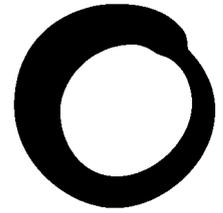


March 2012



**Friends of
the Earth**

Briefing

Gas prices: is the only way up?

The UK uses a lot of gas – both to heat our homes and buildings, and in producing electricity. Over the last decade gas has got more expensive, which is why energy bills have shot up so much.

There are plans to use more gas in future – not just in the UK but across the world.

From the point of view of climate change, this would be a disaster. But given rising gas prices, it also looks like bad news for our energy bills.

This briefing sets out why we need to reduce our dependence on gas – not just for environmental, but economic reasons too.

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Summary

The UK is heavily reliant on gas for energy. We use it for the majority of our heating and generating almost half of the UK's electricity.

To have a decent chance of avoiding the worst impacts of climate change, we need to stop using fossil fuels, and fast. But instead, there are plans for an increase in the use of gas across the world, and here in the UK.

This briefing sets out another reason to kick the gas habit too: cost. Over the last decade the price of gas paid by electricity generators for gas has almost doubled, due to rising international prices. The price of gas has already sharply increased the numbers of people struggling to pay their energy bills.

So whether gas prices will continue to rise is a critical question – and not one it is easy to answer. This is a time of sharp change for the UK and global gas industry:

- Expectation of growing demand from China, India and the Middle East
- Big investments in new ways of transporting gas across the globe in the form of LNG (Liquefied Natural Gas)
- UK North Sea gas supplies are dwindling fast: we now import the majority of our gas
- The USA has ramped up of new sources of gas supply from controversial shale and other forms of 'unconventional' gas, and others are keen to follow suit

But even modest estimates from the Government and other experts see gas prices going higher and higher. It would seem extremely wise to assume that high gas prices are here to stay, and plan accordingly.

This briefing looks at the major factors that will affect gas prices in the UK¹.

International factors: supply, demand, and new technology

Over the last decade the UK has become a net importer of gas. That means we are exposed to prices on the European and international markets which are largely outside our control.

The big picture is that, all things being equal, global demand for gas is expected to continue to increase sharply over the coming years. In its central scenario, the International Energy Agency says the global gas trade could increase by 1.4% a year, with gas use in China alone increasing by 6% a year. Its 'global age of gas' scenario sees the global gas trade doubling in the next 20 years.

Any changes to things like how markets operate or new methods of gas transportation – which by themselves might push prices down from where they might otherwise be – have to be seen in the context of these overarching increases in demand. This is the single biggest reason why gas prices are likely to continue to rise: more and more people want to use gas.

Can supply keep up? No question – there's enough gas is in the ground, but supply will need to significantly ramp up just to keep pace. Three times the current production of Russia would be needed to meet the International Energy Agency's 2011 projections for future demand. Just keeping

pace seems a tall enough order; it seems pretty unlikely that supply will outstrip demand to the point of pushing down prices.

Implications for the UK

■ LNG imports

This all matters for the UK because we are increasingly reliant on imports. A growing proportion of our imports come in the form of LNG, which is much more subject to global prices than more 'local' imports via pipeline from Europe. The global rise of LNG trading is expected to go some way to levelling out the very different gas prices found in different regions of the world, which have been traditionally set by pipeline distances.

Competition may lower prices. But it's a double-edged sword: more LNG also means paying the prices set on the global stage. The extent to which we are forced to compete with the booming Asian economies for gas will have a big impact on the gas price.

■ Pipeline imports

Meanwhile, the rise of LNG may put pressure on the traditional arrangements for pricing gas delivered via **pipeline** from Europe, whereby the price of gas is linked to the price of oil. The price of oil is itself rising. Because of this, the link to the oil price was the single most important factor in sharp gas price rises in 2003, say regulators Ofgem.

But times are changing. LNG is challenging the power of big gas companies and experts think it will start to force the weakening of the gas:oil link for pipeline imports. Given that the only way for the oil price is up, that's probably good news for gas prices, compared to where they would otherwise be.

But experts don't agree about whether the link will ever be truly broken. In large part it depends on those big picture factors: whether supply can keep pace with demand, and how expensive it is to import via LNG.

■ How much we can supply domestically

The UK's gas prices have typically been lower than many other EU countries in part due to its high domestic production and also because of the UK's relatively competitive gas market. However as we have become more dependent on imports, UK prices have risen.

In the USA a rapid revolution in gas production from 'unconventional' sources – in particular shale and coalbed gas – has transformed the market. The USA is now self-sufficient in gas. Some claim that this could happen here too.

Shale gas, and in particular the high-energy process of 'fracking' which is used to extract it, is highly controversial environmentally. Even if the UK's theoretical abundance of unconventional gas could be got out of the ground, experts say it would take about 20 years for this new gas to make much of a dent on supply – and even then would not necessarily be cheaper than imports. Our different regulatory, geological and demographic landscape will act as a significant brake.

What about climate change?

Gas is cleaner than coal, and is held up by some as a way to cut our emissions a bit in the short term – for those that are giving consideration to such things. But gas is still a fossil fuel: because of

climate change we simply can't increase our gas use. If the world is serious about preventing dangerous climate change, then either we will have to cut our fossil fuel use almost to zero by 2030 or we will have to significantly ramp up Carbon Capture and Storage (CCS) technology. The trends at the moment are that both here and internationally, we are a long way from doing either: something has to give.

