Japan's Renewable Energy Policy

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Japan’s Electricity Market after the Great East Japan Earthquake in 2011

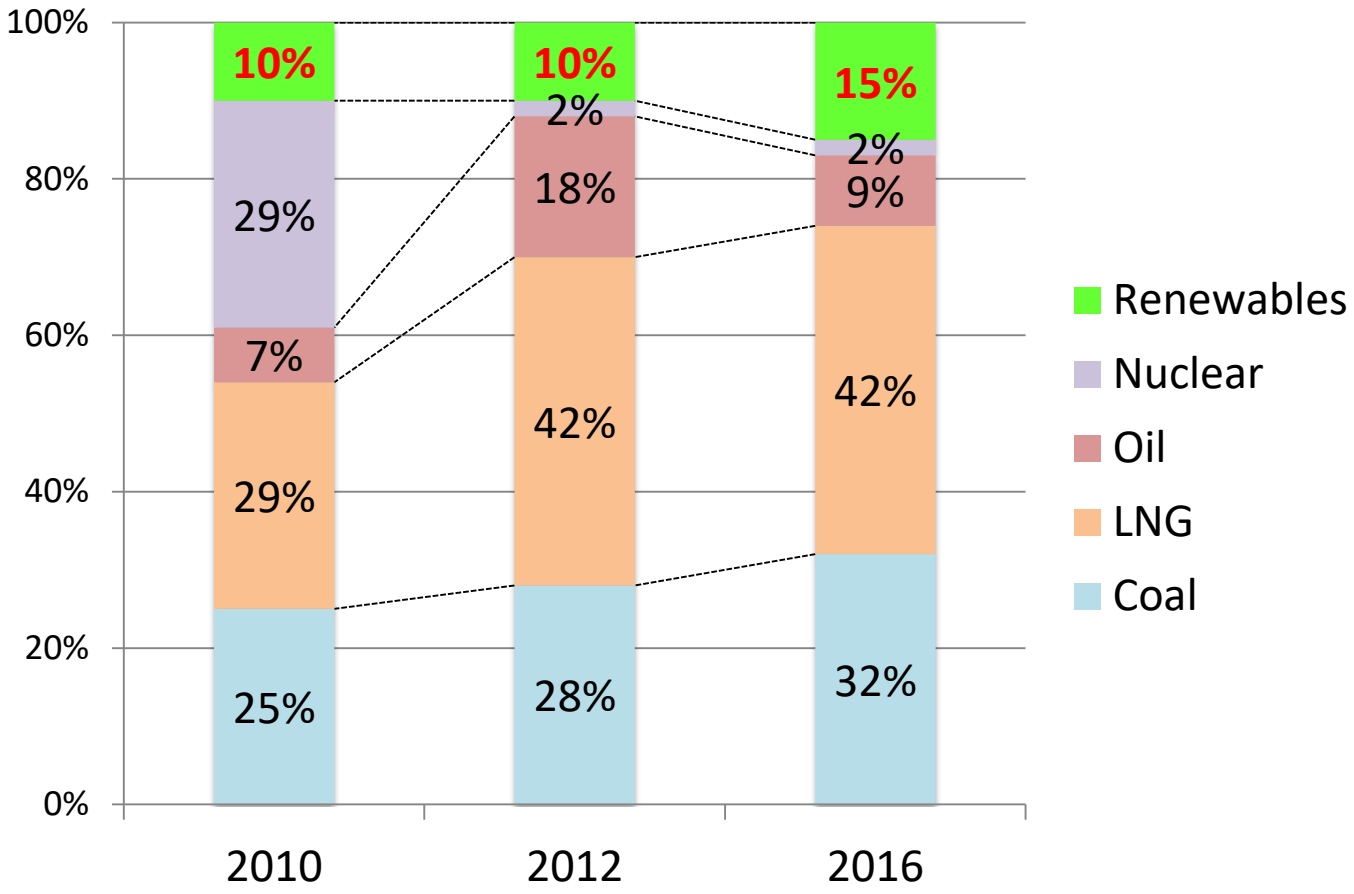
Big Policy Changes after 3.11 : FIT to Renewables

FIT was introduced in 2012 and power generated by renewables has rapidly increased.

