

Medium Term Oil and Gas Markets --2010

Ian Cronshaw
Gas Markets



Gas oversupply

Short and long-term consequences...

2009-10 – Fundamentals

- Demand is falling
- Available supplies increasing:
Unconventional gas + LNG
- Spot prices half oil-linked gas prices



Short-term consequences

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

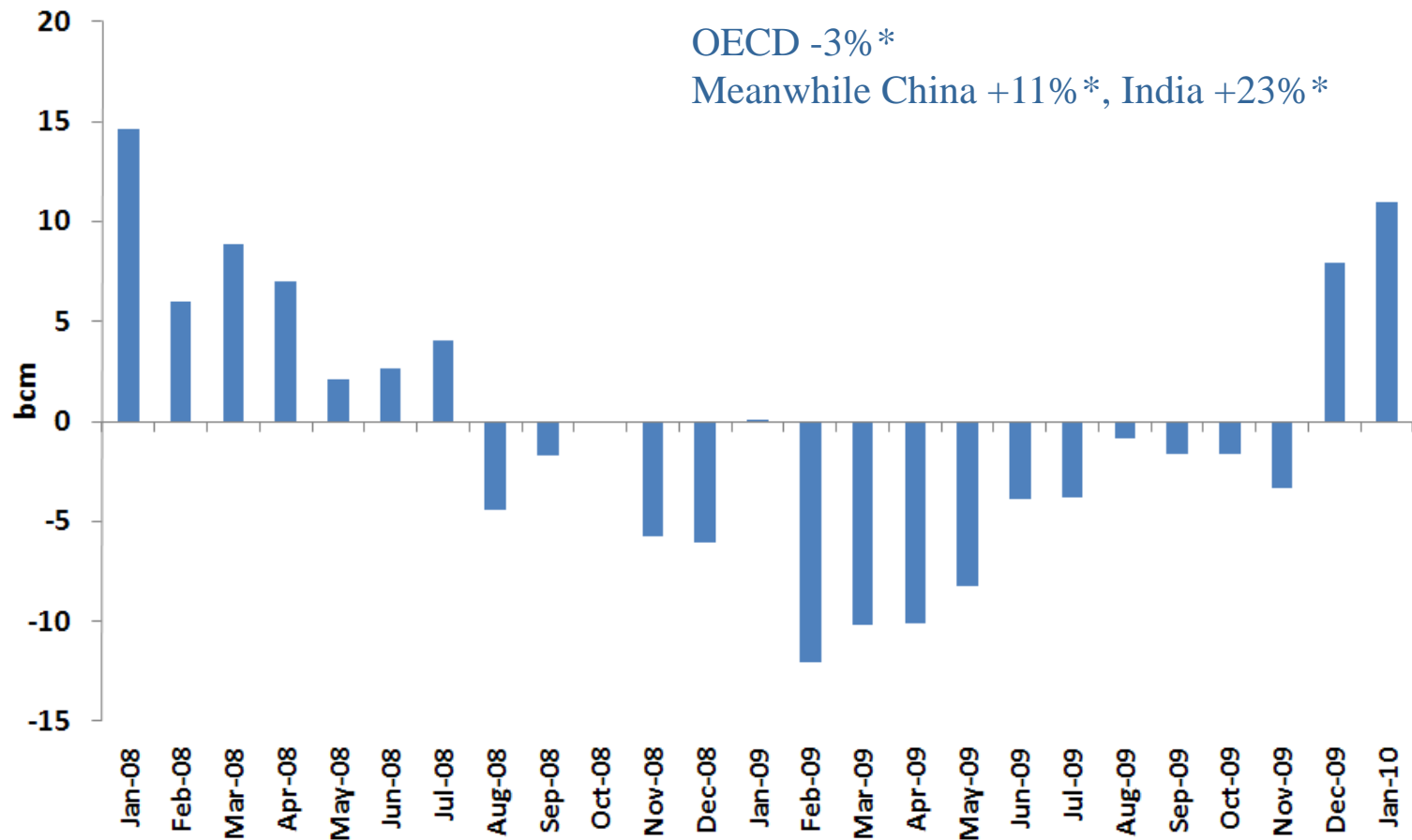


Long-term consequences

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

OECD Gas Demand

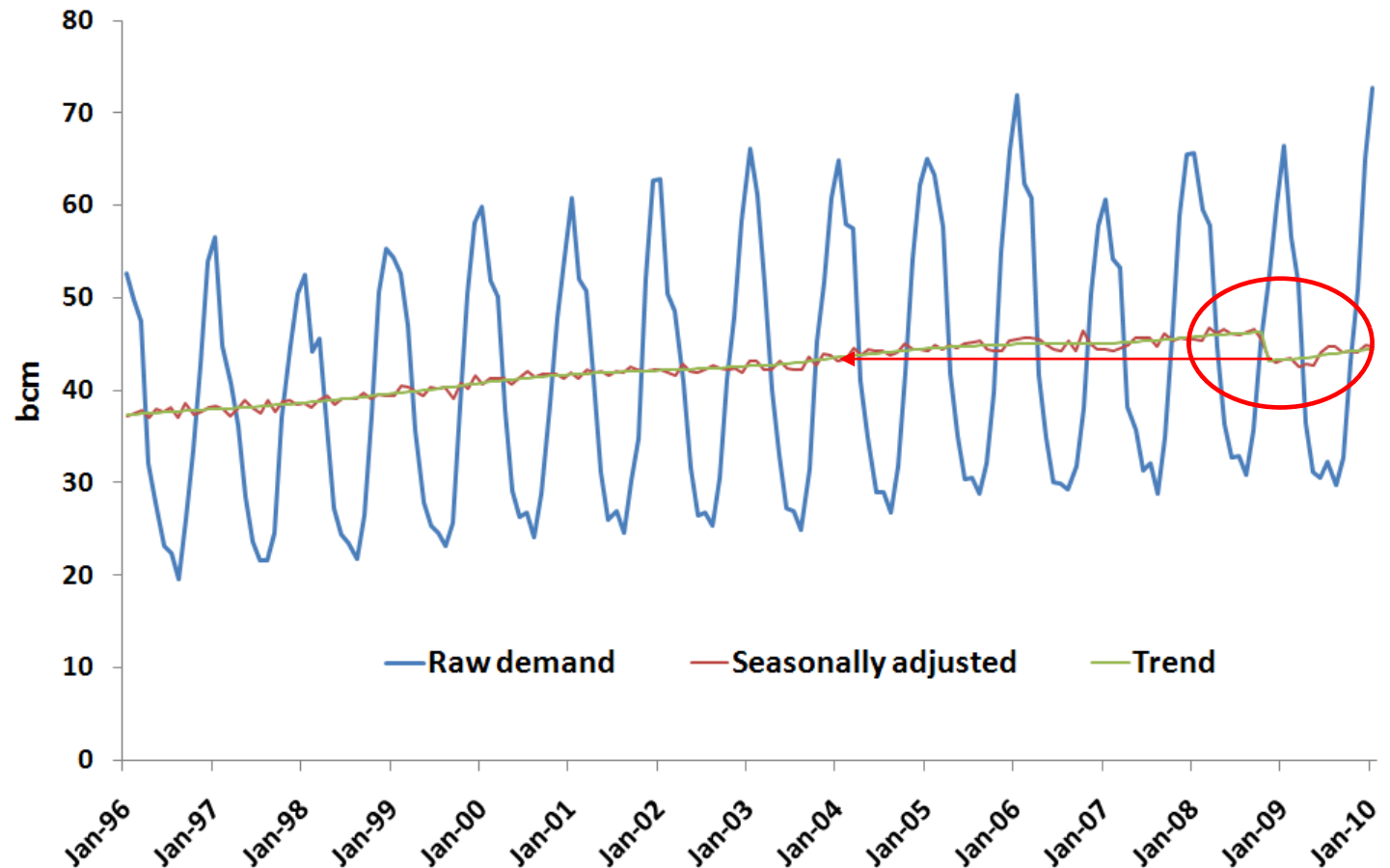
Some recovery at last?



