

# **Direction of Japan's Energy Policy**

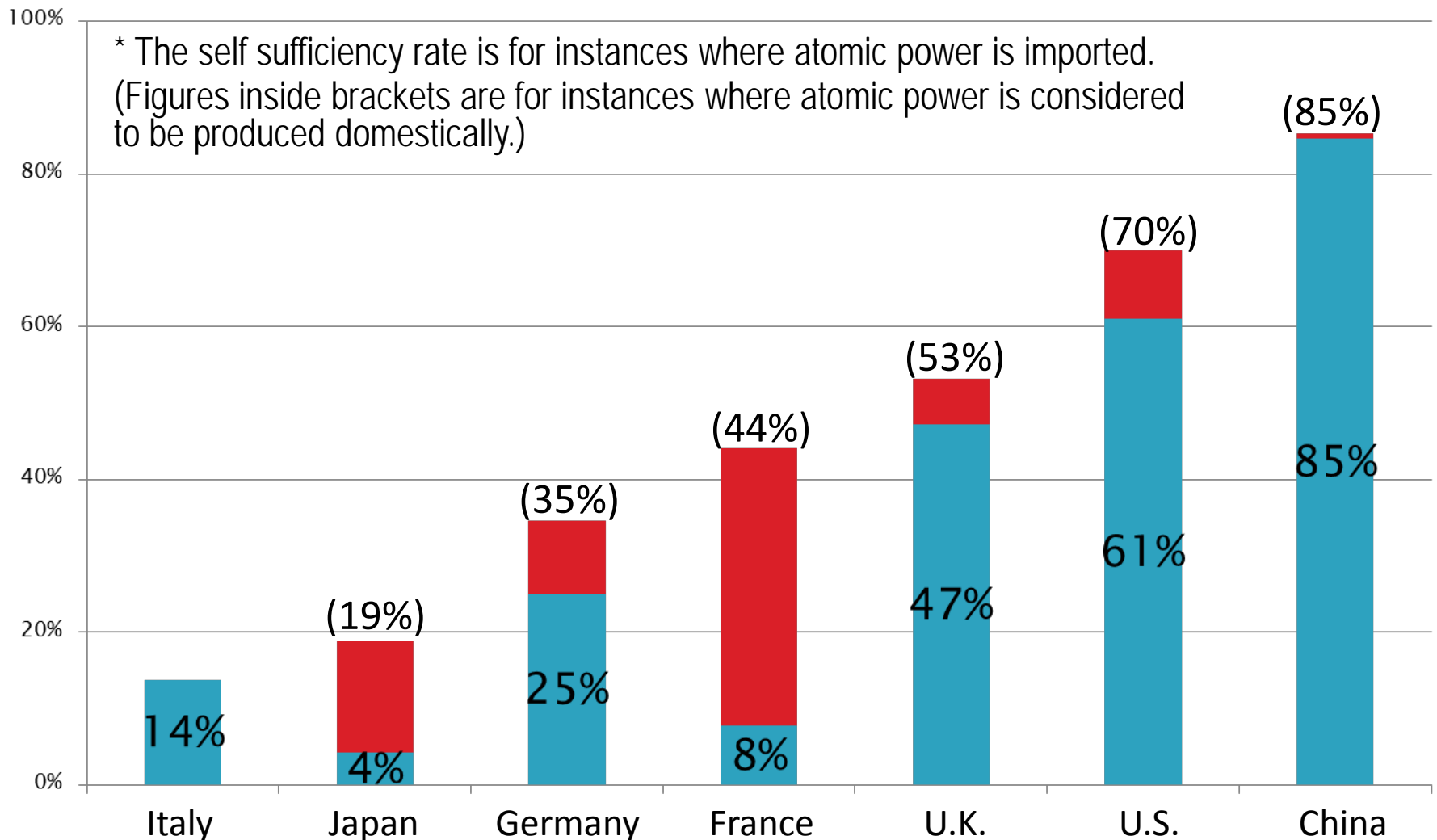
October 5, 2012

Toshikazu Okuya

Special Advisor, Ministry of Economy, Trade and Industry

Low Self-Sufficiency - without Nuclear Energy, it is less than 5%.

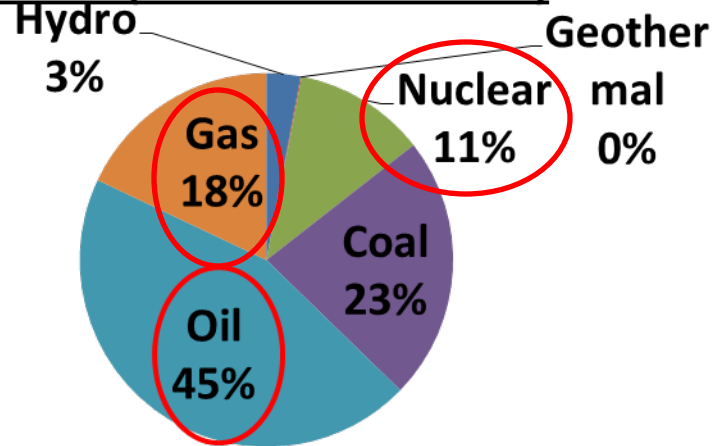
### Energy Self-Sufficiency Ratio (FY2009)



