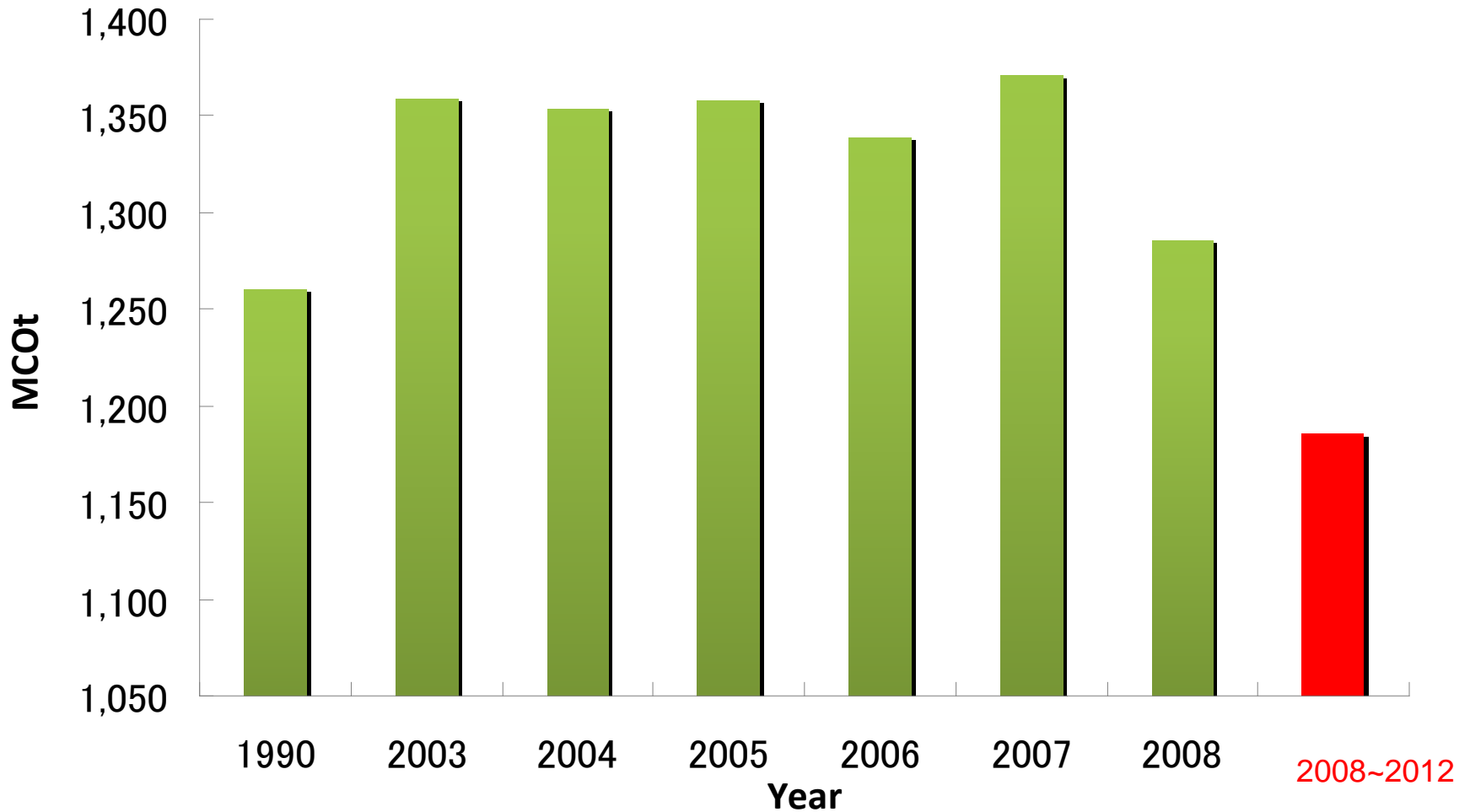


Outline

1. Status of Japan's CO₂ emission
2. Strategic Energy Plan
3. Promotion of Zero Emission
Power Sources
4. Policies and Challenges

Status of GHG in Japan



CO₂ Identity

$$CO_2 = \frac{CO_2}{E} \frac{E}{GDP} GDP$$

$$\therefore \Delta CO_2 = \Delta \frac{CO_2}{E} + \Delta \frac{E}{GDP} + \Delta GDP$$

