

A Japanese View on Russian Gas Supply to Asia-Pacific Region

A decorative graphic consisting of a vertical black line and a horizontal black line intersecting at the center. To the left of the intersection, there are three overlapping squares: a blue one on top, a red one on the left, and a yellow one on the bottom.

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Emerging landscape with regard to energy security/sustainability

- Oil price above 100\$ since 2011
- 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
- Unprecedented impacts of “March 11th” (East Japan Great Earthquake and “Fukushima Daiichi accident”)



- Impacts of Unconventional Oil & Gas Development
 - Impacts of US Shale Gas Revolution
 - Impacts of US Energy Independence



Energy challenges for Japan after “March 11th”

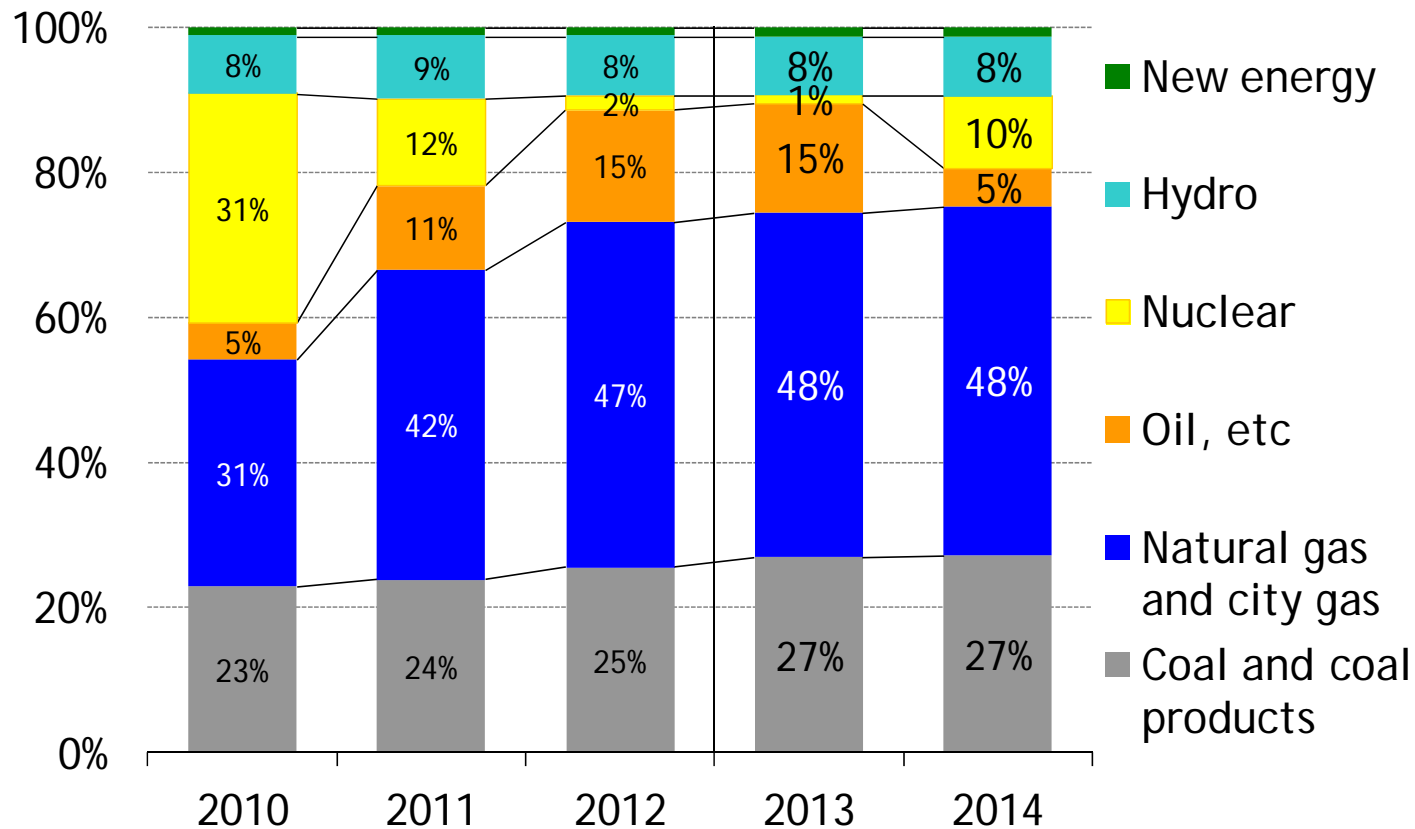
- **Top priority: stabilization of “Fukushima Daiichi”**
- **Restoration and reconstruction of damaged energy related facilities/infrastructure**
- **Power shortage: emerging serious problem**
 - To increase power supply capacity
 - To enhance energy (power) saving and efficiency improvement
 - To secure fuel procurement for increased fossil fuel power generation
- **Negative Impacts on Japanese economy (Increased outflows of National wealth, hollowing out of industry, etc.)**
- **Re-establish Mid and Long term energy policy/strategy**
- **Need to establish contingency planning**



Thermal power generation hits 810 TWh, an all-time high in FY2013

- Electricity generated by oil-fired thermal is greatly reduced in FY2014 as a consequence of restarting nuclear power generation.

