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# Integrated Ocean Energy Atlas

Published On: 24-09-2024

## Integrated Ocean Energy Atlas

### 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 **agranular 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.