Overview of Japan’s Offshore Wind Power Market

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Japan Power Market Snapshot

- World’s third largest economy and second largest electricity market in the OECD.

- Prior to the Fukushima Daiichi Nuclear Accident – power generation was dominated by fossil fuels (c.60%) and nuclear (c.30%).

- After the Fukushima Daiichi Nuclear Accident – big increase in fossil fuel imports for thermal generation, causing:
  - Increasing electricity prices
  - High dependency on imports
  - Increase in Japan’s greenhouse gas emissions

- Energy policy has shifted – to reduce fossil fuel dependency:
  - **Changing power generation mix:** Shift away from nuclear and thermal power generation towards renewable energy, and expanding the mix of renewable power sources
  - **Market liberalization:** Liberalization of power generation, liberalization of retail supply, ensuring independence / fairness of transmission and distribution
  - **Rising awareness of energy conservation:** Efforts towards increased efficient energy usage.
A Changing Generation Mix

- Japan is looking to expand its renewable energy use to reduce its dependency on fossil fuels and secure energy supply.

Pre-Fukushima energy mix:
- LNG: 29%
- Coal: 25%
- Nuclear: 29%
- Renewables: 10%
- Oil: 7%

Govt. base case energy mix by 2030:
- LNG: 27%
- Coal: 26%
- Nuclear: 20 - 22%
- Renewables: 22 - 24%
- Oil: 3%

Source: Ministry for Economy, Trade and Industry (METI), Japan's Electricity Market Reform and Beyond, July 7, 2015
The Role of Offshore Wind in the Generation Mix

- Although installed capacity is increasing steadily ..........
- Further opportunities exist due to an estimated wind technical potential of 1.6 TW and government targets of making floating offshore wind technology in commercial use by 2018

**Installed wind generation capacity by MW and Units 2009 to 2014**

Source: Japan Wind Power Association (JWPA)
Offshore Wind Market Trends

- Increased government support for the offshore wind sector through feed in tariffs (FITs)
  - FITs have increased since introduction a positive signal when compared to other renewable energy technologies e.g. solar, and remain comparatively attractive compared to other countries e.g. Germany, France and Spain.

<table>
<thead>
<tr>
<th>Year</th>
<th>Offshore wind FIT (JPY/kWh)</th>
<th>Solar FIT (JPY/kWh)</th>
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</thead>
<tbody>
<tr>
<td>2012</td>
<td>23</td>
<td>42</td>
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<tr>
<td>2013</td>
<td>23</td>
<td>40</td>
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<td>2014</td>
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<td>2015</td>
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Offshore Wind Market Trends

- Government sees offshore wind generation as a key renewable energy source and has introduced a range of support measures to compliment it’s wind power FIT regime.

- Purchasing of wind turbines and parts, and maintenance services is forecast to grow from an estimated 300 billion yen a year currently to 500 billion yen in 2030.

- International wind generation expertise could be of great value to Japan, including wind modelling, construction, transmission and operation and maintenance of wind farms.

- Japan's substantial investment in making floating offshore wind a viable technology could also present an excellent learning opportunity for international players.

Offshore Wind Market Trends

Market liberalization - encouraging new entrants by opening up the power market to competition

2016
- Retail competition introduced to the residential sector in 2016
- Consumers will likely drive demand for renewable energy

2018
- Abolishment of rate regulations
- Retail tariffs subject to market forces

2020
- Large power companies transmission and distribution operations unbundled
- Enhanced neutrality and transparency of transmission and distribution
Offshore Wind Generation - Barriers to Entry

**Barriers**
- Geographical challenges around sea depth and seismic/weather susceptibility
- Permitting and regulatory approvals
- Grid connectivity and infrastructure
- Local market knowledge

**Result**
- Delays to projects
- Delays to achieving installed capacity targets
- Foreign players cautious to enter the market

**Government Action**
- Addressing barriers through regulatory reform
- Promoting R&D into floating wind turbines and related deep sea infrastructure
- A variety of tax, and other, incentives to promote offshore wind generation
Accessing the Market through Partnership

- Given the unique characteristics of the Japanese market, many of foreign companies overcome barriers to entry by partnering with domestic players.

- There are a number of potential partners for foreign companies looking to expand their business in Japan.

- Partnership can take a myriad number of forms e.g. technology alliances, joint ventures, value chain alliances.

- Success cases include:
  - Vestas – Set up a joint venture with Mitsubishi Heavy Industries specializing in offshore wind generation turbines and equipment. (Company headquarters; Denmark). Vestas has operated a sales branch in Japan since 2011.
How Can JETRO Help?

- Japan’s core organization for promoting foreign direct investment (FDI) into Japan,

- Identifies companies interested in investing into Japan and supports them from the stage of business development to that of corporate establishment.

- Range of services to facilitate establishing a corporate presence in Japan

- No charge for assisting our registered clients