Table 1: Summary of the key uncertainties that affect the price of gas

Factor [Most important first]	Uncertainty	Why this matters for UK	Trend	Broad impact on price
Will global gas demand continue to rise?	In absence of policy, global gas use will rise. By how much? And what will the UK and international leaders do about the carbon impact?	The UK will soon import the majority of its gas via LNG, prices for which are driven by global demand and supply.	All other things being equal, most experts see global gas use increasing.	↑ More demand = higher prices.
Will global supply keep up?	There is no shortage of gas, but can supply keep pace with demand?	As above.	3x Russia's output needed to keep pace with demand. USA's shale gas can't necessarily be replicated widely.	? Only if supply outstrips demand, in theory, would prices be lower than otherwise: unlikely.
Will we have to compete with Asian markets for gas?	Experts don't agree on whether a truly 'global' market for gas will emerge.	The more we need to compete with Asian markets, the more we may end up paying.	LNG has shown it can go where it is needed, ie post-Fukushima, but regional gas markets still exist.	? Competition may push prices down globally, but expose the UK to Asian demand.
Will the traditional link of gas to oil price weaken?	Experts expect weakening of the link between gas to oil prices which has driven EU gas prices higher, but by how much?	Pipeline contracts are typically linked to the price of oil – which is rising.	Some weakening has been seen as a result of over-supply and competition from LNG.	↓ the oil price is only going up, so breaking the link to it should lower prices than would otherwise have been the case.
How much gas can we produce domestically?	Some trumpet new sources of shale gas for the UK, but this seems optimistic – leaving aside environmental concerns.	In the USA the shale gas revolution has made them self-sufficient. Could the same happen here?	Experts warn that the UK will find it hard to have the same shale success as the USA.	? No reason to assume that domestic gas would be cheaper than imported
How much competition will there be in the EU gas market?	Competition in the EU market ("liberalisation") should increase due to new EU rules, but progress is very slow.	More competition is expected to have an effect on the oil:gas price link.	First moves by EU to increase competition started in 1998, but little sign of major change yet.	? "Liberalised" UK's prices are low compared to EU, but prices are still rising nonetheless.
OVERALL	There are many unknowns, but the overarching factor is robust predictions of increased global demand. Pressure on the oil:gas price link and more EU competition could lower prices compared to where they would otherwise be, but globally and in the UK it is hard to see global supply exceeding demand to the point of pushing prices down in absolute terms. So the main question is perhaps not 'will prices rise,' but 'by how much?'			

1 Introduction

Energy bills in the UK have soared in recent years. Between 2004 and 2010²:

- Average electricity bills³ increased by **60 per cent**
- Average gas bills increased by **90 per cent**.

The main culprit is the rising price of fossil fuels – in particular gas. The price for gas paid by power generators has increased by 90 per cent in real terms since the year 2000.

Because three quarters of electricity generation currently comes from coal and gas⁴, rises in the price of either will have a big impact on what consumers pay.

This briefing looks at what the future holds for the price of gas. As we are currently so reliant on gas - we use it for the majority of our heating and generating almost half of the UK's electricity – a future in which gas prices continue to get higher is going to be bad news.

Forecasting future gas prices is difficult enough at the best of times. But this is a period of seismic change for the global and UK gas market:

- Huge new demand from China, India and the Middle East
- Big investments in new ways of transporting gas across the globe in the form of LNG (Liquefied Natural Gas)
- In the USA and theoretically other countries, the swift ramping up of new sources of gas supply from controversial 'shale' gas
- The EU changing the way its gas market works to encourage more competition

All other factors being equal, some of these factors will work to depress prices, and some will work to increase them. No-one can say for certain what will happen. However on the balance of probability, experts say that it's likely that the gas price will rise. It would be wise to plan accordingly.

As the former Secretary of State for Energy and Climate Change, Chris Huhne, said:

"If you are asking me to predict what is going to happen to world fossil fuel prices then the Government's prediction – and the prediction of virtually everybody else – is that indeed that in the medium run those prices are going to go up":

Chris Huhne, former Secretary of State for Energy & Climate Change – 17 October 2011⁵

This briefing sets out why a future hooked on gas looks like being bad news economically. However, the elephant in the room, of course, is that it would also be devastating news environmentally. There simply isn't the space in terms of climate change to burn all of the gas that's theoretically recoverable – or even close to it.

Scenarios that predict runaway gas use acknowledge that this would be game over for any chance of avoiding a two degree temperature rise. The economic implications of failing to avert dangerous climate change - estimated by Lord Stern to be anywhere from 5 to 20 per cent of global GDP – would make discussions about fluctuations in the gas price seem somewhat inconsequential.

2 Gas prices: what do experts say?

The Government's 'central' projection (October 2011) is that gas prices in a decade will be higher than they are now (see Table 1 and Chart 2).

Table 1: Summary of Government assumptions on gas price scenarios

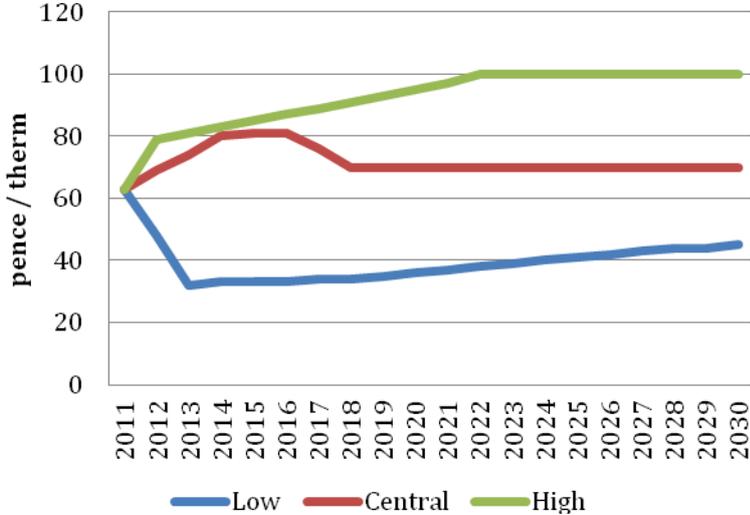
Source: DECC gas price projections, October 2011⁶

