



Shaping the age of gas

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Introduction



Good afternoon everyone, it's great to be here in Paris.

Congratulations to the International Gas Union on an excellent event, bringing together what is now a truly global industry.

I think it is no exaggeration to say that we are approaching the age of gas.

Broadly speaking, in the 18th century, wood remained the dominant fuel in much of the world. The 19th century saw the age of coal. The 20th century was, of course, the age of oil. And I believe the 21st century will be seen in many ways as the age of gas.

Gas is the fastest growing fossil fuel and over the next 20 years we expect it to catch up with oil and coal and emerge as the main hydrocarbon component of a more sustainable mix to power the world's economy in the second half of this century.

That of course is the big, long-term, picture. Today, very understandably, a lot of people are more focused on the current volatile conditions.

Our judgement in BP is that these conditions are not simply cyclical ones. To a degree, they are connected to longer term trends – the role of shale being a case in point.

And we'll be looking to understand what's happening better when we publish our annual Statistical Review of World Energy next week with data for 2014.

It will help us to better quantify the extraordinary growth of shale in the US – both shale gas and shale oil. We'll have more insight into what's happening in China, where reports suggest that the growth in coal consumption has stalled as the economy becomes less centred on labour intensive industry. We'll also see what progress renewables have made. It's important to understand developments such as these and what they may bode for the future.

And in my remarks today, I want to focus mainly on the long term trends – because in an industry with cycle times measured in decades, our decisions need to be guided by these trends as much as day by day events.

And despite the current turbulence, I see three reasons why it is credible to talk of a coming age of gas.

First, the abundance of gas resources will help to ensure that there is sufficient energy to meet the world's needs.

Second, the world wants energy security, and gas can help with that too.

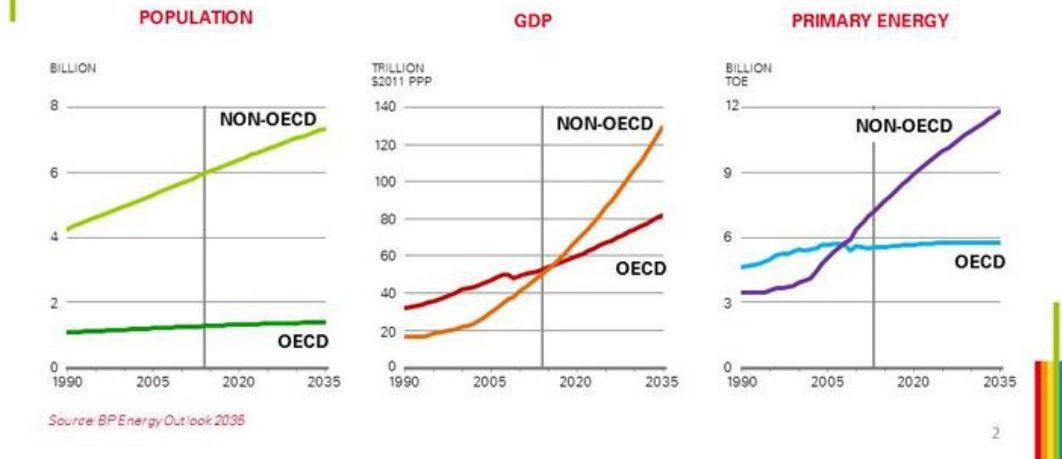
And third, the world needs its energy to be sustainable, and gas has a unique role to play in that regard.

Three 'S's – sufficiency, security and sustainability. Three reasons why I believe gas will become the world's number one fuel during this century.

I'd like to expand a little on each of those three points

Sufficiency

Sufficiency: demand is growing



Starting with sufficiency, the challenge is that the world's energy demand is projected to grow by around 35% by 2035. These charts are taken from BP's Energy Outlook 2035, which is based on current and expected trends in demand, supply, policy and technology.

Almost all the growth – about 95% – comes from non-OECD countries, led by China and India, as they continue to industrialize.

Our Outlook indicates that they will use around an extra four billion tonnes of oil equivalent compared to today – or perhaps I should say 180 trillion cubic feet of gas equivalent - given where we are.

Either way, those numbers are hard to visualise. But I always think about what they mean for individuals and communities. Electricity coming to a village. People riding scooters to work. Power and light for clinics and schools. Irrigation for farmers. Access to computers, to hot water, to refrigeration. New opportunities. New possibilities.

