

# Status of renewable energies in Japan

10th, April, 2017

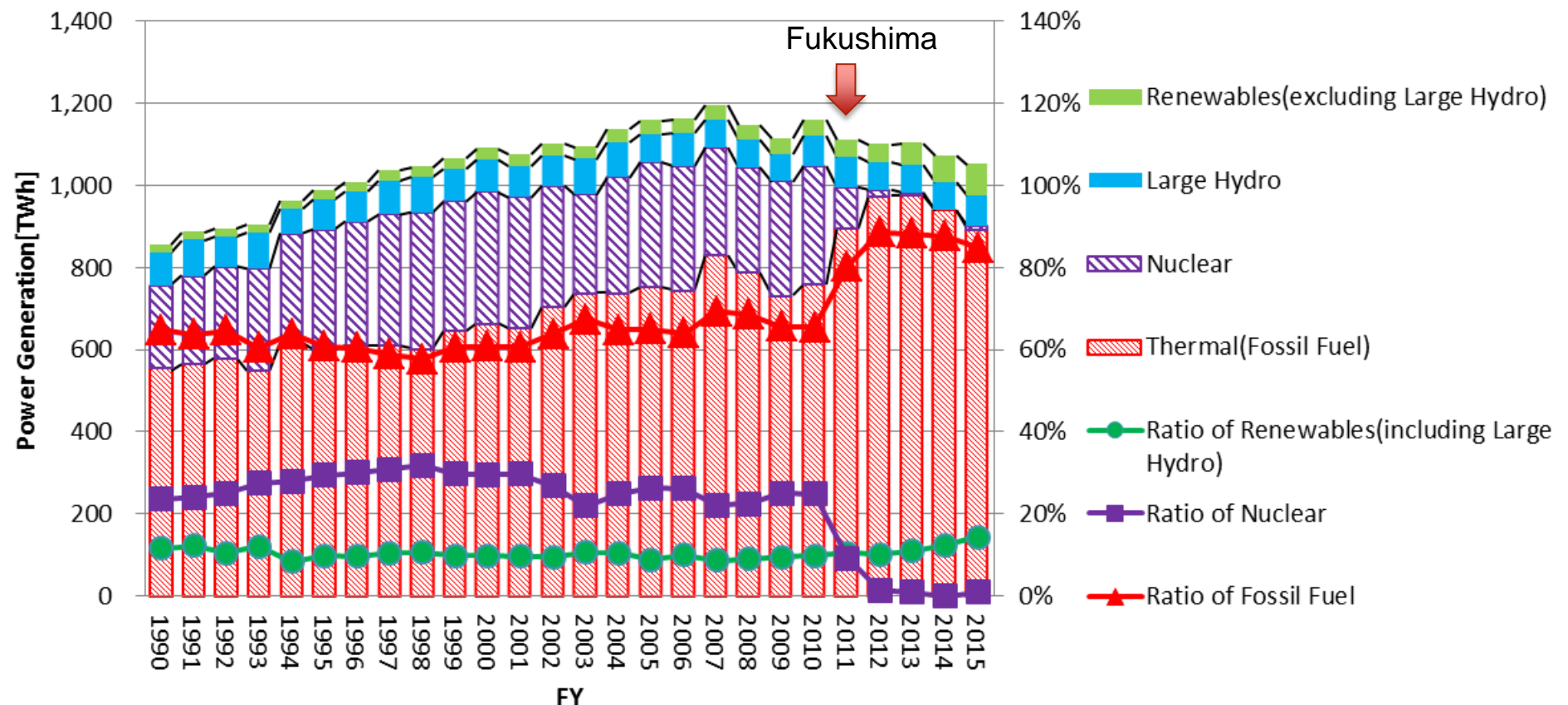
*Institute for Sustainable Energy Policies*

*Tokyo, Japan*

# Trends of Power Generation in Japan

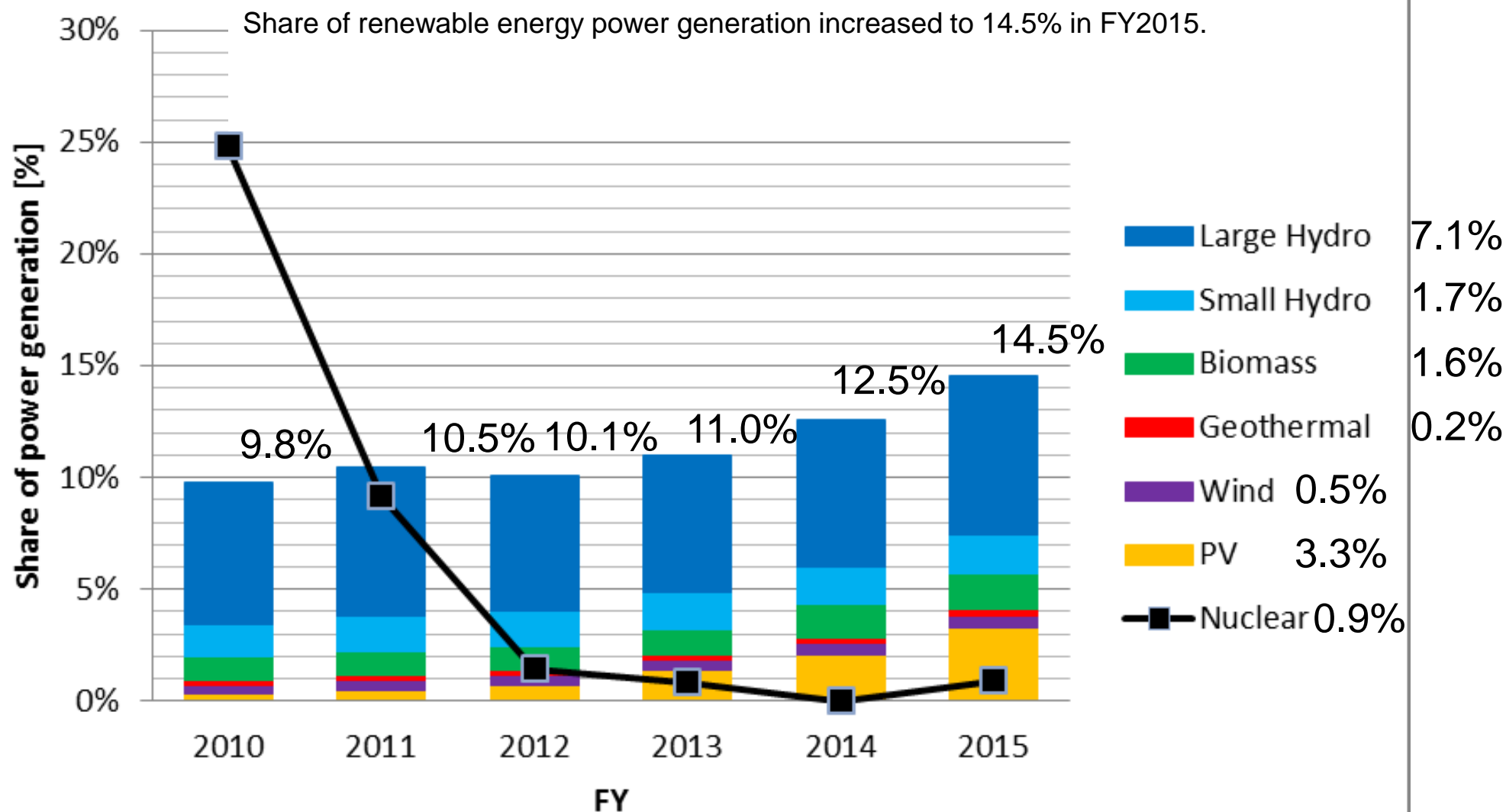
- Ratio of renewable energy is 10% which remained unchanged for the past two decades
- Ratio of renewable energy power generation increased to 14.5% in FY2015.

