

Revisiting the Role of Fossil Fuels in the APEC Region from Japan's Viewpoint

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Session 4: Fossil Fuels and Energy Security

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Emerging landscape with regard to global energy market

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- **Volatile crude oil price**
- **Impacts of Unconventional Oil & Gas Development**
 - Impacts of US Shale Gas Revolution
 - Impacts of US Energy Independence
- **Growing energy demand in Asia and its implication to global energy security**
- **Emerging concerns for energy supply constraints**
 - Geopolitical risks, resource nationalism and issues of market power
 - Ongoing “MENA crisis”, “Iranian crisis”, Ukraine crisis, etc.
 - Lack of timely investment in resource development
 - Importance of stability of energy transportation
- **Environmental challenges for sustainability**
 - Climate change and global environmental problems
 - Local and regional environmental problems
- **Impacts of “March 11th” and Japan’s Energy Policy Review**

Perceived Risks for Energy Security

■ Contingent risks

- Political and military risks in main energy supply area
- Accidents in energy supply chain
- Cyber attacks
- Consumers' panic behavior

■ Structural risks

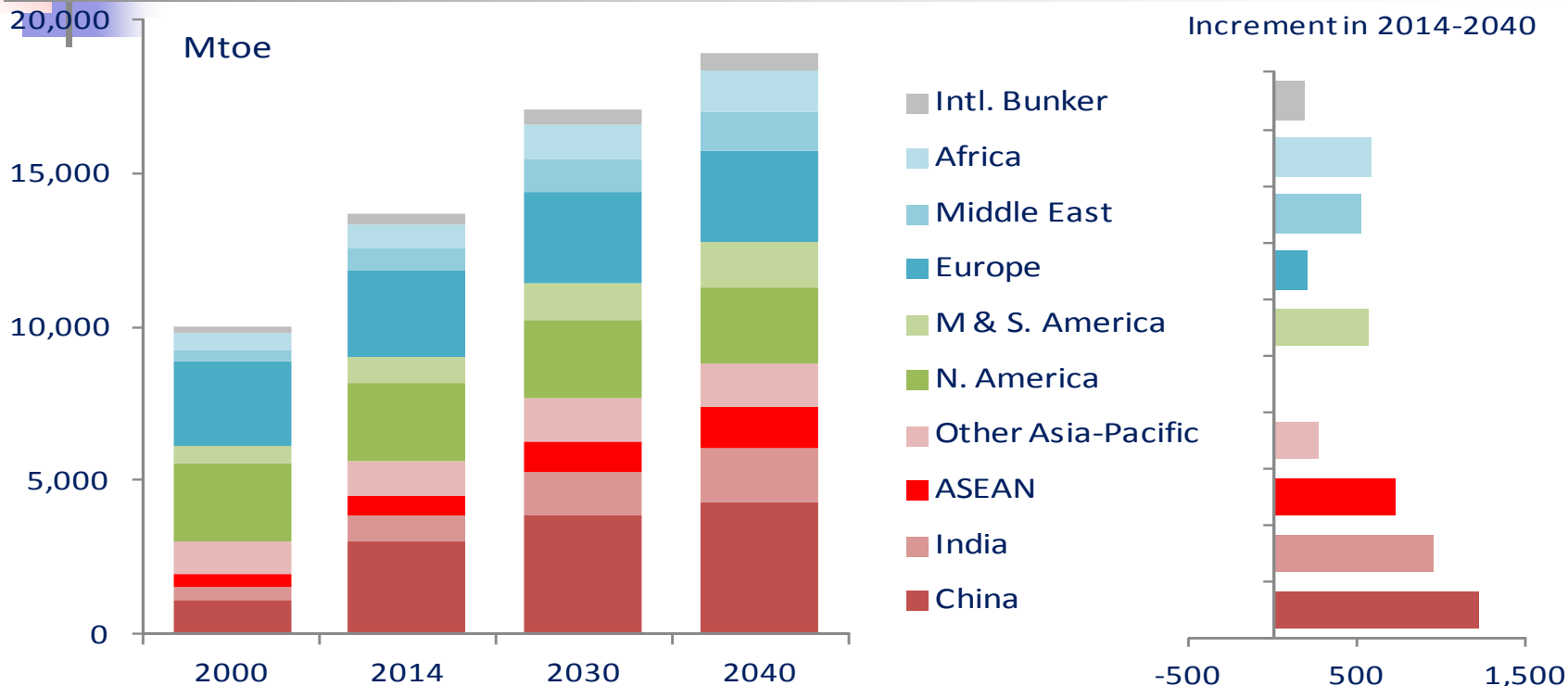
- Supplier's embargo with political objectives
 - Market power of major suppliers
 - Supply/demand squeeze due to insufficient investment, etc.
 - Resource constraints and chronic energy shortage
 - Side effects of market liberalization and environmental restrictions
- **OECD countries have developed energy policy to enhance energy security after the oil crisis in the 1970s, but...**



