

Community Projects in Japan: Challenges and opportunities for realizing the potential as a strong driver for energy transition, climate policies and local community revitalization

German–Japanese Symposium

Panel session on “Climate Policies and Regional Economic Development”

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Introduction

- Community energy projects have been increasing in Japan, particularly after Fukushima nuclear power plant accident.
- Many municipalities are moving forward with projects to promote local production of electricity/heat from renewable sources of energy for local consumption, while also addressing other priority socio-economic issues like de-population, aging society, and the need to bolster local economy and create jobs.
- Promoting community energy projects has the potential to drive energy transition, advance climate policies and revitalize local communities.

Maniwa City: Aiming at becoming self sufficient with biomass-energy

- Maniwa city (population of 48,000) set the goal of supplying substantial part of its energy needs with the area's most abundant resource: **wood**.
- The city has 30 lumber mills, and their leaders jointly established a **biomass power generation company**, together with the forestry cooperative association and the municipal government.
- The company set up its own **biomass power plant** in 2015, with the capacity of 10 megawatts, enough to power 22,000 typical homes.
- Energy business is expected to become **a new engine of growth** for the area, with the saved fossil energy cost getting circulated within the area, helping to bolster the local economy.

Biomass power plant



Iida City: Making steady progress toward achieving independent local change through introducing renewable energy

- Iida city (population of 100,000) is moving forward with the **multi-faceted implementation of renewable energy projects**, with the cooperation of citizens, public purpose energy corporation, a local bank and local businesses.
- The Ohisama Shimpo Energy Corporation is promoting **solar power generation** utilising the roof of public buildings with **citizen funding**.
- The Corporation also plays a key role in planning and running the project called **Ohisama Zero-yen System**, meaning "a solar power system for free," with the company **installing a solar power generator at no initial cost on the roofs of households** applied to the scheme and approved.
- The municipal government provides **technical and financial support to those renewable energy projects** by citizen organisations recognised as being contributing to sustainable city development, under a recently introduced local **Ordinance**.

Miyama City launched its own electricity retail business

- Miyama City has become **the first local government** in Japan to **establish a company that sells electricity to households**--and at rates cheaper than regional monopoly Kyushu Electric Power Co.
- Miyama Smart Energy, set up by the city in collaboration with EpcO, an energy consultancy, and a regional bank in 2015, with the goal of **achieving energy self-sufficiency** by locally generating and consuming power with renewables. The business started by supplying power to public entities such as city offices, schools and libraries, and began targeting ordinary households in April 2016.
- The company plans to invest the profits into local industries, such as agriculture, forestry and tourism. For customers, it provides an elderly-watch and health-check services using electricity consumption, room temperature and humidity data.

Source: Masanobu Higashiyama and Kenichiro Sakai, Asahi Shimbun news article, March 27, 2015, and Japan for Sustainability Article , May 5, 2016

National policies to promote renewable energy in Japan

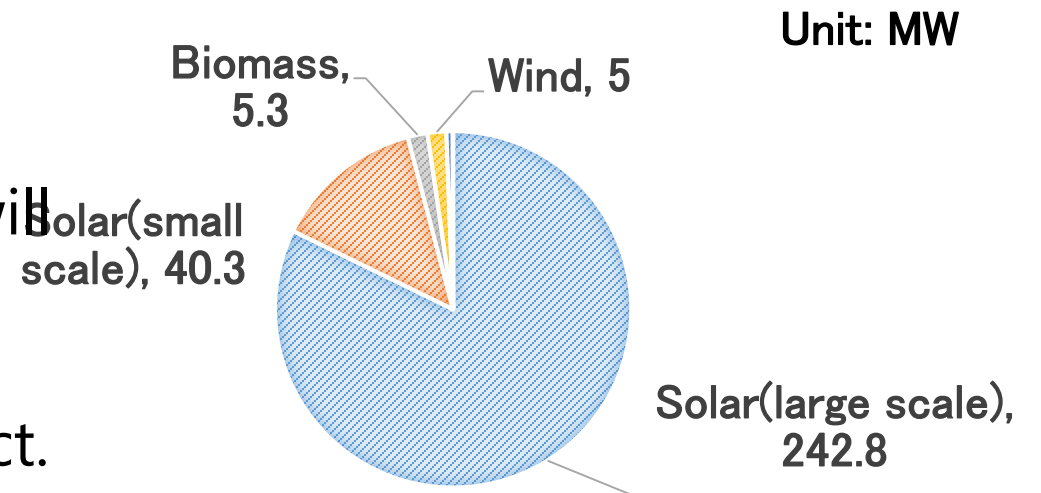
- National energy policy in Japan has long been aiming at securing **stable supply** of energy, as well as achieving **economic efficiency** of energy supply.
- Since 1990's, **environmental consideration** began to be incorporated, particularly to respond to the challenge of **climate change**.
- **National strategy to promote biomass energy** was adopted, and **national support to local governments** started in mid-2000's.
- National programme to support local governments to build "**Environment Model Cities**" and "**Environmental Future Cities**", which incorporates the application of renewable energy systems, began in 2008.
- **Feed-in-Tariff scheme** was introduced in 2009, and expanded its scope to cover renewable energy other than solar PV in 2012, with the enactment of FiT Act in 2011. This has led to rapid and massive development of solar PVs in Japan.