Source: IEA, Monthly Gas Data, *Preliminary data

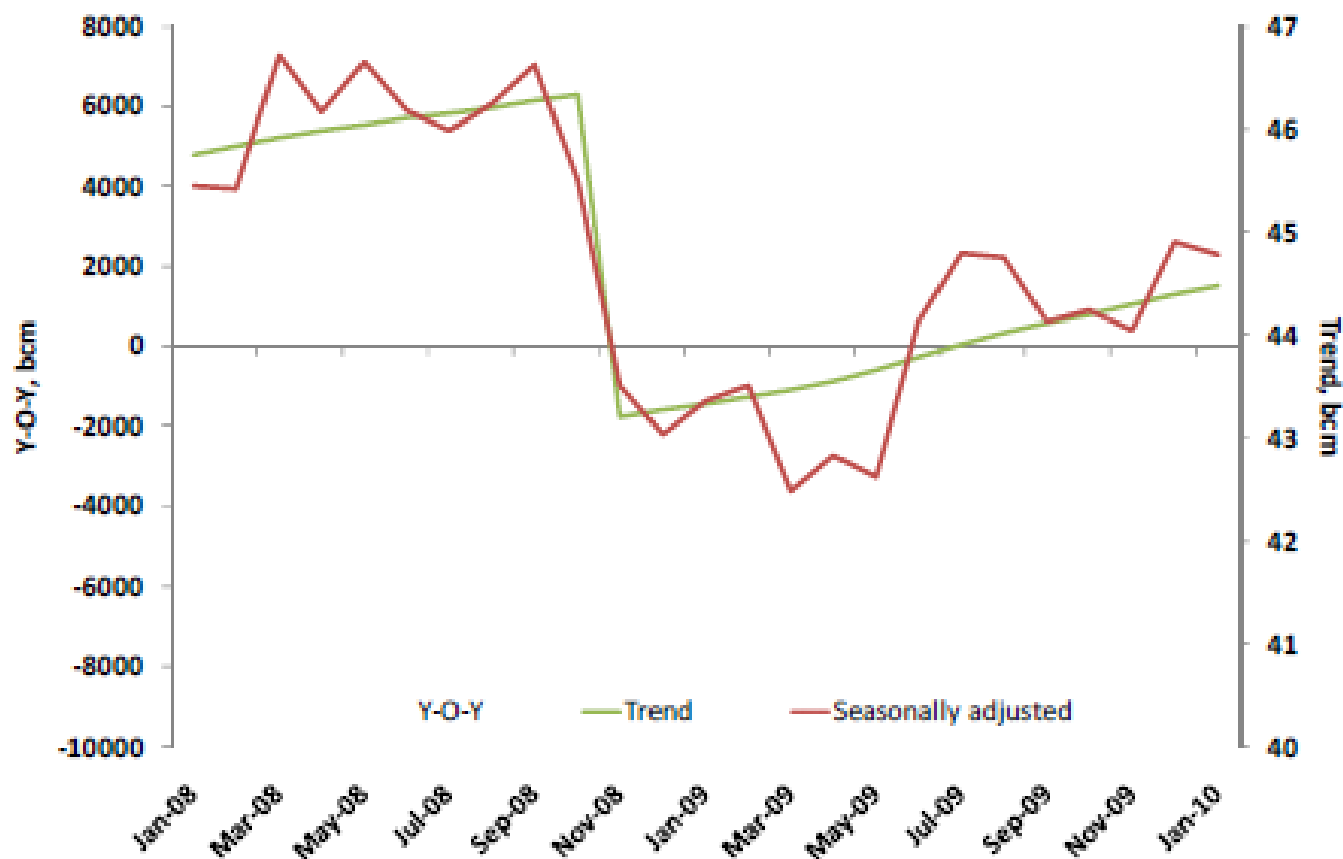
Demand drop was impressive in Europe

When you look at seasonally-adjusted data



Source: IEA, Monthly statistics

Demand Trend in OECD Europe—2008-09



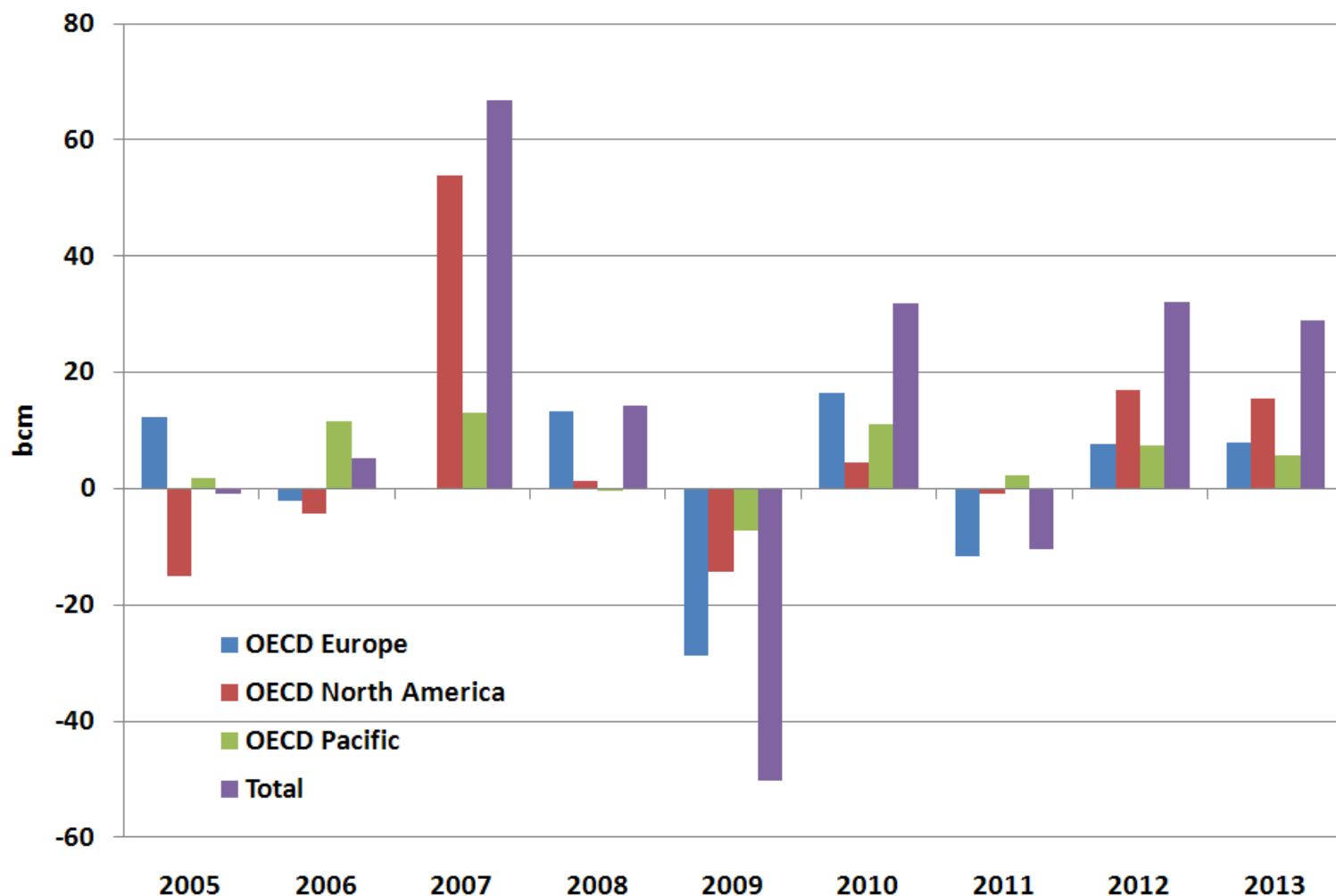
Source: IEA.

Recovery is in sight

Faster in North America and Pacific than in Europe

MEDIUM-TERM
OIL & GAS
MARKETS

2010

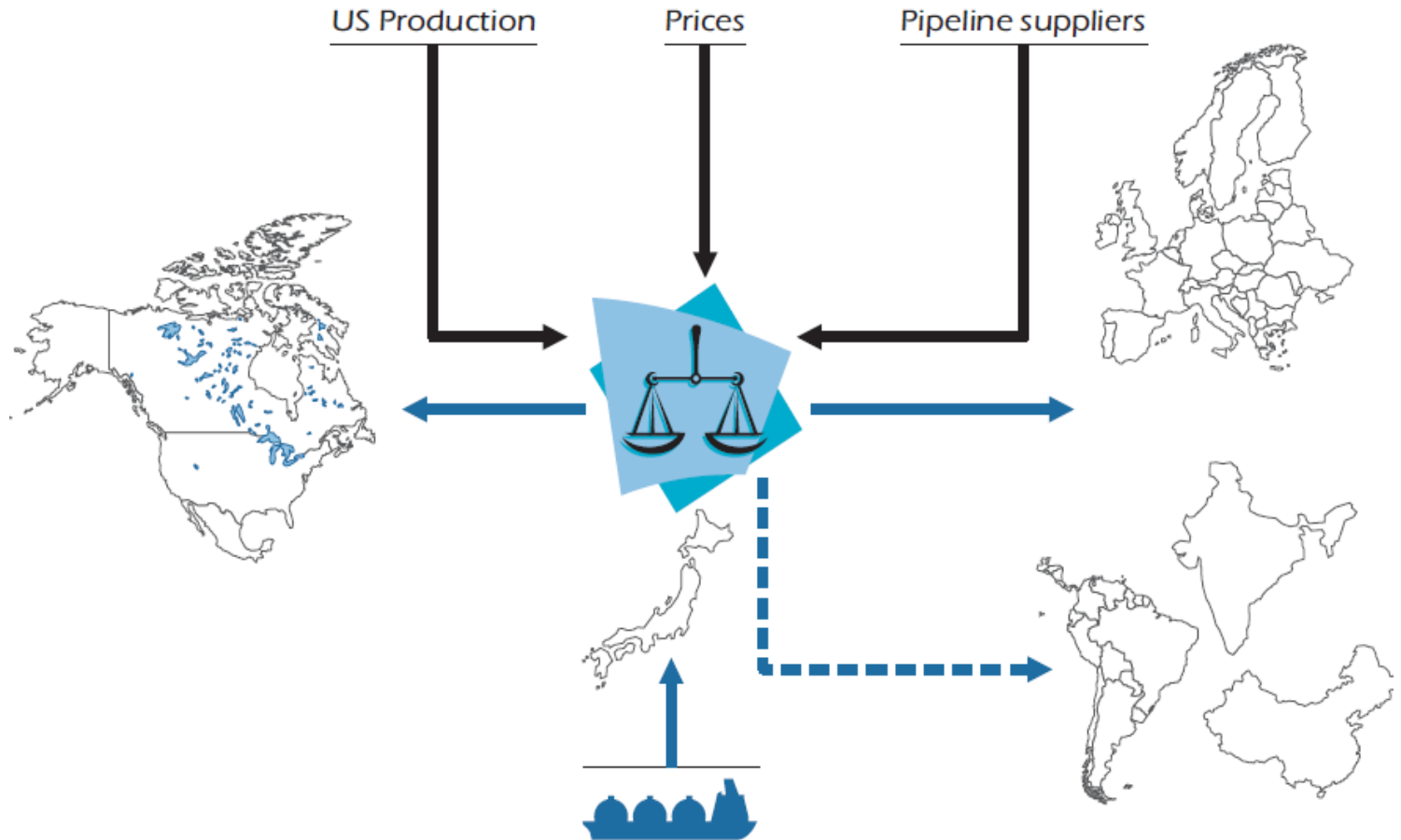


Source: IEA, MTOGM 2010



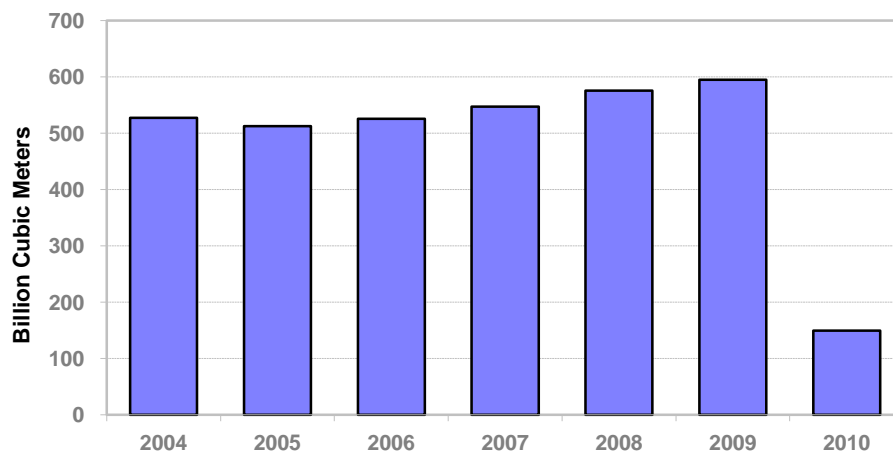
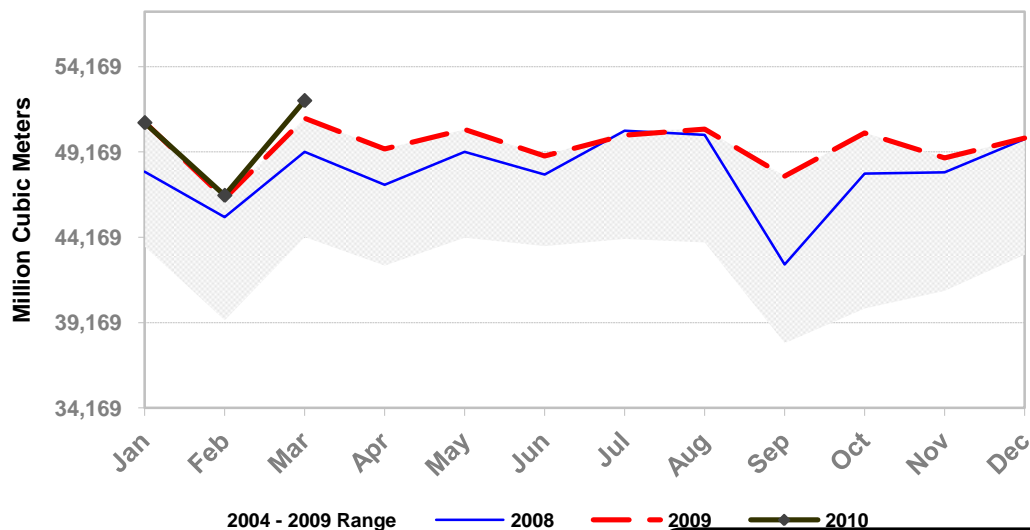
Gas market is not global

