NATURAL GAS

Gas Market Outlook

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International Energy Agency

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The current picture
A global oversupply

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Gas oversupply

Short and long-term consequences…

2009-10 – Fundamentals

- Demand is falling
- Available supplies increasing
- Spot prices twice as low as oil-linked gas prices

Short-term consequences

- Uncertainty on demand recovery and infrastructure investments
- Difficulty to respect TOP
- Decoupling between gas and oil prices?

Long-term consequences

- What is the role of gas in the energy mix?
- Where should companies invest?
- Gas glut or supply crunch?

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Gas demand highlights

- **World gas demand is expected to decline by 3-4% in 2009**
- **OECD Europe is the most affected among OECD regions**
  - In OECD Europe, demand has declined in the industrial sector and in the power generation as gas-fired plants are at the margin
  - In the US, industrial gas use collapsed but use in the power generation sector actually increased due to low gas prices
  - In OECD Pacific, demand has been increasing over the past months
- **Non-OECD countries show a contrasted picture**
  - Major economies (Russia) have seen their demand declining
  - But some notable exceptions: India, China, MENA
- **Demand is expected to recover in the medium term**
  - Driven by the power generation sector
  - Incremental demand over 2007-15 will come from non-OECD countries

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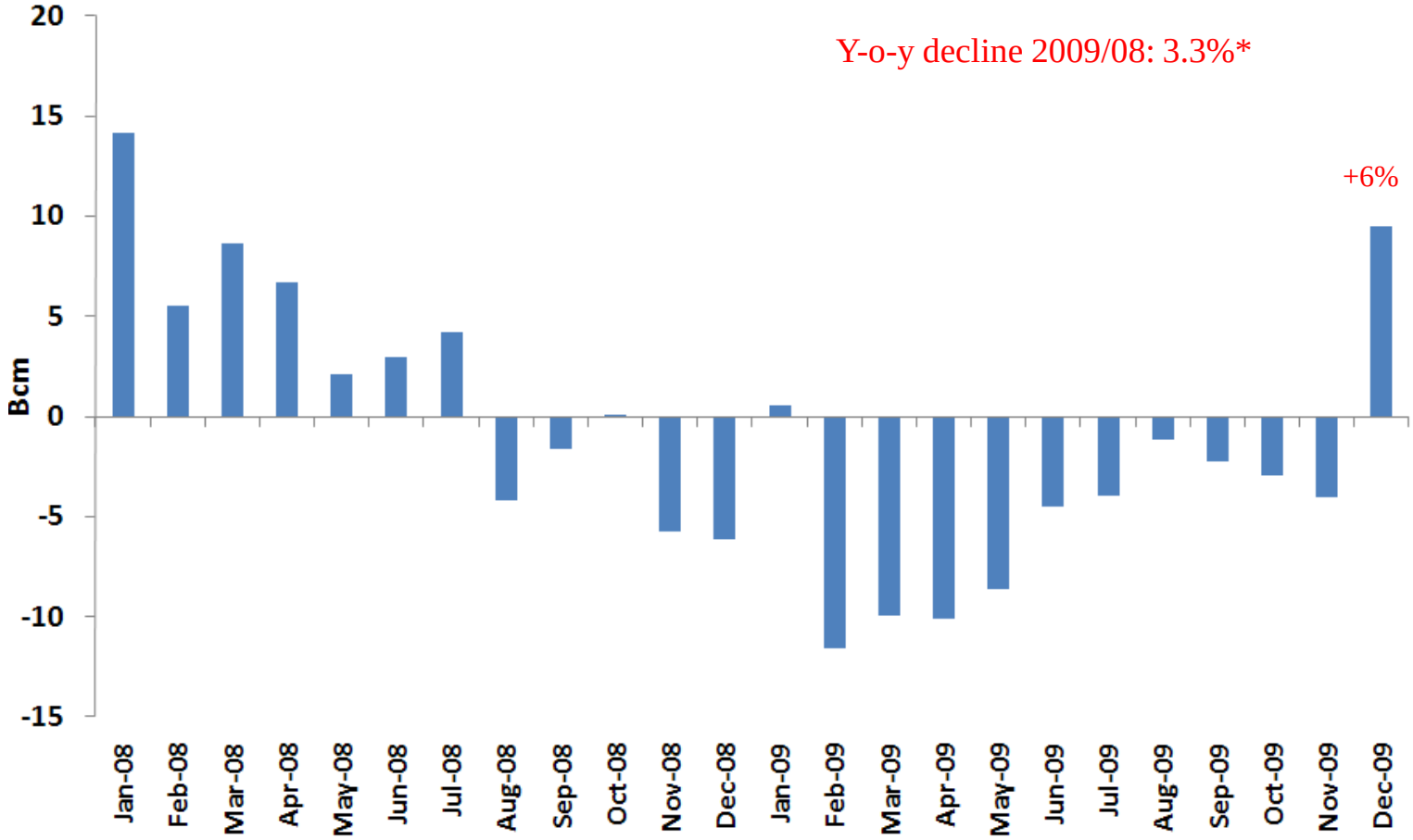
OECD Gas Demand

Some green shots?