Power generation mix for utilities



(Source) IEEJ Short-term energy outlook for Japan (December 2013)



Current Situation on the 3Es and macro economy

Reduced nuclear power generation resulted in substantial increase in fossil fuels use and imports, which has serious implications on:

✓ Energy Security

→ Fossil fuel imports increase leads to lower energy self-sufficiency

(Down from 18% in FY 2010 to 7% in FY 2013 in TPES)

Higher import dependency, in particular on Middle East (Qatar) LNG

Power supply reserve margin remain low, while thermal power plants in full operation

✓ Environment

→ Increase in fossil fuel use leads to higher CO₂ emission

(Up from 1.12 billion ton in FY 2010 to 1.22 billion ton in FY 2013)

✓ Macro Economy

→ Fossil fuel imports increase leads to higher import bill for fuels

(Up from 18.1 trillion yen in FY 2010 to 27.1 trillion yen in FY 2013)

Increased cost for power generation

(Up by 4.4 yen/kWh in FY 2013 as compared to that in FY 2010)

Impacts on trade deficit

(5.4 trillion yen trade surplus in FY 2010 → Trade deficit of 10 trillion yen in FY 2013)



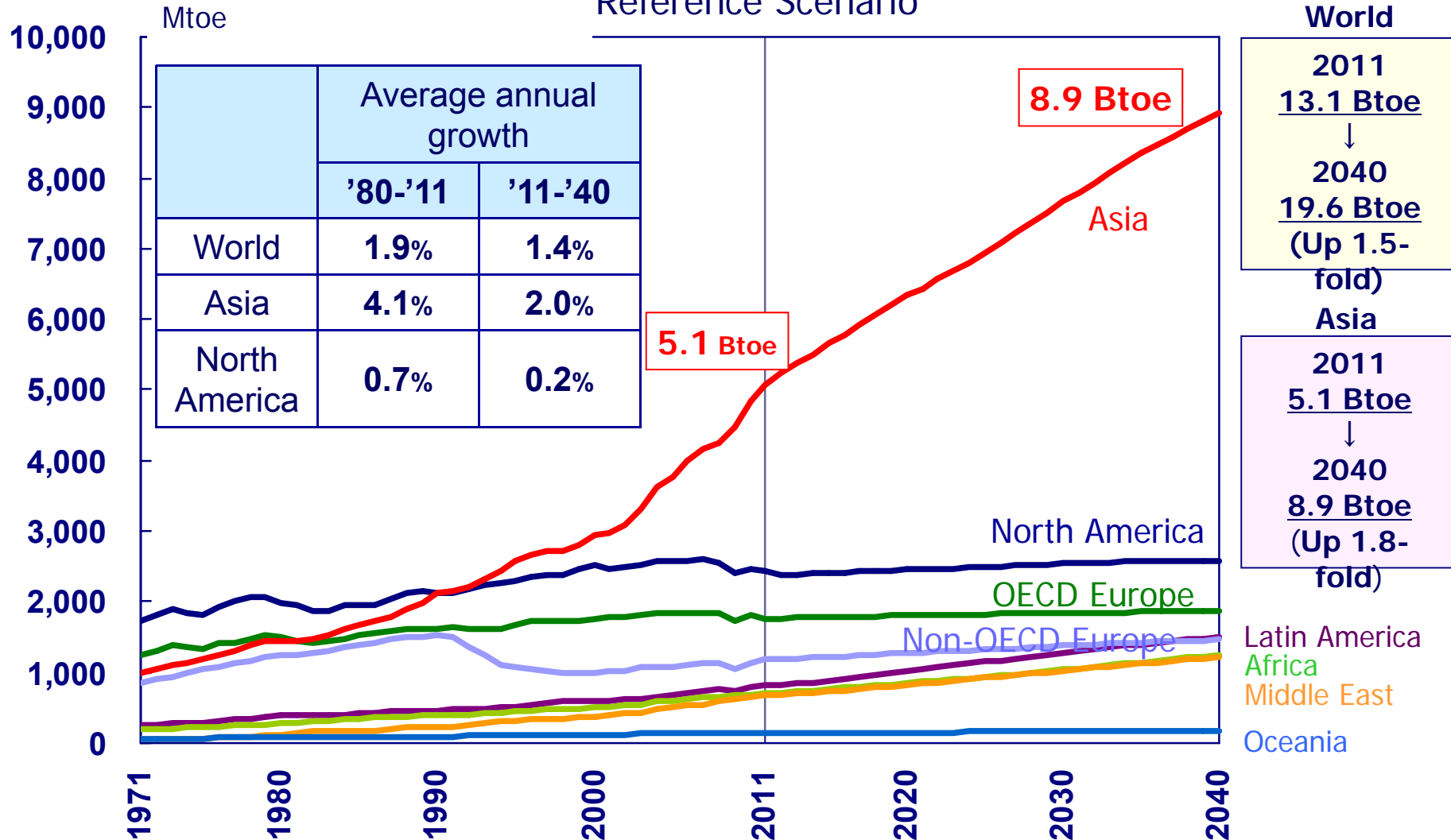
Agenda for Energy Policy under PM Abe/LDP Government