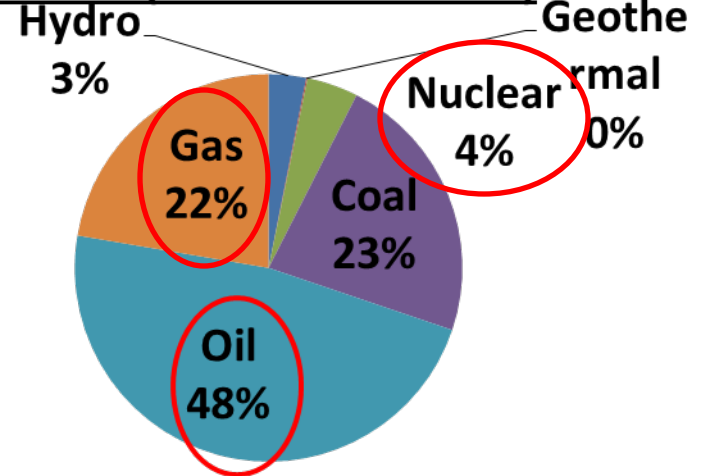
# Dependency on Fossil Fuels is Increasing.

## Japanese Primary Energy Situation

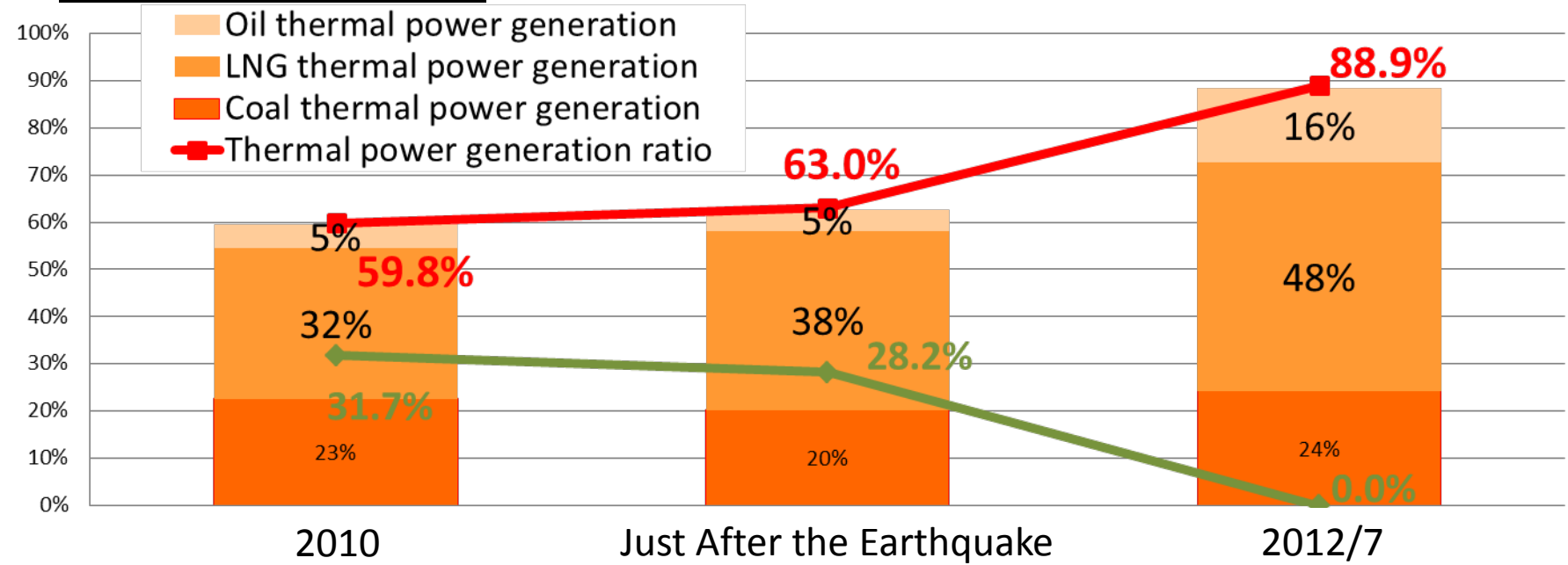
2010FY (Before FUKUSHIMA)



2011FY (After FUKUSHIMA)

