Japan's Policy on Energy Saving, Renewable Energy

July 27, 2015

Katsushi Takehiro
Agency for Natural Resources and Energy
Ministry of Economy, Trade and Industry, Japan

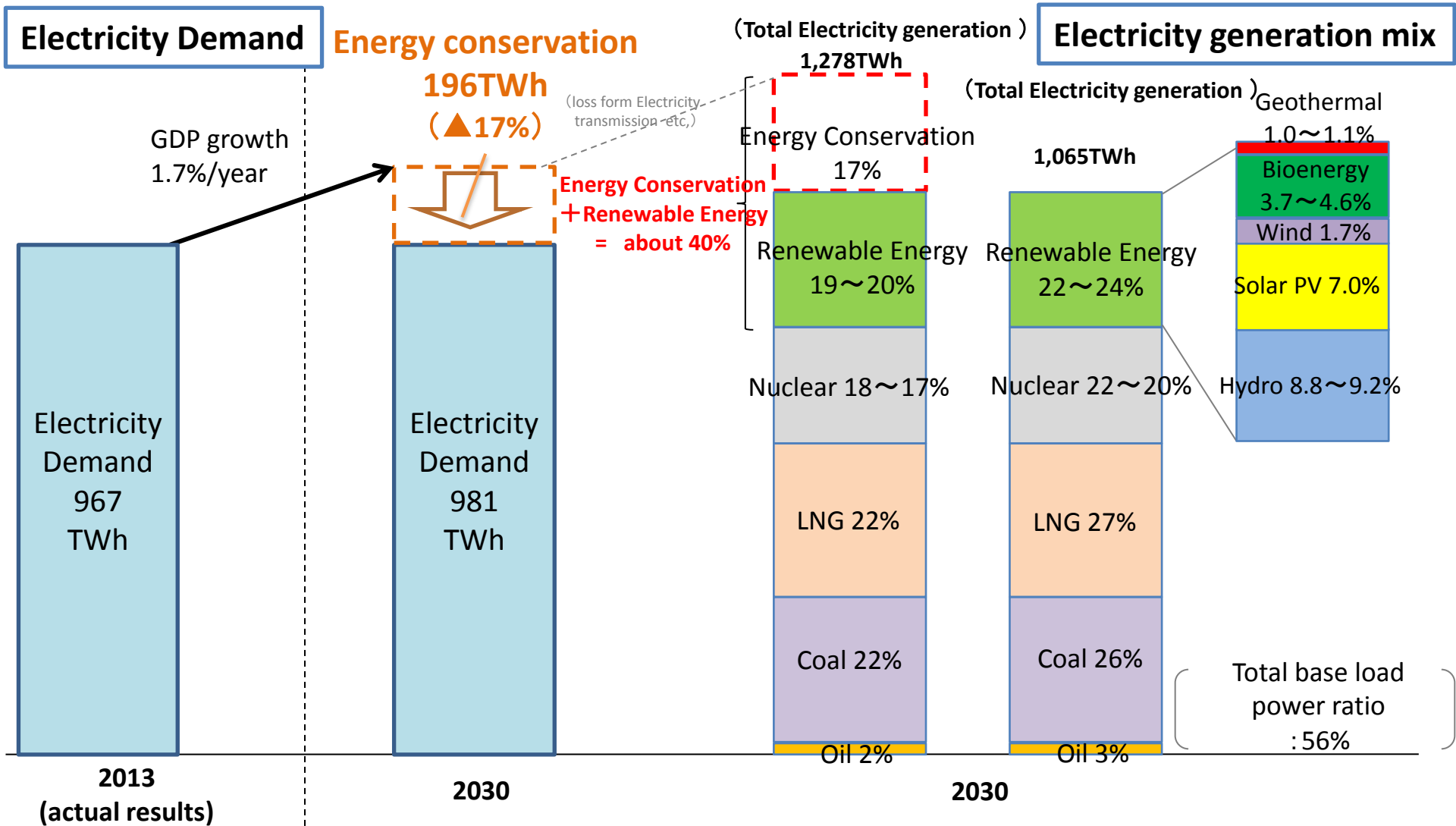
Japan's New Energy Mix

【Direction】

(1) To improve the self-sufficiency ratio to around 25% surpassing the level before the Earthquake.

