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DEPARTMENT OF ENERGY & CLIMATE CHANGE

The role of gas in an ideal energy mix - a UK perspective

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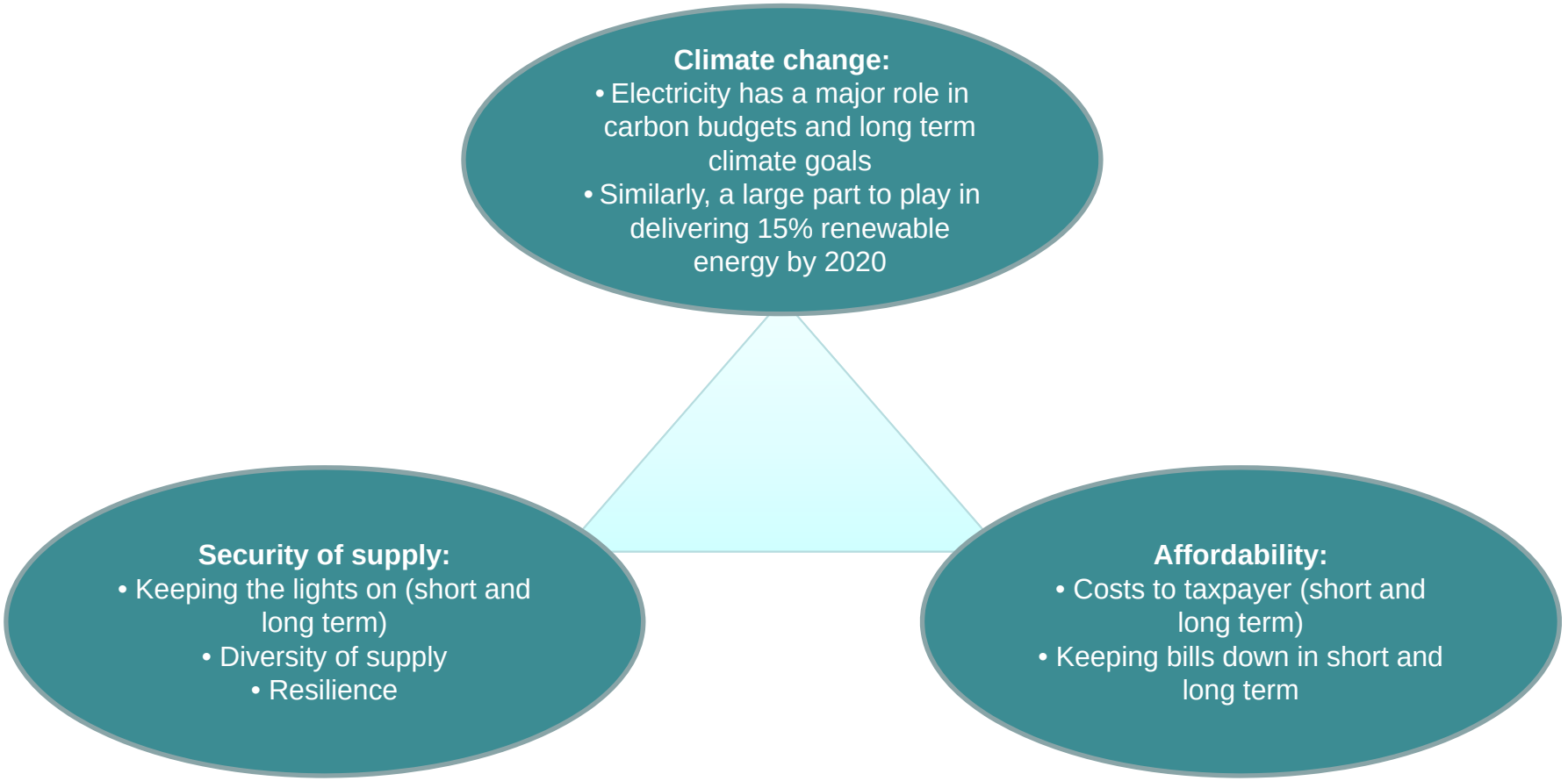
UK Energy Objectives



DECC was created in 2008 to ensure a coherent strategy on energy and climate change

Before DECC Government's approach was fragmented and didn't sufficiently recognise the interdependencies between climate change and energy policy

2008:
Climate Change Act introduced legally binding carbon budgets and aim to reduce emissions by 80% by 2050

October 2008:
DECC created

July 2009:
Low Carbon Transition Plan;
1st, 2nd and 3rd Carbon Budgets set

November 2009:
Copenhagen

May 2010:
General election
PM announces intention to be 'Greenest Government ever'