Source: IEA, Monthly Gas Data, *Preliminary data

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Gas demand for power generators

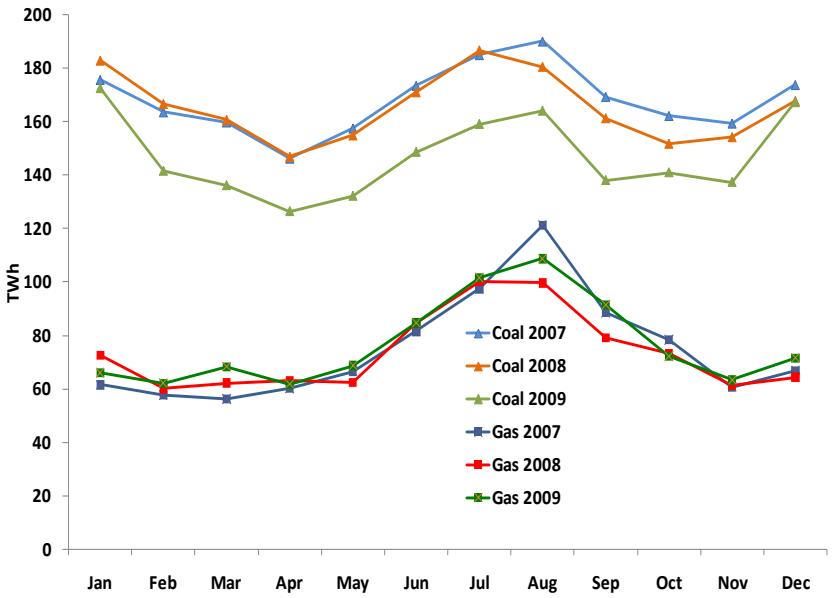
The US picture

- Electricity demand declines
- Coal-fired plants displaced by gas fired plants

The European picture

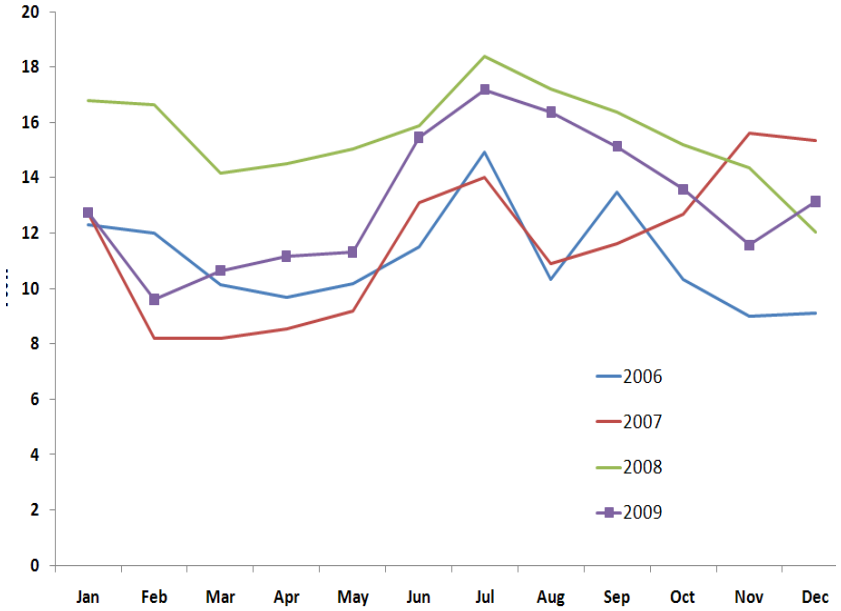
- Electricity demand declines
- Gas-fired plants at the margin, dispatched after nuclear, wind

US: electricity generated by gas vs. coal



Source: EIA

Spain: gas demand in power sector



Source: cores

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Gas supply highlights

- **OECD Production has been stable in 2009**
  - -0.2% (+3% in 2008)
  - Production increased in North America and Pacific
  - But declined in Europe (except Norway)
- **Non-OECD gas production more affected by the crisis**
  - Russian production declined by 12% to 582 bcm
  - Turkmen production dropped significantly
  - Production increased in Qatar, India; Yemen started producing
- **Two major changes**
  - The unconventional gas revolution in the US
  - The massive expansion of liquefaction capacity over 2008-13

