



Global gas market dynamics

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Presentation outline

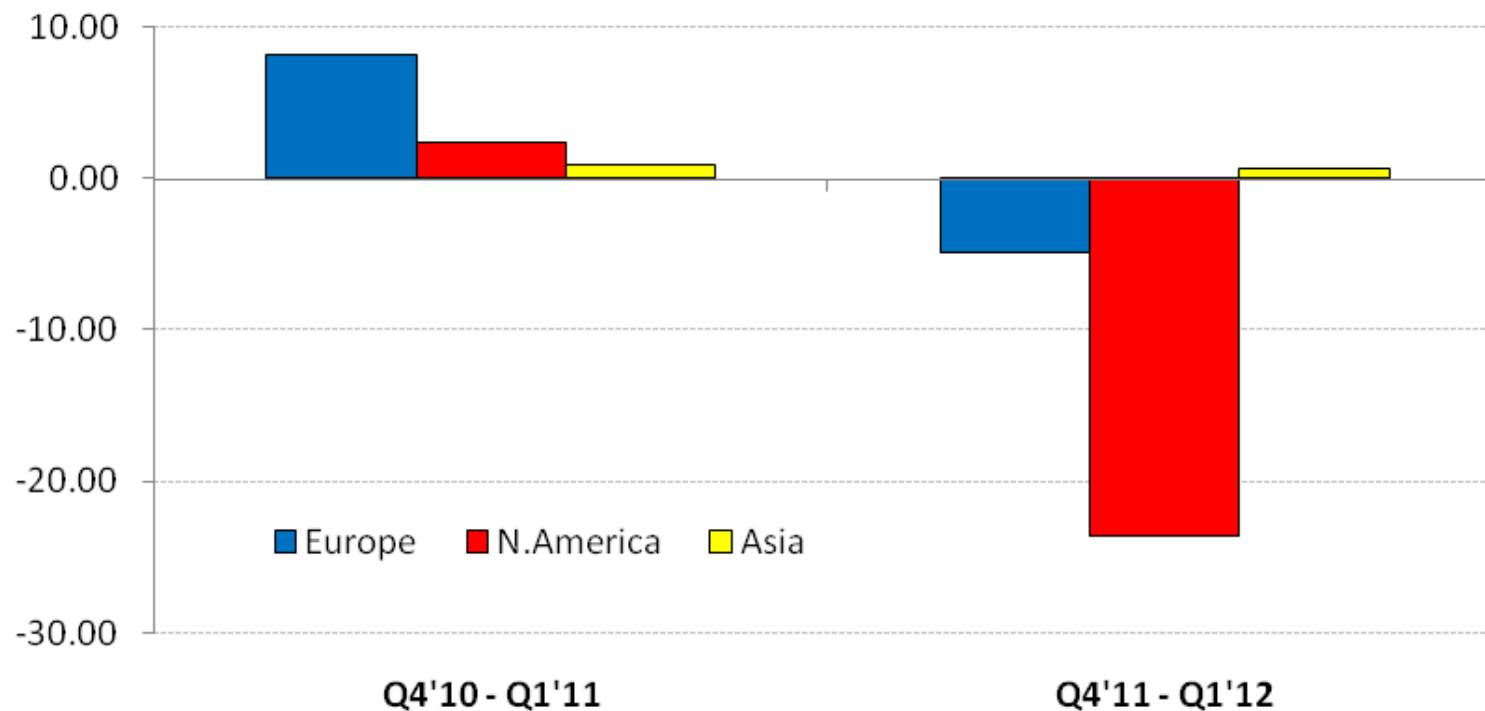


- Weather and macro economy
- Recent developments in key markets
 - regional supply/demand
 - LNG supply/demand
 - price signals
- Gas market outlook
- Conclusions

Weather a negative influence on gas demand in 2011-12 winter, especially in North America

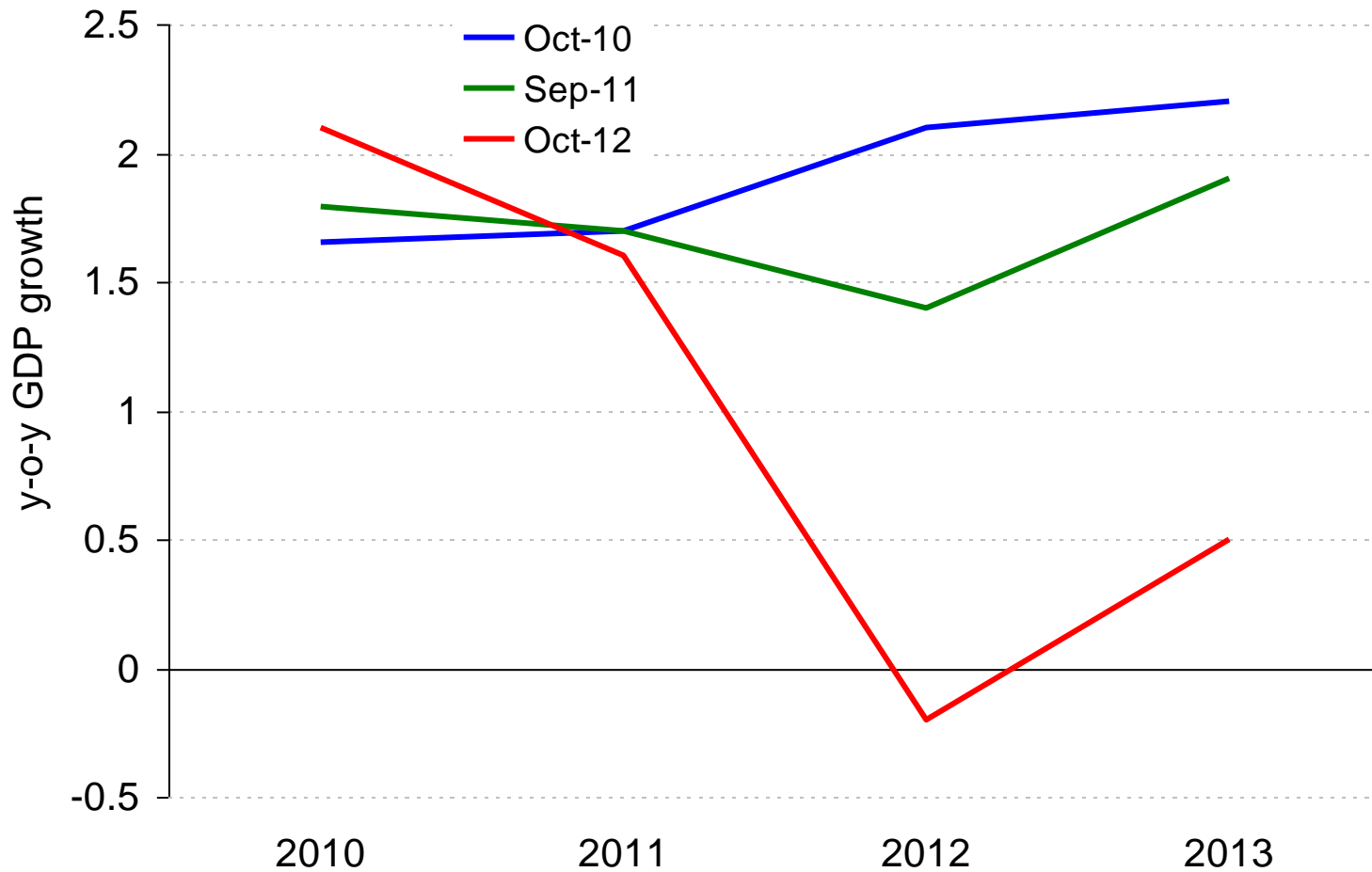


Regional Weather components (bcm)