(2) To reduce the electricity costs lower than today.

(3) To set a high-level GHG reduction goal compared with other developed countries to lead the world.



Data on National Energy Consumption in Japan

1973-2012

GDP: 2.4x

Final Energy Consumption: 1.3x

→Energy Consumption / real GDP 40%down

Industry	0.8x
Commercial/ Residential	2.4x
Transport	1.8x

Basic Structure of Energy Conservation Policy

Incentives

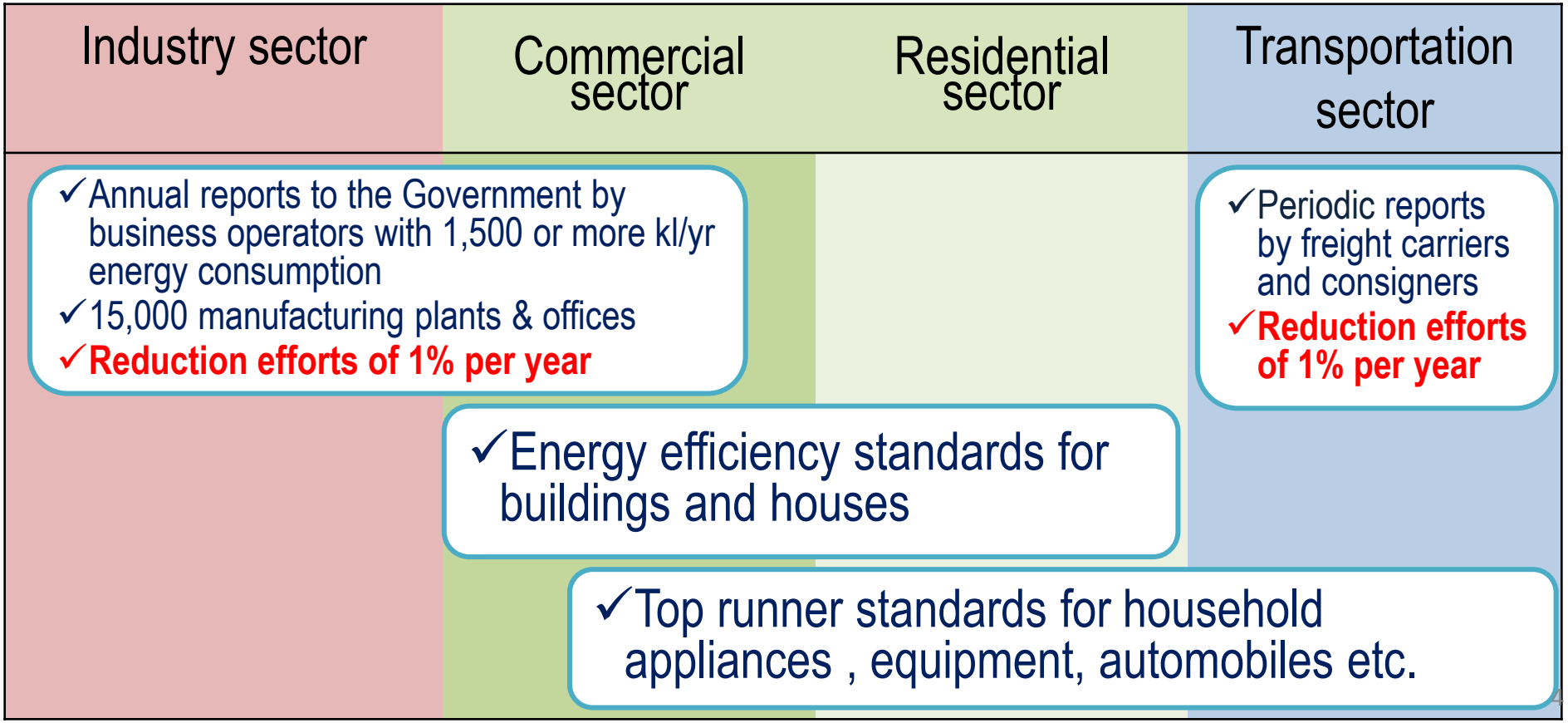
- Subsidies for introducing equipment
- Tax incentive
- Subsidize interest payment
- Subsidize R&D