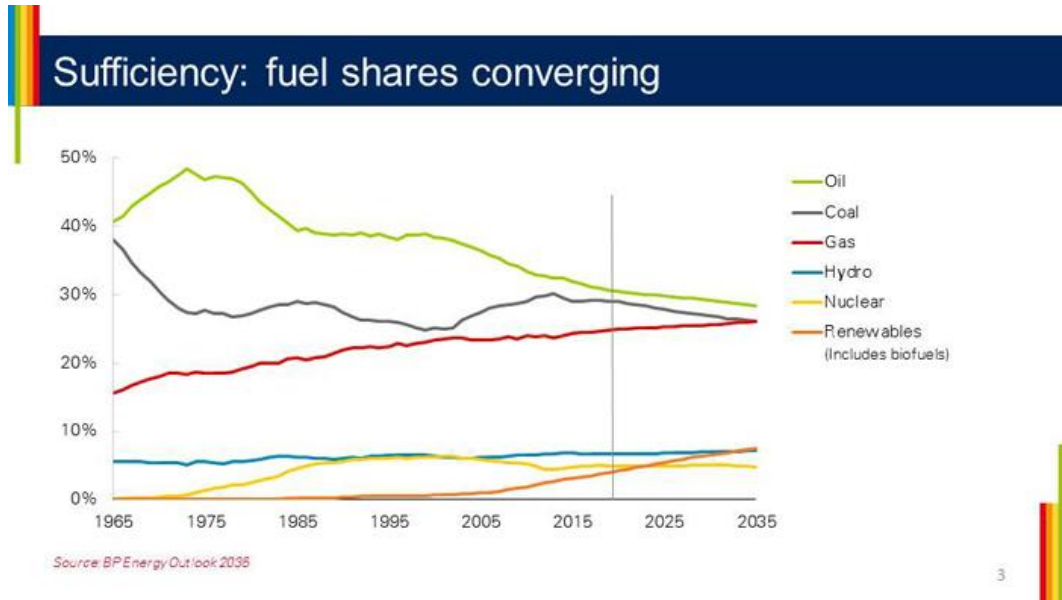
A lot of that comes courtesy of gas. Amid all the debate, let's not forget the good that our product does.

And it has the potential to go on doing so – because there is more than enough gas to meet demand.

Over the past decade the world has consumed around 30 trillion cubic meters of gas – but reserves today are around 30 trillion cubic meters more than they were in 2004.

In other words, the industry has replaced what was used and then added the same amount again.

Recent history tells a story of new frontiers and new sources of supply opening up all around the world – shale gas, tight gas, deepwater gas.

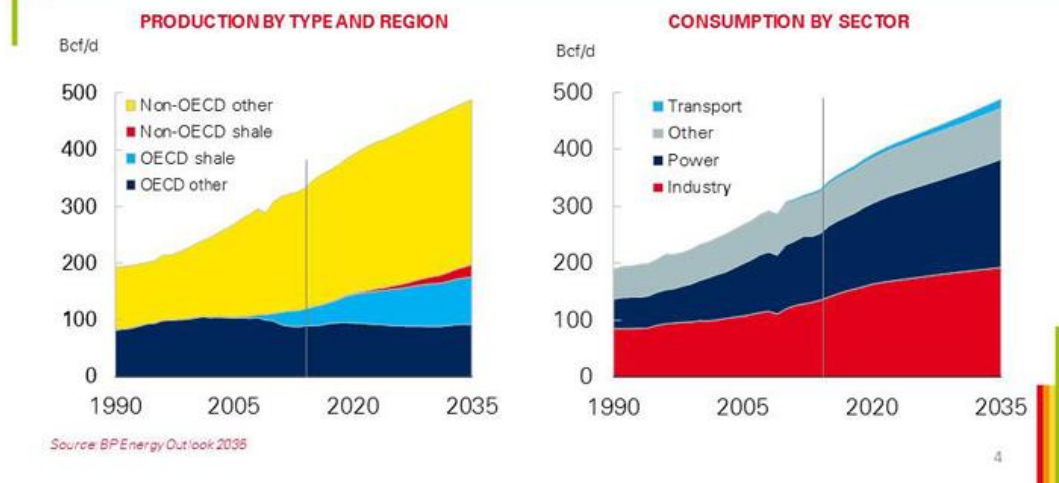


This chart shows how we expect the shares of gas, oil and coal to converge around 2035, with each contributing around 27% of demand. It's what I like to call the rule of 27s.

The other fifth of the demand is met by non-fossil fuels. There we see renewables growing strongly from its low base.

Gas is on a clear upward trajectory. It's the fastest growing of the fossil fuels.

Sufficiency: gas supplies growing



This shows where we expect the additional gas to come from.

Around half the increase comes from non-OECD conventional supplies, mainly from the Middle East and Russia.

The other half largely comes from shale production in North America.

And on a very long timeframe, this may only be the start.

Although America has led the way in developing shale, it actually has fewer shale resources than China, Argentina and Algeria. So there is a long way to go. But it will take time.