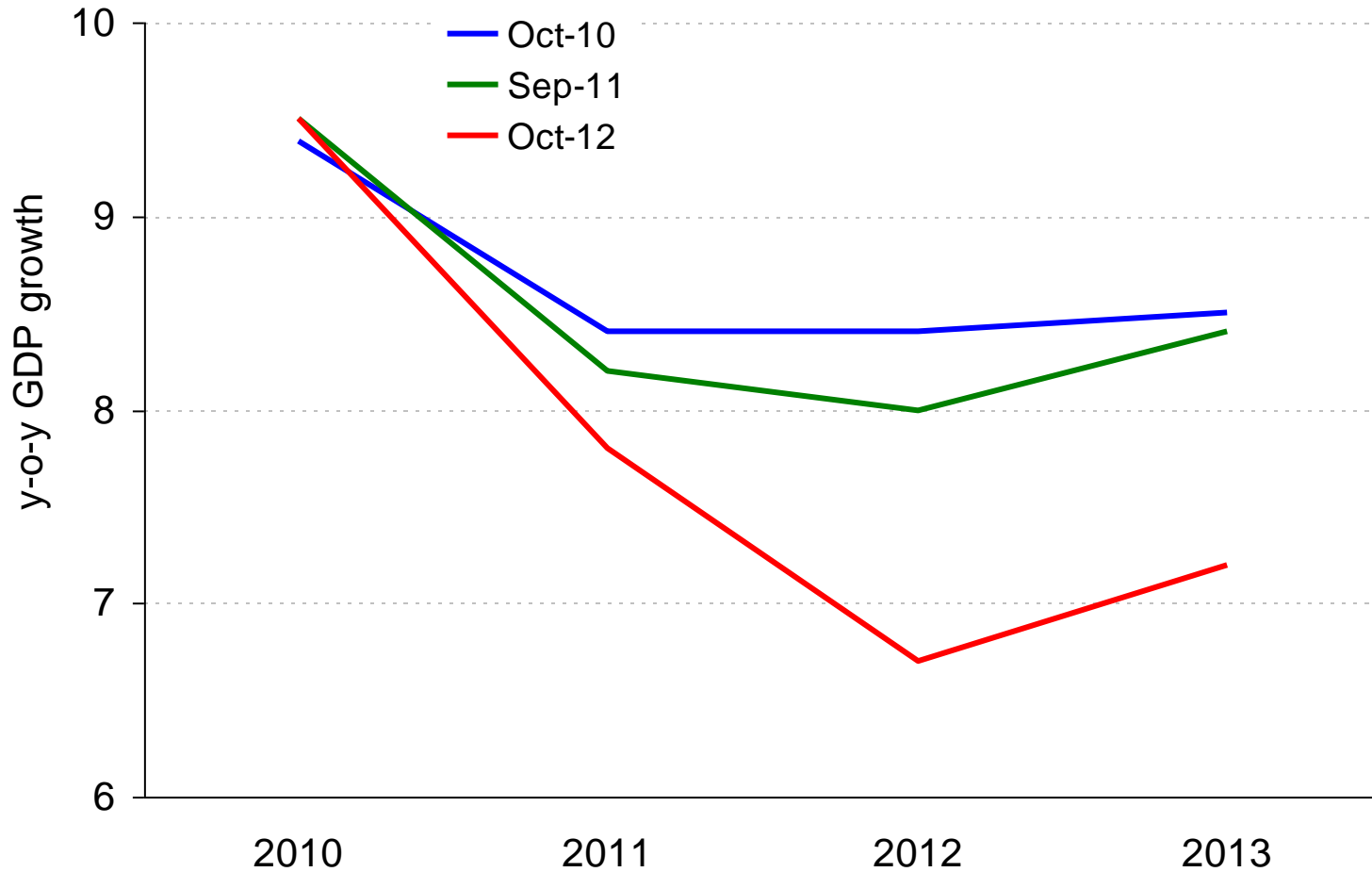


* Europe constitutes the big 7 consumers (UK, Germany, Italy, France, Belgium, Netherlands & Spain)

Deteriorating European (EU) outlook the key macro-economic issue



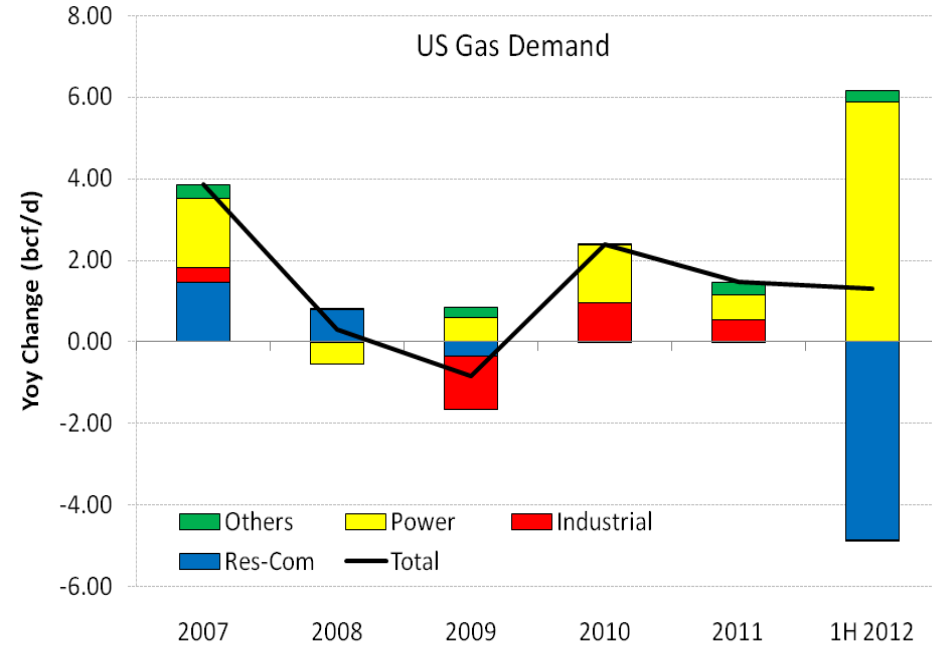
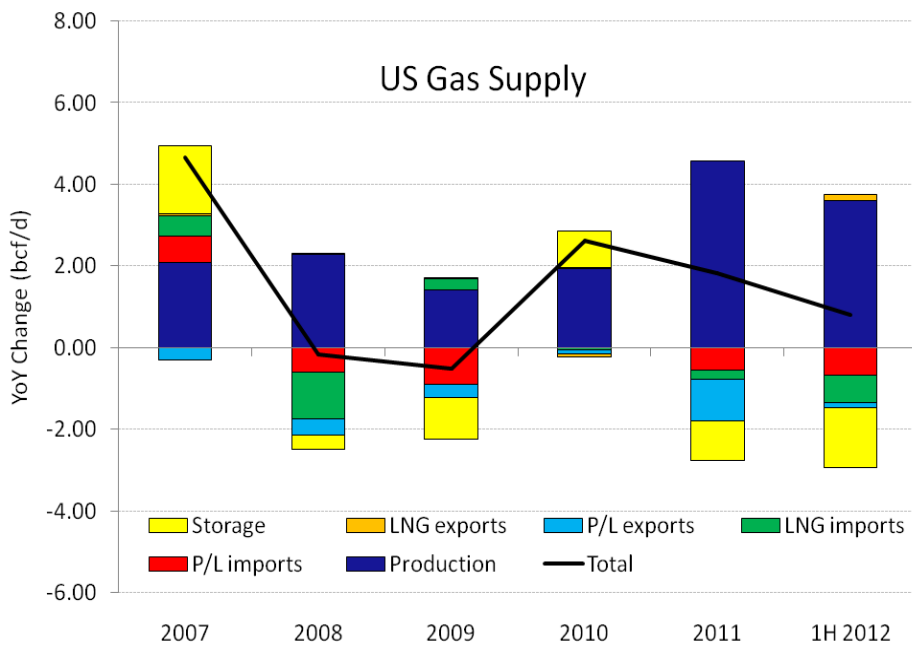
Euro crisis has undermined growth in other regions, e.g. Developing Asia



