMN Contract Area (75,000 km^2) in the CIOB has been uniformly sampled for nodules at 12.5 km intervals to estimate nodule abundance and grade. The National Institute of Ocean Technology (NIOT), an autonomous institute under MoES, has designed a deep-sea mining system aiming at sustainable harvesting of polymetallic nodules from depths of up to 5500m. The mobility and system-powering trials of NIOT's deep-sea mining machine were conducted at 5270m depth in 2021 at the Central Indian Ocean. Besides, baseline data generation for marine environmental characteristics and the development of metallurgical processes are also undertaken. CSIR–National Institute of Oceanography undertook multidisciplinary studies to establish baseline environmental conditions and assess the possible effects of nodule collection on deep-sea ecosystems. Since signing the PMS exploration contract for the Carlsberg Ridge in September 2025, extensive efforts have been undertaken to compile, integrate, and interpret the available geophysical, geological, and oceanographic datasets to support the effective planning and execution of exploration activities in accordance with the work plan approved by the ISA.

(c) Seabed resource estimation and environmental studies at mineral exploration sites are an integral component of the contract with the ISA. For this purpose, geological, geophysical, chemical, oceanographic, and biological data are collected by the CSIR-National Institute of Oceanography (NIO), Goa, from the allocated contract area in the Indian Ocean. CSIR-NIO also conducted the Deep-sea Environment Experiment, involving baseline observations, a controlled seabed disturbance experiment, and subsequent monitoring of physical, chemical, and biological changes, including sediment resuspension, benthic effects, and recolonisation.

(d) The draft Mining Code of the ISA incorporates stringent environmental safeguards, including the precautionary approach, environmental baseline studies, environmental impact assessments (EIAs), environmental management and monitoring programmes, and adaptive management measures to protect the marine environment, including fragile hydrothermal vent ecosystems. At present, no commercial exploitation of deep-sea mineral resources has been approved by the ISA.

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