Of those other countries, we only expect to see China producing from shale in large volumes over the next two decades.

Security

So there is sufficient energy to meet growing demand.

The next challenge is that of energy security – connecting the energy with the people who need it – and doing that affordably.

Gas has an increasing part to play here as countries are able to access more diverse sources of supply – and develop more of their own.

The growth of shale means North America is expected to become a net exporter in the next few years, providing more gas for the global market.

There is a raft of new LNG projects globally which are expected to add around 20 billion cubic feet a day to the market by 2020.

In fact, our forecasts show LNG overtaking piped gas as the dominant form of traded product by 2035.

Then there is also a series of major pipeline projects – from Europe to Asia to North America.

All of this is creating a more integrated global market for gas.

This is particularly important here in Europe. The EU consumes around 13% of the world's gas, yet it only has less than 1% of the reserves.

This creates two issues. The first is import dependency - Europe is the largest energy importer in the world and currently depends on Russia for about 30% of its gas.

The second is a more recent disposition to imported coal that runs counter to environmental objectives. With gas in relatively short supply, cheap coal displaced from the US - by even cheaper gas - is finding a ready market in Europe.

These are the drivers behind the EU's plans for an 'Energy Union' – to reduce dependency on imports, diversify supplies and renew its commitment to lower carbon energy.

I think this is absolutely right – although I would also observe that Russian imports may not be as uncertain as they can appear.

As well as Europe needing gas from Russia, Russia needs revenues from Europe. In 2013 Russia earned \$73 billion from gas sales, mostly from the EU.

This mutual dependency has kept supplies flowing since the Cold War, through many times of tension. Energy can act as a bridge between countries.

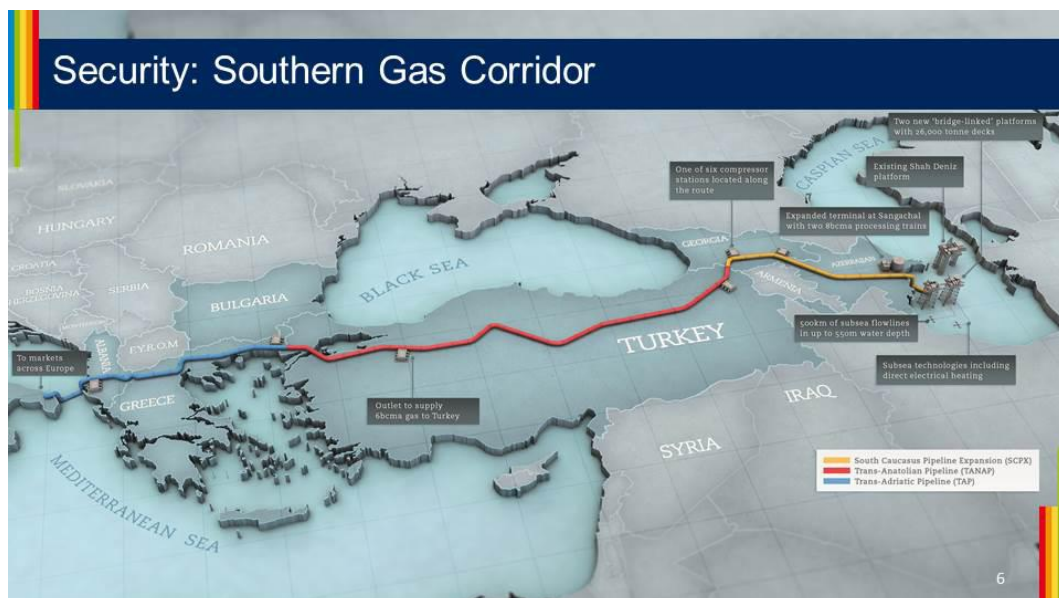
Nonetheless, it is absolutely right for Europe to seek to diversify its supplies and make the region more gas-friendly.

The European Union is committed to the development of single markets. So it is only right to complete the single market in gas, with new interconnector pipelines linking countries together and driving greater competition.

And it is right to continue to develop the EU Emissions Trading System into a truly effective mechanism for lowering emissions.

This will all be good for consumers.

There is also a realization that having more LNG regas facilities will ensure that additional import capacity is available in an emergency.



There is also a place for alternative pipeline supplies. For example, one of the biggest and most complex gas projects currently underway anywhere in the world is the new 3,500km Southern Corridor between the Shah Deniz gas field in the Caspian and southern Europe.

It's a completely new route for gas into Europe, being led by BP, which is on schedule to start delivering up to 16bcm gas a year by 2018 through Georgia, Turkey, Greece, Bulgaria, Albania and Italy.

But as I mentioned, energy security is not only about imports. It's also about accessing domestic resources that have not yet been developed.

