



KAMARAJ IAS ACADEMY
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Integrated Ocean Energy Atlas

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Why in news?

INCOIS unveiled an '*Integrated Ocean Energy Atlas*' for India's EEZ, *highlighting vast marine energy potential from solar, wind, waves, tides, currents, and thermal resources.*

About the INCOIS

- It was established as an **autonomous body** in **1999** under the **Ministry of Earth Sciences** (MoES) and is a unit of the **Earth System Science Organization** (ESSO).
- Mandate: To provide the best possible **ocean information and advisory services** to society, industry, government agencies, and the scientific community through sustained ocean observations and constant improvements through systematic and focussed research.
- **Activities:**
- It provides **round-the-clock monitoring and warning services** for the coastal population on tsunamis, storm surges, high waves, etc. through the in-house Indian Tsunami Early Warning Centre (ITEWC).
- It provides daily advisories to fisher folk to help them easily **locate areas of abundant fish** in the ocean.
- Short-term (3-7 days) **Ocean State Forecasts** (waves, currents, sea surface temperature, etc.) are issued daily to fisher folk, the shipping industry, the oil and natural gas industry, the Navy, the Coast Guard, etc.

Key Features of the Integrated Ocean Energy Atlas

The Atlas encompasses *marine meteorological energy sources* like **solar and wind, and hydrological energy forms** such as **waves, tides, currents, ocean thermal, and salinity gradients** within **India's EEZ**.

It identifies areas with high potential for **energy generation** and will serve as a reference for policymakers, industry and researchers for harnessing these rich energy resources.

INCOIS prepared the **annual, monthly, and daily** energy estimates of **ocean energy** components that can be visualised through a **WebGIS** interface at 5 km grid resolution.

Significant potential of the Indian Exclusive Economic Zone (EEZ)

INCOIS has estimated integrated ocean energy of approximately **9.2 lakh TWh per annum** within the EEZ of India.

The vast coastline of over 7,000 km and the EEZ covering up to 220 km from the coast offers ample scope for generating energy from **blue renewable sources** like tidal waves, currents, solar and wind.

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Exclusive Economic Zone (EEZ):

The concept of **EEZ** was adopted through the **1982 United Nations Convention on the Law of the Sea (UNCLOS)**. It is an **area of the ocean extending up to 200 nautical miles (370 km)** immediately offshore from a country's land coast in which that **country retains exclusive rights to the exploration and exploitation of natural resources**.

Way forward:

The Atlas provides a blueprint for India to tap into its **vast untapped ocean energy resources** to meet its growing energy demands in a sustainable manner.

It offers estimated **values of renewable energy** that can be generated from individual or integrated **blue renewable sources** at potential sites along the coast

The detailed mapping of energy potential at **granular 5 km grid level** can help industries plan and make informed decisions for developing offshore renewable energy projects.

Collaborating with industrial partners and public sector companies to **harness energy at high-potential zones** identified in the Atlas can accelerate the adoption of marine energy technologies.

The Atlas can serve as a model for other countries in the **Indian Ocean region** to assess their blue energy reserves and promote regional cooperation in harnessing ocean energy resources.