## Power Generation in Japan(FY1990 - 2015)



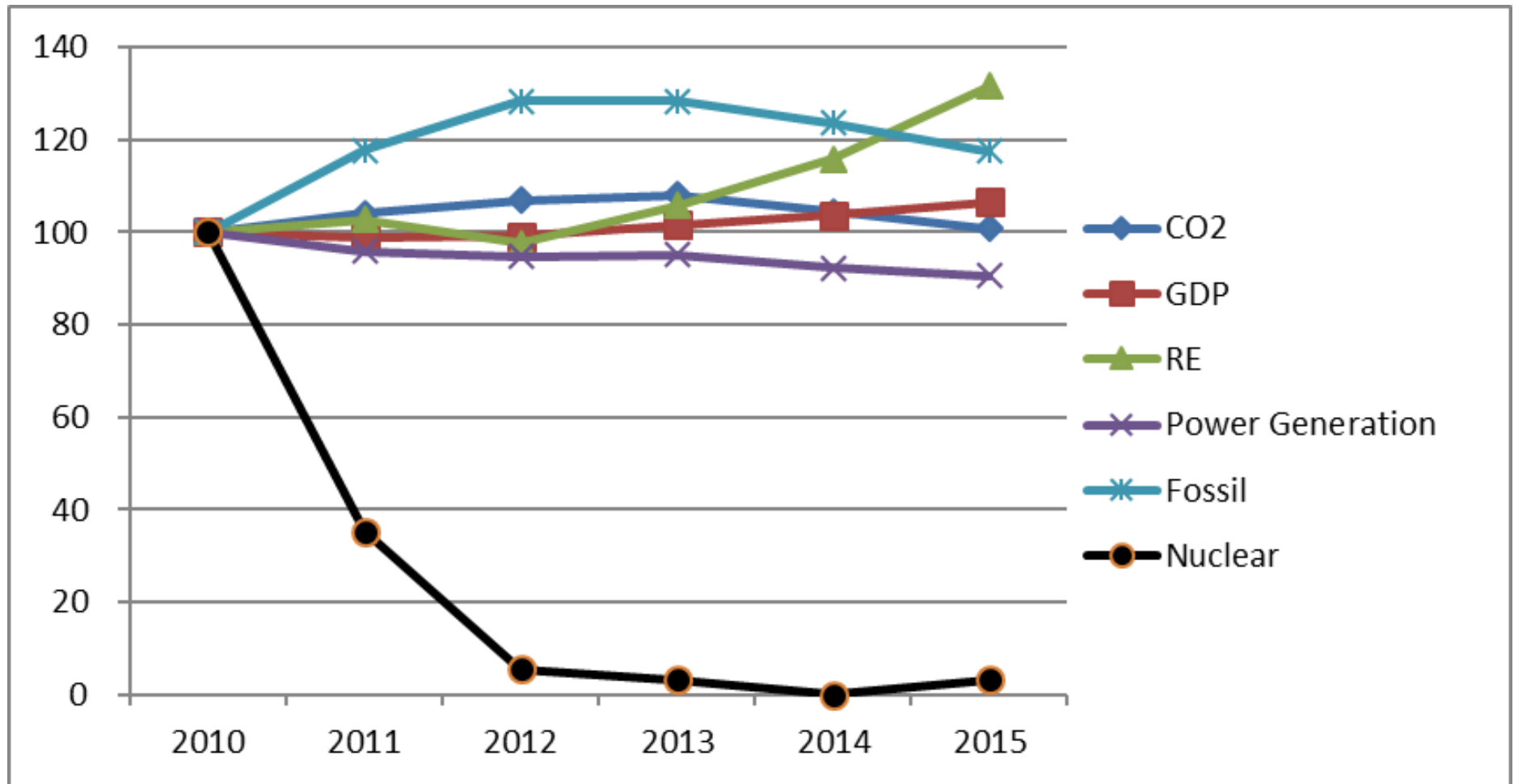
Source data: METI, etc.  
Graph: ISEP

# Trends of Renewable Power Generation in Japan



Source: METI, ISEP(Renewables Japan Status Report)

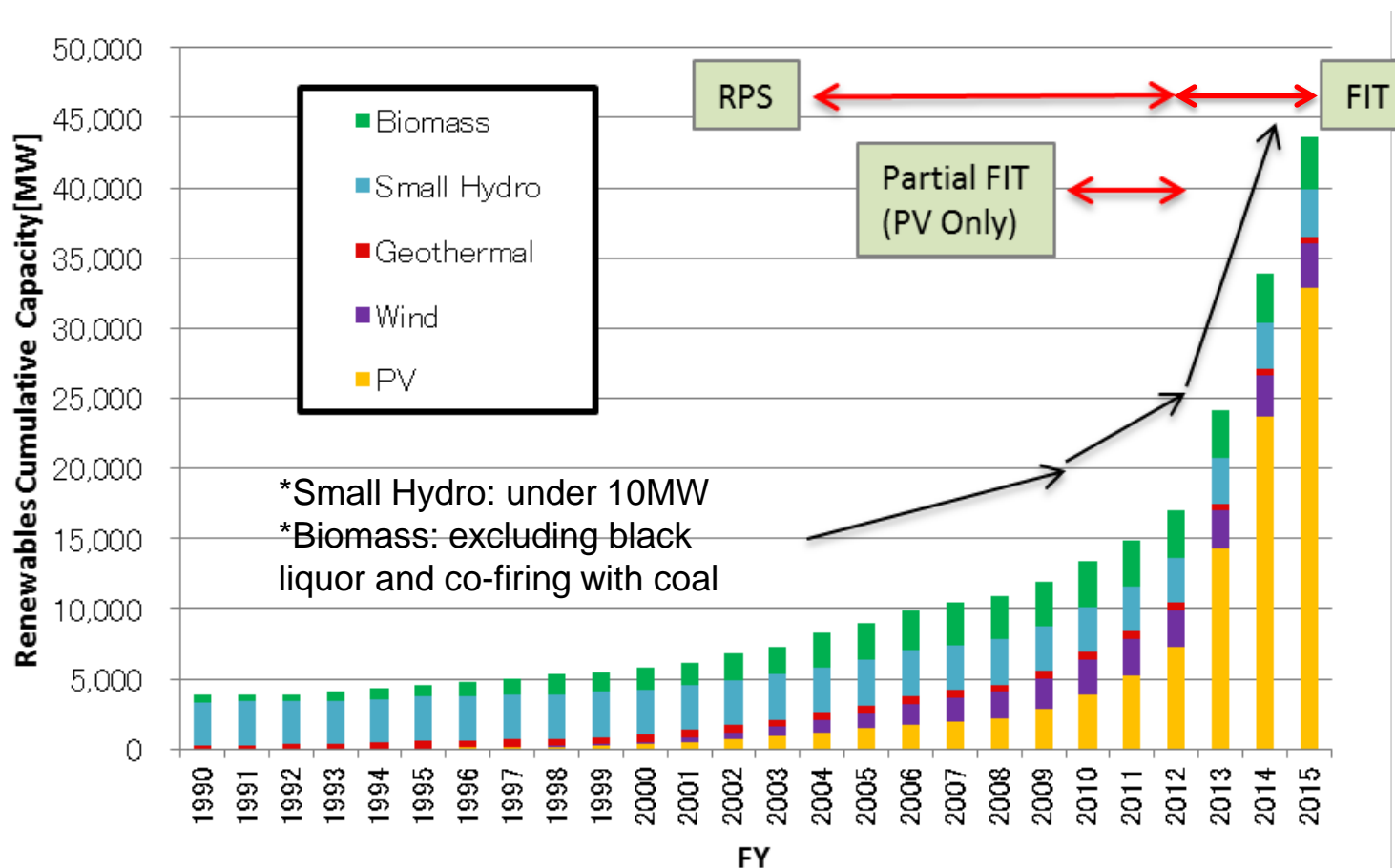
# Energy Transition after Fukushima Accident(3.11) in Japan