DECC Scenario	Prices in 2020 (%)	Prices in 2030 (%)	Notes
'Low'	43% lower than 2011	29% lower than 2011	<p>Requires perfect storm of circumstances to all happen:</p> <ul style="list-style-type: none"> • Prices tumble over the next few years, then remain low. • Big investment in new sources of supply • Very effective shakeup of competition at the EU level • Low economic growth suppressing global demand <p>This is the lowest DECC thinks prices could possibly fall to – an extreme case. Characterised by expert Government peer reviewer as unlikely.</p>
'Central'	11% higher than 2011	11% higher than 2011	<p>Prices continue their upward trajectory as international demand continues to build.</p> <p>Even in this scenario price rises more slowly than has actually been the case over the last decade.</p>
'High'	51% higher than 2011	59% higher than 2011	<p>Sharp and continuing rises in the gas price because</p> <ul style="list-style-type: none"> • Assumption that competition at EU level won't make much of a difference • International demand continues to skyrocket, pushing prices unrelentingly upward. <p>The Government's peer reviewer thought this would be too high as prices of this level would undermine the power of the big pipeline companies to link contracts to the gas price (see section 4).</p>

So in two of the Government's three scenarios, the price of gas rises from 2011 levels:

Chart 2: Government gas price projections 2011-2025 (in real terms)

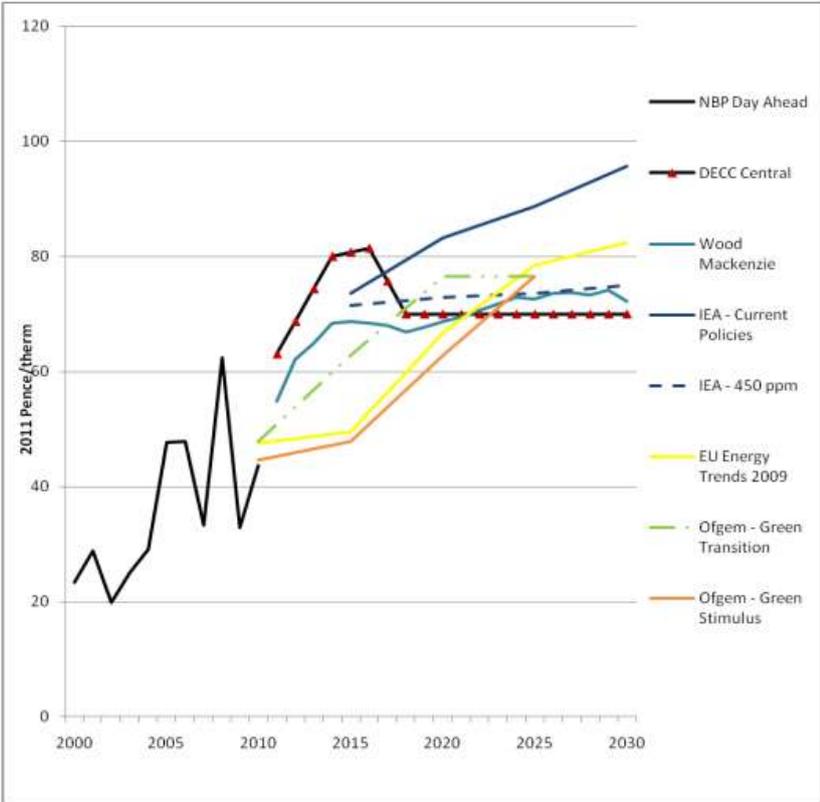
Source: DECC Gas price projections, October 2011



Importantly, it is not just the Government saying this. If anything its estimates are more optimistic than those from other experts in the field: although in the same ballpark, the estimates it collates from the EU, energy regulator Ofgem, Wood Mackenzie, and the International Energy Agency all expect higher gas prices in the 2020s than the Government does (see Chart 3).

Chart 3: Comparison of DECC Central Scenario to other projections

Source: DECC gas price projections, October 2011 (op cit)



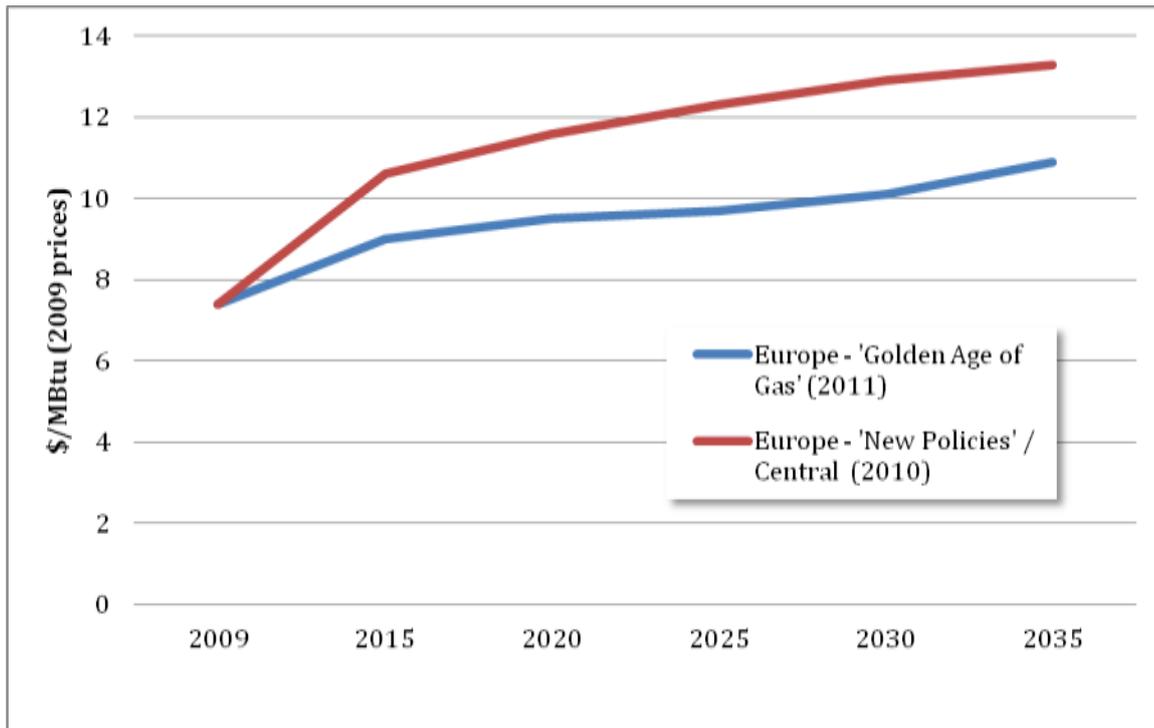
Source: Wood Mackenzie (2011 H1), Ofgem, IEA WEO 2010, EU Energy Trends 2009, DECC.

