

# Outlook for Gas Market

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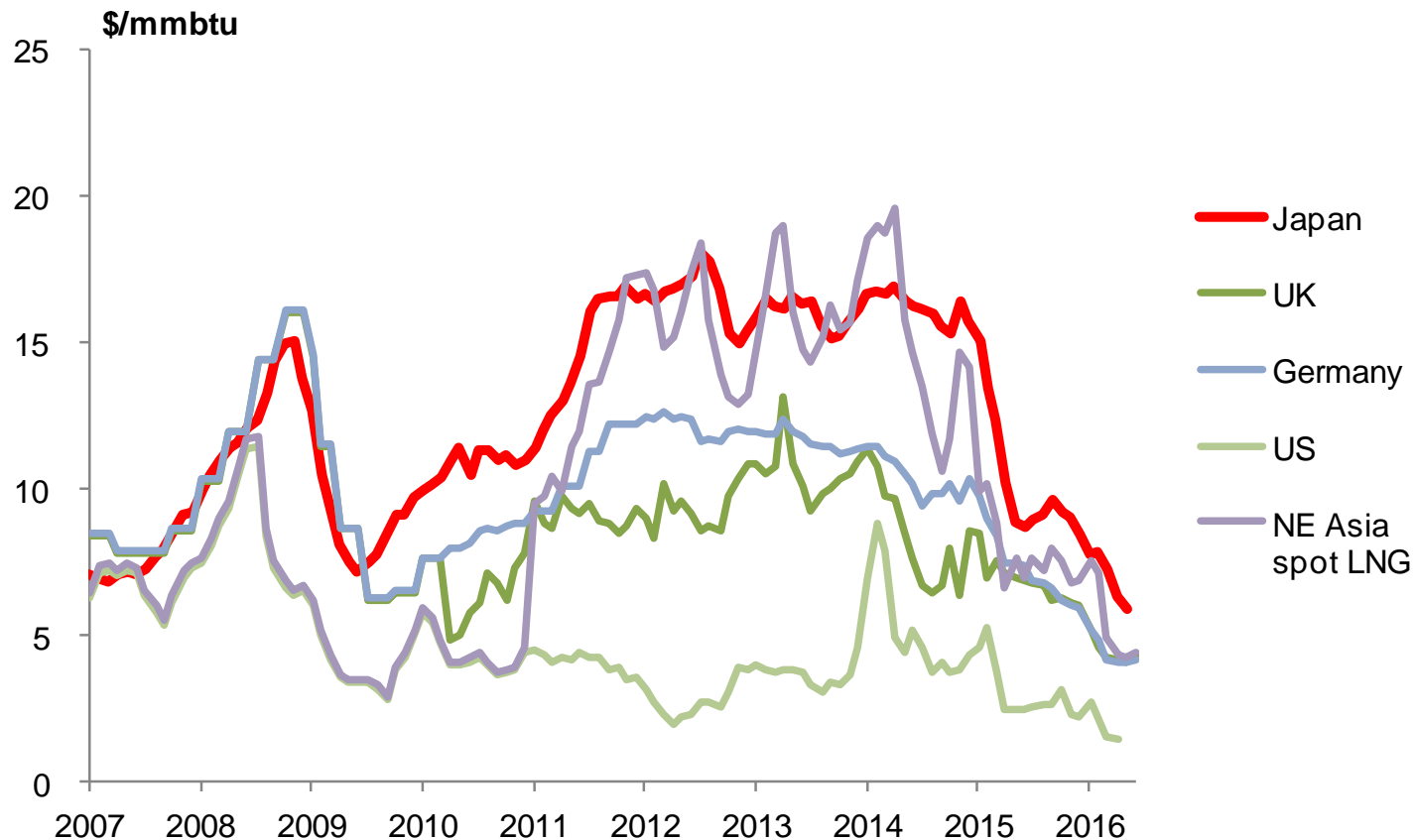
# Key points of this report

- ❑ Oversupply in the international LNG market will expand further in the coming years.
- ❑ Upstream industry is cutting capital spending. A major matter of concern is that the investment slump could lead the supply-demand balance to tighten over a long term. It will be important to smoothly launch new LNG projects in Canada, Eastern Africa and other regions.
- ❑ LNG has begun to be exported from the lower 48 of the U.S.. While no explicit impact has been seen in the Asian market yet, expectations are placed on the improvement of liquidity and the creation of pricing benchmarks in the Asian market.
- ❑ The improvement of trading flexibility is a major precondition for developing an LNG trading hub in Asia. A flexible, liquid market will contribute to the sound development of the natural gas market and the improvement of supply security.

# Trends of major natural gas prices

- European and Asian natural gas prices are going in the direction of convergence.
  - The Asian premium has almost diminished.
  - The U.S. market price trend has been independent from European and Asian trends.

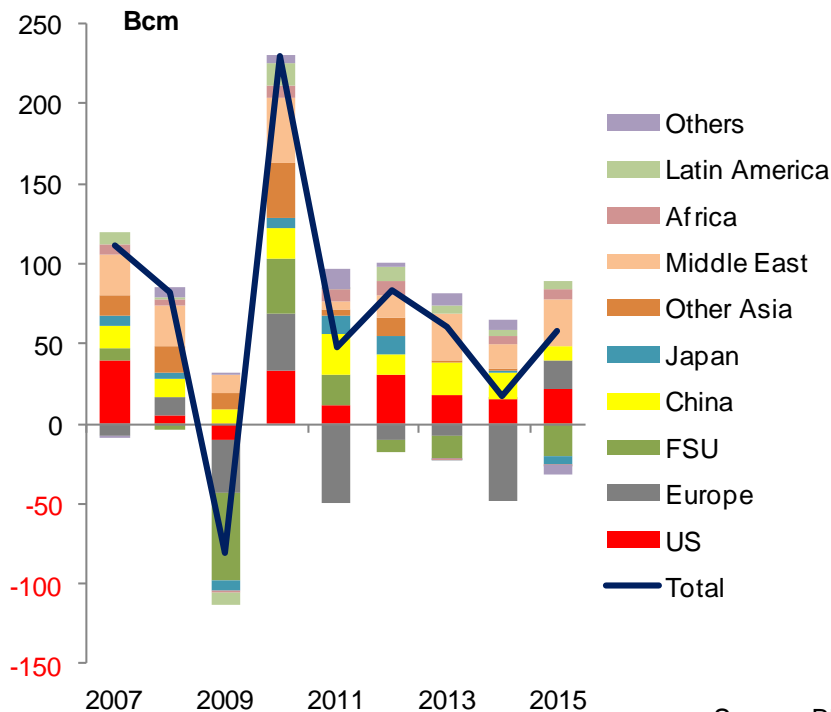
**Natural gas import price trends in major countries**