- Re-start of nuclear power
- Best Energy Mix
 - Cabinet Decision on revised “Basic Energy Plan”
- Power Market System Reform
- Security of Supply for Fossil Fuels
- Promotion of Renewable Energy and further Enhancement of Energy Saving
- Etc.



Primary Energy Demand by Region

Reference Scenario

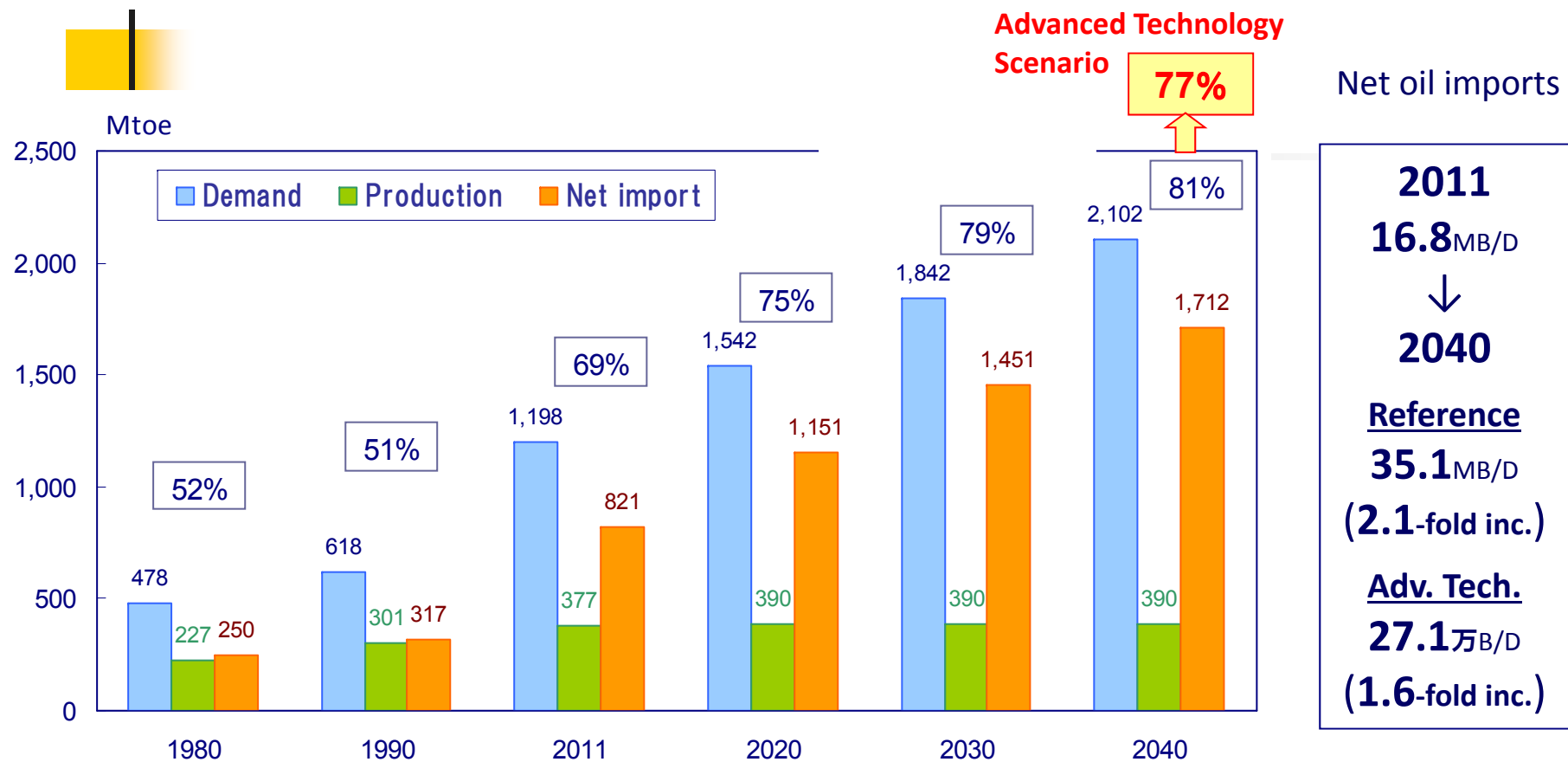


Under steady economic growth assumptions, Asian energy consumption in 2040 will increase 1.8-fold from the present level (from 5.1 billion tons in 2011 to 8.9 billion tons in 2040). Non-OECD countries will account for about 90% of global energy consumption growth between 2011 and 2040.

