Global Offshore Wind Alliance

For Prelims: Global Offshore Wind Alliance, Offshore Wind Energy, Net zero

For Mains: Status of Wind Energy in India and related steps taken

Why in News?

Recently, nine new countries sign up for Global Offshore Wind Alliance at COP27.

- **Nine new countries:** Belgium, Colombia, Germany, Ireland, Japan, the Netherlands, Norway, the UK, and the US.
- Australia announces to sign up with global offshore wind alliance.

What is Global Offshore Wind Alliance (GOWA)?

- It was established **to ramp up of offshore wind** in order to tackle the climate and energy security crises.
- It was set up by the International Renewable Energy Agency (IRENA)**,** Denmark and the **Global Wind Energy Council.**
    - GWEC was established in 2005 to **provide a credible and representative forum** for the entire wind energy sector at an international level.
- Several **organizations are supporting the alliance** and promoting offshore wind in their respective regions.
    - Both IRENA and the International Energy Agency (IEA) **expect that offshore wind capacity will need to exceed 2000 GW in 2050,** from just over 60 GW today, to limit the rise in global temperatures to 1.5 degree Celsius and achieve net zero.
    - To reach this target, **GOWA will aim to contribute to accelerating growth** to reach a total of at least 380 GW installed capacity by the end of 2030.

What is Offshore Wind Energy?

- **About:**
    - **Wind energy today typically comes in two different "types": onshore wind farms** which are large installations of wind turbines located on land, and offshore wind farms which are installations located in bodies of water.
    - **Offshore wind energy refers to the deployment of wind farms** inside the water bodies. They utilise the sea winds to generate electricity. These wind farms either use fixed-foundation turbines or floating wind turbines.
        - A fixed-foundation turbine is built in shallow water, whereas a floating wind turbine is built in deeper waters where its foundation is anchored in the seabed. Floating wind farms are still in their infancy.
    - Offshore wind farms must be at least 200 nautical miles from the shore and 50 feet deep in the ocean.
    - Offshore wind turbines produce electricity which is returned to shore through cables buried

in the ocean floor.

- **Status of Wind Energy in India:**
  - India’s electricity generation from wind reached **39.2 gigawatts (GW) a year in March 2021.** An addition of another 20 GW over the next five years is expected to happen soon.
  - The compound annual growth rate for wind generation has been 11.39% between 2010 and 2020, and for installed capacity, it has been 8.78%.
  - More than **95% of commercially exploitable resources are located** in seven states: Andhra Pradesh, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Tamil Nadu.
- **Policies related to Wind Energy:**
  - National Wind-Solar Hybrid Policy: The main objective of the National Wind-Solar Hybrid Policy, 2018 is to provide a framework for promotion of large grid connected wind-solar PV hybrid systems for optimal and efficient utilization of wind and solar resources, transmission infrastructure and land.
  - National Offshore Wind Energy Policy: The National Offshore wind energy policy was notified in October 2015 with an objective to develop the offshore wind energy in the Indian Exclusive Economic Zone (EEZ) along the Indian coastline of 7600 km.

What are the Benefits of Offshore Wind Energy?

- **Wind speed over water bodies is high** and is consistent in direction. As a result, offshore wind farms generate more electricity per installed capacity.
- **Fewer offshore turbines are required to produce the same capacity of energy** as compared to onshore ones.
- Offshore wind farms have **a higher CUF (capacity utilisation factor)** than onshore wind farms. Therefore, offshore wind power allows for longer operating hours.
  - A wind turbine's CUF is equal to the average output power divided by the maximum power capabilities.
- It's possible to build **bigger and taller offshore windmills,** resulting in increased energy harvest.
- Furthermore, the **wind flow is not restricted by hills or buildings.**

UPSC Civil Services Examination, Previous Year Question (PYQ)

Q. Give an account of the current status and the targets to be achieved pertaining to renewable energy sources in the country. Discuss in brief the importance of National Programme on Light Emitting Diodes (LEDs). **(2016)**

Source: ET