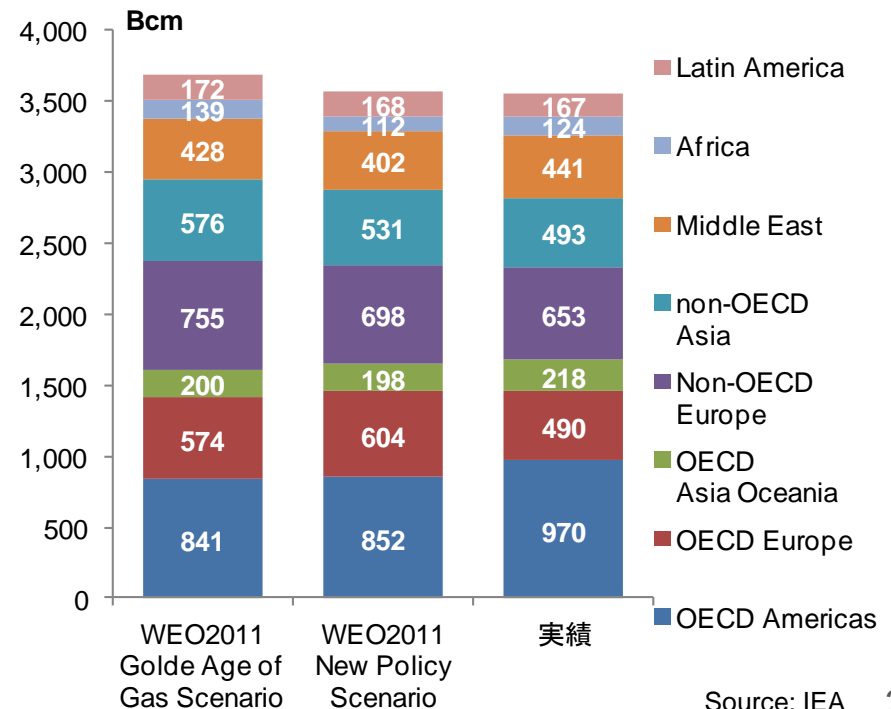
# Global natural gas demand

- Global natural gas demand has continued growing at a slower pace than expected.
  - Natural gas still has great supply potential.
  - Due to overall energy demand deceleration following an economic slowdown in emerging countries, slack natural gas demand amid growing coal and renewable energy power generation, high gas prices indexed to oil prices and other demand-side factors, however, the gas market has failed to expand as earlier expected.

