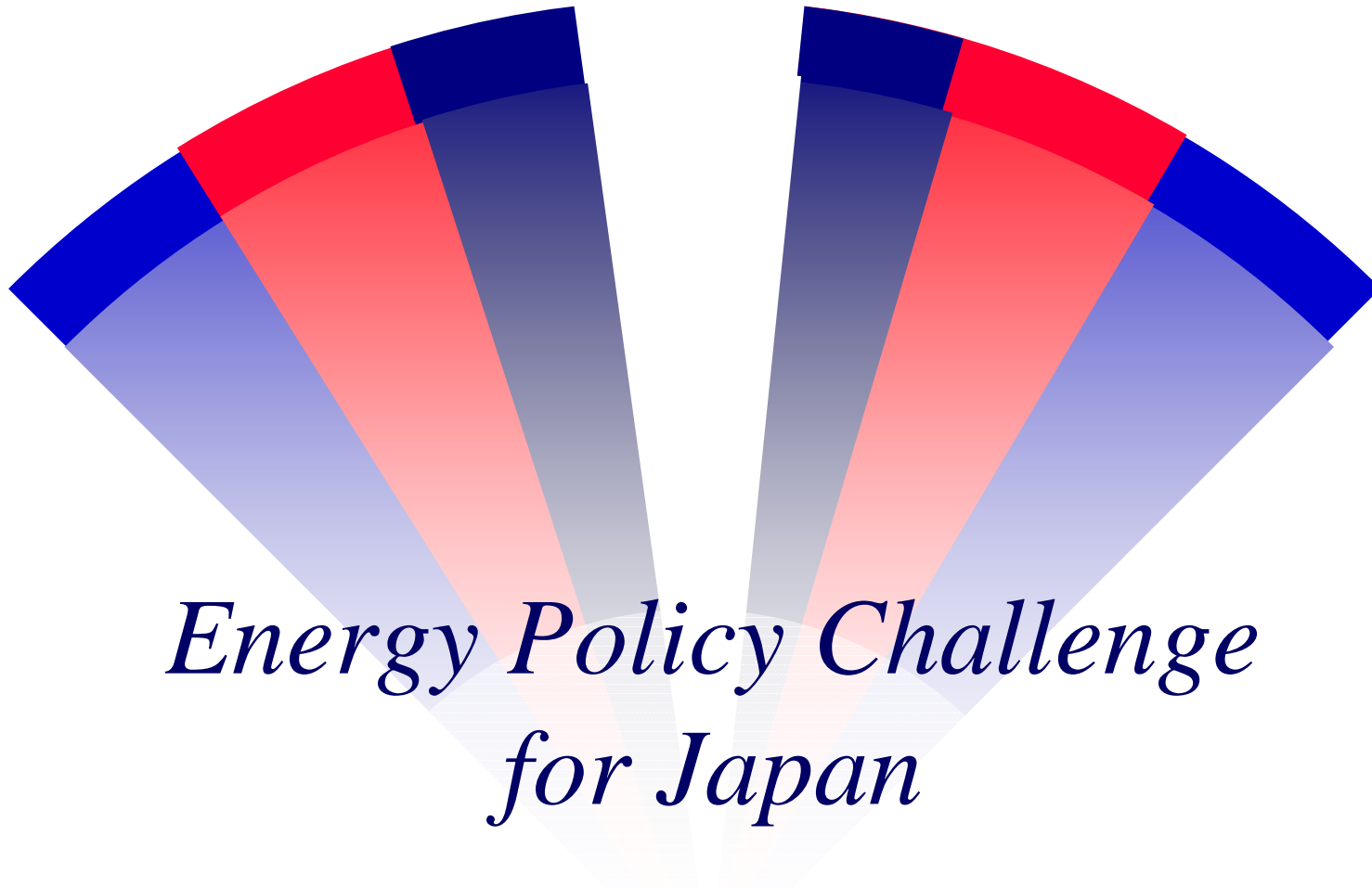


Colorado- Japan Energy Forum



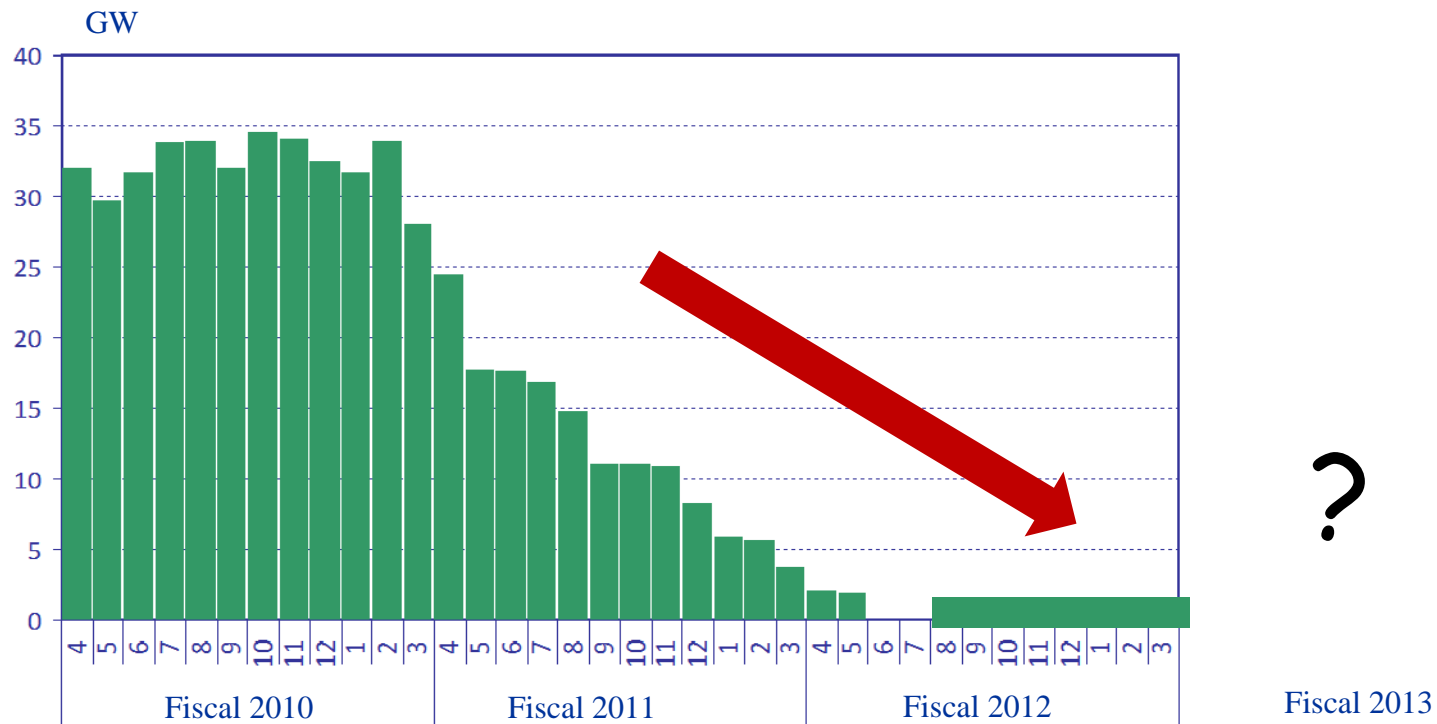
Energy Policy Challenge for Japan

Tokyo, Japan, 13 June 2013

Yukari YAMASHITA

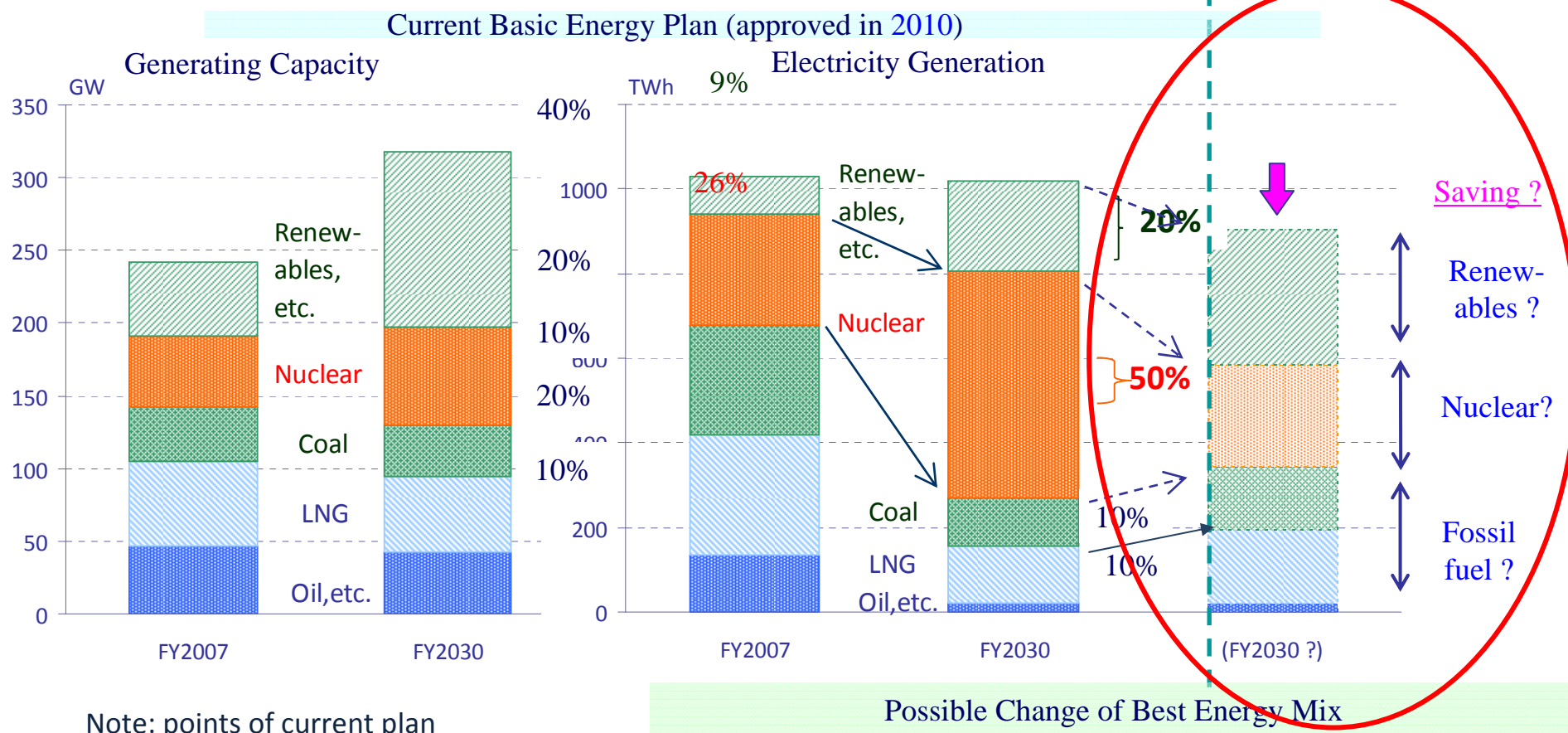
The Institute of Energy Economics, Japan

Nuclear Plants' Restart in FY2013 still Unknown



Need to revise Energy Mix Plan - post Fukushima -

- Build 14 new nuclear reactors and raise utility factor from 60% to 90%
- Introduce 2.4 times as much renewable (15 times for non-hydro renewables)
- Increase zero-emission electricity share from 34% to 70%