Regional & LNG developments



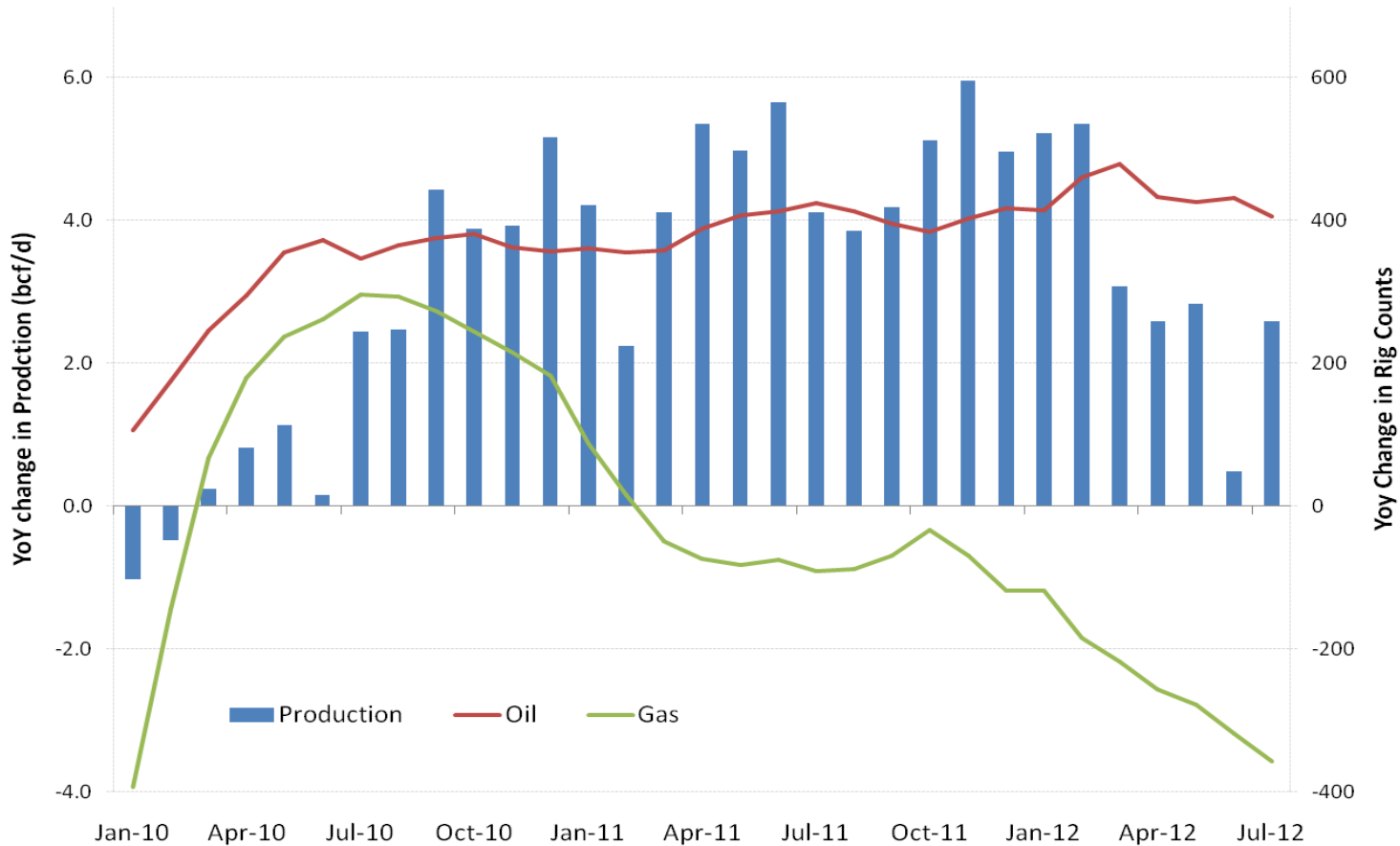
US supply/demand fundamentals



Source: EIA

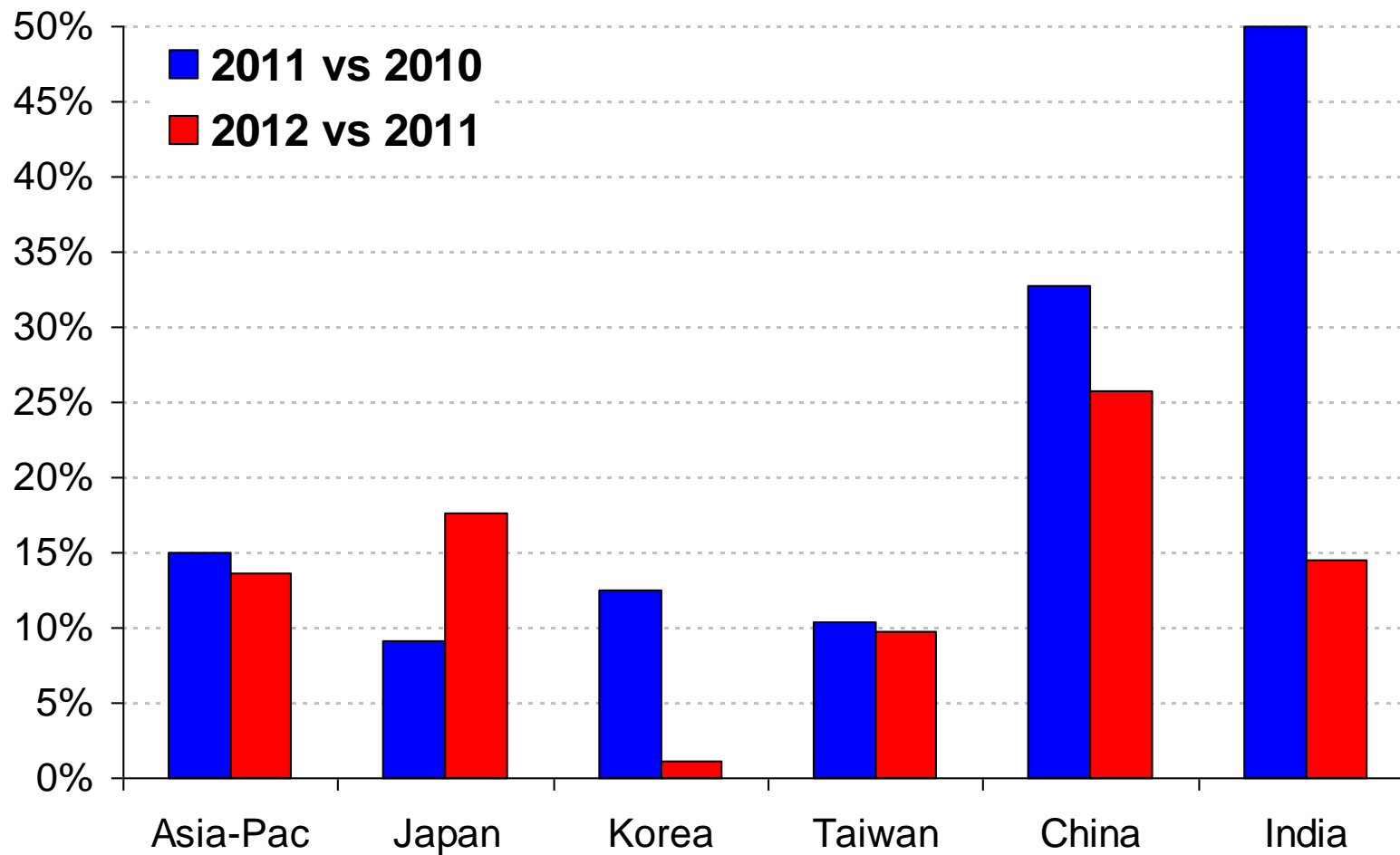
- Trend of strong production growth continuing into 2012, displacing LNG and Canadian pipeline imports and underpinning higher pipeline exports to Mexico.
- Mild 2011-12 winter resulted in weak residential-commercial demand. Gas prices had to fall significantly to incentivise power demand growth and storage builds to balance the market.
- Lower gas prices yet to be reflected in structural industrial gas demand increase

US gas production now responding to falling rig counts: year on year growth faltering