Source: IEEJ “Asia/World Energy Outlook 2013”



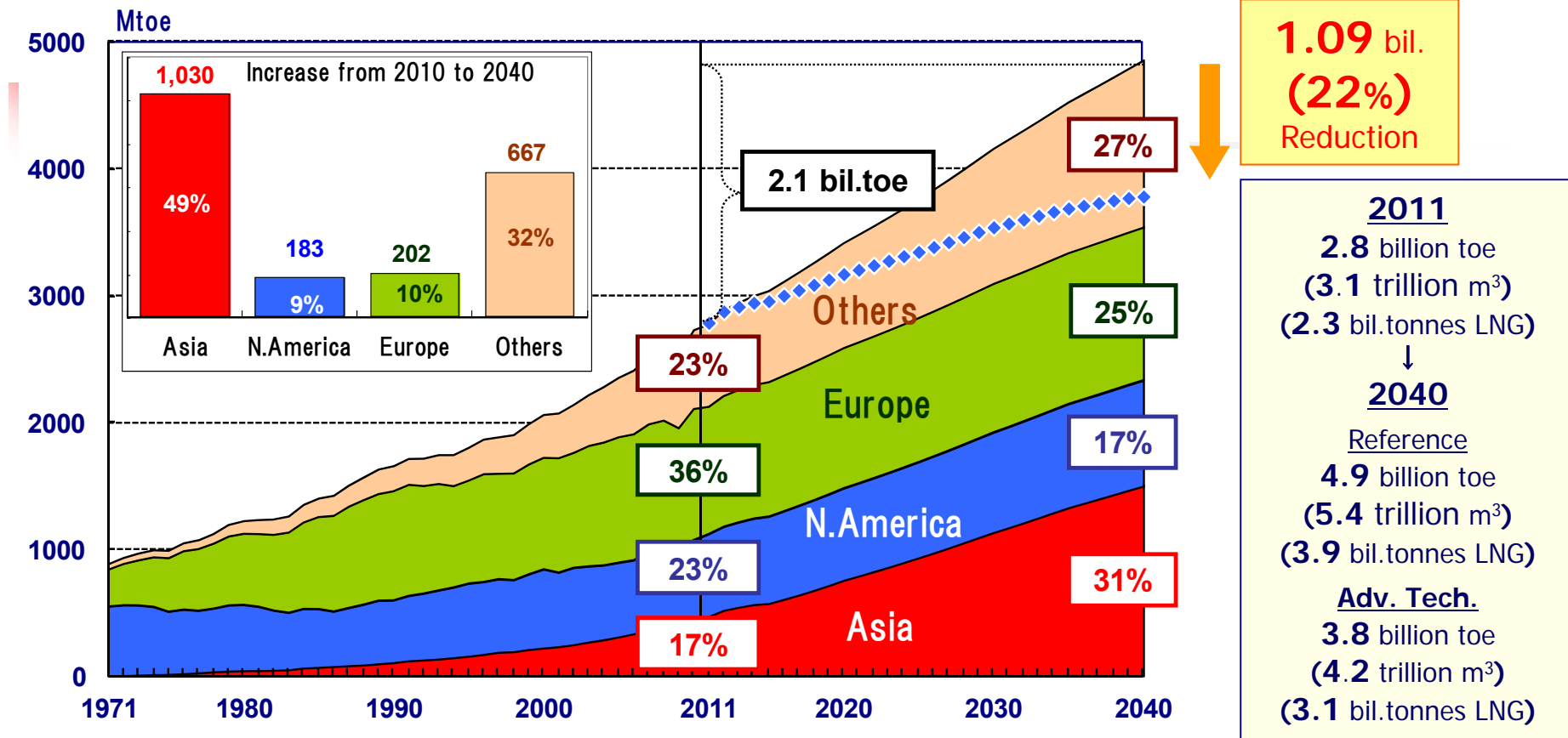
Outlook for Asia Oil Supply-Demand



- In the Reference Scenario Asian net oil imports will expand from 16.8 Mb/d in 2011 to 35.1 Mb/d in 2040 due to the rapid increase in demand and the stagnant production in the region.
- Oil import ratio will increase from 69% in 2011 to 81% in 2040 in the Reference Scenario and 77% in the Advanced Technology Scenario.