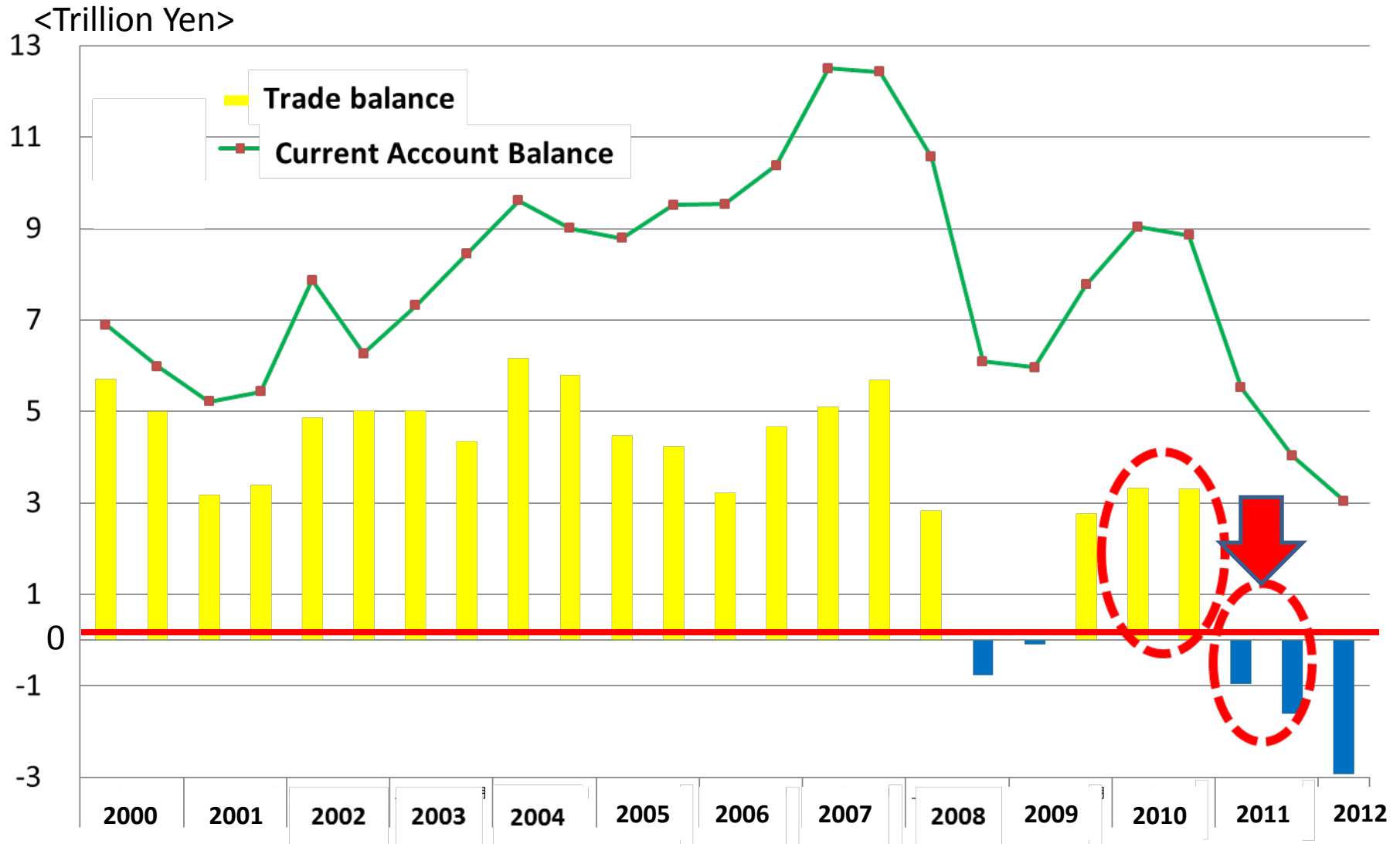


## For Power Generation



# The First Annual Trade Deficit in 3 Decades in 2011

Main Reason was Rise of Fossil Fuel Import ( $16.3\text{T} \Rightarrow 20.6\text{T}$ )



## Energy and Environment Council : Innovative Strategy for Energy and the Environment

(September 14, 2012)

1. Realization of a Society Not Dependent on Nuclear Power
2. Realization of Green Energy Revolution
3. For Ensuring Stable Supply of Energy
4. Bold Implementation of Reform of Electric Power System
5. Steady Implementation of Global Warming Countermeasures

## Cabinet Decision : Future Policies for Energy and Environment

(September 19, 2012)

GOP will implement future policies on energy and the environment,  
taking into account of “the Innovative Strategy on Energy and the Environment,  
while having discussions in a responsible others, and obtaining understanding of  
the Japanese public,  
by constantly reviewing and re-examining policies with flexibility.

# “Realization of a Society Not Dependent on Nuclear Power”

In the mean time, nuclear power plants whose safety is assured will be utilized as an important power source.

## 1. 3 Guiding Principles

- Strictly Apply the Stipulated Rules Regarding Forty-year Limitation of the Operation
- Restart the Operation of Nuclear Power Plants Once the Nuclear Regulatory Authority Gives Safety Assurance
- Not to Plan the New and Additional Construction of a Nuclear Power Plant

## 2. 5 Policies

- Nuclear Fuel Cycle Policy
  - \*Continue its present nuclear fuel cycle policy
  - \*Engage in Reprocessing Projects with Assuming Responsibility for the International Community
  - \* Discuss with Related Local Government and International Community Responsibly
- Maintain and Strengthen Human Resources and Technology
- Cooperate with the International Community
- Strengthen Measures for Local Area with Nuclear Power Facilities
- Systems of Nuclear Power Projects and the Liability System for Nuclear-Related Damages