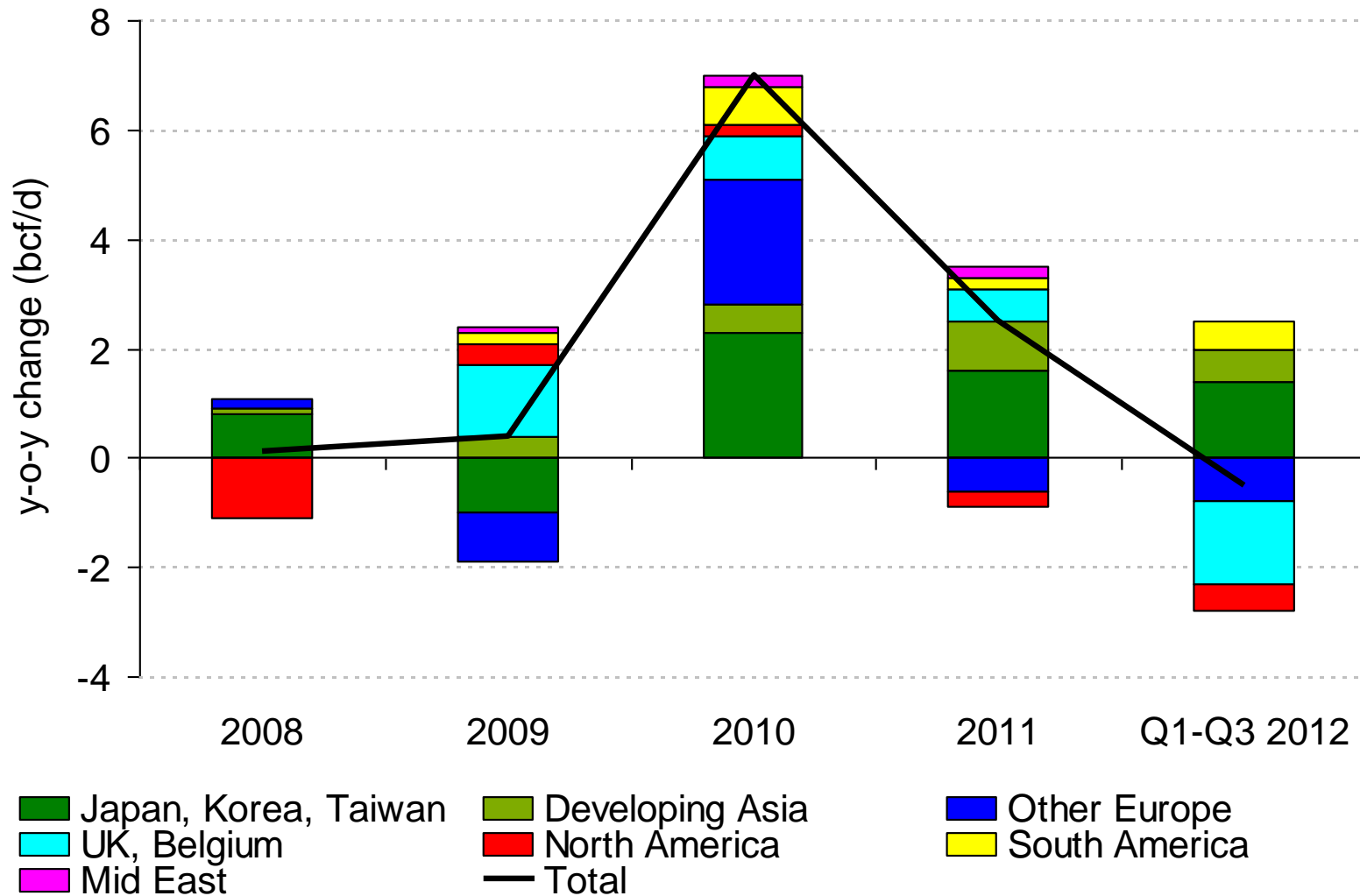


- Production momentum from uncompleted wells, elimination of transportation/processing bottlenecks
- Associated gas resulting from oil shale boom also adding to gas supply
- Lower NGL prices undermining some wet gas plays

Asian LNG imports show strong year on year growth through July 2012, especially in Japan



2010-11 LNG supply wave is now over. Meeting growth in Asia/new market demand requires large scale diversion away from Europe and North America

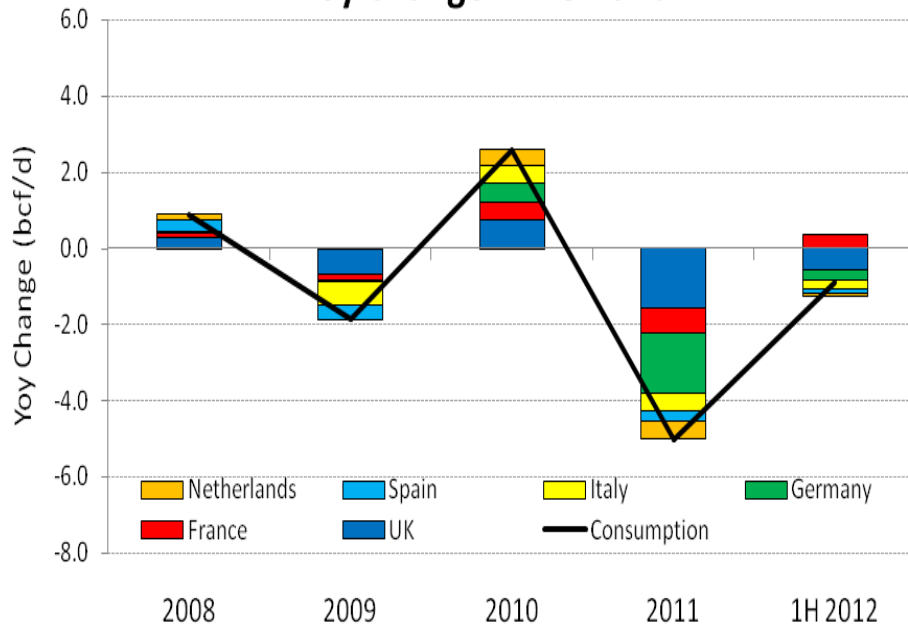


Source: BP analysis

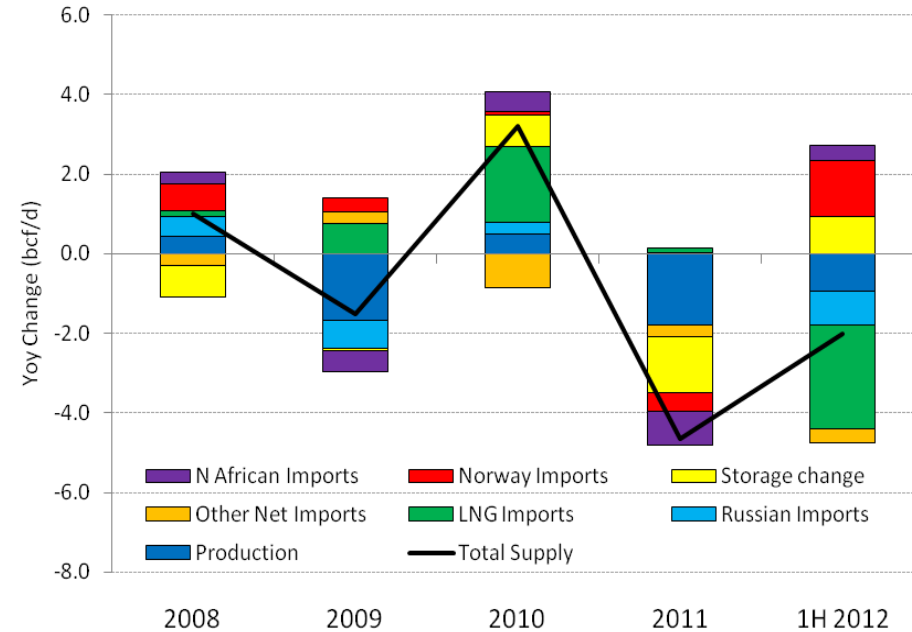
Europe (Big 6) supply/demand fundamentals



