



Japan's Solar PV Market Overview

November 2015

Louis du Plessis

Energy & Environment Specialist

JETRO London

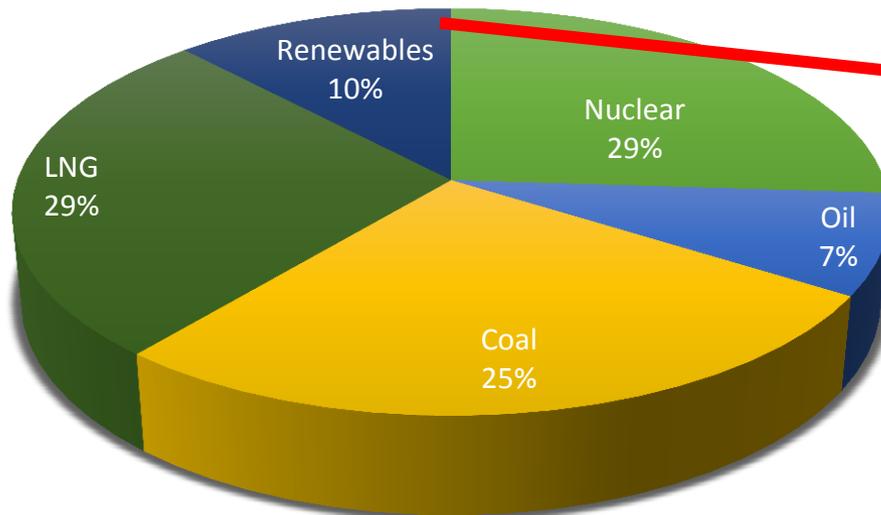
Japan Power Market Snapshot

- ❑ World's third largest economy and second largest electricity market in the OECD.
- ❑ Prior to the Fukushima Daiichi Nuclear Accident – power generation mix was dominated by fossil fuels (c.60%) and nuclear (c.30%).
- ❑ Post Fukushima Daiichi Nuclear Accident – big increase in fossil fuel imports for thermal generation leading to:
 - Increasing electricity prices
 - High dependency on imports
 - Increase in Japan's greenhouse gas emissions
- ❑ Energy policy has shifted – to reduce dependency on fossil fuels and secure energy supply:
 - **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.

