Emission Projection for 2050 in Developing Countries

- Viewed from Energy Use -

UNFCCC COP18 Side Event

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“Energy Mix” Debate in Japan : Relevance to ROW

1）Comprehensive Perspective

- **No Perfect Energy** exists for Japan without domestic energy resource
- 3E+S : **Energy Security ＋Efficiency ＋Environment ＋ Safety**
  - More Efficient Energy Use
  - Cleaner Use of Fossil Fuels + Safer Nuclear Energy Technology
  - Lower Cost Renewable Energy
- Increasing use of electricity requires:

➔ **Well-balanced Mix** of 4 power gen technologies

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

”**Nuclear**” :”Renewable” :”Thermal Power” :”Cogeneration”

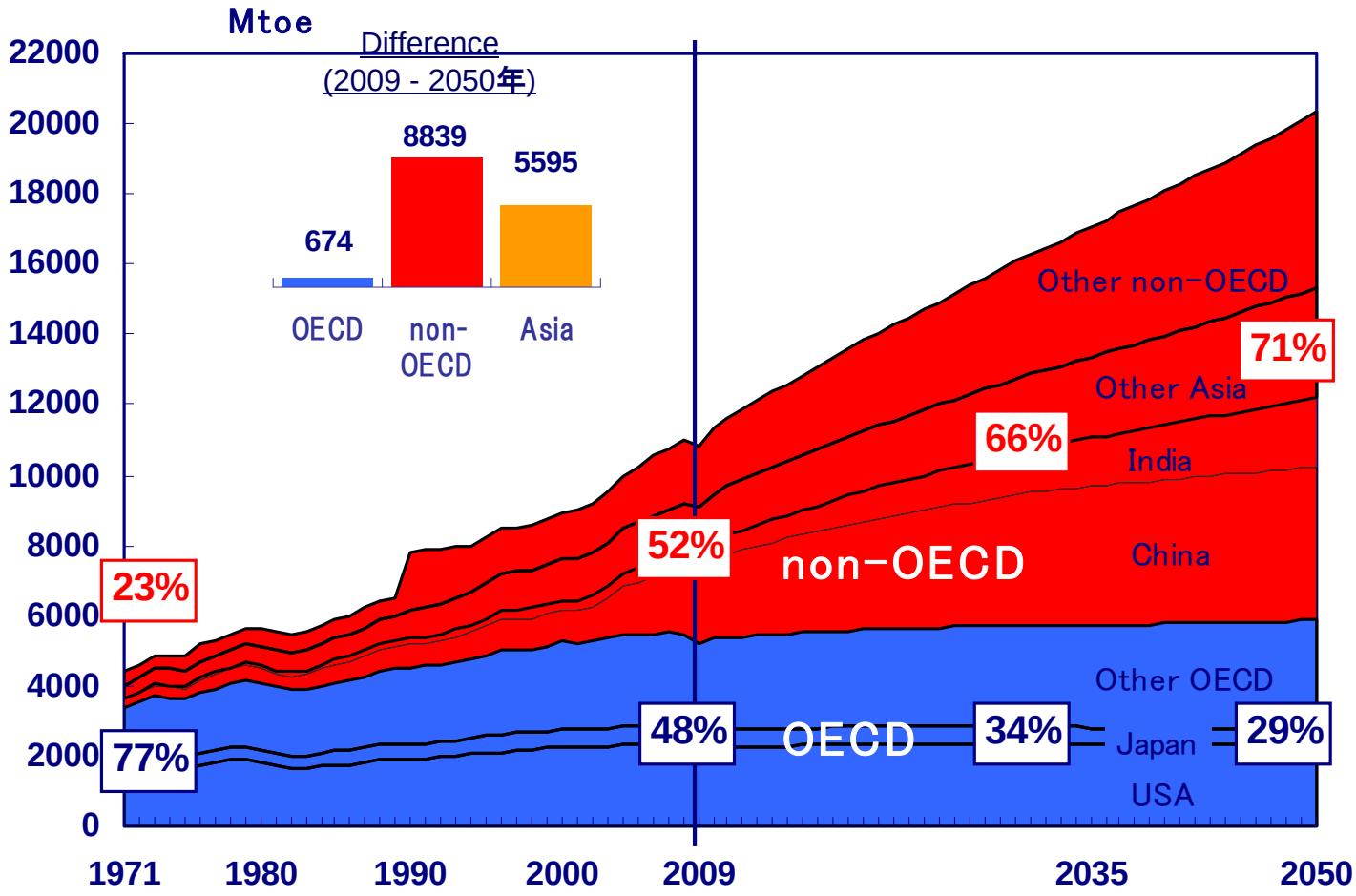
2）Long-term Perspective

3）International Perspective

➔ **Japan’s Energy Mix Debate has a relevance to the Rest of the World**

World Energy Demand Will Grow

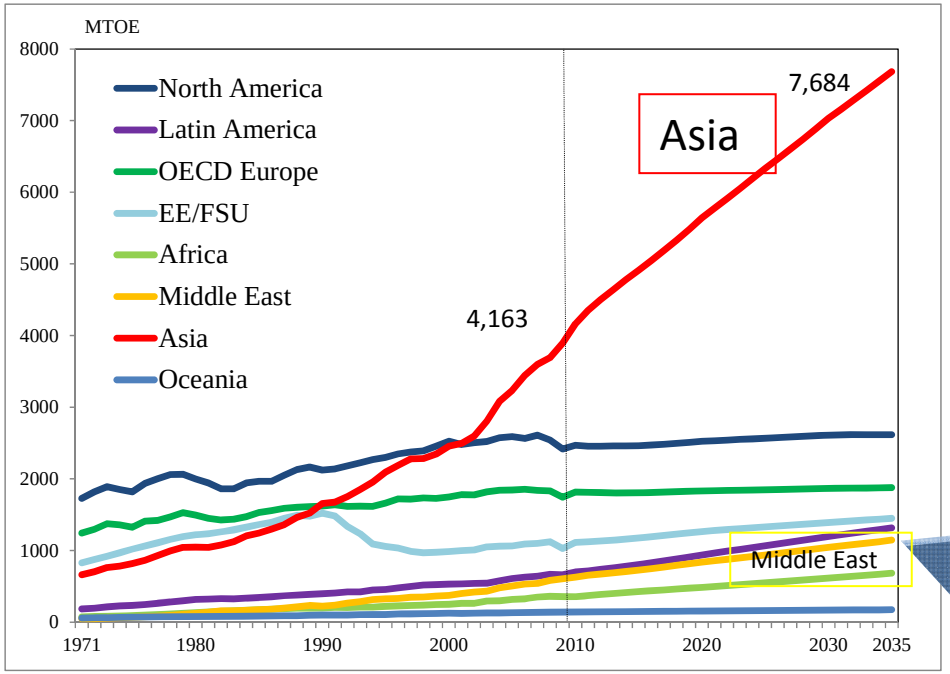
Reference



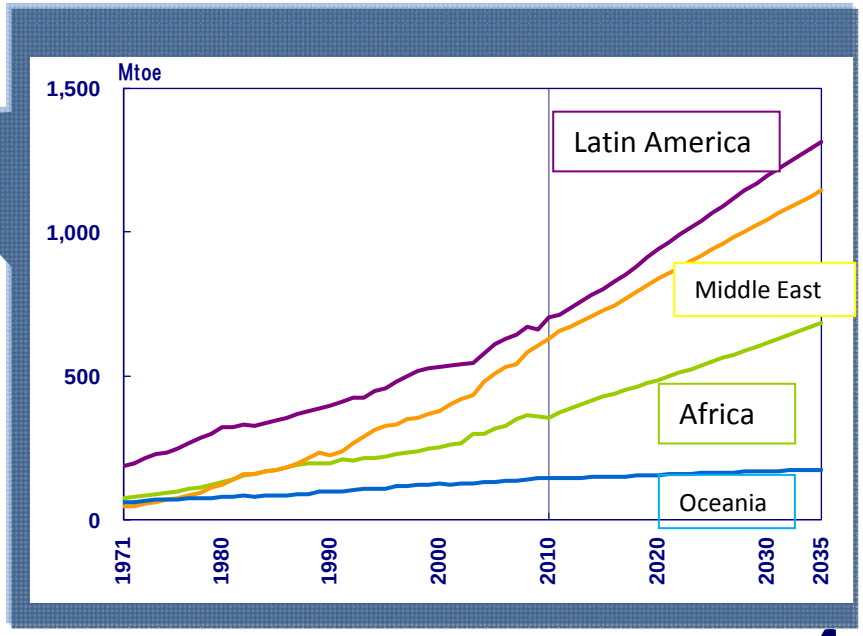
Energy Demand in Asia Will Continue to Grow