Regulation

- Energy Conservation Law
- Mandatory Labelling

Energy Conservation Law

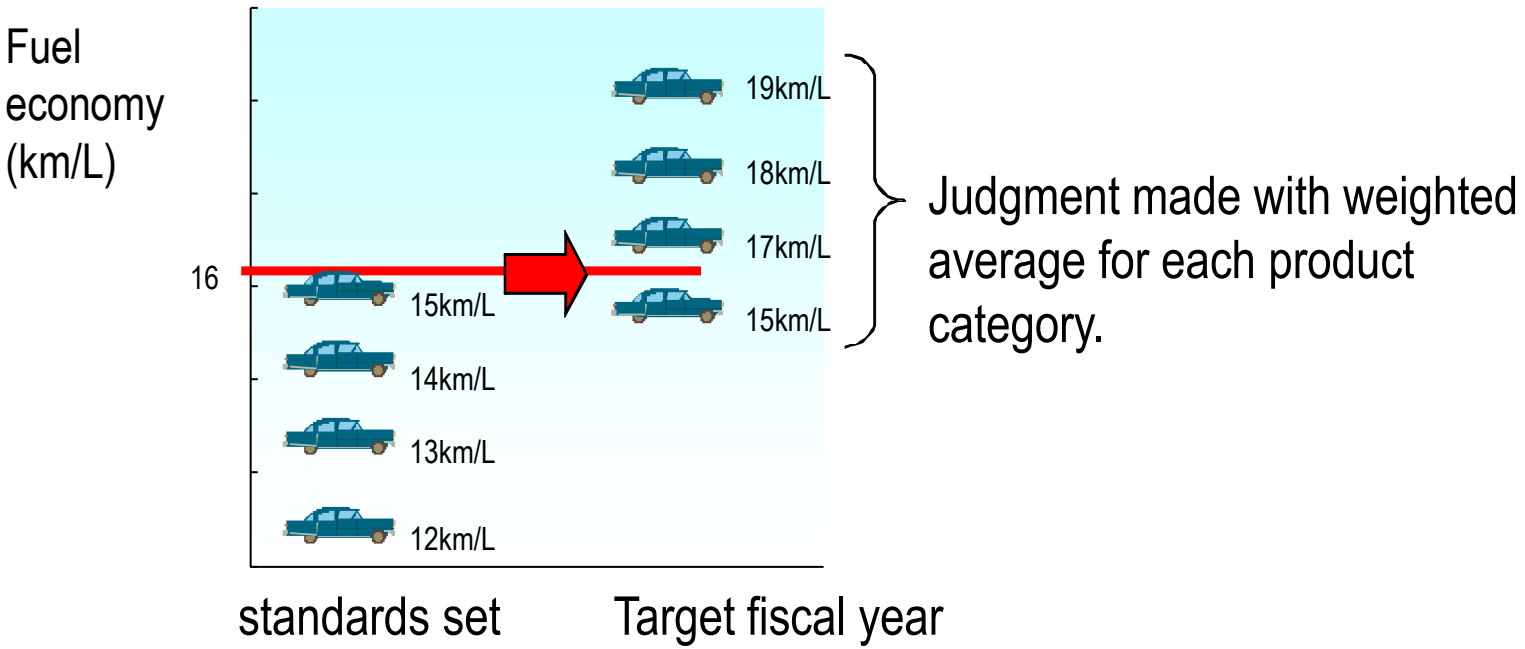
1. Requires companies to measure and report their energy consumption to Government
2. Set energy efficiency standards for new buildings and houses
   (will be mandatory for large-scale buildings to comply from 2017)
3. Top Runner Program



