



# OCEAN ENERGY



## DEFINITION

Ocean energy refers to the power harnessed from the ocean's natural movements, such as waves, tides, currents, and temperature variations, to generate electricity or other forms of usable energy.





## ADVANTAGES OF OCEAN ENERGY



- **\*Renewable:\*** It's a constant and renewable energy source, relying on natural movements like waves and tides.
- **\*Abundant:\*** Oceans cover a vast area, providing a huge potential for energy generation.
- **\*Predictable:\*** Wave and tidal patterns can be predicted, making it easier to anticipate energy production.
- **\*Low environmental impact:\*** It generally has a low impact on the environment compared to some other forms of energy generation, like fossil fuels.
- **\*Stable:\*** It can offer a consistent and stable source of energy once the technology is developed and deployed effectively.



## APPLICATION OF OCEAN ENERGY



E- \*Wave energy:\* Using devices that capture the kinetic energy from ocean waves to generate electricity.

- \*Tidal energy:\* Harnessing the energy from the rise and fall of tides through tidal turbines or barrages.

- \*Ocean thermal energy conversion (OTEC):\* Utilizing the temperature difference between warm surface waters and cold deep waters to produce electricity.

- \*Salinity gradient energy:\* Generating power from the difference in salt concentration between freshwater and seawater.

- \*Underwater currents:\* Tapping into the kinetic energy of underwater currents using turbines to generate electricity.

These applications have the potential to provide sustainable and clean energy for various purposes, including electricity generation, desalination, and more



## FUTURE TRENDS



- A- \*Technological advancements:\* Improved technologies for capturing and converting ocean energy more efficiently and cost-effectively.
- \*Increased investment:\* Growing investment in research, development, and deployment of ocean energy technologies, leading to commercial-scale projects.
  - \*Integration with other renewables:\* Integration of ocean energy with other renewable sources to create hybrid systems for more consistent power generation.
  - \*Environmental considerations:\* Further focus on minimizing environmental impacts through innovative designs and site selection.
  - \*Policy support:\* Continued policy support and incentives to encourage the development and adoption of ocean energy technologies.
  - \*Global expansion:\* Expansion of ocean energy projects to different regions worldwide, tapping into the potential of diverse ocean conditions for energy production.



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**THANK YOU**