December 2010:
Cancun

December 2011:
Carbon Plan;
4th Carbon Budget set; 2050 Futures published

December 2011:
Durban

2012:
Green deal implementation
Electricity Market Reform

DECC's strategy works to head off two risks:

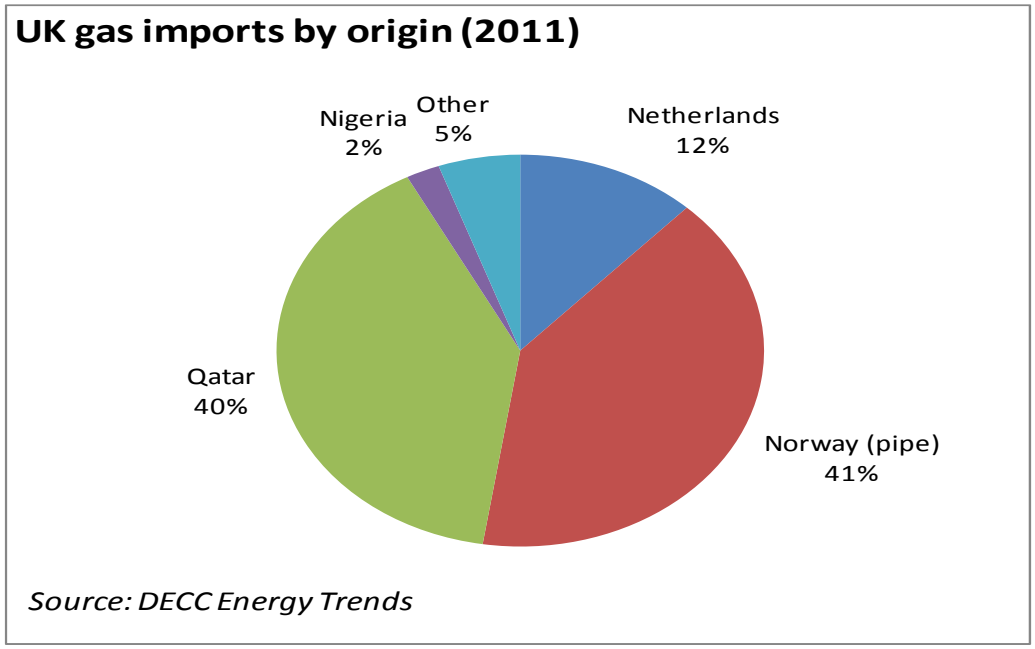
- **Catastrophic climate change**
- **Failure of secure, safe and affordable energy supplies for the UK**

Carbon Budgets and the 2050 target set out a legally binding framework for the UK's GHG emissions reductions

Why gas? Gas is a secure and relatively clean and cheap supply source....

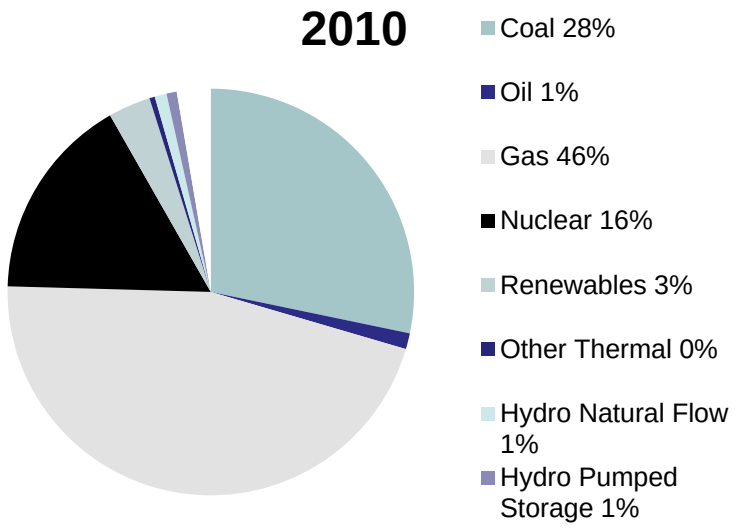
- **Gas is plentiful** (compared to oil) both in terms of current supplies and future supplies (large scale reserves)
- **Strong market framework – delivered diversity, flexibility,** and increased import and storage capacity (500% and 30% increases in the last decade respectively). 4 storage projects under construction, & a further 9 with planning permission
- Gas generation is **flexible**, has **low fixed costs**, is **quick to build**
- Gas has **lower GHG emissions** than coal
- Very significant **business & job** opportunities

Imports cover around half our gross demand. They are drawn from a range of source countries, by pipeline and by LNG.
LNG markets accounted for almost half of our imported gas in 2011