Top Runner Program

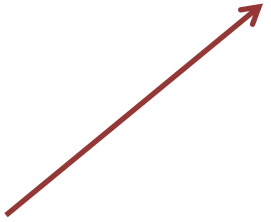
- The program requiring manufacturers and importers to fulfill the efficiency targets within 3 to 10 years
- Targets are set, based on currently commercialized products with best energy consumption efficiencies, namely top runner products.
- encourages competition and innovation without price hike

Image of Top Runner Program



31 equipment and materials are subject to the program, which cover approximately 70% of the energy consumption in household.

1. Passenger cars
2. Trucks
3. Air conditioners
4. Television receivers
5. Video tape recorders
6. Lighting apparatuses
7. Copying machines
8. Computers
9. Magnetic disk devices
10. Electrical refrigerators
11. Electrical freezers
12. Heaters
13. Gas cooking appliances
14. Gas water heating appliances
15. Oil water heaters
16. Electric toilet seats
17. Vending machines
18. Power tansformer
19. Jar rice cookers
20. Microwave ovens
21. DVD recorders
22. Routing equipment
23. Switching equipment
24. Multifunction Devices
25. Printers
26. Heat Pump Water Heater
27. AC motors
28. LED lumps
29. Heat insulating materials
30. Sashes
31. Multi-Paned Glazing



It also covers materials for building.

Achievement of Top Runner Program

Gasoline passenger vehicles

48.8% (FY1995→FY2010)

Air-conditioners

(Types other than direct airflow & wall-mount)

32.3% (FY1997→FY2007)

Electric refrigerators

43.0% (FY2005→FY2010)

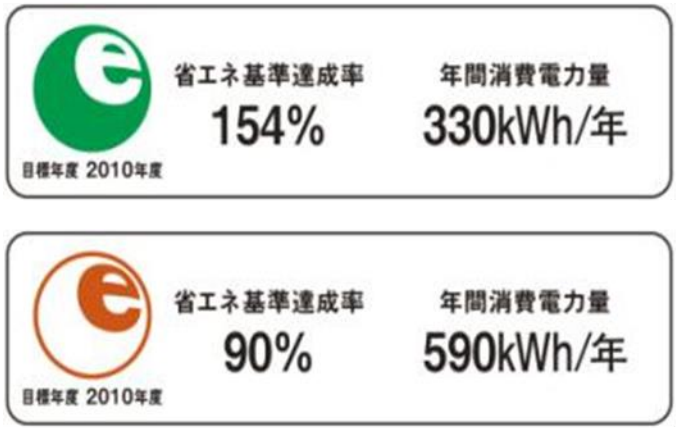
TV sets (LCD and PDP TVs)

29.6% (FY2004→FY2008)

Labelling Program

Energy conservation label

- Displayed by manufacturers
- 18 equipment, primarily household equipment with a large amount of general consumer usage



