

Ocean Services, Modelling, Application, Resources and Technology (O-SMART)

November 25, 2021

In news– Recently, the Union Cabinet has given its approval for continuation of the umbrella scheme O-SMART of the Ministry of Earth Sciences, for implementation during the period from 2021-26.

About O-SMART scheme-

- The O-SMART scheme encompassing oceanographic research activities is being **implemented with the objectives for providing forecast and services based on the continuous observation of our oceans**, development of technologies and exploratory surveys for sustainable harnessing of our oceanic resources (both living and nonliving) and promotion of front-ranking research in ocean sciences.
- **The scheme encompasses seven sub-schemes namely:**
 1. Ocean Technology.
 2. Ocean Modelling and Advisory Services (OMAS).
 3. Ocean Observation Network (OON).
 4. Ocean Non-Living Resources.
 5. Marine Living Resources and Ecology (MLRE).
 6. Coastal Research and Operation and Maintenance of Research Vessels.
- **These sub-schemes are being implemented by** autonomous/attached institutes of the Ministry, viz.
 1. National Institute of Ocean Technology (NIOT), Chennai.
 2. Indian National Center for Ocean Information Services (INCOIS), Hyderabad.

3. National Centre for Polar and Ocean Research (NCPOR), Goa.
 4. Center for Marine Living Resources and Ecology (CMLRE), Kochi; and
 5. National Centre for Coastal Research (NCCR), Chennai as well as involving other national institutes.
- **The present decade has been declared as the Decade of Ocean Science for Sustainable Development** by the United Nations (UN) and continuation of the scheme would strengthen our stand in the global oceanographic research and technology development.
 - The research and technology development pertaining to oceans in India was initiated by the Department of Ocean Development (DoD), which was set up in 1981 which later merged to the Ministry of Earth Sciences (MoES) and continuing since then.

Objectives of the scheme-

- To generate and regularly update information on Marine Living Resources and their relationship with the physical environment in the Indian Exclusive Economic Zone (EEZ),
- To periodically monitor levels of sea water pollutants for health assessment of coastal waters of India, to develop shoreline change maps for assessment of coastal erosion due to natural and anthropogenic activities,
- To develop a wide range of state-of-the art ocean observation systems for acquisition of real-time data from the seas around India,
- To generate and disseminate a suite of user-oriented ocean information, advisories, warnings, data and data products for the benefit of society,
- To develop high resolution models for ocean forecast and reanalysis system,
- To develop algorithms for validation of satellite data

for coastal research and to monitor changes in the coastal research,

- To develop technologies to tap the marine bio resources, to generate freshwater and energy from ocean, underwater vehicles and technologies,
- Establishment of Ballast water treatment facility,
- To support operation and maintenance of 5 Research vessels for ocean survey/monitoring/technology demonstration programmes,
- To carry out exploration of Polymetallic Nodules (MPN) from water depth of 5500 m in site of 75000 sq.km allotted to India by United Nations in Central Indian Ocean Basin, to carry out investigations of gas hydrates,
- Submission of India's claim over continental shelf extending beyond the Exclusive Economic Zone supported by scientific data, and Topographic survey of EEZ of India.

Major milestones of the scheme-

Following are the several major milestones have been achieved through the activities of the scheme:

- India's recognition as **Pioneer Investor with International Seabed Authority (ISA) for conducting extensive research on deep sea mining of Poly Metallic Nodules (PMN) and hydrothermal sulphides** in the allotted area of the Indian Ocean.
- The **technology development for desalination** using low temperature thermal desalination installation of such a facility **in Lakshadweep islands**.
- India has taken a leadership role in implementing the Indian Ocean component of the Global Ocean Observing System in Intergovernmental.
- **Oceanographic Commission** through wide range of observations networks including both moored and drifters' types have been deployed and maintained in the

Indian Ocean

- **A state-of-the-art early warning system for oceanic disasters** viz. tsunami, storm surges, has been established at INCOIS, Hyderabad to provide services for India and countries of the Indian Ocean, which have been recognized by UNESCO.