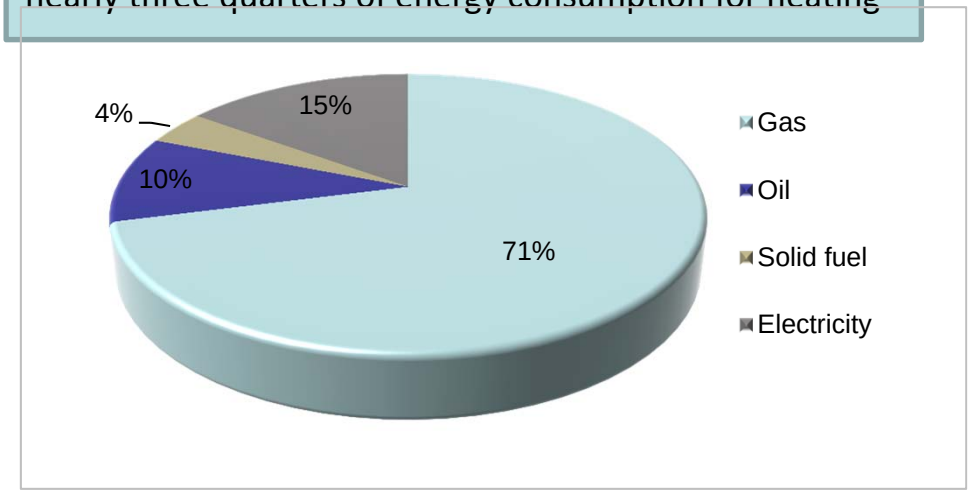


Gas plays crucial role satisfying UK energy demand now.... Some facts and figures…

UK electricity generated in 2010: 46% from gas



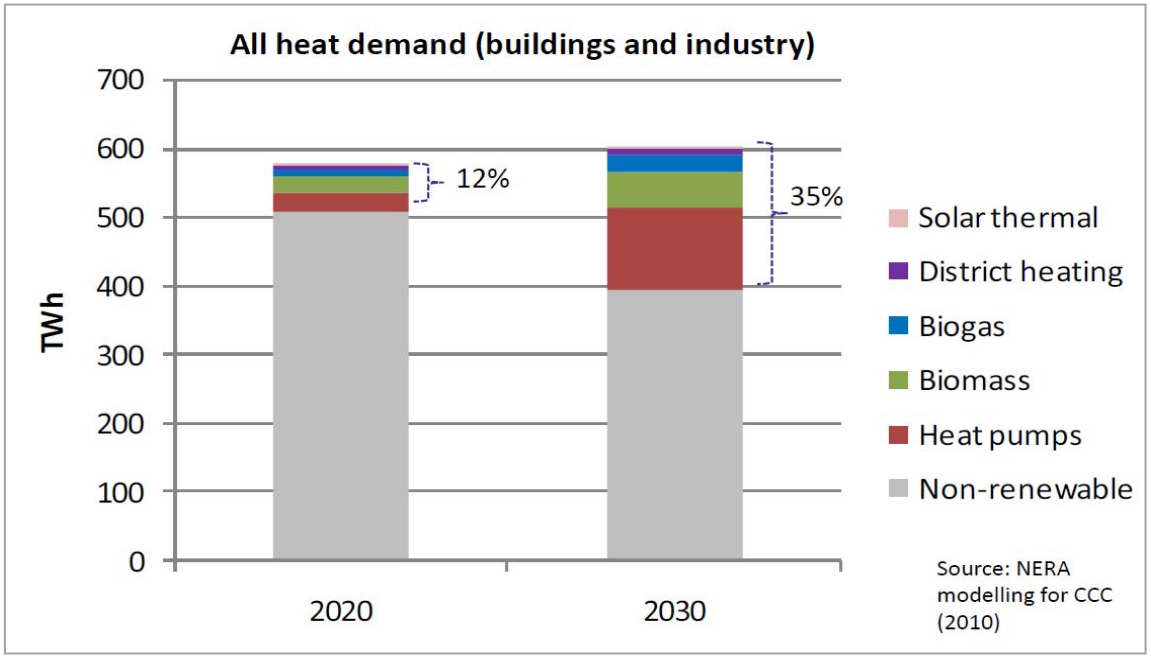
57% of gas use is for heat - currently gas represents nearly three quarters of energy consumption for heating



Energy consumption for heating purposes by fuel type (2008)
{this needs UPDATING}

- We consume more natural gas than any other fuel
- In 2011, gas accounted for **37%** of UK primary energy use.
- Gas has an important role as a consumer fuel both directly for heating and indirectly for electricity provision through gas fired power stations. In 2011 **57%** of our gas was used for heat, providing 68% of the UK's heating needs.
- A third of our gas use was for power generation in 2011. This represented **40%** of electricity generation gas uses (down from 46% in 2010).
- In general, gas sets the electricity price for most of the year, so fluctuations in gas plant costs are reflected in wholesale electricity prices

Gas projected to continue to dominate heat supply despite the rollout of renewable heat technologies....

