

Utility Week Energy Summit 2016

Tuesday 5 July 2016

**Bridging the gap between current realities and future energy**



Good morning everyone, and my thanks to Utility Week for the invitation to contribute to this important debate today.

It is an honour to share the stage with my good friend and close colleague of over two decades, Iain Conn.

When one is invited to speculate about the future it is usually wise to be a little circumspect.

In 2004 Bill Gates announced that spam would be a thing of the past within two years.

In 2005 Sir Alan Sugar famously said: "By next Christmas, the iPod will be dead, finished, kaput."

It sold over 50 million units a year for the next five years.

In our own industry we have had our share of mistaken predictions.

It is not so long ago that the orthodoxy was for oil production to peak within decades and then begin to decline.

Then along came the shale revolution, several years of record production, and a supply glut that has resulted in prices that more than halved compared the same period two years ago.

So we can be mistaken individually or collectively.

As Sir Terry Wogan said as he introduced the 2007 Eurovision Song Contest: "Who knows what hellish future lies ahead? Actually, I do. I've seen the rehearsals."

Unfortunately, we do not have any rehearsals for the future energy world.

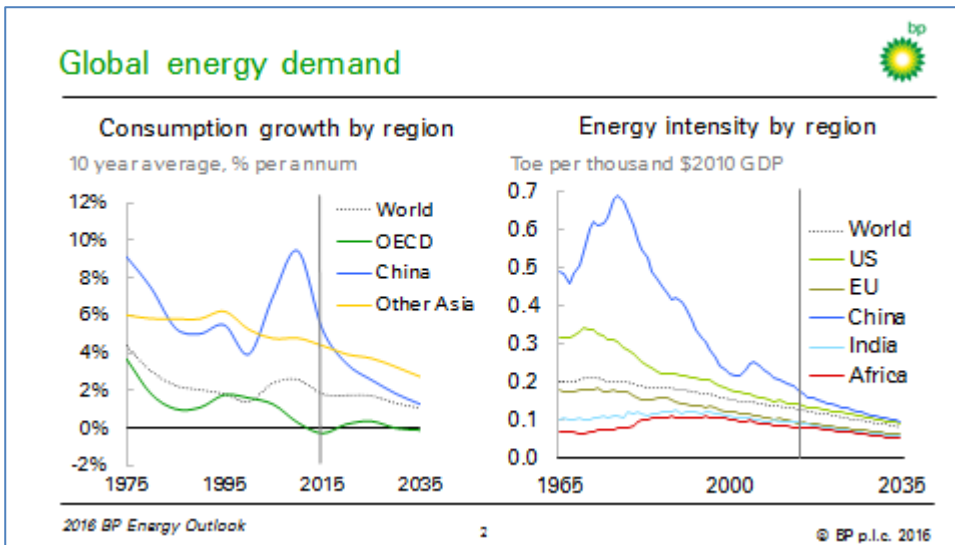
But we do have the next best thing - two things, in fact.

We have the BP Statistical Review of World Energy, which has been an authoritative record of past energy trends since 1965.

And we have the BP Energy Outlook, which is BP's view of future energy patterns.

The first records the past, while the second projects the future - trying to do so by analysing current and expected trends in supply, demand, policy and technology.

I would like to briefly review the global trends that form the backdrop for the UK's energy landscape. I will identify what we in BP see as four key trends in energy - and for each I will give a point of view about the future.



## 1. Growing but slowing

Let me start then with the first of these four trends, which is that the pace of growth in global energy demand is decelerating.

Or to put it another way, still growing but slowing.

Let's be clear though - that still means global demand, in the most likely circumstances, will increase by about a third over the next 20 years.

This is like adding over 20 times the UK's current consumption.

But that is, in fact, a slower rate than the growth of over 50% we saw in the previous 20 years.

This global trend is of course in large part a reflection of the picture in China, where the economy is in transition from the rapid industrialization of recent years to growth associated with less energy-intensive industries.

The picture here in the west is significantly different.

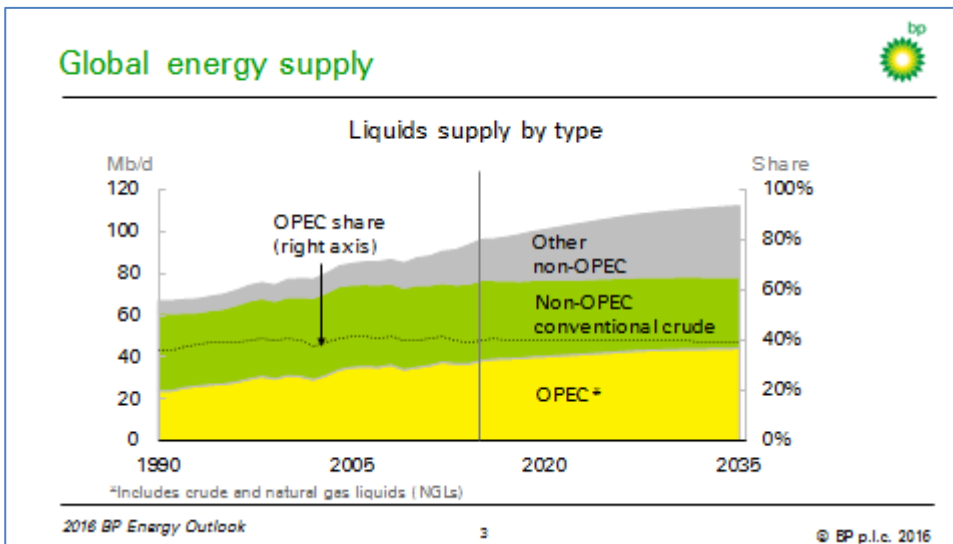
Energy consumption in the EU in the past two years has been down to levels last seen in 1994 and has been on a falling trend for the past decade, in part due to an increase in the pace of energy efficiency gains.