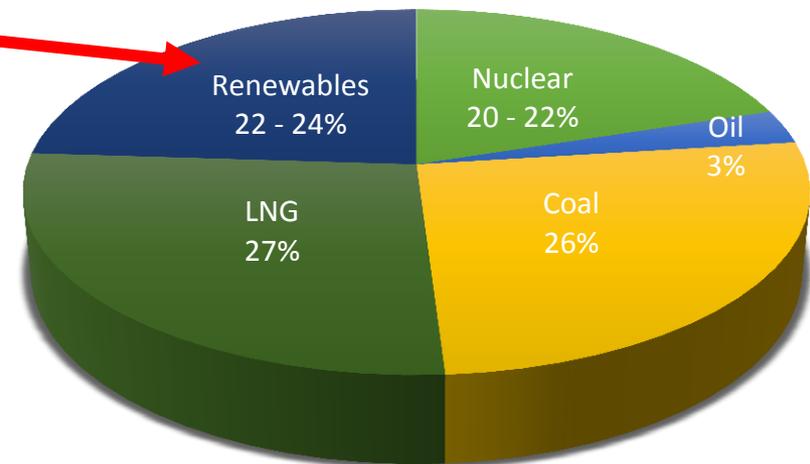
A Changing Generation Mix

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

Pre-Fukushima energy mix

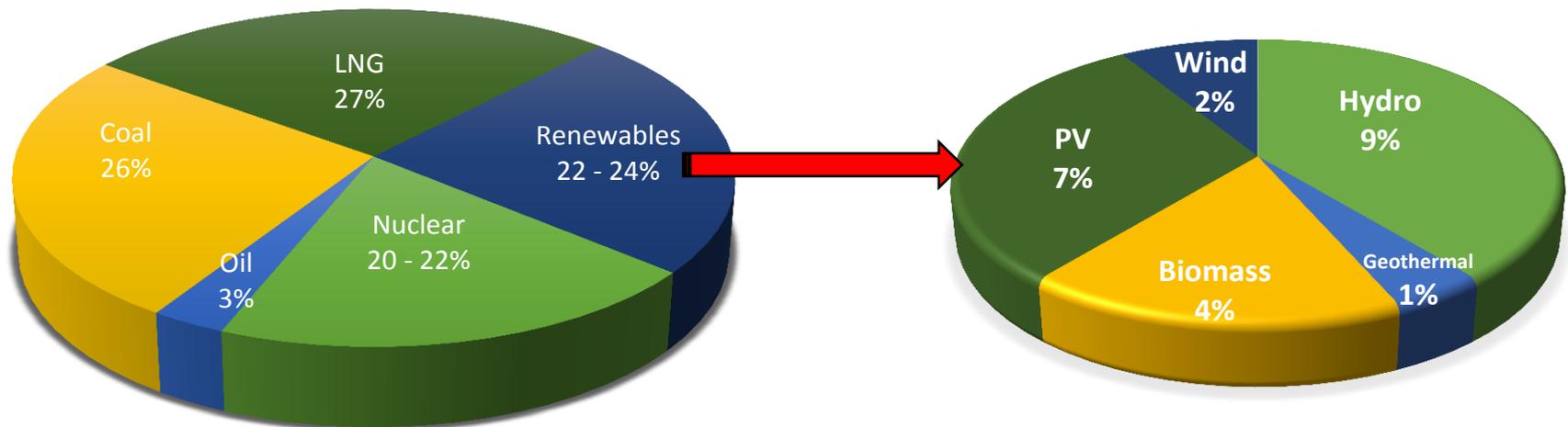


Govt. base case energy mix by 2030



The Role of Solar PV in the Generation Mix

- ❑ 4th largest Solar PV market in the world
- ❑ By 2030 Solar PV expected to:
 - Comprise 33% of generation from renewables
 - Attract c.62% of govt. incentives for renewable generation



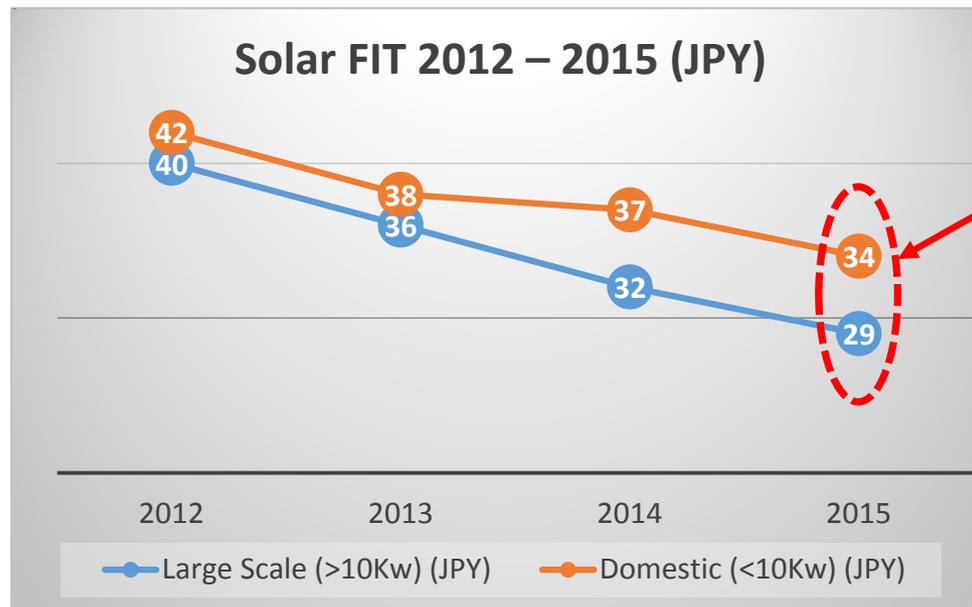
2030 JAPAN ELECTRICITY GENERATION MIX

Source: Ministry for Economy, Trade and Industry (METI)

Solar PV Market Trends

❑ Reducing feed in tariff (FIT)

- Initial FIT rates were set at comparatively favourable levels - triggering an initial surge in solar investment
- Repeated tariff cuts triggered by a cost reductions and capacity improvement – indication the market is maturing



