

UK GAS SECURITY OF SUPPLY SEMINAR



PÖYRY

The Impact of Unconventional Gas

2 February 2012

Lucy Field

AGENDA

1. Introduction
2. Pöyry
3. Potential in Europe and around the World
4. Impact on GB gas market
5. Recent developments
6. Conclusions

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INTRODUCTION

In 2011, Pöyry undertook a study for Ofgem to investigate the potential impact of unconventional gas (UG) developments around the world, on Europe and the UK

- Could a US-style boom be repeated in Europe?
- What is the global potential for UG?
- Pöyry researched UG developments around the world, then projected a range of possible outcomes by 2030
- These were combined to create three scenarios:
Boom, Balanced and Restrained
- Pöyry's analysis indicates a range of potential effects on UK gas prices, gas demand and sources of supply

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PÖYRY MANAGEMENT CONSULTING

Pöyry's experience across Europe made it ideal for this project



- Offering expert advice from strategy to implementation on policy, regulation, business operations, financing and valuation and sustainability
- Providing in-depth market intelligence across Europe
- Over 250 energy market experts in 14 offices across Europe:
 - Düsseldorf
 - Helsinki
 - London
 - Madrid
 - Milan
 - Moscow
 - Oslo
 - Oxford
 - Stockholm
 - Stavanger
 - Paris
 - Vienna
 - Villach
 - Zurich

SAMPLE OF CLIENTS



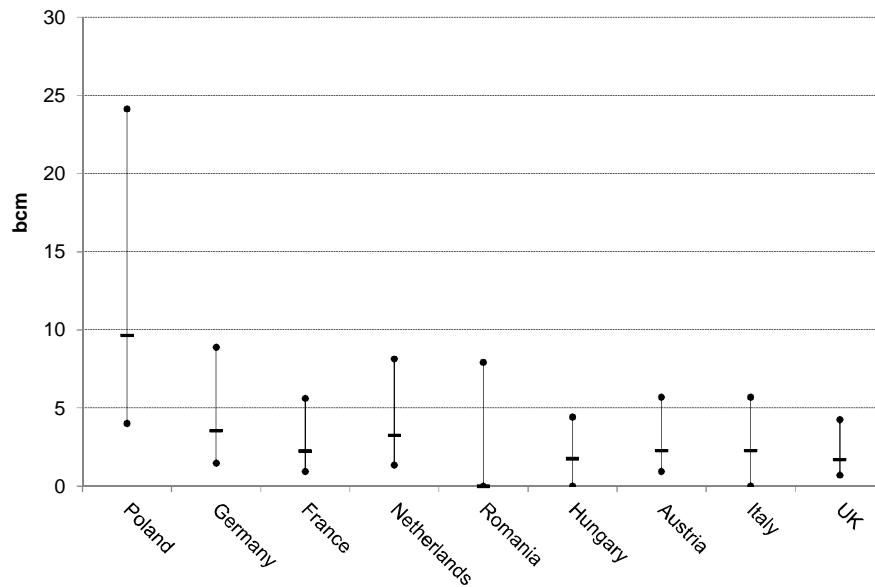
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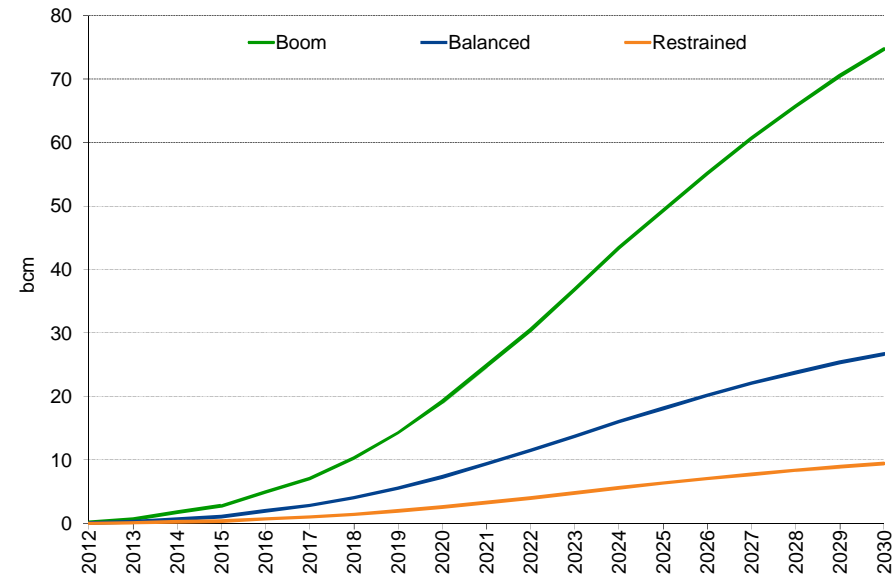
MUCH UNCERTAINTY IN EUROPEAN UG POTENTIAL