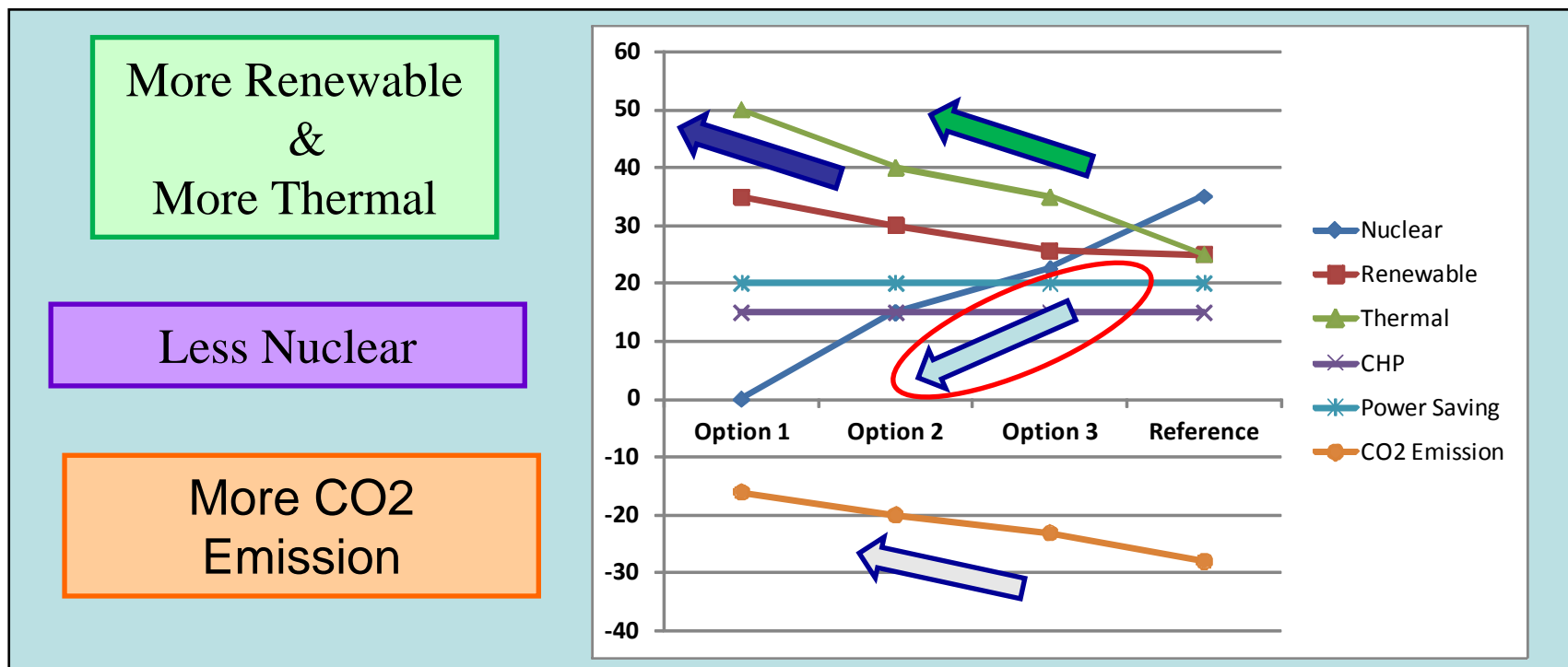
Note: points of current plan

- ① raise self-sufficiency of energy supply : 38 -> 70
- ② reduce emissions by 30% in 2030 compared to 1990 level

Four Options Discussed for Power Generation Mix

at the National Energy Committee (7th June 2012)

	Nuclear	Renewable	Thermal	CHP	Power Saving	CO2 Emission	Electricity Tariff Increase
Option 1	0%	35%	50%	15%	20%	-16%	99-102 %
Option 2	15%	30%	40%	15%	20%	-20%	71 %
Option 3	20-25%	25-30%	35%	15%	20%	-23%	54-64 %
Reference	35%	25%	25%	15%	20%	-28%	38-39 %



What are important in choosing Best Energy Mix?

1) Comprehensive Perspective

- S+3E : **Safety** + **Energy Security** + **Efficiency** + **Environment**
- No Perfect Energy exists for Japan without domestic energy resource
- Energy Mix Portfolio:

Well-balanced Mix of 4 power gen technologies

(Nuclear, Renewable, Fossil Fuels and Cogeneration)