➢ **Global surplus expected for the upcoming years**

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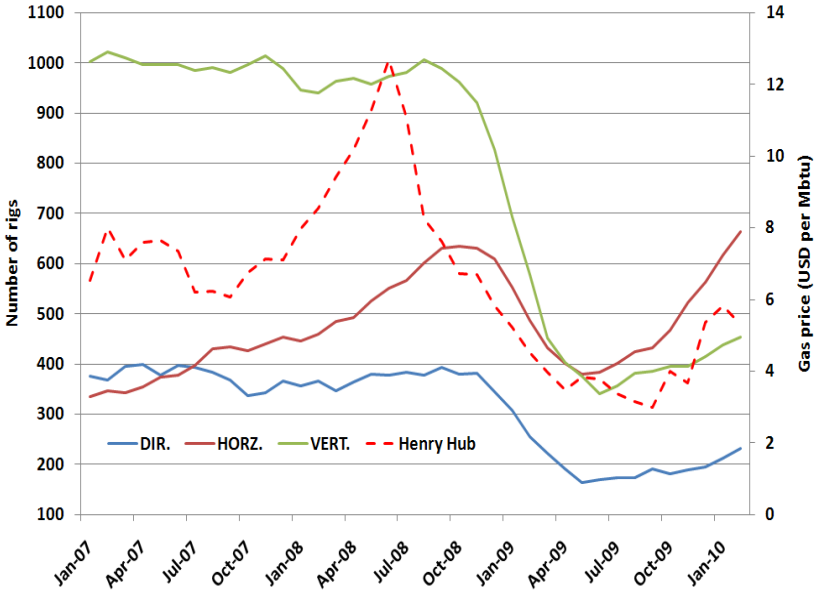
Unconventional gas revolution

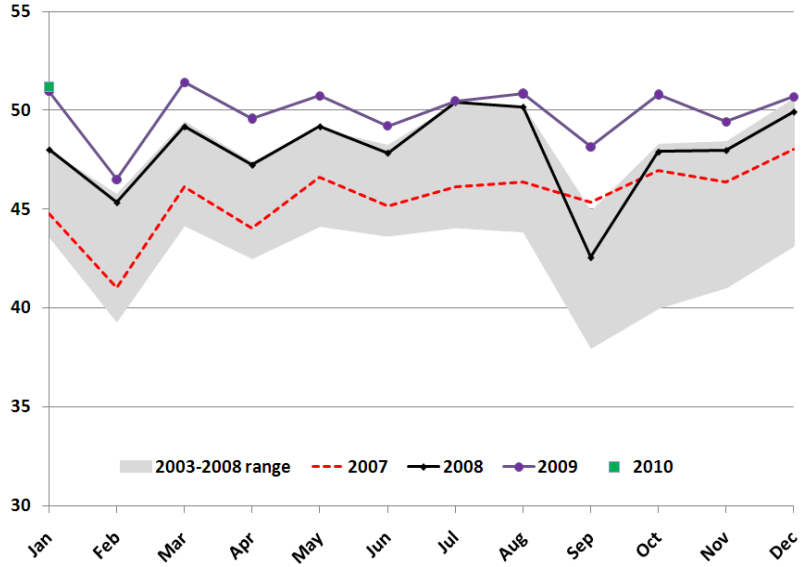
Still going on…

Number of rigs vs. HH prices



Source: IEA, Baker Hughes

US production: +24 bcm in 2009



Source: IEA, EIA

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LNG Markets

A look back at 2009, what to expect for 2010

- **Problems are now common in new and existing liquefaction plants**
- **There was little growth of LNG trade in 2008 and during the first half of 2009**
  - Output has been improving only during the second half of 2009
- **LNG imports – a contrasted picture**
  - LNG imports in Japan and Korea declined by 7 and 9% respectively
  - UK imports increased by more than 10
  - US LNG imports increased by 30% to 13 bcm
  - China LNG imports increased by 66% to 7.5 bcm
  - New players are appearing: Kuwait, Canada
- **The year 2010 will see the actual ramp up of production**
  - All facilities will progressively increase output
  - Peru and further Qatari plants expected to start