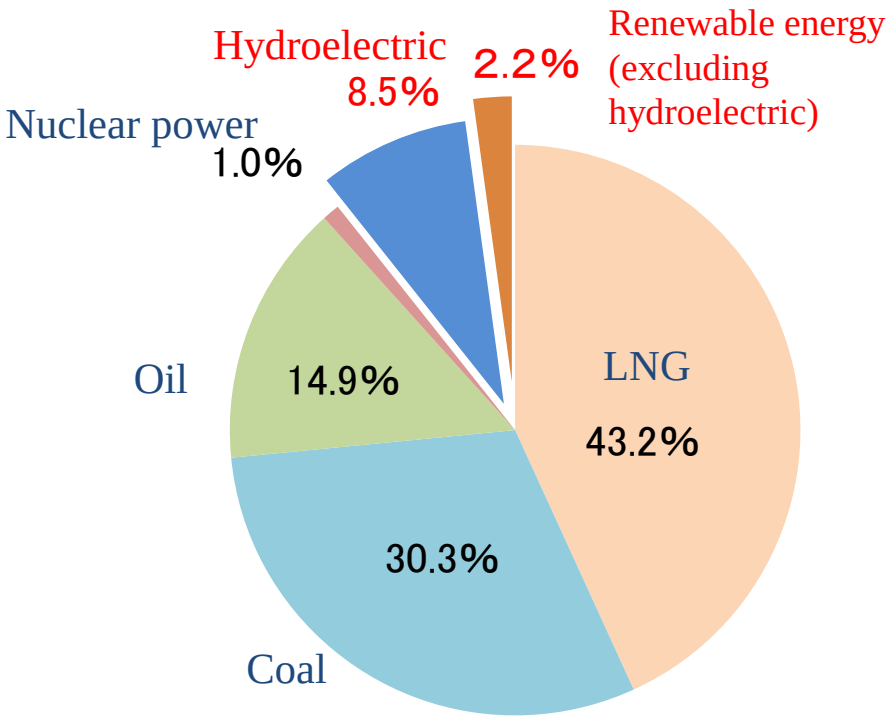
Unified energy conservation label

- displayed by retailers
- air conditioners, television receivers, electric refrigerators, electric toilet seats and fluorescent lighting apparatuses
- Enable consumers to compare energy efficiency by consumers when purchasing
- five star ranking with costs reduced

(Unified energy conservation label)

(simplified version label)

Composition of Power Generation in Japan (FY2013)