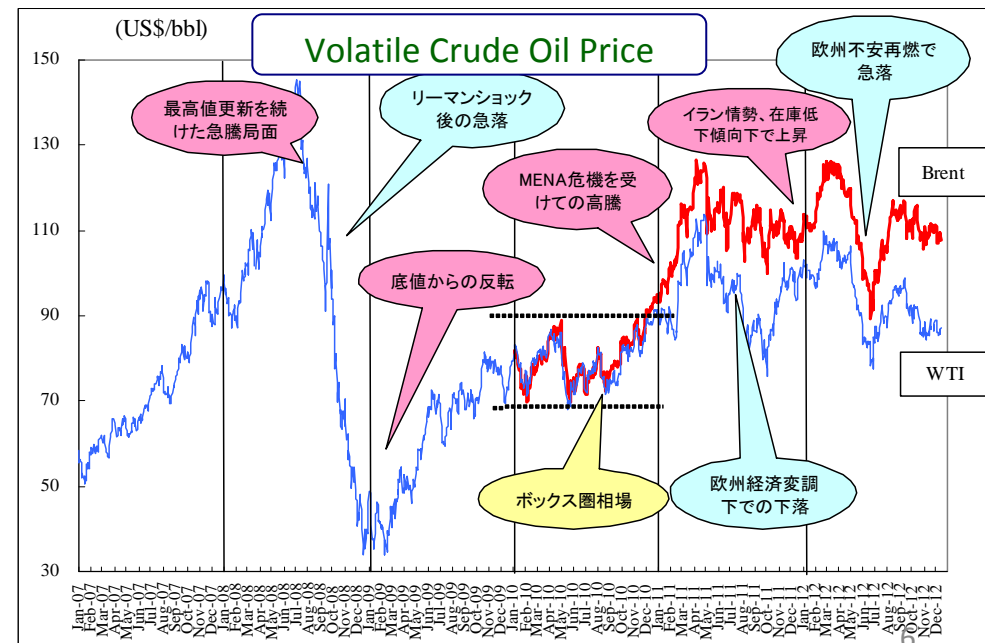
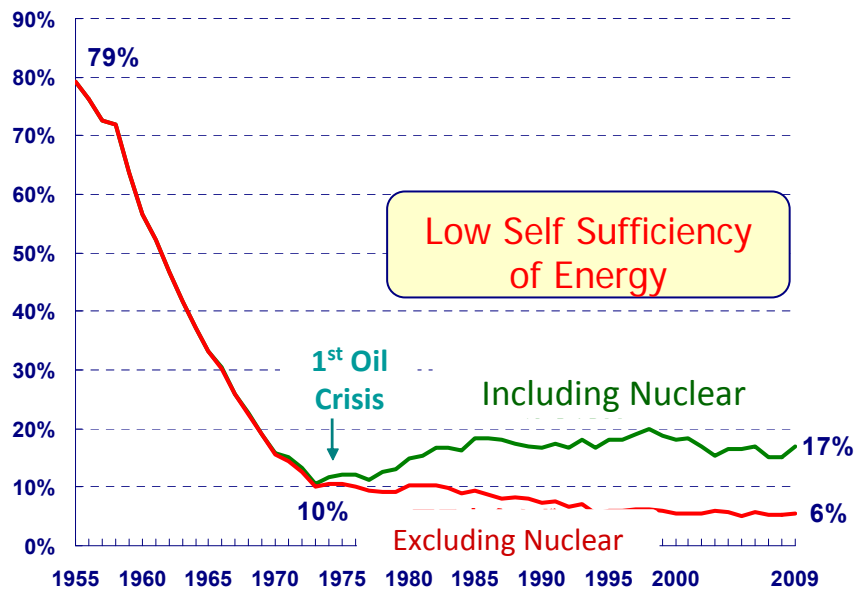
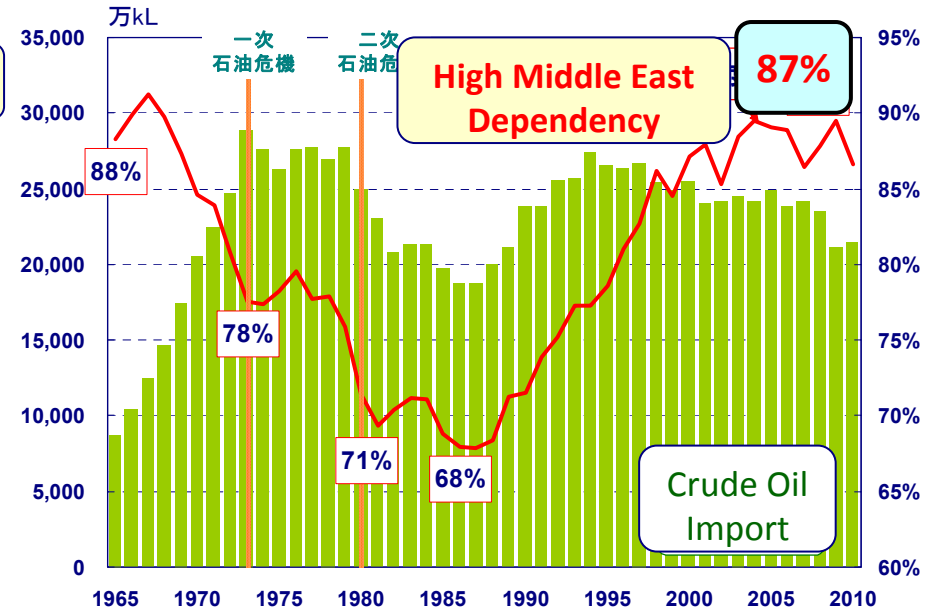
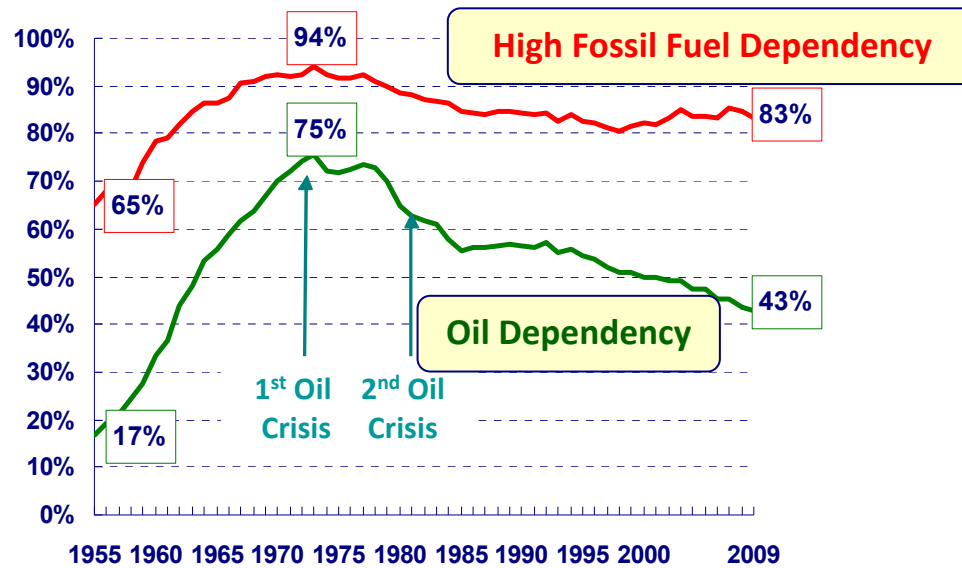
in addition to **enhanced energy efficiency** is essential.

● "Nuclear" : "Renewable" : "Thermal Power" : "Cogeneration"
 = **25%** : 25% : 35% : 15%

2) International Perspective

- Germany will phase out Nuclear but **with EU power network**
 (10 times more supply than German power demand)
- **Nuclear** is expected to **grow** in **China, India**, etc.
 : 4—7 folds in coming 20 years (up to 160—260 units)

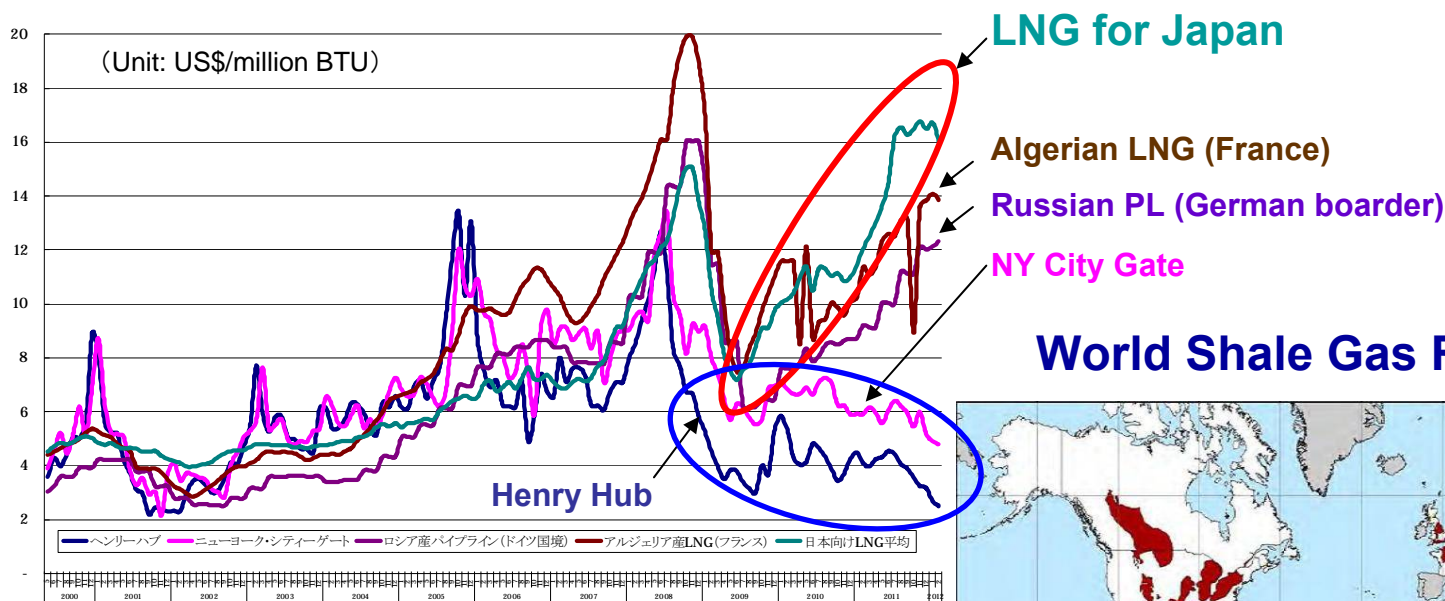
Weakness of Japan's Energy Security



Source) IEEJ "EDMC Handbook of Energy & Economic Statistics", IEA, etc.