Reference

Outlook for Energy Demand by Region



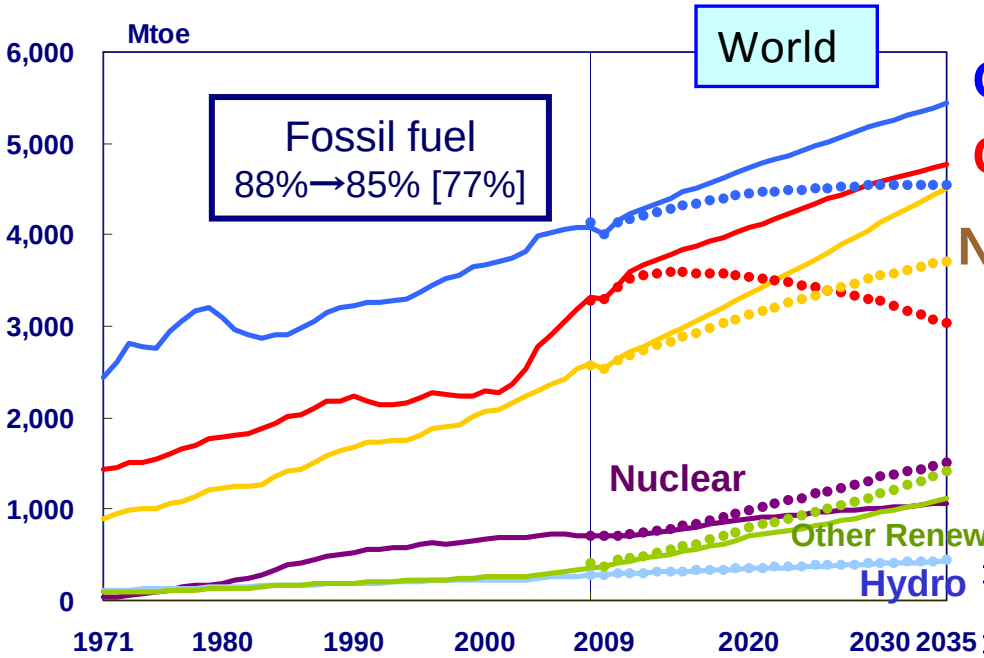
So is the case for the other regions!



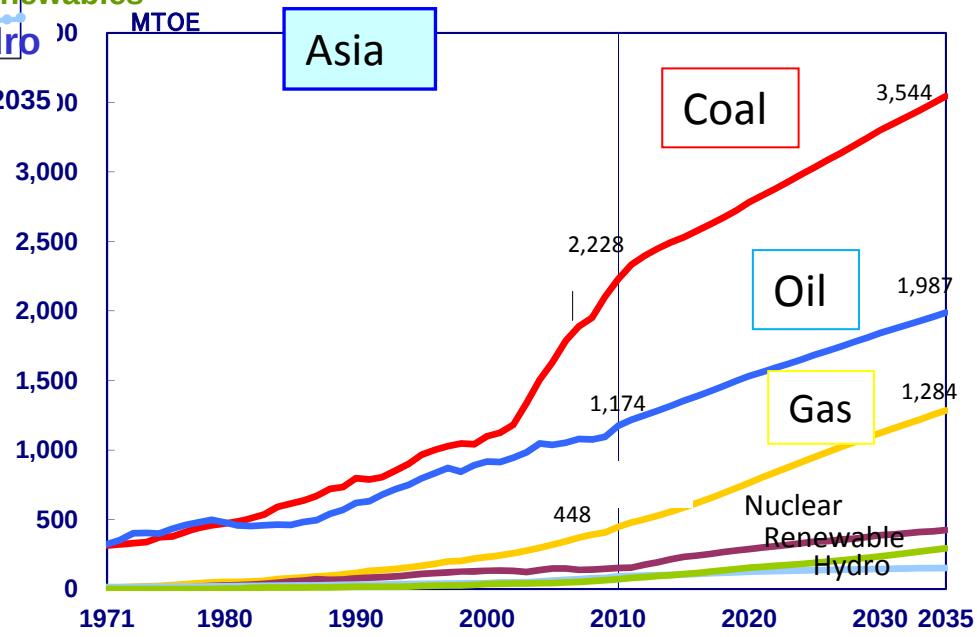
Source: IEEJ (Asia/World Energy Outlook 2012)

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

Reference
Adv. Tech.