Source: ISEP "Renewables 2016 Japan Status Report"

# Trends of Renewable Energy Capacity in Japan

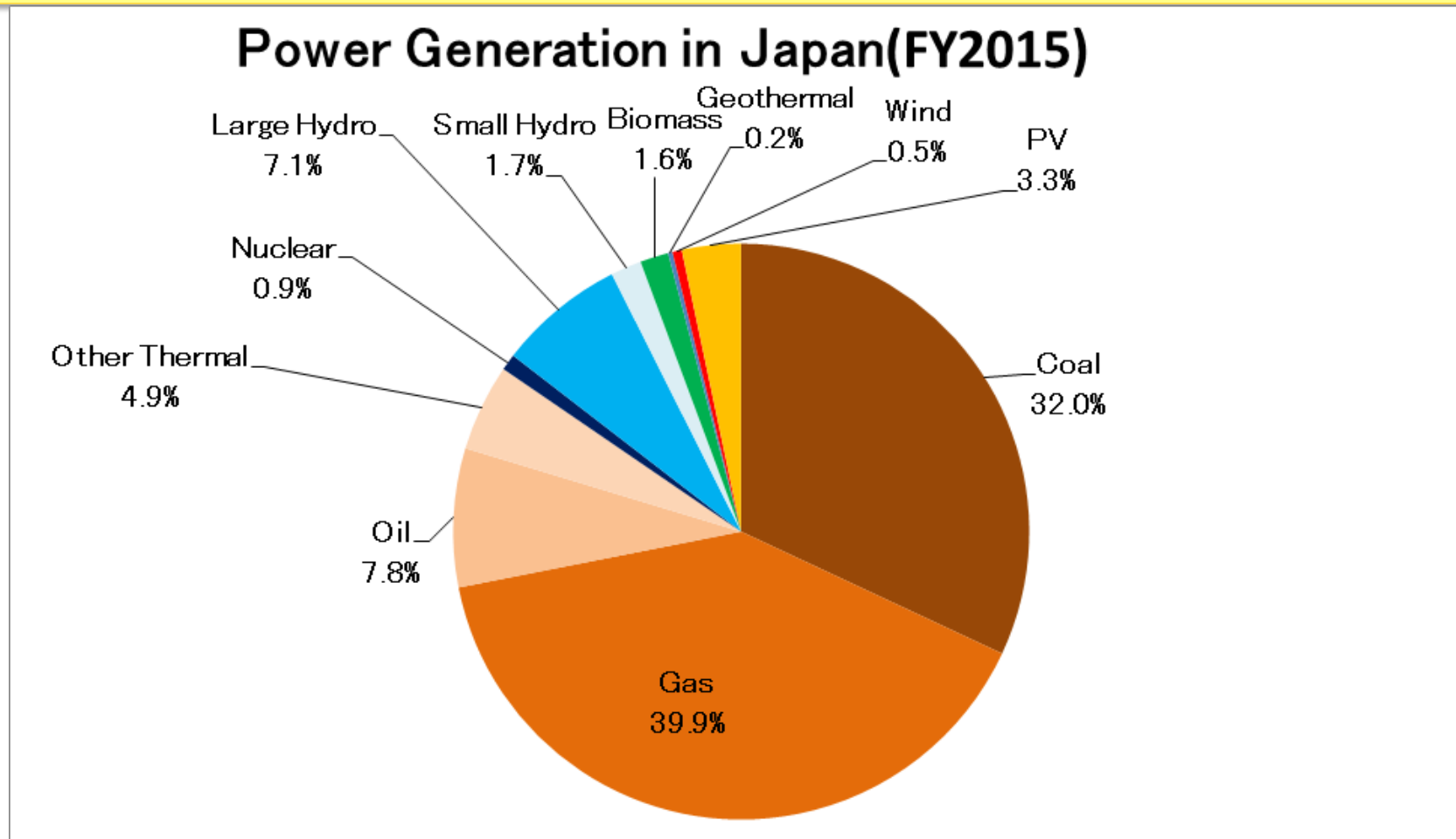
Trends of Renewable Energy Capacity in Japan(excluding large hydro): 44G(FY2015)



Source: Renewables Japan Status Report (ISEP)

# Balance of power generation in Japan

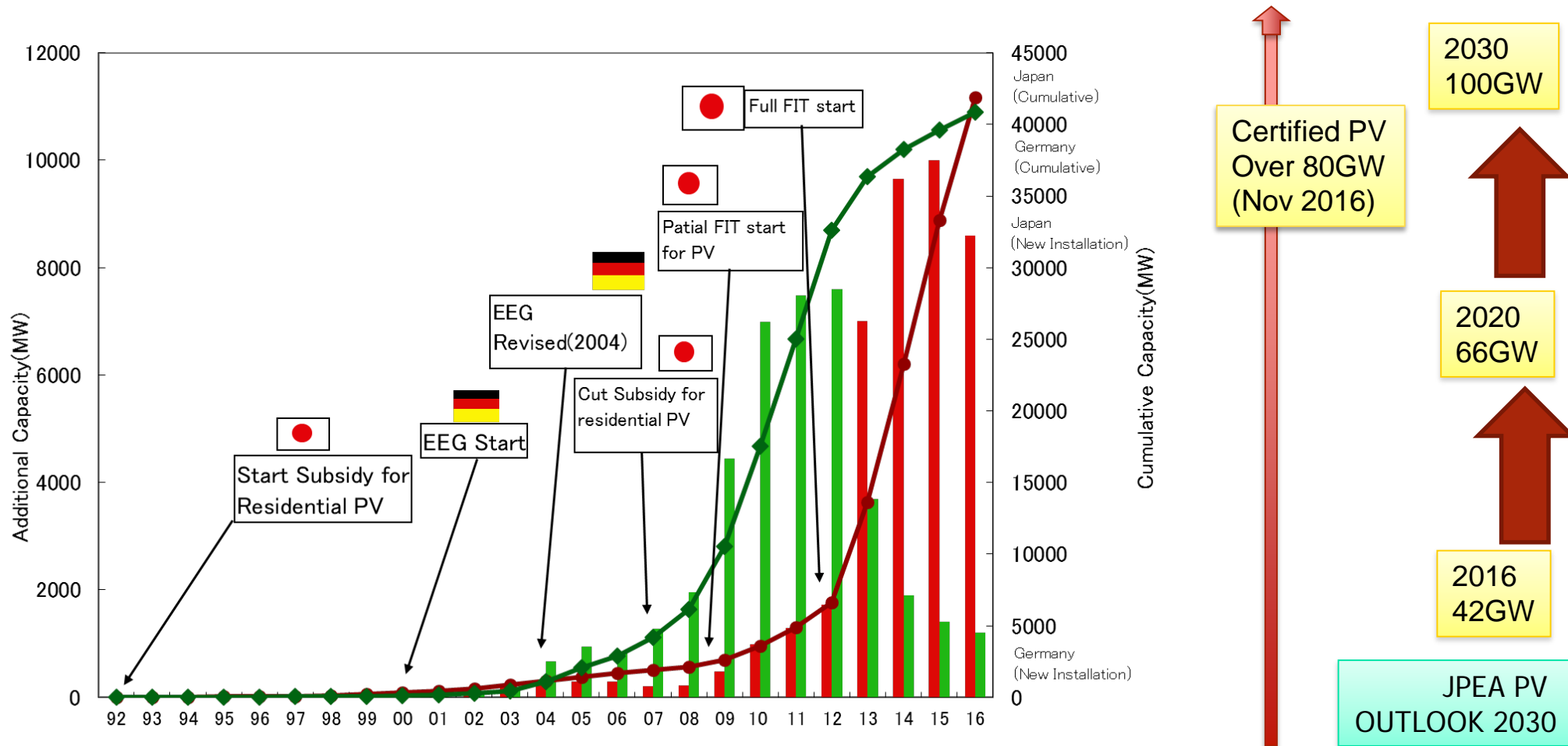
Renewable Energy is increasing contribution to the power generation in Japan, 14.5% in FY2015, including large hydro.



