

GAS

Medium-Term Market Report 2014

Global Gas Market Outlook

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Gas, Coal and Power

7th International Gas Turbine Conference

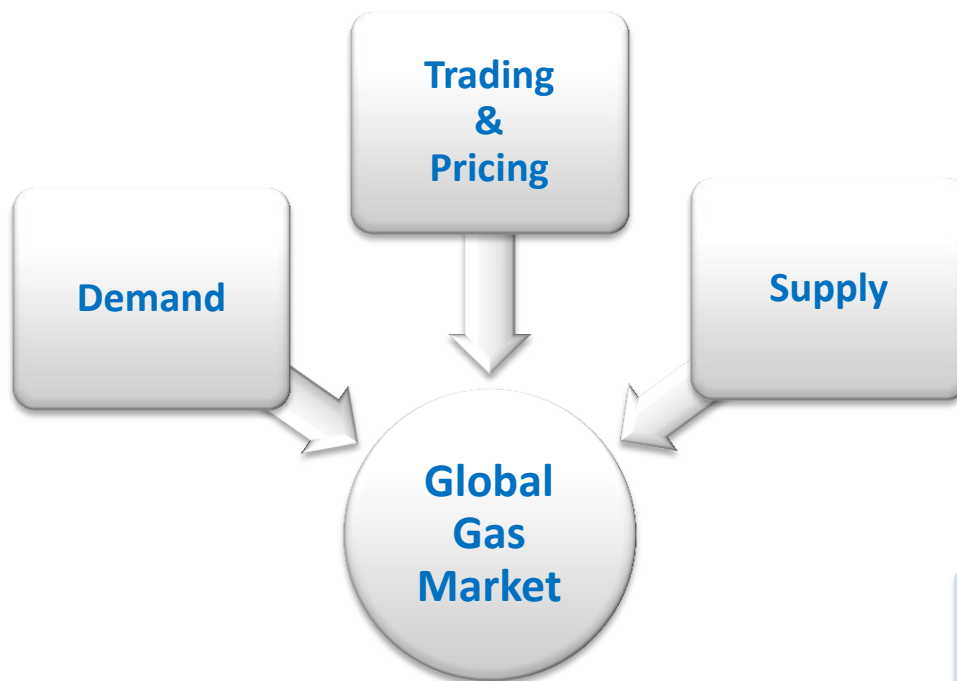
Brussels, 2014



Market Analysis and Forecasts to 2019

Outline

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**The share of gas
In the global energy
mix**

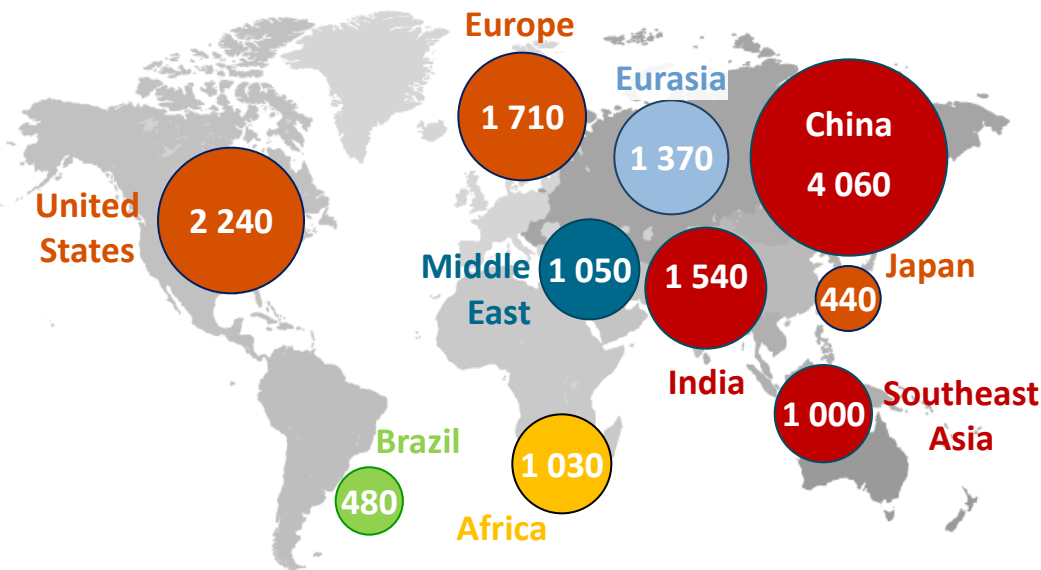
Energy policies

**The impact of the
Russian-Ukraine crisis**

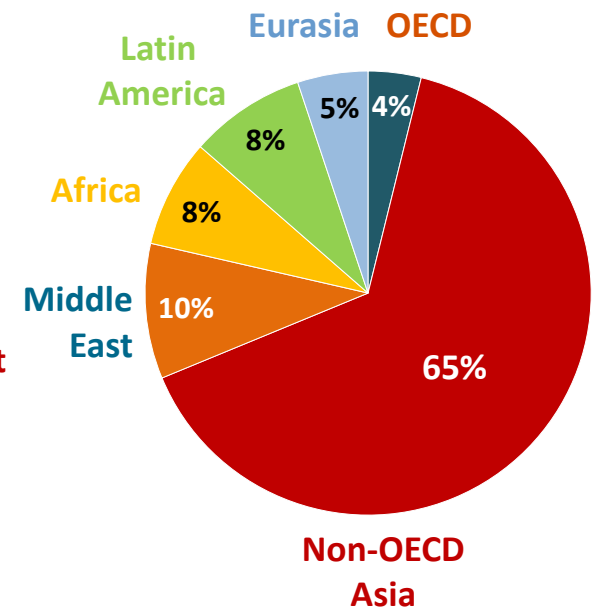
The engine of energy demand growth moves to South Asia

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Primary energy demand, 2035
(Mtoe)



Share of global growth
2012-2035

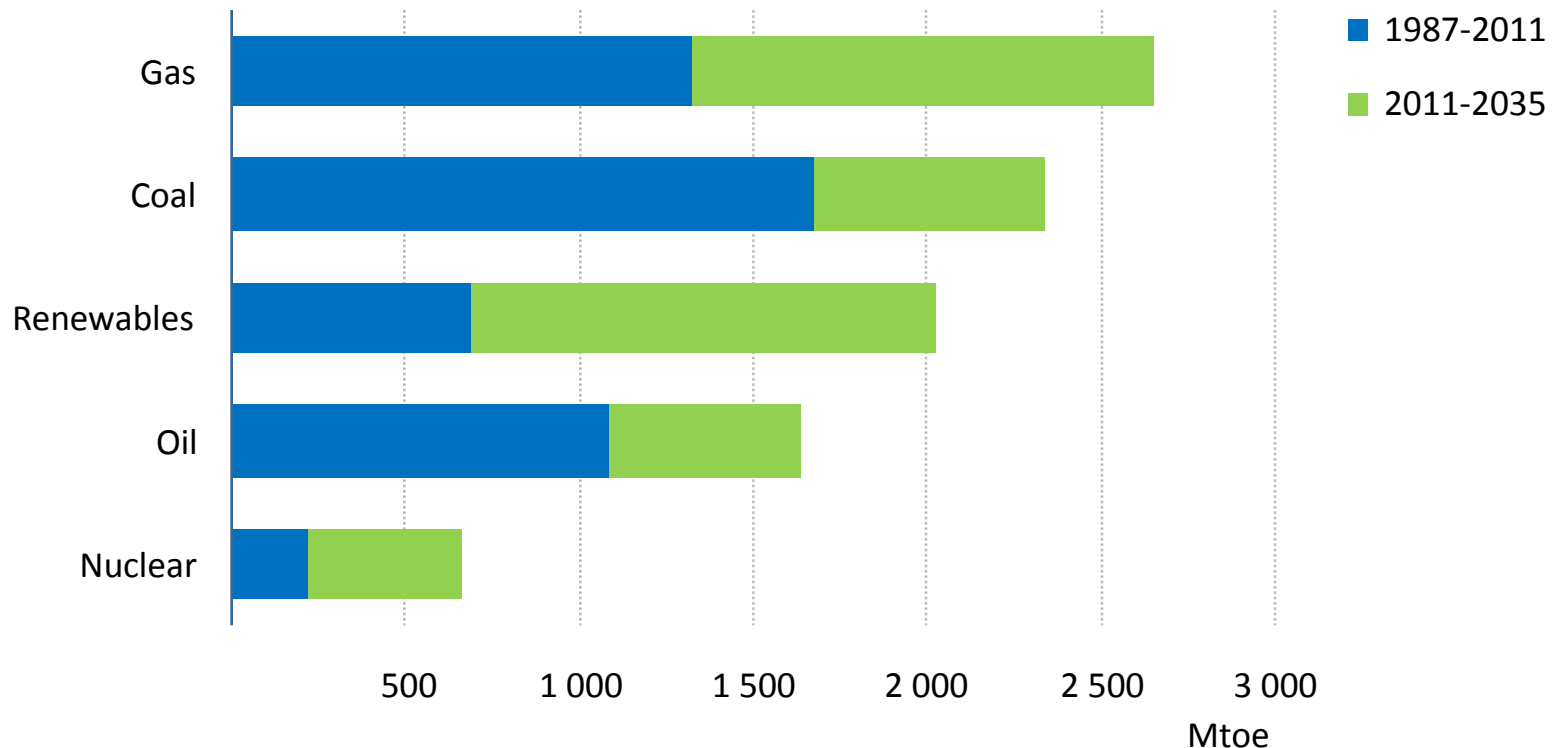


- China is the main driver of increasing energy demand in the current decade, but India takes over in the 2020s as the principal source of growth