Widening gap between large scale and domestic FIT rates

Solar PV 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

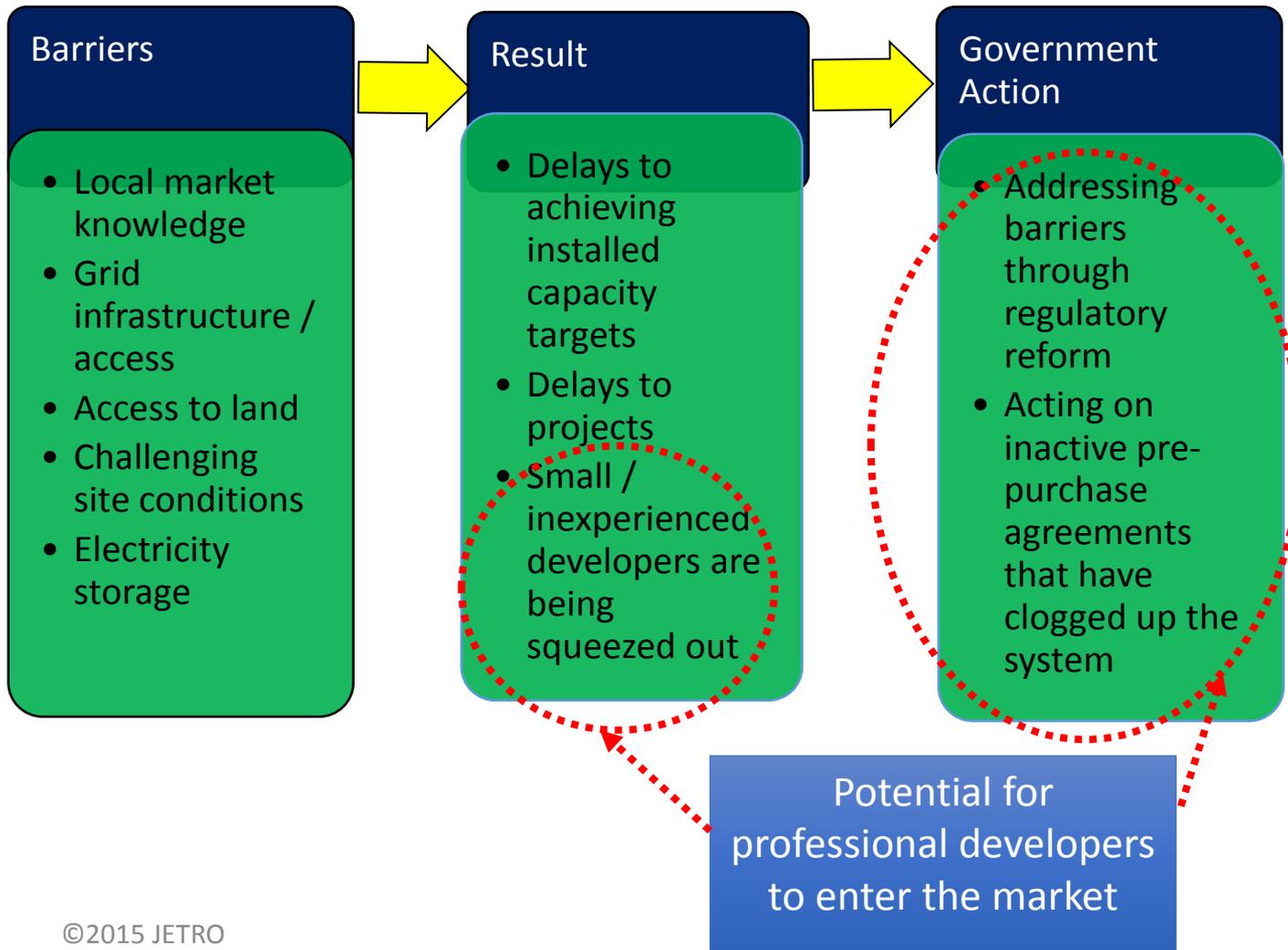
2020

- Large power companies transmission and distribution operations unbundled
- Enhanced neutrality and transparency of transmission and distribution

Solar PV Market Trends

- ❑ Technological innovation, making it possible to install panels in previously challenging places
 - dye-sensitized technology - offers a variety of uses not applicable to glass-based systems
 - organic thin film technology - flexible, lighter cells which can be laminated onto windows
- ❑ Domestic companies shifting away from PV manufacturing to higher value market segments
 - system integration / installation / electricity generation.
- ❑ A number of international players are entering the market
 - GE Energy, RES, First Solar, Canadian Solar, Gestamp Solar and others

Solar PV Market Barriers to Entry



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:
 - **Etrion** - after signing a strategic partnership with Hitachi for the construction of two solar projects in Japan totalling 34 MW, Marco Northland of Toronto and Stockholm-listed Etrion declared to the Japanese press: “We continue to target a solar project pipeline in Japan of at least 100MW under construction or shovel-ready by 2015”.
 - **GE Energy Financial Services** – the energy and power financing arm of General Electric – has announced it is to partner on the development of a 96.2 MW solar PV plant in Japan with Pacifico Energy, the third such occasion the two firms have collaborated on solar development in the country.



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