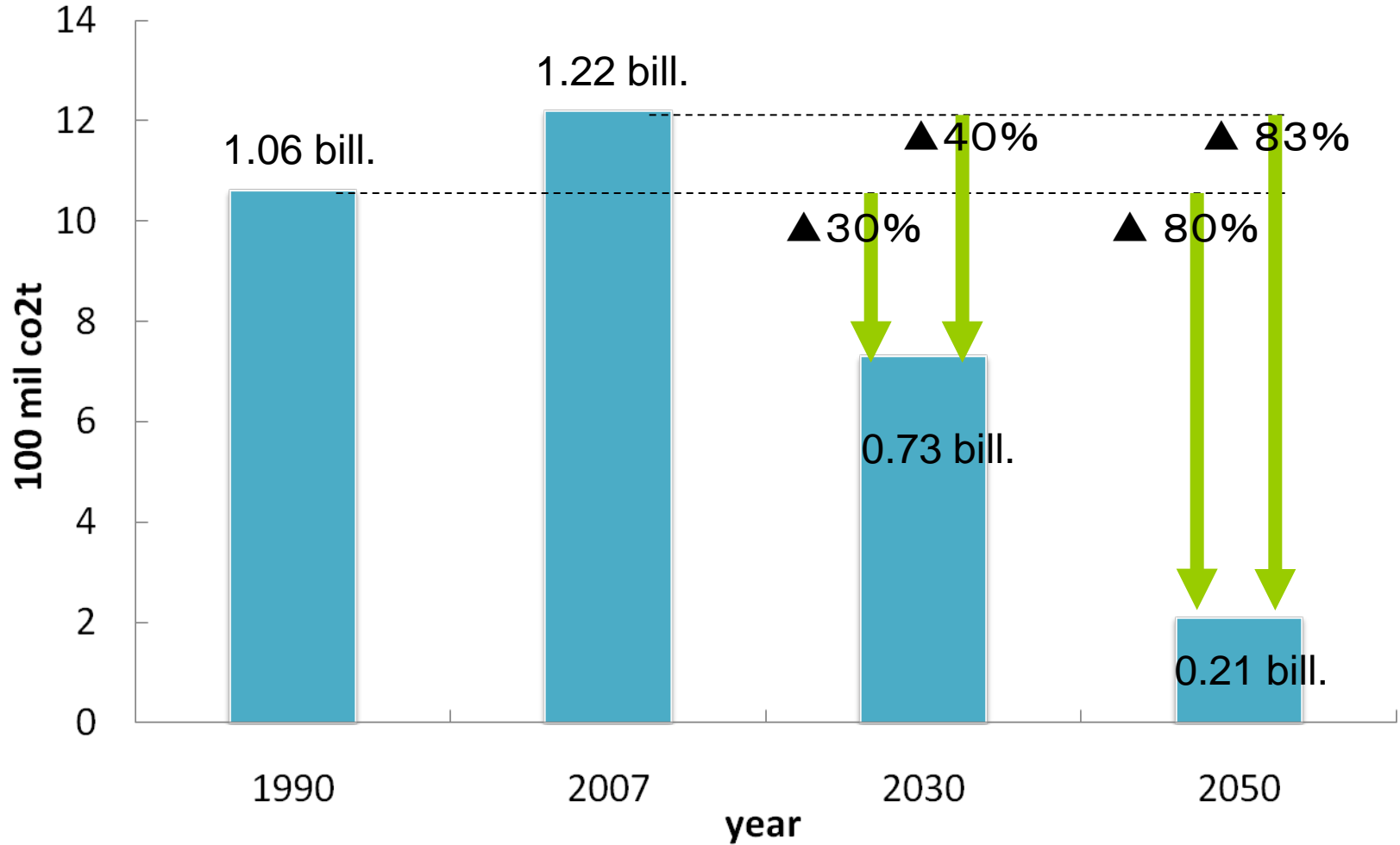
Decomposition of Changes in CO2

	1990-2000	2000-2005	2007-2008	2005-2020	
				Aso	Hatoyama
Δ GDP	+1.2	+1.3	-3.7	+1.1	+1.1
Δ CO2/ Energy					
Δ Energy /GDP	-0.2	-0.5	-2.8	-2.3	-3.7
Δ CO2	+1.0	+0.8	-6.5	-1.2	-2.6

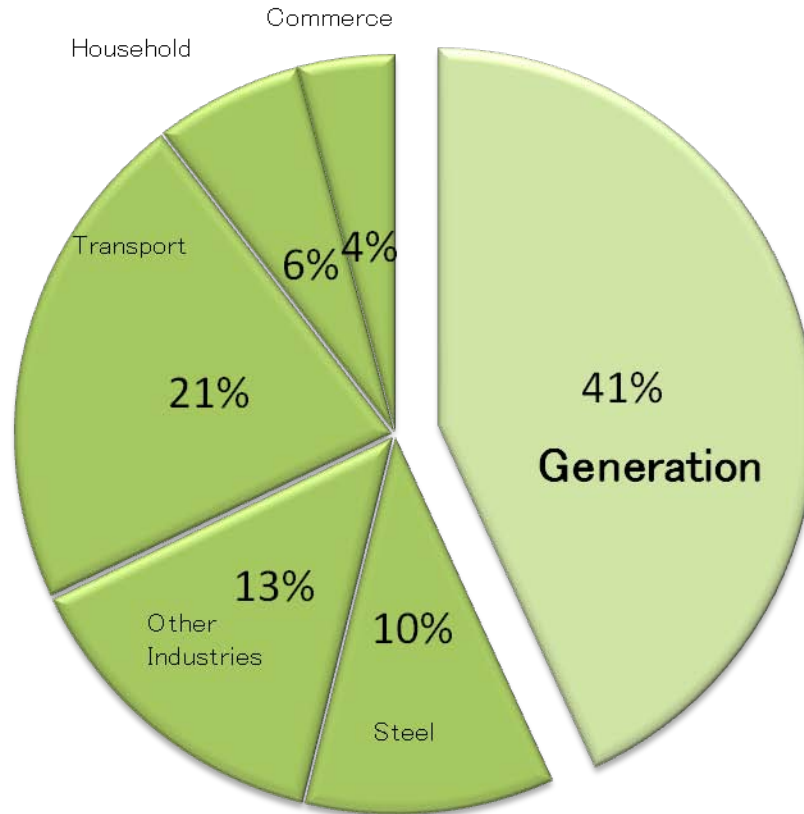
“The Strategic Energy Plan of Japan”