Outlook for Asia Gas Demand



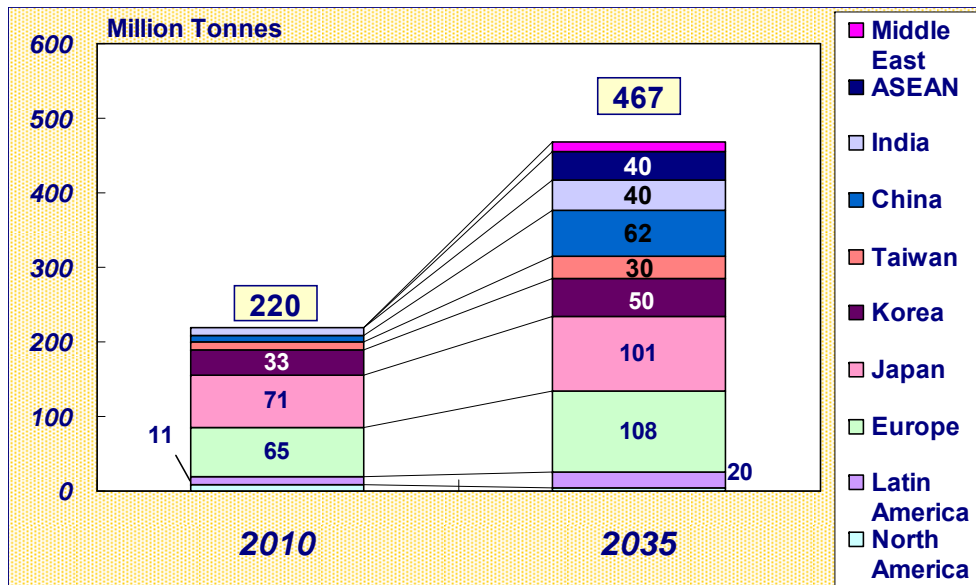
- The world natural gas demand is expected to increase from 3.1 trillion cubic meters (tcm) in 2011 to 5.4 tcm in 2040, a 1.7-fold increase.
- Non-OECD will account for 82% of the growth in the world natural gas demand from 2011 to 2040,
- In the Adv. Tech. Scenario, natural gas demand will be 1.20 tcm lower than the Reference Scenario. Despite the projected saving, natural gas demand will continue to grow in the Adv. Tech. Scenario suggesting further needs of energy resources development.

Source: IEEJ “Asia/World Energy Outlook 2013”



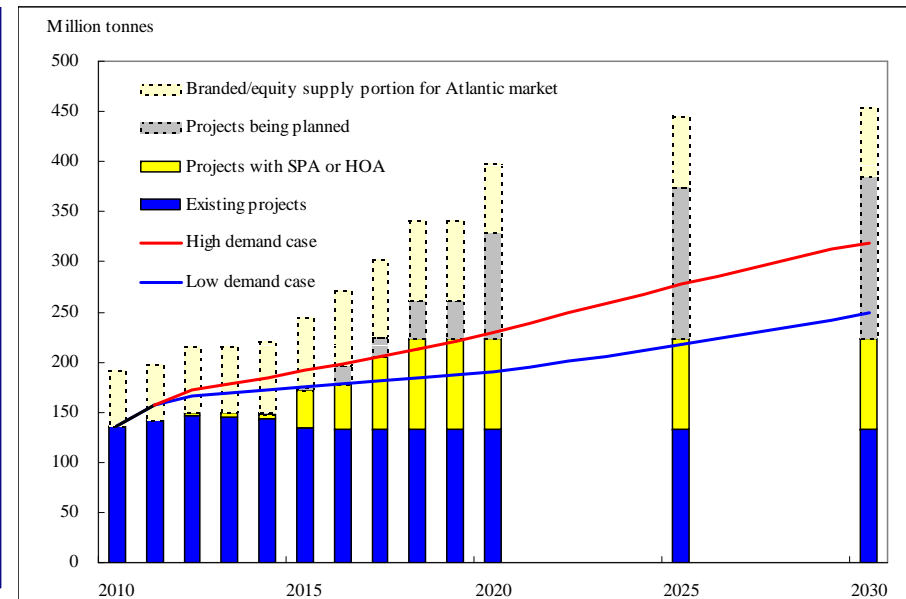
World/Asia LNG Outlook

World LNG Demand Outlook



Source: IEEJ (Asia/World Energy Outlook 2012)