Energy Market Gravity Shifts towards Asia

World's Primary Energy Demand

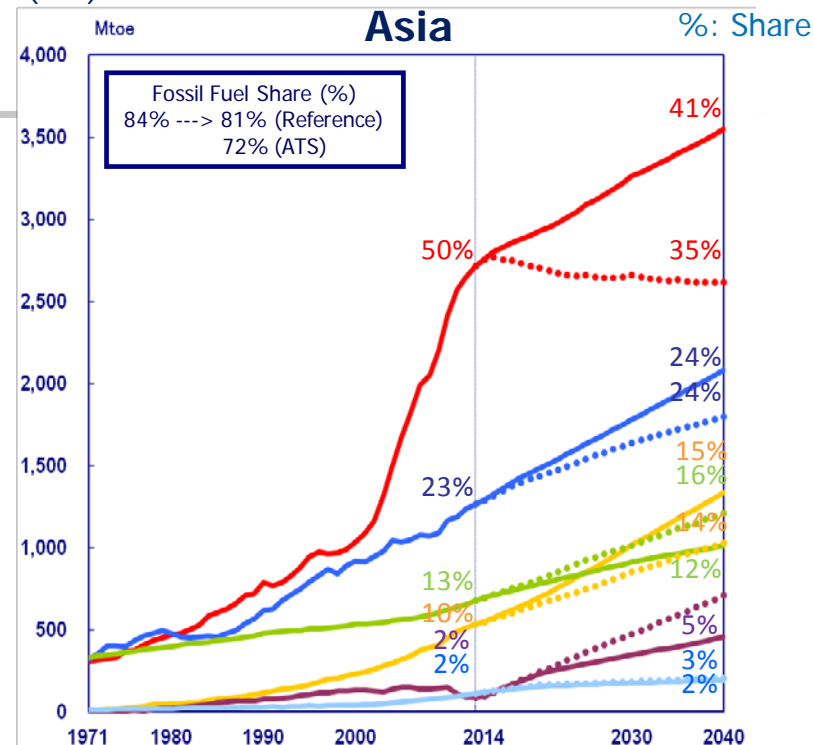
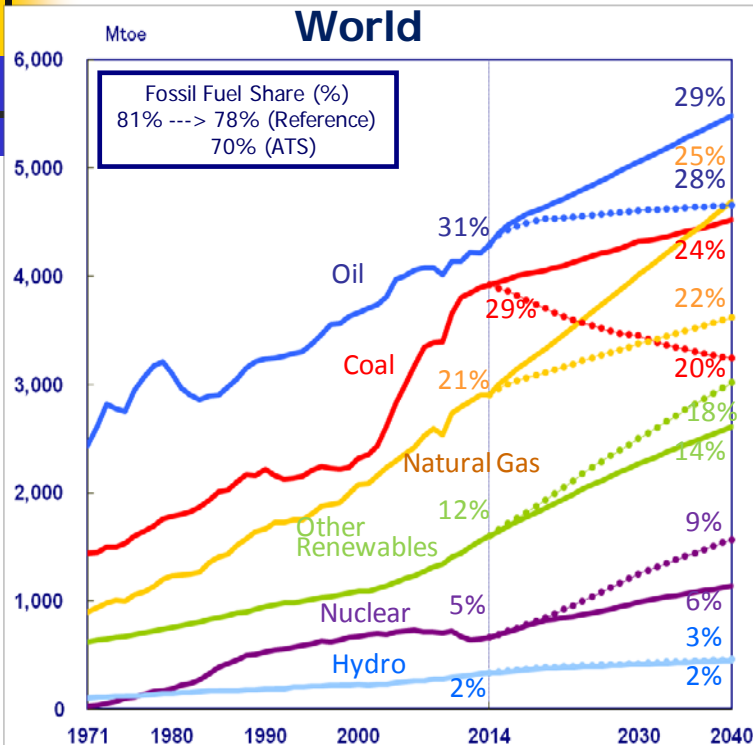
Increase of Primary Energy Demand



- Global energy demand increases by 1.4 times and 60% of the growth comes from Asia. Asia is the final destination for around three quarters of oil, gas and coal traded inter-regionally.
- ASEAN has the third largest demand growth, after China and India.