**Global natural gas demand changes (year on year)**



**2011 demand outlook for 2015 and actual data**



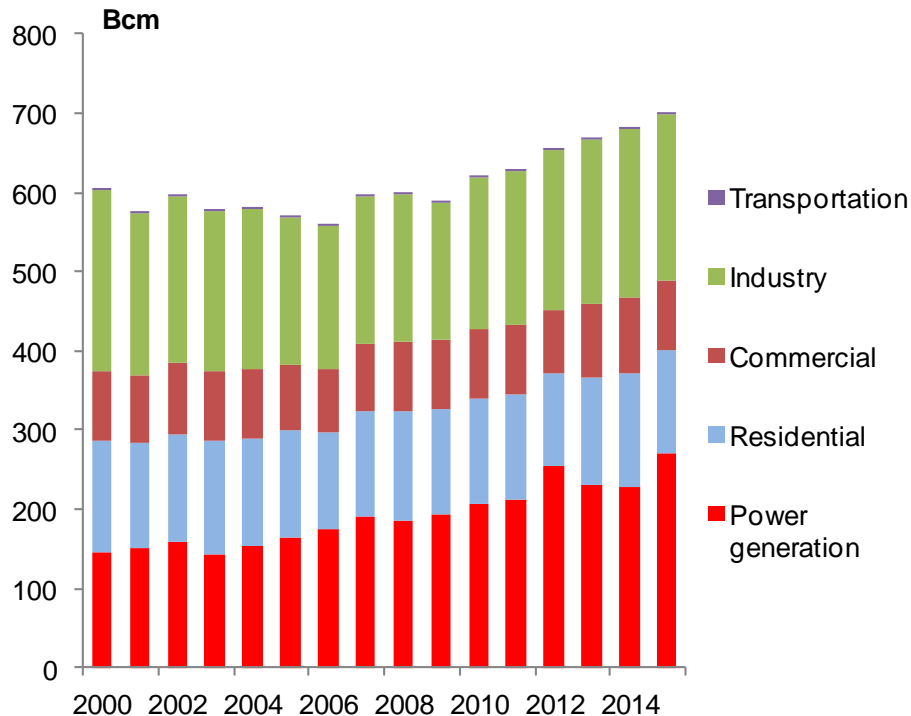
Source: BP

Source: IEA

# Gas demand in developed countries

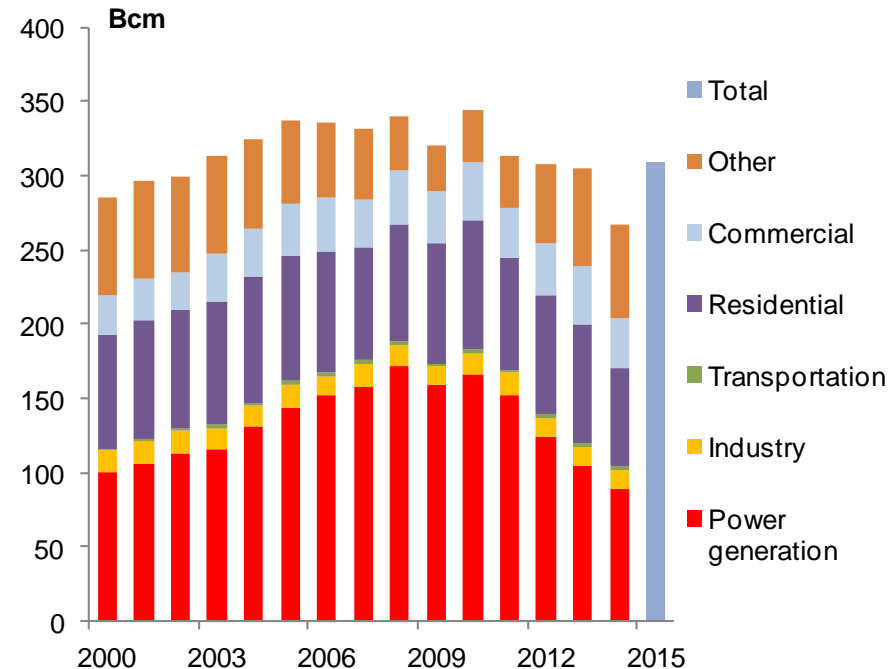
- European and U.S. natural gas demand trends differ from each other.
  - In the United States, a gas price plunge under the shale revolution has contributed much to expanding gas consumption in the power generation sector.
  - In Europe, natural gas demand had continued falling mainly in the power generation sector due to an economic slump, weather factors and competition from coal and renewable energy before recovering slightly in 2015.
  - Given the United Kingdom's global gas market share (2.0%) and the period (at least two years) for its exit from the EU, Brexit may have only limited impacts on the international gas market for the immediate future.

## U.S. natural gas demand



Source: EIA

## European natural gas demand (19 EU members)

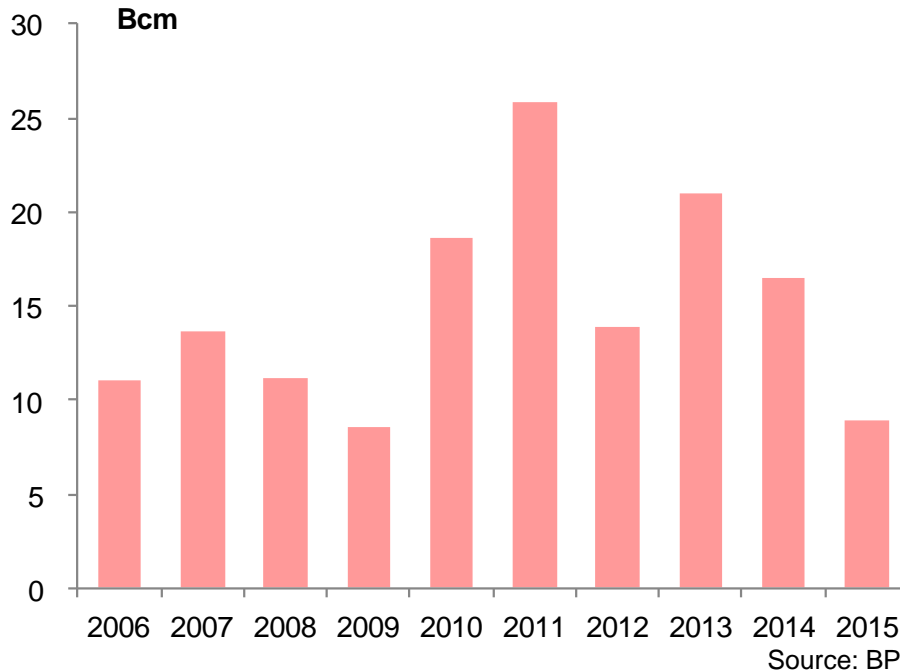


Source: Eurostat

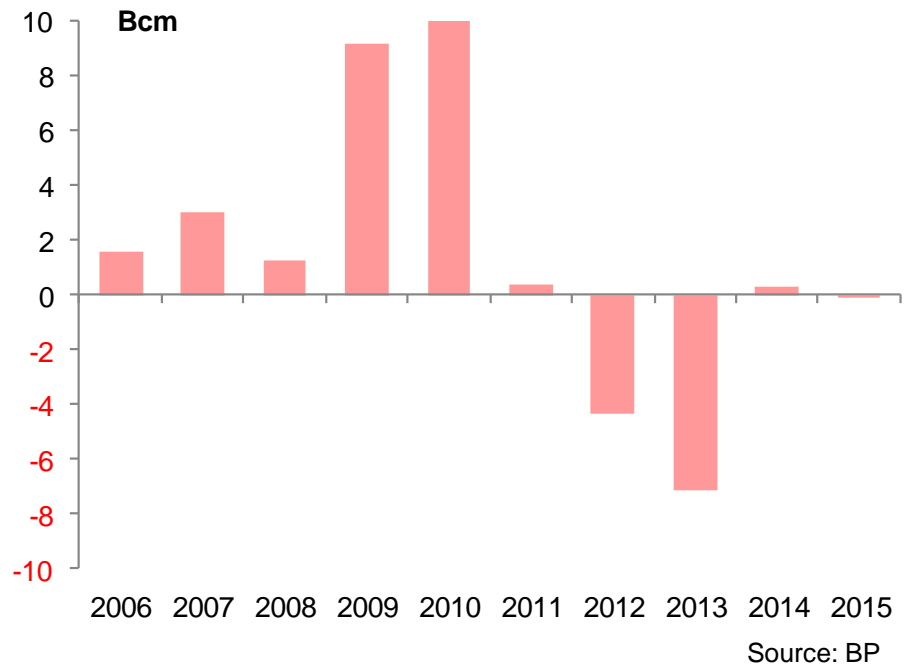
# Gas demand in emerging countries

- ▣ In China, gas demand has maintained an uptrend while decelerating on an economic slump.
- ▣ Indian gas demand has bottomed out after a slump and is expected to increase in the future.
  - Major factors behind gas demand growth are a decline in international LNG prices and rising demand for gas for fertilizers.
- ▣ The Chinese and Indian markets have great demand growth potential for the future.
  - According to the IEA, China and India will account for 47% of global gas demand growth (341 Bcm) in the next five years.
  - At present, demand in China and India is the only factor that can change the current LNG supply and demand trend.