Pöyry used data published on shale gas potential in various countries and projected the rate at which rigs could be dispatched and new wells drilled

UG production by 2030 – a range of outcomes

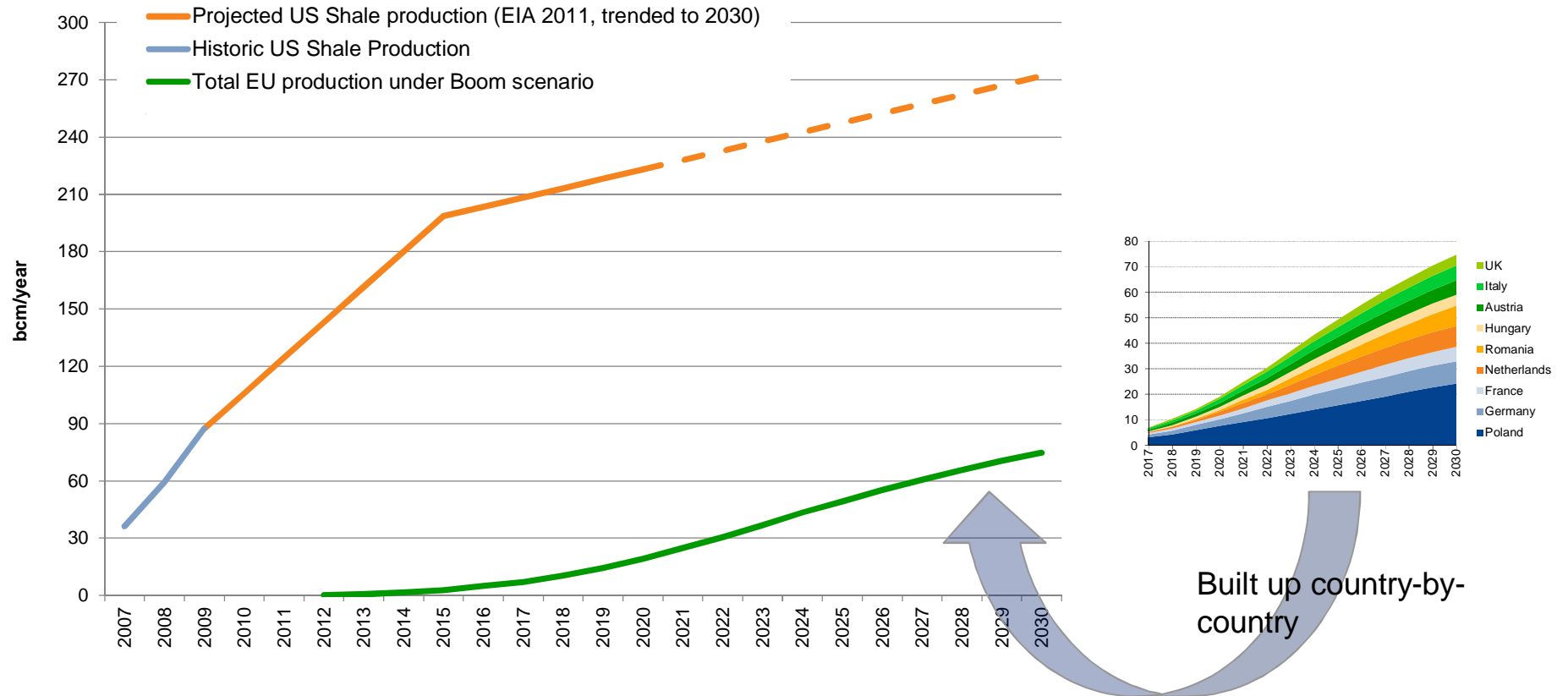


...leading to three scenarios for Europe as a whole



EU SHALE POTENTIAL DWARFED BY US FORECASTS

US growth is currently projected to be three times bigger than Pöyry's European Boom, which is also set to commence 10 years later