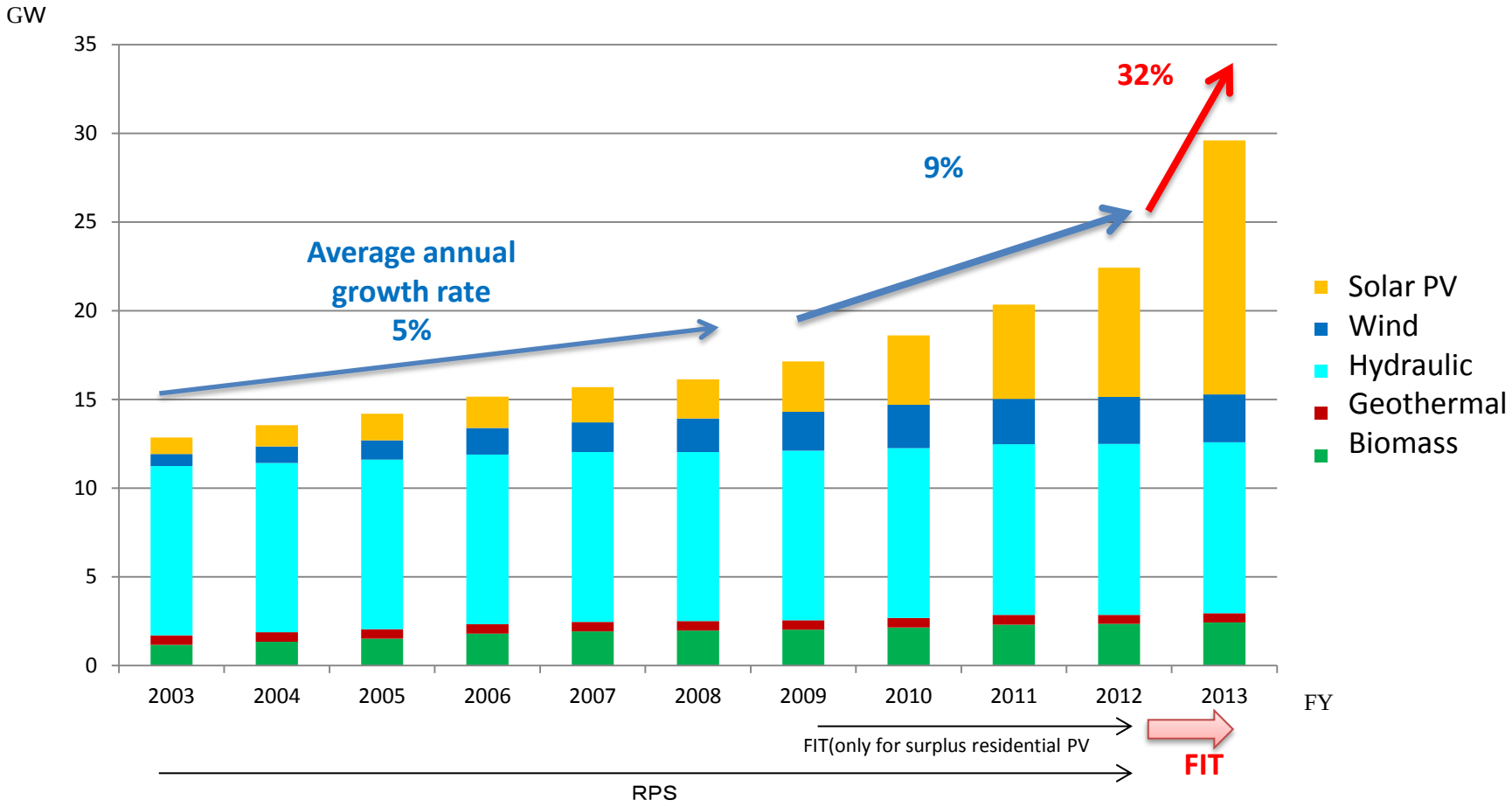


Source: Federation of Electric Power Companies of Japan,

2003-2012 RPS (Renewables Portfolio Standard)

2009- 2012 Feed-In-Tariff only for residential PV

2012- Feed-In-Tariff



(From various sources including JPEA statistics, NEDO wind power generation statistics, hydrogenation capacity studies, geothermal surveys, and actual RPS/feed-in tariff figures)