FIT (¥)

	2012	2016
Solar Non-residential	40	21
Wind > 20kW	22	
Geo > 15MW	26	
Biomass wood	24	

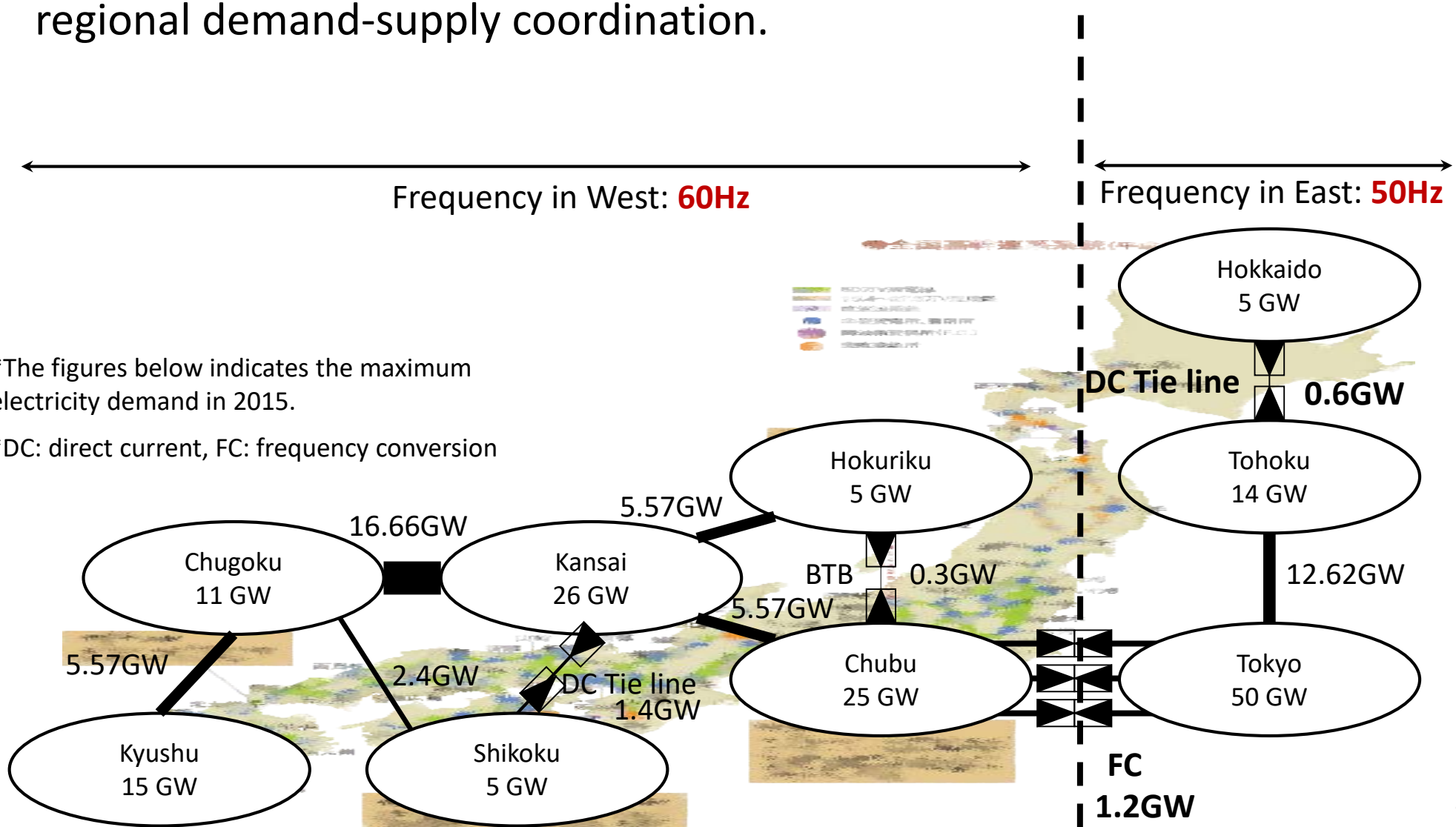
Power generation ratio (%)