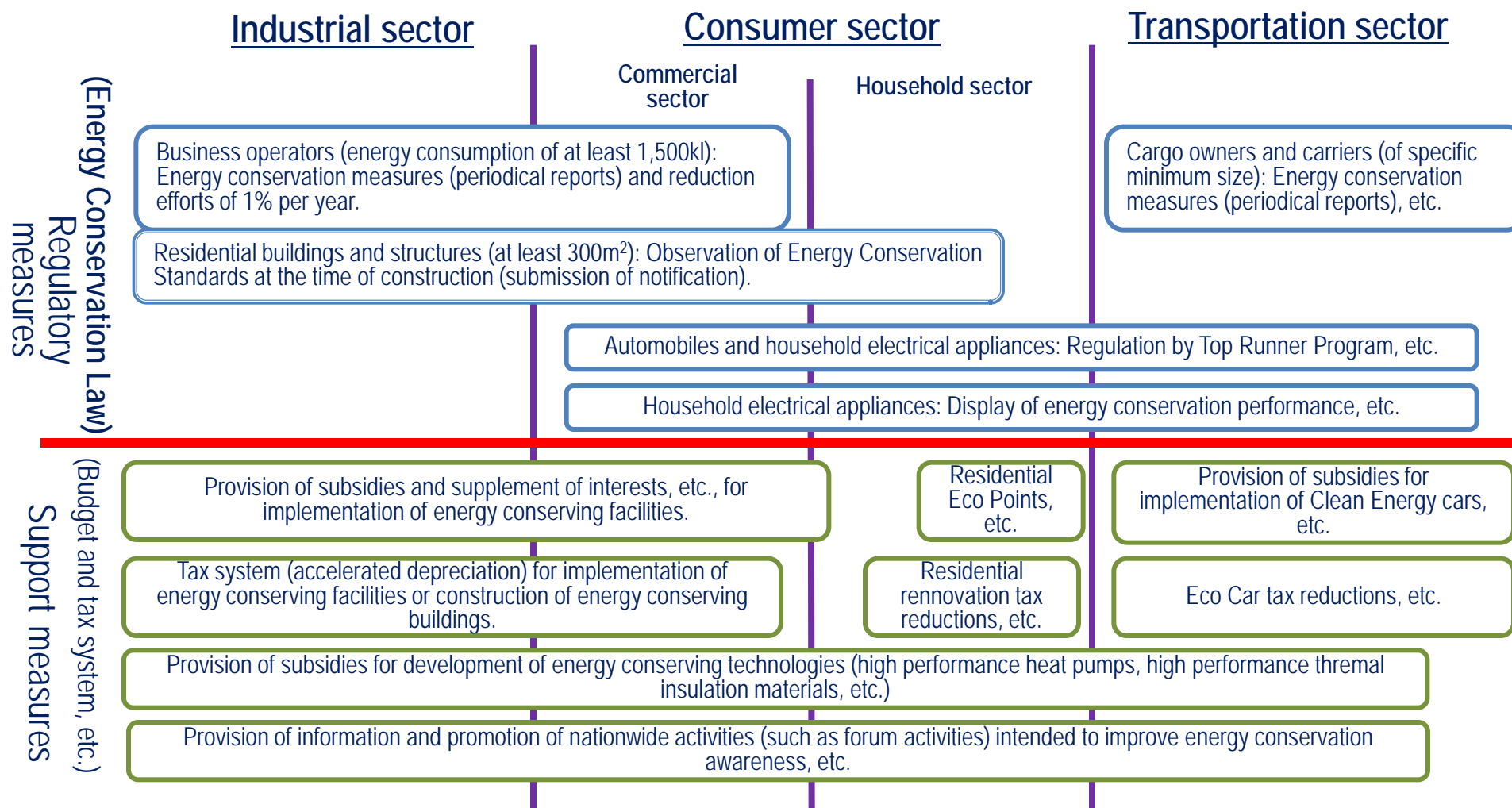
## 3. Review of the Path

- Review and Constantly Re-Examine the Path towards Realization of a Society Not Dependent on Nuclear Power in order to be Sufficiently Flexible and Responsive to any Unforeseen Changes in the Future

# “Realization of Green Energy Revolution” – Energy Saving

- Both Regulation (Energy Conservation Law) and Support will Push the Strategy

## Structure of Measures for Energy Saving in Japan



# Image of Expansion of Energy Saving

from “Innovative Strategy on Energy and the Environment”

2015

2020

2030

Amount of energy saved:

16 million kl (-4%)

Amount of electricity saved:

25 billion kWh (-2%)

Accumulated investment amount:

\17 trillion

Amount of energy saved:

31 million kl (-8%)

Amount of electricity saved:

50 billion kWh (-5%)

Accumulated investment amount:

\34 trillion

Amount of energy saved:

72 million kl (-19%)

Amount of electricity saved:

110 billion kWh (-10%)

Accumulated investment amount:

\84 trillion

## -2015 Electricity saving takes precedence

- (1) Introduce smart meters for 80% of total demand in the next five years
- (2) Demonstrate and develop smart communities
- (3) Construction of necessary facilities for market introduction of fuel-cell vehicles from 2015

## -2020 Promotion of energy saving mainly in the household and commercial sectors

- (1) Accomplish the energy saving standards for 100% of newly built residences (40% at present)
- (2) Introduce high-efficiency lighting at 100% of public facilities and institutions (20% at present)
- (3) Expand the effective utilization of unused heat and heat from renewable energy sources
- (4) Introduce 2 million ordinary chargers and 5,000 quick chargers for electric vehicles (600 quick chargers at present)

## -2030 Further expansion of introduction

- (1) Disseminate LED and other high-efficiency lighting as installed 100% of the stock of the lighting (20% at present)
- (2) Introduce HEMS to 100% of households (less than 1% at present)
- (3) Introduce high-efficiency hot water apparatus, including 5.3 million residential fuel cell cogeneration systems (10,000 at present), to approx. 90% of all households (10% at present)
- (4) Increase the share of next-generation automobiles in the sale of all new automobiles sold to 70% at maximum (10% at present)