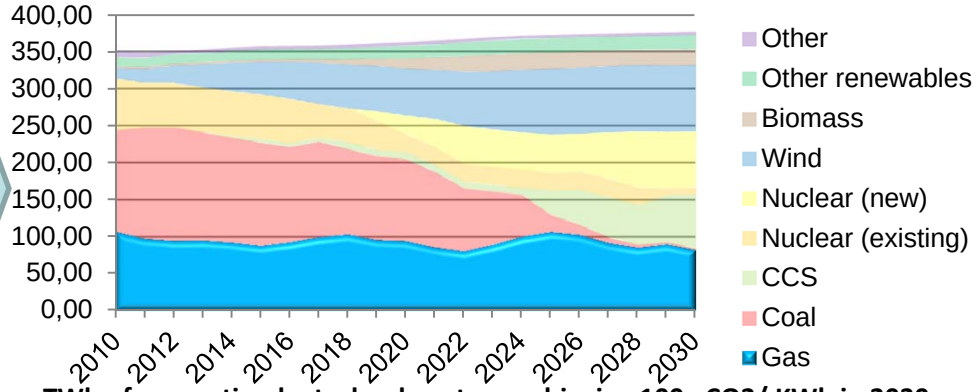


- The Committee on Climate Change projections through the 2020s show significant deployment of renewable heat technologies but fossil-fuel, and predominantly gas, would still meet around two-thirds of heat demand by 2030.

...and will be key to managing pressures on electricity generation capacity.

There will be significant plant closures...	• Ageing nuclear, and 12GW of coal and oil plant closing by end 2015 due to Large Combustion Plants Directive
... gas will play a key role in managing this	• gas-fired CCGT under construction • Flexible gas plant will be required as back-up for intermittent renewables

Redpoint modelling for EMR shows **gas playing a flexible role** as we transition to a low carbon future



TWh of generation by technology type achieving 100g CO2/ KWh in 2030.

EMR will deliver new low carbon capacity and **maintain a role for gas.**

UK's import dependency will rise
The global supply picture is benign

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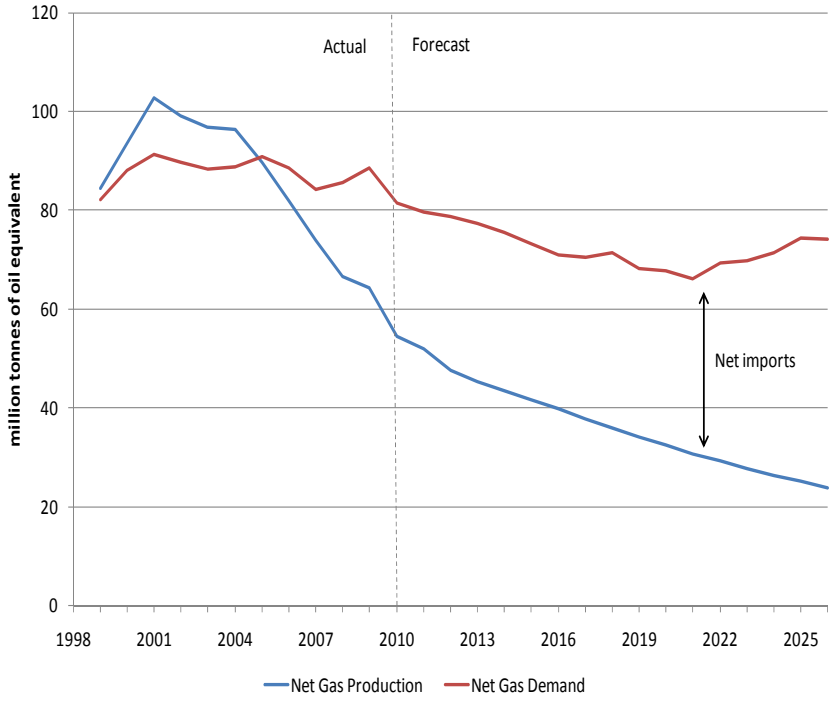
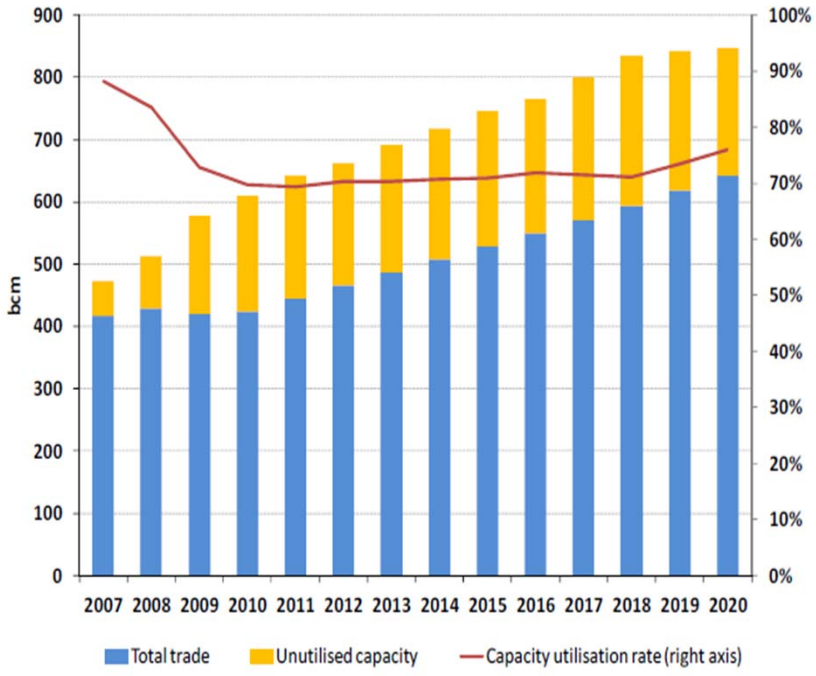
Domestic production is in decline – so our reliance on imports is increasing