- Raising energy independence ratio from 38% to 70%
- Raising zero-emission power source ratio to 70%
- Cutting CO2 emission in half from the residential sector
- Maintaining and enhancing energy efficiency in the industrial sector at the highest level in the world
- Maintaining or obtaining major shares of global markets for energy-related products and systems.

Long-term CO2 Emission Reduction Path



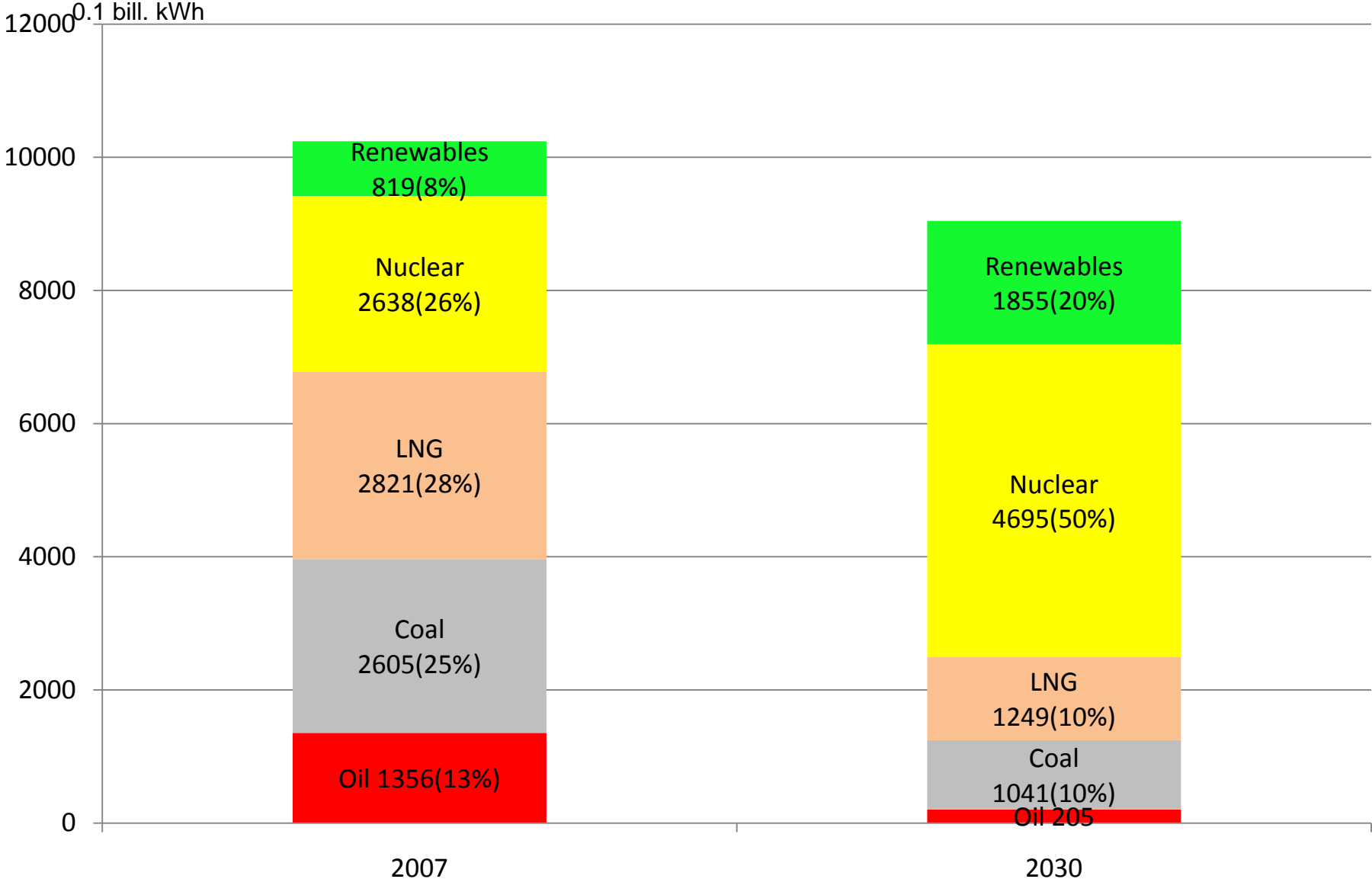
Electric Generation: Biggest CO2 Emitter