Yoy Change in Demand



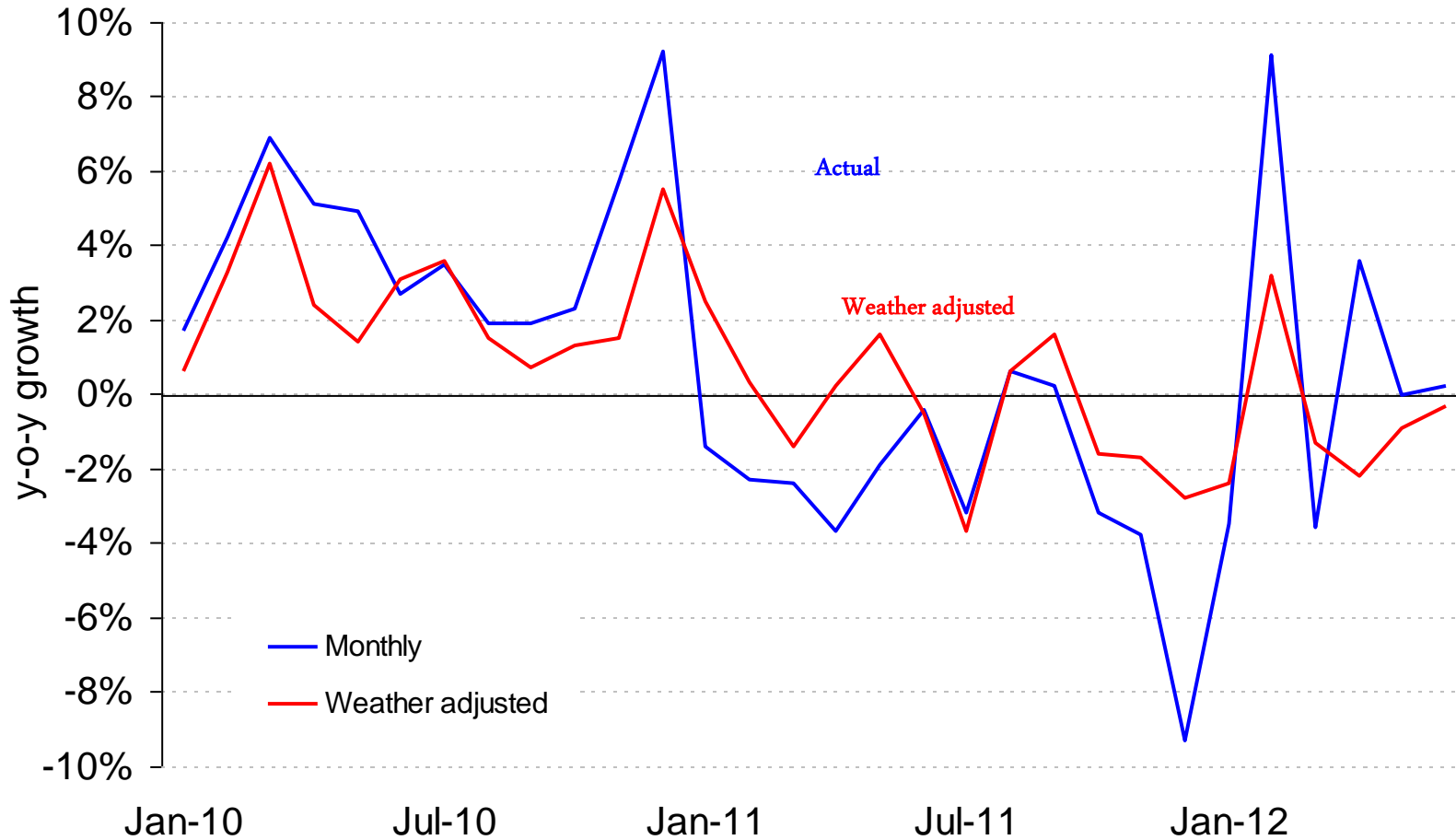
Yoy Change in Supply



Source: Various TSOs

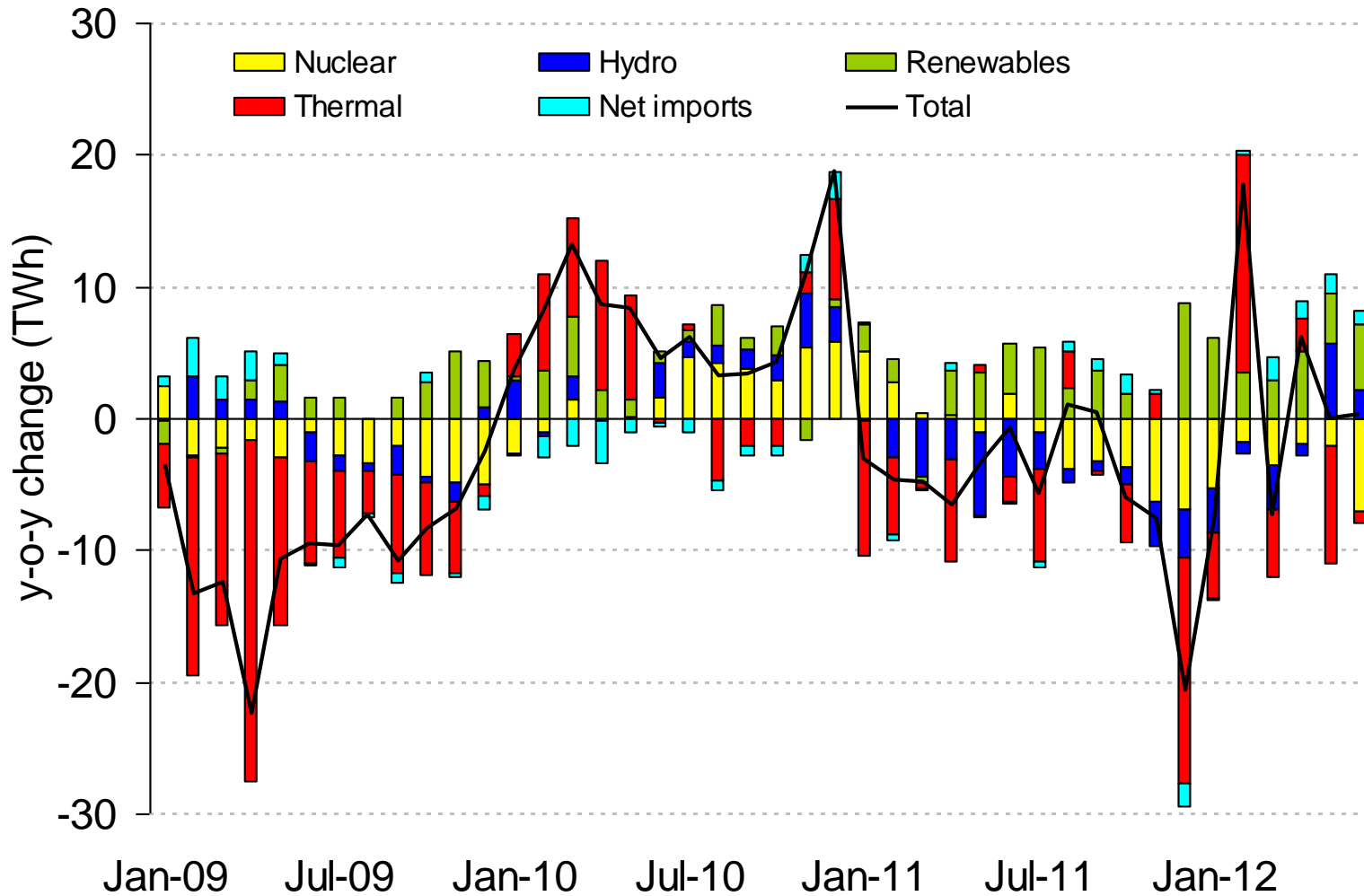
- 2011 demand was exceptionally weak with very mild weather and the European economic slowdown impacting. 1H 2012 has failed to show a recovery despite experiencing colder weather than last year
- On the supply side, LNG diversions away from Europe were large in 1H 2012. UK/German production continues to decline and Russian imports are also lower year on year. These negative impacts partly offset by very strong Norwegian flows and the run down of high start of year inventories

Weakness in the power market has been behind weak European gas markets: year on year change in electricity demand for Big 7* European markets



* UK, Germany, France, Italy, Spain, Belgium, Netherlands

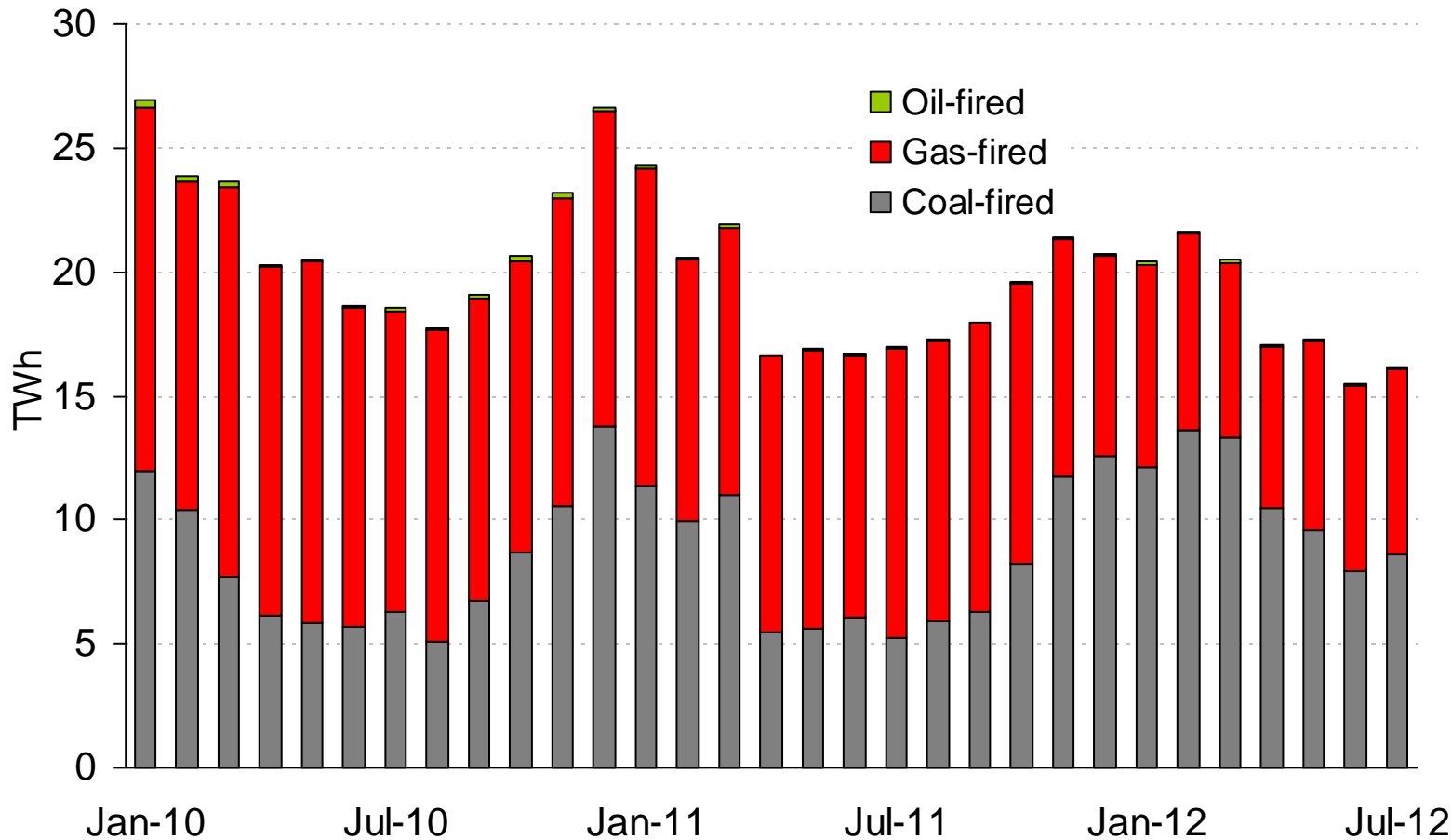
Year-on-year change in Big 7 electricity supply by type: Thermal output displaced during periods of falling power demand