The energy mix is slow to change

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Growth in total primary energy demand

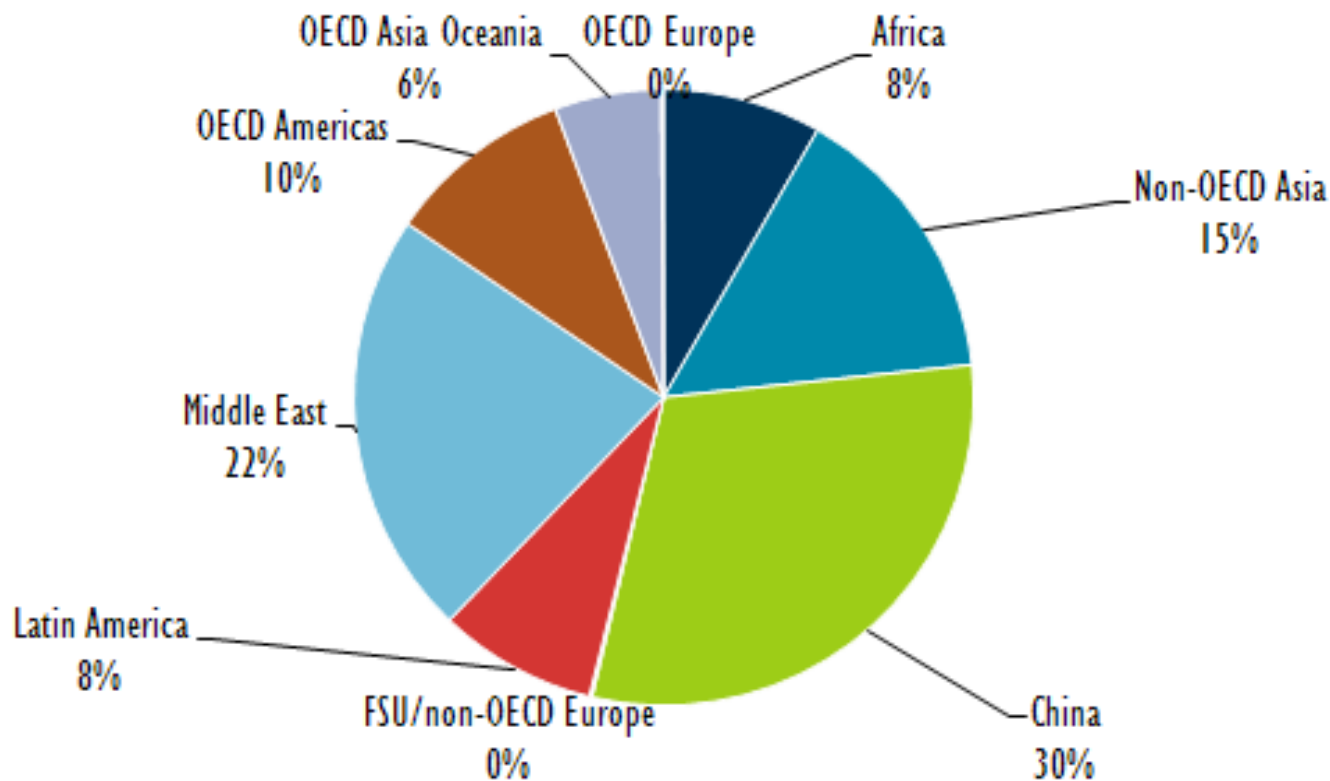


- 25 years ago the share of fossil fuels in the global mix was 82%; it's the same today
- Strong rise of renewables in the future only reduces this to around 75% in 2035

Gas demand grows by 490 bcm, 2.2% per year between 2013-2019

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Split, of incremental demand by region, 2013-2019

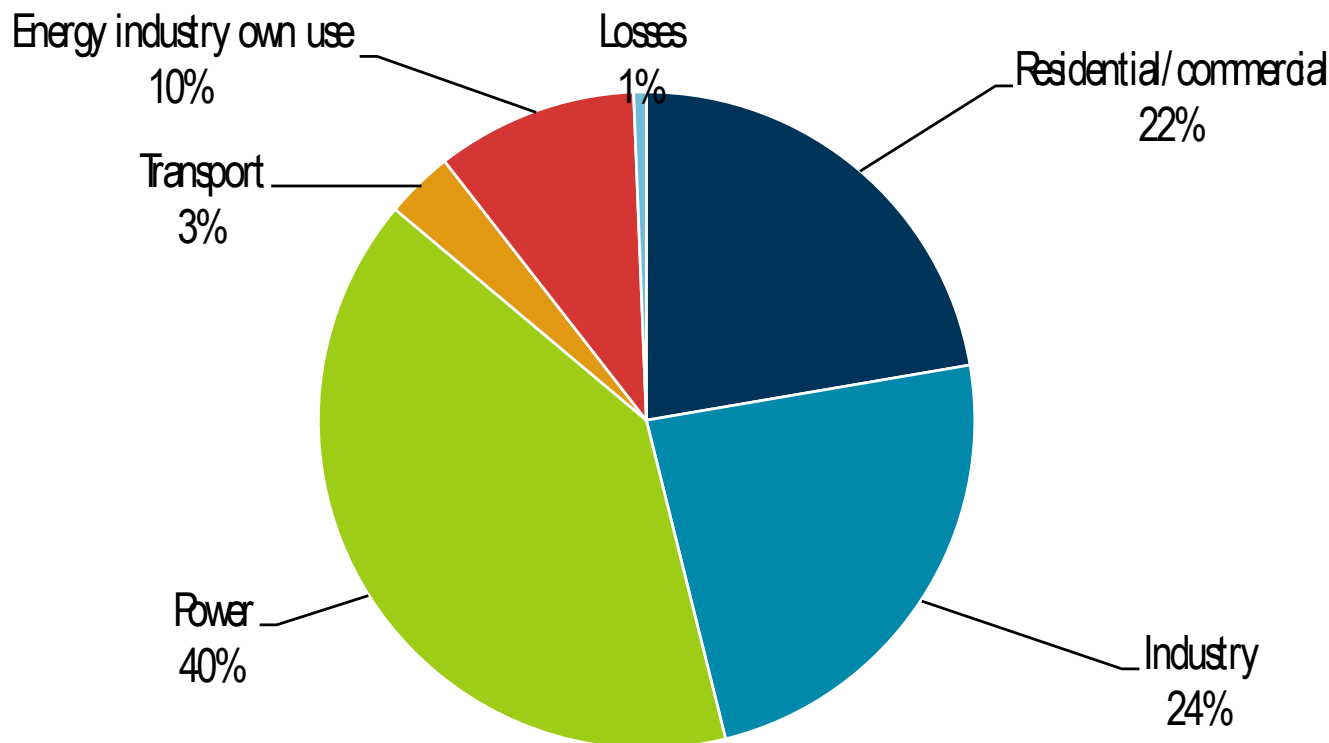


- China is by far the largest contributor, followed by the Middle East.
- In Europe zero growth for the next 5 years.