Source: METI, ISEP(Renewables Japan Status Report)

# Trends of Solar PV in Japan and Germany

- Expanded introduction of Solar PV in Japan and Germany
- Since 2013, trend of additional capacity is dramatically changed in Japan and Germany.



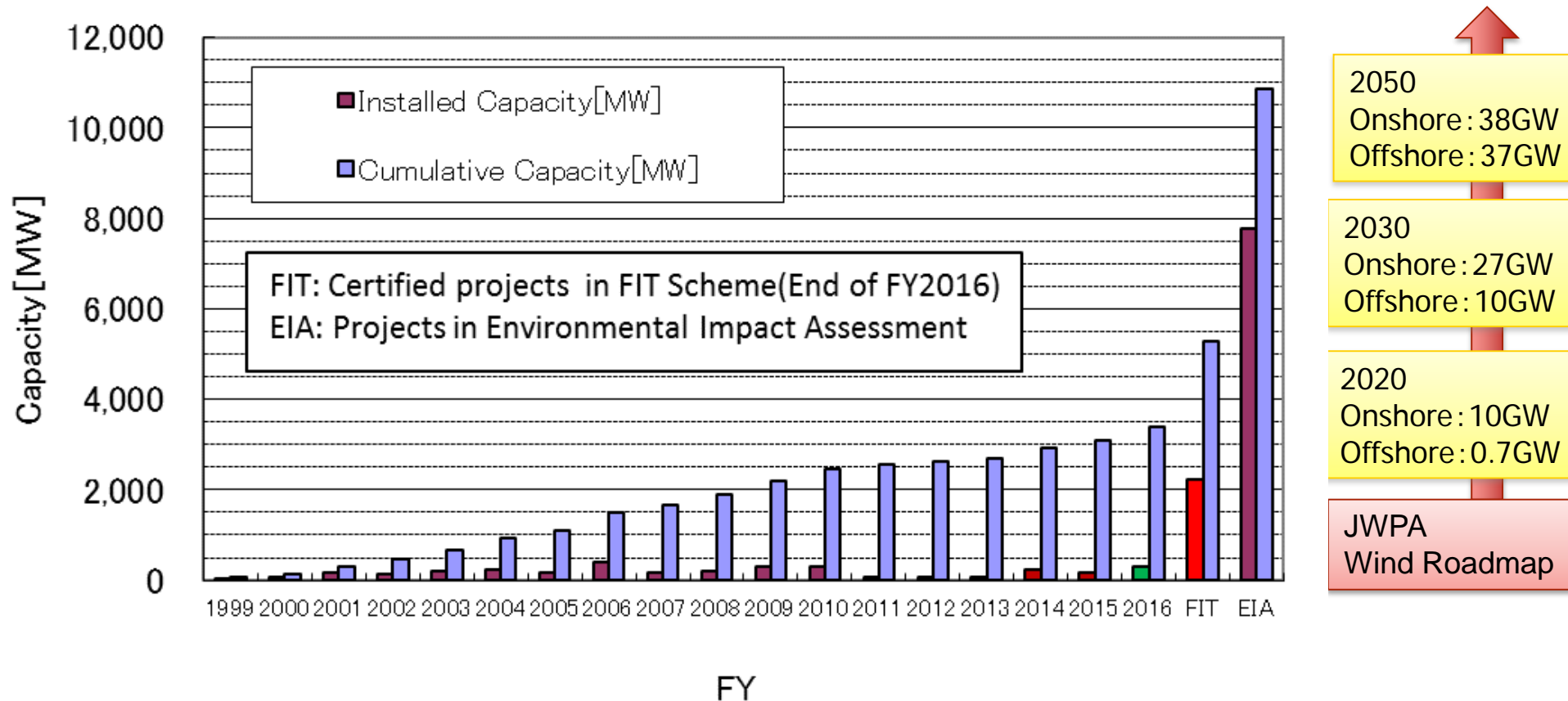
Source data: IRENA, PVMA

Graph: ISEP

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# Trends of Wind power capacity in Japan

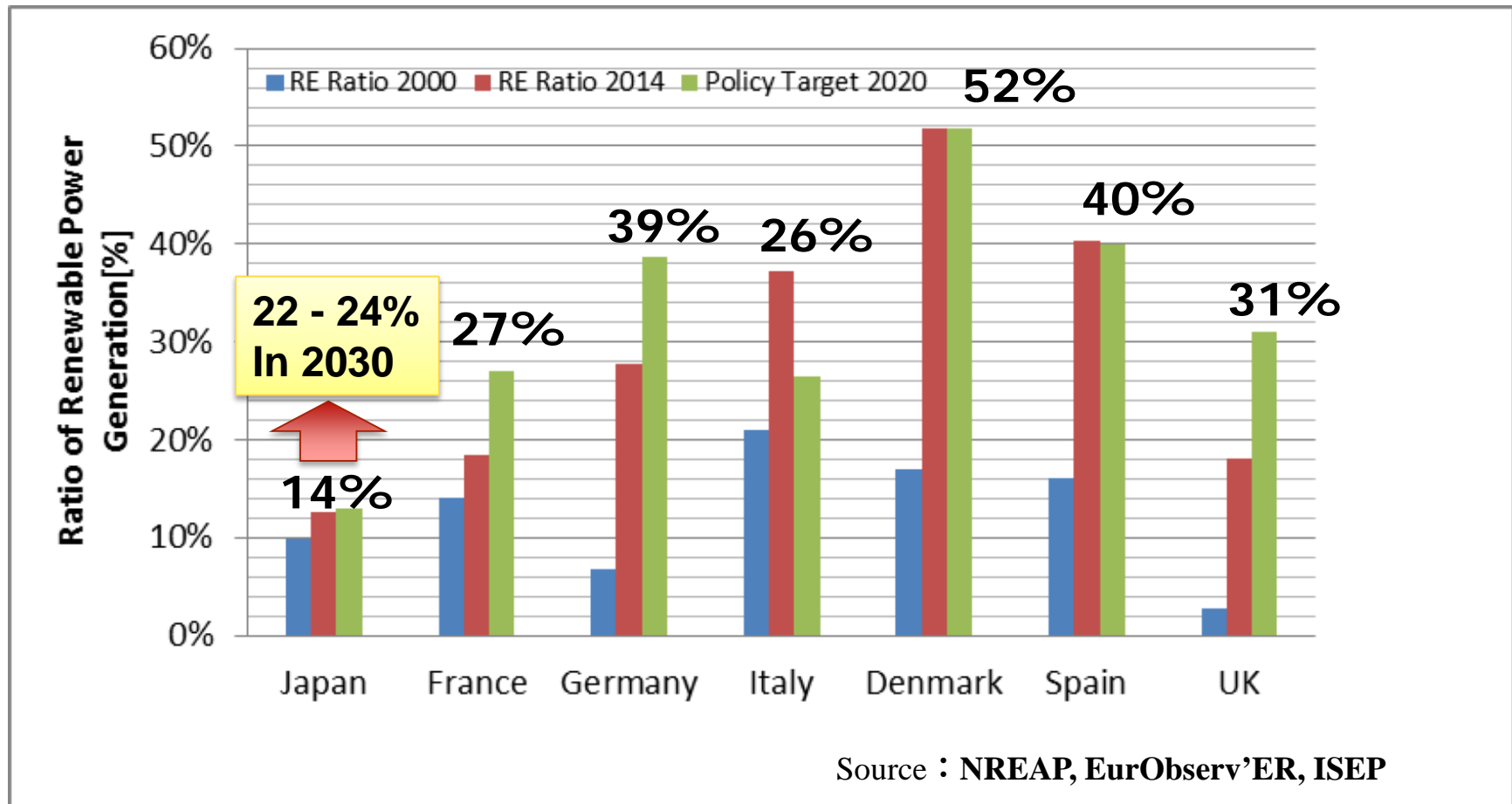
- After FY2011, annual installed capacity keeps very low level because of several regulation.
- Pipeline of environmental assessment is over 7GW including certified wind capacity is over 2GW