Energy Demand by Source

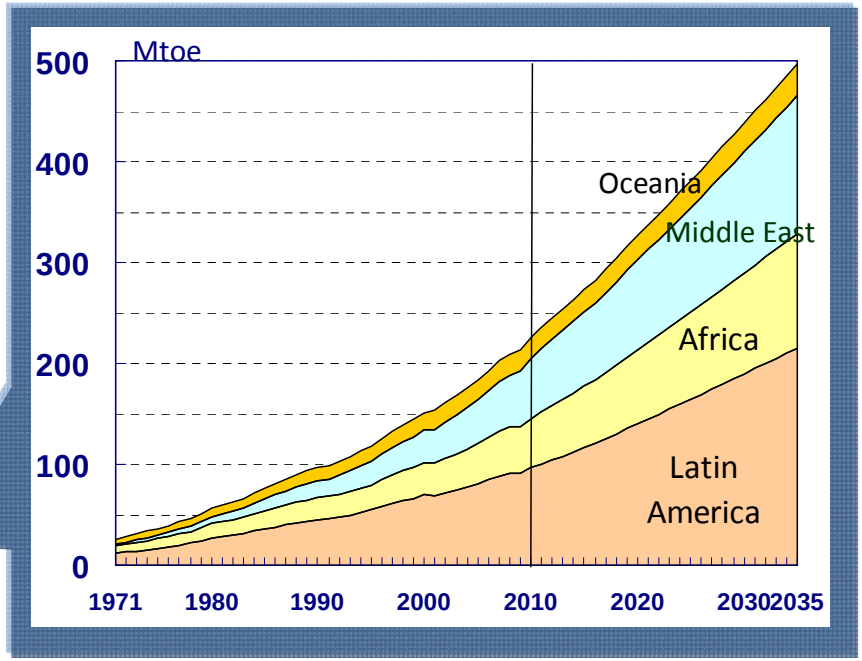


Source: IEEJ (Asia/World Energy Outlook 2012)

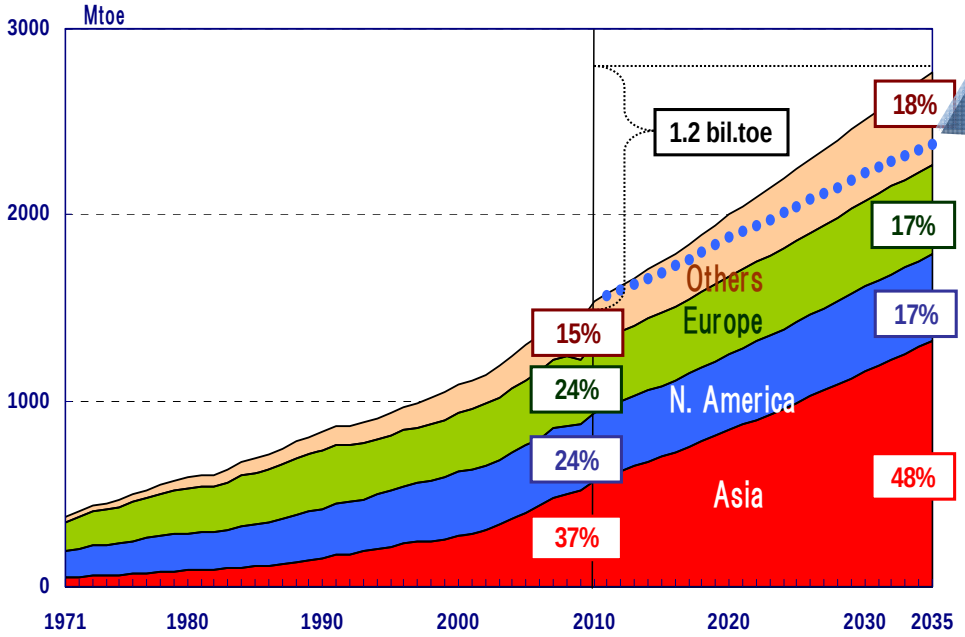
Robust Increase of Electricity

Reference

Outlook for Electricity Demand (ROW)