Outlook for Primary Energy Demand (by energy)

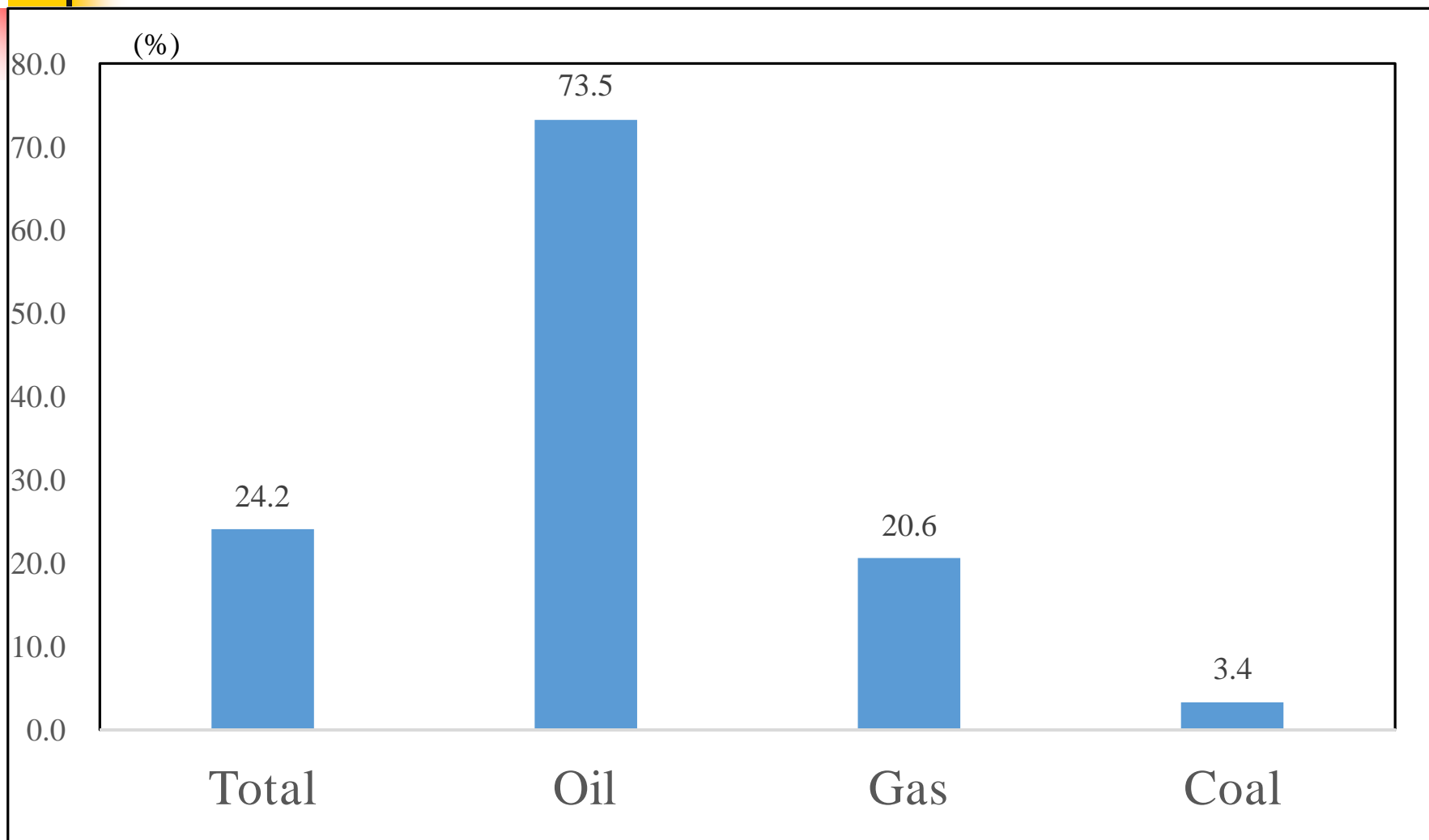
Line Reference
Dotted line Adv. Tech (ATS)