But is certainly globalising



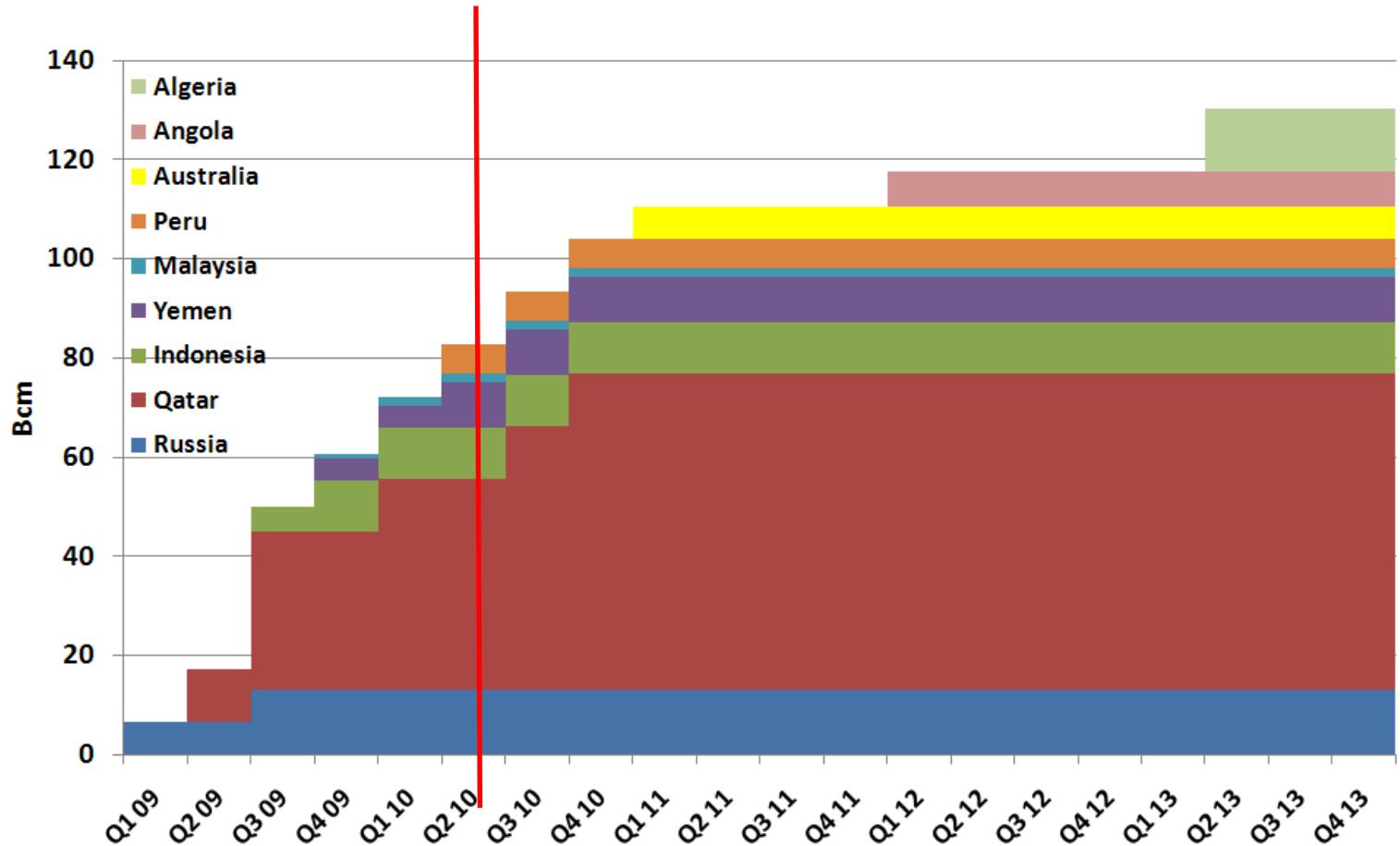
Source: IEA, MTOGM 2010

United States Gas Output—A Global Game Changer



Massive new LNG supply in sight

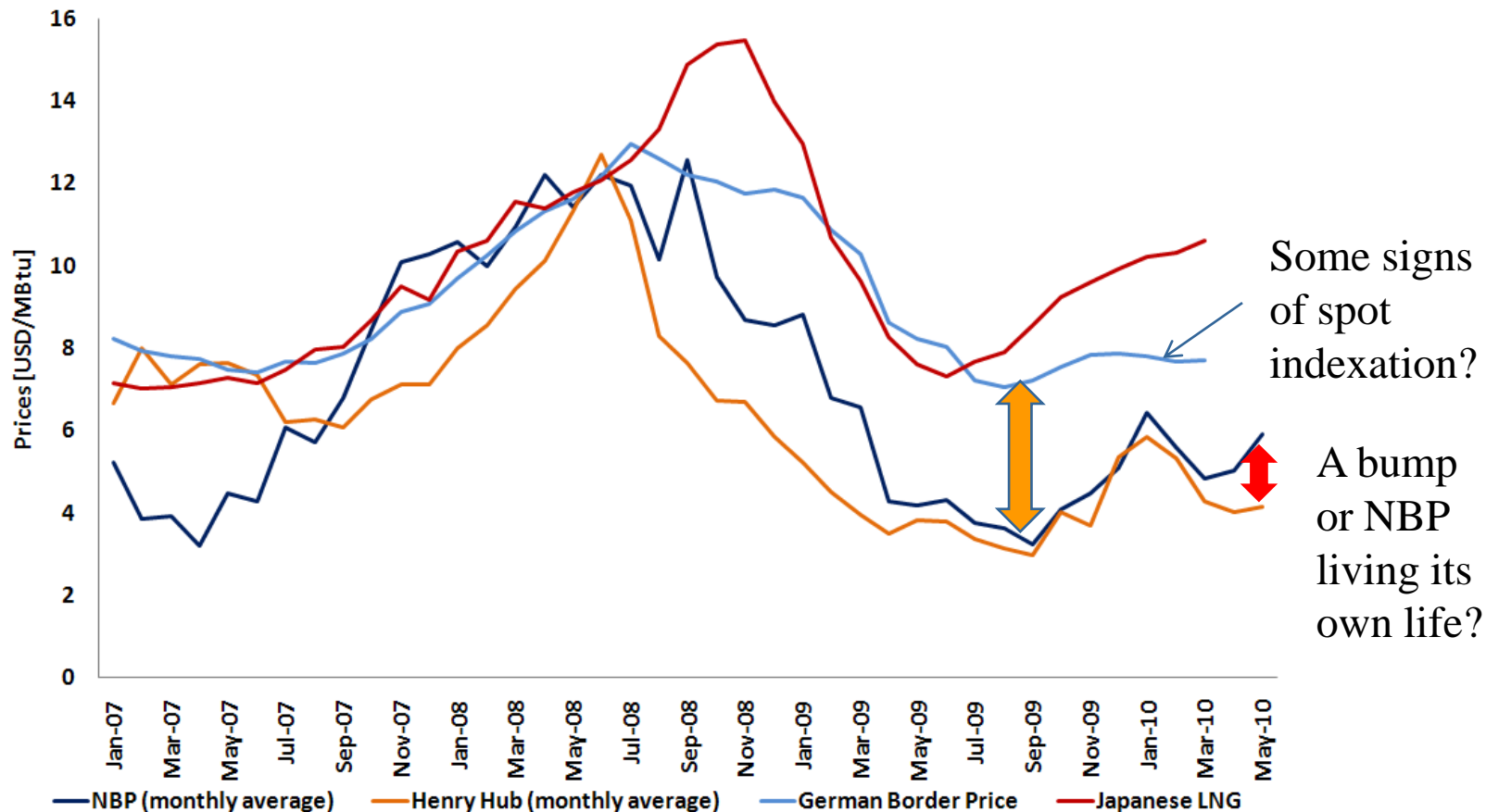
Despite a slow start, this LNG will arrive on markets...



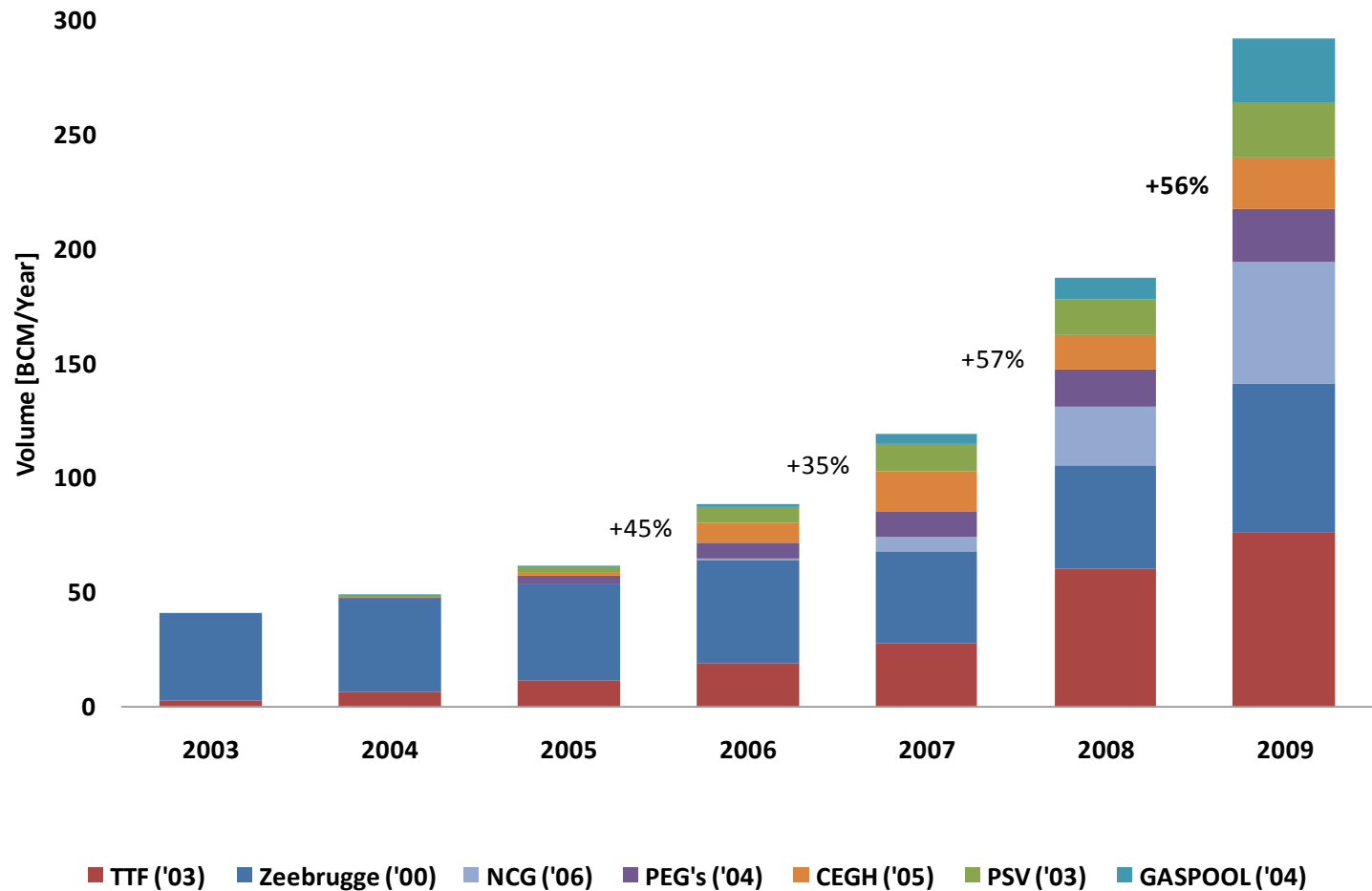
Source: IEA, MTOGM 2010

Price decoupling and convergence

For how long?