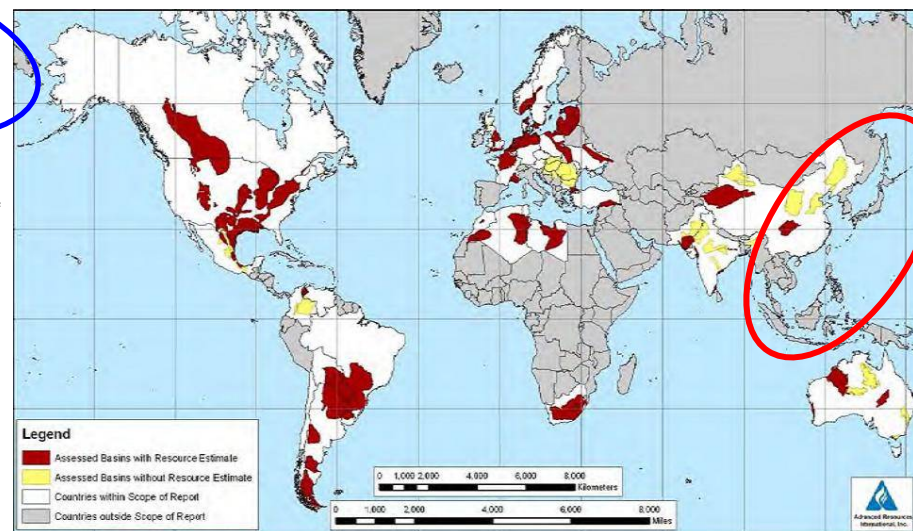
Facing Higher Gas Prices

Comparison of Regional Natural Gas Prices



(Source) Compiled from Trade Statistics (Japan), US/DOE, Energy Intelligence data

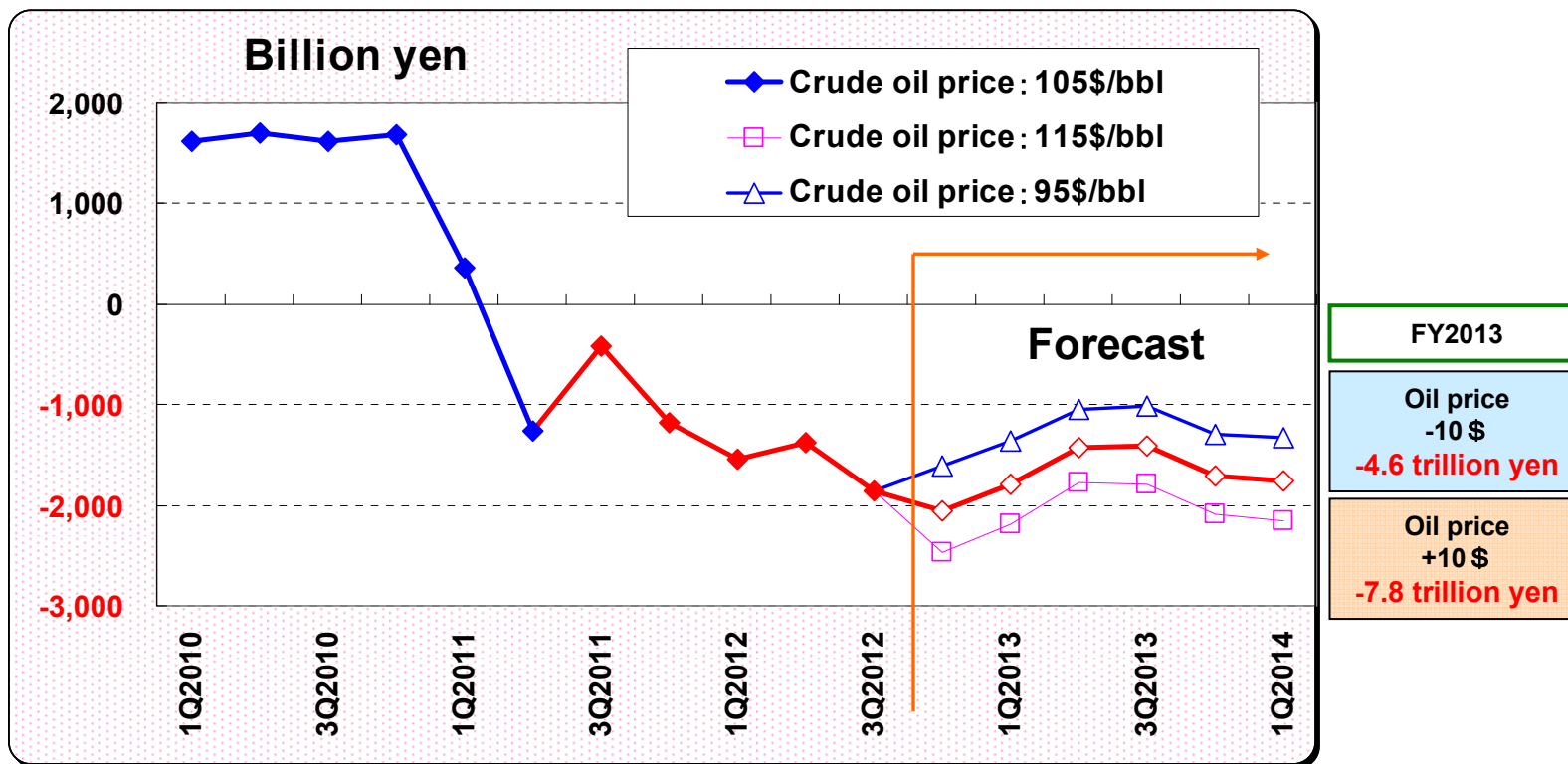
World Shale Gas Resources



(Source) US/DOE study, World Shale Gas Resources: An Initial Assessment of 14 Regions Outside the United States, APRIL 2011, prepared by Advanced Resources International (ARI) for the United States' Energy Information Administration (EIA).

