

**GOVERNMENT OF INDIA  
MINISTRY OF EARTH SCIENCES  
LOK SABHA  
UNSTARRED QUESTION NO. 2436  
TO BE ANSWERED ON WEDNESDAY, 15 MARCH, 2023**

**O-SMART SCHEME**

2436. DR. SHRIKANT EKNATH SHINDE:  
SHRI UNMESH BHAIYYASAHEB PATIL:  
PROF. RITA BAHUGUNA JOSHI:  
DR. HEENA VIJAYKUMAR GAVIT:  
DR. KRISHNA PAL SINGH YADAV:  
DR. SUJAY RADHAKRISHNA VIKHE PATIL:

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) the details of the steps that have been taken by the Ministry to achieve the objectives of the Ocean Services, Modelling, Applications, Resources and Technology (O-SMART) Scheme;
- (b) whether the department has allocated and disbursed any budget in this regard and if so, the details thereof;
- (c) whether any steps have been taken by the Ministry to tackle the possible environmental costs of development of underwater vehicles and technologies under the scheme;
- (d) if so, the manner in which the Ministry plans to implement these steps; and
- (e) the intervals within which the department plans to present the research obtained under this scheme and its mode of publication?

**ANSWER**

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

- (a) The Ocean Services, Modelling, Applications, Resources and Technology (O-SMART) Scheme of Ministry of Earth Sciences (MoES) is implemented through various institutes of Ministry. To achieve the objectives of the scheme, following steps are being taken by the Ministry:
  - The proposed technology development and R & D activities related to schemes are being assigned to relevant institutes of the Ministry for timely execution.
  - Various ocean observational platforms viz., Argo floats, XBT/XCTDs, Wave Rider Buoys, Automatic Weather Stations, Drifters, Moored Buoys, Tide Gauges, Acoustic Doppler Current Profilers, were deployed and existing ones were maintained to obtain continuous data sets for initializing models and assimilation. Process Specific Observations were also undertaken to improve the model outputs.

- Operational services on Tsunami Early Warnings, Storm Surges, Potential Fishing Zones, Ocean State Forecast, Harmful Algal Blooms, Coral Reefs, Multi Hazard Vulnerability, Coastal Vulnerability Indices, High Wave Alerts, Oil Spill, Search and Rescue operations etc were generated using the data and models operational in house and was provided on day-to-day basis to various stake holders and end users.
  - Coastal surveys and deep-sea cruises are conducted of as per the requirement of the program using the fleet of research vessels maintained by the Ministry.
  - Public awareness campaign and related activities are conducted on regular basis to disseminate technology and policies.
- (b) An amount of Rs. 2177 crore is allocated for implementation of O-SMART scheme during a period of 5 years i.e 2021-22 to 2025-26. Rs. 382.08 crore was released during the year 2021-22 and Rs. 176.35 crore is so far concurred for expenditure during current year.
- (c) Yes, Sir. Ministry is following applicable guidelines for assessment of environmental impact for developing underwater vehicles and technologies.
- (d) The underwater vehicles developed under the scheme are environmentally safe and do not cause any appreciable effects. The deep sea mining machine is developed and deployed as per the guidelines laid down by the International Seabed Authority (ISA) and the impact is monitored between, during and after the deployment as per the guidelines of ISA.
- (e) O-SMART is a continuing central sector scheme mandated for technology development for oceanic application, services (forecast and advisories) and R & D activities in the marine as well as coastal environment. The research outputs obtained from this scheme are presented on regular basis in the form of annual reports and submitted to the Parliament and also posted in the Ministry's website. Moreover, several developed technologies are transferred to industry and scientific outcomes are published in peer reviewed journals.

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