Average investment amount: \3.4 trillion/year

Average investment amount: \5.0 trillion/year

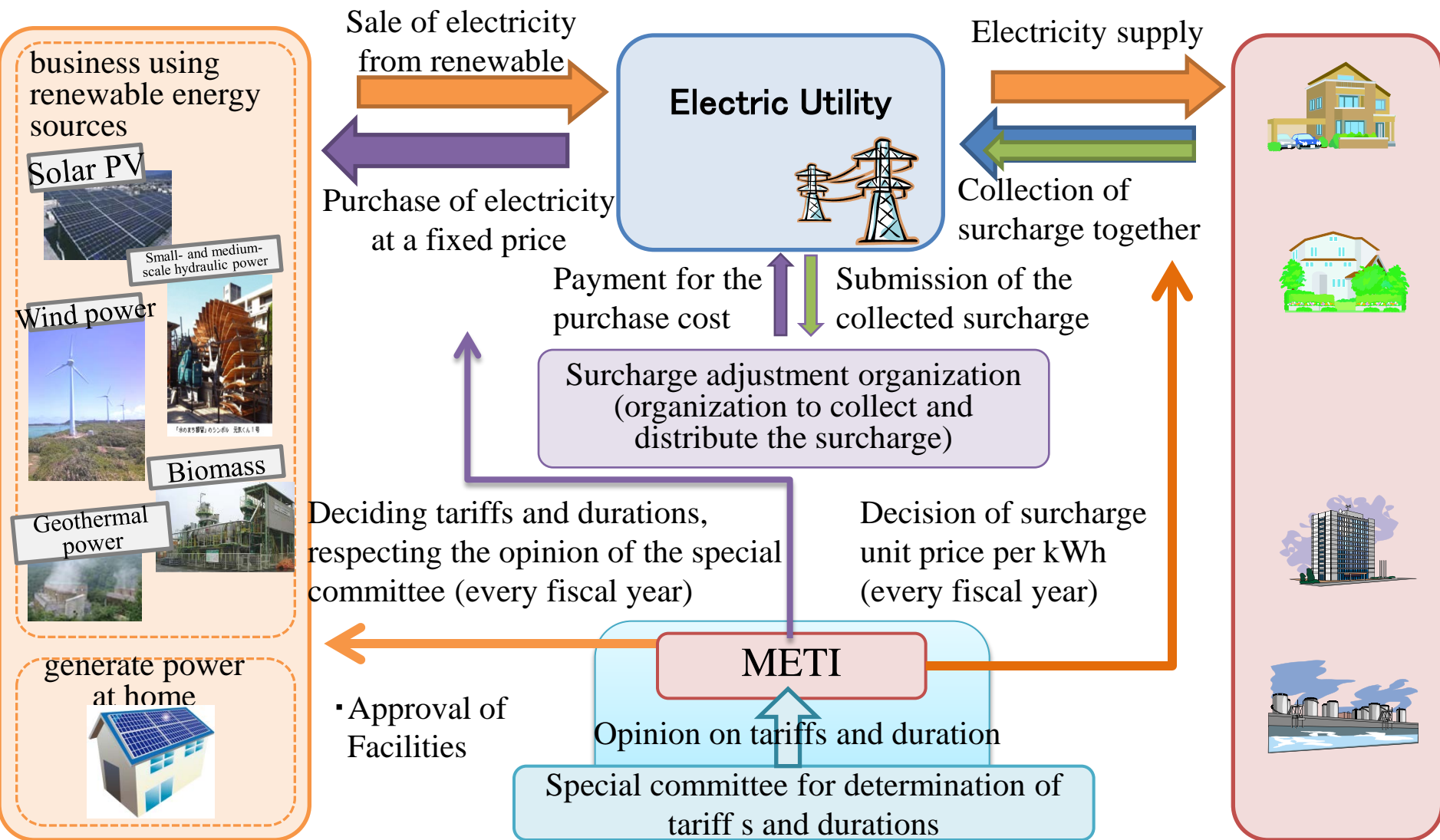
Note: The amount of energy saved/electricity saved is compared to 2010.



# “Realization of Green Energy Revolution” – Renewable Energy

## - Feed-in Tariff System Started from July, 2012

### Structure of Feed-in Tariff System



# Feed-in Tariff System is Pushing an Expansion of Renewable Especially, Solar (19.5GW Renewable is Reaching at 22GW in FY2012)

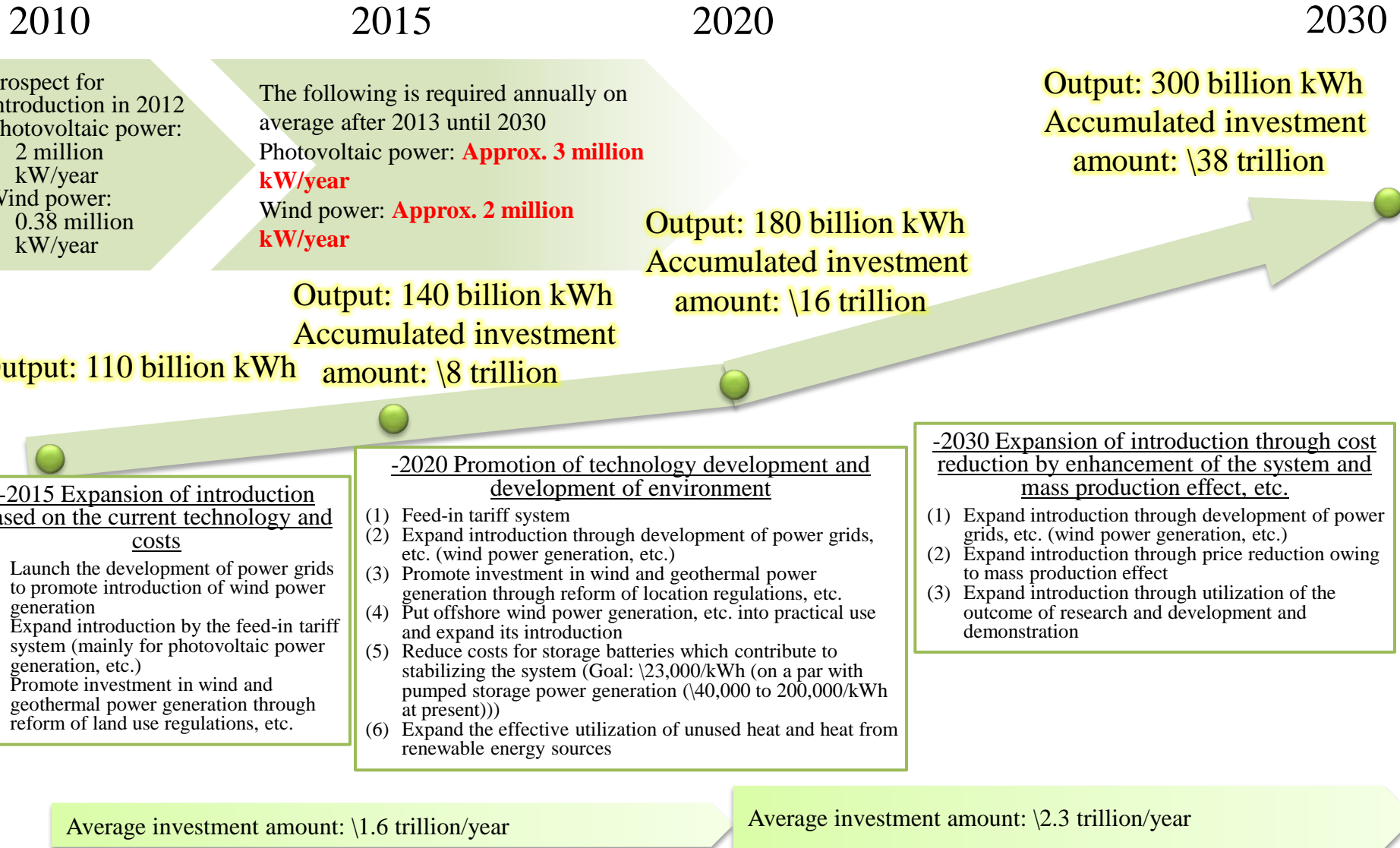
## <Renewable energy installation forecast in FY 2012>