LNG Supply-Demand Outlook for Asia

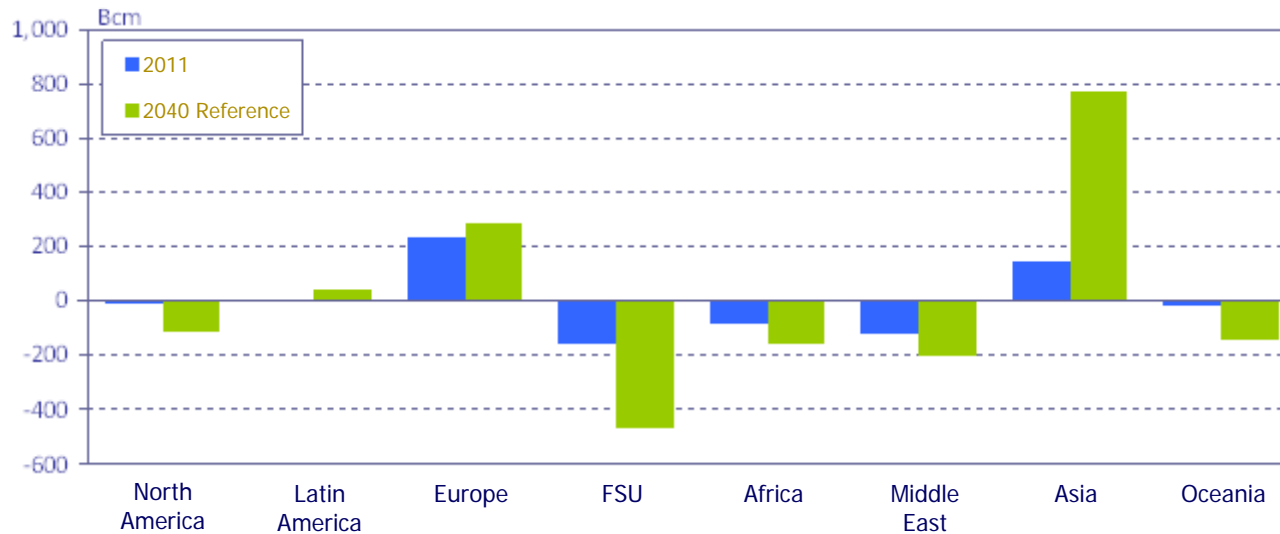
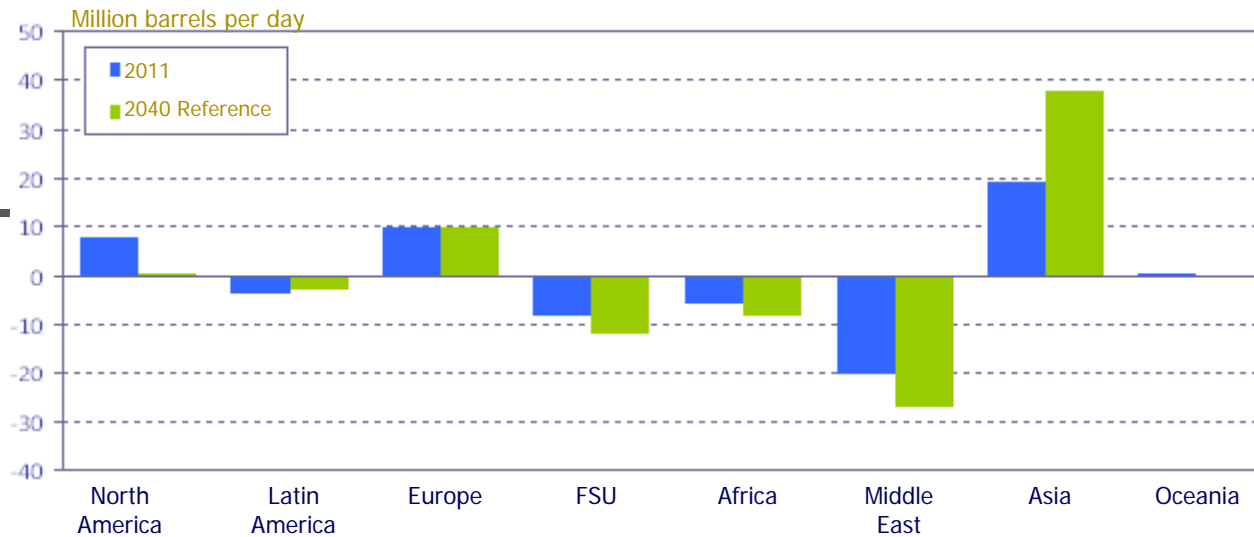
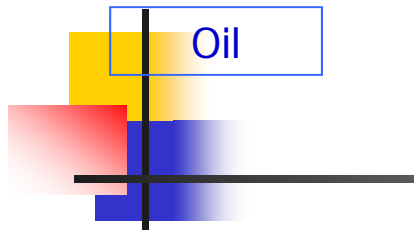


Source: IEEJ estimate

- World LNG demand will expand from 220 million tonnes in 2010 to 467 million tonnes in 2035.
- Asia's LNG demand will increase by 189 million tonnes, accounting for 80% of the world's LNG demand growth through 2035.
- Supply capacity will be enough to meet growing LNG demand in Asia



Net Oil/Natural Gas Import Projections



- While Asia will expand oil demand toward 2040, North America will go in the direction of oil self-sufficiency. The Middle East will be required to expand its oil output to meet the Asian demand growth.
- While natural gas imports are increasing mainly in Asia, exports from North America are expanding.