Trading is growing quickly on Continental European markets



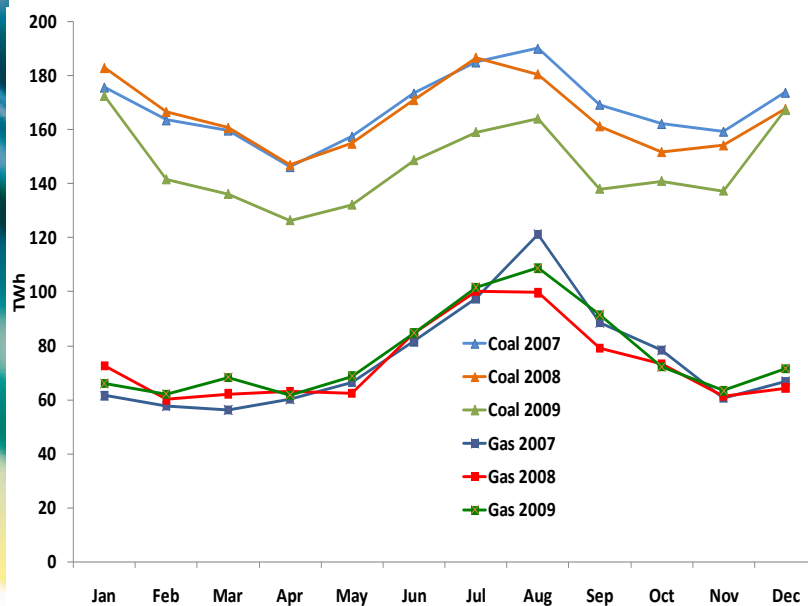
Source: IEA, MTOGM 2010

Gas demand for power generators

The US picture

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

US: gas demand in power sector

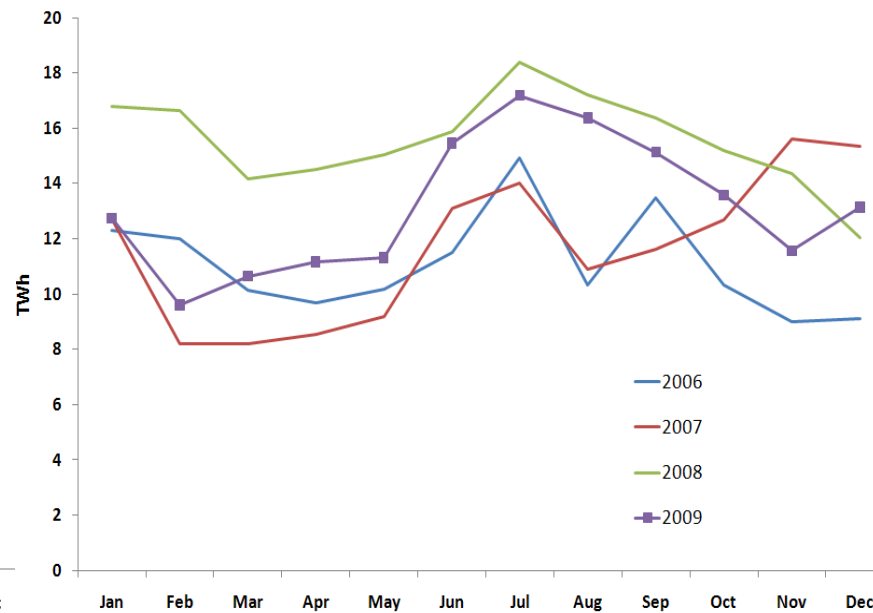


Source: EIA

The European picture

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

Spain: gas demand in power sector



Source: cores

China – already 3rd non OECD gas consumer

- **China's gas demand has been increasing by 10bcm/y over the past years**
 - China consumed 88 bcm in 2009, close to UK or Germany's gas demand
 - Growth is in all sectors

- **China has been investing to secure new supplies**
 - The Turkmenistan-China pipeline started in December 2009
 - Myanmar China is now under construction
 - Chinese companies have been securing LNG under long-term contracts

- **Prices are increasing**
 - Prices increased by 25% in June 2010
 - An evolutionary step to continue to attract investments in gas

And Don't Forget India

- **23% growth in 2009 (52 bcm)**
- **Krishna –Godavari changes the scene**
- **Policy environment changing fast**
- **Well placed to profit from any LNG surplus**
- **China+India could import 65 bcm LNG by 2012**

Conclusions

- **Uncertainty in gas demand recovery flowing from economic recovery and the power sector**
- **Pricing systems show major divergence**
- **Unconventional gas a global game changer**
- **LNG too, although most output still to hit markets**
- **China, India, Middle East major growth markets**

Spare Slides

Two different price systems coexist

For how long?

- **Divergence between spot and oil-indexed gas prices**
- **Consequences**
 - Buying gas at spot volumes has been very attractive
 - Pressure on long-term contracts to respect minimum TOP quantities
 - Renegotiations of some long-term contracts
 - ◆ Gazprom
 - ◆ Statoil
 - ◆ GasTerraHave made “public” announcements
- **These concessions are temporary**
 - **Whether we see spot indexation staying in the long-term contracts, receding or increasing will depend on**
 - 1. The supply/demand situation by end 2012**
 - 2. Oil price level**
 - 3. Henry Hub price level**

4 key points on long-term gas demand

1. Gas demand grows in any scenario

- 41% in the reference scenario (WEO 2009)
- 17% in the 450 scenario

But forecasts are lower due to a lower starting level (2009)

2. Demand grows mostly in 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
- Limited demand growth in the medium term in OECD countries

3. Different gas demand patterns

- Gas will be increasingly used to back up wind, implying need for flexibility in transmission and storage

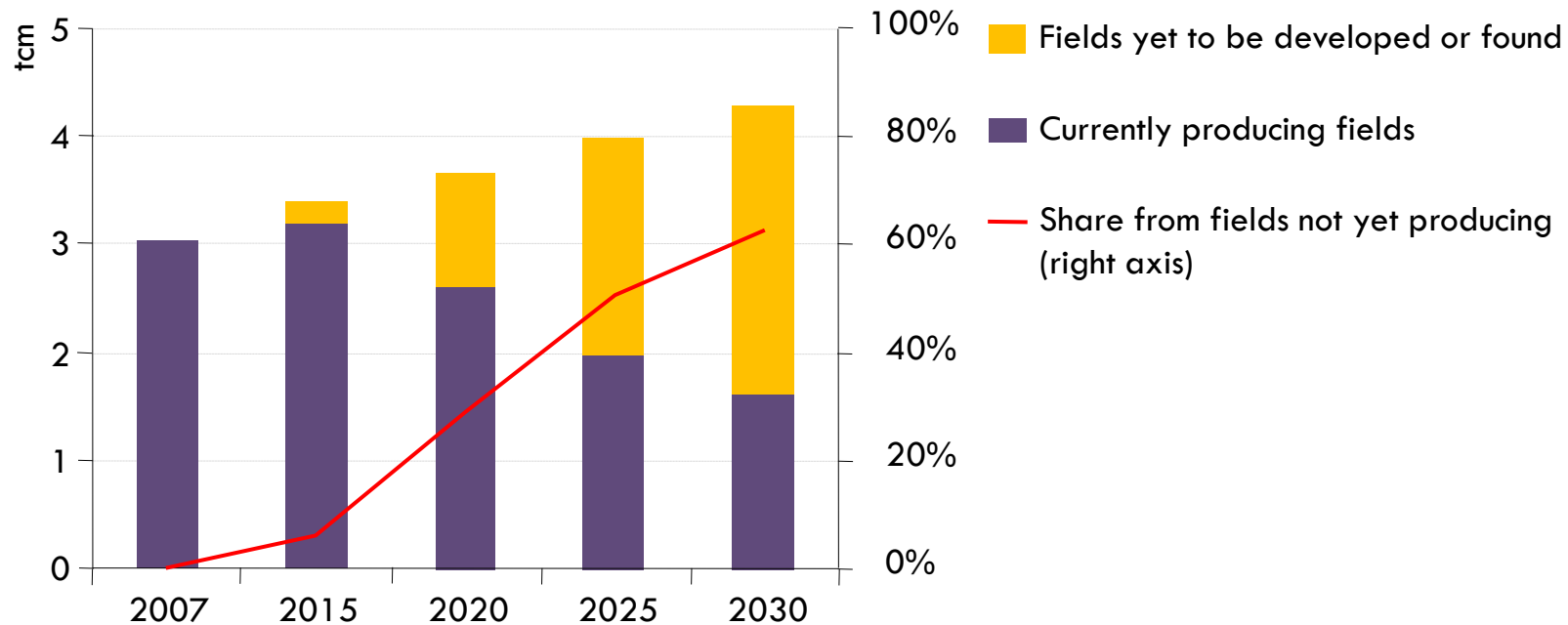
4. Two major uncertainties

- Economic recovery
- Gas demand from power generators

How companies respond to the crisis

- **Slow down of investments**
- **Careful evaluation and refocus on key projects**
 - Wait and see approach
 - Most of the FID on LNG projects will be in the Pacific basin over the next 3 years
 - Shift from uncertain areas to areas of growth
 - ◆ Gazprom looks now at China
 - ◆ Yamal postponed (but real money already spent), more uncertainties for Shtokman
- **Focus of producers on domestic markets**
 - Many producing countries now give priority to their markets rather than to exports
 - Rise of DMOs (Domestic gas Market Obligations)
 - ◆ Egypt, Qatar, Peru, Indonesia, Nigeria