Note: FY2013 figures show Mar. 2014 status

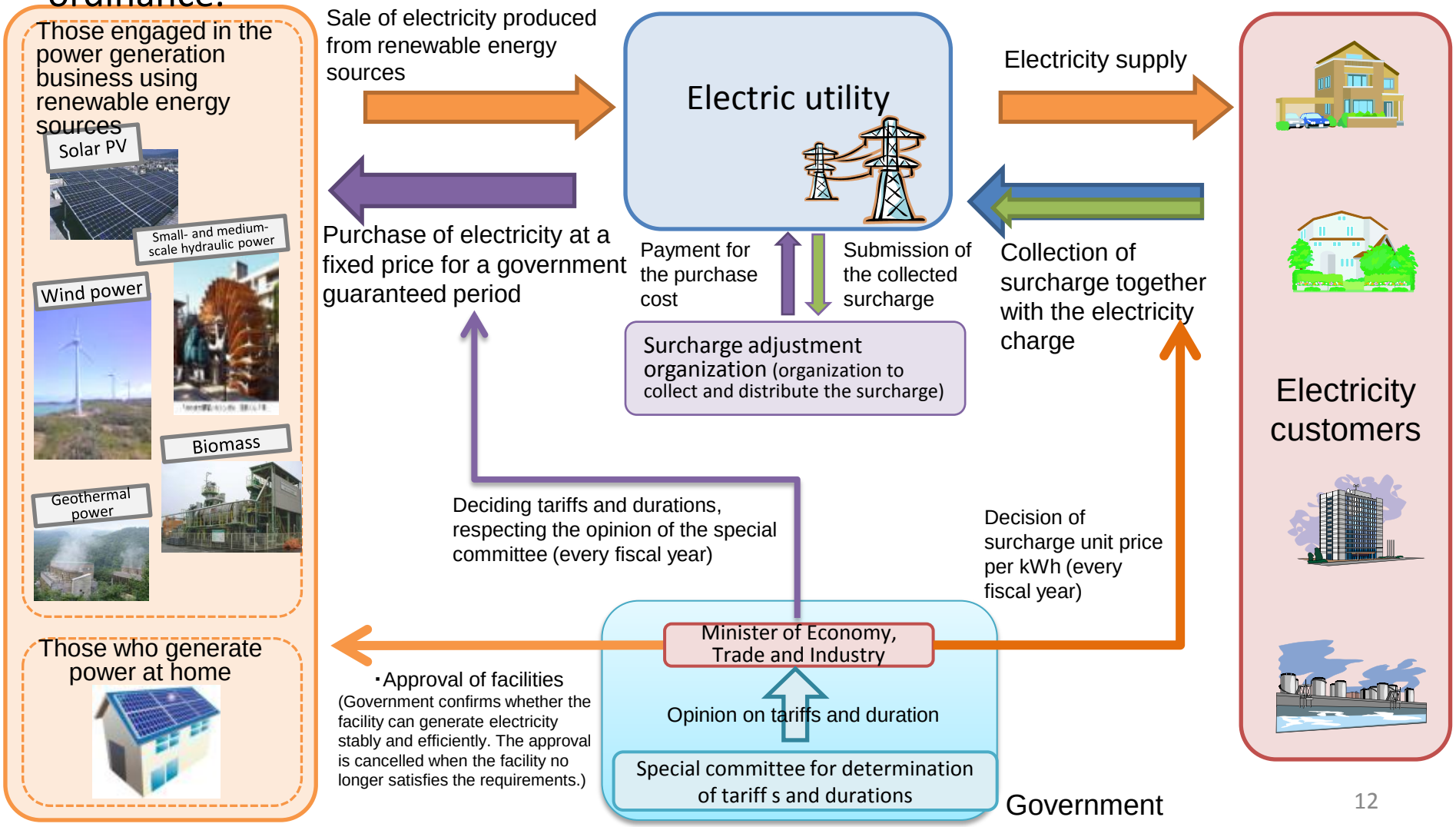
From start of FIT (July 2012) to Oct. 2014, 72 GW of RE capacity has received certificate and 14GW has actually started operation, mostly by Solar PV.

Energy Source	Accumulated capacity (approximate #) As of June 2012	Capacity introduced after FIT from Jul.2012 to Oct.2014
Solar PV (residential)	4.7 GW	**2.7 GW**
Solar PV (non-residential)	0.9 GW	**11.1 GW**
Wind	2.6 GW	**0.20 GW**
Geothermal	0.5 GW	**0.001 GW**
Mid-to small-sized hydraulic (Less than 30MW)	9.6 GW	**0.032 GW**
Biomass	2.3 GW	**0.010 GW**
Total	20.6 GW	**14GW**

Note 1. Biomass capacities are estimates based on the constituting percentage of the energy source of each year.
2. Each energy source figure is rounded up/down separately, while the Total figures are the sum of non-rounded data – hence their discrepancies.