Challenges for promoting community energy projects (1): Expected amendment of FiT Act

The pace of PV installation may be slowed down in Japan since the amendment of FiT Act expected in 2017 will include following changes:

- Bidding system for solar power producers will be introduced.
- Rule for grid access will be provided by “Electricity Utility Industry Act”, not by FiT Act.
=> For renewable power producers, this amendment poses the challenge of **lower purchasing price** and **uncertainty** regarding **access to the grid**.

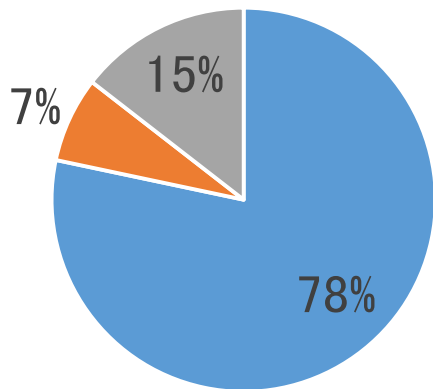
Installed capacity by FIT as of April 2016



Source: Agency for Natural Resources and Energy(2016)

Challenges for promoting community energy projects (2): Limited volume of electricity transaction available through JPEX (Japan Electric Power Exchange)

- 10 major power company
- J-power and JAPC
- Others



Total 268 GW

Source: Agency for Natural Resource and Energy (2016)
Generation capacity by power

- ◆ Around 85% of capacity is owned by 10 major power company, J-power and Japan Atomic Power Company (JAPC).
- ◆ Share of transaction through JPEX (Japan Electric Power Exchange) is only 2% of total electricity generation.
- ◆ When new power company wants to expand its business, it would face the imbalance risk due to the very small volume of electricity transaction available through JPEX.

Challenges for promoting community energy projects (3): Inflexible business model focusing on power supply

Typical local energy initiatives have focused on electricity supply to public sectors, but not on **electricity distribution** and **demand management**. If institutional/ technical barriers (lower FiT price/ limited grid access) become more serious, this would make currently prevailing business models less effective.