Globally, gas prices are projected to continue to rise as well. Under the International Energy Agency's 'central' projection (2010)⁷, which it calls its 'New Policies' scenario, gas import prices to Europe rise by 57 per cent by 2020, and 79 per cent by 2035.

Even under its 'Golden Age of Gas' scenario (2011), in which demand for gas is higher but supply keeps pace, prices still rise (See Chart 4)⁸.

Chart 4: Natural gas import price assumptions for Europe (in 2009 prices, \$/MBtu)

Source: International Energy Agency, 2010, 2011



3 Overview: what affects the price of gas in the UK?

As set out in Table 4 and Chart 5, in the last decade the UK has moved to being a net importer of gas, with LNG making up a rapidly growing percentage of those imports.

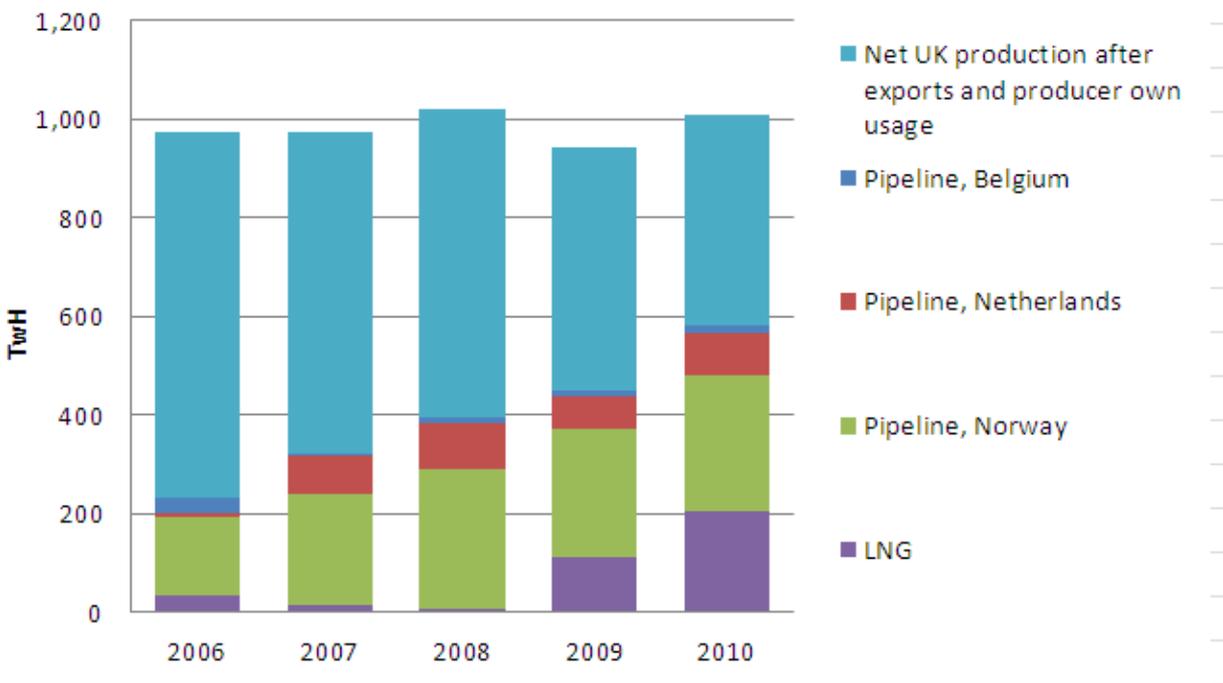
There are a number of factors that will affect the price of gas in the UK in the coming decades. Many of these are interlinked. These are summarised in the table on page 4.

Table 4: Sources of UK gas, overview

DOMESTIC PRODUCTION	IMPORTS	
NORTH SEA: Currently less than 50% of total net energy production in UK, and diminishing fast.	PIPELINES: Currently approximately 40% of UK gas is via imports from pipeline, predominantly Norway.	Liquefied Natural Gas (LNG): the new arrival. In 2010 20% of total UK gas use was via LNG, but this is increasing rapidly following major investments. In September 2010 the volume of gas imported via LNG exceeded that imported via pipeline from Norway for the first time (DUKES) ⁹ .

Chart 5: Domestic production v imports of natural gas in the UK, 2006-2010

Source: Digest of United Kingdom Energy Statistics (DUKES, op cit), 2011



Crudely, the two factors that affect UK gas prices are these:

- (1) International factors: of the gas we import to the UK, how expensive will it be?
- (2) Domestic factors: How much can we supply domestically, and what would it cost?

4 International factors

The UK's gas prices have typically been lower than many other EU countries in part due to its high domestic production (and also because, it is claimed, of the UK's relatively competitive gas market¹⁰). However as we have become more dependent on imports, UK prices have risen with more exposure to international prices and markets.

