Raising Ambitions: developing the offshore wind industry

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ABSTRACT

Many different governments, both local, state, and supranational, see offshore wind generation as the key to reaching the goal of net-zero greenhouse gas emission by 2050. Benefits of offshore wind include job creation for communities on the coasts but also for communities inland. However, there are obstacles to offshore wind including preserving fishing industries and communities, ensuring shipping lanes remain clearof obstructions, and military concerns.

SUMMARY

Countries in the European Union are working to utilize offshore wind in an effort to decarbonize. There is enormous potential for offshore wind in the Baltic Sea and the North Sea. Expanding offshore wind can help secure Europe's energy independence from Russian natural gas and can help countries within the EU to become net exporters of electricity.

- Denmark's plan for decarbonization is to reduce emissions by 70% by 2030 and to reach climate neutrality by 2050. Denmark decided to end its oil and gas industry in an effort to reach carbon neutrality. Replacing Denmark's oil and gas industry with wind energy islands in the Baltic Sea has potential to generate 120%-150% of what Denmark will need, and these wind islands will be completed by the end of the current decade. The energy islands will have potential to liquify hydrogen that can be used in heavy industry to further lower Denmark's net emissions.
- Lithuania believes that offshore wind is the answer to help achieve 70% energy independence. Nuclear energy comprised 90% of Lithuania's energy needs, but reactors were shut down and Lithuania lost 3 gigawatts of electricity. This shut down moved Lithuania from a net-exporter of energy to a net-importer. At present, Lithuania only generates 30% of its electricity needs. By 2025 onshore renewables will be maxed-out with 1.2 gigawatts of onshore wind and 1 gigawatt of solar. Offshore wind can help close the gap. The government of Lithuania is aiming to generate 700 megawatts of electricity from offshore wind. Reaching 70% domestic generation of electricity will help Lithuania become more energy independent as it moves away from Russian oil and gas.

Japan has a target of adding 10 gigawatts of offshore wind electricity by 2030 and 30-45 gigawatts by 2040 in an effort to reach carbon neutrality by 2050. To achieve this goal, Japan has secured investments in a green innovation fund and from taxation and regulatory reforms. Cooperation and coordination with various ministries in Japan will help secure offshore wind as a key generator by 2050.

- Japan has secured 2 trillion yen in a green innovation fund, and also with tax and regulatory reforms, to invest in new green technology. There is bipartisan support within Japan and in Japan's industry sector to support carbon neutrality by 2050.

Industry leaders believe that green energy will generate a positive cycle of growth and environmental protection.

- Renewable energy has doubled in the 10 years since Fukushima. For offshore wind, Northern and Western Japan has high potential for generation. The government is expecting global offshore wind generating capacity to grow 24-fold in the next 20 years from 23 gigawatts today to 560 gigawatts by 2040 with a large increase in Asia. Japan's goal is to: 1) develop attractive domestic offshore wind market, 2) facilitate investment in build supply chains, and 3) enhance technology development in joint and international projects. Japan expects to add 10 gigawatts of offshore wind power by 2030 and 30-45 gigawatts by 2040.
- Obstacles to Japanese offshore wind include coordinating with different parties with vested interests in the offshore space. Coordinating with the Land and Infrastructure Ministry and the Fishery Ministry is critical to ensure that there isn't a negative impact on those sectors. The Telecommunication Ministry needs to ensure that the cable wiring system from windmills does not impeded communication cables.

The United States has a goal to exceed 30 gigawatts of offshore wind by 2030 that will both lower carbon emissions and also create thousands of new jobs for communities along the coast and also states further inland. States are competing to become the leader for US offshore wind. Low-lying states like New Jersey are particularly vulnerable to the effects of climate change and hope that they can lead the way to offshore wind generation.

- The United States has an ambitious goal of achieving over 30 gigawatts of offshore wind by 2030, enough electricity to power ten million homes and create 83,000 jobs. These new gigawatts will provide pollution free energy for communities living among the coasts. To meet these ambitious targets, new supply chains will open business opportunities in costal port communities as well as inland factories creating the actual wind turbines. Long term stability is required to ensure investors that offshore wind will return a profit.
- Low-lying states like New Jersey face an extended risk of rising seas due to climate change. The governor of New Jersey wants the offshore wind industry to be anchored in its state. To reach the goals of 2050, New Jersey will require 60.5 gigawatts of clean energy with 11 gigawatts being from offshore wind. To kickstart the campaign of clean energy, New Jersey has put a carbon cap on coal- fired and gas-fired power plants.

QUESTION & ANSWER

Q: *How do you ensure cooperation?*

A: It is important to work with the market and not against the market and with other states in the region. Baltic countries will work together to ensure the crowded seas and crowded sea routes will be secure. Further, integrating the energy grids will further help cooperation.

Q: *How do you ensure that benefits of offshore wind reach the communities that actually need*

the jobs?
A: There are 4,000 components in a wind turbine manufactured in 43 different US states. Ensuring that thosejobs are in communities that need the jobs will be key to ensuring equality. Engaging all of the stakeholders that have a vested interest in any part of the wind industry area from fishermen to conversationists will be essential. The US has decades worth of experience in offshore gas and oil which will help establish the offshore wind infrastructure. Floating wind technology is where America can lead especially off the coast of California.

Q: *What additional steps need to be taken for offshore wind as well as other green technologies are a viablepart of the energy grid?*
A: Priorities include making the EU an example by promoting offshore wind industry not only in Europe but in other parts of the world. Showing that offshore wind is an economic success will also be beneficial. It has potential to create domestic jobs. However, offshore wind is competing with the same territory with fishing, shipping, and defense. In this context, we need good agreements with other players with how to plan and develop.

Q: *How can the EU cooperate with other countries and US states? Can we work together for the benefit of best practices?*
A: Offshore renewable is an opportunity for the EU and EU businesses. It has potential to use its decades of experience with cooperation with other agencies. Offshore comes up in dialogues. All of the countries who have committed to the climate crisis have accepted that electricity usage will grow, and the coastline presentsan opportunity to help cover the additional demand.

Q: *How much does the goals depend on cooperation between the public and private sector?*
A: Our main task is to promote predictable investment sectors and opportunities. Green technology will create jobs even away from coastal areas.