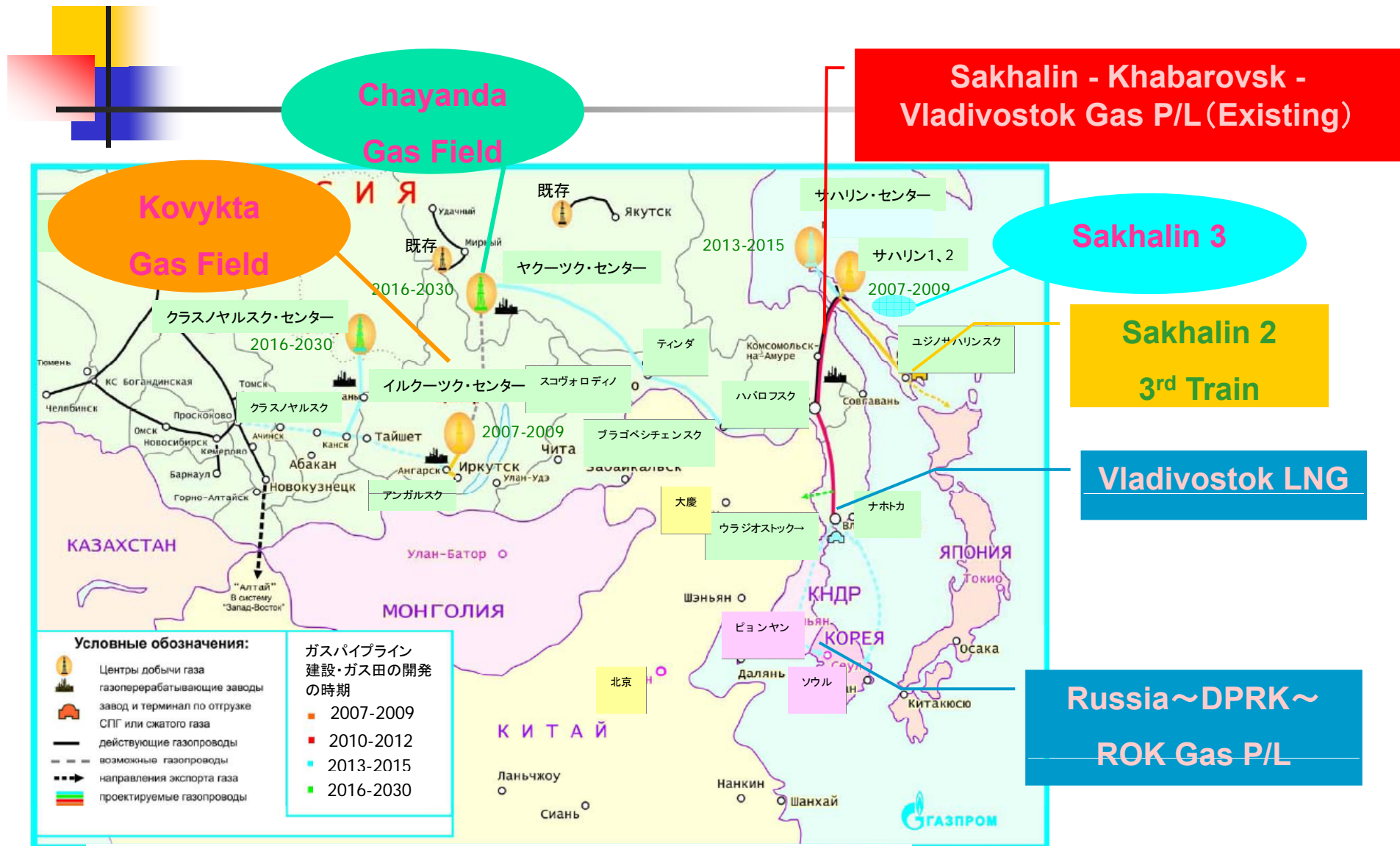
Source: IEEJ “Asia/World Energy Outlook 2013”

Russian Energy Resources and the World

The importance to the world energy market

- Huge resource potential, possible to meet global energy demand growth in the future
- Production from existing major oil and gas fields showed stagnation/decline
- Importance of supply growth in new/frontier fields/areas
- Long term supply growth possible, but uncertainty remains
- Importance of “Demand security” in Europe and expectation for Asian market (Japan, China, Korea, etc.) as a new and growing market
- Initiatives for enhancing access to Asian market
 - APEC Summit in Vladivostok
 - Completion of ESPO PL
 - Vladivostok LNG, Sakhalin 1 LNG, Sakhalin 2 LNG (expansion), etc.
 - Eastern Gas Program
 - Oil & Gas Development plans in East Siberia and Sakhalin