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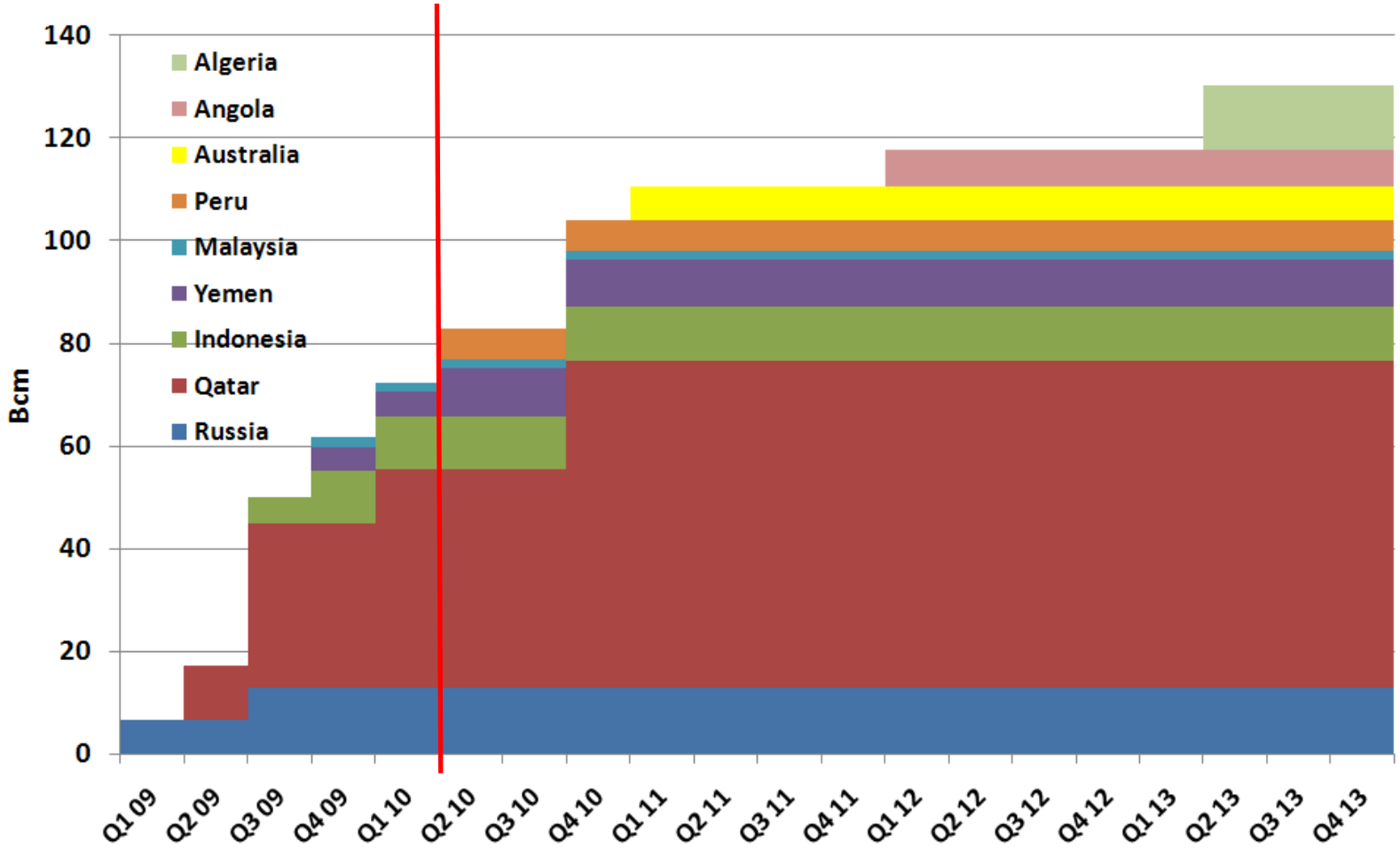
Significant expansion of LNG capacity

But many delays or technical difficulties



Source: IEA, NGMR 09

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The long-term view
How long will it last?

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Long-term gas demand outlook

- **Gas demand is growing in any scenario (WEO 2009)**
  - 41% in the reference scenario
  - 17% in the 450 scenario
- **Most of the growth comes from non-OECD countries**
  - China and India show the most impressive growth rates
  - Middle East has the largest incremental growth
  - OECD Europe gas demand would grow only by 0.8%/y over 2007-30
- **Demand is expected to slowly in the medium term**
  - Limited growth in OECD countries: back to 2007's levels by 2014-15
  - Non-OECD countries gas demand grows by over 300 bcm between 2007 and 2030
- **But many uncertainties**
  - Economic recovery
  - Gas demand from power generators