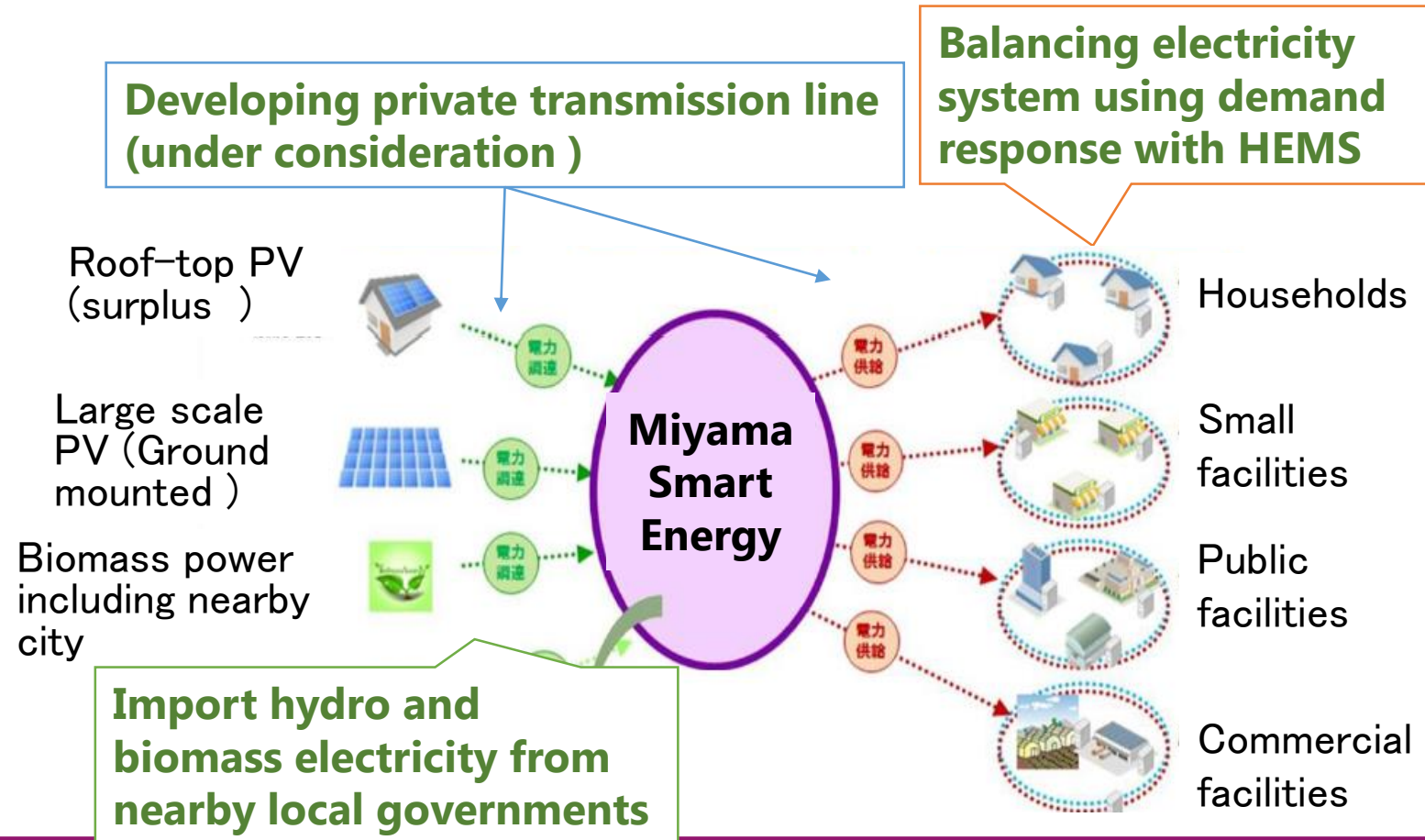
Comparison of three local energy companies established by local governments

	Tottori Citizens Electric Power	Nakanojo Electric Power	Kitakyushu Power
Supply side	PV owned by local gov Purchased from JPEX	PV owned by local gov Purchased from JPEX	Waste incineration power plant owned by local gov Purchased from JPEX
Demand side (Consumers)	Public facilities	Public facilities	Public facilities, Small-Medium sized enterprises
Power generation output	500 kW	5 MW	5 MW
Approach to expanding activity	Increase capacity of power plants	Increase capacity of power plants	Increase capacity of power plants
Regulating supply and demand	Balancing group (Itochu Enex)	Balancing group (V-power)	Balancing group (F-Power)

Approach to further expand community renewable energy (1): Miyama Smart Energy as decentralized initiative by local government