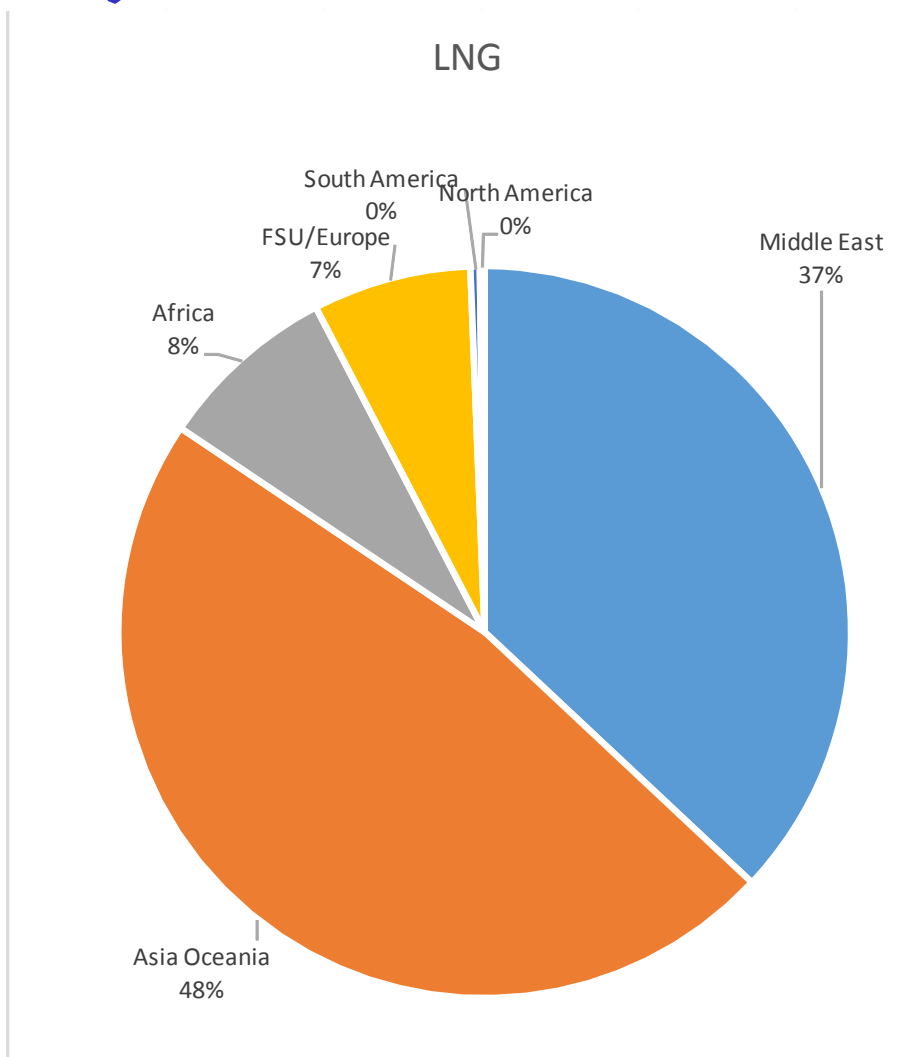
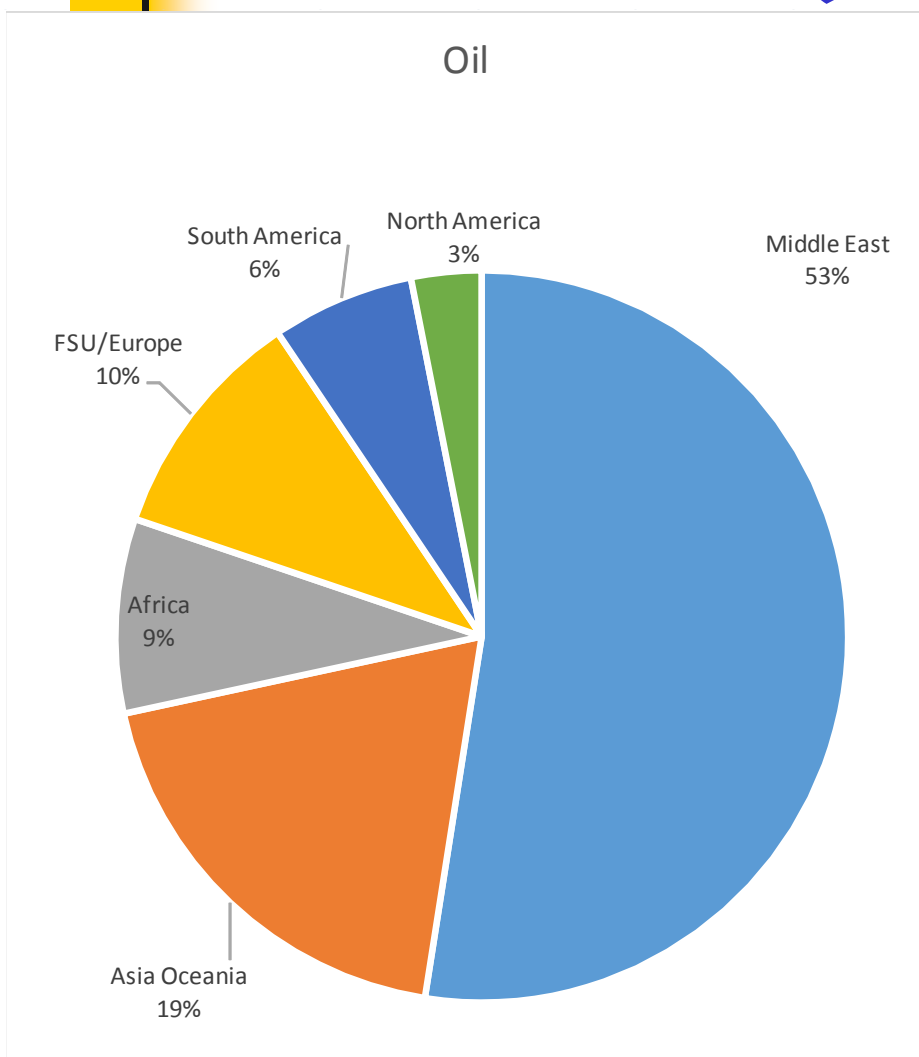
- Oil remains the most important fuel in the global energy mix for both Reference and ATS, even though the demand levels off in 2030's in the latter scenario.
- In Asia, coal demand keeps the largest among primary fuels, even though declining largely in ATS.
- Fossil-fuel dominates the both global and Asian energy mix, with 70% share even in ATS, although reducing from today's level.