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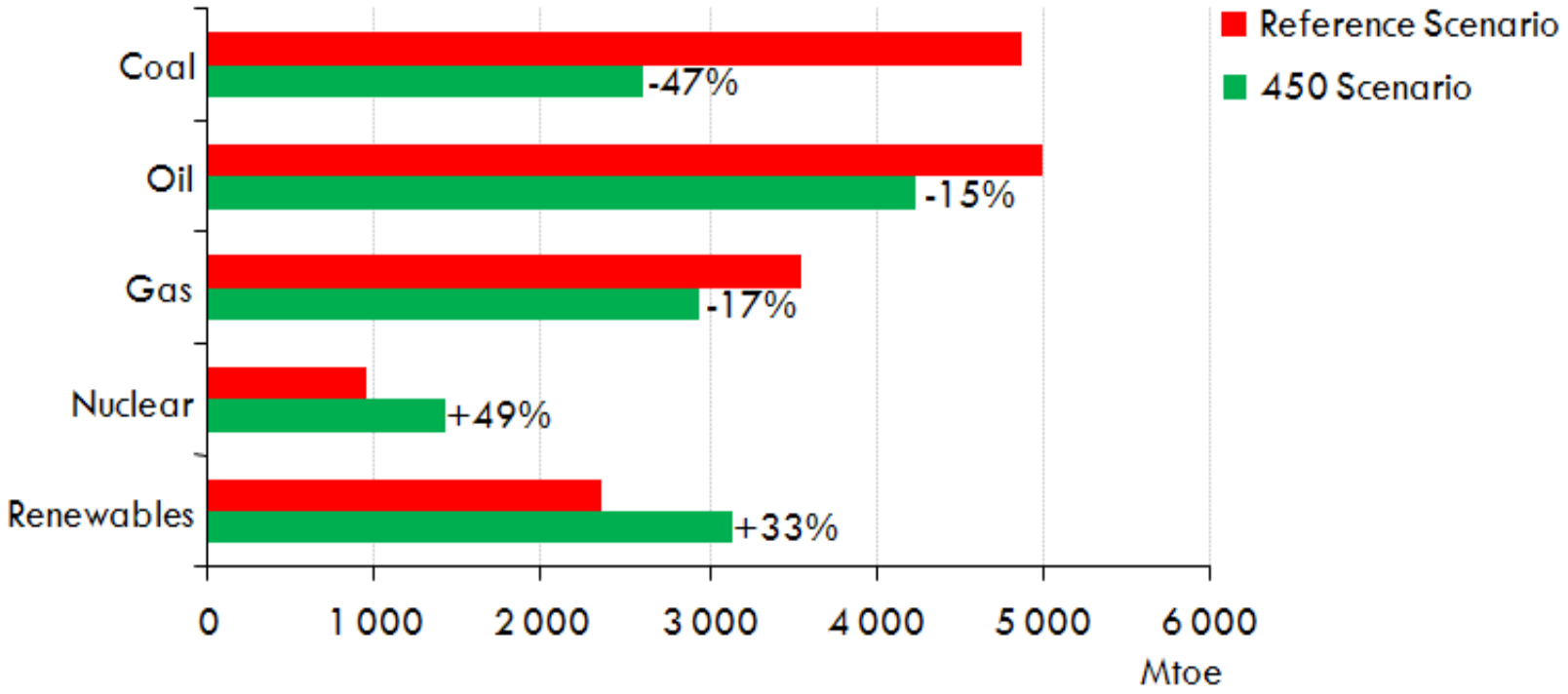
World primary energy demand by fuel and scenario in 2030



Source: WEO 2009

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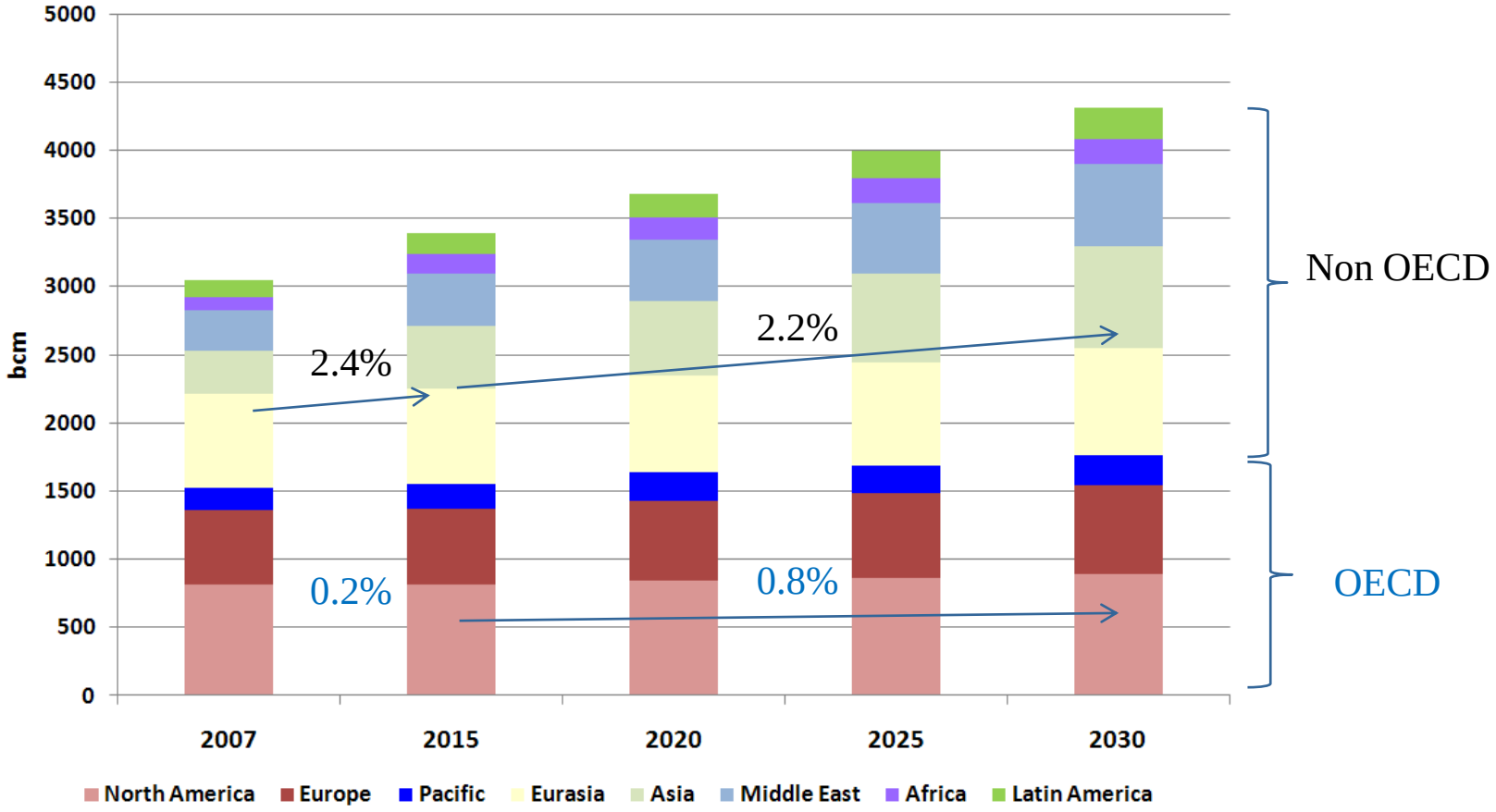
Different regional gas demand trends