DIFFERENT COUNTRIES HAVE VERY DIFFERENT DRIVERS

Coal bed methane (CBM) features widely outside of the US

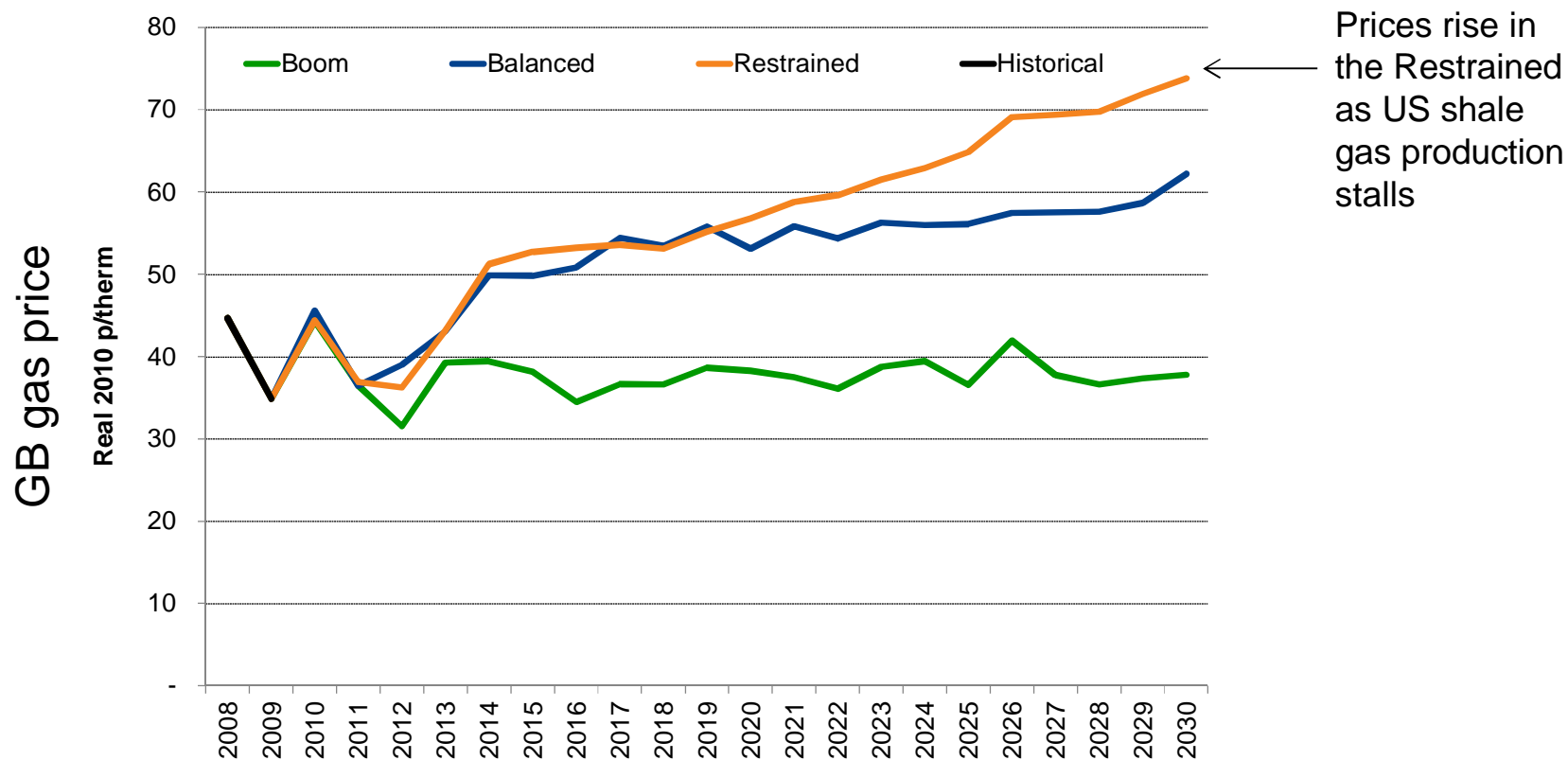
- Russia dominated by conventional gas but has started to exploit CBM
- Australia has developed, and is planning more, CBM for export as LNG
- India and China have potential in UG, however, the total energy supply-demand balanced needs to be considered before projecting the impact on world gas balance
 - new gas could displace domestic coal rather than imported LNG
 - growth in energy demand could absorb any new gas produced
- Some countries, such as South Africa, have UG potential but their isolation means their impact on world gas markets is likely to be small
- Developments in the US will have influence on the world LNG market