The IEA predicts spare gas transport capacity globally for the next decade



Source: IEA.

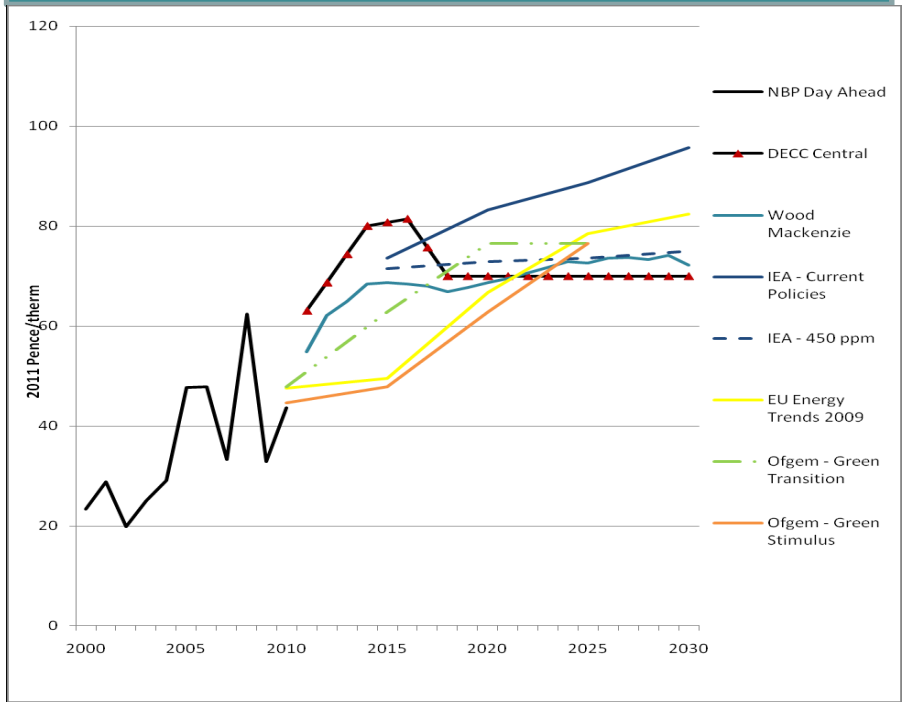
International gas markets will become increasingly important for the UK