## <Certified Capacity>

	Already installed capacity by FY2011	Forecast of newly installed capacity in FY2012	By the End of Aug.
Residential PV	Approx. 4GW	+ Approx 1.5GW (40% increase from new installation in 2011)	+306MW
Non-Residential PV	Approx. 0.8GW	+Approx 0.5GW (Estimate by METI)	+725MW
Wind	Approx. 2.5GW	+ Approx 0.38GW (50 % increase from recent annual installation)	+262MW
Small and Medium scaled hydro (1MW to 3MW)	Approx. 9.35GW	+ Approx 0.02GW (Estimate by METI)	+0MW
Small and Medium scaled hydro (Less than 1MW)	Approx. 0.2GW	+ Approx 0.01GW (50 % increase from recent annual installation)	+1MW
Biomass	Approx. 2.1GW	+ Approx 0.09GW (50 % increase from recent annual installation)	+6MW
Geothermal	Approx. 0.5GW	+0GW	+0MW
Total	Approx. 19.45GW	+ Approx 2.5GW	+1.3GW

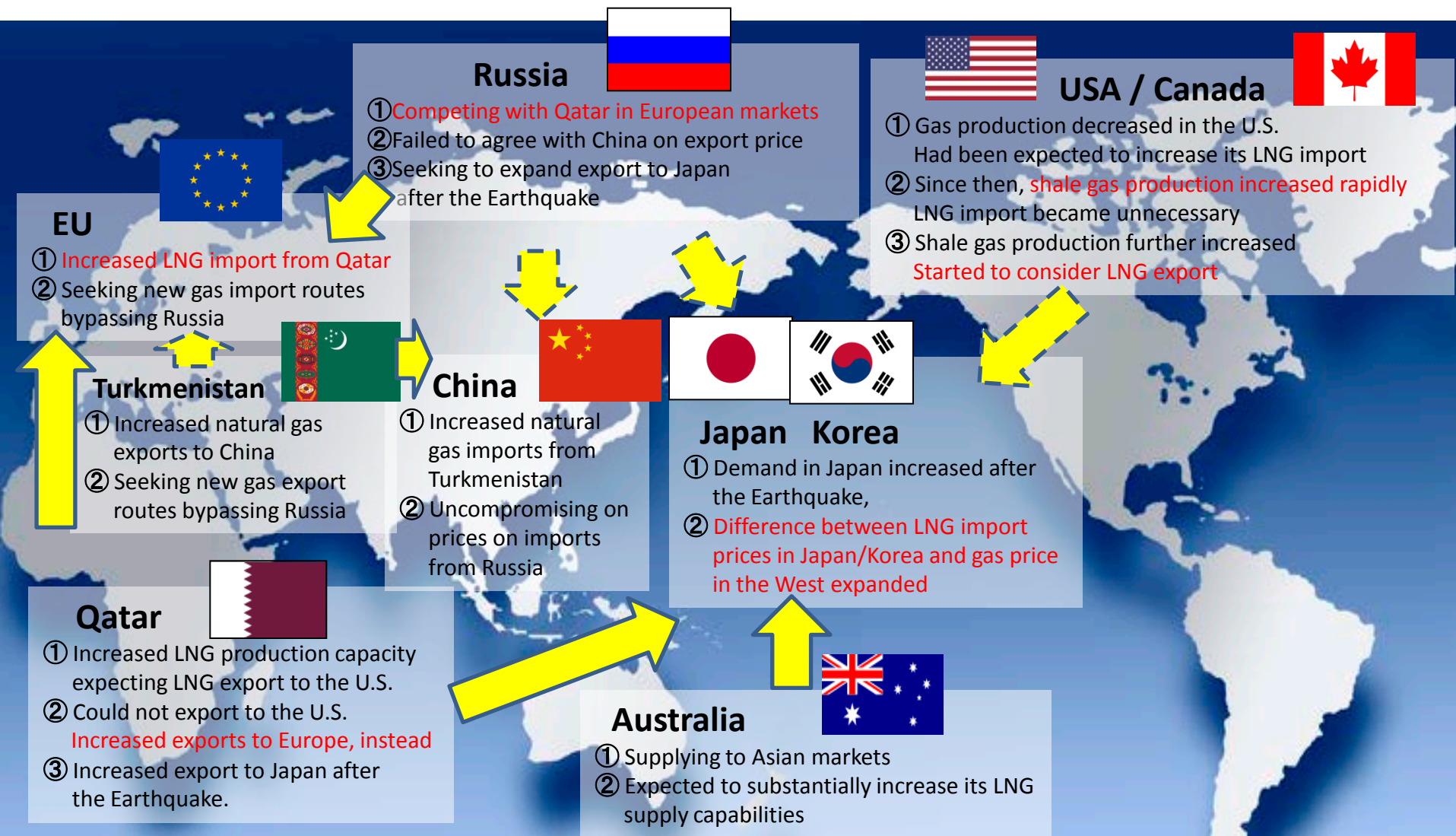
# Image of Expansion of Renewable Energy