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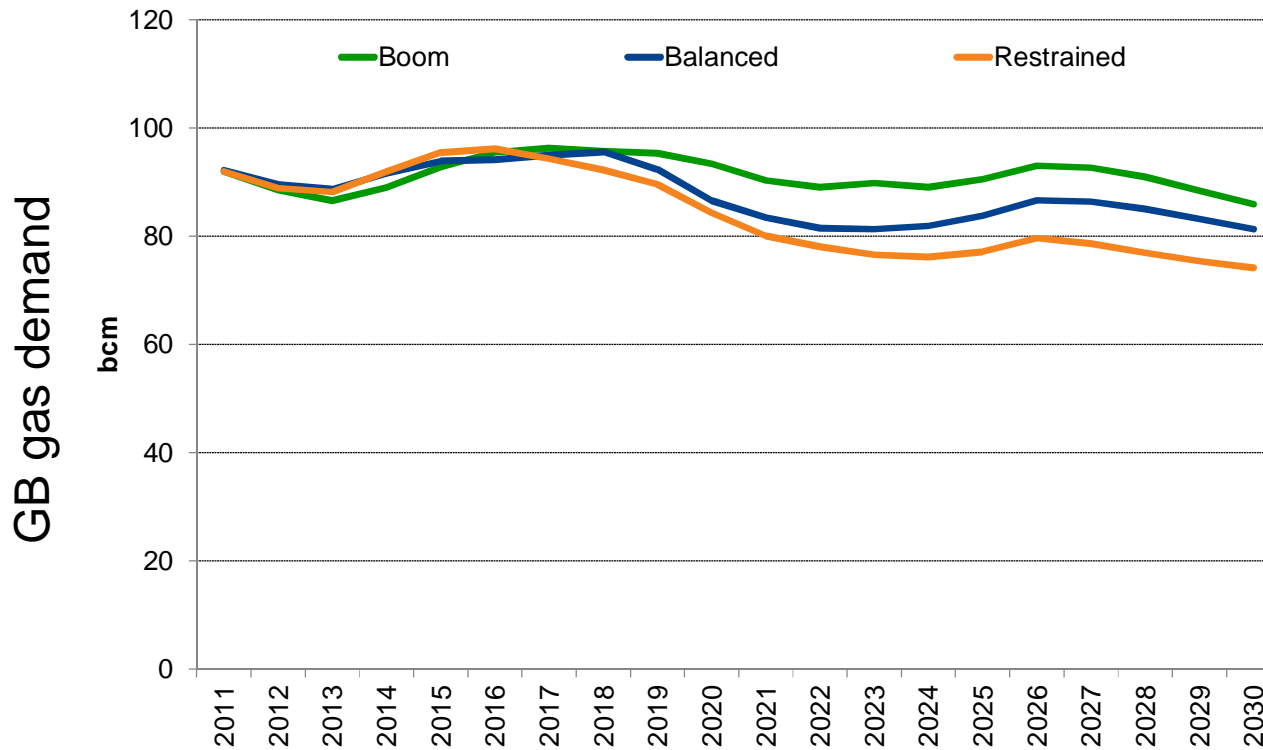
UG BOOM DOES NOT CAUSE A COLLAPSE IN PRICES

But prices remain much lower in the Boom scenario due to a well supplied LNG market and large volumes of shale gas being produced in the EU