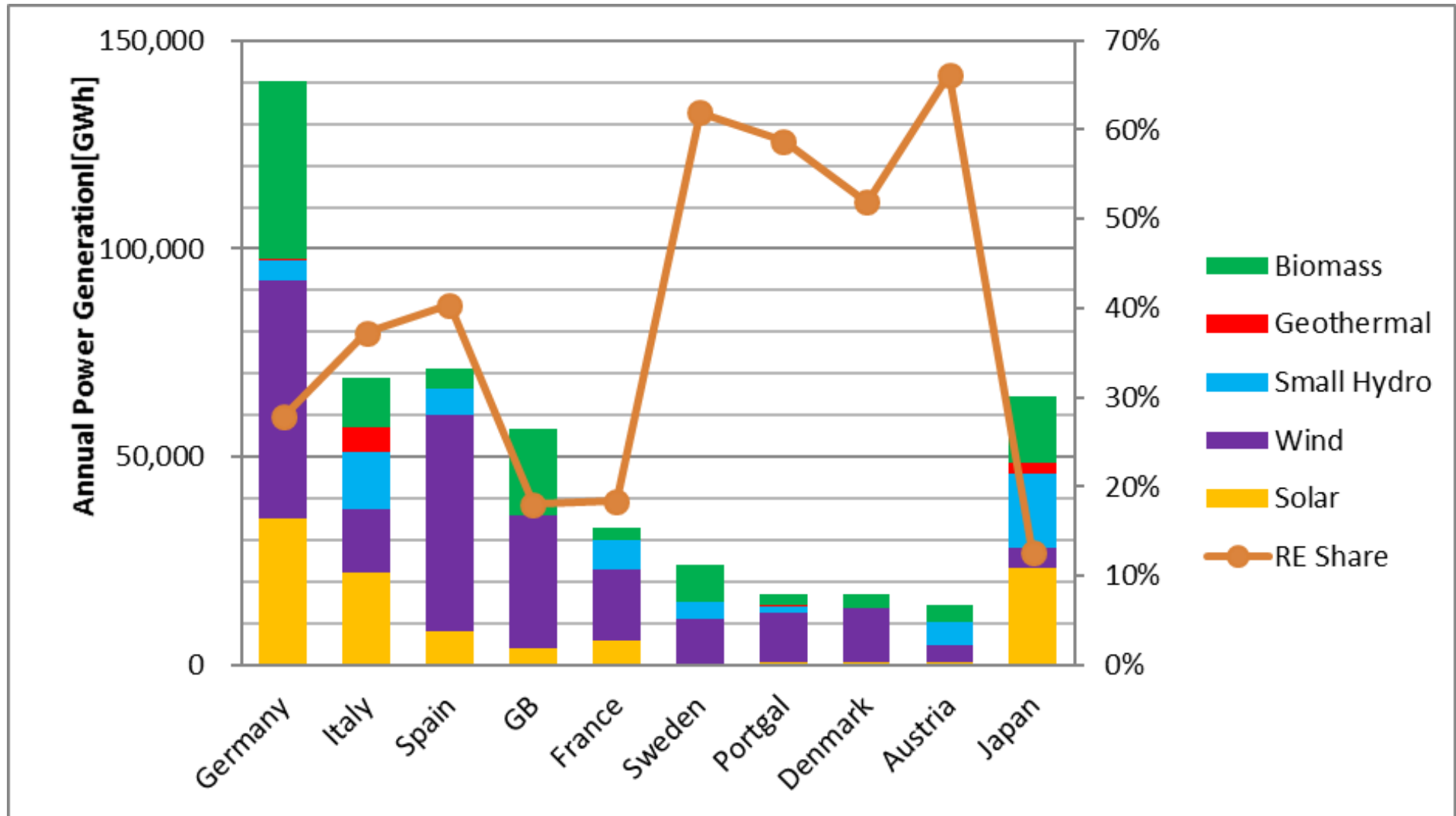


# Policy target of renewable energy

- EU directive causes renewable energy target of 2020 based on NREAP for each country in EU
- 2030 energy mix of renewable energy in Japan is 22 – 24%, which corresponds to 2020 target of EU countries.



# Power generation by Renewable Energy



Source: EurObserv'ER, ISEP

# Economical effects of FIT scheme in Japan

Renewable Share : 7%(excluding large hydro)

**Renewables**  
(PV,Wind,Geothermal,  
Hydro,Biomass)

**Tariffs for electricity**

employment: 390,000  
(IRENA)

1800B JPY

**Priority  
Access**

**Power  
Producers**

**Electricity**

**Investment,  
Loan**

**Capacity  
Investment**

58TWh

**Financial  
Institution**

**Power Facility**

Investment(2015): 36 Billion USD  
(Total investment for clean energy  
in Japan) estimated by UNEP