The power sector and the industry: the largest contributors of the growth

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World's gas demand by sector, 2013 (estimates)

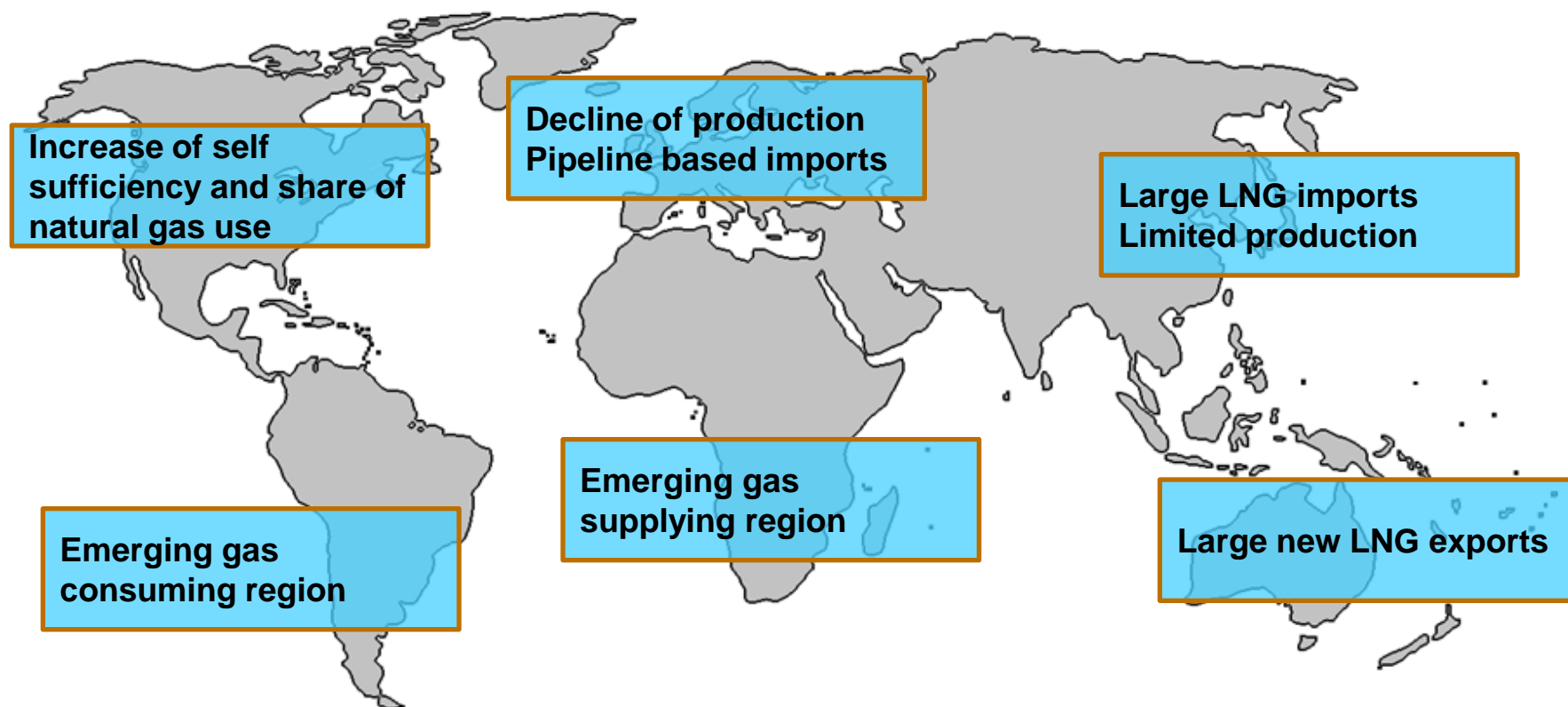


Forecast 2013-2019:

- Power contributes to 53% of the demand growth of gas, with 258 bcm
- Industry is the second largest contributor with 154 bcm (32% of the incremental demand)

Different regions, different interests and different policies

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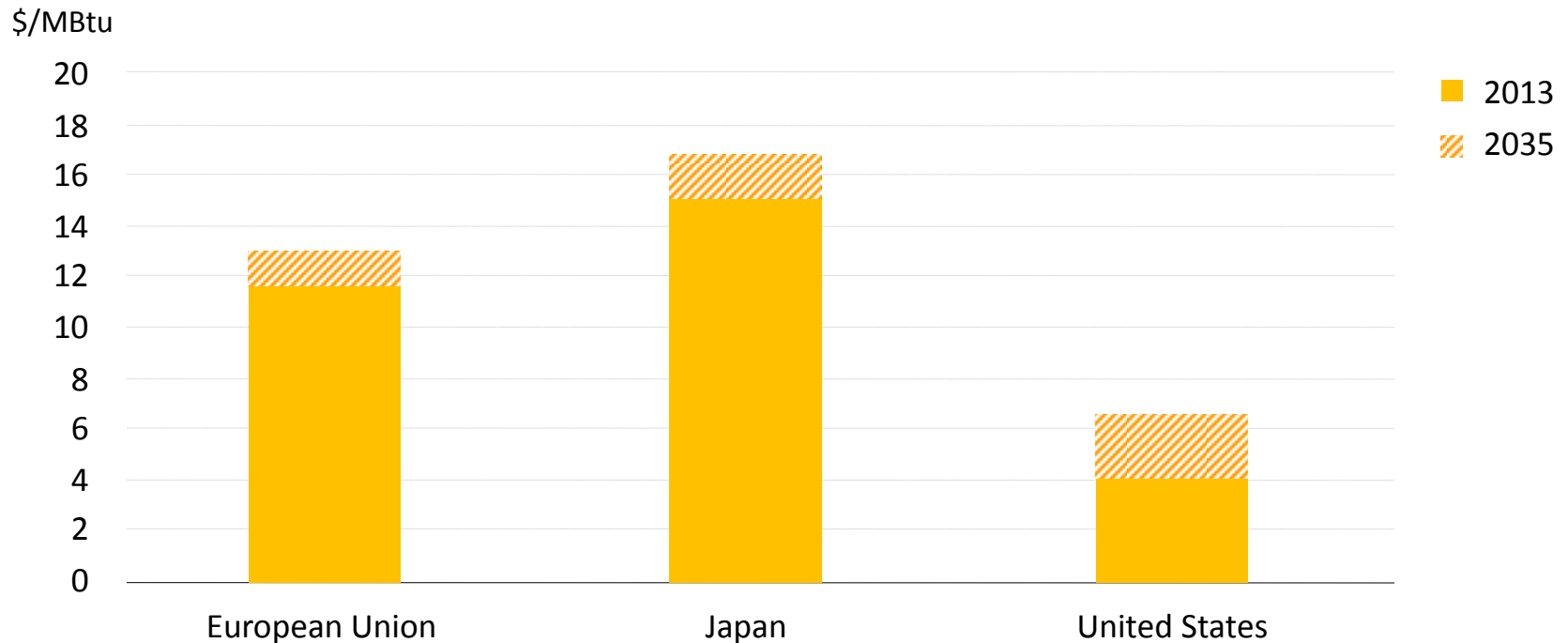


➤ Large differences world wide in gas markets: 3 price zones

Price differentials are here to stay

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Natural gas prices by region



- Regional differences in natural gas prices narrow from today's very high levels but remain large

The policy agenda's on natural gas

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Local air pollution
Security of supply