Source: WEO 2009

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Long-term outlook

Focus on the EU27

- **Gas demand grows very modestly (at best)**
  - 0.7%/y over 2007-30 in the Reference scenario (619 bcm by 2030)
  - -0.1%:y over 2007-30 in the 450 scenario (509 bcm by 2030)
  - But imports would increase in any case
- **Demand would only come back to 2007's levels by 2014-15**
  - And even later in the 450 scenario
- **Two main uncertainties**
  - Economic growth: will European industrial sector ever recover?
  - The 20:20 targets: what is the role of gas in the power generation sector?
    - Most of the planned power plants projects are CCGTs

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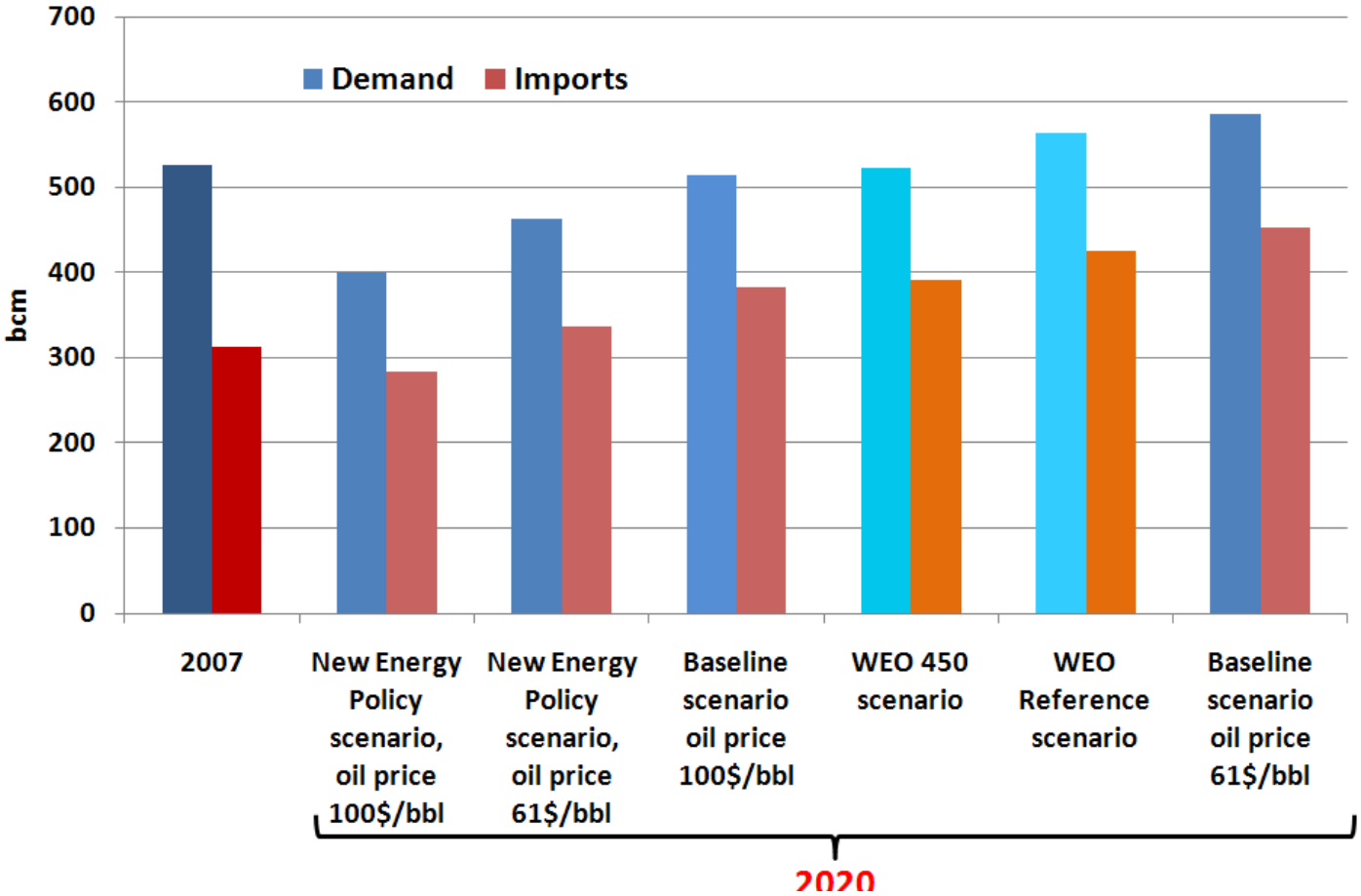
EU27 gas demand and imports by 2020