Fundamentally, the most important factor driving the gas price for import is international supply and demand. The more that people are demanding gas, the harder supply is going to need to work to keep up in order to meet demand:

*“The UK gas price is influenced by changes in supply and demand in other countries. Also, where market distortions exist in other countries, such as the oil-gas price link in Europe... this too will affect the UK gas price. The existence of import capacity does not necessarily guarantee the flow of gas to the UK. **Rather, this is determined by market attractiveness and willingness to pay.**”*

House of Commons Business & Enterprise Committee, July 2008¹¹

So in looking at future import prices, the first thing to do is look at demand and supply.

4.1 Global demand

All things being equal, the volume of new gas being demanded from emerging economies is expected to be very large indeed:

- Even the International Energy Agency (IEA)'s *central* scenario for its World Energy Outlook 2010 (the 'New Policies' scenario) expects global demand for gas to increase by 1.4% every year (Chart 6a), with Chinese demand increasing by 6% a year.
- Its 2011 'Golden Age of Gas' scenario predicted much higher uptake: the global gas trade would double over the next 25 years. Over a third of the increase would head to China, which would increase its demand by a massive 7.7 per cent a year (Chart 6b). The IEA says it is “hard to overstate the growing importance of China in global energy markets.”
- BP's World Energy Outlook 2030 (January 2012) also predicts soaring global demand: “Natural gas is projected to be the fastest growing fossil fuel globally (2.1% p.a.)... Demand grows fastest in non-OECD Asia (4.6% p.a.) and the Middle East (3.7% p.a.). Gas grows rapidly in China (7.6% p.a.) to a level of gas use in 2030 equal to that of the European Union in 2010.”¹² (Chart 6c)

Chart 6a: IEA central projections for energy demand to 2035
 Source: IEA World Energy Outlook, 2010

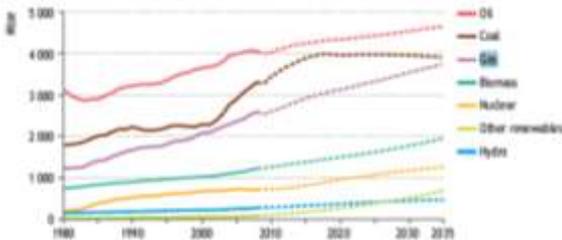


Chart 6b: IEA 'golden age of gas' projections for energy demand to 2035
 Source: IEA, Golden Age of Gas, 2011

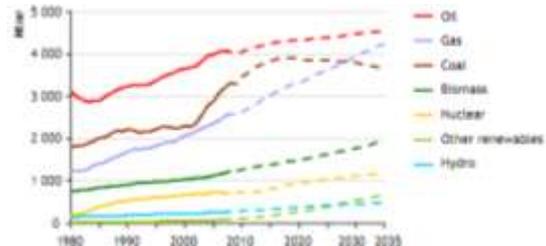
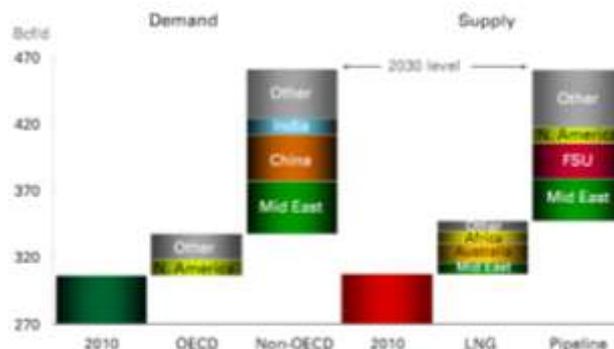


Chart 6c: BP projections for increases in final energy demand to 2030
 Source: BP World Energy Outlook 2030¹³



There are of course big unknowns projecting global demand this far forward. Two major factors which will affect demand are the state of the world economy, and the extent to which the takeup of gas will be limited by the need to cut carbonemissions.

The global economy

DECC says that “the pace of economic recovery will be very important.. particularly with regard to [but not limited to] oil, GDP growth could be considered the most significant driver of prices”¹⁴. It notes that during the recession global gas demand increased by only 0.8% a year, compared to trend growth of 2.3%.

While the level of economic growth worldwide is important it is most significant with regard to the Asian economies. China, India and the Middle East will, say the IEA “largely determine the extent to which natural gas use expands over the next 25 years”. On that front, there seems little immediate prospect of a sharp decline in growth: China’s growth rate of 8.9 per cent in the last quarter - whilst lower than previously – does not suggest a country about to tip over into recession just yet¹⁵.

4.2 Global supply

So will supply keep pace? There is certainly no shortage of gas, both from 'conventional' and new, 'unconventional' sources, in the ground. The IEA says:

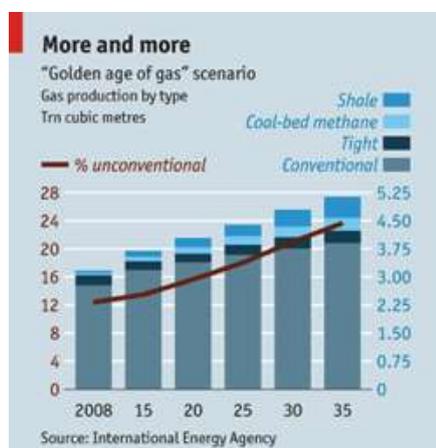
“Conventional recoverable resources are equivalent to more than 120 years of current global consumption, while total recoverable resources could sustain today’s production for over 250 years. All major regions have recoverable resources equal to at least 75 years of current consumption¹⁶”.

