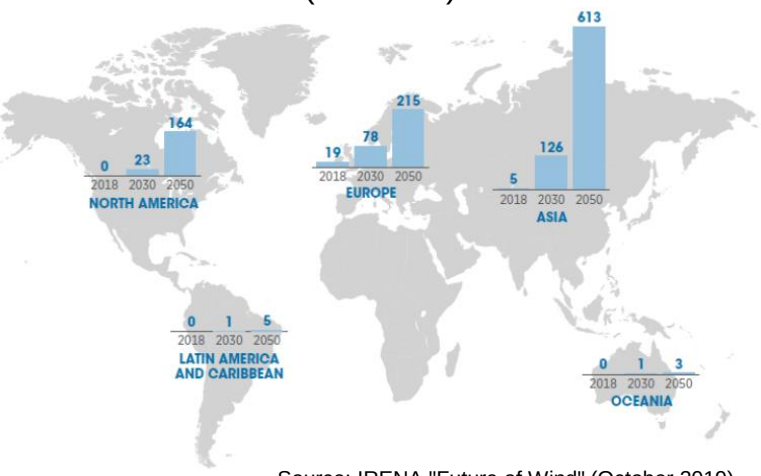
Cost Reductions for Offshore Wind Power Generation (Amount covered by the government: Up to 119.5 billion yen)

- Offshore wind power has been expanding **mainly in Europe**, but **the Asian market is expected to grow rapidly**.
  While the introduction of fixed-bottom turbines in shallow waters is progressing, **countries are competing to develop technology for floating turbines**.
- In order to win this competition, the fund will support the following R&D projects for **floating turbines etc.**:
  (1) Develop technology for wind turbines, floating structures etc. that will be suitable for the meteorological and marine conditions in Asia;
  (2) **Integrally design an entire system that combines wind turbines, floating structures, cables etc.** involving from users (power generation businesses) with a view to achieving **internationally competitive cost levels**, and **demonstrate them** toward public implementation.

Forecast for the offshore wind turbine market
(Unit: GW)



Source: IRENA "Future of Wind" (October 2019)

Floating offshore wind turbine

Phase 1: Developing component technology

Example challenges:

- Reducing costs by using substitutes for steel materials (concrete floats, synthetic fiber mooring)
- Wind turbines that are suitable for the natural conditions in Japan and Asia (such as typhoons, earthquakes, lightning strikes, low wind speeds)
- Improving the durability of the cables that move along with the floating structures
- Failure prediction using AI and big data

Phase 2: Testing

Example challenges:

- Integrally designing an entire system that combines the wind turbines, floating structures and cables, and verifying the cost reductions

R&D goals: Achieve a generation cost of 8 to 9 yen/kWh with seafloor-mounted turbines under certain conditions (wind conditions) by 2030