Creating jobs with
gas

Climate Change

LNG exports and
effect on prices



Decreasing gas
import dependency

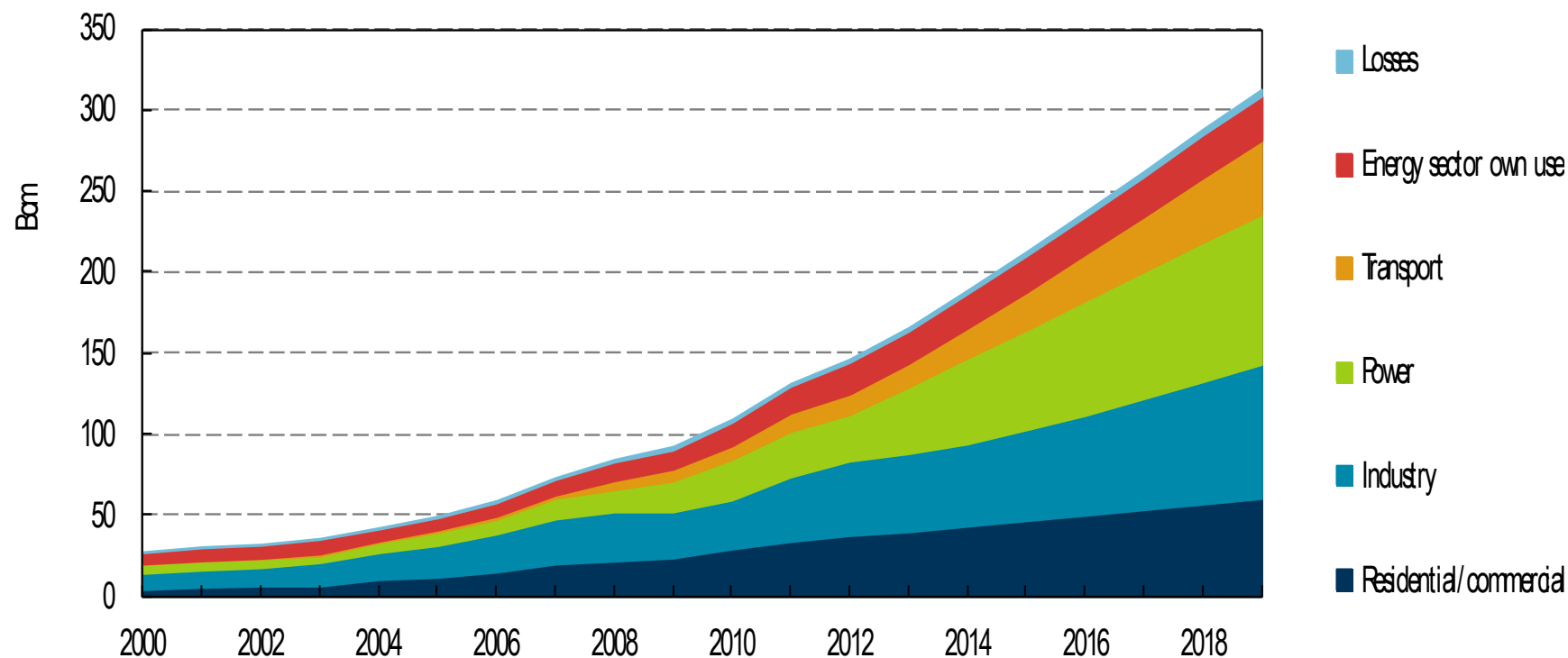
Competitiveness

Decarbonisation



Political aim to reduce the use of coal leads to a demand growth of 11.3 % per year over 2013-2019

Gas demand in China 2000-2019

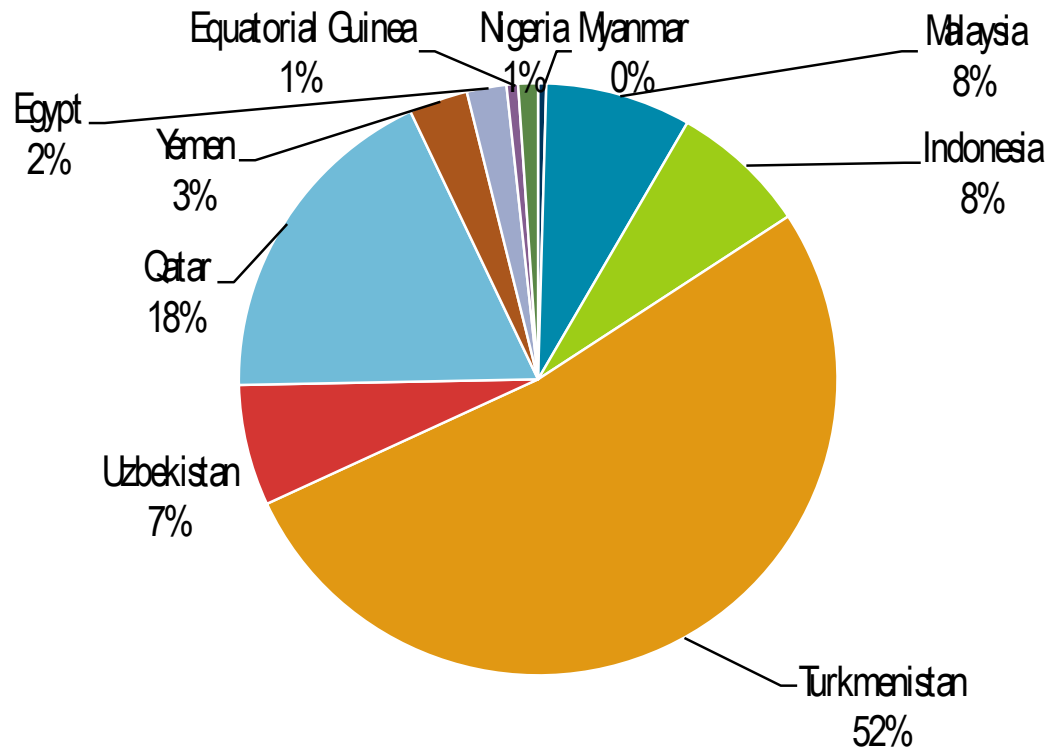


- **An additional demand of 149 bcm, up to 315 bcm by 2019.**
- **50% of additional demand will be met by domestic production, the rest with imports.**

Chinese diversification policy: a successful formula

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Gas flows to China 2013



- **Turkmenistan as the largest supplier. based on a broad economic bilateral cooperation.**
- **Also with Russia “ Power to Siberia pipeline**

China: accelerating the production of shale gas

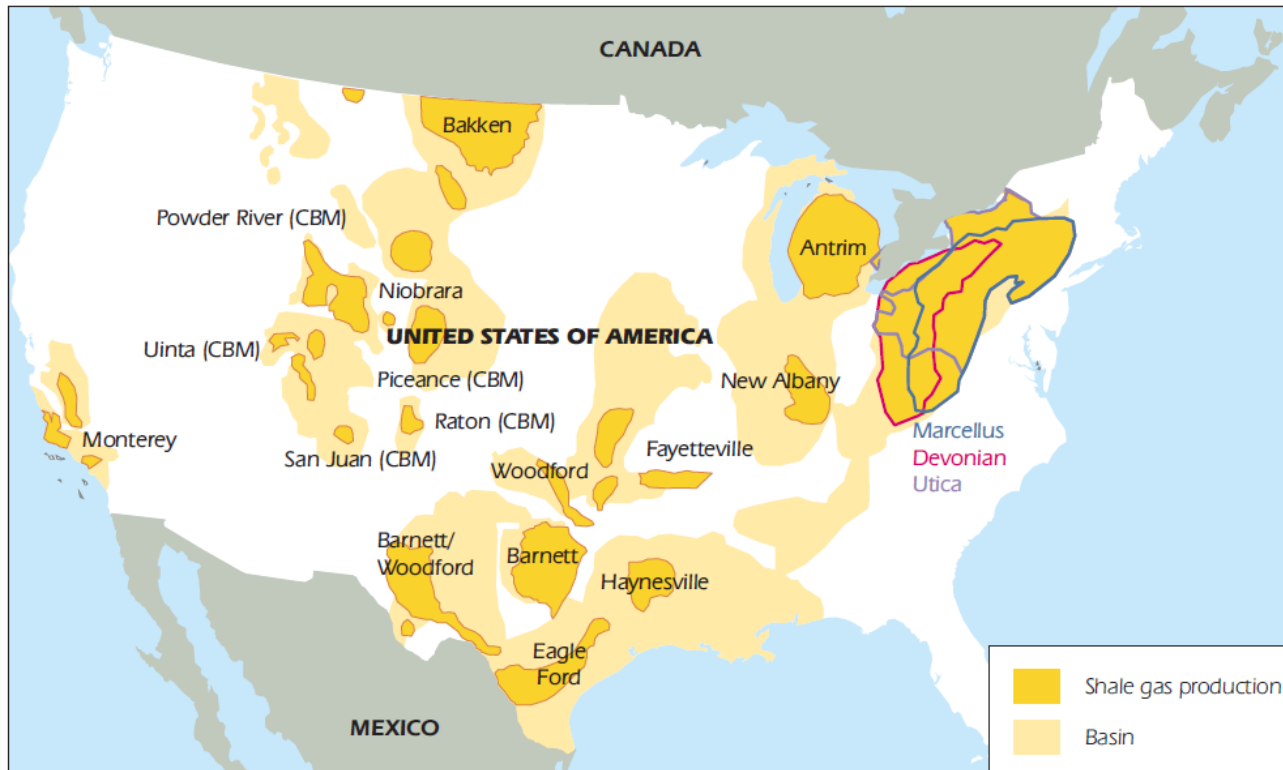
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- China is in a good position to replicate the shale gas revolution.
- Technically recoverable shale gas reserves 25 tcm (larger than U.S. estimated reserves 24.4 tcm).
- China's plan to reach 6.5 bcm in 2015.
- After 2020 acceleration of production. IEA projection 120 bcm in 2035