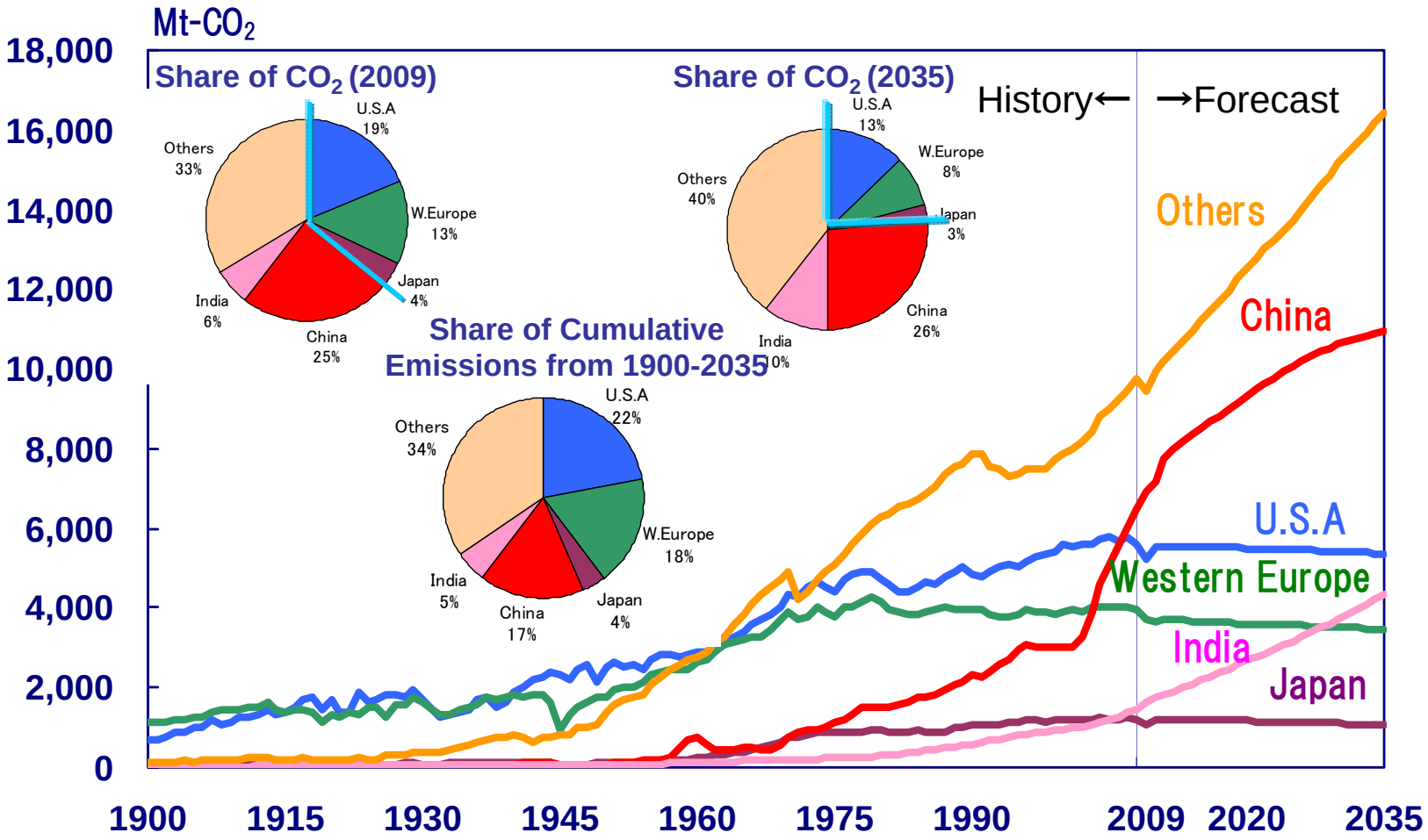
Outlook for Electricity Demand by Region



Source: IEEJ (Asia/World Energy Outlook 2012)