**Chinese natural gas demand changes  
(year on year)**



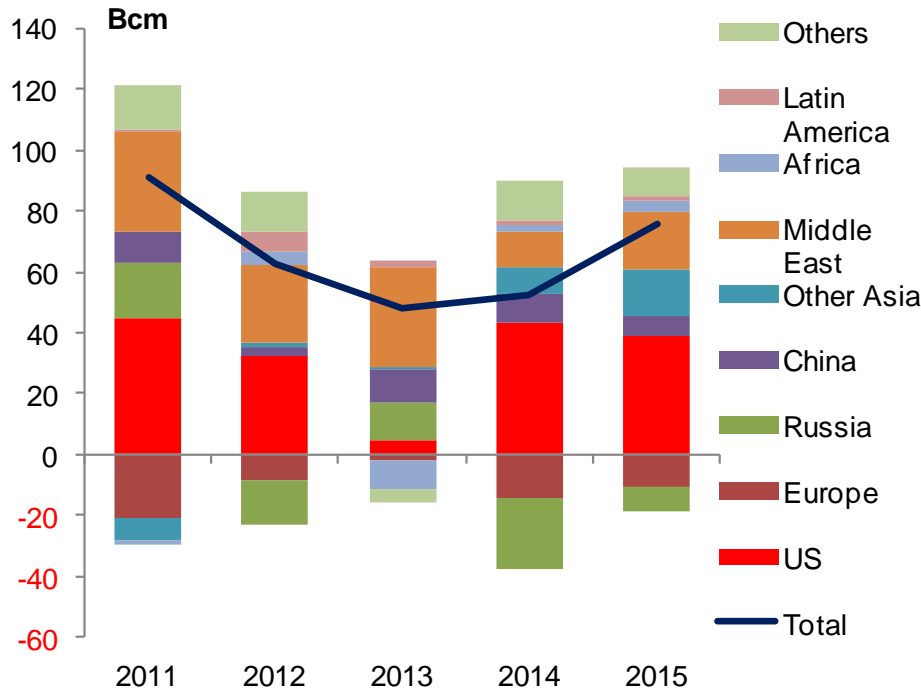
**Indian natural gas demand changes  
(year on year)**



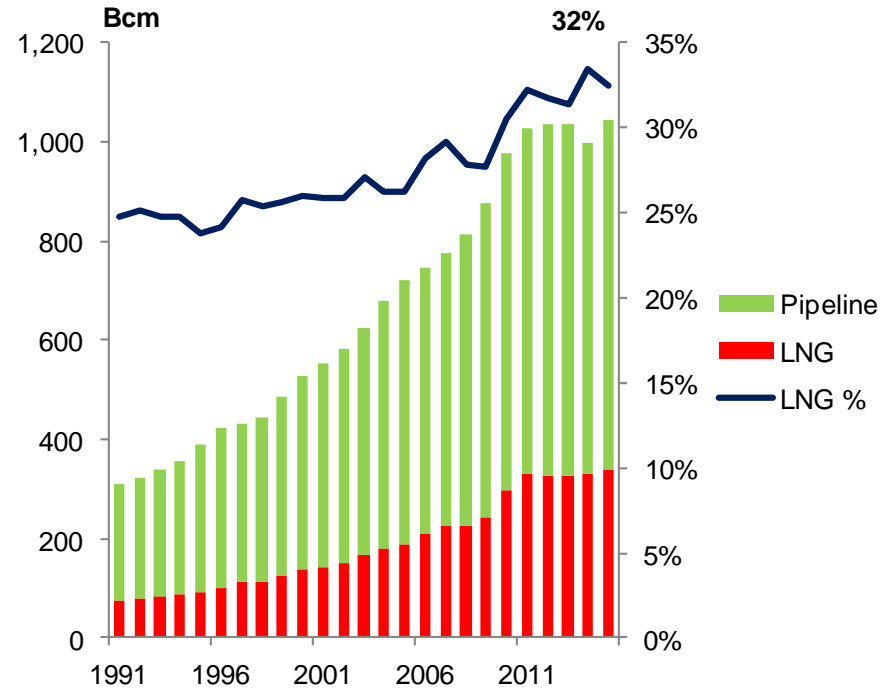
# Global natural gas supply

- ▣ While Russia and Europe have reduced gas supply, rising production in the United States, the Middle East and Asia has driven global supply growth.
  - Production has increased in Iran and Qatar among Middle Eastern countries and in Australia among Asian-Oceanian countries.
- ▣ Global natural gas trade has turned upward, though with LNG trade stagnating.
  - LNG's share of natural gas trade has fallen to 32%.

**Global natural gas supply changes (year on year)**



**Global natural gas trade**



# Large LNG projects launching production

- ❑ New projects with a total capacity of more than 30 million tons are expected to launch production in 2016.
- ❑ Large projects will launch production in 2017 and 2018 mainly in the United States and Australia.
  - However, the current oversupply may prompt some projects to delay start-up.