The US: a new production record in 2013, 688 bcm

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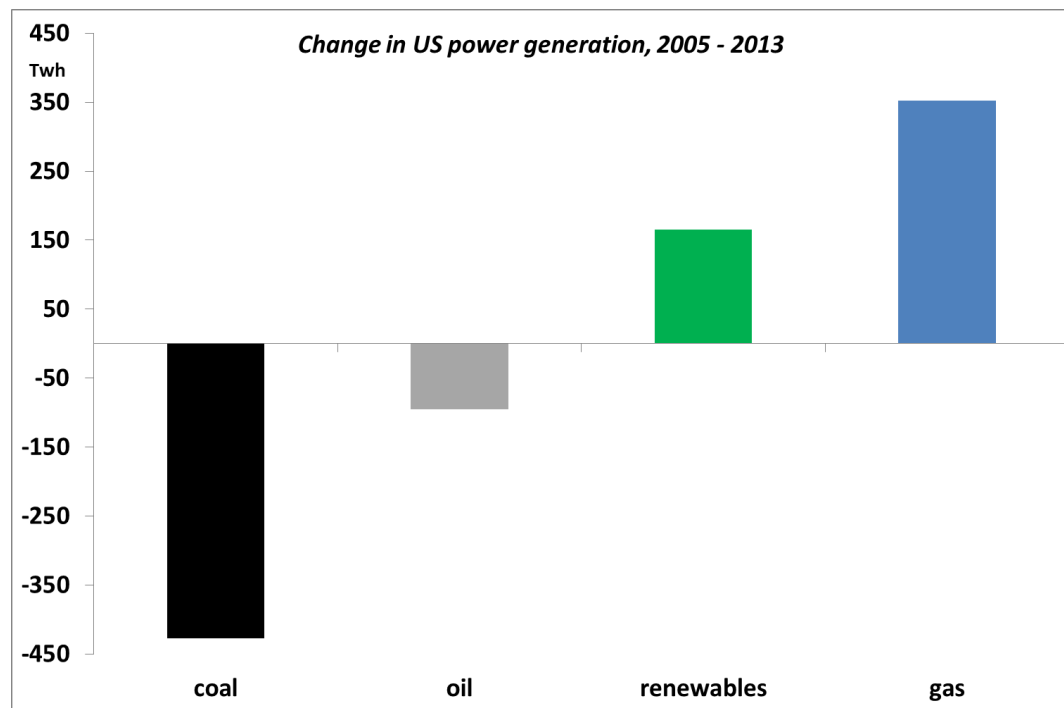


This map is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

- **A perfect combination of production factor: Marcellus, NGL's and tight oil, technological progress and access to capital**
- **Forecast: production will keep rising, reaching 797 bcm in 2019.**
- **Total demand 765 bcm in 2019, increasing exporting capacity**

The Obama plan: the first time the U.S. is regulating power plants nationwide

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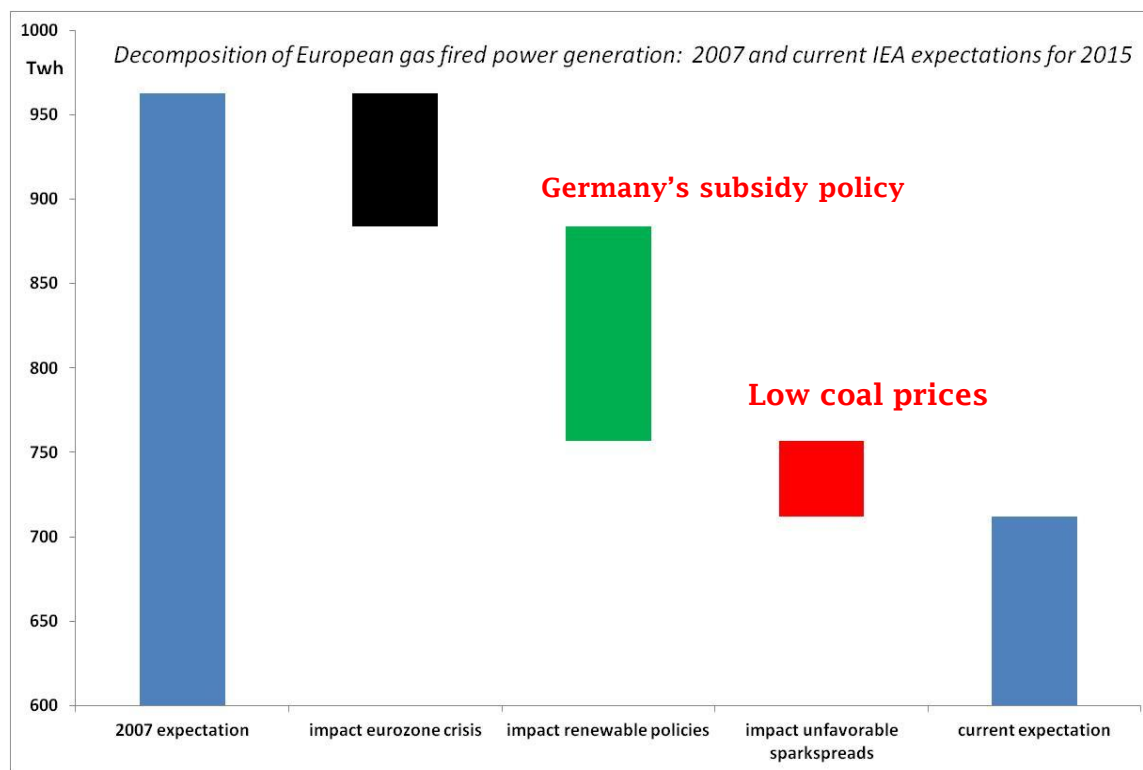


- The new Clean Power Plan seeks to cut carbon emissions of power plants by 30% by 2030. It contains strong new rules targeting coal-burning power plants in an effort to curb global warming.
- States must submit initial compliance plans by June 2016.
- Strategies may include increasing nuclear or solar power or switching to natural gas,

European declining demand

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Who killed EU gas fired power generation?

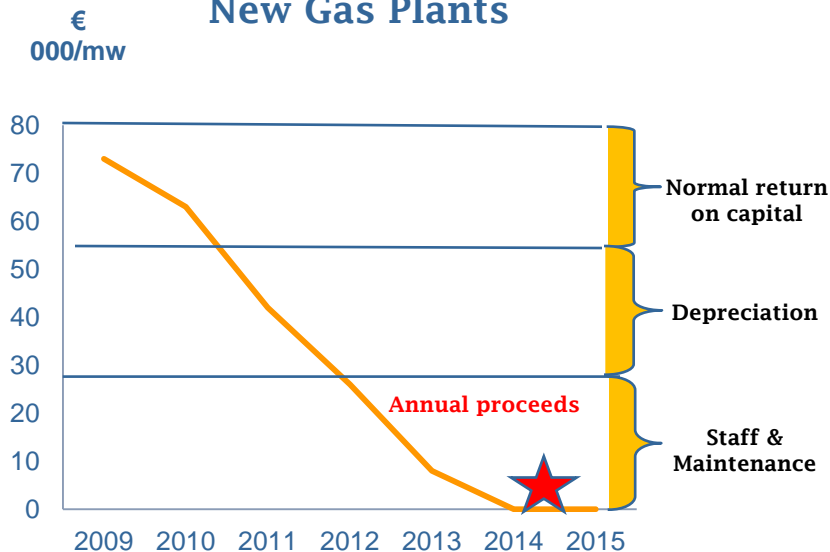


- 2013: 18 bcm less use of gas in the power sector, following significant drop of 23 bcm in 2012.
- Demand in power sector has not been so low since 2002.