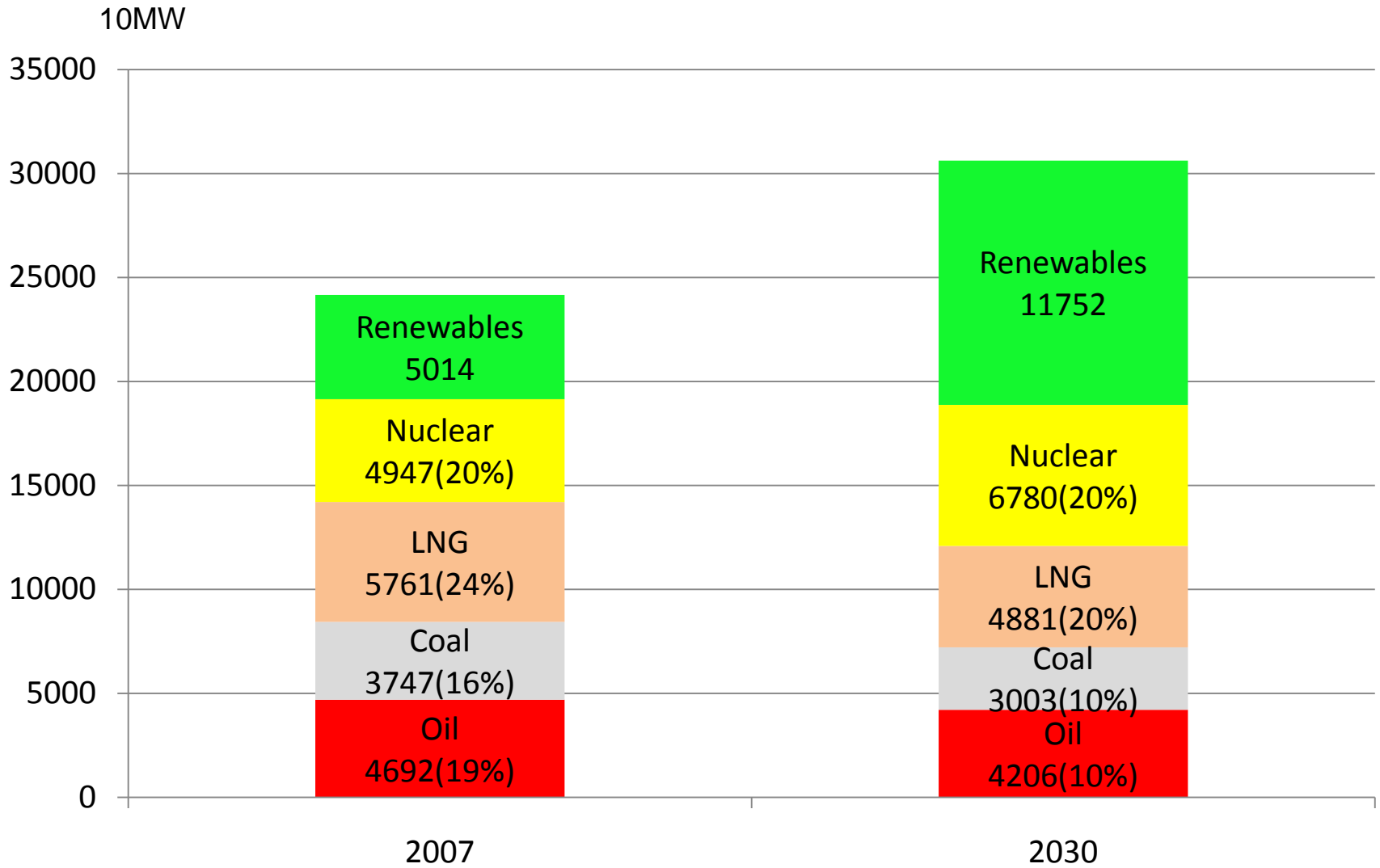
CO2 Mitigation by the Electric Utility Industry

- Supply Side
 - Use of non-fossil resources
 - Nuclear power
 - Renewable energies
 - Improving efficiency of electric power facilities
 - LNG combined cycle and coal-fired power
 - Reducing T & D loss