The key issue has been displacement of gas-fired power by coal-fired power, reflecting relative generation economics

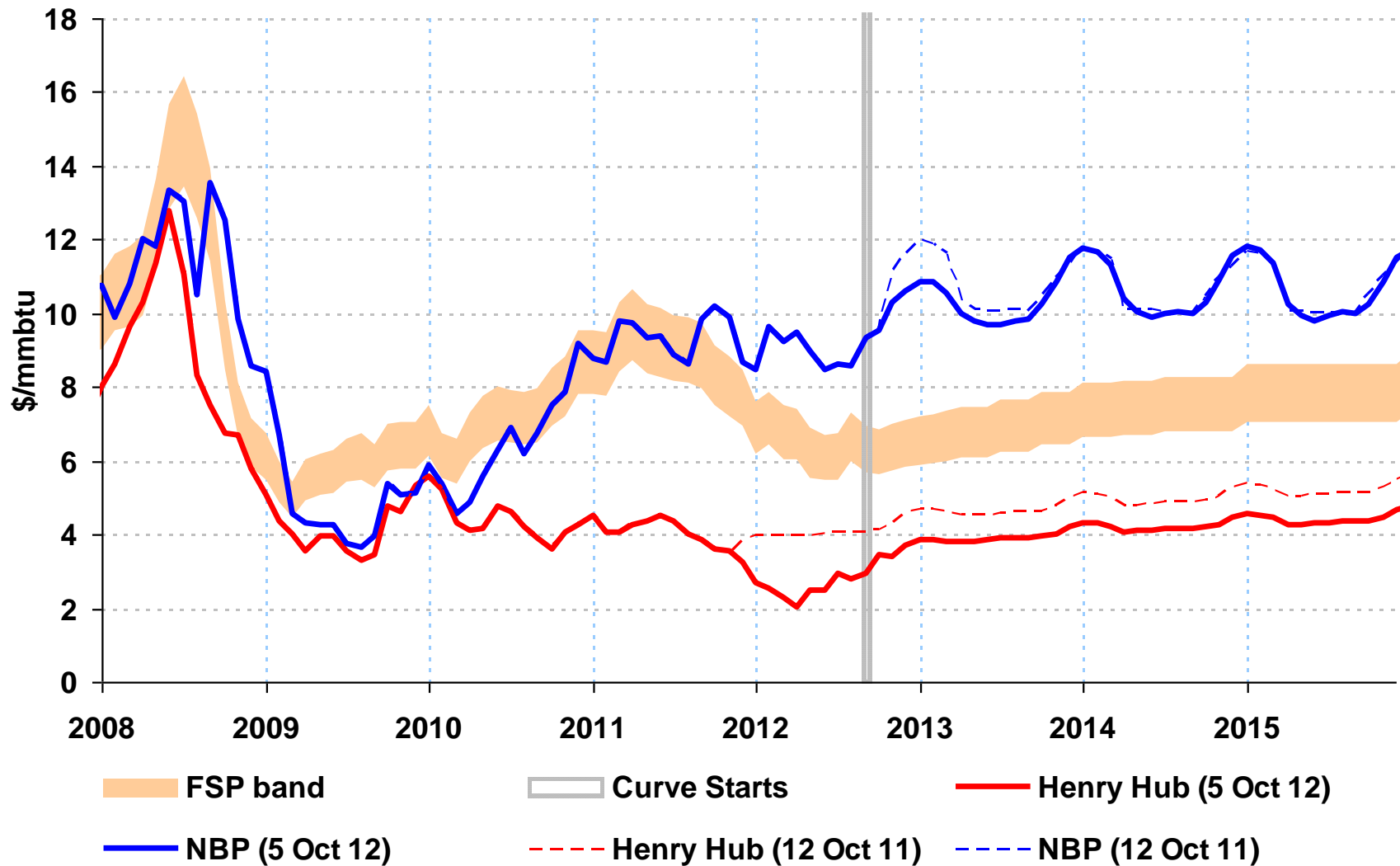


UK thermal power generation by fuel



Source: DECC

US Henry Hub futures curve has shifted down along its length since last year. NBP curve further out supported by higher oil prices but down at front end, reflecting weaker fundamentals



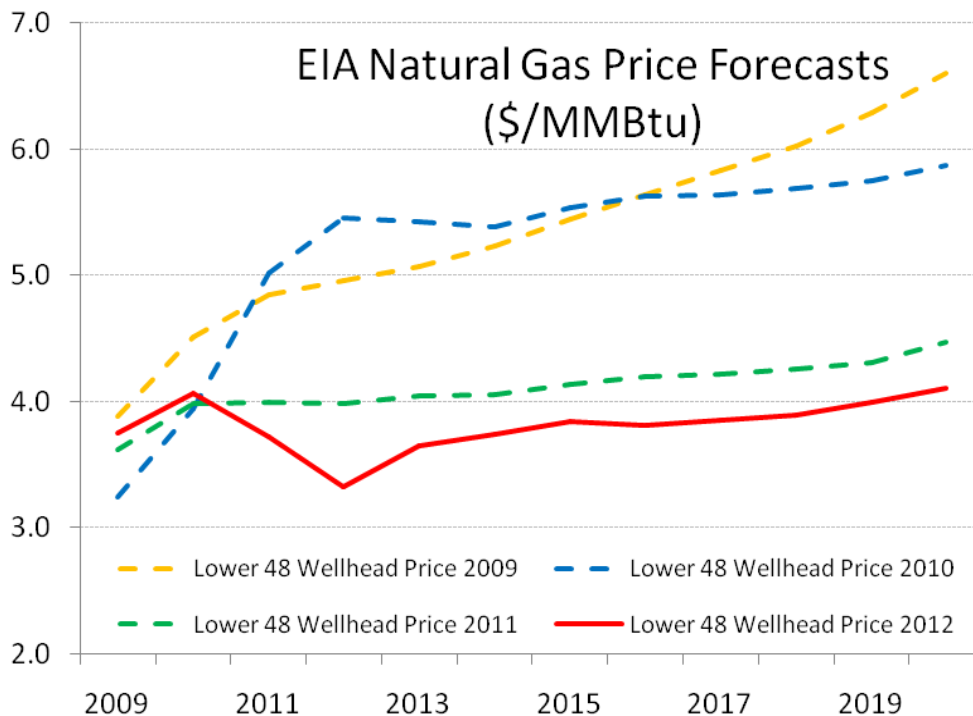
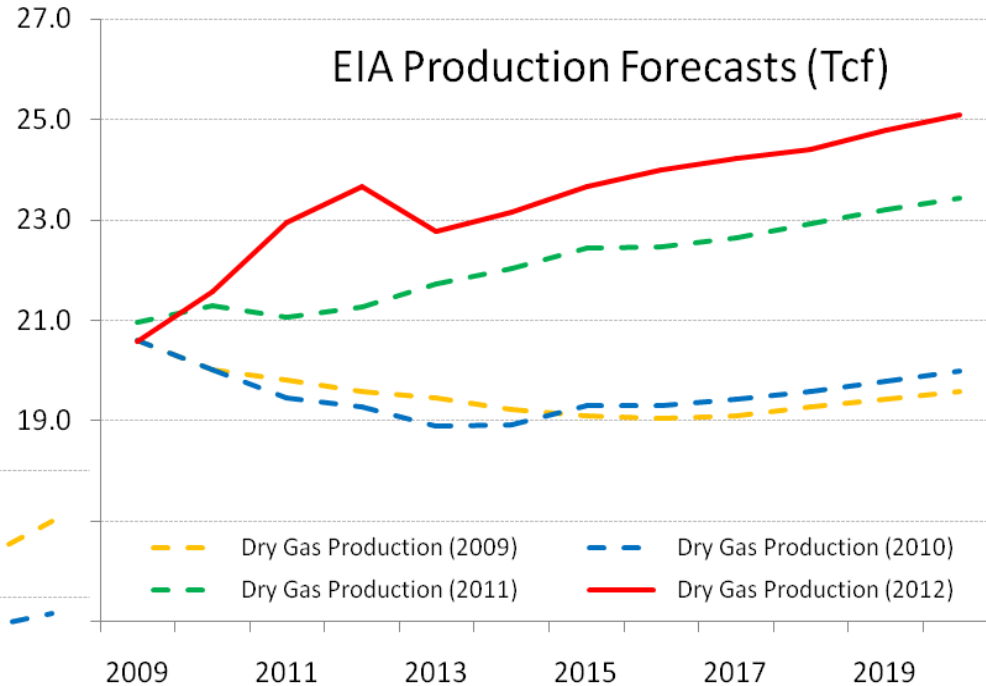
Gas market outlook