## New projects through 2018

Country	Project	Capacity (mtpa)	Partners	Start up
Angola	Angola LNG	5.2	Sonangol, Chevron, Total, Eni, BP	2016
Australia	Gladstone LNG	3.9	Santos, Petronas, Total, Kogas	2016
Australia	Gorgon T1	5.2	Chevron, Shell, Exxon Mobil	2016
Australia	Australia Pacific LNG	4.5	Origin, ConocoPhillips, Sinopec	2016
United States	Sabine Pass (T2)	4.5	Cheniere Energy	2016
Australia	Gorgon (T2)	5.2	Chevron, Shell, Exxon Mobil	2016
Indonesia	Sengkang LNG	2.0	Energy World Corporation	2016
Malaysia	MLNG T9	3.6	Petronas	2016
Malaysia	PFLNG SATU	1.2	Petronas, MISC	2017
Australia	Wheatstone LNG	8.9	Chevron, Apache, KUFPEC	2017
Australia	Gorgon (T3)	5.2	Chevron, Shell, Exxon Mobil	2017
United States	Cove Point LNG	5.3	Dominion	2017
United States	Sabine Pass (T3-T4)	9.0	Cheniere Energy	2017
Cameroon	Cameroon FLNG	1.2	SNH, Perenco, Golar	2017
Russia	Yamal LNG (T1-T3)	16.5	Novatek, Total	2017
Australia	Prelude FLNG	3.6	Shell, Inpex, Kogas, CPC	2018
Australia	Ichthys LNG (T1-T2)	8.9	Inpex, Total	2018
United States	Freeport LNG (T1-T3)	13.2	Freeport, Macquarie	2018
United States	Corpus Christi LNG (T1-T2)	9.0	Cheniere Energy	2018
United States	Sabine Pass (T5)	4.5	Cheniere Energy	2018
United States	Cameron LNG (T1)	4.0	Sempra Energy	2018

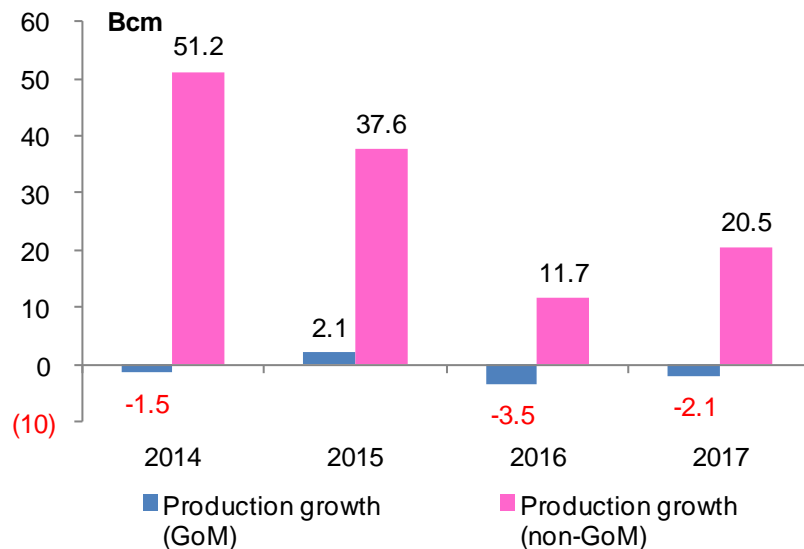
Source: Media reports, company releases, etc.



# U.S. natural gas supply

- Production growth has slowed down but will recover toward 2017 again.
  - Weak Henry Hub prices have had no major impact on U.S. natural gas production.
- In February 2016, LNG export from the U.S. mainland started. Through 2020, more than 60 million tons of LNG without restrictions on destinations will be exported from the U.S. mainland.
  - The U.S. LNG export has exerted no explicit impact on the Asian market but is expected to improve future international LNG market liquidity and help create pricing benchmarks.
  - Meanwhile, the current oversupply may be making it difficult for LNG facilities to operate at their full capacity.