from “Innovative Strategy on Energy and the Environment”



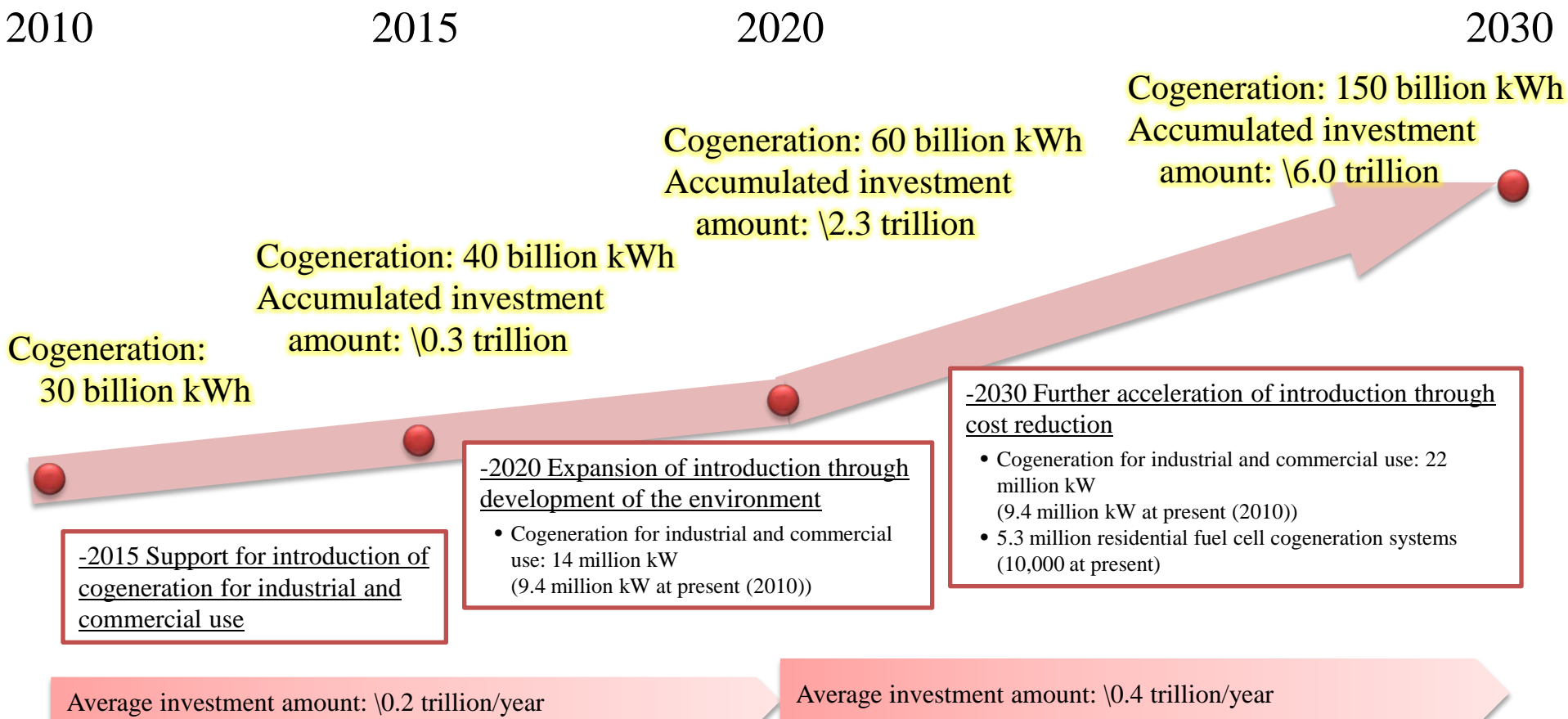
# “For Ensuring Stable Supply of Energy” – Strategic, Efficient Approach

## Global Picture of Natural Gas



# Image of Expansion of Cogeneration

from “Innovative Strategy on Energy and the Environment”