Consensus emerging that US production potential will keep a firm lid on Henry Hub prices

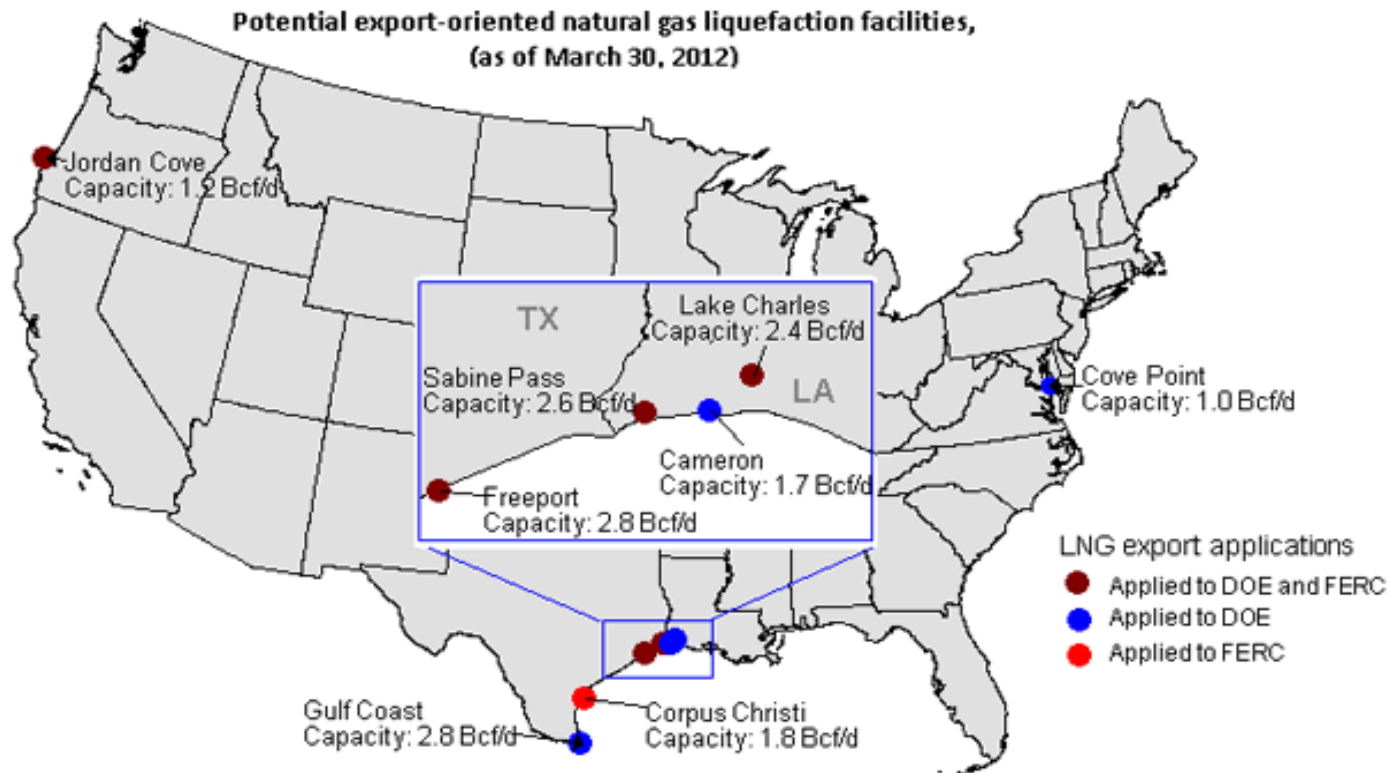


- Will the US gas rig count overshoot on the downside, resulting in a near term price blip?
- Will the US allow unfettered LNG export?
- How flat is the US long run supply curve?



- Will lower gas prices lead to a renaissance in US industrial gas demand?
- Will low gas prices and federal budgetary pressures crowd out renewables and nuclear in power generation?
- Will gas penetrate the transportation sector, e.g. LNG in long distance trucking?

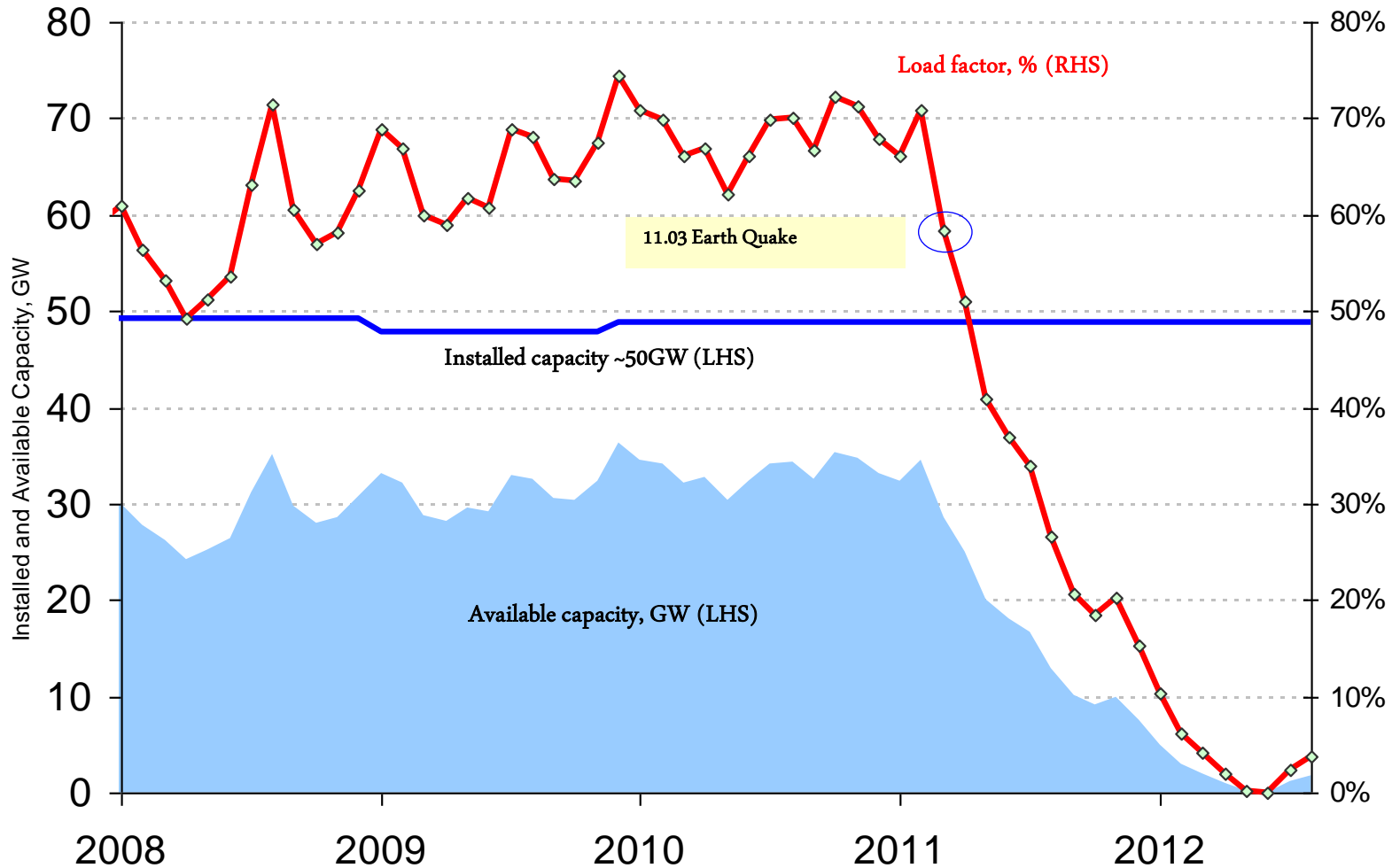
US proposals to build 16bcf/d of LNG export capacity



Source: U.S. Energy Information Administration, based on U.S. Department of Energy (DOE), [Office of Fossil Energy, Applications Received](#), and [Federal Energy Regulatory Commission \(FERC\)](#).