Investments in the upstream sector are still 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

Russia is now looking increasingly to the East



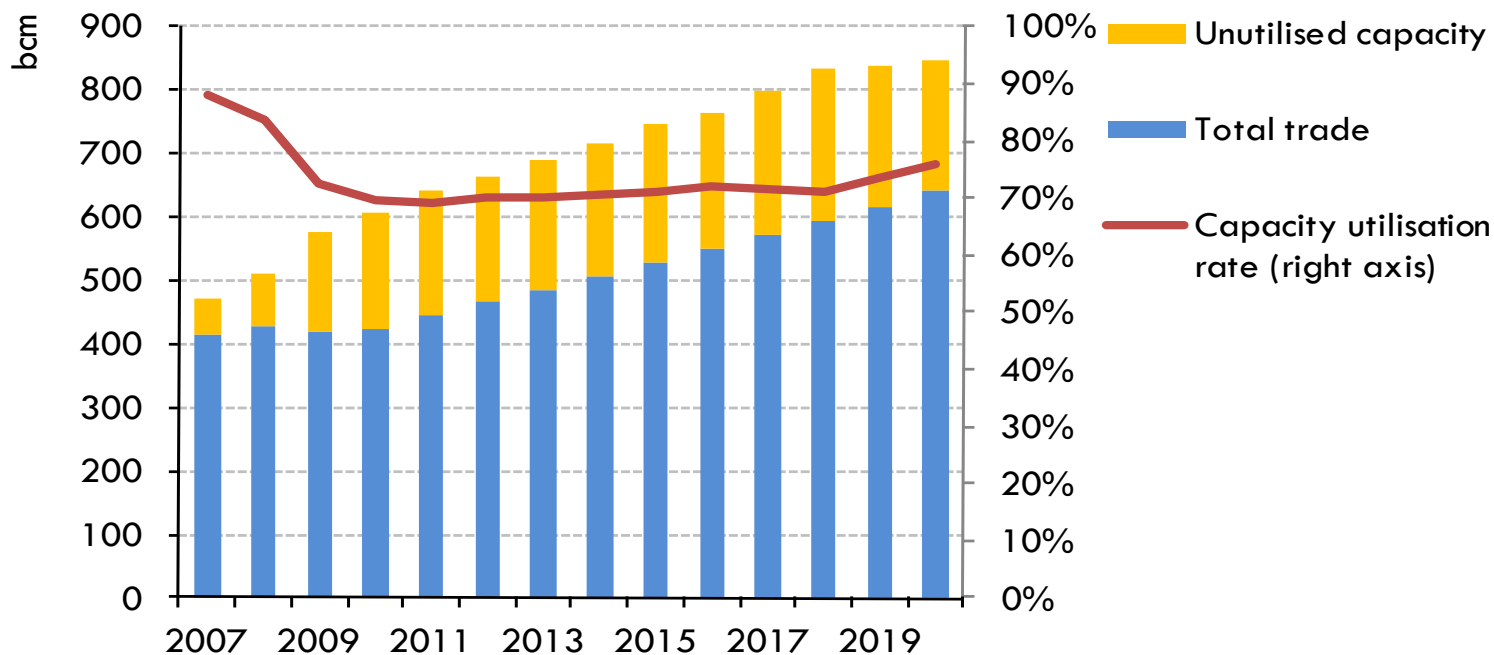
The boundaries and names shown and the designations used on maps included in this publication do not imply official endorsement or acceptance by the IEA.

Source: IEA, MTOGM 2010

Gas oversupply

The impact on infrastructure use

Use of interregional transport capacity (LHS)



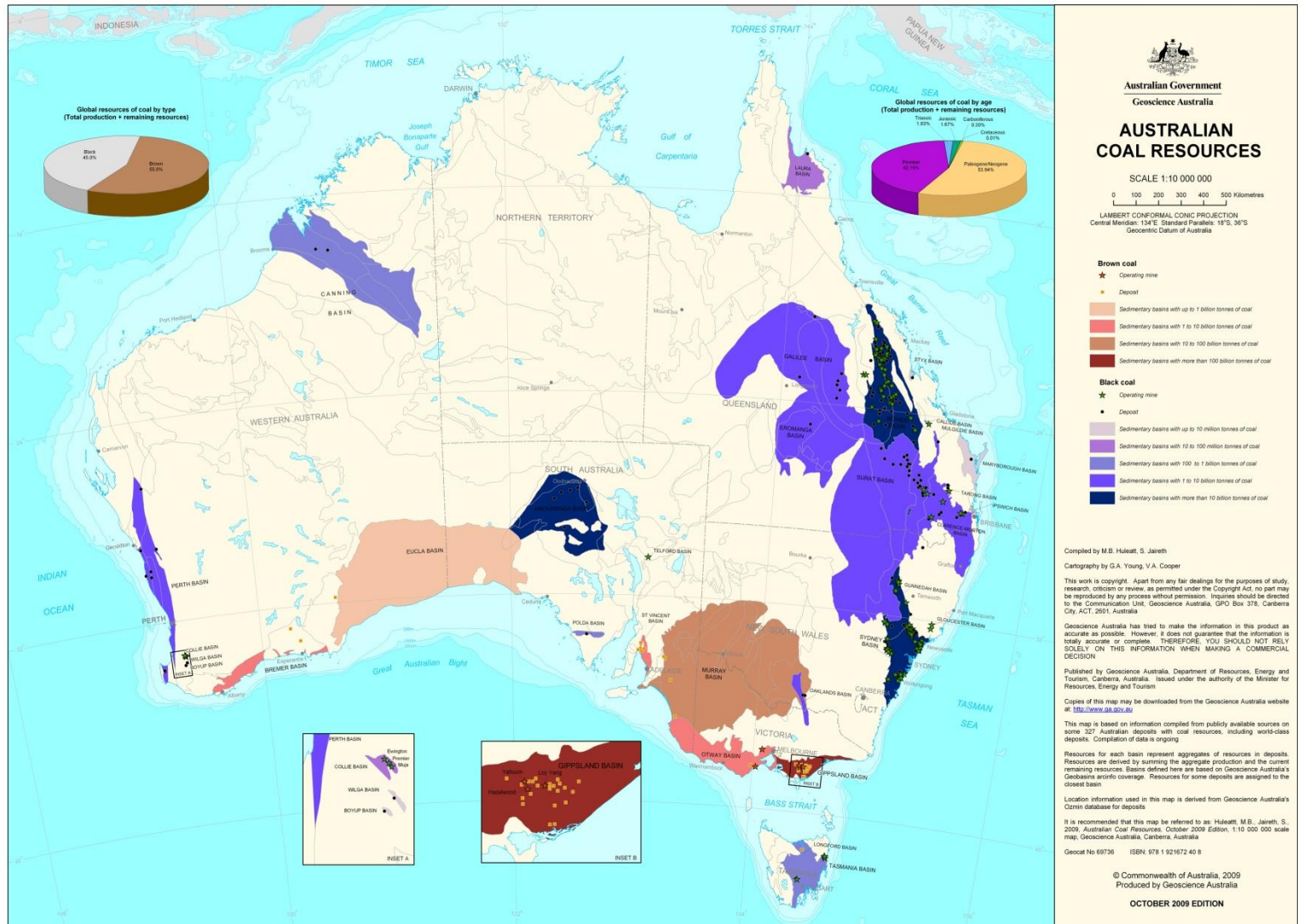
- Surplus of 200-250 bcm versus 60 bcm in 2007 (which was tight)
- But strong regional differences
- Pipelines less flexible, likely to be more affected
- And some "surplus" capacity is also desirable for security of supply reasons

Where's the Next Big chunk of LNG Supply Coming From?

- **Nigeria or Sub Saharan Africa**
- **Venezuela**
- **Qatar, Iran other Middle East**
- **Russia, Norway**
- **Traditional South East Asian producers**

- **Australia**

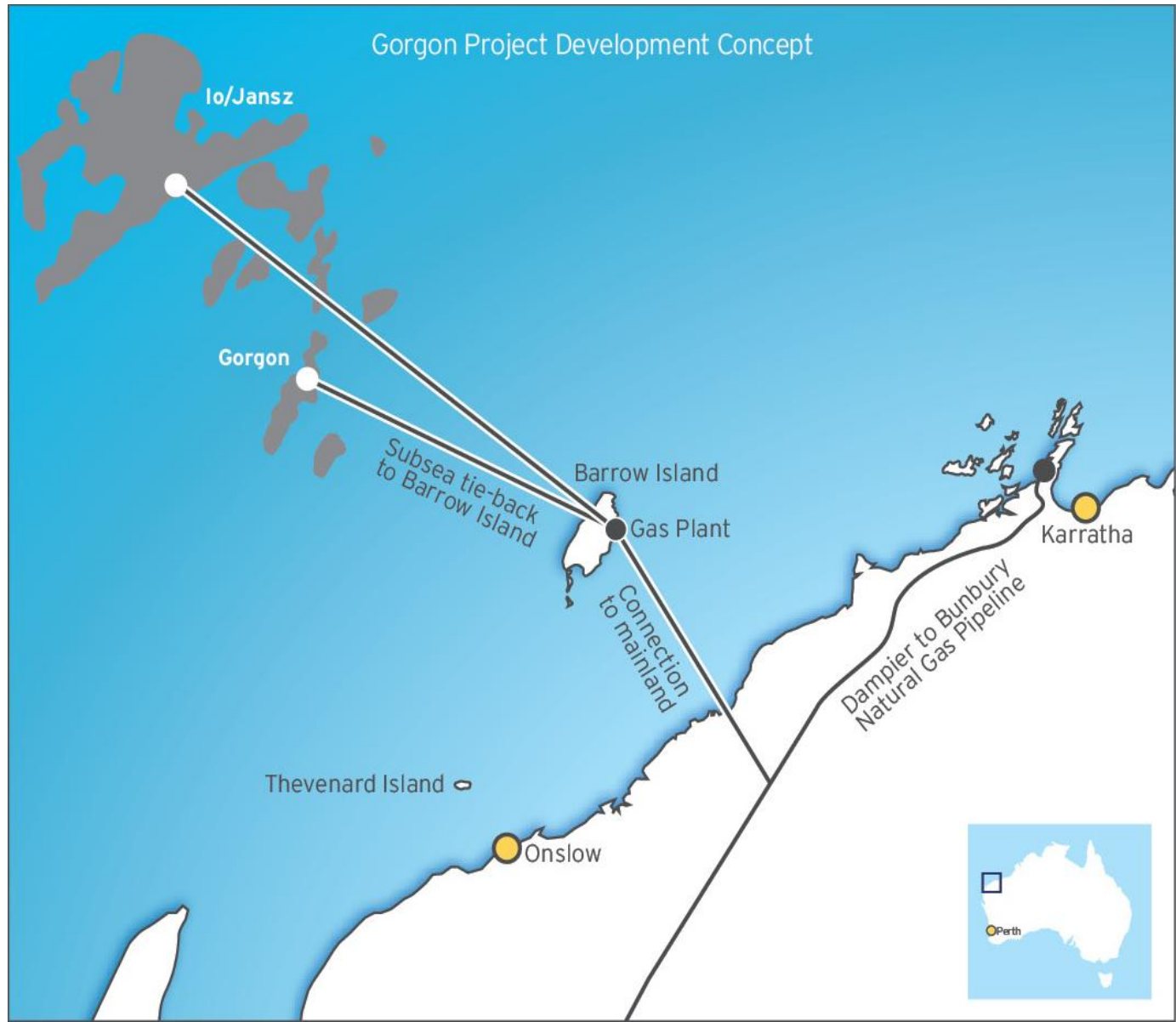
Australian Coal Bed Methane



Coal Bed Methane gets serious

- **BG Group**
- **Santos, Petronas**
- **Origin, Conoco Phillips**
- **Shell, Petrochina**
- **All around Gladstone, Queensland**