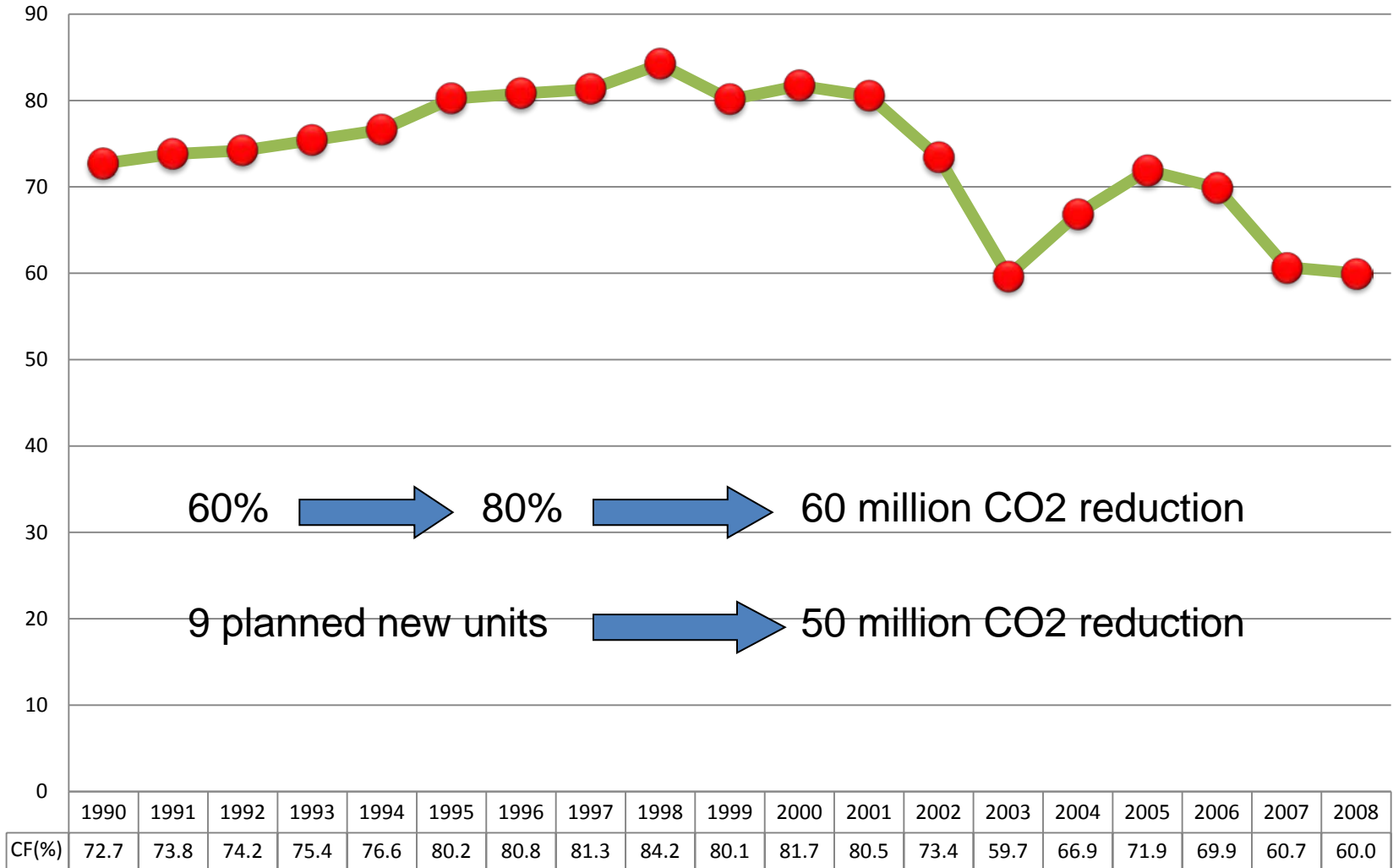
Generation Mix (kWh) 2007 & 2030



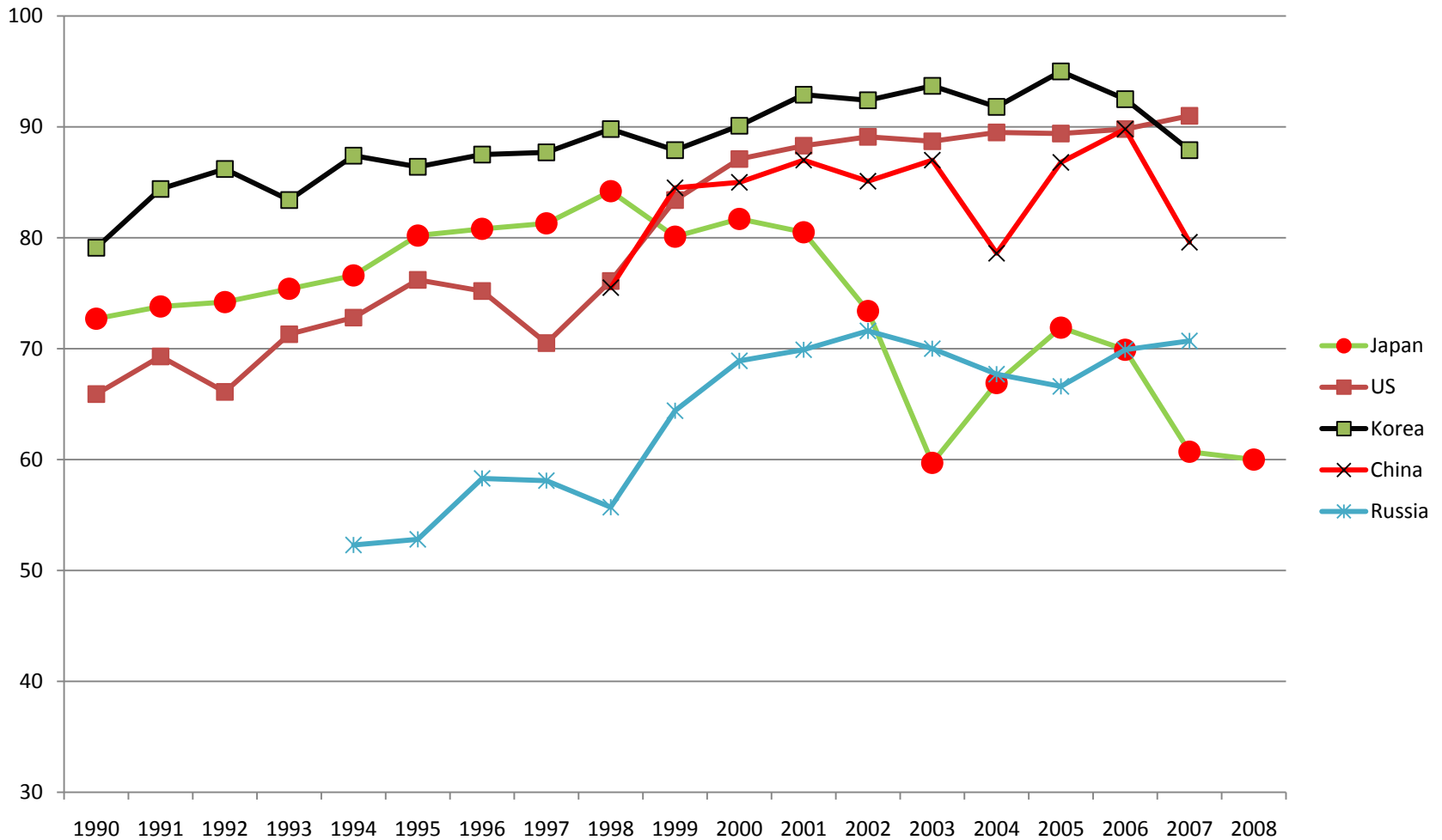