Gas development PJs in East Siberia and Sakhalin



(Source) Prepared by IEEJ based on Eastern Gas Program of Gazprom

Background for energy relation between Asian consumers and Russia



- **Why “Japan/Asia consumers-Russia Energy Cooperation” attracts attention?**
 - **Complement “Energy Supply Security” and “Energy Demand Security”**

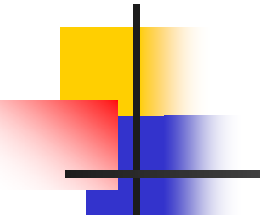
- **Needs to have discussion based on new/emerging realities in global energy market, as well as political, economic and energy market development both in Asia and Russia**
 - **Energy security and climate change challenges, and growing importance of Asia in this context**
 - **Impacts of Fukushima accident**
 - **Overall political and economic relation between the two countries and in the region**
 - **Prospects for regional cooperation (APEC, etc.)**
 - **Impacts of Ukraine crisis**

Possible Areas for Energy Cooperation

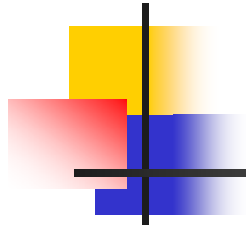


- **Complement “supply and demand security”**
- **Joint Efforts to Increase Energy Supply Capacity**
- **Promotion of Energy Conservation**
- **Cooperation in Alternative Energy Development (renewable energy, nuclear power, etc.)**
- **Cooperation in Environmental Protection**
- **Facilitate and Enhance Mutual relation and Information Sharing through Improvement in Dialogue**
- **Etc.**

Summary

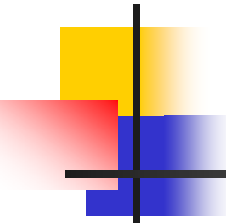
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- **Energy is essential to human existence, social and economic development and civil life for every country**
 - **Emerging multiple and serious risks/threats to global energy security and sustainability**
 - **Growing importance of Asia in the global energy challenges**
 - **Japan, still suffering from the aftermath of Fukushima accident**
 - **Russia, an important energy market player, looking at East**
 - **Asian countries and Russia, facing new/emerging political, economic and energy market realities, can complement each other**
 - **Energy cooperation should be pursued in a way to promote mutual, regional and global benefits, taking into account the surrounding political, economic and energy market realities**

Annex 1. Global implications of Russian energy strategy



- **Russia, a very important energy supplier to the world and Asian energy market**
- **Oil and Gas, strategic commodities for Russian economy and politics**
- **Use of energy (oil and gas) as a tool to best fit to Russian national interests**
- **State involvement in energy sectors and global presence of Russian oil and gas “majors”**
- **Russian strategy has important implications for energy supply growth, investment opportunity and energy trade in the world market**

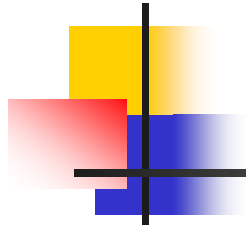
Annex 2. Issues To Be Considered for Japan

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- **No.5 energy consumer, No.3 oil consumer in the world**
 - **No. 3 oil importer, No.1 LNG importer in the world**
 - **Matured, but stable/reliable market**
 - **Impacts of Fukushima accident**
 - **High import and Middle East dependence for oil**
 - **Energy security/climate change is a top policy agenda**
 - **Oil dependence set to decline, and further diversification and upgrading of energy supply structure being pursued by new policy initiatives**
 - **Importance of Asian energy cooperation, but...**
 - **Japan is able to best utilize her accumulated technology and policy know-how**

Annex 3. Issues To be Considered for Russia

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- **A leading oil and gas producer in the world**
 - **Large energy resource potential to meet energy demand growth in Asia, and its geographical proximity**
 - **Impact of Shale revolution in Russian energy sectors**
 - **Stagnant energy demand and imports in Europe and growing need to diversify export market**
 - **Need for long term sustainable economic growth, economic structure diversification**
 - **Importance to enhance regional economic and energy cooperation (APEC, etc.)**
 - **Impacts of Ukraine crisis**

Annex4. Cooperation between Asian consumers & Russia



- **Growing economic and energy relations**
- **Importance of both countries in global economy**
- **Asian consumer :**
 - **needs energy supply security**
 - **provides a stable/reliable market**
- **Russia (producer) :**
 - **needs energy demand security**
 - **provides stable/reliable supply**
- **Both sides need sustainable development, economic growth/diversification**