1.58 JPY/kWh

**Electric Price  
(Surcharge)**

1300B JPY

**Electric  
Utilities**

**Electricity**

837TWh

Avoidable Cost:  
515B JPY

**Estimation  
for FY2015**

**Home  
(Regulated)**

**Company  
(Office,  
Industries,  
Etc.)**

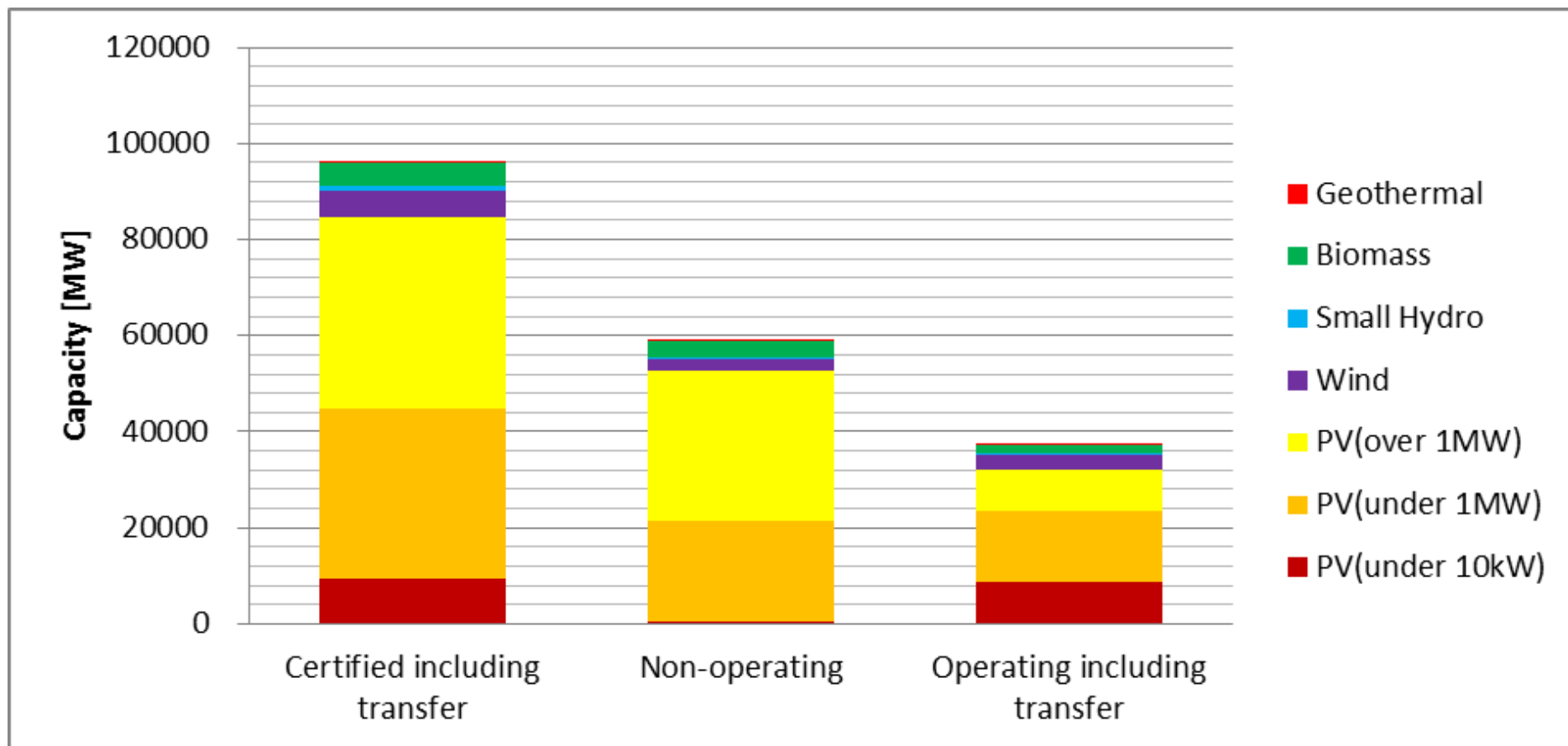
**Electric Consumer**

**April,2015 – March,2016**

**Source Data: METI, Estimation by ISEP**

# Status of FIT in Japan (as of March 2016)

- Cumulative capacity of certified facilities is nearly 96GW until March, 2016 since July 2012.
- PV capacity is 88%(85GW) of certified facilities. And certified large PV over 1MW is 40GW(42%)
- Operating facilities are 39%(37GW) of certified facilities including transfer by March 2016.
- 59% of Certified facilities(about 60GW) were non-operating by March 2016.

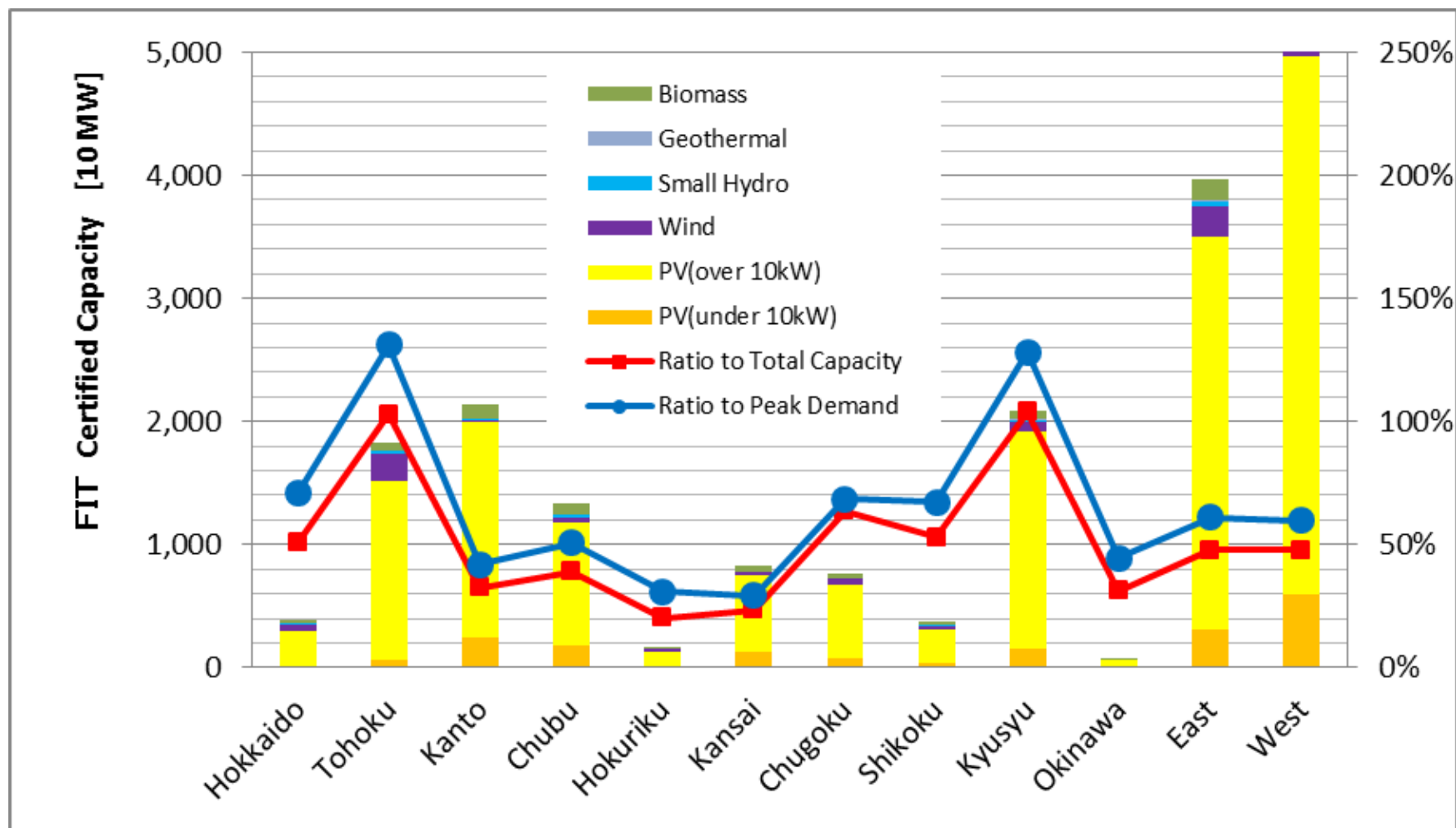


Source data: METI

Graph: ISEP

# Status of FIT certified capacity in each utility

In Kyusyu and Tohoku region, certified capacity ratio to peak demand reaches 100%.