World CO_2 Emissions are Increasing

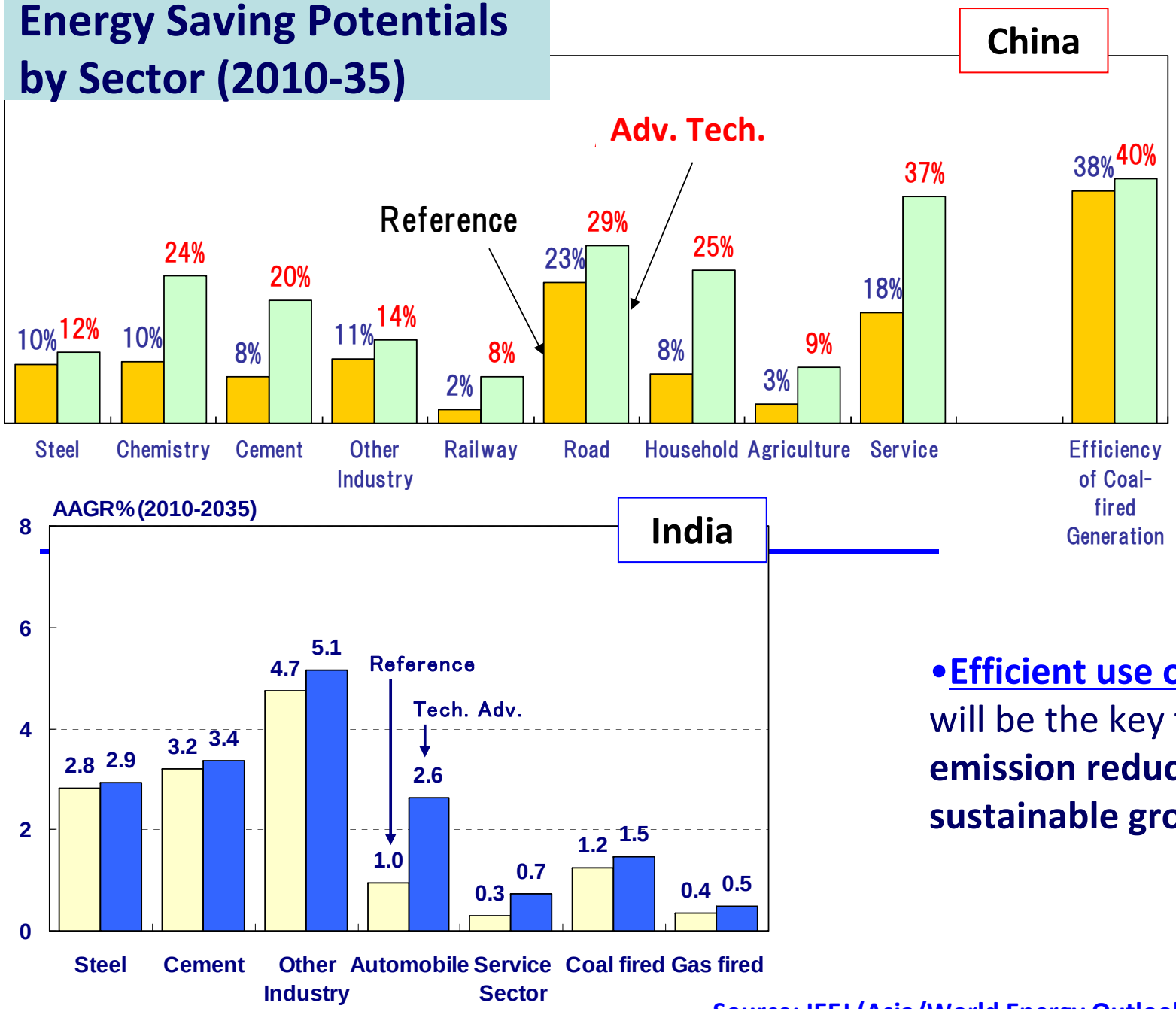
Reference



- China overtook USA as world's biggest CO_2 emitter in 2007. By 2035, India will emit almost as much as the USA.
- India's cumulative CO_2 emissions from 1990 will surpass that of Japan by 2025.

Source: IEEJ (Asia/World Energy Outlook 2012)

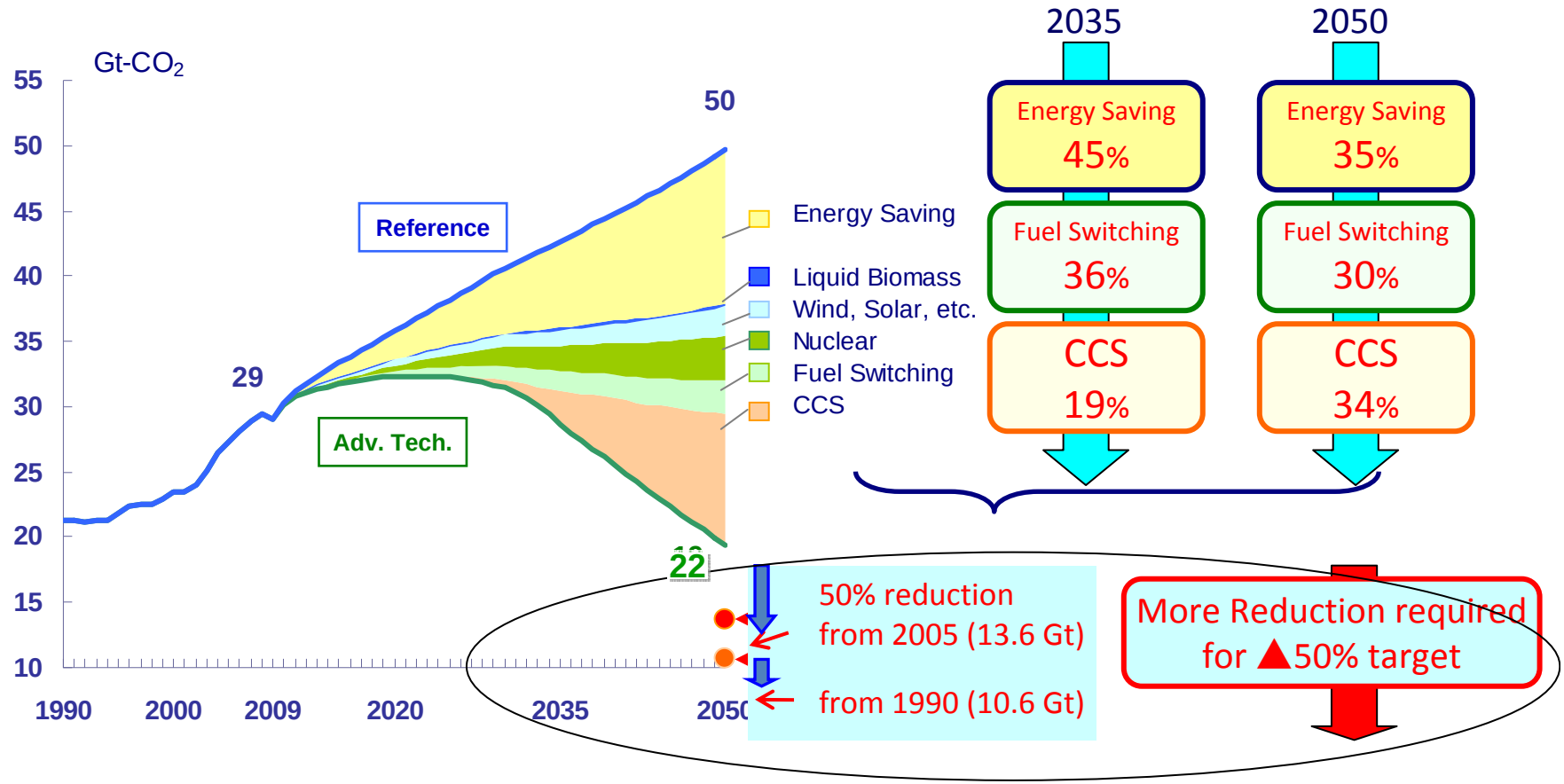
Energy Saving Potentials by Sector (2010-35)