Worsening Trade Deficit

◆ Balance of trade



(Trillion yen)	Actual		Forecast	
	FY2010	FY2011	FY2012	FY2013
Export	67.8	65.3	63.4	63.6
Import	62.4	69.7	70.5	69.9
Fossil Fuels	18.1	23.1	24.2	23.4
Balance of Trade	5.4	▲ 4.4	▲ 7.1	▲ 6.3

◆ Export and Import

**trade deficit
(3 years in a row)**

Source : Historical data from Ministry of Finance, forecasts from IEEJ.

IEEJ (Short-term Outlook (Dec. 2012))

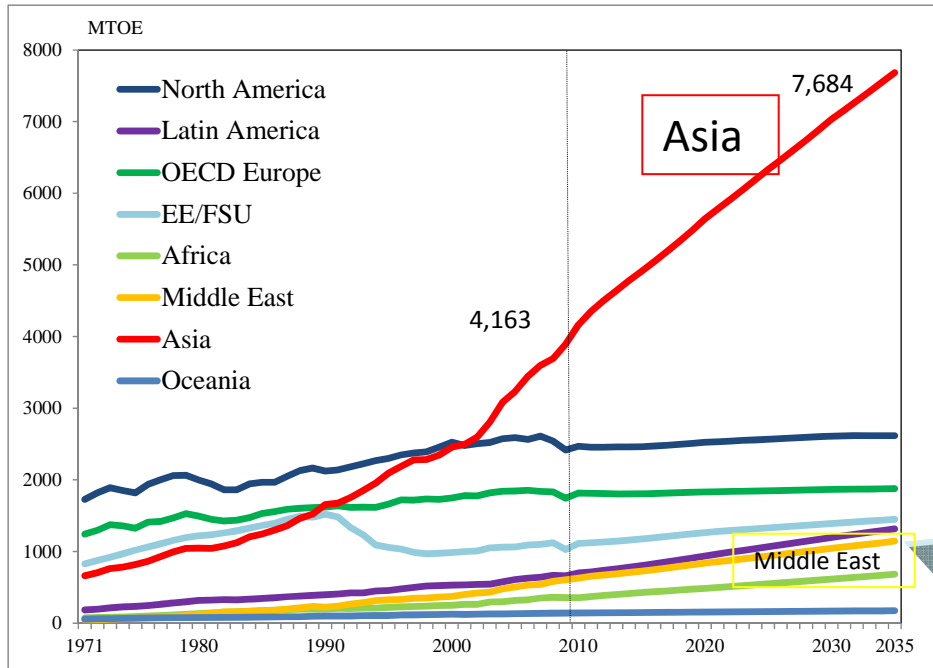


Relevance of Japan's Energy Challenge to the ROW

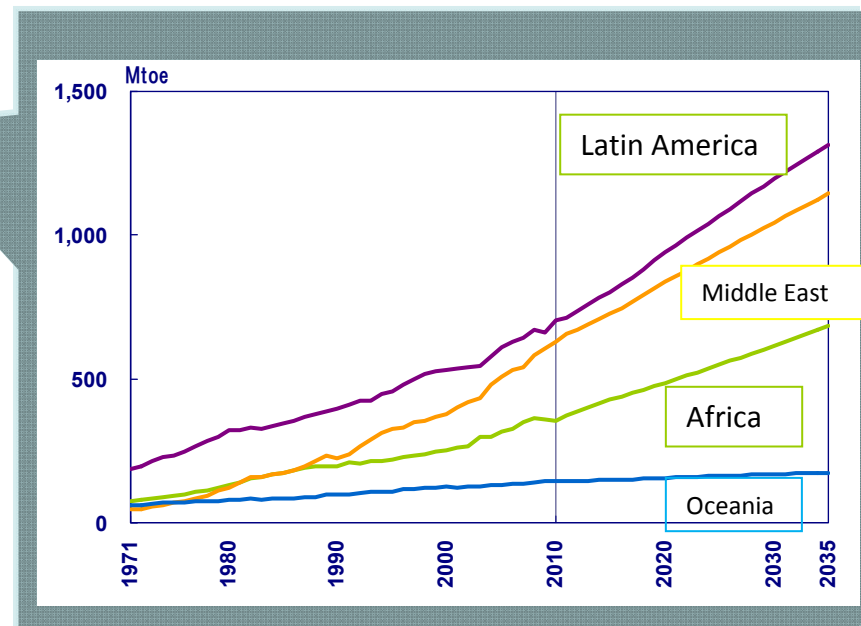
Energy Demand in Asia Will Continue to Grow

Reference

Outlook for Energy Demand by Region



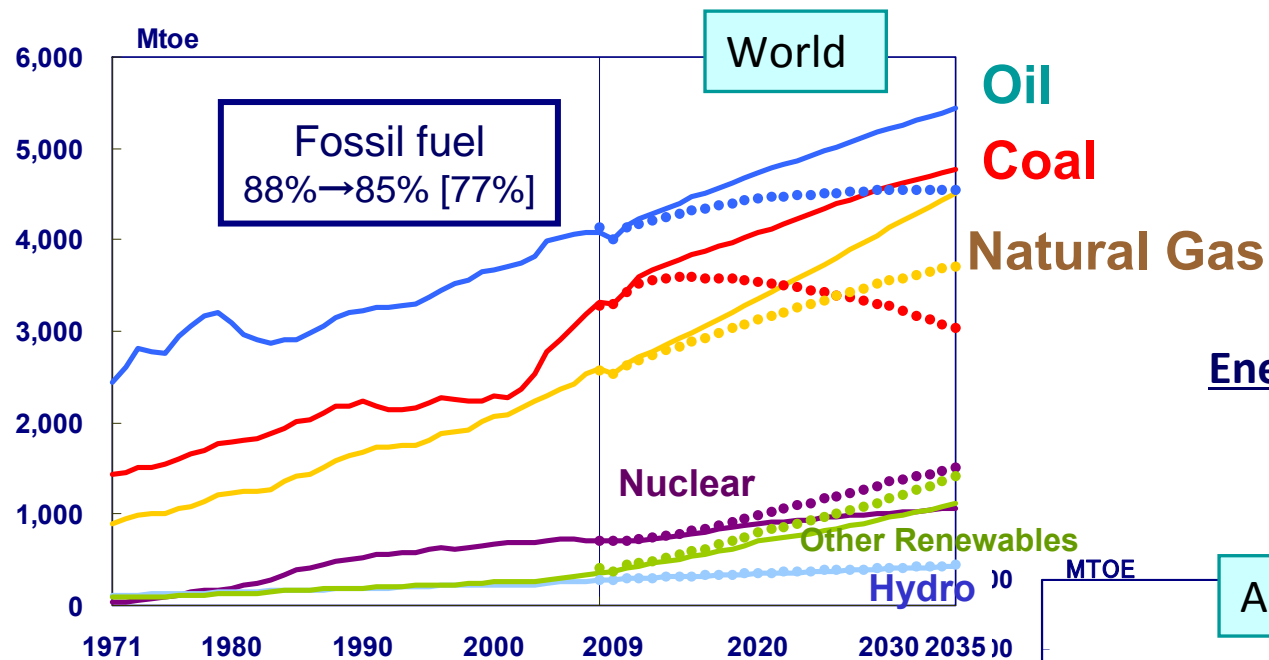
So is the case for the other regions!