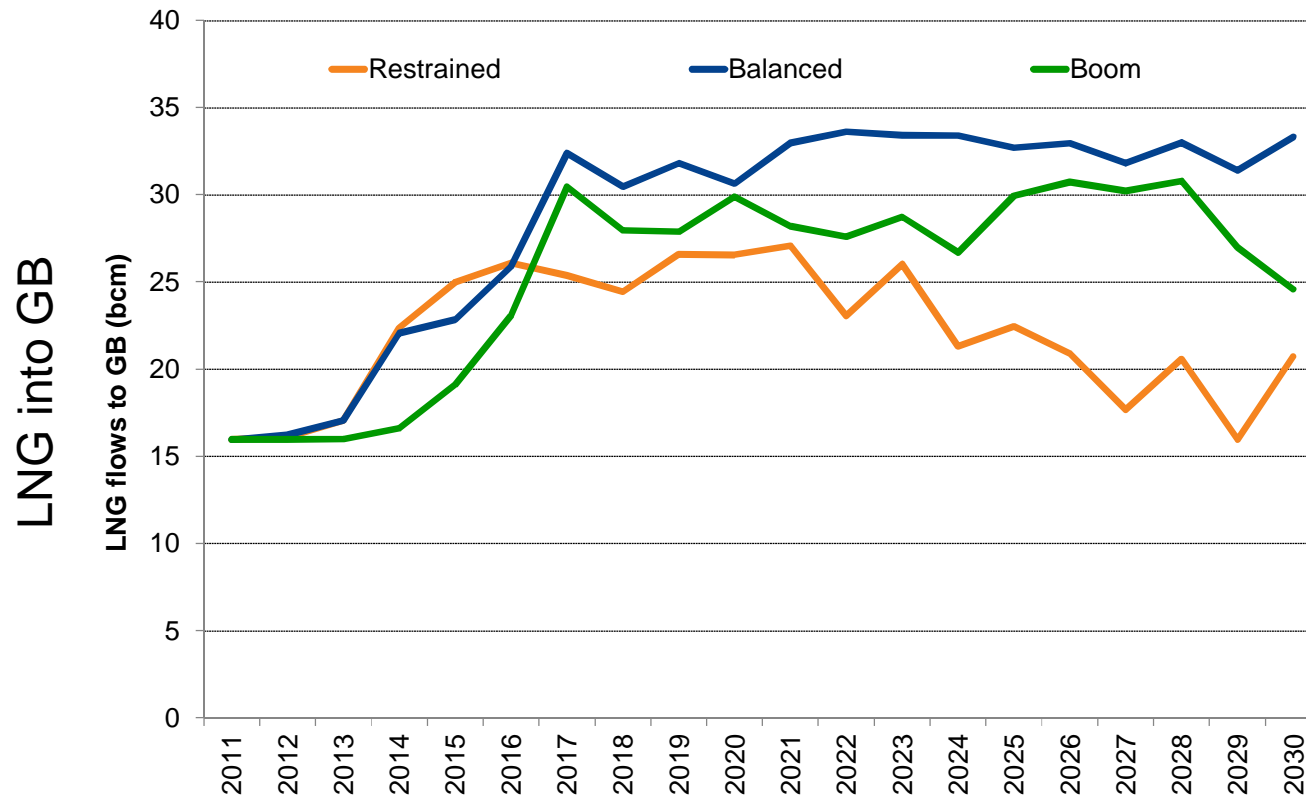
LOWER PRICES UNDER THE BOOM LEAD TO HIGHER DEMAND

Demand for gas in power generation is 10bcm/year higher under the Boom scenario, than the Restrained.