We are now seeing examples around the world where such resources are being unlocked when you have the right conditions above the ground as well as the right resources below the ground.



In our own business we have seen this at work in places such as Egypt, where we have just been able to sanction a \$12 billion investment package, and in Oman, shown here, where the government has opened up vast tight gas reserves for development and we are now planning to drill around 300 wells over an area roughly the size of urban Paris.

Gas-fired power stations also provide the most flexible source of power, and hence have a role to play in balancing intermittent supplies, such as wind and solar, which are generally local and hence secure.

Sustainability

So this takes us onto the third of the three S's, sustainability.

This is sometimes seen as incompatible with security and sufficiency – but that's not the case and gas is one of the main reasons why.



It's certainly true that the current path of carbon emissions is not in line with keeping the rise in global temperatures to the level recommended by the experts.

But, with political will and collective action, that trajectory can be changed. And there are two main ways to do it. The first is to use energy more efficiently and the second is to use lower carbon energy in place of higher carbon energy. Put simply, saving and switching.

And critically, switching does not only mean switching from fossil fuels to non-fossil fuels – but from coal to gas.

In this hall, I expect most of us know that.

We know that gas is the cleanest fossil fuel.

We all know that gas emits half the carbon of coal when burned to generate power.

But what about the world outside?

If we were to ask passers-by, I doubt they would know these facts about gas.

As an industry, we need to explain more clearly that gas is not so much part of the problem as part of the solution.

That is why a group of us have issued a statement this week to highlight the role gas can play in addressing climate change.

However, to be clear, we are not arguing for any special favours for gas in the area of policy.

What we are recommending is simply a price on carbon, however it is emitted. This will then enable many solutions to play a part.

It will encourage more energy efficiency – smarter vehicles or advanced industrial equipment. It will enable renewables to be more competitive. It will improve the economics of carbon capture and storage. And in many circumstances, it will lead to the substitution of gas for coal – and with it significant reductions in emissions.

Because of the relative scale of coal versus renewables in today's power industry, if we were to switch just 1% of total power generation from coal-fired power plants to gas-fired ones, that would cut emissions as much as increasing renewable energy by 11%.



Gas is lighter in carbon than coal, but not carbon-free, and that's why it is also important to minimise emissions from the gas supply chain as well. That includes tackling flaring and so-called fugitive emissions. And I just wanted to note for the record that BP has now added its name to the World Bank's initiative to end routine flaring.

So progress is being made but, in general, we recognize that the challenge of achieving these objectives is a great one. At the same time as striving for a more sustainable system, there will be the tremendous imperative to reduce poverty and provide reliable energy to the world's poorest populations. We are seeking to shift the global energy system at the same time as meeting the needs of a world whose population is set to grow by around 20% in the next 20 years and whose GDP is expected to more than double over that same period of time.

BP is helping to shape the age of gas

So gas can help to meet demand, provide energy security and pave the way to a lower carbon economy. That's what we can achieve as an industry.

But let me close with a brief word on how we in BP aim to play a part in this.

Our contribution comes about in two main ways, through our upstream operations, and through our trading arm.

Today gas accounts for around half of BP's Upstream production and this is expected to grow over the next decade.

We specialise in operating giant fields, deploying new technologies and working with partners to create gas value chains.

But as well as our upstream operations, we also have a trading operation that facilitates trade in gas on a much wider scale.

To give you an example, we produce around 1% to 2% of the natural gas that comes out of the ground in the US - that's around 1.5 billion cubic feet a day. But we market some 24 billion cubic feet a day, which is roughly the equivalent of the combined daily demand of Europe's four biggest gas markets - Germany, Italy, Turkey and the UK - and that makes BP the leading natural gas merchant in America. Worldwide, we are part of a trading sector that is facilitating the globalization of the market, directing gas to where it is most needed and making it more available and affordable.



Trading has become a specialism for BP – but it is grounded in operational experience. Many of the people on our trading floors have spent time in frontline operations.

That means they have experience of building operational relationships outside the trading environment. We aim to bring that experience into the trading business and make a priority of strong relationships and flexibility - for example in the currencies we trade in and the indices we price against.

We also have a growing LNG fleet of our own, with seven vessels at sea and six more orders on the way.

Conclusion – hopes for the future

So that just about concludes what I want to say. Thank you all for listening.

The message I have tried to put over is a very simple one.

Gas provides sufficient energy – there are many decades' worth of reserves.

Gas provides secure energy – whether domestic or imported, through pipelines or LNG.

And gas provides sustainable energy – it has a huge role to play in a lower carbon world.

We ask those who are meeting here in six months' time to be mindful of that - and of our industry's desire to be part of the debate - part of the solution - and part of the future.

Thank you.