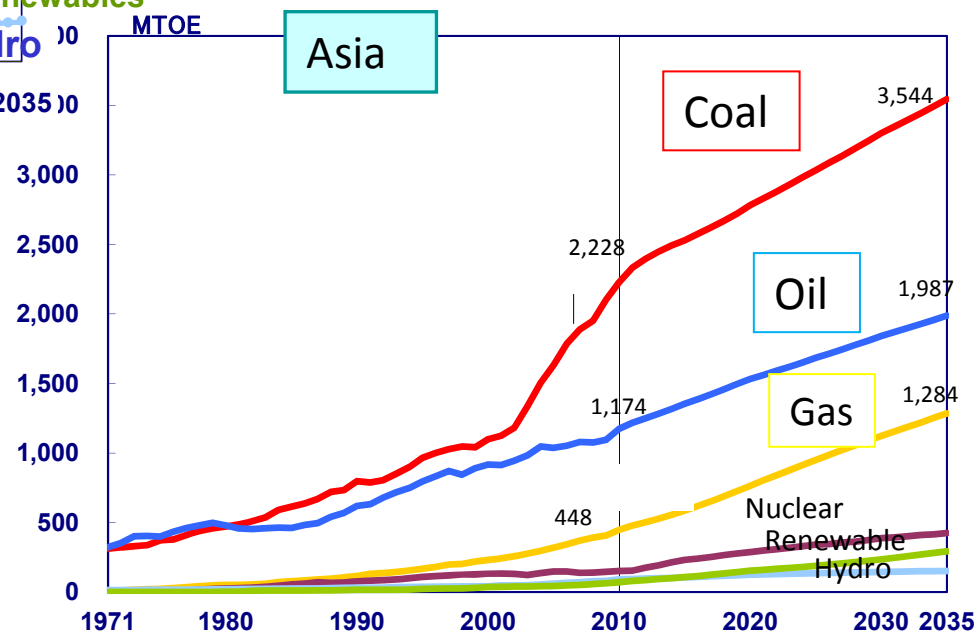
Source: IEEJ (Asia/World Energy Outlook 2012)

Fossil Fuels (Oil, Coal, Gas) Will Remain Key Energy

Reference
Adv. Tech.



Energy Demand by Source



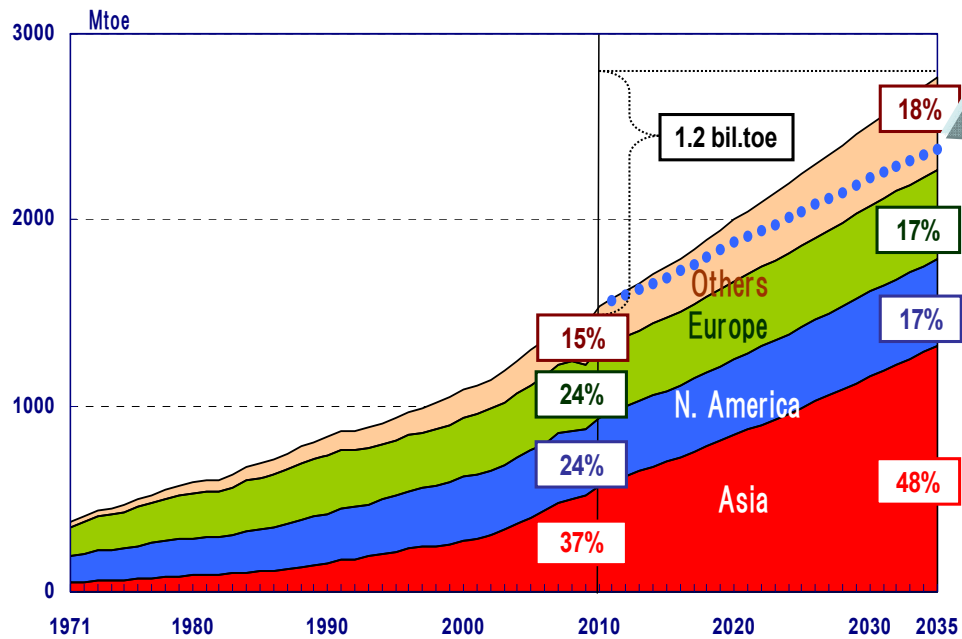
Source: IEEJ (Asia/World Energy Outlook 2012)

Robust Increase of Electricity

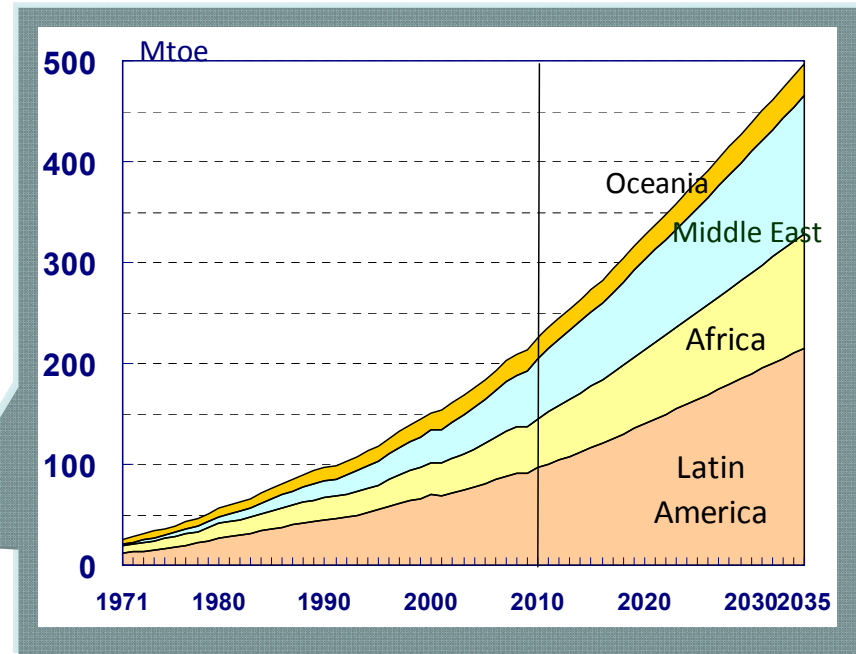
Reference



Outlook for Electricity Demand by Region



Outlook for Electricity Demand (ROW)



