

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.:
 - Develop technology for wind turbines, floating structures etc. that will be suitable for the meteorological and marine conditions in Asia;
 - 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



Image: NREL

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