Source: Agency for Natural Resources and Energy

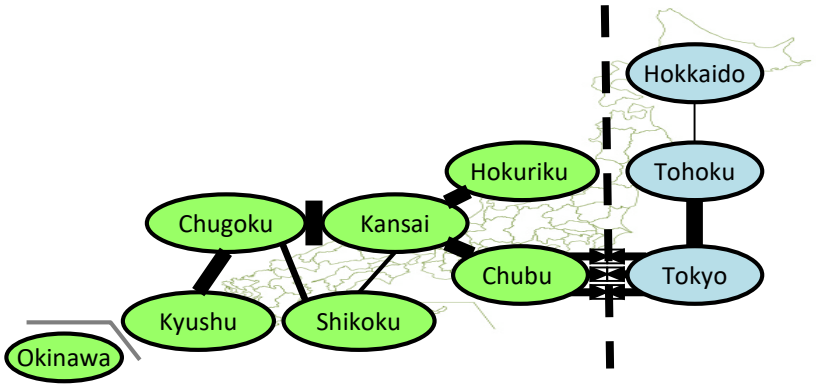
(Regionally-Segmented Market before 3.11)

Japan is divided into 10 regions, each of which is operated and controlled by a regional electric power company with little cross-regional demand-supply coordination.



Big Policy Changes after 3.11: Market Reform

Established OCCTO* in 2015 to promote cross-regional electricity transmission



Power Generation

Transmission & Distribution

Retail

Big EPCOs will be mandated to unbundle T&D sector in 2020

Power Generation

Transmission & Distribution

Retail

Retail market was fully deregulated in 2016

*Organization for Cross-regional Coordination of Transmission Operators

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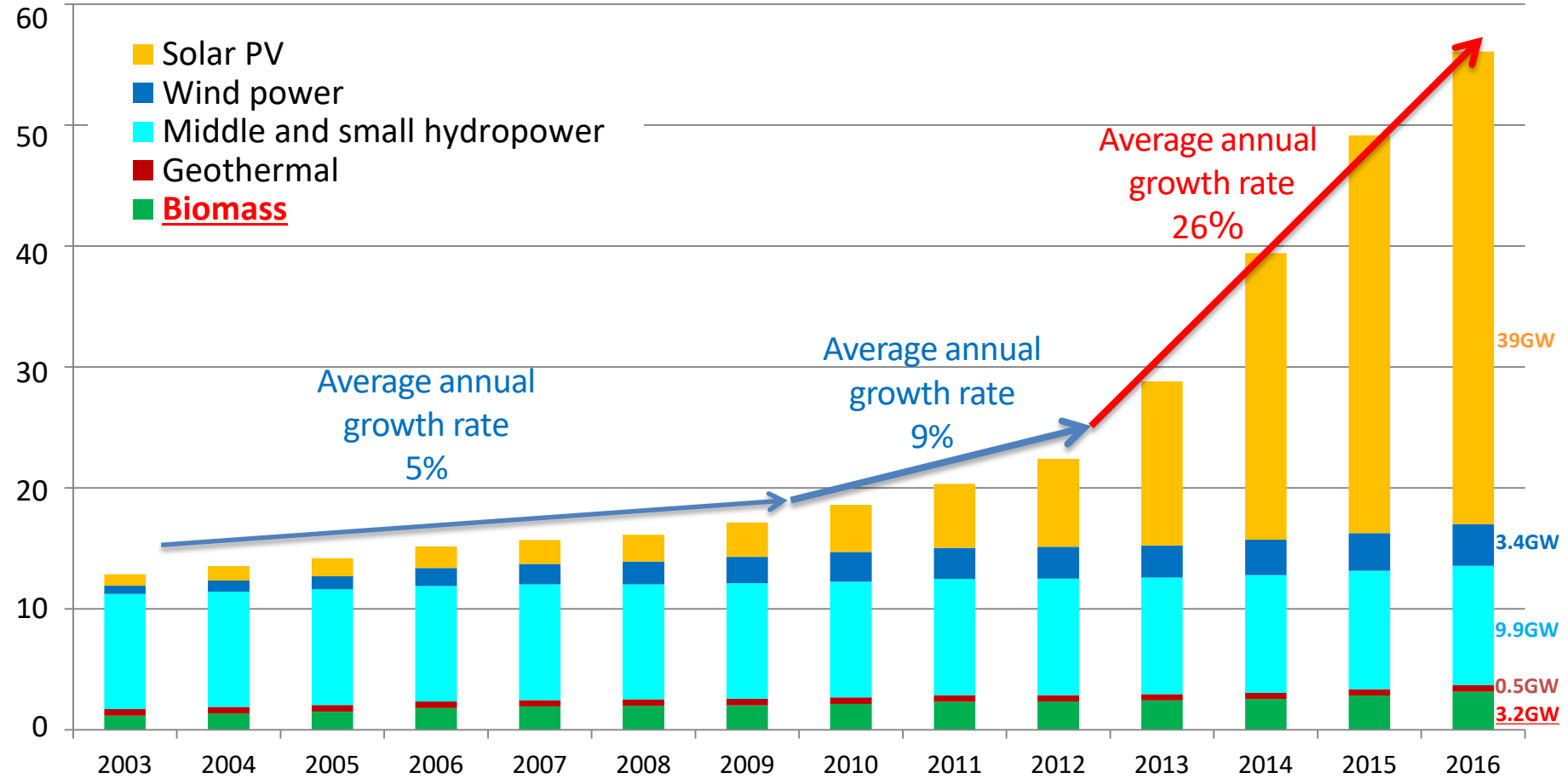
Renewables in Japan