However there are short term risks and uncertainties around gas prices

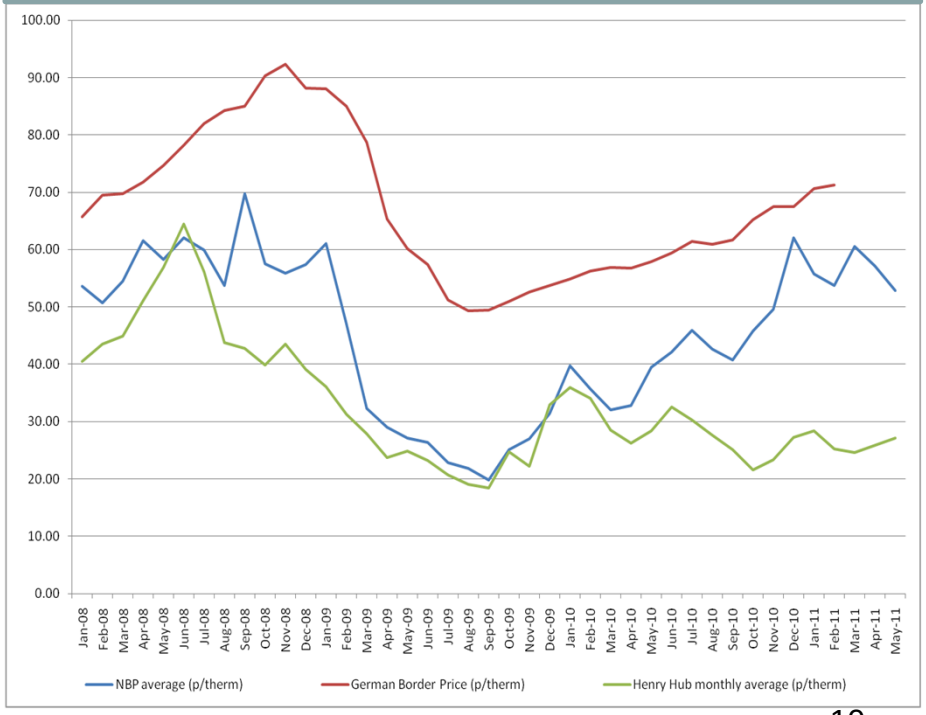
There are risks of rising gas prices in the short term

- recent cold winters,
- supply events (MENA / Japan)

There are widely differing views on the future direction of gas prices...



...particularly on whether UK gas prices will follow those in the US and delink from oil prices



In the longer term the global gas supply picture is good but demand will grow rapidly too

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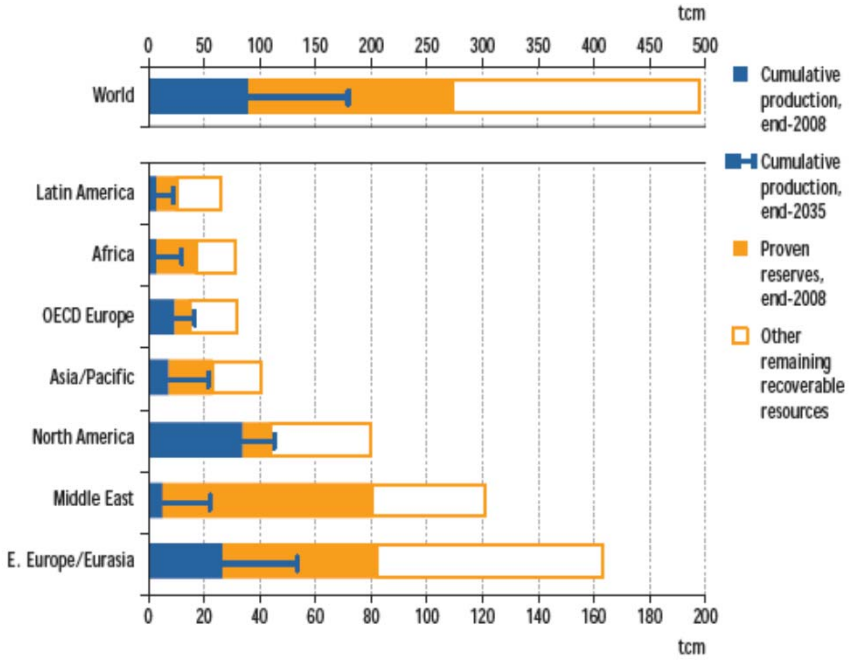
➢Remaining recoverable reserves of conventional gas are equivalent to 130 years of current consumption

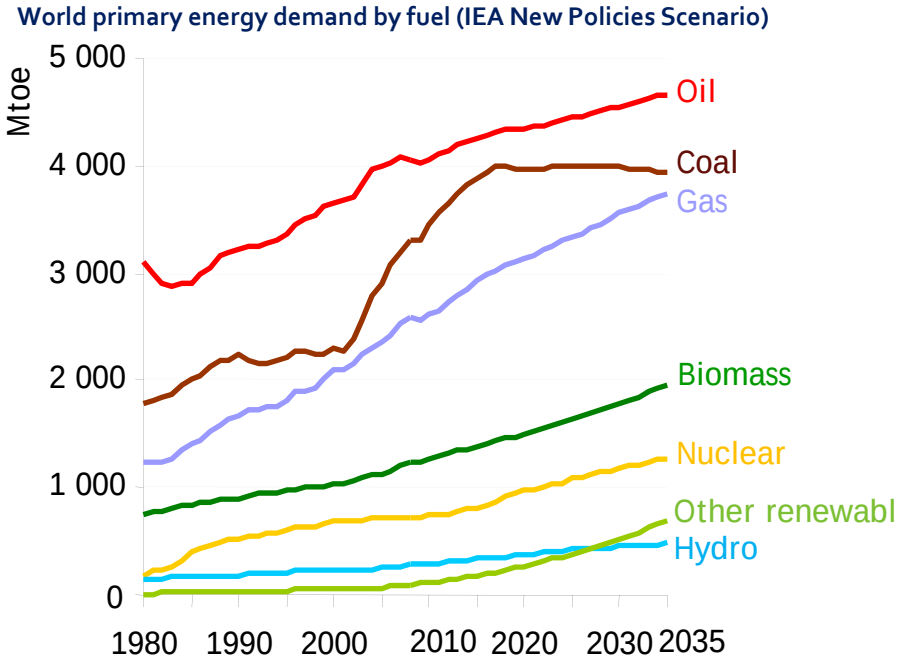
➢ Recoverable reserves of unconventional gas could be equivalent to another 125 years of current consumption