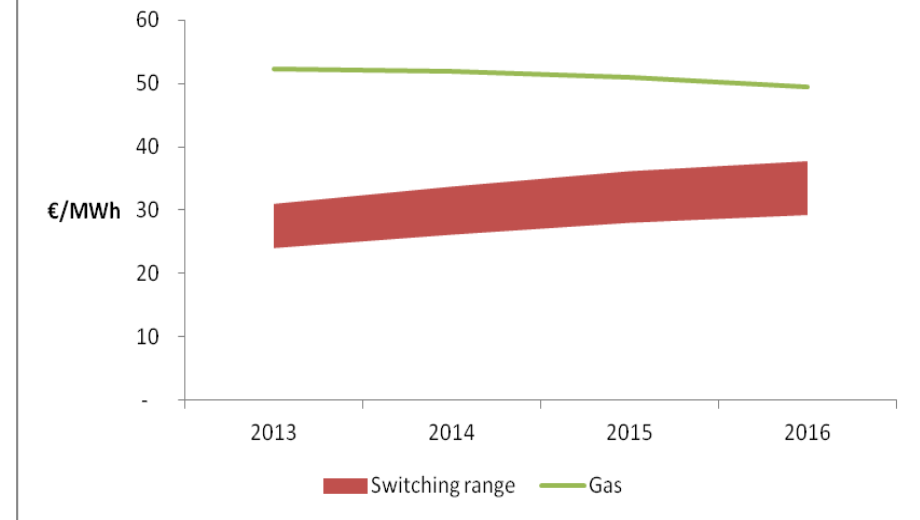
Weak demand will remain during the next years

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New Gas Plants



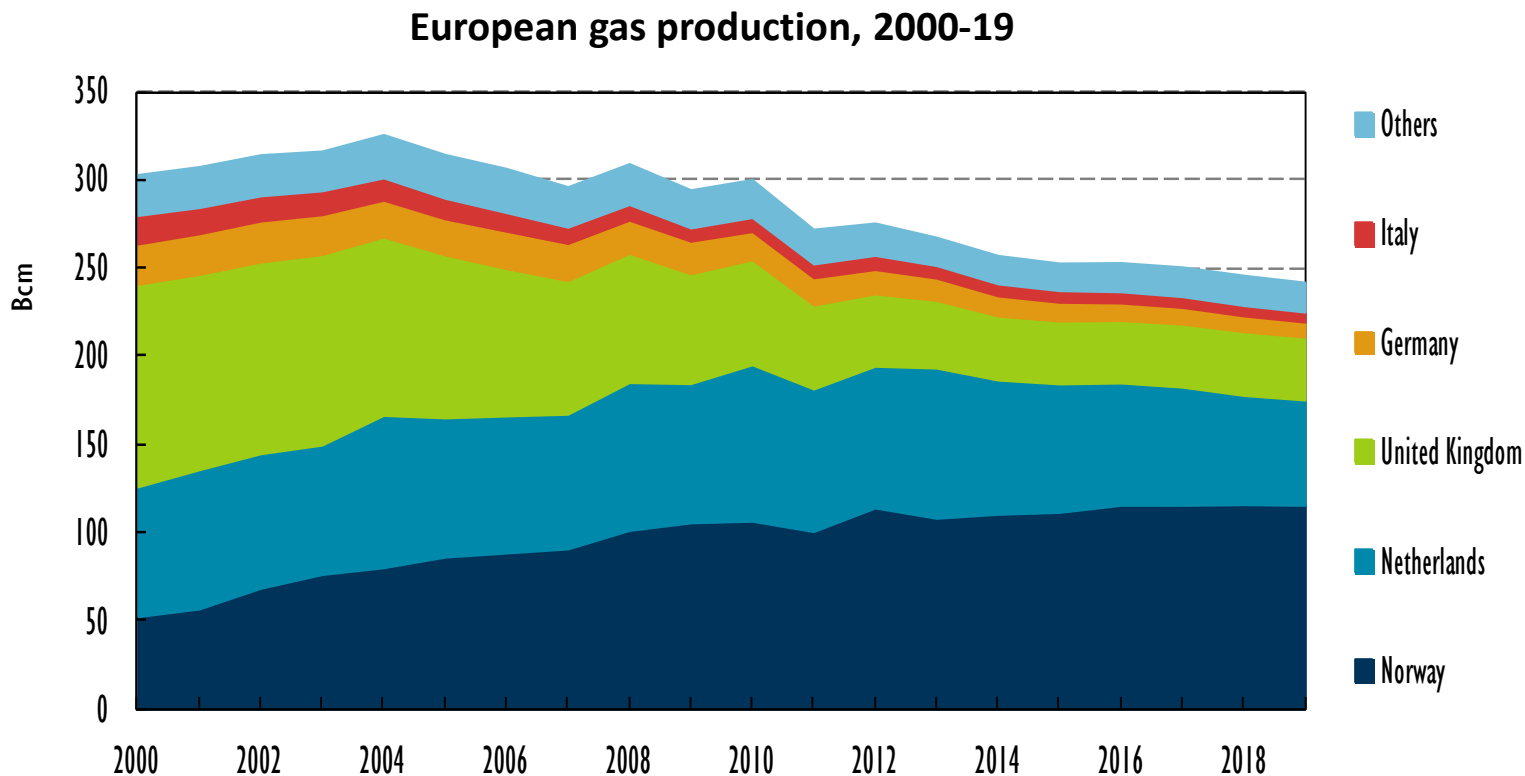
Generation costs based on futures



- Around 30 GW gas power plant capacity mothballed at the end of 2014, 40 GW at the end of 2015
- Probably light recovery gas use power and industrial around 2019, but structural weak position of gas remains
- Is that too late to avoid a new round shut down power plants?

Declining domestic Production in Europe

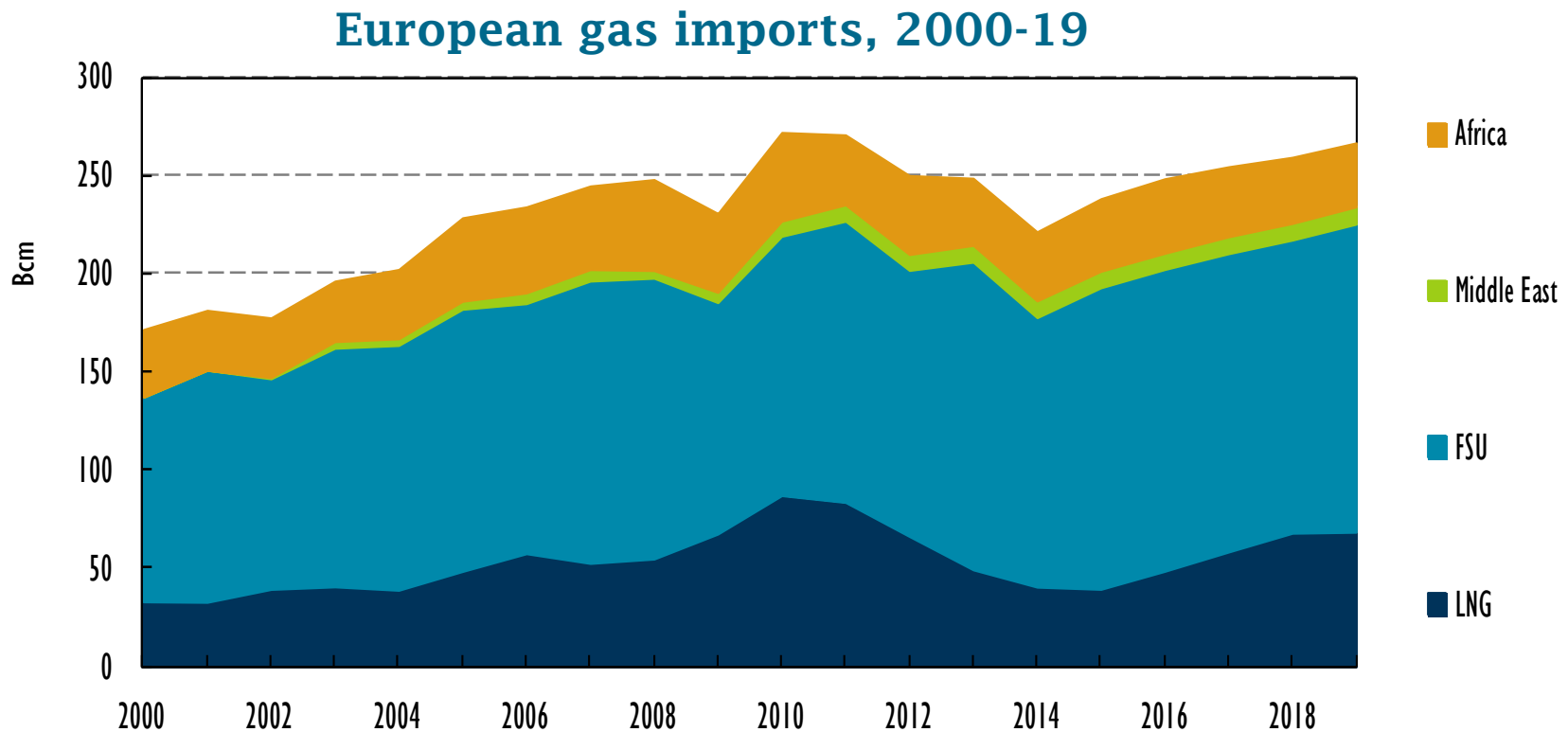
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- **Domestic production: Norway (109 bcm), the Netherlands (86 bcm) and UK (73 bcm)**
- **European gas production is forecast to decline even more than previously foreseen due to changes in Dutch gas policy, around 25 bcm over 2013-19.**