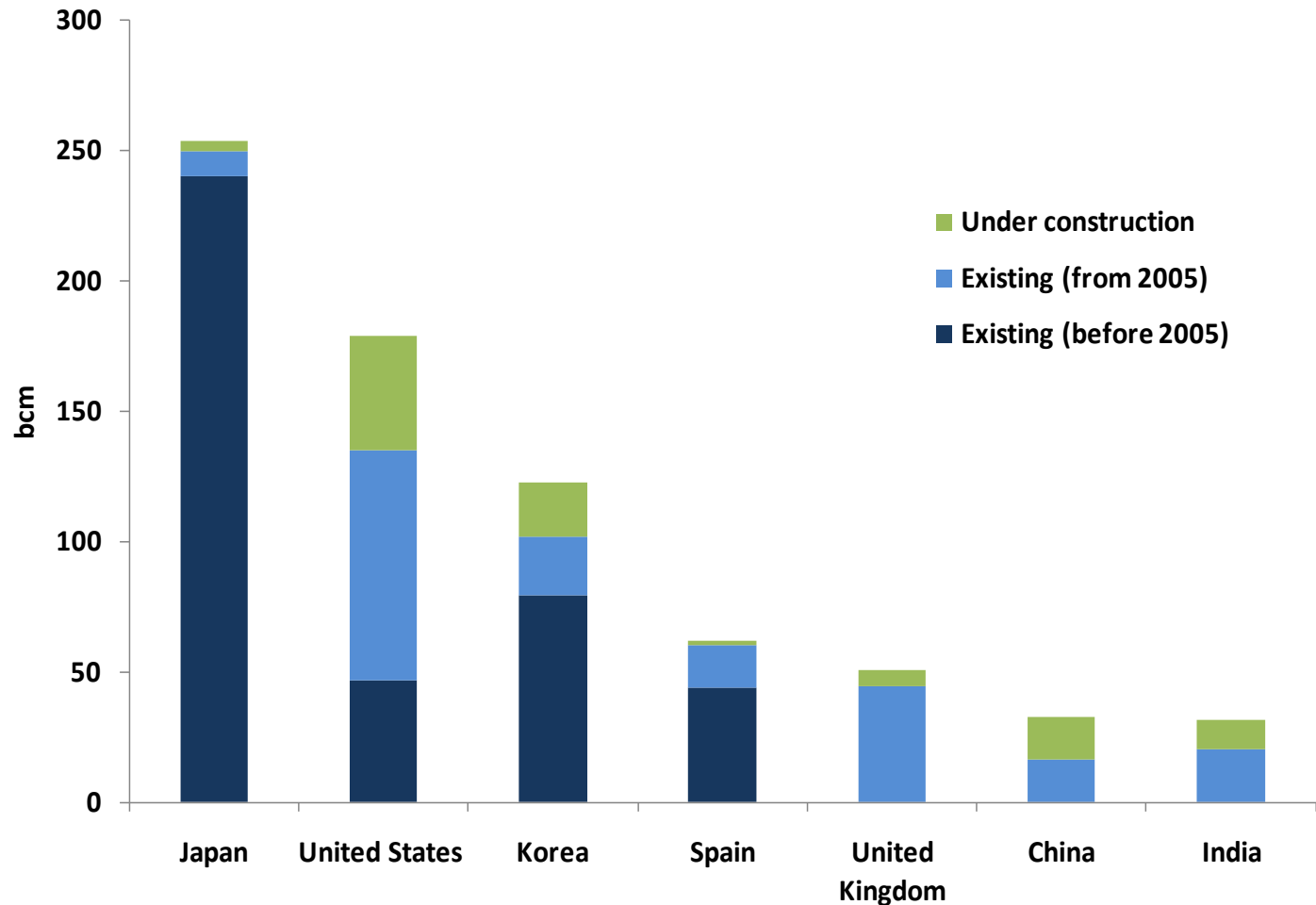
Gorgon



Other Conventional Projects

- **Wheatstone**
- **Greater Sunrise**
- **Shtokman, Yamal**
- **North America???**
- **Innovation in Technology and Marketing**

New LNG importing countries have appeared



Source: IEA, MTOGM 2010

By 2013, China and India will have a combined LNG import capacity of 65 bcm – roughly what Europe imported in 2009

Unconventional gas impact on the markets

■ **Growth of US unconventional gas has had regional and global consequences**

■ **Regional**

- Low utilization of the US LNG terminals (~10%): 9 bcm imported in 2008, 13 bcm in 2009
- Lower imports of Canadian gas
- Change in investments: Kitimat LNG was changed from import to export, Cheniere looking at LNG exports at Sabine Pass

■ **Global**

- Aggravation of the oversupply and therefore drop of spot prices
- More LNG available for the other markets (Europe, Asia)
- Discourage LNG projects targeting the US
- Increasing interest for unconventional gas in importing countries (Europe, China, India), but also in major producing/exporting countries as well (Australia, Indonesia, Argentina)

Can the US unconventional gas 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, landowners
 - 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

Recent developments

By country

■ **Australia – the front runner**

- Many CBM/CSM projects

■ **China, India, Indonesia looking seriously at it**

- China, India already producing some CBM
- Ambitious targets for shale gas in China (15 to 30 bcm by 2030)

■ **Growing interest in Europe**

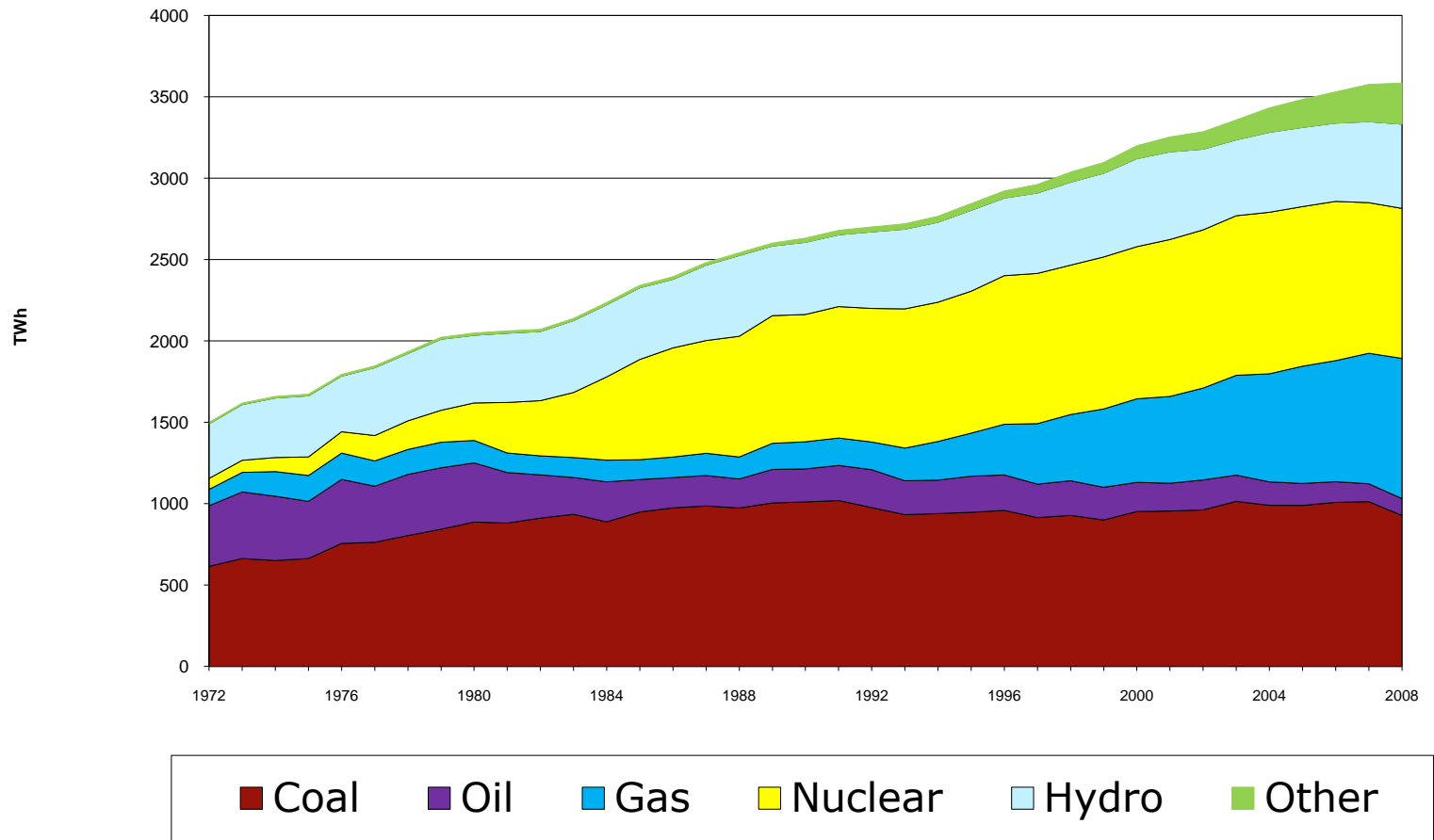
- GASH initiative to evaluate potential
- Chevron, Exxon Mobil, ConocoPhillips and Marathon in Poland
- Shale gas potential in Sweden, France, CBM in the UK
- But disappointment in Hungary (Exxon and MOL exit the Mako field)

■ **Potential in Latin America**

- Argentina (Neuquén basin)