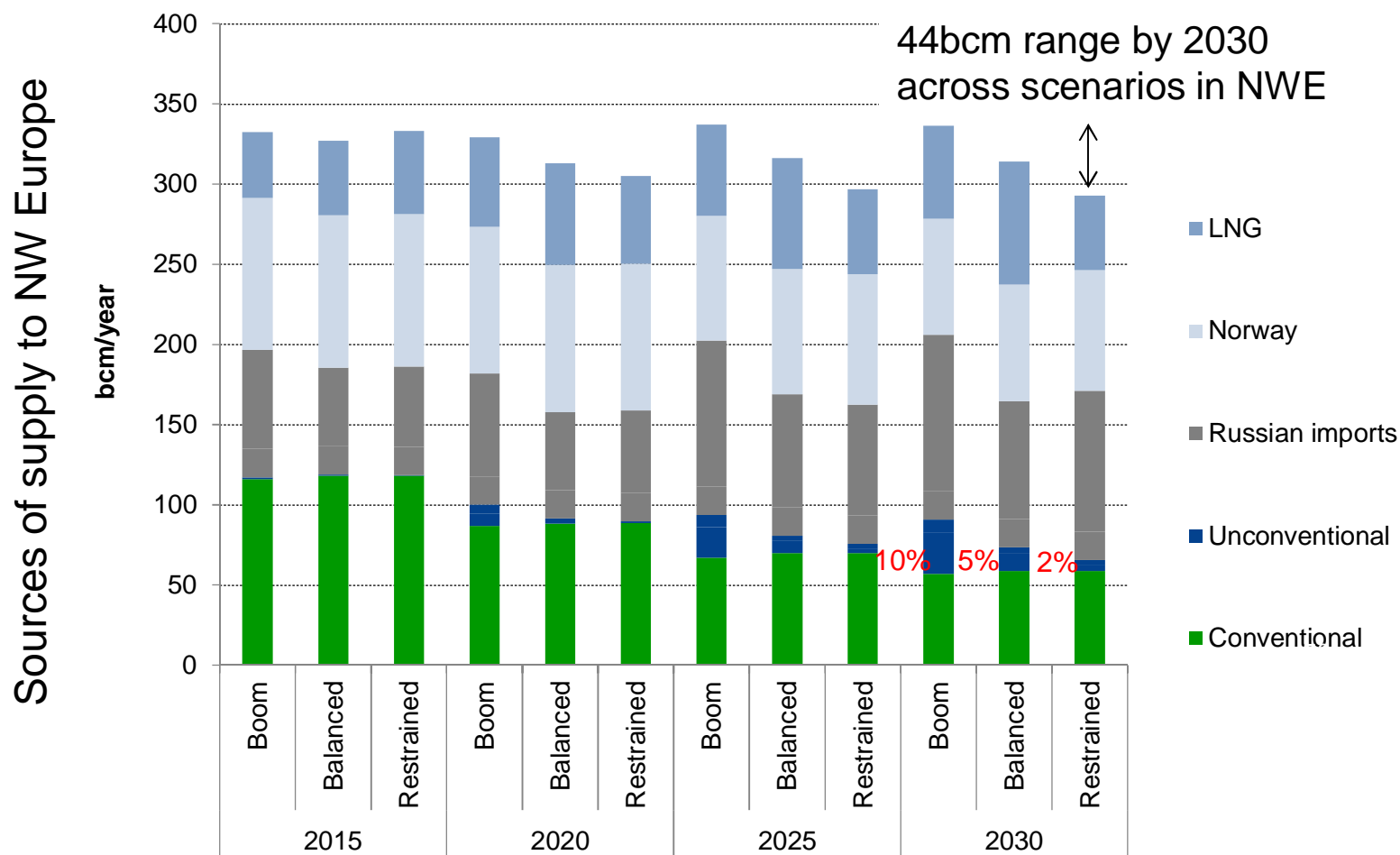
THE BALANCED SEES THE GREATEST VOLUMES OF LNG IN GB

Tightness in the US diverts LNG away from the UK in the Restrained scenario. Imports from the continent displace LNG in the Boom scenario



UG VOLUMES IN NW EUROPE MODERATE COMPARED TO US

Under the Boom scenario 10% of gas supplied to NWE is UG by 2030, but demand is higher.