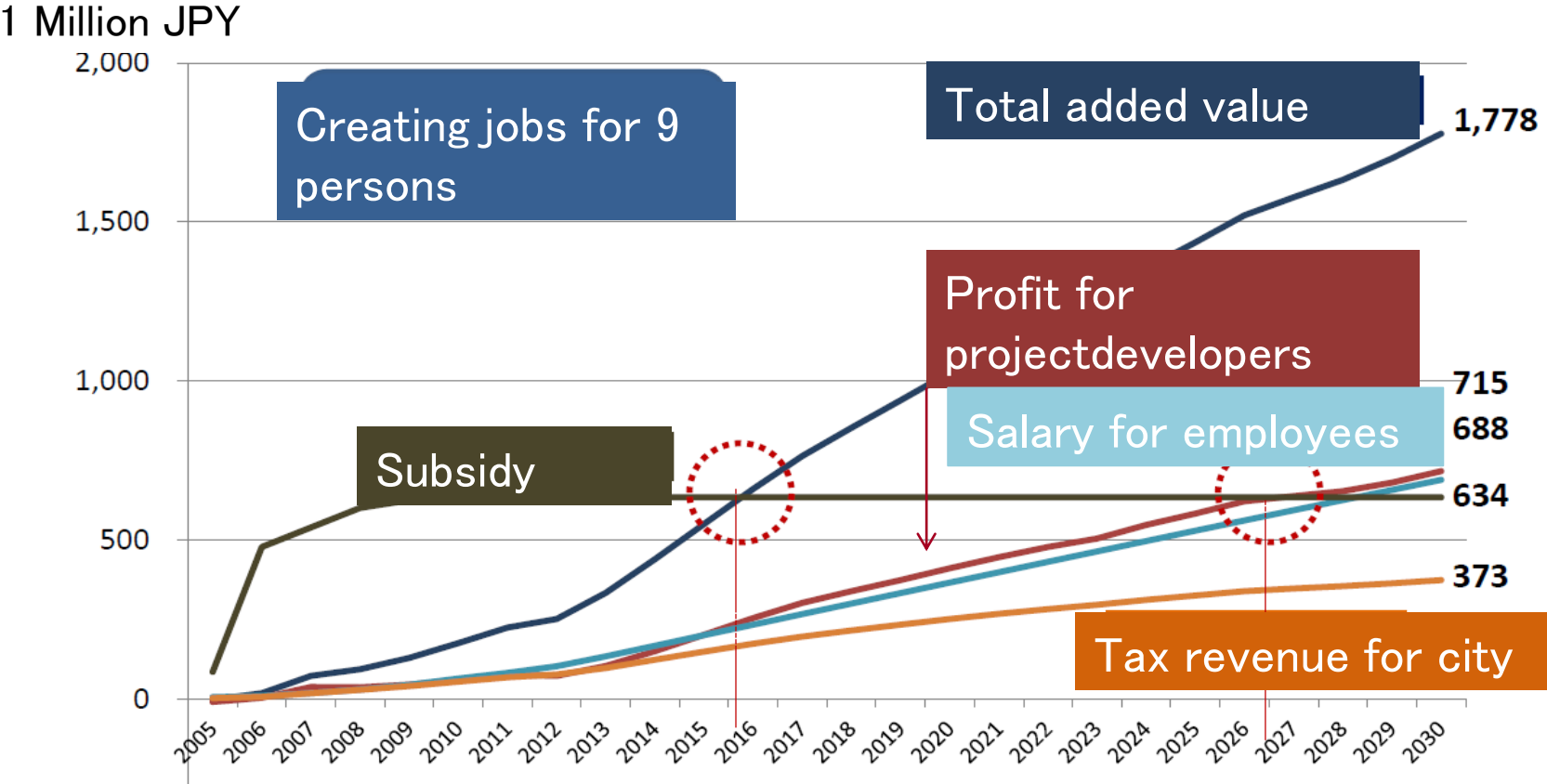
Miyama Smart Energy is creating an independent business model, which is not significantly affected by policy changes at national level.

	Miyama Smart Energy
Supply side	PV owned by local gov Residential PVs Purchased from JPEX
Demand side (Consumers)	Public/private facilities and households
Power generation output	5.5 MW
Approach to expanding activity	Linkages with nearby local governments
Regulating supply and demand	Carried out independently



Importance of highlighting benefits to justify investment in community energy projects : A case of Ohisama Shimpo Energy Corp. in Iida City


- Ohisama Shimpo Energy Corp.:
- PV power project
- ESCO project
- Solar and biomass heat supply



The result of the analysis by Prof. Raupach indicates that **overall public benefit exceeds the amount of subsidy within 10 years' time**, and justify Iida City's investment in Ohisama Shimpo Energy Corp.

Source: Raupach (2016)

Summary and way forward

- Community energy projects is growing in Japan, as people's awareness on energy security, safety and environment was heightened and national policy support strengthened, particularly after Fukushima nuclear accidents.
 - However, modification of rules and institutional framework for electricity market will pose new challenges for promoting community energy projects:
 - Limiting grid access by renewable power producers,
 - FiT Act to introduce bidding system resulting in lower purchasing price,
 - Insufficient capacity of electricity transaction through JPEX
- 
- Initiatives by local governments involving local stakeholders are helpful for further promoting community energy projects:
 - Highlighting benefits of renewable energy projects, partnership and cooperation with other local governments, etc.
 - Knowledge sharing and lessons learning through international cooperation is also beneficial.