Trend of Renewables since 2003

RES, particularly solar, have rapidly increased since FIT introduction in 2012.

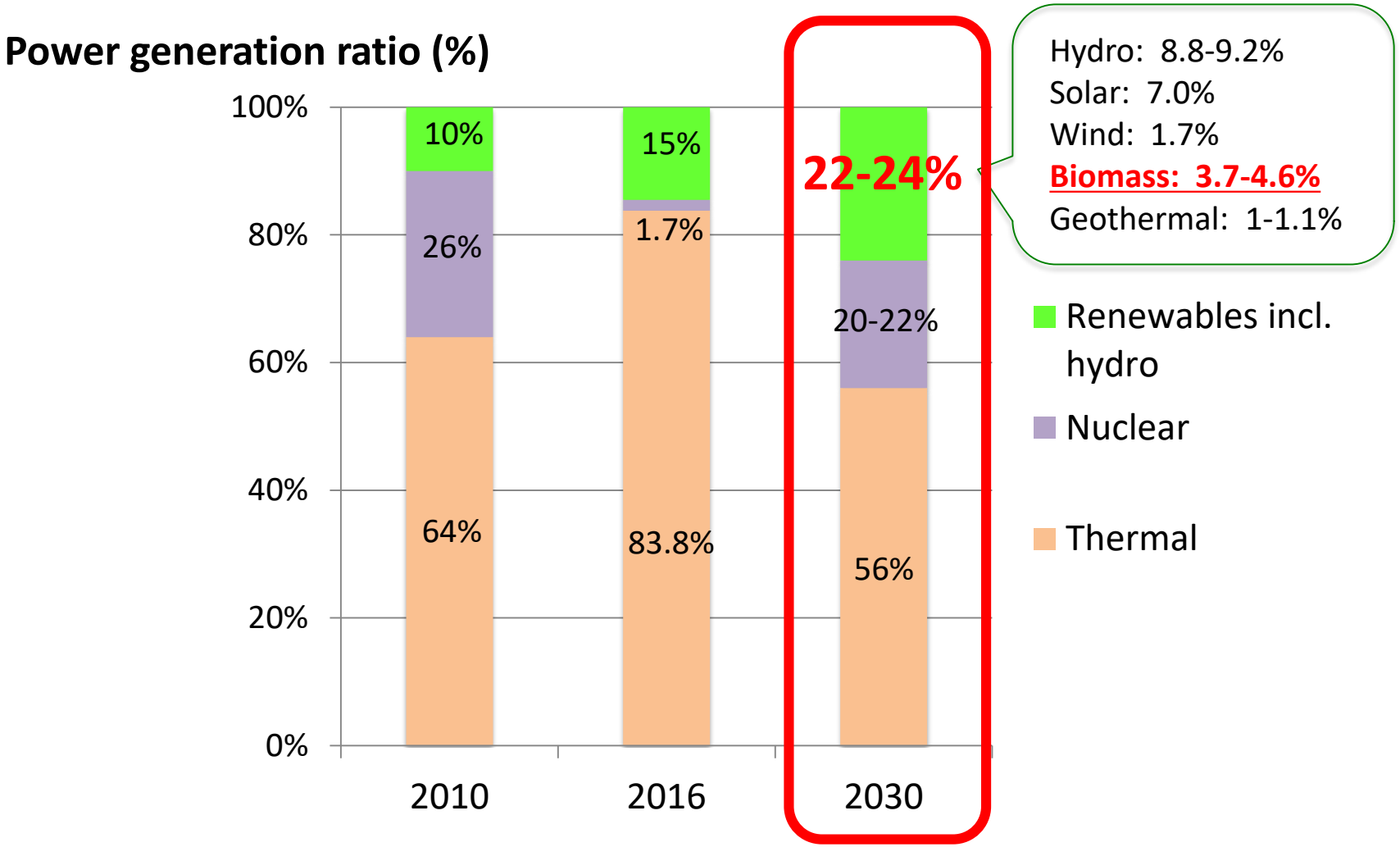
Capacity of renewables (GW)