## EIA outlook for U.S. natural gas production changes



Source: EIA STEO

## U.S. LNG projects

U.S. Lower 48 liquefied natural gas export facilities

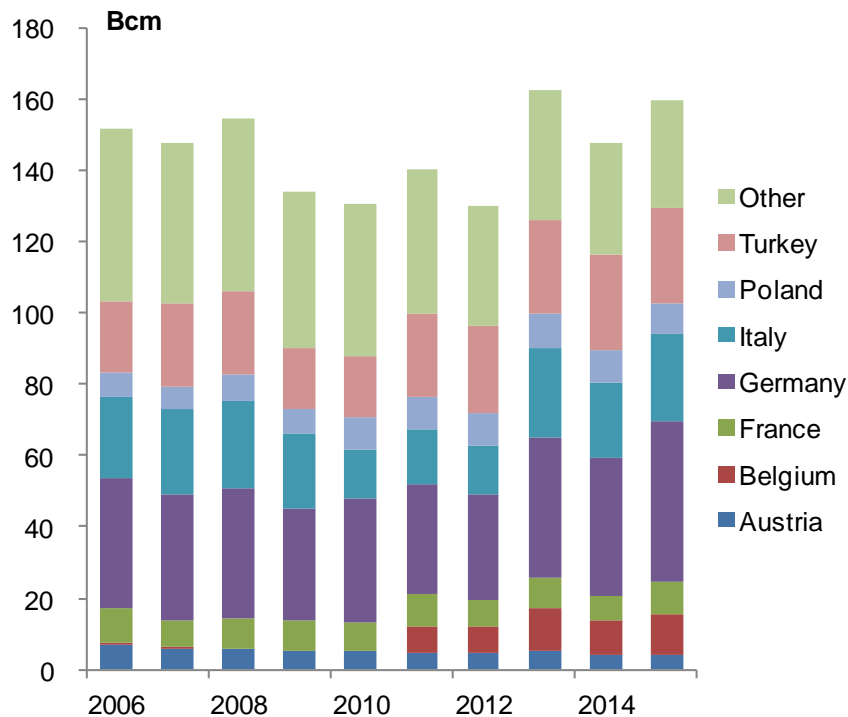


Source: EIA 8

# Russian natural gas supply

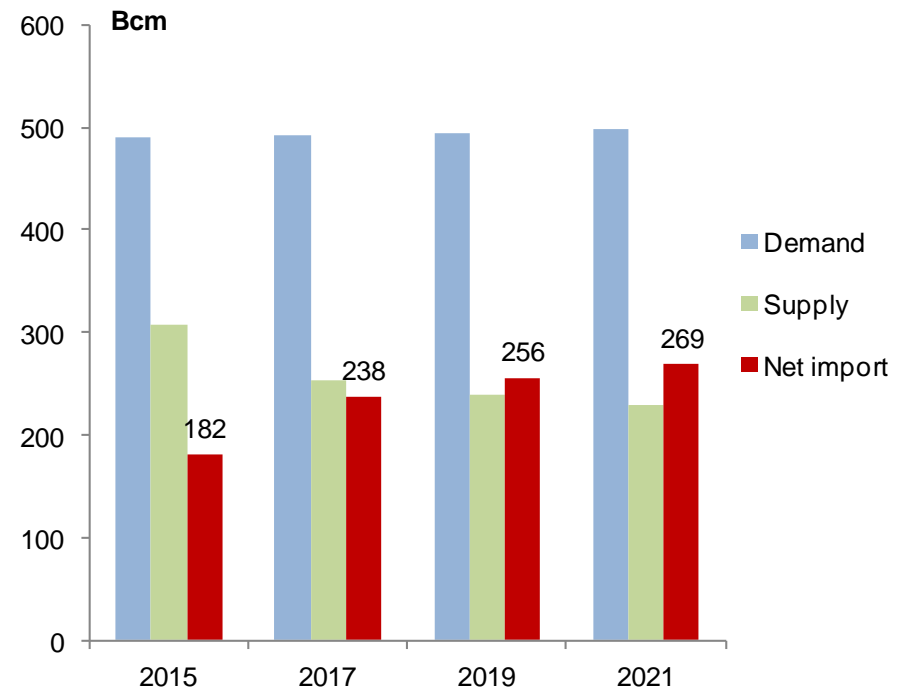
- ❑ Natural gas exports to Europe via pipelines had plunged in the wake of the Lehman Shock before recovering recently.
- ❑ Europe with expanding gas import demand will remain a major market for Russia. Given competition from renewable energy, coal, and U.S. and other LNG, however, Russia may be required to set competitive prices for natural gas exports.

## Russian gas export volume changes



Source: BP

## Future European gas supply-demand balance

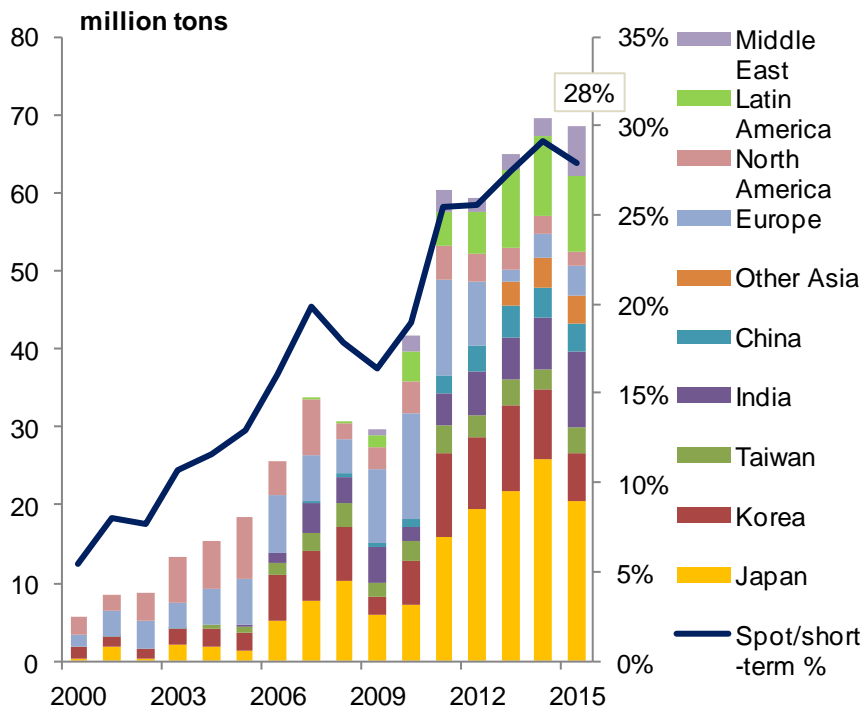


Source: IEA MTGMR

# Spot and short-term contract transaction trends

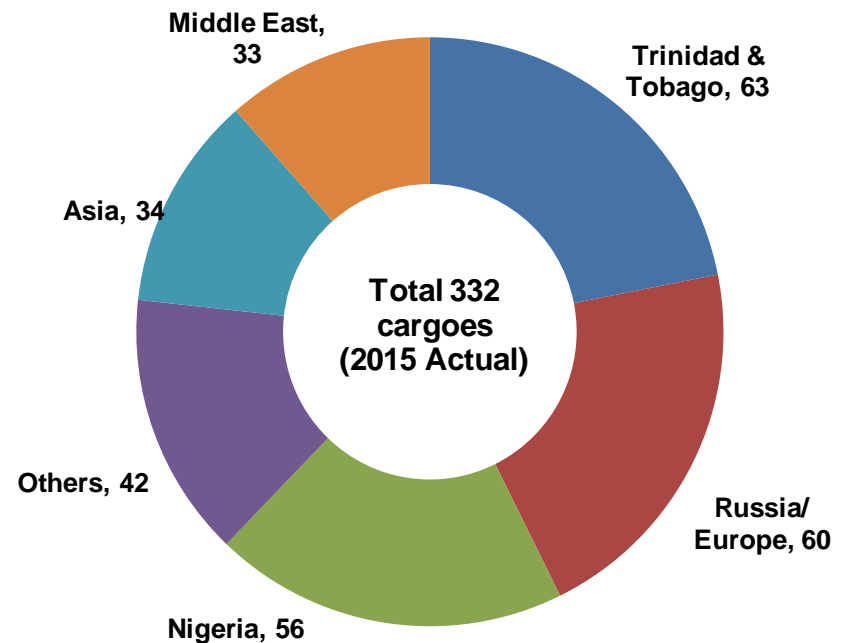
- ❑ In the international LNG market, spot and short-term contract transactions have stagnated in response to weak demand.
- ❑ Trinidad and Tobago, Russia and Nigeria have remained major LNG suppliers for spot transactions.
  - As LNG production free from long-term contracts increases in the future, spot transactions are expected to expand due to supply-side factors.