Meanwhile, 'unconventional' sources of gas – most notably shale gas, but also 'tight' and coal bed gas – are big news – in particular thanks to the revolution in unconventional gas production in the USA. In just six years shale and coalbed methane gas have gone from 5 to 23 per cent of the USA’s total production of natural gas. This has transformed the market, leading to a sharp fall in gas prices in the USA and, indeed, the cancelling of investment in renewable energy as a result¹⁷. Indeed since 2009 the world has experienced a short-term 'gas glut' as supply has outstripped demand (see box).

Big claims are now being made for unconventional gas to help keep up with demand. The Economist claims that “In short order estimates of the Earth’s bounty of recoverable gas have expanded by about 40%”, and that global estimates of shale gas potential put recoverable reserves at at least 190 trillion cubic metres¹⁸.

But the amount of gas in the ground is not the main issue. As Dieter Helm from Oxford University says, what matters is about how accessible it is, and whether the climate could stand burning it:

Chart 7: Gas production by type, summary of IEA 'golden age of gas scenario' (2011)
Graphic: the Economist



“there is enough oil and gas (and coal too) to fry the planet several times over. The problem is there may be too much fossil fuel, not too little, and that fossil fuel prices may be too low, not too high... the issue is not whether there is a shortage of the stuff, but the costs of getting it out.¹⁹”

One thing is clear – supply will indeed need to significantly ramp up just to keep pace even with central predictions of demand. If gas use really accelerates as the IEA’s ‘golden age of gas’ scenario suggests, three times the current production of Russia would be needed to meet demand. Even in this scenario, the IEA say unconventional gas will still be a significant minority of total gas production by 2030 (Chart7).

In a world of rapidly rising demand, the idea that there will be sufficient left-over supply to force prices down seems, on that basis, far-fetched.

The 'Gas Glut'

The trend for prices has been steadily upwards. However in the last two years, prices have fallen slightly. There’s been more gas available than expected – a ‘gas glut’ – because:

The **economic crisis** has lowered demand

Big investments in LNG facilities worldwide

Most significantly, a **rapid expansion of shale and coalbed methane gas production** in the USA.

In just six years this ‘unconventional’ gas has gone from 5% to 23% of the USA’s total production of gas.

4.3 Impact on the UK

Global supply and demand matter for the UK because they will affect the price paid for, and the availability of, gas imported via LNG.

“We are importing 50% of the gas that comes into Britain and we are having to compete for sources from the Middle East. Japan is importing huge amounts of gas on ships and that was gas that used to come into the UK market.”²⁰

Phil Bentley, Managing Director, British Gas, October 2011

As can be seen from Chart 5, imports of LNG are rising extremely quickly as a proportion of total UK gas demand.

Indirectly, global factors will also affect the price for gas supplied via pipeline, depending on the extent to which the attractiveness or otherwise of LNG puts pressure on pipeline operators to lower their prices and break the traditional pegging of gas contracts to the oil price.

4.3.1 UK Imports via LNG

Traditionally different parts of the world (the Americas, Europe and Asia) had their own, independent gas markets, limited by the distance over which it was economical to transport gas via pipelines. However with the development and rapid spread of LNG technology gas has started to become more of a global market. This is expected to impact on the gas price by increasing competition and opening up the European market to suppliers from further afield who may previously not have been able to compete. In theory, this would put downward pressure on prices.

However for the UK, it is a double edged sword. The more we use LNG, and the more the price of LNG is influenced by global factors, the more we are pitched into competition with the booming Asian market. So to what extent will the UK have to compete with the Asian market for gas?

The Economist believes that the rise of LNG points to a day when gas becomes as “freely traded as oil”²¹. That is, differences in regional gas markets will be eradicated as LNG is shipped around the world to where it attracts the best price. But others do not agree: the IEA suggest only

“increased convergence, but the market does not become truly globalised... price differentials between the United States, Europe and Japan remain broadly constant. This reflects the relative isolation of these markets from one another and the cost of transport between regions.”²²

LNG’s transport costs, which increase with distance, may mitigate against full convergence. DECC estimates that the costs of transport alone add 8p/therm to imports from the Middle East²³.

Regardless, if the levels of global demand and supply for gas are the biggest factor affecting global gas prices, as discussed above, then the extent to which the UK has to compete on the global market is, suggests industry expert Howard Rogers, the biggest unknown for predicting future prices for the UK²⁴.

4.3.2 Imports via pipeline

What does the rise of LNG mean for the ‘traditional’ means of importing gas to the UK – via pipeline from Europe?

Currently gas delivered via pipeline from Europe is generally, for largely historical reasons, issued in contracts which link the price of gas to the oil price. So, when the oil price goes up, so does the gas price. It’s an old-fashioned way of pricing gas but persists because of the power that the major companies that control pipeline trade have: as the Economist notes, “gas producers are happy enough with the archaic pricing structure, particularly when oil prices are high. Customers with limited choices have had to put up with it”²⁵.

Ofgem’s analysis of UK price spikes in 2003 pointed the finger squarely at the oil:gas link. But things may be changing. The ‘gas glut’ (see box on page 12) led to Gazprom, which controls 25 per cent of the Western European gas trade, being forced to renegotiate its long-term contracts with European customers.

With purchasers increasingly able to shop around via LNG instead, the gas:oil price link will come under pressure. As oil prices are set to continue to rise sharply in the years ahead – the Government expects the UK oil price, for example, to go up by almost 50 per cent by 2020 – breaking this link points to lower gas prices than would otherwise be the case.

But to what extent the gas:oil link will ever be truly broken is hotly debated. Experts polled by the Government had no consensus; the majority believed that decoupling oil and gas prices will not happen any time soon, and fully a quarter believed it –will never happen²⁶.