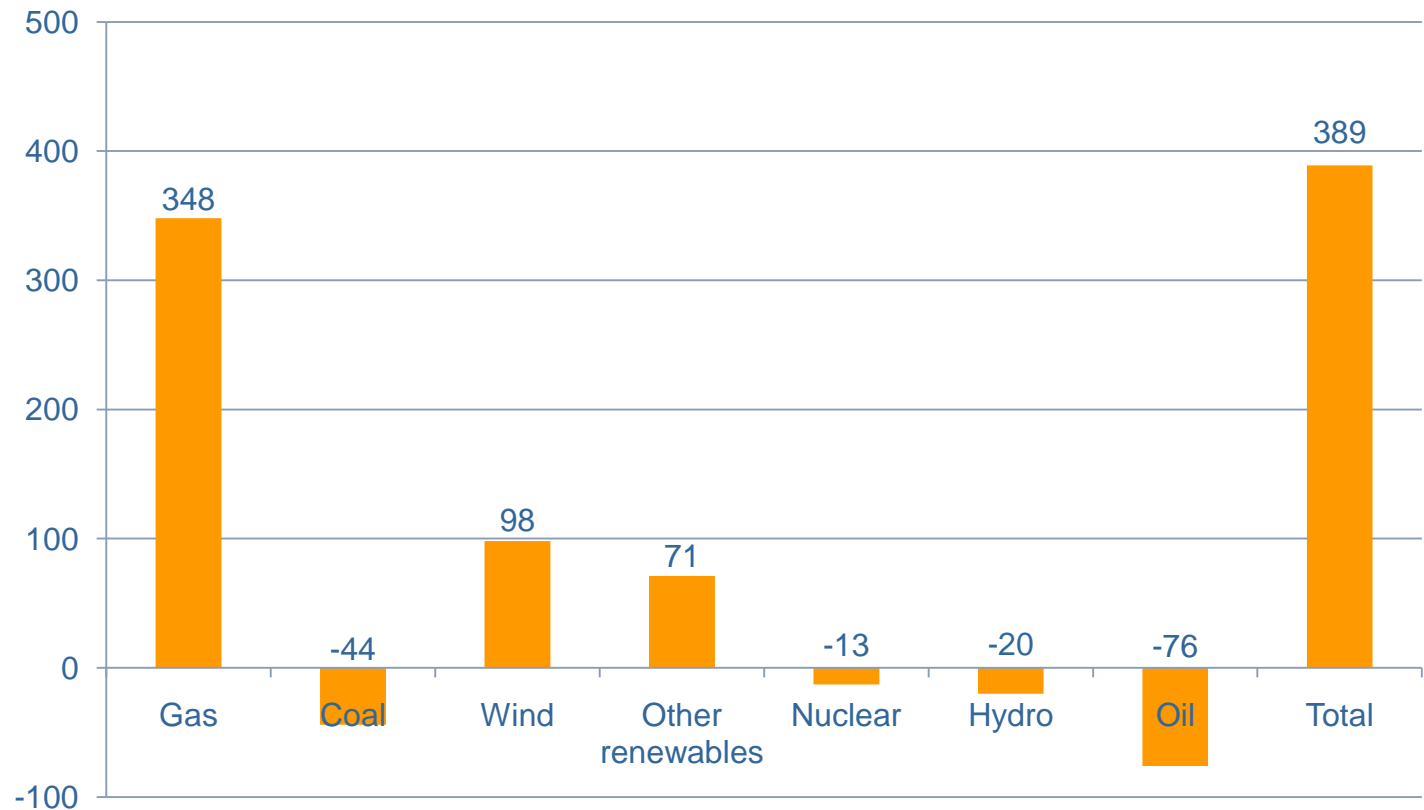
Power markets—the Key Uncertainty

OECD Europe electricity generation (1972-2008)



Gas – Main contributor to the 2000-08 growth in OECD Europe electricity generation

Incremental Growth [TWh]

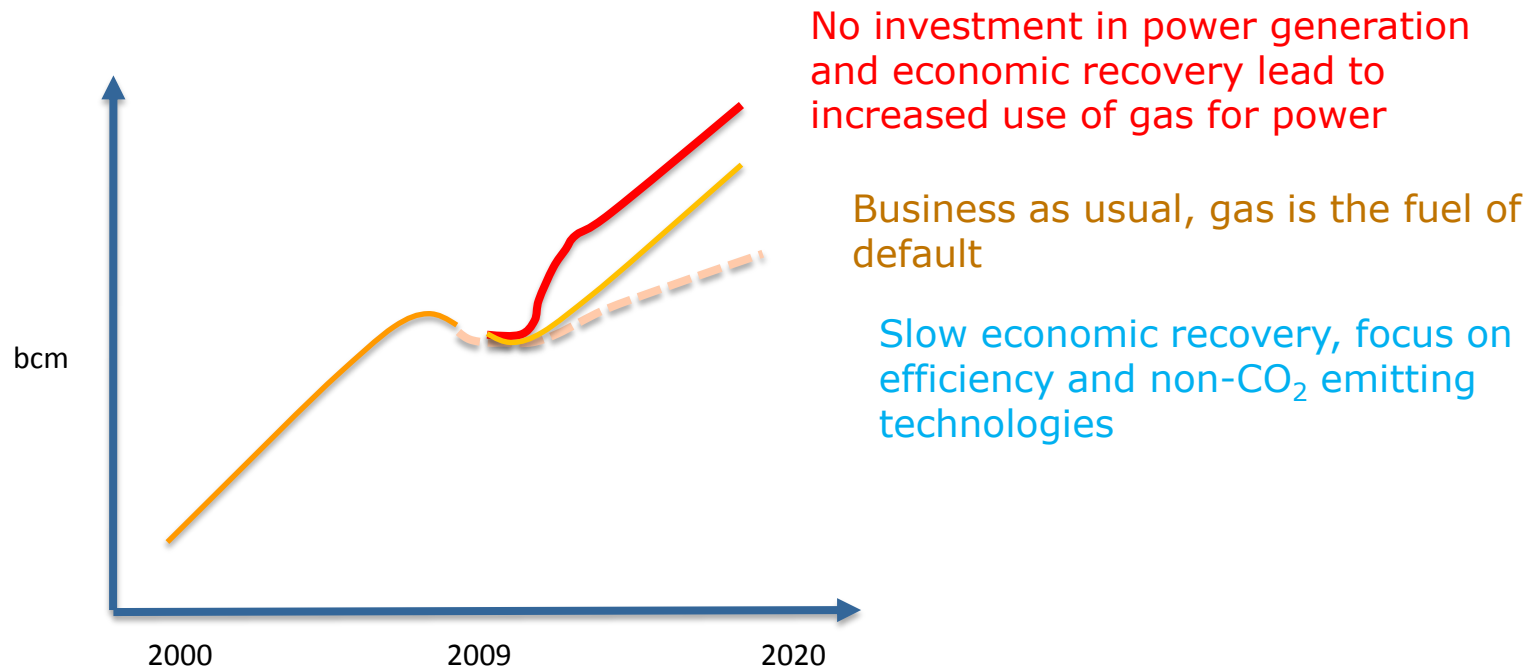


WHY GAS?—Many Good Reasons

- **Low Capex**
- **Short lead times**
- **Flexible, ideal with renewables**
- **Low carbon signature, and**
- **A natural hedge to power prices**

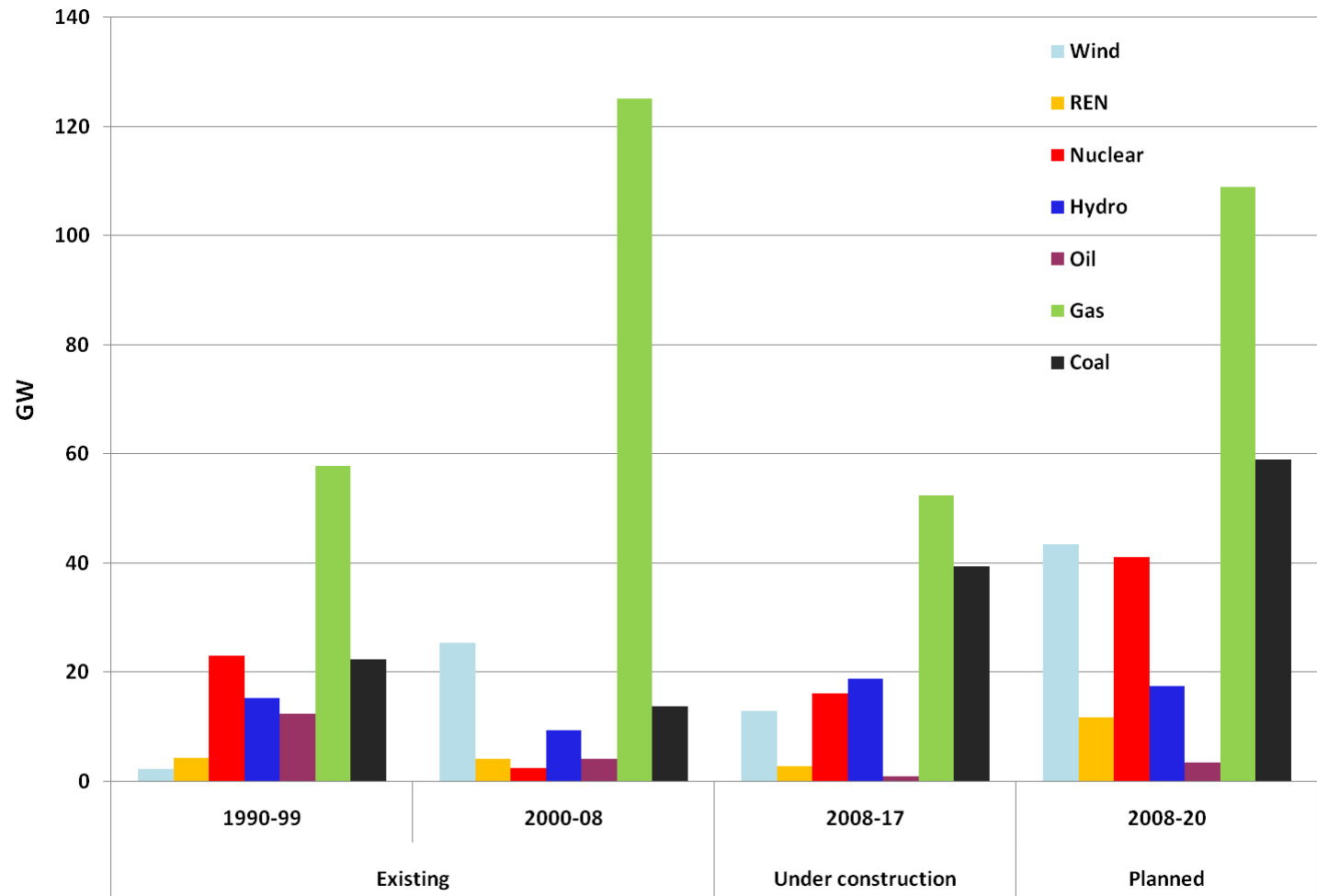
What would be the future gas demand path?

- How long will it take for demand to rebound?
- How quickly will it recover?