Source: Agency for Natural Resources and Energy

New Political Targets on Renewables

Japan will aim at increasing power generated by renewables up to 22-24% by 2030 and "will make renewables primary generation source".



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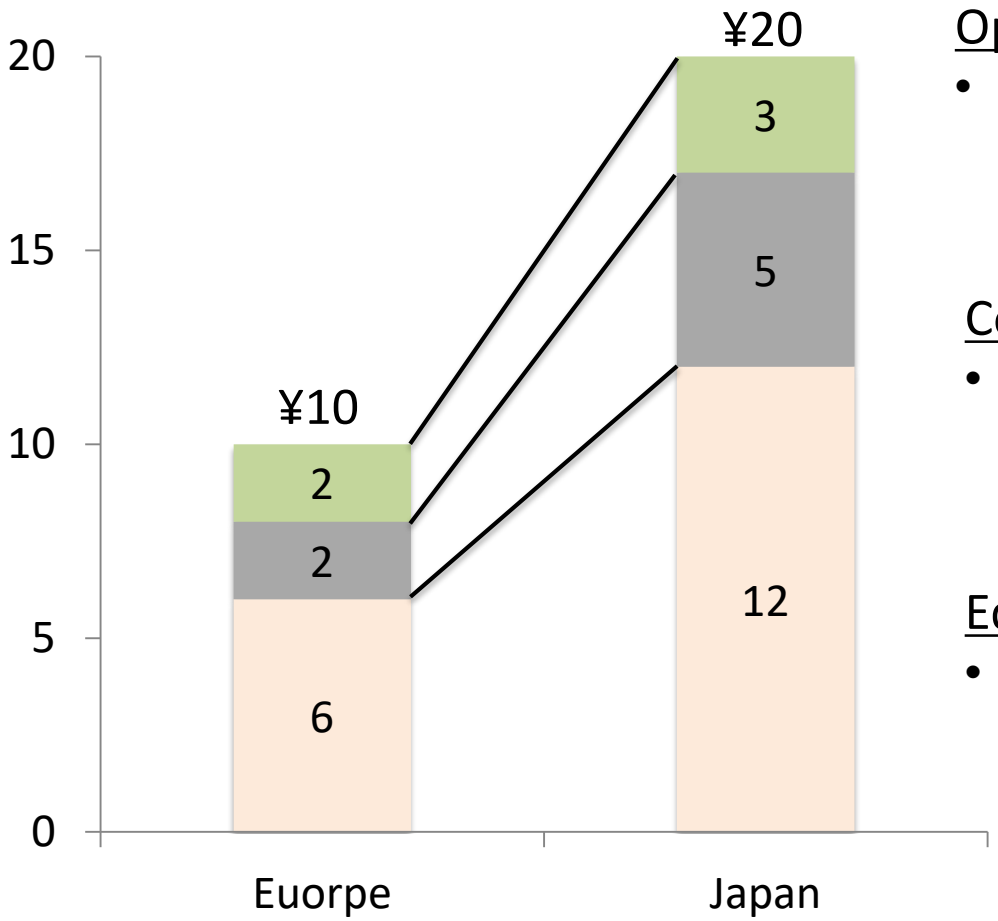
Challenges

Challenge #1: High Cost

It costs a lot to produce power by renewables in Japan.

Cost of solar (¥/kWh, 2016)



Operation & maintenance

- Few experts and little use of big data lead to high operation and maintenance cost

Construction cost

- Little flat land and insufficient construction industry system make construction cost high.