Generation Mix (kW) 2007 & 2030



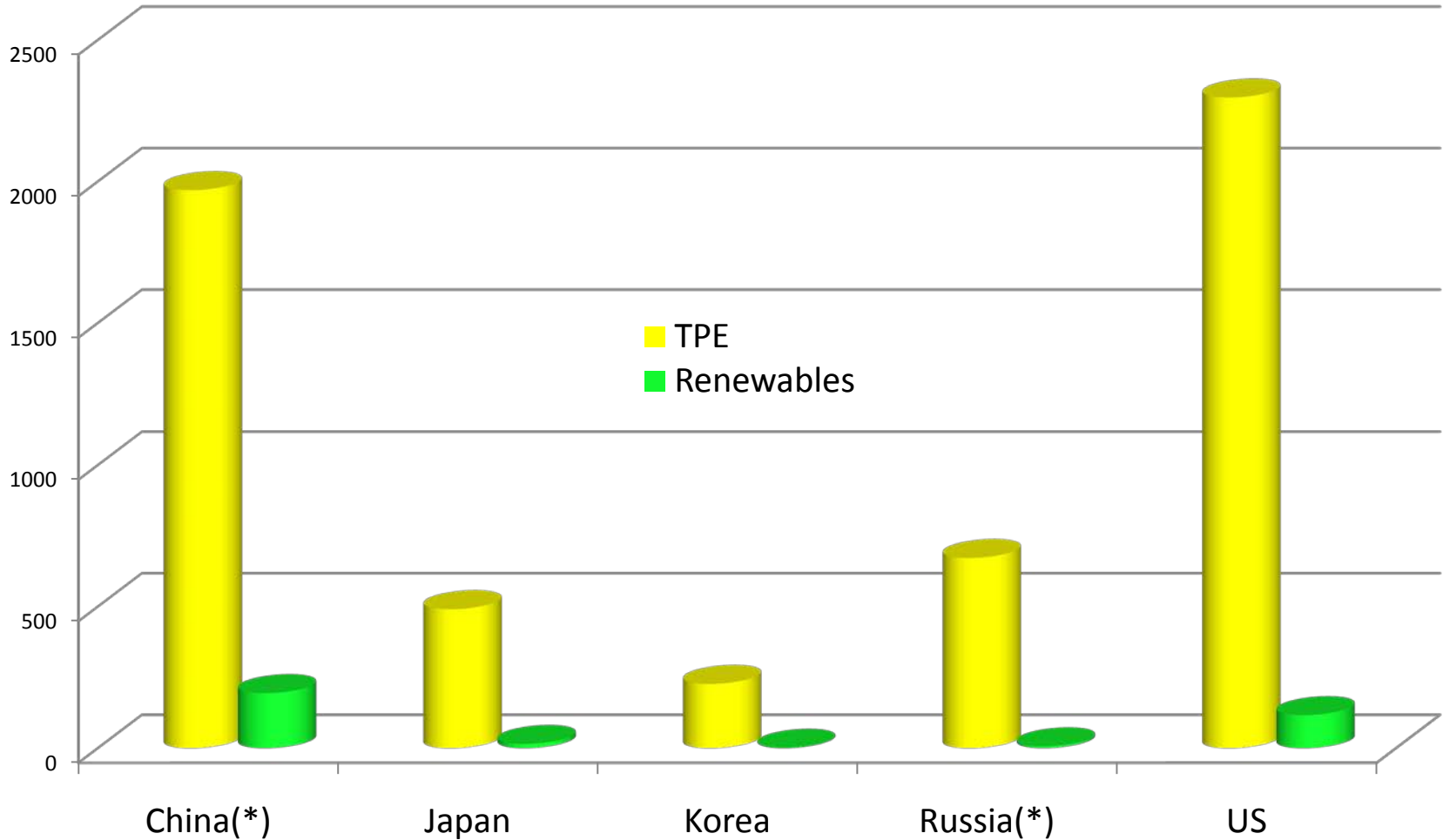
Nuclear Capacity Factor (1990~2008)