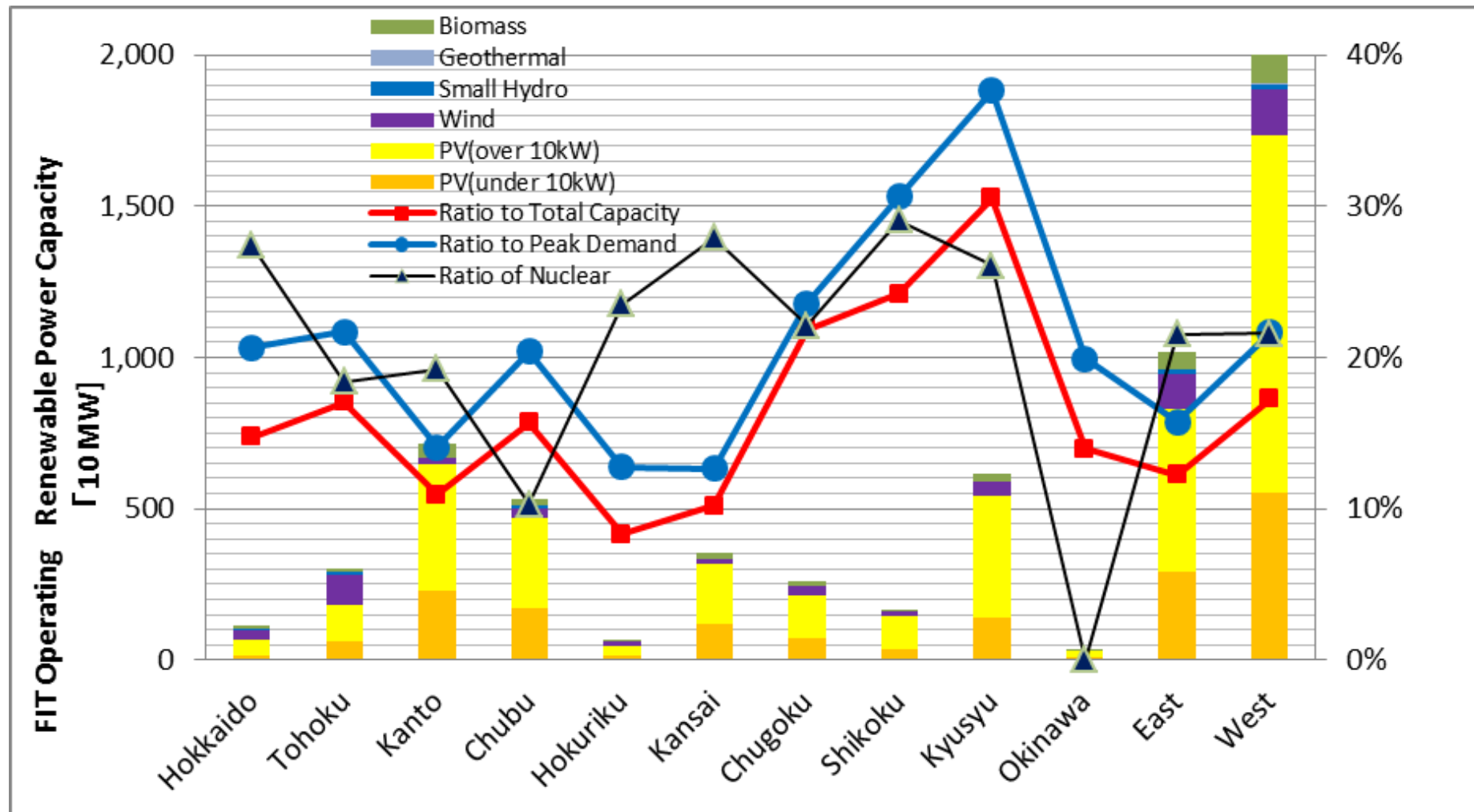


Source data: METI  
Graph: ISEP

As of March 2016

# FIT scheme: Operating Renewable power capacity in each utility

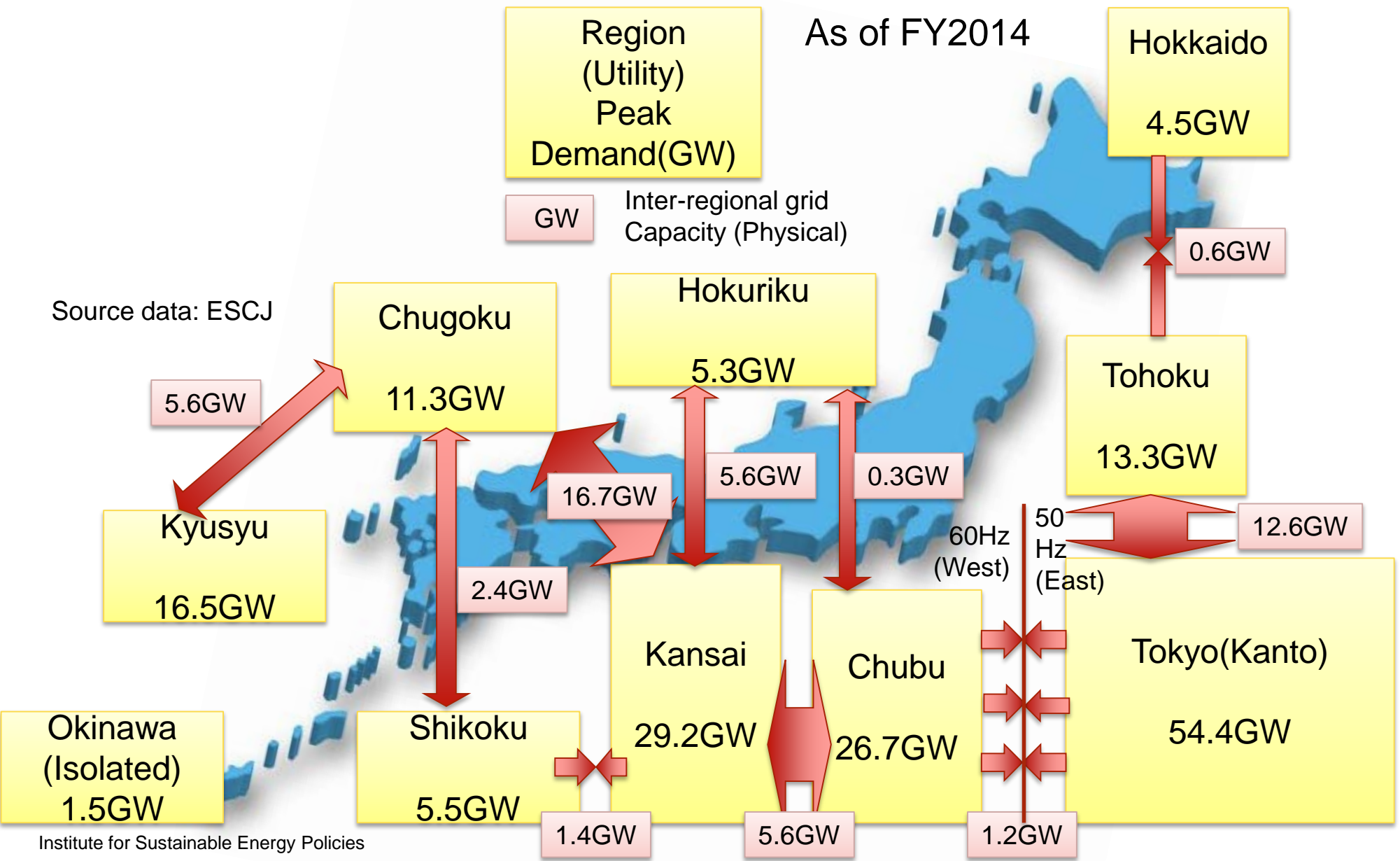
In kyusyu, operating renewable power capacity reaches 37 % of peak demand.



Source data: METI  
Graph: ISEP

As of March 2016

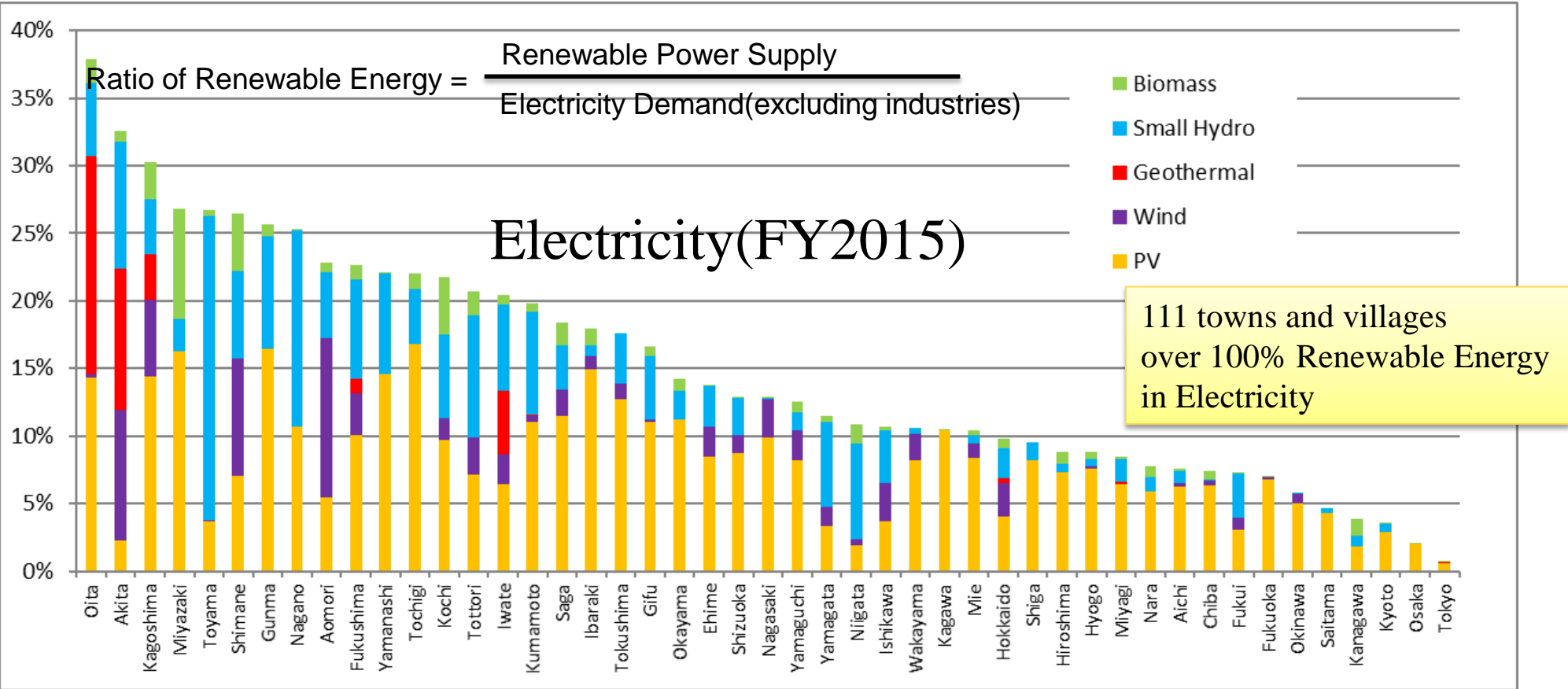
# Inter-regional grid connection between region of large utilities in Japan