## Global spot and short-term contract transactions



Source: GIIGNL

## Global spot cargo exports

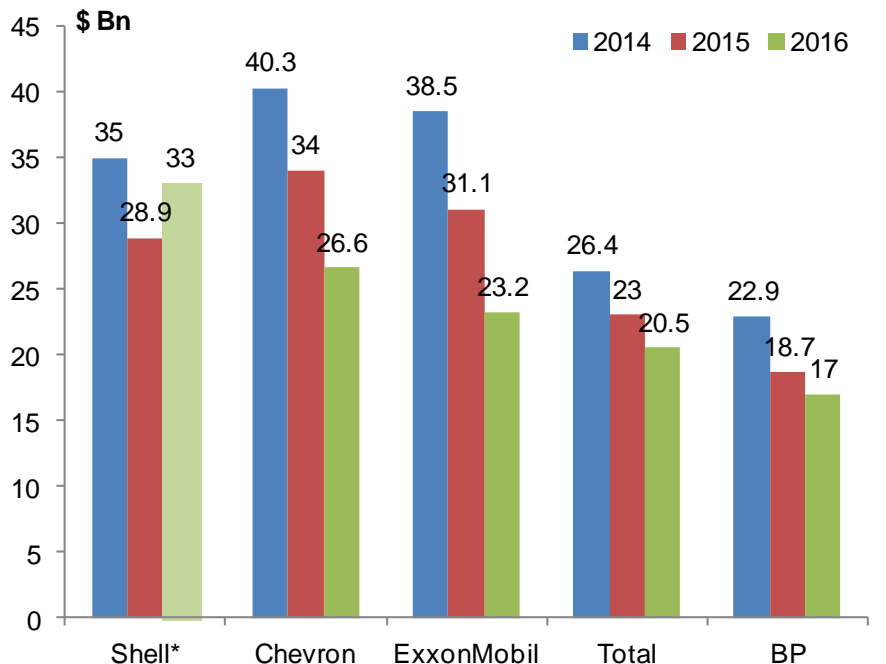


Source: ICIS 10

# Slumping investment and future projects

- ❑ Crude oil price plunges have led oil companies to continuously reduce capital spending.
  - Oil majors look for new business models, while small and medium-sized oil companies struggle to repay debt.
- ❑ As uncertainties grow about LNG demand, investment decisions are expected to be delayed on new projects.
  - A major matter of concern is that the investment slump could lead the supply-demand balance to tighten over a long term.
  - It will be important to timely launch projects under planning particularly in Canada and Eastern Africa.

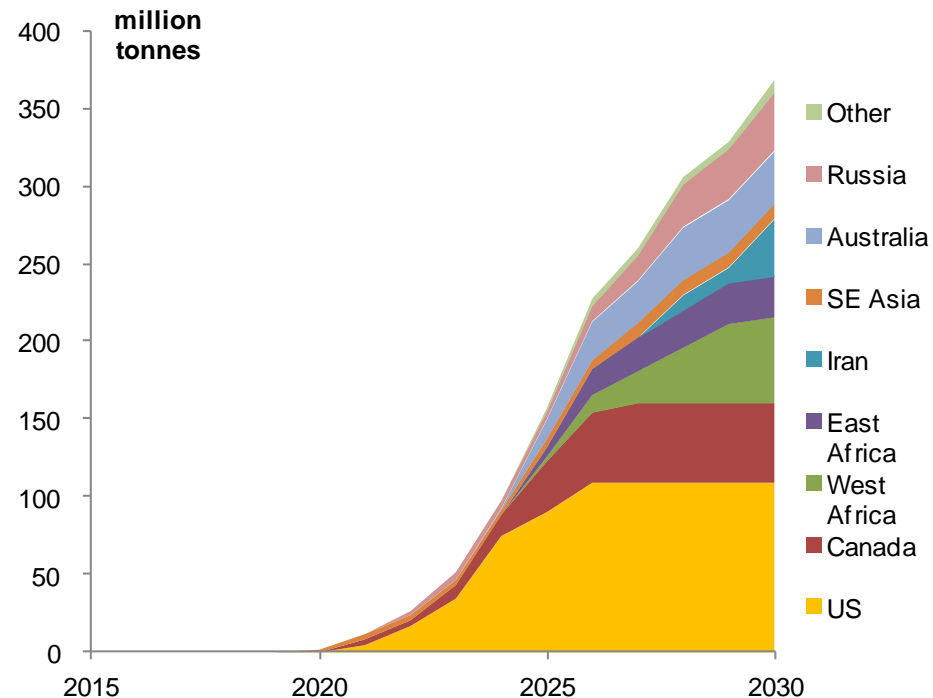
## International oil majors' capital spending trends



Planned amounts for 2016 include capital spending on the downstream sector. \*Including BG (British Gas) spending.