International Comparison of Nuclear Capacity Factor



Renewables in Total Primary Energy Supply (2008)



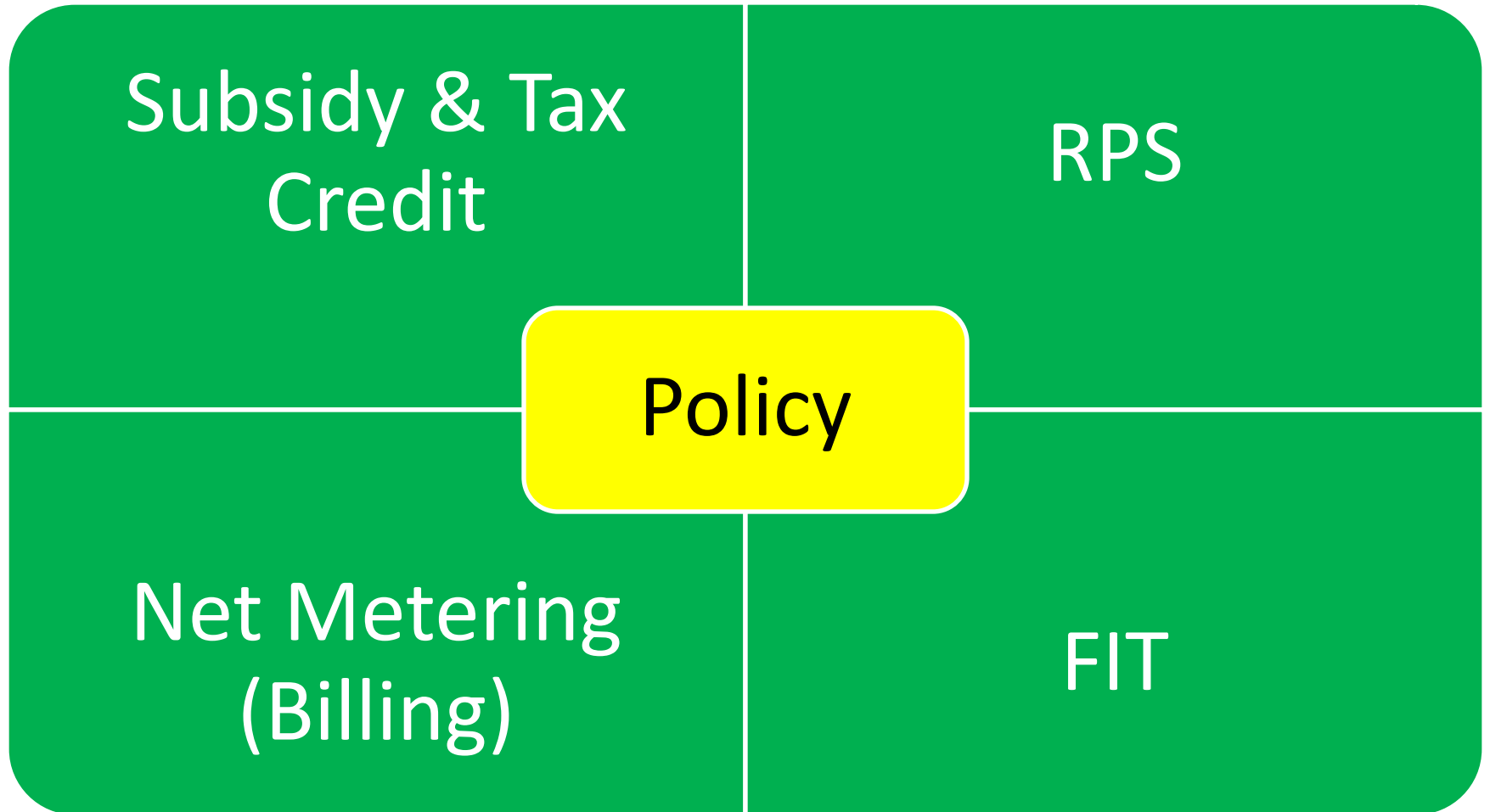
Source: OECD & Non-OECD Energy Balance

Note: (*) 2007 Data

Promoting Renewable Energies

- Target for renewable capacity in 2020 is in the range of 32,000MW to 35,000MW.
- CO2 reduction by expansion is expected to be 24 -29 million ton.
- Renewable market is estimated to be 10 trillion yen.
- Cost of renewables for average household will be 150 -200 yen per month.
- Unique to Japan is promotion of diffusing rooftop PV. PV capacity in 2020 will be about 28,000MW