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RECENT DEVELOPMENTS

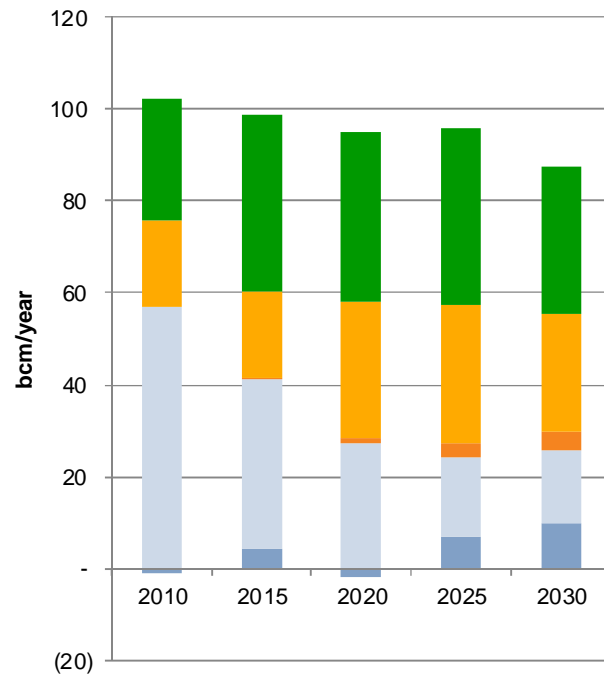
Since Pöyry finished this study in June 2011 there have been developments

- In September 2011, Cuadrilla announced enormous potential shale gas resources near Blackpool and there have also been earth tremors
- France and Bulgaria have banned fracking completely
- There have been reports of disappointing early results from Poland and Hungary
- The continued growth in shale gas production in the US has led to plans for the US to build capacity of up to 90bcm/year for the export of LNG

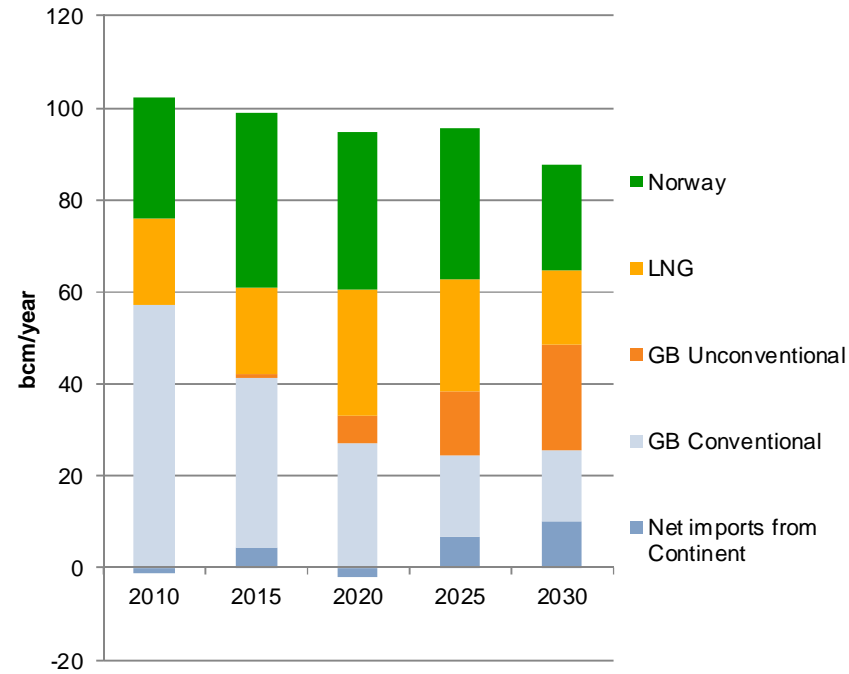
PÖYRY ANALYSIS OF THE POTENTIAL BLACKPOOL BOOM

Even with a Blackpool Boom, by 2030 the UK would still be importing over half its gas

Current Pöyry Boom Scenario for UG in UK



Potential 'Blackpool Boom' in UG in UK



Pöyry article in New Power UK at http://www.poyry.co.uk/News_items/1325772480.html

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CONCLUSIONS

- Environmental, planning and resource concerns make our Boom Scenario a low probability outcome
- Even moderate development of unconventional gas resources in Europe could keep gas prices in Great Britain lower from 2020 onwards, but a crash in prices is unlikely
- The future production of unconventional gas in the US has the potential to significantly impact upon the world LNG market
 - And, new developments make this an even more pressing question
- The security of gas supply to GB and wider Europe is improved by any increase in the indigenous gas reserves and diversity of supply



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