O-SMART Scheme

Why in News

The Cabinet Committee on Economic Affairs approved the continuation of the **'Ocean Services, Modelling, Application, Resources and Technology (O-SMART)' Scheme** for the period of 2021-26.

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Key Points

- **About:**

    - It is a government scheme that aims at **promoting ocean research and setting up early warning weather systems.**

        - It was **launched in August 2018.**
    - It also aims at **addressing ocean development activities** such as technology, services, resources, science, and observations as well as offering required **technological assistance for implementing aspects of the** Blue Economy**.**
    - It comprises seven **sub-schemes** which are being implemented by autonomous institutes of the Ministry of Earth Sciences (MoES).

        - **Sub-Schemes are:** Ocean Technology, Ocean Modelling and Advisory Services (OSMAS), Ocean Observation Network (OON), Ocean Non-Living Resources, Marine Living Resources and Ecology (MLRE), Coastal Research and Operation, Maintenance of Research Vessels
- **Objectives:**

    - 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 [seawater 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 the acquisition of real-time data from the seas around India and to cater to the testing and sea trial activities of ocean technology.
- 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 systems.
- To **develop algorithms** for validation of **[satellite data for coastal research](#)** and to monitor changes in the coastal research.
- Acquisition of **[Coastal Research Vessels](#)** (CRVs) **for coastal pollution monitoring, testing of various underwater components and technology demonstration** and to support their operation and maintenance.
- To **develop technologies to tap the marine bioresources, generate freshwater and** [ocean energy](#) and develop **[underwater vehicles](#)** and technologies.
- Establishment of **[Ballast water](#)** treatment facility.

    - Ballast Water Discharge by ships is **responsible for the introduction of invasive species** in the oceans by taking water from one port and discharging it during the next port call.
- To carry out exploration of **[Polymetallic Nodules (MPN)](#)** from water depth of 5500 m in a site of 75000 sq. km allotted to India by the **[United Nations](#)** in the Central Indian Ocean Basin, and to carry out investigations of **[gas hydrates.](#)**

    - **MPN,** also called **manganese nodules, are rock concretions formed of concentric layers of iron and manganese hydroxides** around a core.
    - MPN **contain multiple metals like copper, nickel, cobalt, manganese, iron, lead, zinc, aluminium, silver, gold and platinum etc.** in variable constitutions and are precipitate of hot fluids from upwelling hot magma from the deep interior of the oceanic crust.
    - Mining for Polymetallic nodules **is of strategic importance for India** as there are no terrestrial sources of these metals in India.
- **Exploration of polymetallic sulphides near Rodrigues Triple junction** (convergence of Central Indian Ridge, the Southeast Indian Ridge, and the Southwest Indian Ridge) in 10000 sq. km of area allotted to India in International waters by **[International Seabed Authority.](#)**
- Submission of **India's claim over continental shelf extending beyond the EEZ** supported by scientific data, and the Topographic survey of EEZ of India.

- **Significance:**

    - It will **augment the capacity building of India in the oceanographic field at the international level** with the ongoing extensive research and technology development activities.
    - It will **aid in strengthening India's contribution towards a national policy on** [Blue Economy](#) for efficient and effective use of the ocean resources in a sustainable way.
    - It will offer further comprehensive coverage while strengthening ongoing activities to deliver cutting-edge technology for the marine sector, **[forecast and warning services](#)**, understanding **[marine biodiversity,](#) coastal processes, and conservation strategies for marine living organisms.**
    - **It will help in achieving** [United Nations'](#) **[Sustainable Development Goal (SDG) 14](#)** to conserve and sustainably use the oceans, seas, and marine resources.

- **Major Milestones:**

    - It has **helped India get recognized as Pioneer Investor with [International Seabed Authority (ISA)](#)** for conducting extensive research on **[deep-sea mining](#)** of **MPN** and hydrothermal sulfides in the allotted area of the **[Indian Ocean](#)**.
    - The scheme has **enabled India to take a leadership role in implementing the Indian Ocean component of the Global Ocean Observing System in** [UNESCO's](#)

Intergovernmental Oceanographic Commission (IOC).
- A state-of-the-art Early Warning System for oceanic disasters such as **storms**, **tsunamis**, has also been set up at **Indian National Centre for Ocean Information Service** (INCOIS), Hyderabad.

Source: PIB

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