What may also serve to lower prices for the UK’s pipeline imports is a package of reform at the EU level to liberalise the gas market and introduce more competition. One of the factors needed to deliver on the Government’s ‘low’ price scenario (see table 1) is that EU liberalisation takes place extremely quickly. DECC warns that this would mean EU liberalisation happening with unheralded speed, far quicker than the UK alone managed, about which it is somewhat sceptical. Rightly so, given recent heavy criticism of progress by the European Commission²⁷.

As a Parliamentary paper on gas prices from 2004 warns, however, competition alone doesn’t necessarily mean prices fall if demand remains high²⁸. In the UK, prices fell following liberalisation in the 1990s, but this newly ‘competitive’ market has not managed to stop prices steadily increasing over the last decade. Even a competitive domestic market will grapple with rising costs for imports of LNG as international demand increases sharply.

5 Domestic factors: why the UK is not the USA

As we have seen, the UK is reliant on imports for the majority of its gas. However as we have become more dependent on imports, UK prices have risen with more exposure to international prices and markets. Traditional supplies from the North Sea are dwindling.

What prospects for the UK opening up new sources of gas? Shale gas is promoted as a safe, clean energy source that can help the UK in the transition to a low carbon economy. It is, however, highly controversial, with serious environmental concerns around shale gas drilling including climate change emissions, threats to groundwater quality and water resource needs²⁹.

The first major UK claim on shale gas deposits is held by Cuadrilla Resources. It holds a drilling licence that covers an area in Lancashire which they estimate contains 5,660 billion cubic metres (bcm) of shale gas. But while theoretically the Cuadrilla haul is enough to supply Britain's annual gas needs for 56 years, only 10-20% is thought to be actively recoverable³⁰, and the British Geological Survey believes the find may actually be only 1/40th of that claimed³¹.

The Daily Express has proclaimed that "shale gas could be the answer to our energy woes"³². Dieter Helm sees shale gas as potentially creating a "seismic shift" in Europe as well as the USA³³. But there are many reasons why the USA's shale gas revolution won't be easily replicable over here:

- Shale deposits in Europe and the UK tend to be deeper underground and harder to extract than in the US.
- Estimates are that drilling costs will be two to three times higher here than in the USA, with costs for the water needed for 'fracking' up to 10 times higher³⁴.
- The UK's density of population and relative inexperience at onshore drilling mean that it is unrealistic to expect significant production before 2020.
- The regulatory landscape is different: as the Economist noted, "America's gas industry faces fewer and friendlier regulations than Europe's. Call it the Dick Cheney effect"³⁵.
- The International Energy Agency warns that "once discovered, major gas resources can sometimes take several decades to reach production"³⁶.

Industry expert and peer reviewer for the Government's gas price projections, Howard Rogers, agrees:

"unconventional supply in Europe is ... expected to be high cost because of different geology to US (generally much deeper) and greater logistical difficulties in development"³⁷.

And in an October 2011 report, Deutsche Bank were highly critical of the potential for shale gas in the EU to make a significant impact – either on supply or gas prices:

"Those waiting for a shale gas 'revolution' outside the US will likely be disappointed, in terms of both price and the speed at which high-volume production can be achieved... whilst we think that EU shale-gas deposits certainly have the potential to contribute meaningfully to indigenous production over the next 10-20 years, we do not expect the impact of shale-gas production on EU gas prices to be anywhere near as great as has been the case with US shale-gas production."³⁸

The key point is that even if UK shale gas production was OK from an environmental point of view – which it isn't – it is very unlikely to have a transformative impact on UK prices.

There is after all no reason to assume that gas produced from shale would be any cheaper than that imported from 'conventional' sources. The Government's assumptions for imports of shale gas, for example, shows that they expect them to be much more expensive than 'conventional' gas³⁹.

6 The elephant in the room: climate change

In a carbon constrained world, rampant emissions from gas will be something we literally and figuratively can not afford. Any future scenario that relies upon a massive usage of gas is simply not compatible with the urgent need to cut carbon emissions, domestically and globally.

Some hope might come from a sea-change in carbon capture and storage technology. But progress is nowhere near where it needs to be. The IEA estimates that in order for predicted gas use increases to be compatible with keeping temperature increases to below two degrees, there will have to be 1,500 large-scale CCS projects around the world by 2035. So far, only 74 have been announced. China alone needs 270 but only has six at the planning stage.

Prospects seem dim here in the UK as well. Last year Scottish Power pulled the plug on its proposed CCS scheme at Longannet (a coal scheme in any case), and the Government's £1bn CCS demonstration fund went unallocated. Betting the farm on CCS seems, on current performance, exceptionally risky⁴⁰.

Conclusions

No-one knows for sure what will happen to future gas prices. The major factors affecting future UK gas prices are summarised on page 4.

For planning purposes however, it seems sensible to assume the price is going to continue to rise:

- **Demand** for gas from countries like China and India is predicted to continue to soar, massively increasing competition for supply.
- **Supply** is going to have to be massively ramped up just to tread water. Internationally three times the current production of Russia is needed to keep pace with estimates of future world demand. Shale gas in the UK will take a decade to make a dent, is likely to be pricey to extract, and even then there's no guarantee it will be anything like as fruitful as some promise.
- Although new technology in the form of **LNG** will increase our import options and potentially put pressure on old-fashioned pipeline contracts **that link the price of gas to that of oil**, it also means we will increasingly have to compete on the global market for gas, and pay the price accordingly.
- And fundamentally, there is simply not the **carbon space** for a new dash for gas. Unless carbon capture and storage technology proves itself very quickly, the world faces a choice: allow predicted soaring gas demand, or put in place policies to urgently wean us off fossil fuels. Increasing global gas use means, as BP candidly admit, "inescapable conclusions for the likely path of carbon emissions"⁴¹.

The safe bet is that recent price rises will continue into the future, as predicted by a fleet of experts and summarised in this paper.