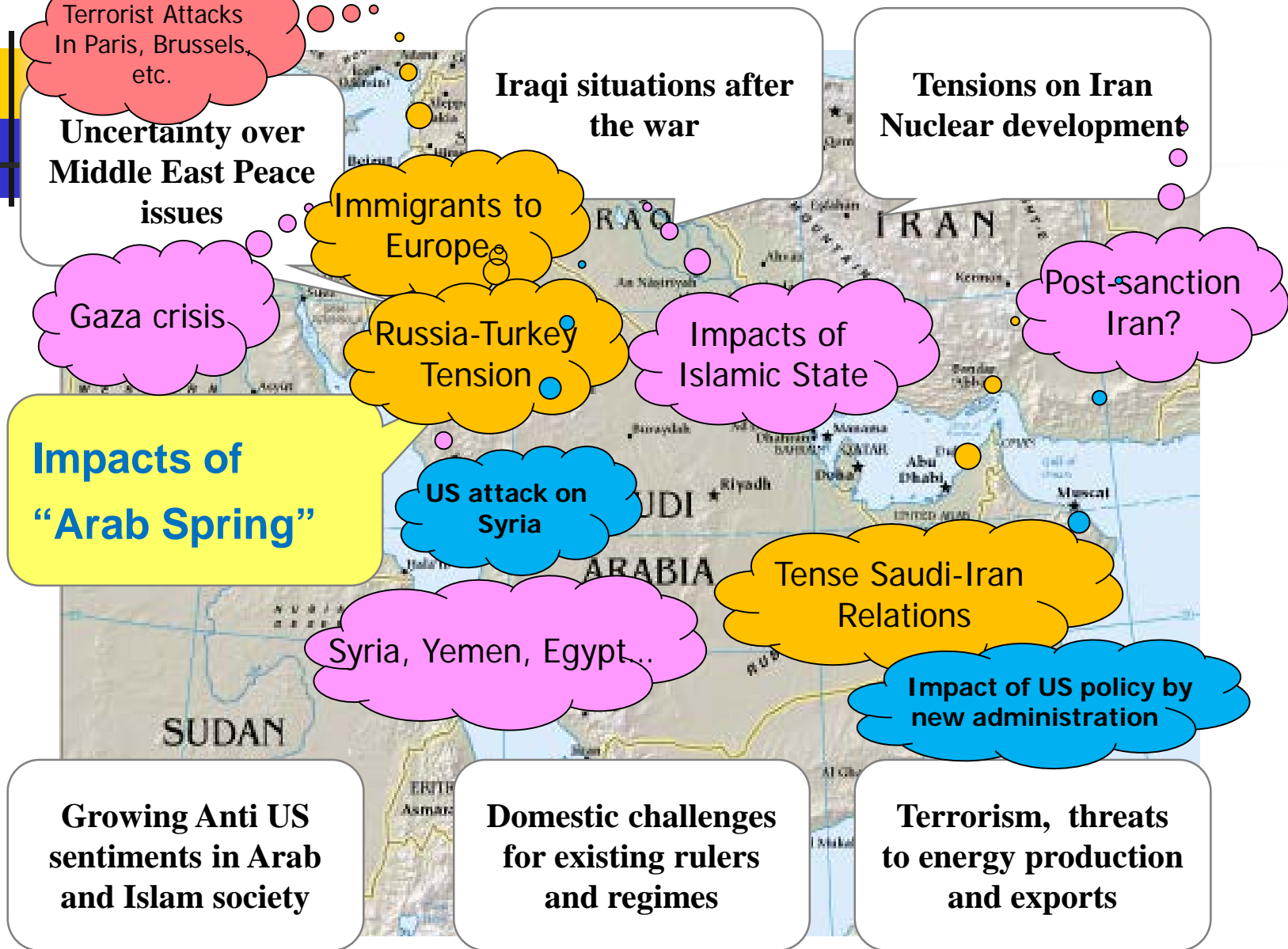
Energy Import Dependence in Asia (2015)