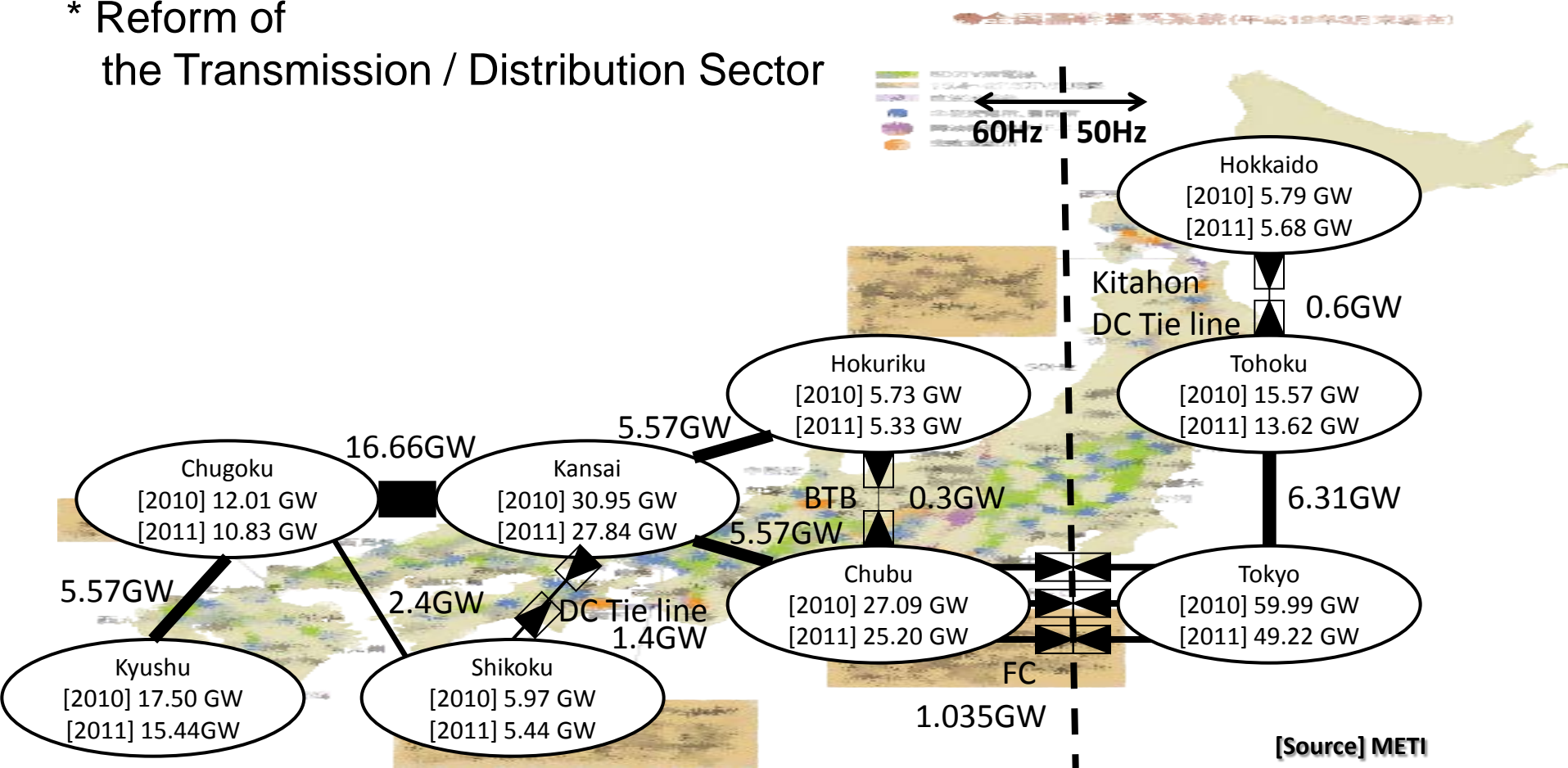


Note: The amount of investment in fuel cells for household use is recorded redundantly in energy saving and cogeneration.



# “Bold Implementation of Reform of Electric Power System”

- Expert Committee under METI issued “The Basic Direction of Electricity System Reform” in July 2012.
- The Committee will Conclude the Details by the End of 2012.
  - \* Full Retail Competition
  - \* Reform of the Generation Sector
  - \* Reform of the Transmission / Distribution Sector



# Verification of Costs of Power Sources

**Nuclear power** ↑  
More than about 9 yen

- Social costs such as accident risk costs emerge.
- **More than 9.0 yen/kWh**

**Coal, LNG** ↑  
**10-yen level**

- Rises due to fuel costs and CO2 emission countermeasures.
- Competitiveness equivalent to that of nuclear power.

**Wind and geothermal** ↓  
There are some cases with rates below 10 yen even under existing circumstances.

- Competitive even under existing circumstances if conditions are right.
- Mass adoption subject to restrictions below.
  - Wind power concentrated in Hokkaido/Tohoku areas, resulting in higher transmission costs.
  - Geothermal power concentrated in natural parks, resulting in some limitations.

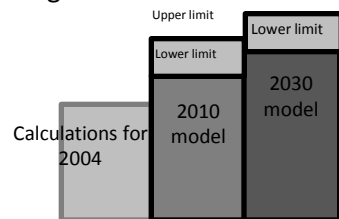
**Solar power** ↓ : 10 – 20 yen

- Price reductions possible with improvements in technology; competitive compared to oil thermal power.
- Mass adoption requires back up by auxiliary power or batteries when not generating power.

**Decentralized power sources**  
About 10–20 yen level

- Attractive to consumers, considering savings in electricity bills (Home: 20 yen; Business and industrial: 14 yen).

<<Legend>>



[Yen/kWh]