Sources: Annual reports of these companies

## LNG projects under planning (reference)



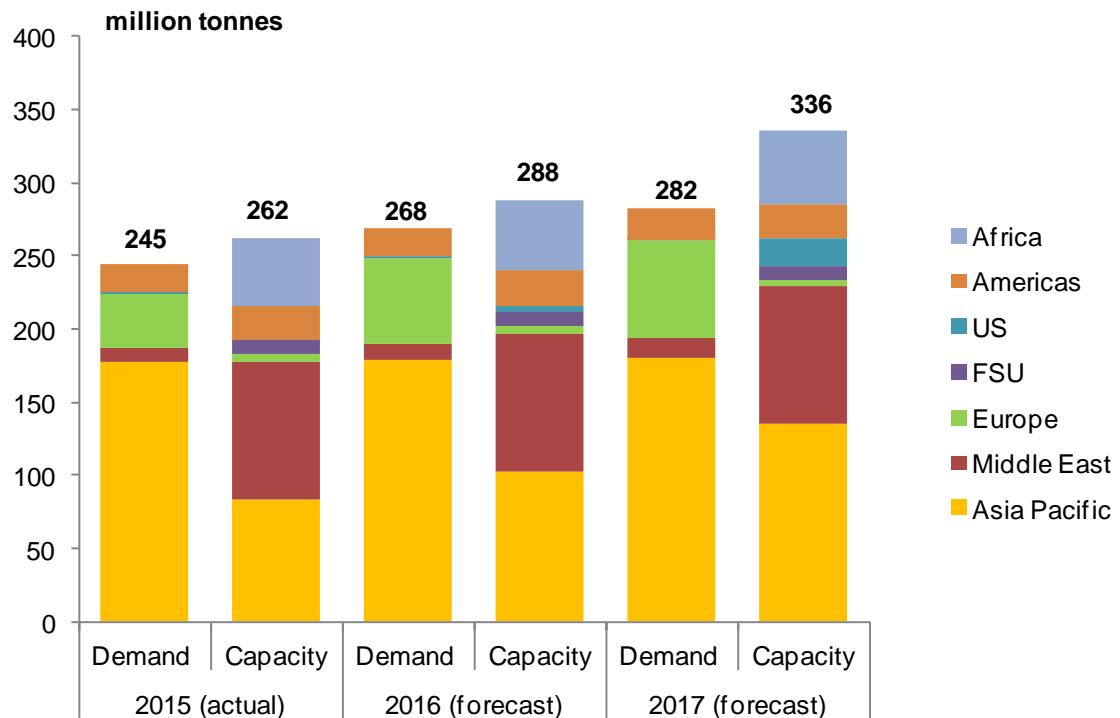
Source: IEEJ 11

# Outlook for international LNG supply-demand balance

- ❑ Oversupply may expand further
  - Large projects will be launched one after another in the United States and Australia.
  - Some projects may be forced to delay production launches or adjust capacity utilization ratios.
- ❑ Important factors for projecting future demand are the trend of the world economy including emerging economies and energy policy measures such as the enhancement of price competitiveness against other fuels and infrastructure development.
- ❑ Europe will increase LNG demand as the final receiver of surplus LNG for supply-side reasons.

## Short-term global LNG demand and projected supply capacity

Source: IEEJ



# Outlook for natural gas prices

- Following is an outlook for the average price of LNG arriving in Japan from the second half of 2016 through 2017:

Price	1st half 2016 (Actual data)	2nd half 2016 (Forecast)	2017 (Forecast)
<b>LNG arriving in Japan</b>	<b>\$7.0</b>	<b>\$6.6</b>	<b>\$7.4</b>

- Details of outlook for prices

- Overall LNG import prices are forecast to increase as prices for long-term LNG import contracts rise in response to a crude oil price recovery.
- Given that orders from emerging LNG importers will increase while the LNG supply-demand balance will further loosen and that spot prices may be susceptible to changes in the benchmark European (NBP) price and long-term contracts prices, spot prices are forecast to weaken to a \$4.5-5.5/mmbtu range.
- As a result of the above forecast price changes, a gap between long-term contract and spot prices is likely to expand.

# Developing an LNG trading hub

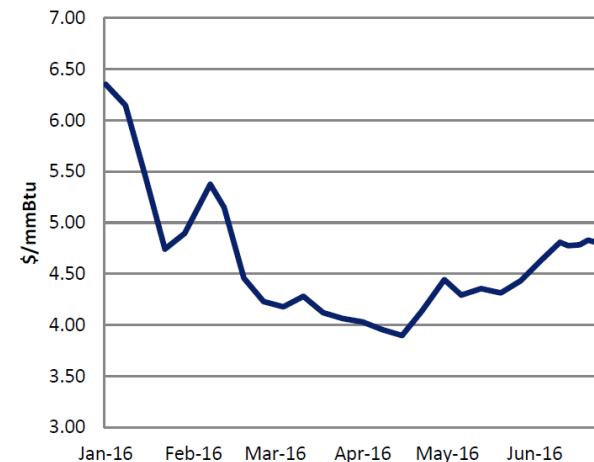
- ❑ Japan published the Strategy for LNG Market Development in May 2016, seeking to procure cheaper and flexibly available LNG.
  - Top priority is given to relaxing or repealing destination clauses in LNG contracts. A flexible, thick market would contribute to finding appropriate natural gas price levels and improving natural gas security.
- ❑ Moves for developing a trading hub
  - The Tokyo Commodity Exchange opened an LNG OTC market at the Japan OTC Exchange in September 2014.
  - In January 2016, the Singapore Exchange launched futures and swaps on Singapore's new price index for LNG (SGX LNG Index Group: SLInG).
- ❑ In the future, it will be important to invigorate spot transactions through the improvement of transaction flexibility and benchmark prices' reliability and the standardization of trading terms and conditions.

## Specific actions under the Strategy for LNG Market Development

1. Relaxing or eliminating restrictions on resale (under destination clauses) in contracts
2. Implementing public financing contributing to launching projects and developing a market smoothly
3. Expanding gas/LNG demand to thicken the LNG market
4. Quick LNG delivery
5. Realizing a benchmark price reflecting Japanese LNG demand
6. Expanding LNG terminal, underground storage and pipeline capacity available for third parties' delivery and transactions
7. Enhancing collaboration between LNG consuming and producing countries
8. Continuing dialogue with private sector players
9. Future reviews and continuous consideration

Source: Ministry of Economy, Trade and Industry

## Singapore SLInG price changes



source : SGX 14  
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