- **Efficient use of energy** will be the key for **emission reduction** and **sustainable growth**.

Source: IEEJ (Asia/World Energy Outlook 2012)

EE Improvement : Most Effective!
Innovative Technologies : Essential for Deeper Cut!



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

Source: IEEJ (Asia/World Energy Outlook 2012)

Summary and Conclusion

- **Robust demand for fossil fuels and growth will continue in Asia**
  - **60%** of Energy demand growth to take place in Asia.
  - Unconventional oil and gas increase **changes** the **global map of energy balances**.
  - **Energy producing countries** also need to address robust **domestic demand growth**.

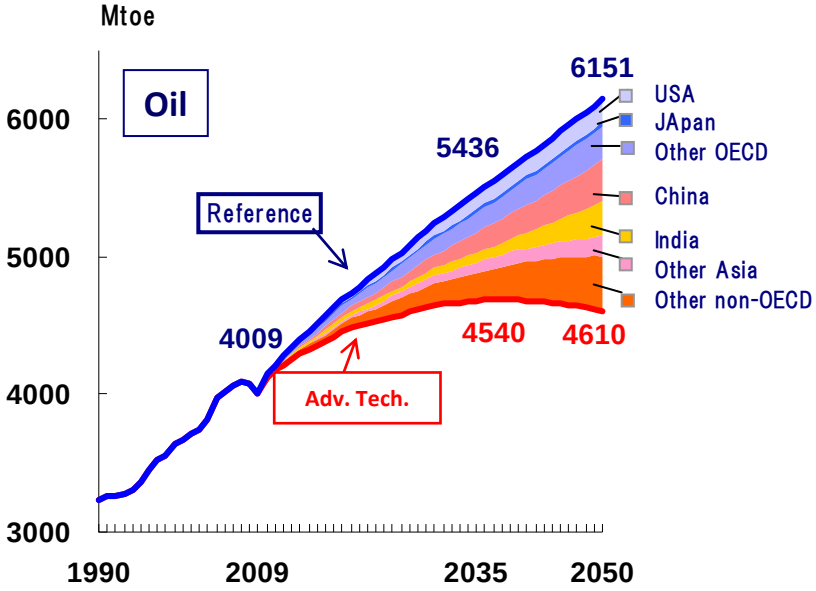
- **Complex world with uncertainties ➔ Global Challenges**
  - Energy is essential for economic growth
  - In search of "**best energy mix**"… cleaner energy use, energy security, cost effectiveness
  - **Climate Change** agenda: Need for "**new chart**"
    ➔ "mitigation efforts" + "adaptation" … **CCU**, **Hydrogen**, etc.
  - How to achieve "**Energy Security**"? … quantity, price, diversity, total energy
  - Importance of "**Energy Cooperation**"