Wide disparities between forecasts



Source: WEO 2009, EU Second Strategic Energy Review

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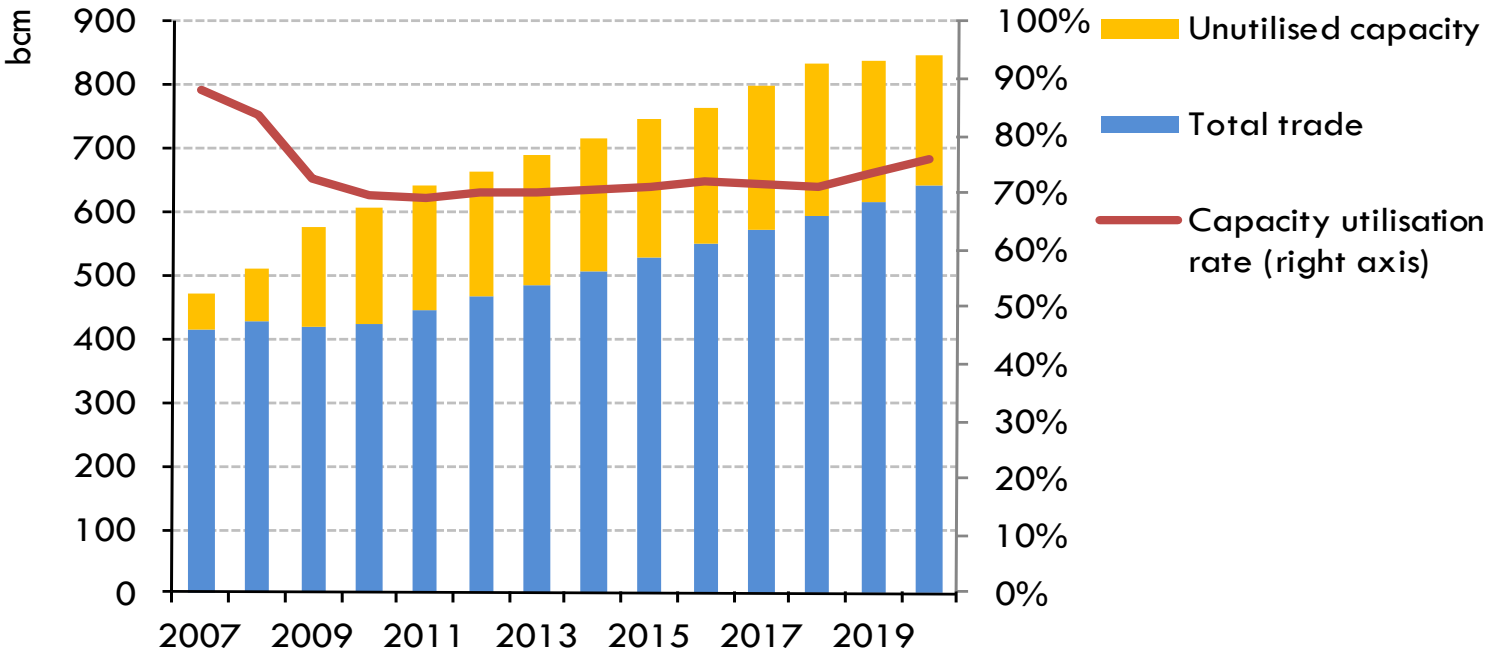
Gas oversupply