Despite low demand and weak gas position, Europe will have to rely increasingly on imported gas

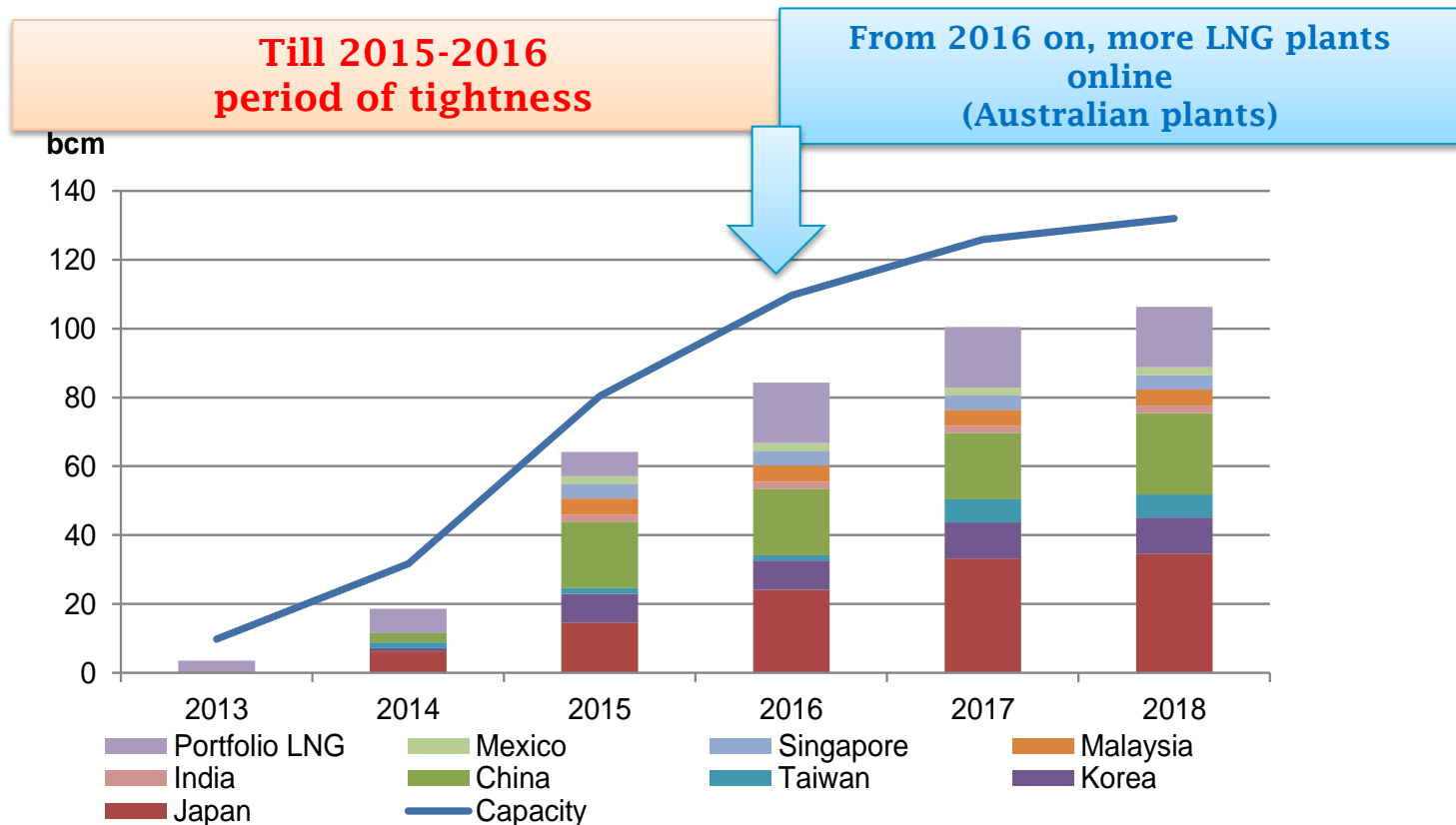
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- **Russia remains the main supplier of Europe, exports in 2013: 167 bcm.**
- **Exports will rise to over 200 bcm by 2020, around 50% of European total imports**

Europe's hope that the LNG market will become more comfortable

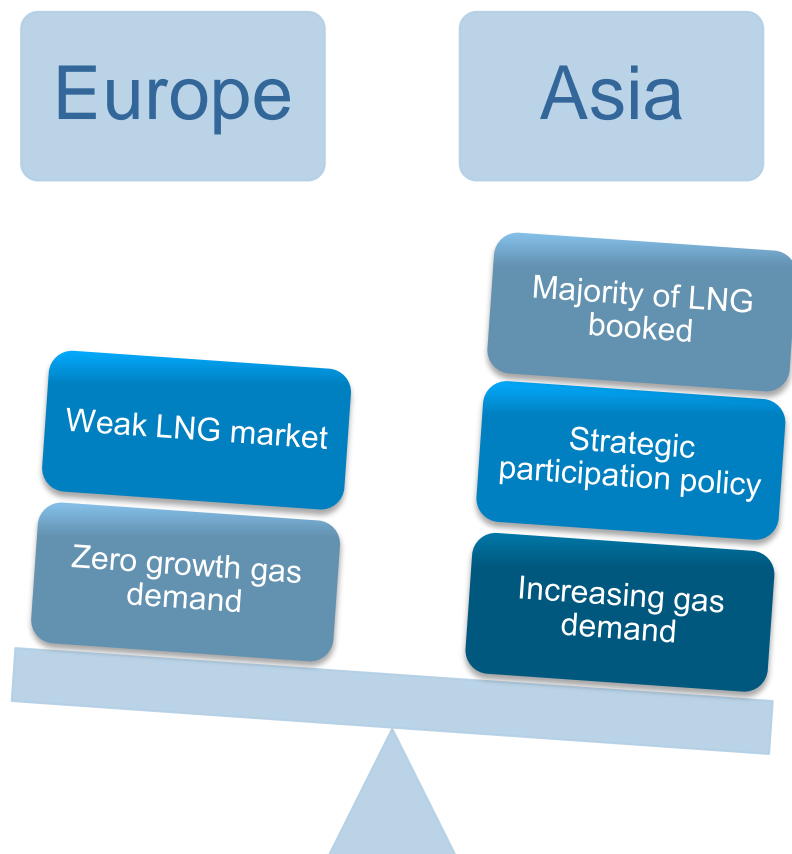
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- **80% of global LNG is covered by long-term contracts**
- **Strong relation between Asian states and National Oil Companies**
- **Strong participation in upstream projects worldwide**

A structural weak European LNG market and the dominant position of Asia

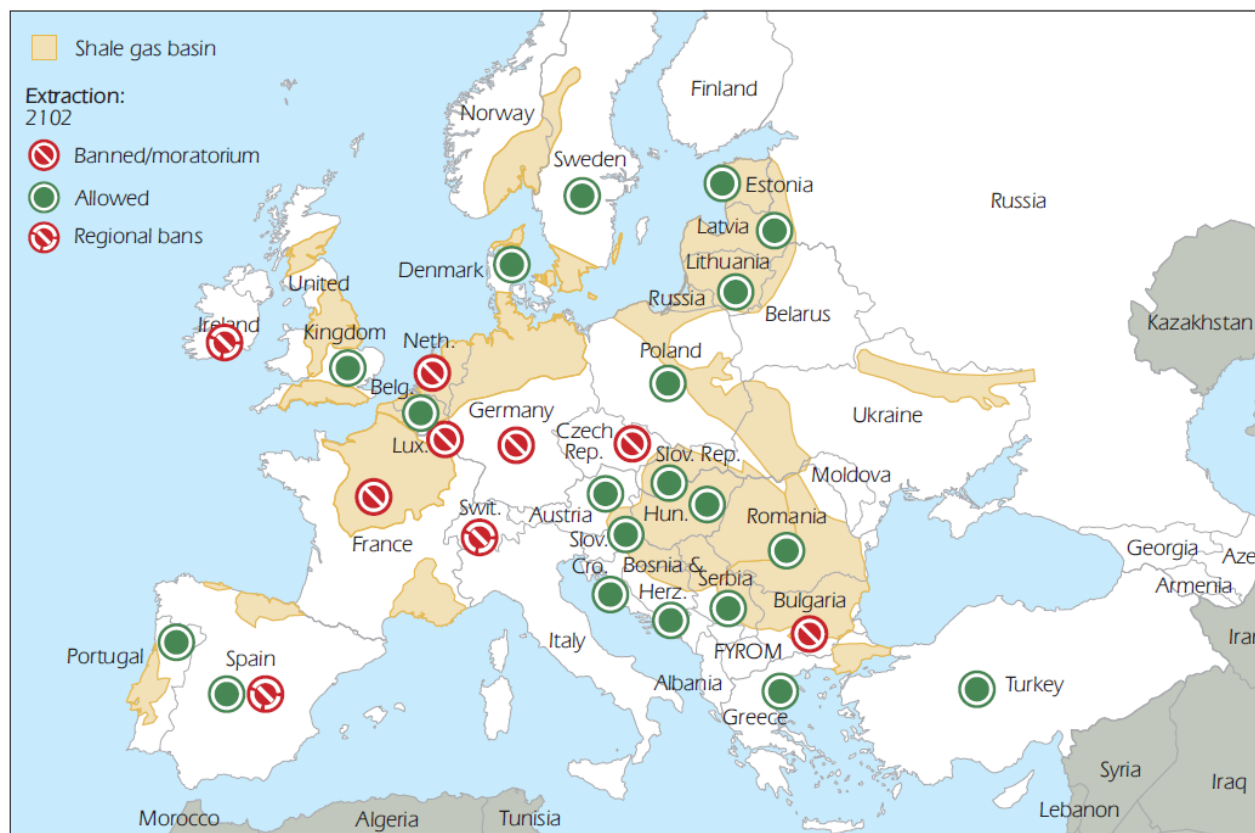
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- **Between 2010 and 2013 LNG imports fell by 40.6 bcm**
- **Utilization level terminal around 25% in Europe (Gate 4%)**
- **Reexporting LNG**