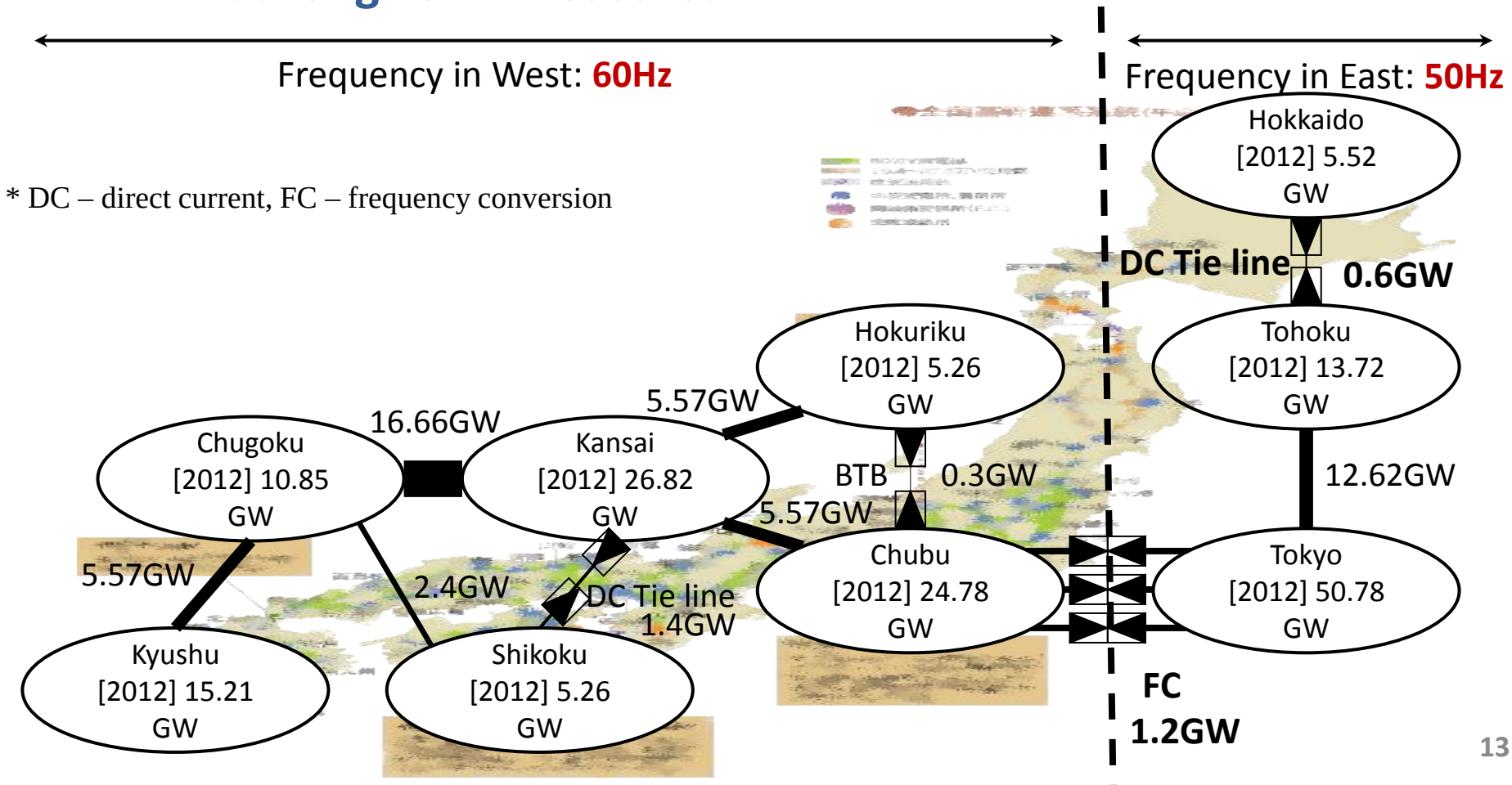
-Under FIT, Electric Utility is obliged to accept RE generators' request of signing power purchasing contract at the price and period which are fixed by government.

- Utility has right to deny connection in limited cases stipulated in Ministry ordinance.



Last year, 5 out of 10 electric utility companies suspended the applications for grid connection by RE power producers due to constraint of connection capacities.

1) Introduced more stringent output control scheme
2) Will increase energy storage and inter-area connection as long-term measures



Issues and Challenges

Policy Measures

1) Electricity Market Reforms
(retail liberalization, unbundling T/D sector)

2) Introduction of Smart Meter to all Households by 2024

3) Rule-making e.g. Negawatt Trading Guidelines

New business opportunities for distributed power generators, ancillary services, demand response aggregators, CEMS service etc.

By 2030
- 17% by Energy Saving
- 22% by Renewables

Thank you for your kind attention