The impact on infrastructure use

Use of interregional transport capacity (LHS)



- Surplus of 200-250 bcm versus 60 bcm in 2007 (which was tight)
- But strong regional differences
- Pipelines less flexible, likely to be more affected
- And some "surplus" capacity is also desirable for security of supply reasons

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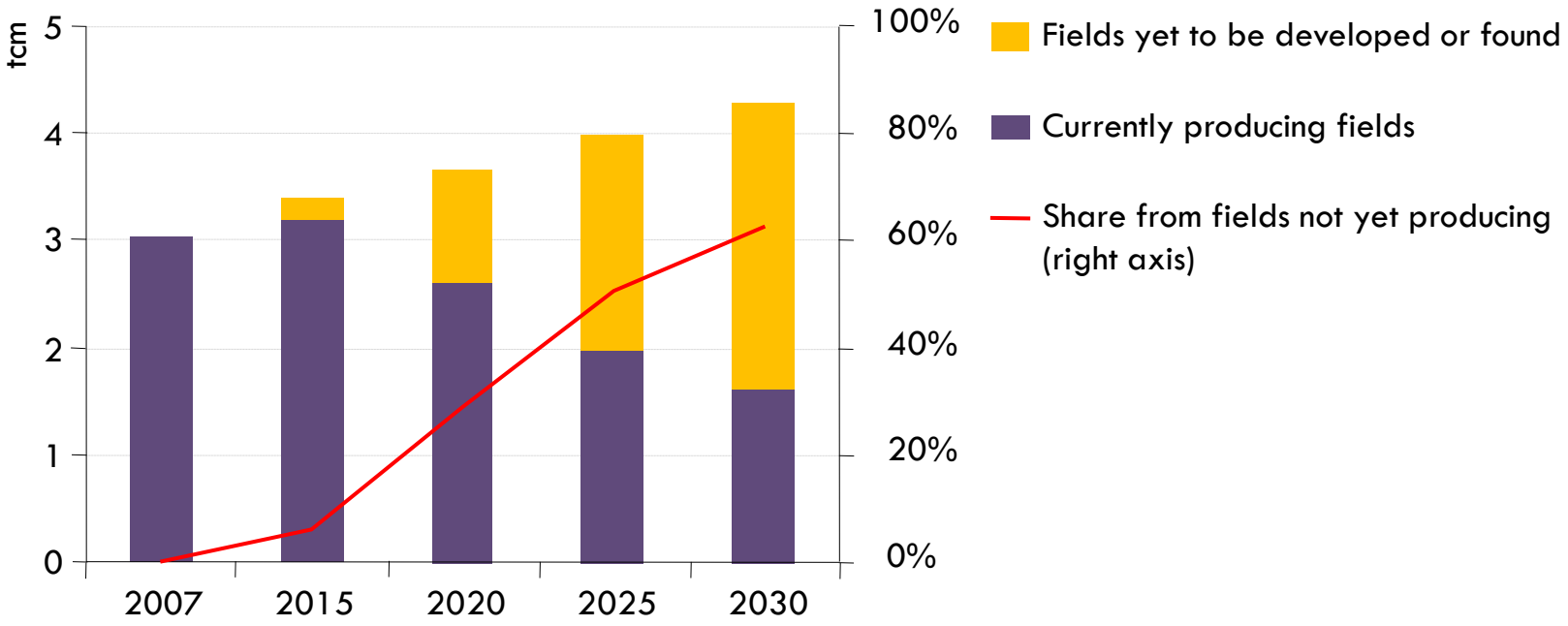
But investments in the upstream sector would still be needed



Additional capacity of around 2 700 bcm, or 4 times current Russian capacity, is needed by 2030 – half to offset decline at existing fields & half to meet the increase in demand

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Can the US success story be reproduced elsewhere?

- **The potential of unconventional resources is still poorly mapped and quantified**
  - Even in the United States
  - Difficulty to apply the same methodology as for conventional gas
  - Uncertainties on how much of this gas is actually recoverable?
- **Some key success factors**
  - Identification of the location and potential of the best areas
  - Rapid leasing of large prospective areas
  - Availability of rigs and of engineers
  - Acceptance by local communities
  - Resolution of environmental issues (water management)
  - Possibility to link to existing pipeline infrastructure

Once some potential has been identified, population support and respect of environmental regulations will be key

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Thank you for your attention

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