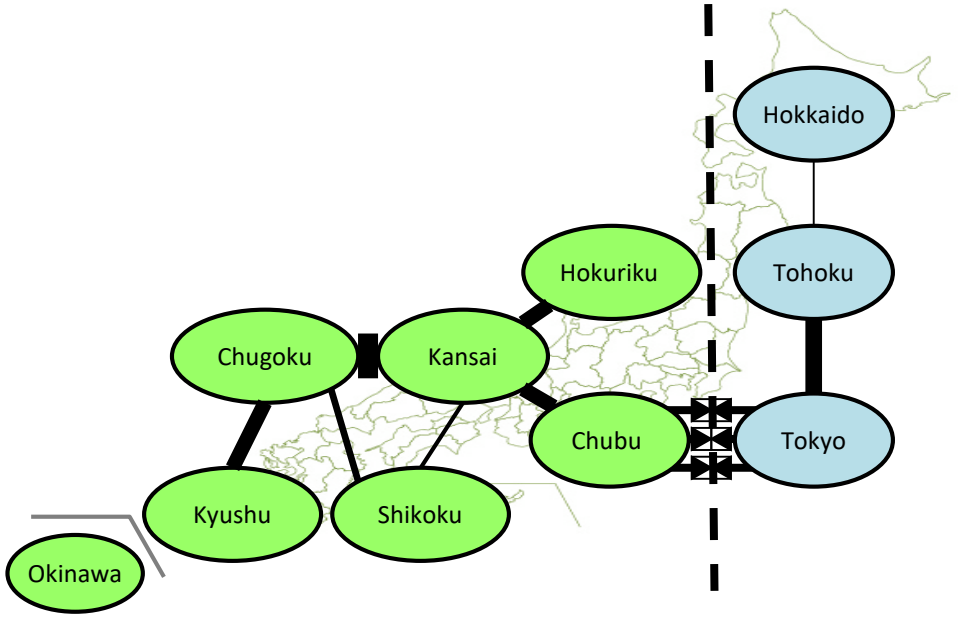
Equipment cost

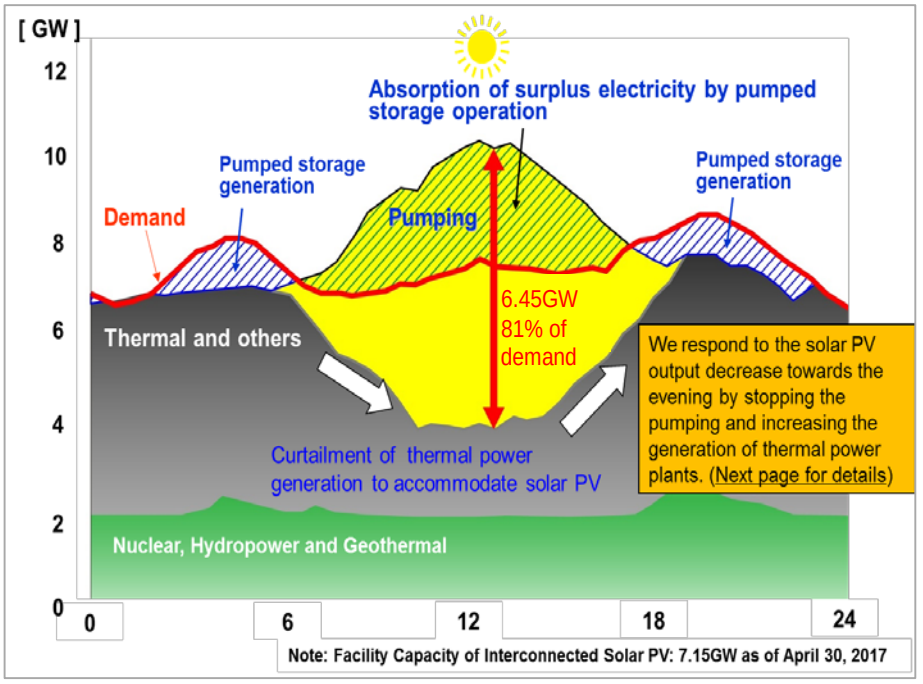
- High FIT allows multiple intermediaries to join the market, creating multi-layered distribution system.