From “3E” to “3E + S + M”

Energy Security

Recent unstable geopolitical situations weaken Japan’s energy security.

Environment

Global climate change issues remain important.
➔ Cleaner Use of Fossil Fuels & Tech. Innovation

Economic Efficiency

Lower cost renewable energy and utilization of nuclear energy with further EE&C.

+

Safety

How to re-establish confidence in nuclear energy.

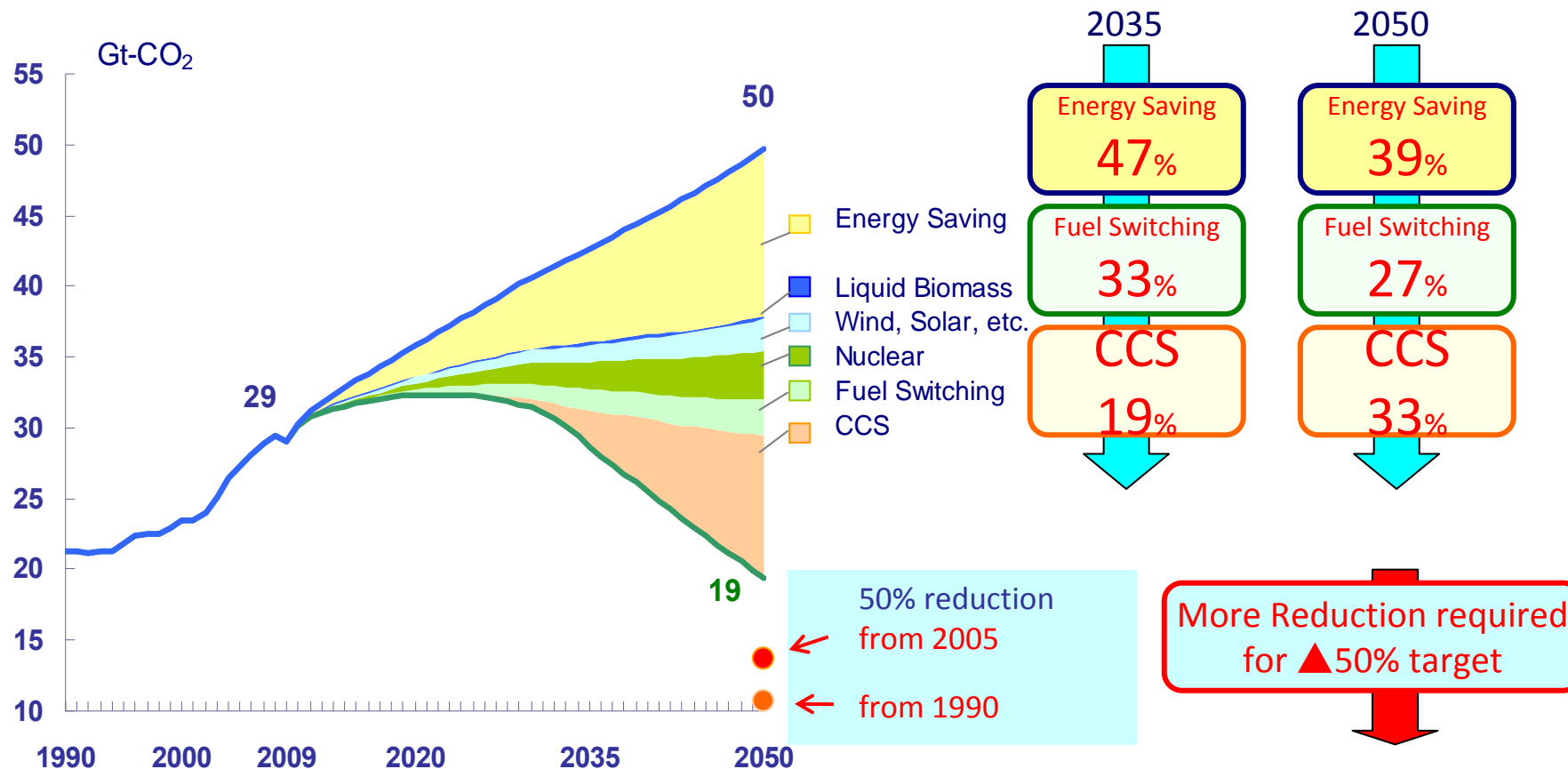
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Macro Economic Impact

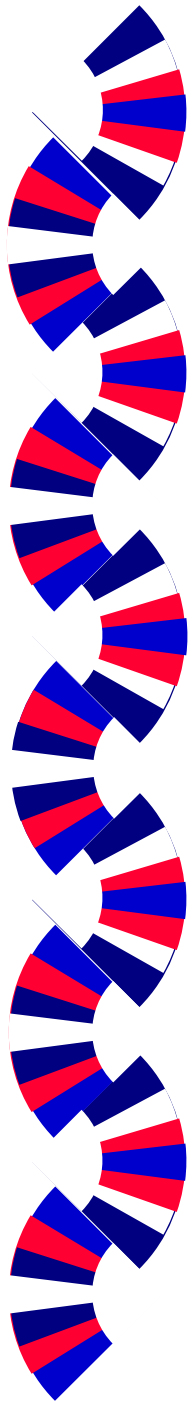
Appropriate “Energy Mix” minimizes bad influence on macro economy.

CO2 Emissions Reduction by Technology (World)

Reference
Tech. Adv.



■ For 50% reduction of global CO2 emission, additional long-term measures are necessary and development of innovative technology is essential.



Thank you

IEEJ Asia/ World Energy Outlook 2013
To be announced in **October!**