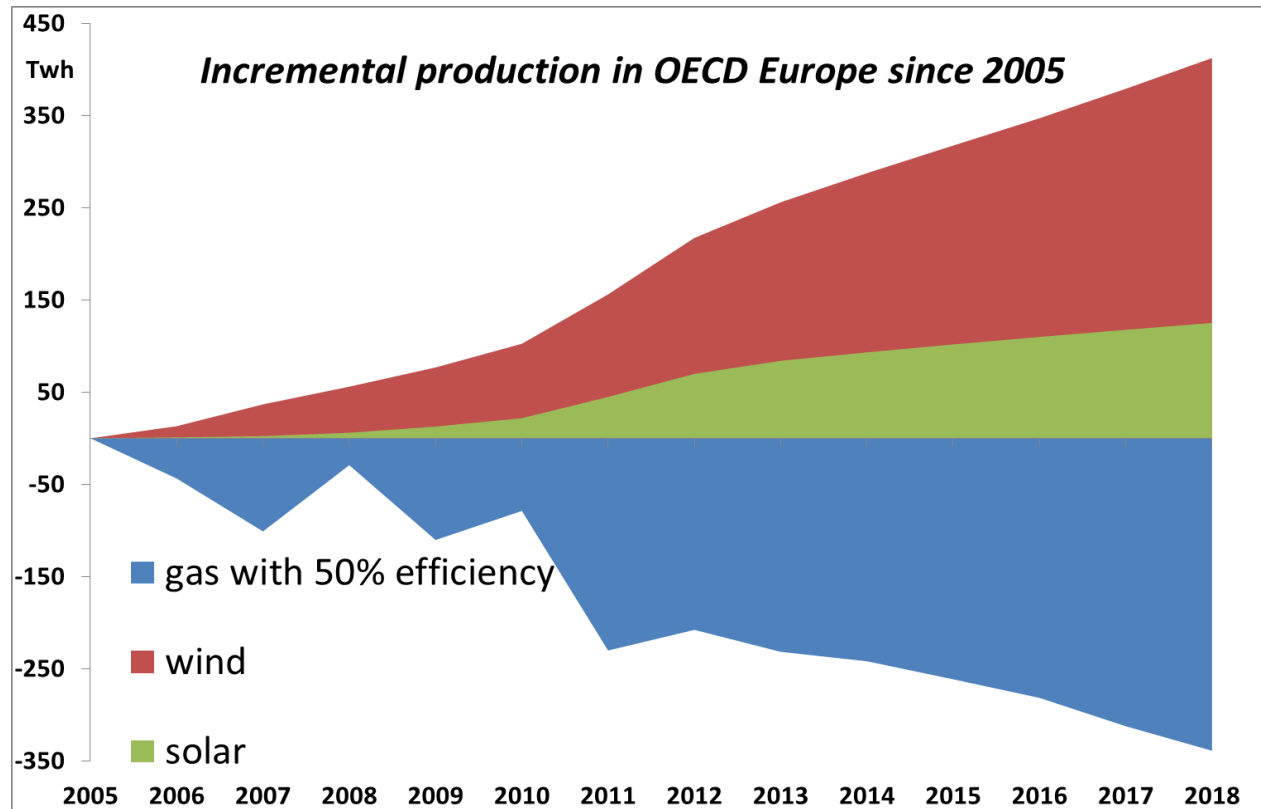
Unconventional gas production still faces hurdles

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➤ **A minimal contribution to reduce import dependency**

But in the long term the decline of gas can also be compensated by an increasing share of renewables

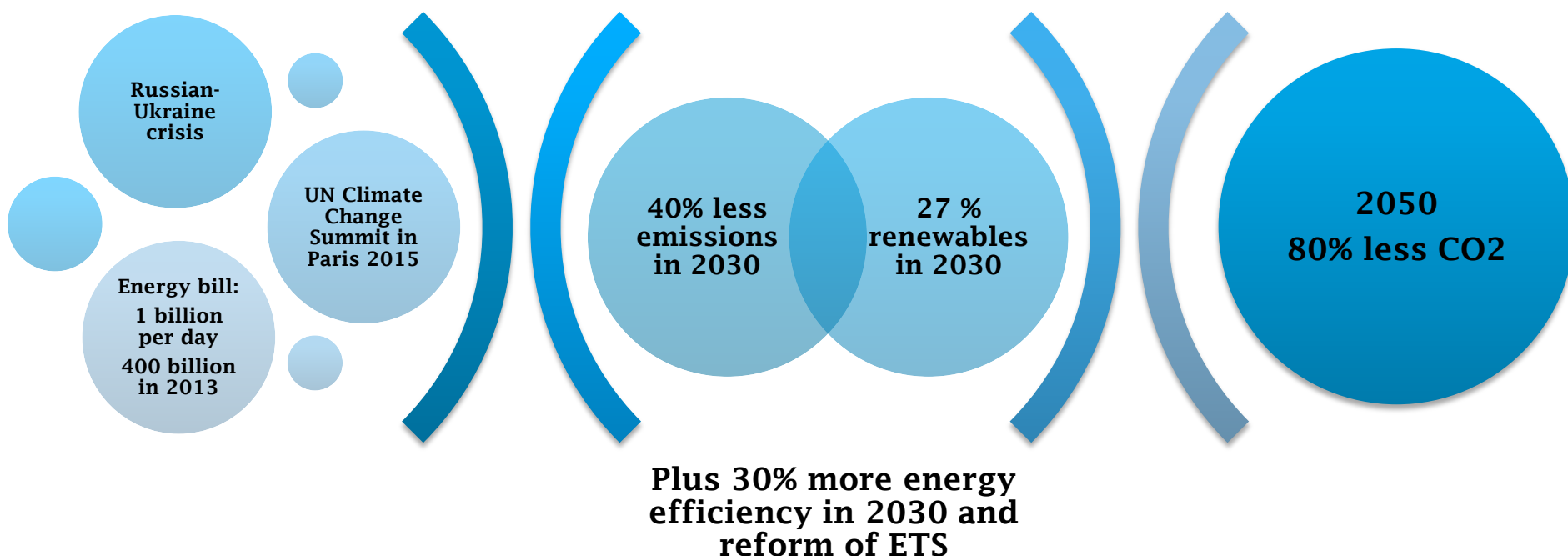


- The “Energiewende” and Germany as forerunner with the most ambitious targets: 35% renewables in 2020, 50% in 2030, 65% in 2040 and 85% by 2050.

New EU targets: renewables to reduce energy dependency ?

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New targets: October 2014



➤ Less use of gas by the power sector?

Concluding remarks

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- The largest demand growth during the next 5 years will take place in China, 30% of the global growth.
- In China air quality is emerging as the key question and gas is the answer.
- In the US the substitution of coal by gas in the power sector will continue due cheap shale gas and the new Clean Power Plant Policy.
- The deterioration of gas in the power sector in Europe is not going to stop till 2020.
- The decline of gas use in Europe can also be compensated by an increasing share of renewables.