Asia's Middle East Dependence (2015)



Instability in the Middle East



Impact of new US Presidency

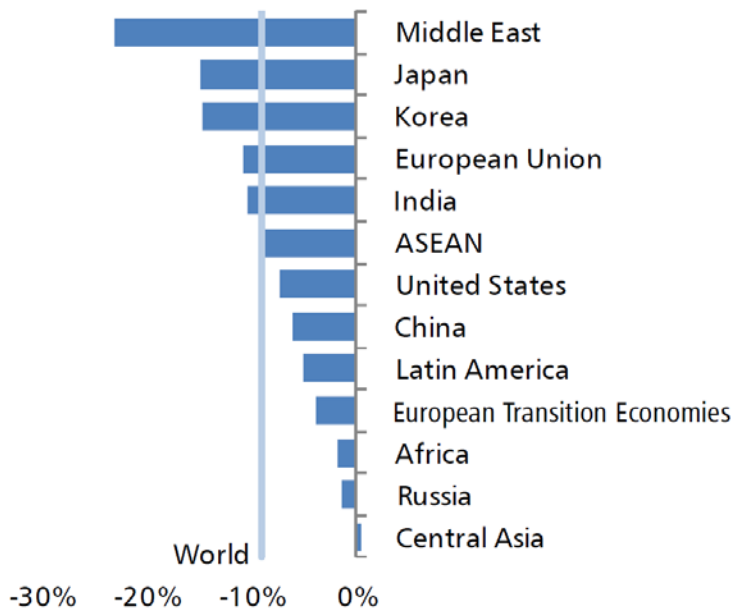


- **Uncertainties and unpredictability**
- **No concrete details about policy**
- **The meaning of “America First”?**
- **Opposite direction to Obama policy**
- **Implication on the stability of world energy market?**
- **Policy versus Market reality?**