(source: IEA)



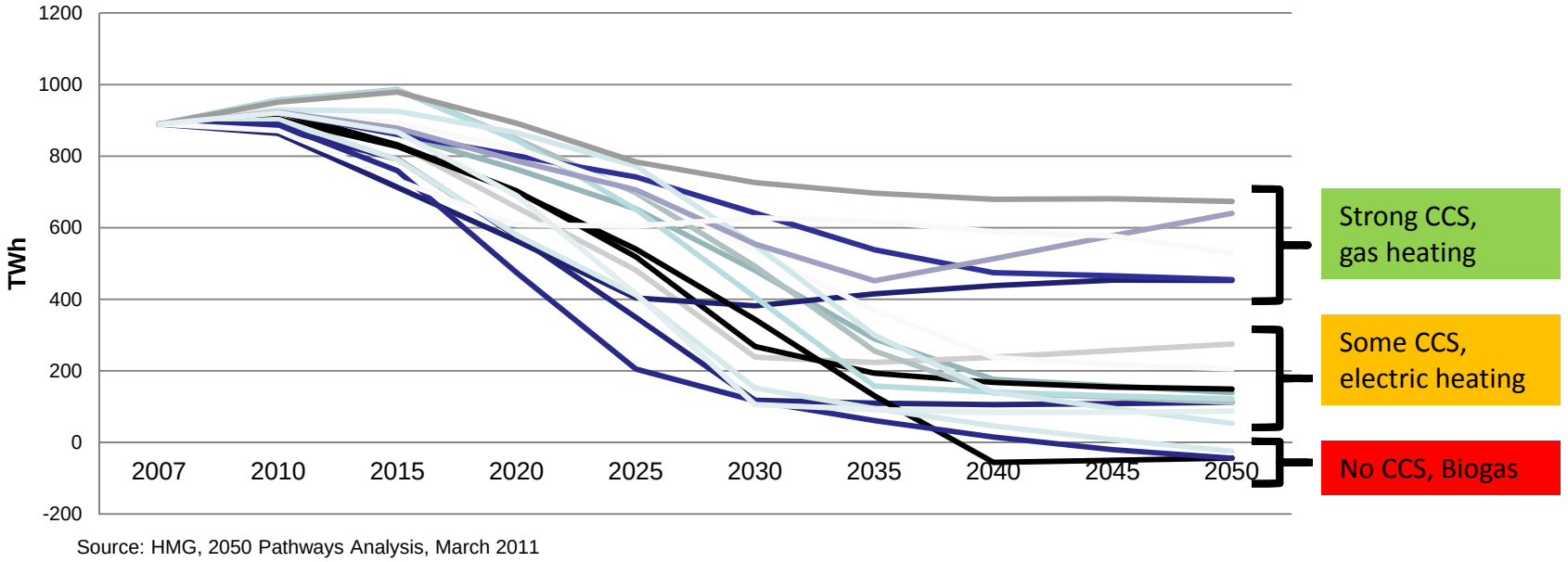
➢However the IEA forecast gas markets are likely to become tighter. Global demand for gas increases more rapidly than other fuels

➢And there are questions over whether the US shale gas experience can be replicated elsewhere, and environmental / emissions impacts