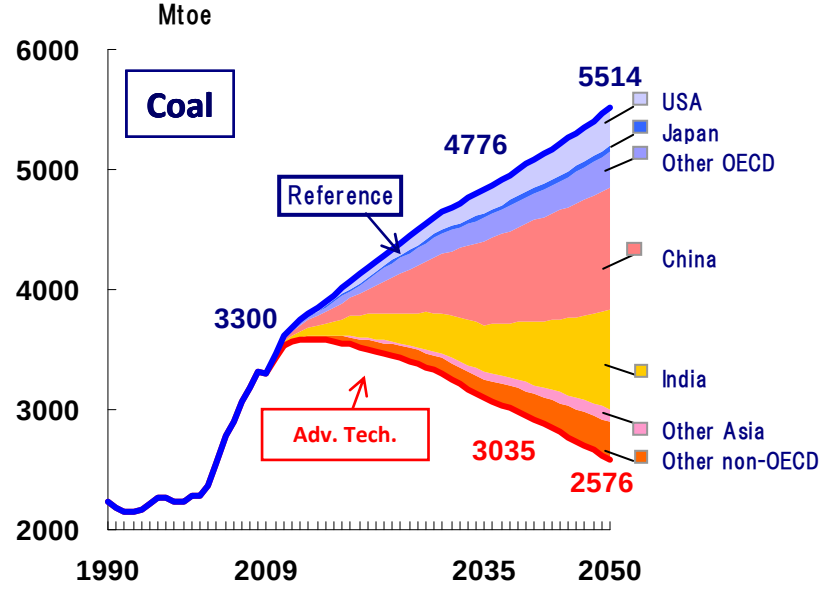
- **Increasingly complex & inter-related issues in the world.**
  - Economy, food, water, energy access … ➔ **Efficient Use of Energy is KEY**

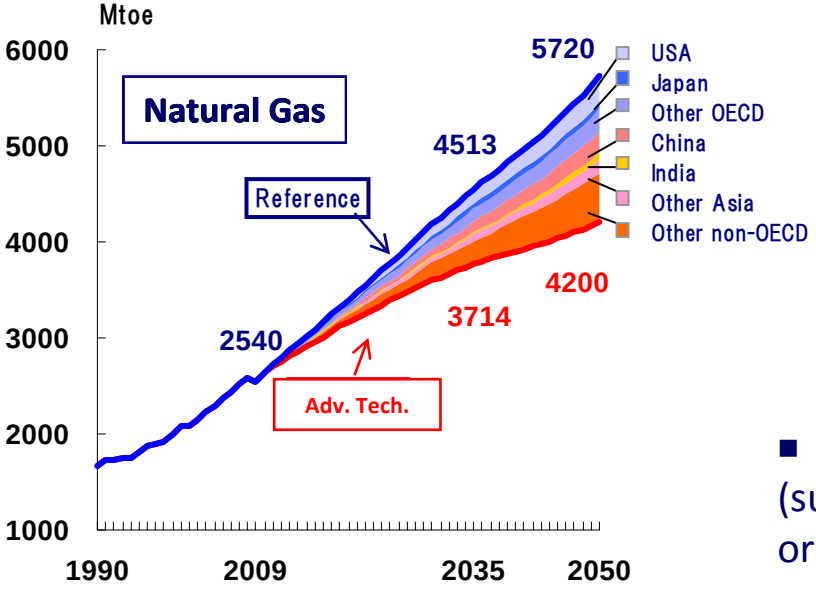
Efforts to enhance domestic and global "Energy Security" & "Sustainable Growth" via policy promotion, dialogue and international cooperation are important.

Thank you for your attention!

Reference: Robust Fossil Fuels Increase (-2050)







Reduction in 2050 (Regional Breakdown)

(Oil)

	Mtoe	Share
USA	168	11%
Japan	33	2%
Other OECD	242	16%
China	296	19%
India	257	17%
Other Asia	151	10%
Other non-OECD	394	26%
OECD	442	29%
non-OECD	1,099	71%
Developing Asia	705	46%
World	1,541	100%

(Coal)

	Mtoe	Share
USA	316	11%
Japan	56	2%
Other OECD	287	10%
China	1,021	35%
India	829	28%
Other Asia	114	4%
Other non-OECD	316	11%
OECD	659	22%
non-OECD	2,280	78%
Developing Asia	1,964	67%
World	2,938	100%

(Natural Gas)

	Mtoe	Share
USA	271	18%
Japan	63	4%
Other OECD	238	16%
China	211	14%
India	81	5%
Other Asia	142	9%
Other non-OECD	514	34%
OECD	572	38%
non-OECD	948	62%
Developing Asia	434	29%
World	1,520	100%

- The highly efficient technologies consuming fossil fuels (such as clean coal technologies) need to be deployed in order to largely decrease the fossil fuel consumption

Source: IEEJ (Asia/World Energy Outlook 2012