Source: Agency for Natural Resources and Energy's analysis based on data by Bloomberg New Energy Finance

Challenge #2: Grid Constraints

While power generated by renewables greatly vary due to geographical and climate reasons, regional monopoly, which prevents national-level demand-supply adjustment, creates overcapacity in some regions.



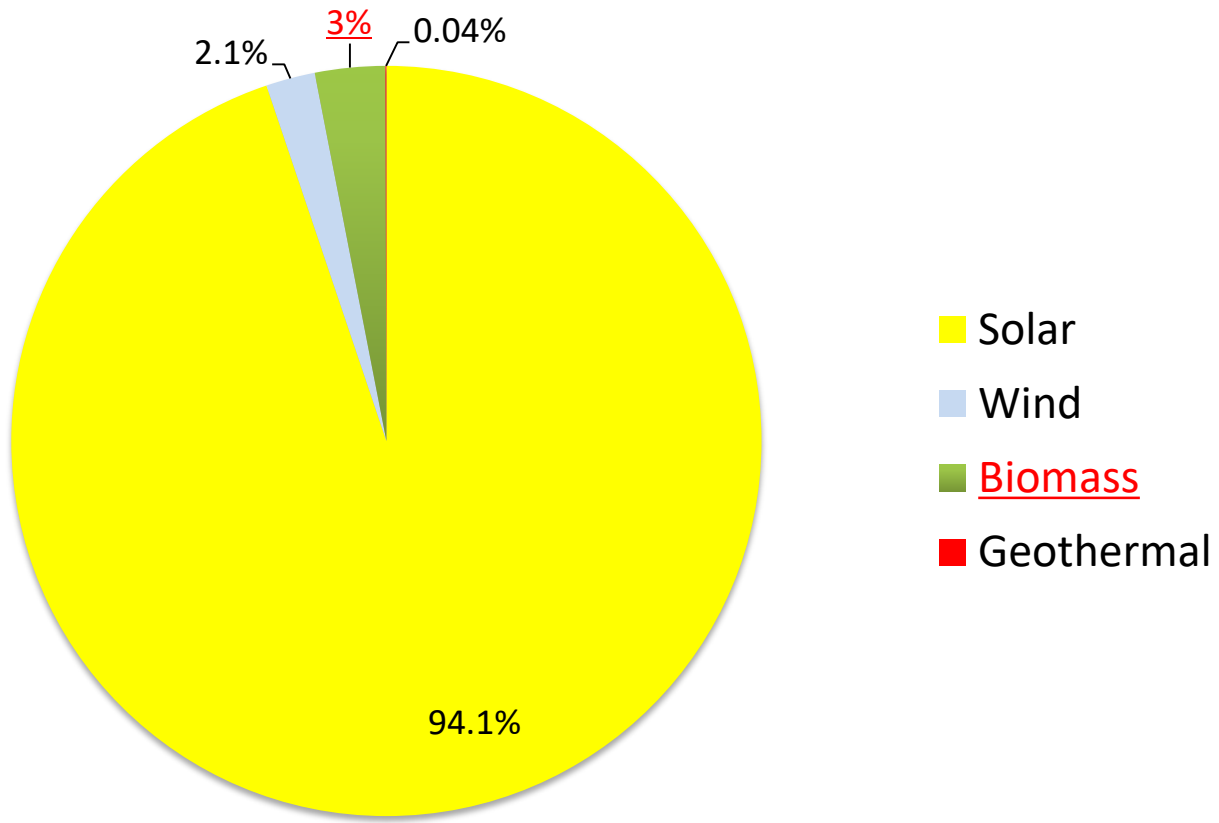


Power generated by solar reaches 80% in Kyushu area.

Challenge #3: Unbalanced Mix

Unbalanced introduction of renewables has proceeded after FIT started in 2012.