To 2050, CCS is critical…

Natural Gas Domestic consumption by 2050 scenario

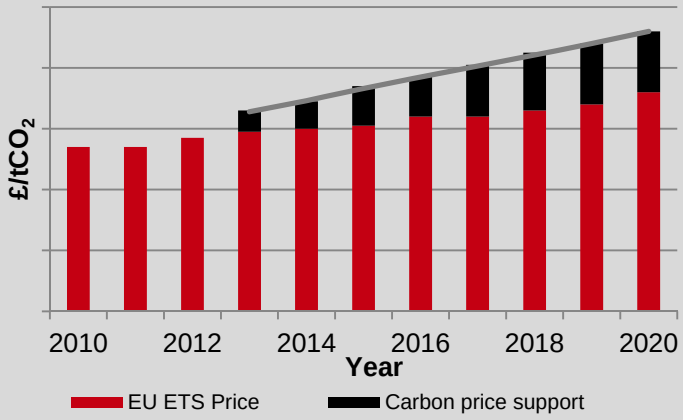


Source: HMG, 2050 Pathways Analysis, March 2011

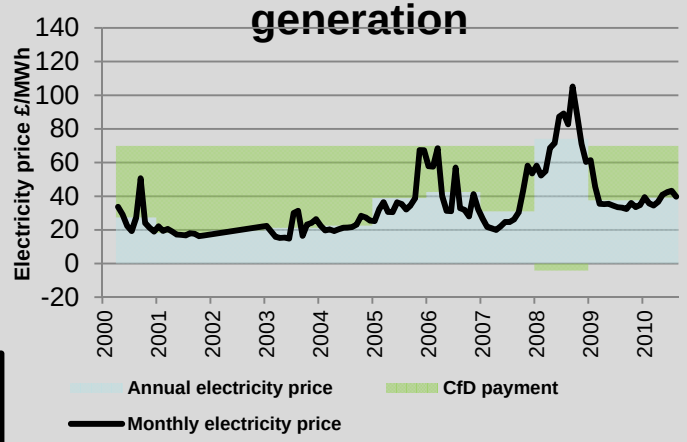
2050 pathways suggest gas demand in UK could be up to 83% of current levels in 2030, and 72% in 2050, while meeting our carbon goals.

Electricity Market Reform - a four point plan for power market transition

Carbon price support



Long term contracts for low carbon generation



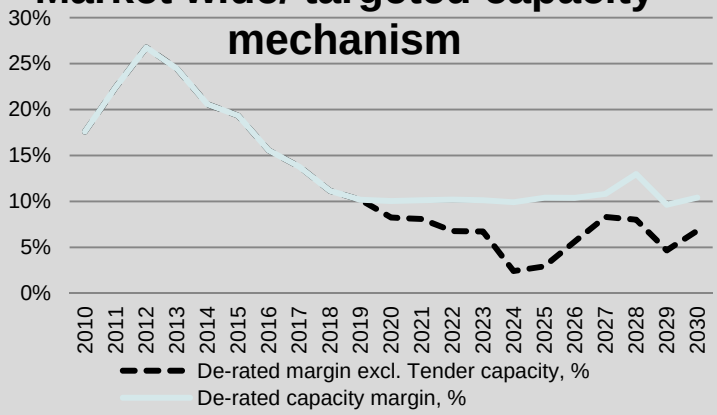
EMR package

Emissions performance standard:

Set at 450g/KWH

Grandfathering arrangements/ time limit

Market wide/ targeted capacity mechanism



Gas in the UK - summary

Now to 2030

- Gas plays a crucial role satisfying UK energy demand now...
- ..and is projected to continue to dominate heat supply despite the rollout of renewable technologies, and will be key to managing pressures on electricity generation capacity.
- Gas is currently a secure supply source with lower emissions than for coal, and cheap fixed costs and a continuing major role for gas to 2030 is broadly consistent with our emissions targets.
- However there are short term risks and uncertainties around gas prices
- UK import dependency will rise, but the global supply picture is plentiful and diverse.
- The level of the gas price will be important in considering the role of gas in the energy mix in the 2020s

2030s to 2050:

- Global gas supply picture is good but demand will grow rapidly too
- Unabated gas use will need to fall, although by how much is not clear
- Gas with CCS can have a long term role in the energy mix

New energy strategy – change for the better

- Investment in renewable energy good for energy security and crucial to achieving ambitious emissions targets
- Electricity Market Reform long overdue. Cheaper electricity, more flexible grid
- Japanese nuclear safety system to provide an independent and powerful regulator
- The speed and quality of nuclear plants improvements: visiting overseas experts have been evaluated these highly
- Japan's strengths in energy efficiency technologies, EV, solar and wind power generation are opportunities for economic growth
- To achieve 80% emission cut by 2050: decarbonision of electricity supply is key

Energy policy can support Japan's climate change ambition

- Feed In Tariff from July 2012 is in the national interest
- Drastic shifts from high to low carbon energy source are happening globally
- Countries can choose to be leaders or followers in the low carbon transition
- Renewable energy promotion: electricity market reform and smart grid to increase flexibility, smart technology and open competition are important
- Asian super grid system: regional energy interdependence to enhance energy security

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Conclusion

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Dealing with Climate Change and Energy is…

- Saving human life and livelihoods, not the planet
- Tackling climate change more economic than environmental
- Today's problem, not tomorrow's problem

… and gas plays a crucial part.

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Thank you very much.

For more information:
www.ukinjapan.fco.gov.uk