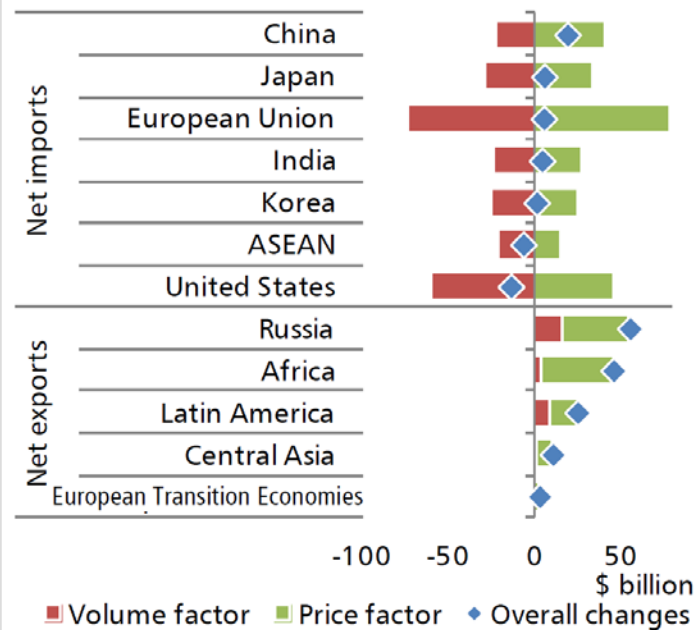


Serious Economic Damage of Supply Disruption (10 Mb/d)

Real GDP



Crude oil net export value

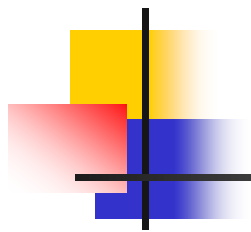


Note: Crude oil exports from the Middle East diminishes by \$139 billion.

In the situation where crude oil production in the Middle East drops unexpectedly and by large amount while other countries/regions are unable to increase the production to replace the lost volume, the world economy will shrink by 9%. It hits countries such as Japan and Korea which are dependent on imported oil the most.

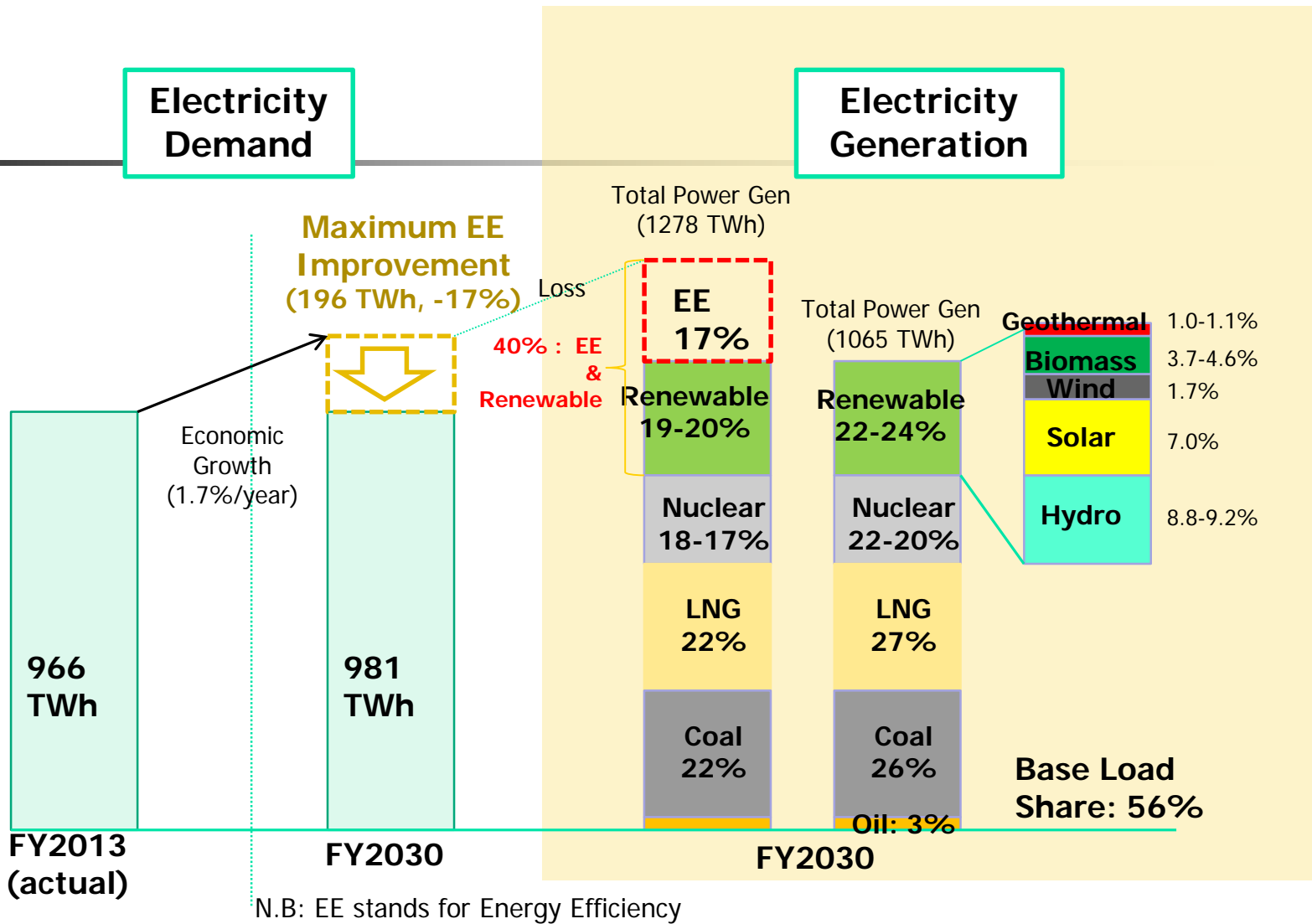
Despite the increase in export value, the economy of the non-Middle East exporting regions will not manage to avoid being hit by the depression pressure.

