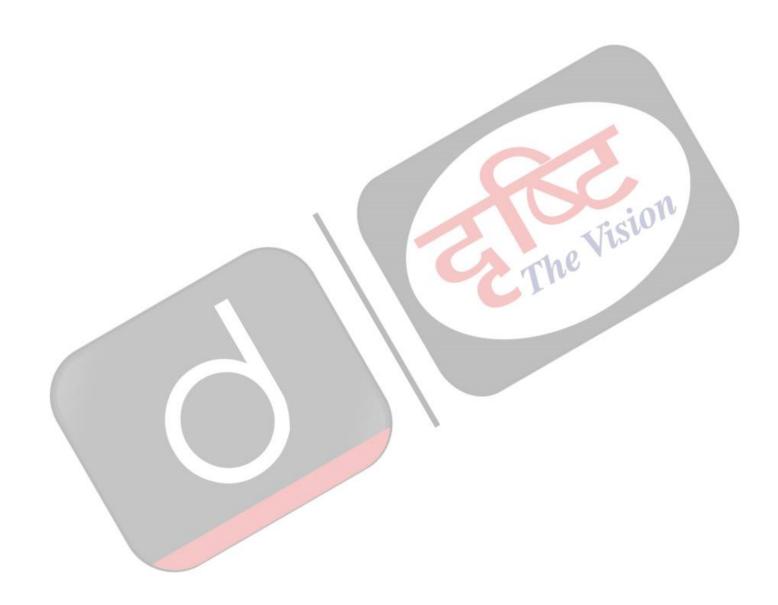


# **Ocean Energy**



### Ocean Energy

- □ Vast store of kinetic energy created by oceans' water movements.
- ☐ Can be harnessed to generate electricity.

#### Types of Ocean Energy

- ☐ **Tidal:** By tidal water which is held back and released on river estuaries.
- □ Wave: By the movements of devices, floating on the ocean's surface or moored to the seabed).
- □ **Current:** By underwater turbines which are run by the ocean currents.
- Ocean thermal: By temperature difference between the warm surface water and deeper cold layers.
  - OTEC has high capacity factor; best possible source with infinite supply of solar energy and no harmful air polluting emissions.
- Osmotic: By water movement across a membrane between a saltwater reservoir and fresh water reservoir; Salinity Gradient Energy.

#### Features

- ☐ Predictable, reliable and endless.
- ☐ Global presence oceans are available almost everywhere.
- Energy rich.
- ☐ Unlimited usage areas as surface, ocean beds, on shore, offshore locations.

#### Objectives

#### Ocean Energy

- ☐ To accelerate and enhance support for resource assessment and deployment.
- ☐ To overcome energy deficiency.
- ☐ To include public & private sectors for more projects on it.
- ☐ To invite Industry led research and development proposals for problem solving.

## Limitations

- ☐ Limited deployment of technology and under utilised.
- □ Very less research; most at the initial stages of R&D.
- □ Uncertainty of marine environment tsunamis, hurricanes etc.
- □ Commercial scale risks corrosion of machinery, impact on marine ecosystem.

#### Potential

- □ Tidal energy 12,455 MW, potential locations Khambat & Kutch regions.
- □ Wave energy 40,000 MW.
- □ OTEC 1,80,000 MW.
- ☐ Boost economic growth, reduce carbon footprint and provide employment.

#### Suggestions

- □ Long coastline of India (with estuaries & gulfs) should be fully used.
- Small environmental interactions for large scale electricity generation.
- More research inputs are needed.

#### Conclusion

- Can enable India to stimulate innovations, provide more jobs, grow economically.
- ☐ Can help attain self sufficiency in energy and help support neighbouring nations for growth and development in the energy sector.





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