Yet in spite of this the big six energy suppliers are fervently pursuing a second 'dash for gas' for electricity generation. The costs will, of course, be passed on to consumers. That's a massive problem for our energy bills.

We need to get our energy system firing on clean, renewable energy, and quickly. Investing in a fleet of new low-carbon renewable technology may cost more in the short-term than plunging into new gas build, but looks like bringing bills down in the longer term – compared to relying on increasingly expensive, insecure and polluting fossil fuels. And ultimately, the economic implications of failing to avert dangerous climate change - estimated by Lord Stern to be anywhere from 5 to 20 per cent of global GDP – would make discussions about fluctuations in the gas price seem inconsequential.

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References

1 This briefing does not look at what will happen to energy **bills**. Our bill is affected not just by how much the energy costs, but by how much of it we use. A separate briefing from Friends of the Earth is available which examines the future prospects for energy bills.

2 Committee on Climate Change, <http://www.theccc.org.uk/reports/household-energy-bills> Figures are nominal.

3 Figures are for standard (non Economy 7) tariff paying by standard credit (not direct debit). The trends are very similar for all varieties of electricity tariff and payment options.

⁴ DECC: Smarter Grids (2011)

http://www.decc.gov.uk/assets/decc/what%20we%20do/uk%20energy%20supply/futureelectricitynetworks/1_20091203163757_e@@_smartergridsoopportunity.pdf

5 Telegraph: <http://www.telegraph.co.uk/finance/personalfinance/consumertips/household-bills/8831627/Gas-prices-will-continue-to-rise-industry-bosses-warn.html>

6 DECC: Gas price projections (2011): <http://www.decc.gov.uk/assets/decc/11/about-us/economics-social-research/2935-decc-gas-price-projections.pdf>

7 International Energy Agency, World Energy Outlook (2010): <http://www.iea.org/weo/2010.asp>

8 International Energy Agency, Golden Age of Gas (2011):

http://www.iea.org/weo/docs/weo2011/WEO2011_GoldenAgeofGasReport.pdf

9 DECC, Digest of United Kingdom Energy Statistics (DUKES, 2011)

<http://www.decc.gov.uk/en/content/cms/statistics/publications/dukes/dukes.aspx>

10 Parliamentary Office of Science & Technology (POST, 2004): <http://www.parliament.uk/documents/post/postpn230.pdf>

11 Select Committee on Business & Enterprise (2008):

<http://www.publications.parliament.uk/pa/cm200708/cmselect/cmberr/293/29305.htm>

12 BP World Energy Outlook (2012):

http://www.bp.com/liveassets/bp_internet/globalbp/STAGING/global_assets/downloads/O/2012_2030_energy_outlook_booklet.pdf

13 BP, op cit

14 DECC: Fossil fuel prices summary projections (2011), op cit.

15 Forbes: <http://www.forbes.com/sites/moneybuilder/2012/01/23/china-wont-blow-up-in-2012/>

16 IEA 2011, op cit.

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- 17 Bloomberg: <http://www.bloomberg.com/news/2012-01-17/electricity-declines-50-in-u-s-as-shale-brings-natural-gas-glut-energy.html>
- 18 Economist (2011a): <http://www.economist.com/node/21525381>
- 19 Guardian: <http://www.guardian.co.uk/commentisfree/2011/oct/18/energy-price-volatility-policy-fossil-fuels>
- 20 BBC: <http://www.bbc.co.uk/news/business-15308005>
- 21 Economist 2011a, <http://www.economist.com/node/21525381>
- 22 IEA 2011, op cit.
- 23 DECC gas price projections 2011, op cit.
- 24 <http://www.decc.gov.uk/assets/decc/11/about-us/economics-social-research/2940-fossil-fuel-price-proj-review-rogers.pdf>
- 25 The Economist 2011a, op cit
- 26 DECC gas price projections 2011, op cit.
- 27 Euractiv: <http://www.euractiv.com/energy/internal-energy-market-doubt-18-states-face-court-news-508048>
- 28 POST 2004, op cit
- 29 Friends of the Earth: http://www.foe.co.uk/resource/briefings/shale_gas.pdf
- 30 Financial Times: <http://www.ft.com/cms/s/0/3b59d762-e465-11e0-844d-00144feabdc0.html#axzz1bt1Xbj89>
- 31 Energy-pedia: <http://www.energy-pedia.com/news/united-kingdom/british-geological-survey-says-cuadrillas-shale-gas-estimate-unreliable-to-release-new-figure>
- 32 Daily Express: <http://www.express.co.uk/ourcomments/view/279299/Leo-McKinstryShale-gas-could-be-the-answer-to-our-energy-woesShale-gas-could-be-the-answer-to-our-energy-woes>
- 33 Global Warming Policy Foundation: <http://www.thegwfpf.org/energy-news/4646-dieter-helm-shale-gas-will-transform-europes-energy-roadmap.html>
- 34 The Economist (2011b): <http://www.economist.com/node/21540256>
- 35 The Economist, 2011b op cit.
- 36 IEA 2011, op cit.
- 37 Rogers 2011, op cit.
- 38 Deutsche Bank, 'A first look at EU shale gas prospects' (October 2011): cited in <http://www.guardian.co.uk/environment/damian-carrington-blog/2011/nov/03/shale-gas-game-changer-fracking>
- 39 DECC, gas price projections 2011, op cit.
- 40 Even gas with CCS may not lower emissions enough. Modelled estimates of emissions from gas power stations fitted with CCS are 140-200gCO₂e/kWh: http://www.green-alliance.org.uk/uploadedFiles/Publications/reports/Avoiding_gas_lock-in_Jun11_Dbl.pdf. That's a long way off the 50gCO₂/kWh that the Committee on Climate Change recommend for the UK's electricity generation by 2030.
- ⁴¹ BP, op cit.