Japan's "3E+S" Policy Target

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- **"Safety"** as a top-priority precondition
 - **"Energy security"**: To increase energy self sufficiency rate from 6% to 25%
 - **"Economic efficiency"**: To reduce electricity cost from current level
 - **"Environment"**: To set GHG emission reduction goal in line with US and EU



Japan's Policy for Best Energy (Power) Mix

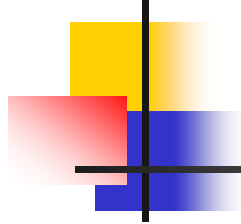


Source: METI

Policy to Enhance Energy Security

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- **Unilateral Approach**
 - **Improve Energy Self-Sufficiency**
(Energy saving and domestic energy production)
 - **Energy Source Diversification**
(Promotion of Gas, Coal, Nuclear, Renewable)
 - **Oil Import Source Diversification**
 - **Oil Stockpile Buildup**
 - **Overseas Upstream Investment**
 - **Etc.**
 - **International Cooperation**

Importance of Regional Cooperation

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- **Understanding that energy security is a common challenge for Asia**
 - **Cooperation can be beneficial:**
 - **Synergies**
 - **Optimal use of existing resources, capital, technology, know-how, infrastructure, etc.**
 - **Bargaining power**
 - **From “national energy market” to “regional energy market”**
 - **Efficiency**
 - **New business opportunity**
 - **Existence of various “constraints” should be overcome**

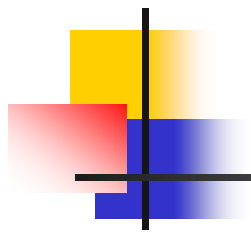
Importance of cooperation between Asia and the producing countries



Producing countries need Asia because:

- **Growing market for their most important commodity**
- **Crucial needs for stable and sufficient revenue flows for their sustainable development**

Conclusion

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- **Energy is essential to human existence, social and economic development and civil life for every country, but emerging multiple and serious risks/threats to energy security and sustainability**
 - **Energy demand in Asia is expected to grow. Security of energy supply both in terms of volume and price is a priority for Asian countries**
 - **Pressed by the growing energy import dependence, Asian countries are embarking on strategy development to enhance energy supply security**
 - **Pursuit of energy security by individual countries is expected to contribute to enhance regional and global energy security.**
 - **Intra/Inter regional cooperation should be promoted for the benefit of regional and global economic development and prosperity**