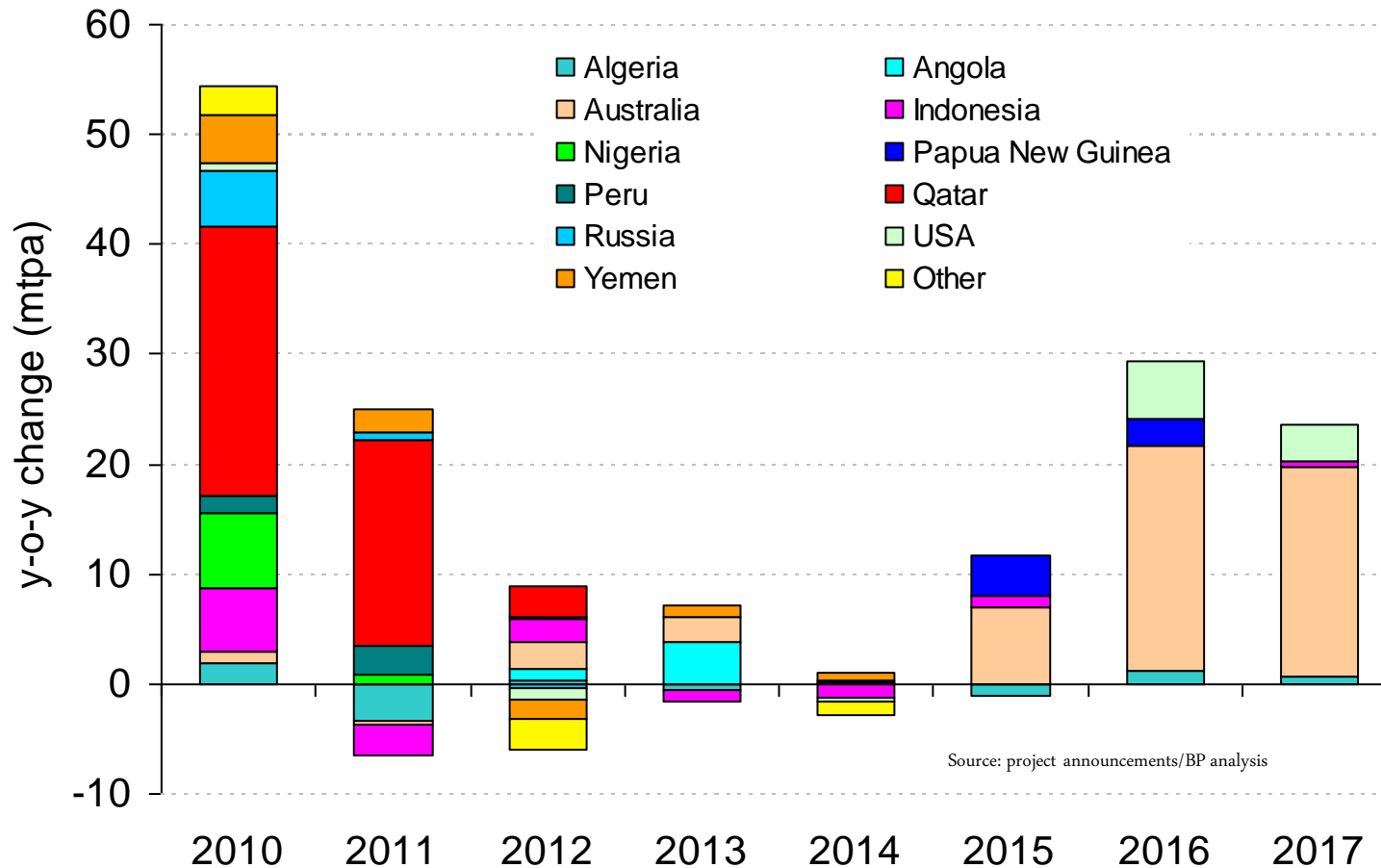
- Only Sabine Pass has approval to export to both FTA and non-FTA countries, plus FERC approval.
- Non-FTA approval for other projects pending DOE economic study.
- Over 3bcf/d of Canadian export capacity proposed of which just under half has export approval.

Japanese nuclear question will continue to be key driver of Asian LNG markets. Additional nuclear capacity unlikely to be online before next summer



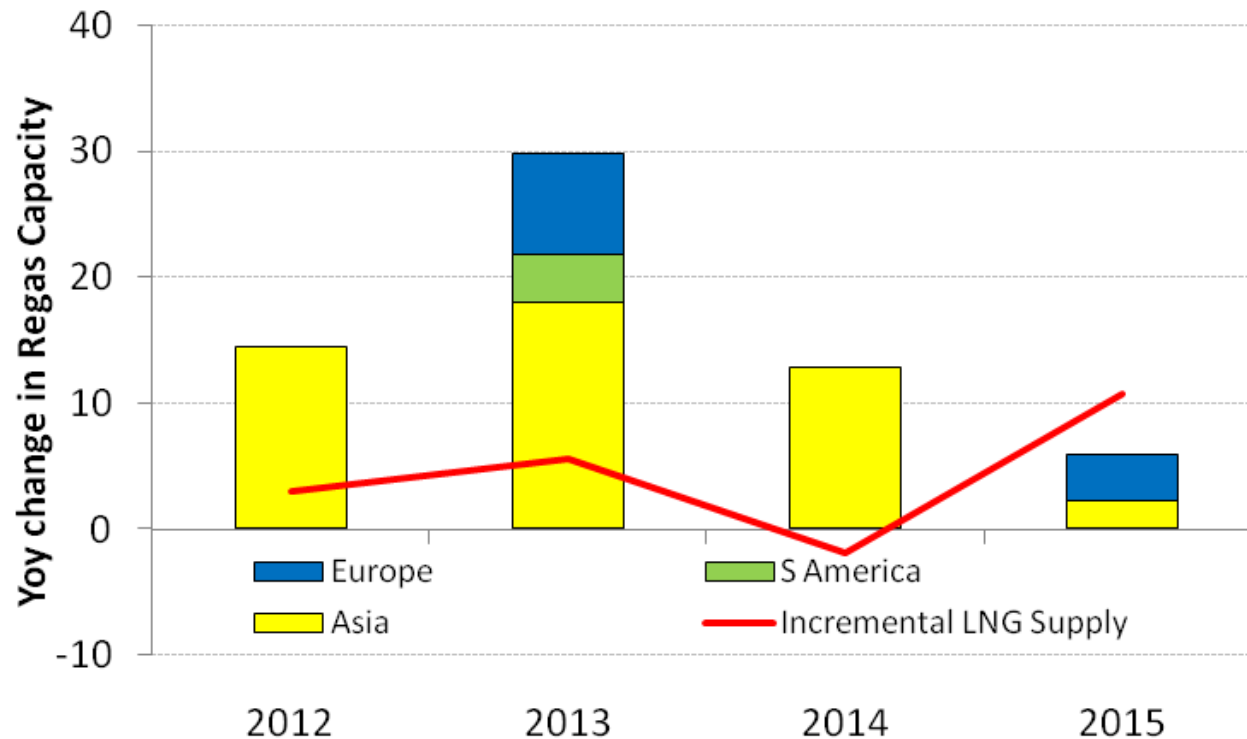
Source: Japan METI

2009-11 LNG supply wave now over. Minimal supply additions before next wave hits the market starting in 2015



- Operating and under construction projects only: additional projects possible (with 2017+ start up)
- 2010 was the peak year for LNG output additions but momentum carried over into 2011
- Net supply additions 2012-14 average only ~2 mtpa vs. >25 mtpa 2009-11
- Not all new capacity likely to result in incremental supply, e.g. Algeria (gas supply constraint)
- Delays to new wave of Australia/PNG projects built in given complexity and recent experience

Capacity to import LNG is growing much faster than LNG supply through 2014, implying a tighter mid term LNG market



Source: project announcements

- European re-gas capacity additions in 2013 (Spain, Italy) unlikely to result in much additional demand. Ditto for new Brazilian terminal
- 75% of Asian capacity growth is in China, India and new markets of South East Asia: much more likely to result in incremental demand than Japan/Korea capacity adds
- Relatively short lead times for LNG re-gas make additional 2014/15 capacity adds possible

Asia Pacific: long term issues



- Japan nuclear phase out?
- Will gas exploration success underpin long term futures of LNG projects in Indonesia, Malaysia and Brunei?
- Will future LNG projects in Australia be able to compete with new supply from East Africa?
- Will we see additional LNG supply from the Middle East or will the region become a demand sink?
- How quickly will India add new re-gas capacity? Will pricing in India adjust to facilitate LNG import growth?
- How quickly will LNG demand grow in the new markets of South East Asia?
- Will China hit its targets for coal bed methane and shale gas output?
- Will China import pipeline gas from Russia? Scope for further imports from Central Asia? Will piped gas compete with LNG?
- Will we see the emergence of an Asian price hub?

Europe: long term issues



- When will the European economy return to growth? More major Euro zone economic disruption to come?
- Will gas-fired power generation continue to be eroded by flat/falling electricity demand, growth in renewables and competitive coal-fired power? Will LCPD/IED impacts offset to some extent?
- Will the LNG market go long supply again after 2015, especially if large scale US LNG exports move ahead? If so, it is possible this length would appear on European hubs
- Could we see a renaissance in North Sea gas production? Will we see a shale gas revolution in Europe?
- Given the competitive and regulatory pressures, can we expect oil-linked contracts to survive, especially if the market goes long supply?
- If Europe moves to a hub model, what will set the price of gas in Europe?