Source: IEA, NGMR 09

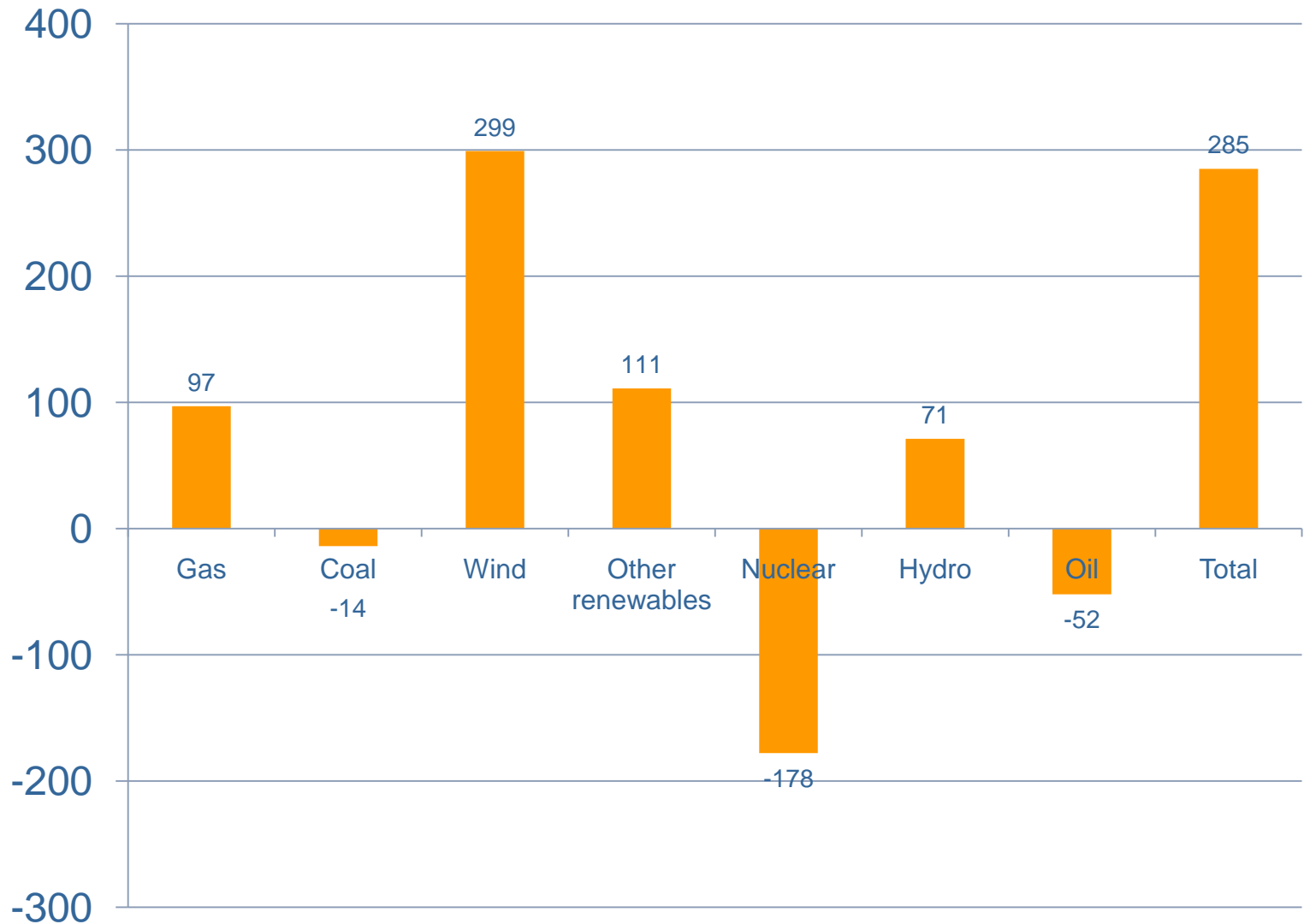
Gas is still the fuel of default in OECD



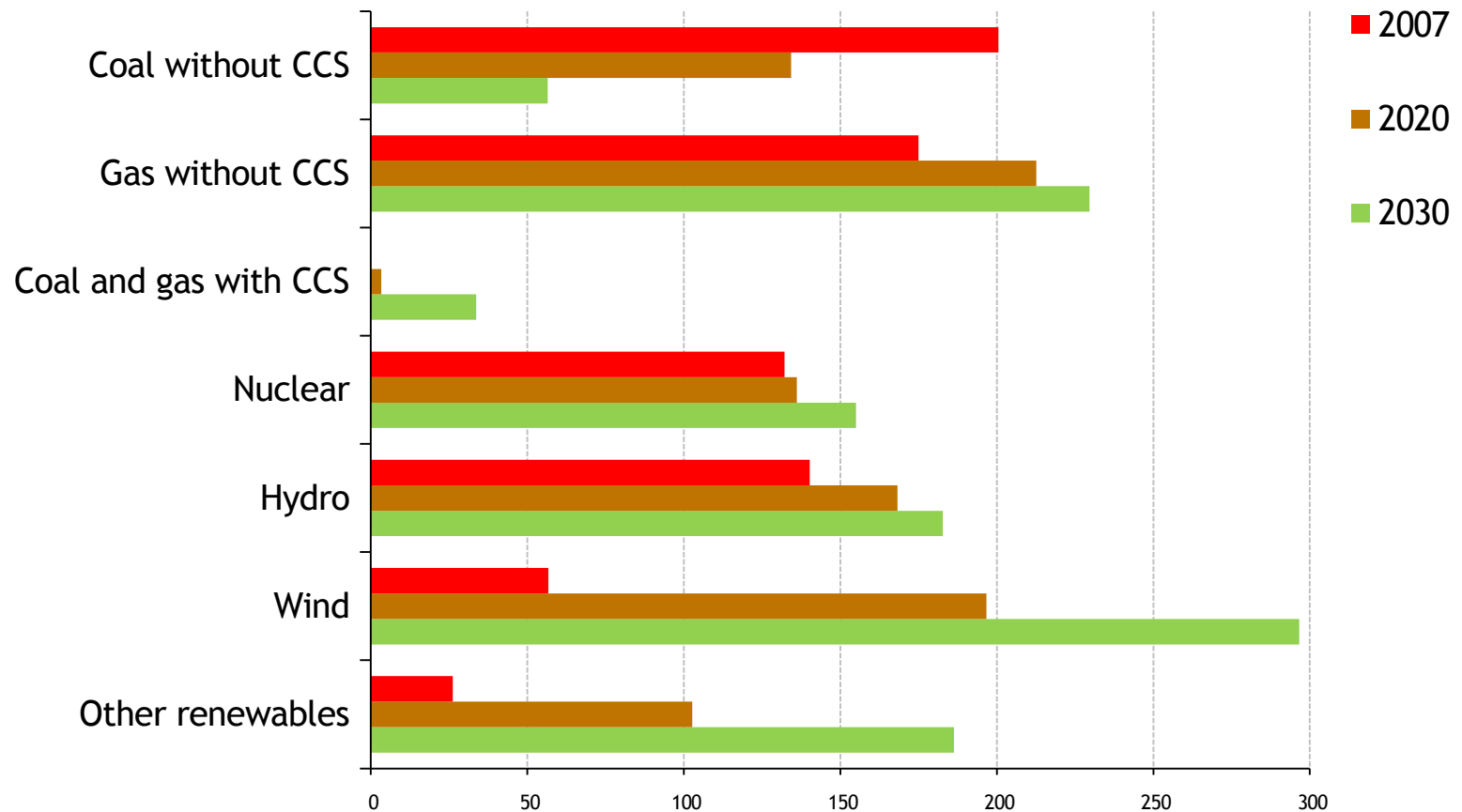
Source: IEA, NGMR 09

OECD Europe 2008-2020 (Twh)

WEO reference case



EU27 installed power generation capacity in the 450 Scenario

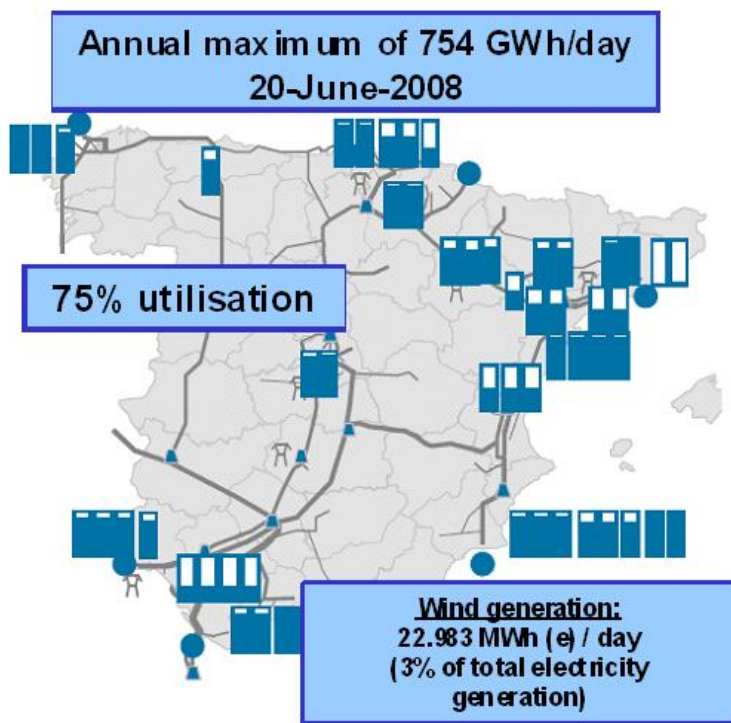


GW

The future role of gas in the power generation mix could evolve

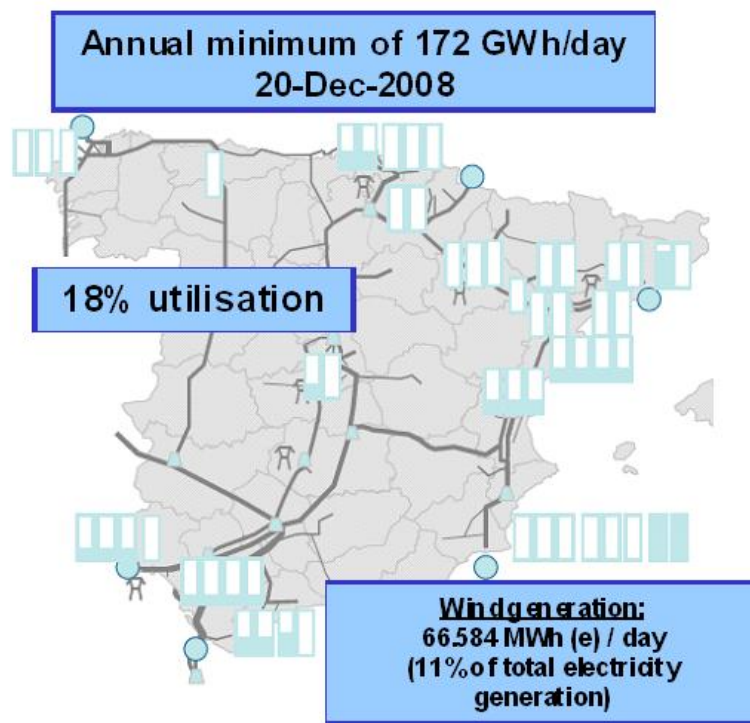
Summer:

Less wind availability
Gas is used to replace wind



Winter:

Increased wind availability
Use of gas is minimum



Source: Enagas