Green Energy Promotion Policies



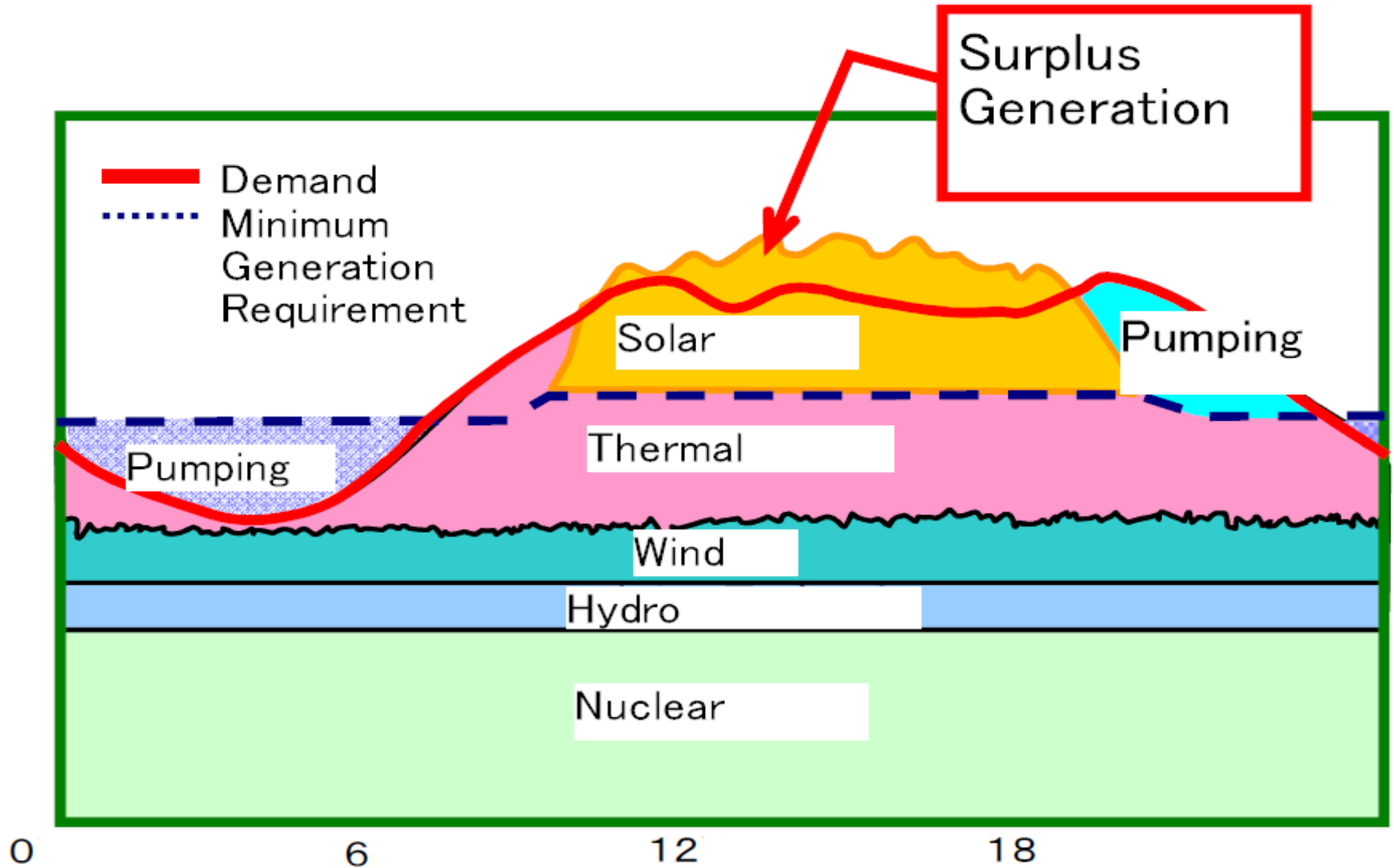
Feed In Tariff

- FIT has been introduced in Nov. 2009.
- The purpose is to accelerate PV development and its diffusion.
- Electric utilities are required to purchase at \48 from residential PV and \24 from non-residential PV.
- Purchase period is ten years. Purchase price is fixed for 10 years.
- Eligible customer is residential and non-residential but only for excess power.

Expansion of FIT System

- Eligible Renewables: PV, Wind, Medium and Small Hydro, Geothermal, Biomass
- Purchase price except PV will be in the range of 15 yen ~20 yen. The price for PV is to be determined.
- Purchase period will be 15 ~ 20 years. For PV, it will be 10 years.

What If Generation Exceeds Load ?



How much cost?

	Trillion Yen	Billion Dollar
Battery on grid side	16.2	180
Battery on customer side	45.9-57.2	510-630
Controlling power output	3.67	40

Thank you for your attention!