RES integration after FIT started (%)



Source: Agency for Natural Resources and Energy

Responses to Challenges

High cost

- Introduce auction system to FIT.
  - Solar : introduced (¥21/kWh → ¥17/kWh)
  - Biomass : planned

Grid constraints

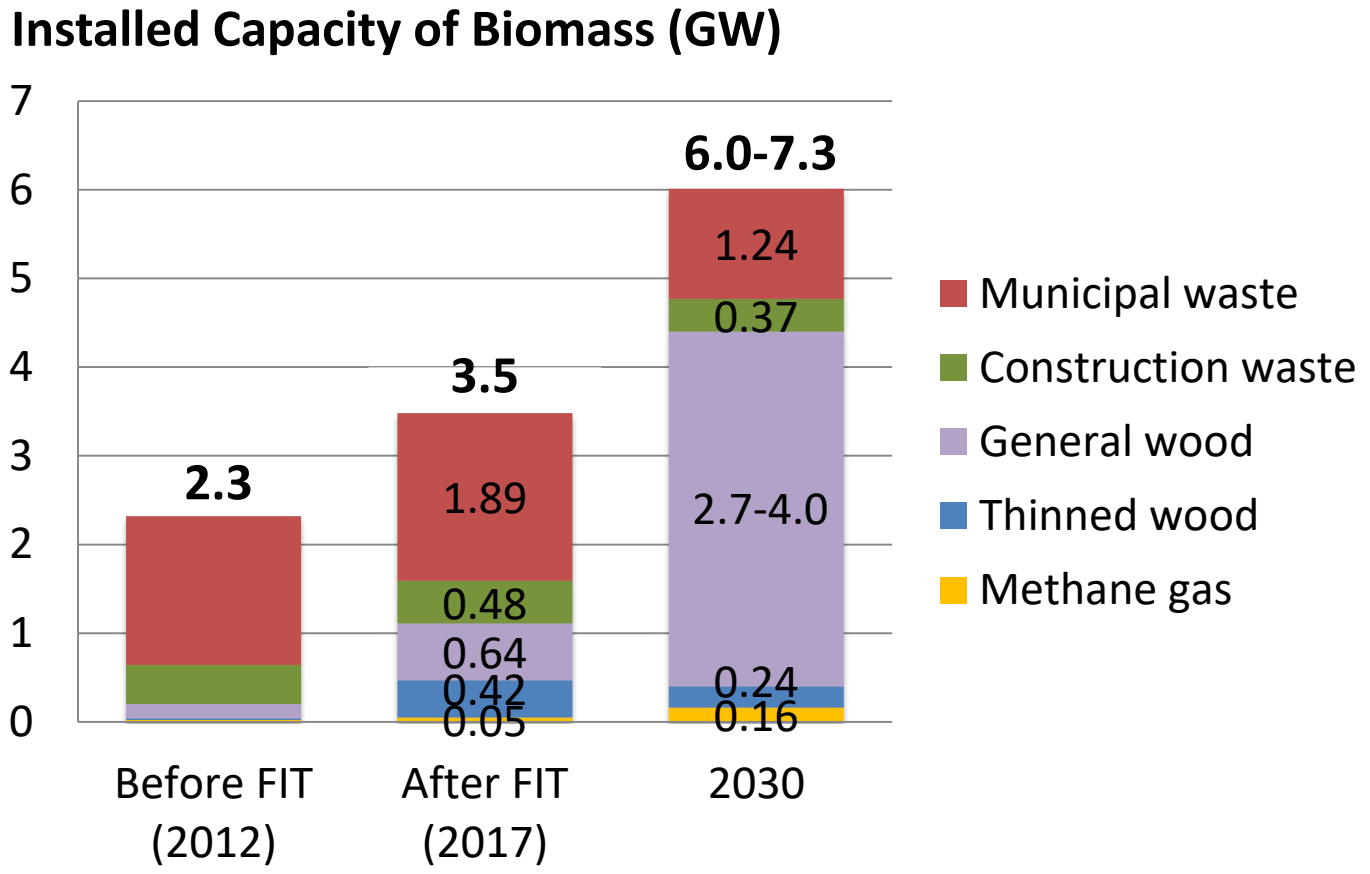
- Promote further cross-regional adjustment through OCCTO
- Introducing implicit auction for interconnections
- Started the “Connect & Manage” scheme

Unbalanced mix

- Set three-year tariffs for geothermal and biomass
- Promote offshore windmill through providing rights to use sea area to lowest-bidding power generators
  - Submitted the bill to the Diet to be discussed

Current Status of Bioenergy

- Introduce more biomass without subsidies
  (→ combined heat and power (CHP), larger scale development)
- Ensure stable procurement and sustainability
  (→ stringent verification)



Thank you very much

Ministry of Economy, Trade and Industry