# Sustainable Zone: Indicator for Sustainability of region in Japan

Energy Sustainable Zone (SZ) is an indicator to identify areas where local production of renewable energy exceeds local consumption of energy by residential and service sector.

Estimated by ISEP and Kurasaka Lab. Chiba Univ.



Prefectures

Source: Sustainable Zone Study Group  
<http://www.sustainable-zone.org>



# Stats of renewable energies in Japan

Making system of renewable energy statistics in Japan has been delayed.

- Current Initiative for renewable energy stats in japan
  - **Renewables Japan Status Report**(ISEP)
  - **Energy Sustainable Zone** (ISEP & Kurasaka Lab. Chiba Univ.)
  - Energy White Paper (METI) and other statistics by Japanese government
  - EDMC, Handbook of electricity utilities industries in Japan and other private statistics
- Case study of foreign countries
  - **Renewables Global Status Report**(REN21) International
  - **AGEE Stat** (Germany BMU -> BMWi) Germany
  - **REDAF**(Renewable Energy Database Framework) IRENA(International Renewable Energy Agency) International (mainly developing countries)
  - IEA(International Energy Agency) OECD
- **Needs for system development of Renewable Energy Statistics**
  - Organizing Data Source
  - Networking for renewable energy statistics
  - Database development and organizer



# Renewables 2016 Japan Status Report, Summary

Status report that summarizes trend and various data relating to renewable energy policies centering around Japan

Published in October, 2016

<http://www.isep.or.jp/en/>

Edit/Issue : Institute for Sustainable Energy Policies (ISEP)

Introduction “Towards the Age of Energy Democracy”  
Status and Trends of renewable energy in Japan  
Renewable Energy Policies in Japan  
The FIT Program: Current State and Issues  
Topic1: The trend to aim for 100% renewable regions  
Topic2: Renewable energy and getting social agreement  
Topic3: Coming to grips with community power  
Topic4: Production of food and renewable energy in agriculture

*Renewables 2016 Japan Status Report , Summary*



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<http://www.isep.or.jp/en/>

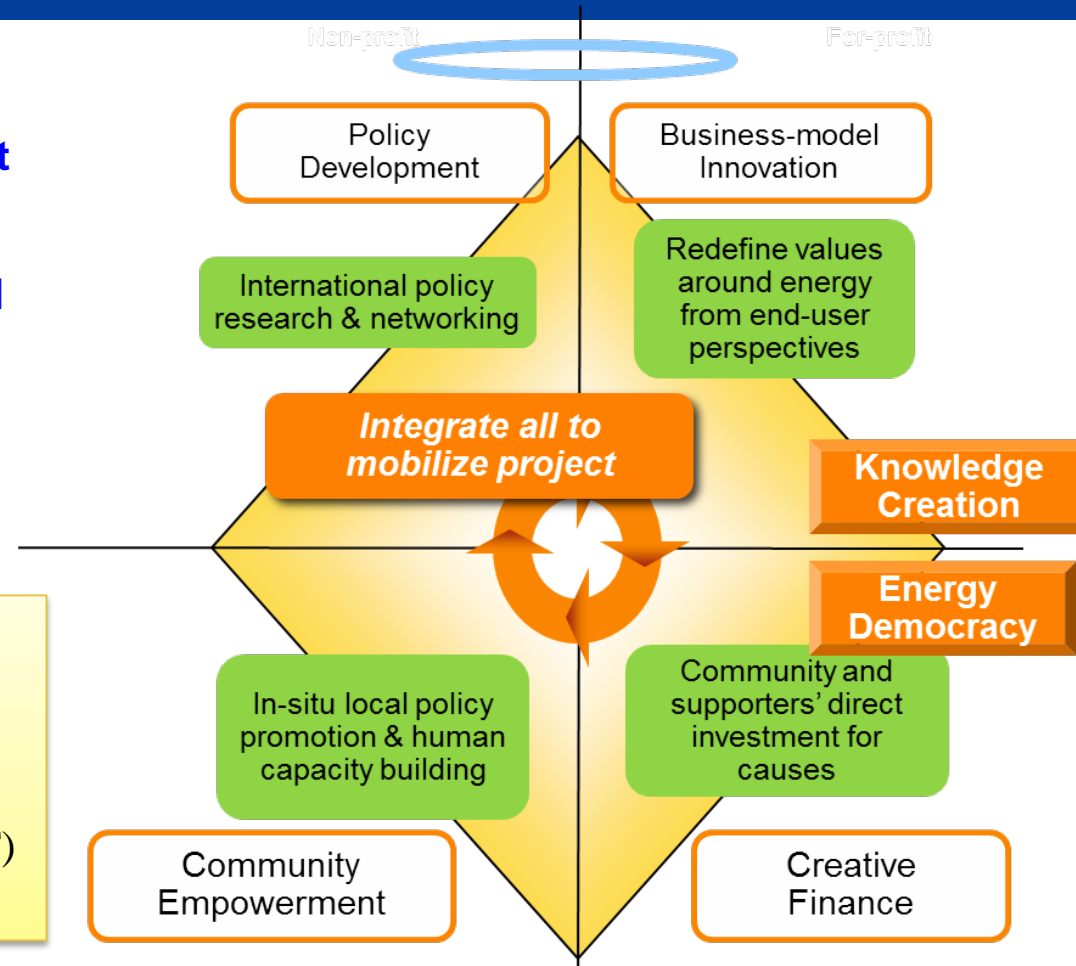
# Introduction of Institute for Sustainable Energy Policies

**An independent nonprofit  
policy think-tank  
(Environmental NGO) aiming at  
the realization of sustainable  
energy policy mainly engaged  
in the rationalization of natural  
energy, energy saving, and  
energy market.  
Founded in 2000.**

<http://www.isep.or.jp/en/>

- Green electricity, Green thermal Certificate system
- Community Fund Scheme
- Regional energy office
- Demand-pull strategy (such as FIT)
- Community Power Initiative

- Autonomy's policy advisory
- Autonomy's climate change policy research
- "Sustainable Zone" study group
- Regional economy effect study



- Renewable energy and building-up of social agreement
- Sustainable energy finance
- Japan Renewable Energy Platform (JREP)