Thank you for your kind attention

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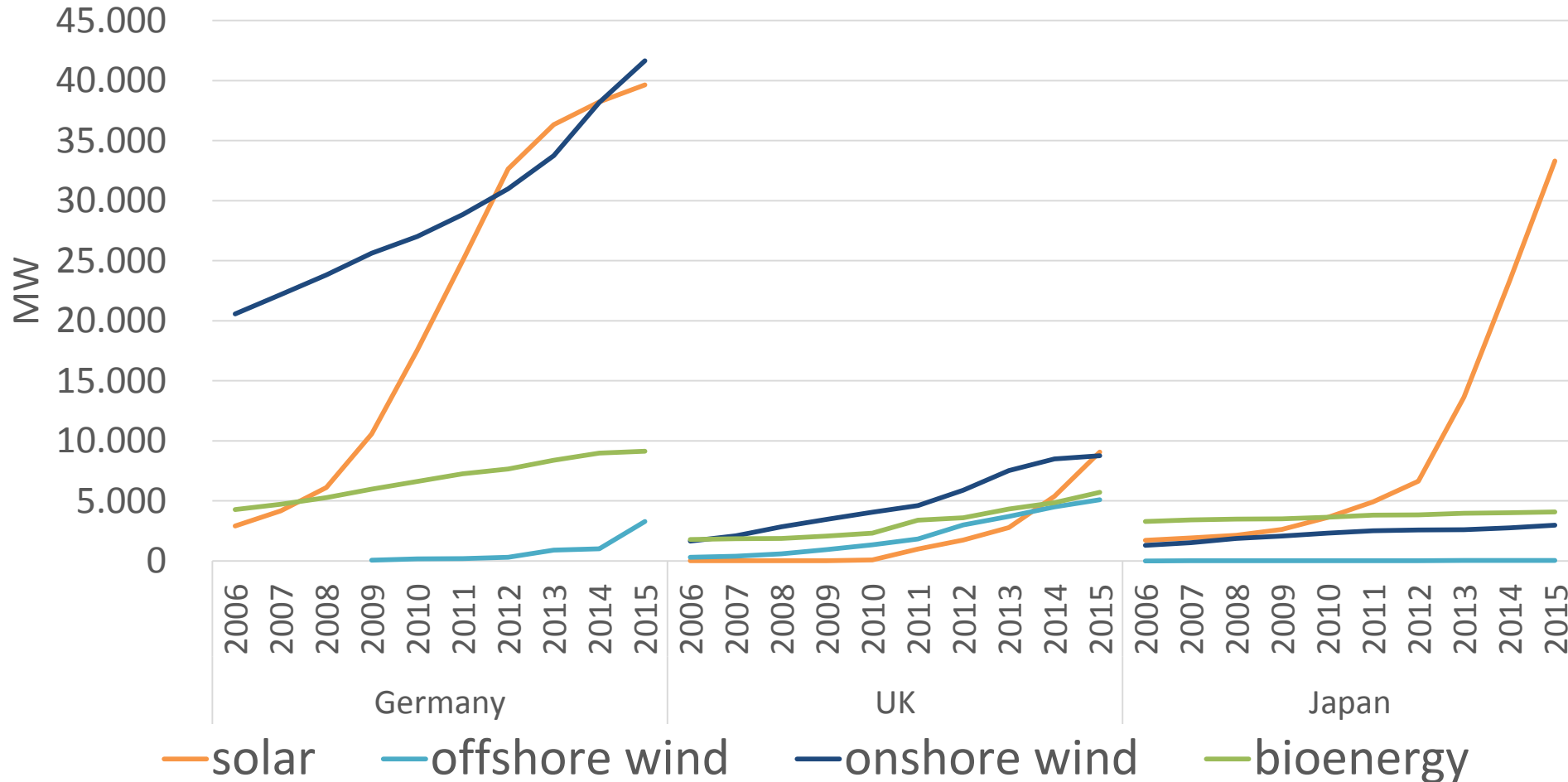
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Reference data:

Installed capacity of renewable energies in Germany, UK and Japan



Source: Author, original data from IRENA (2016), "Renewable Capacity Statistics 2016"