In terms of the future, I would look to India to lead on growth.

Over the past five years, China's energy demand grew by 21% while India's grew by nearly 30% and will continue growing faster than all major economies in the world.

In fact, India's projected demand growth of 136% over the next two decades is more than double the non-OECD average (+56%), and India also outpaces each of the other BRIC countries: Russia (+11%), China (+48%), and Brazil (+45%).

It is often overlooked that 1.2 billion people globally still do not have access to electricity - over 200 million of them in India, where the ambition is to have every village connected to 24-hour electricity within 1,000 days from April 2015.



## 2. Innovation creates transformation

So the first key trend was one of demand, and the second is one of supply.

I have already alluded to this.

We are in a situation today that is the diametrical opposite of the peak oil concerns of a decade ago.

Put simply we have too much supply.

Technology has changed everything - innovation creates transformation.

Resources have been discovered and made recoverable offshore, in deep and deeper water - and most recently in shale and tight rocks once considered uneconomic to drill.

By way of illustration, when I joined the industry in 1989 the world had a little over a trillion barrels of oil reserves.

Since then around 0.8 trillion barrels have been consumed but the reserves have grown and now stand at 1.7 trillion.

It is a similar story with natural gas, and we know there is more oil and gas out there to be found and produced.

The market is going through some profound changes initiated by a wave of technological development.

In terms of primary energy supply, we are in an age of plenty.

What then is my supply-side outlook for the future?

Quite simply, it is that innovation will ensure we have more resources at our disposal than are needed to meet demand.

It is a buyers' market.

And that leads me to my third key trend.

### **3. Compete or retreat**

When oil was above \$100 a barrel, the focus was on barrels rather than margins.

With oil at \$50 per barrel the focus is on the barrels with the best margins - and being able to produce those barrels as competitively as possible.

The race to be competitive is redefining the industry as we speak.

You either compete or retreat.

This is a race we entered early in BP and we have been bringing our costs down for some years now by driving reliability, efficiency and safety performance.

They are interlinked.

Our group cash costs for the last four quarters were \$4.6 billion lower than the equivalent period in 2014.

Our Downstream is on track to deliver \$2.5 billion of cost efficiencies by the end of 2017.

And our Upstream expects to see its cost base down by \$4 billion between 2014 and 2017 - which is a 30% reduction.

Just to give you one example, we have a major project in planning in the Gulf of Mexico - the second phase of development of our Mad Dog field.

In 2014, the project was costed at around \$20 billion.

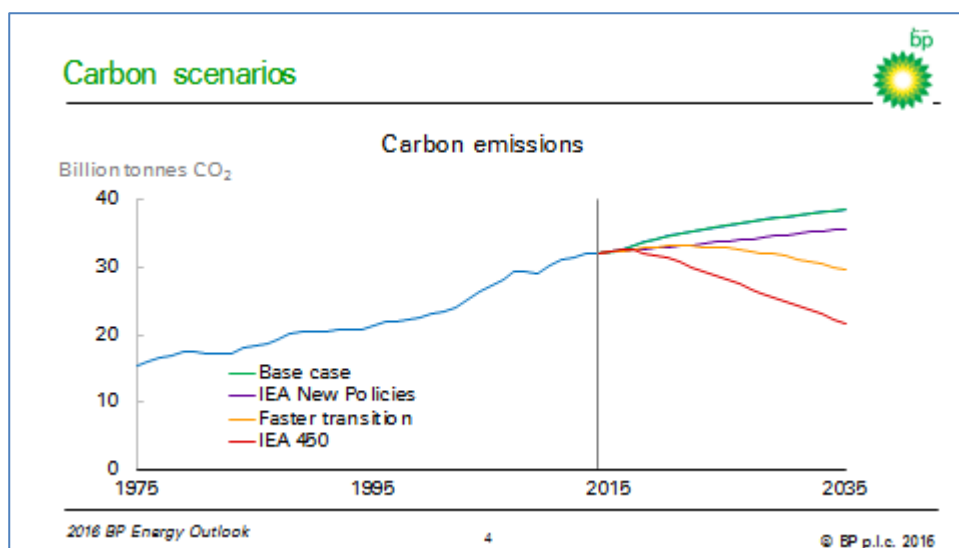
In collaboration with our partners and the supply chain we have brought down the cost to under \$10 billion with the expected returns improved despite a lower oil price.

Within the industry there is a fundamentally different mindset taking hold. Priority number one remains safety, but we are looking to bring costs down through standardisation and repetition of activity - and with all the advantages that come from harnessing digital technology and big data.

We sometimes call it a manufacturing mindset - by which we mean state of the art, high-tech, high-efficiency manufacturing.

From my remarks so far on supply and demand you might conclude that we don't anticipate the oil price returning to \$100 anytime soon.

I make no predictions on the oil price itself, but my prediction for competitiveness is that companies that will have the greatest resilience are those able to compete at a low price environment.



#### 4. Emissions require decisions

Let's move onto the fourth key trend, which is the welcome flattening in the growth of carbon emissions and the transition to a lower carbon economy.

Last year global emissions grew by just 0.1% - the lowest growth in emissions for a quarter of a century, apart from one exceptional year in 2009, immediately after the global financial crisis.

This may only be a small step given that a substantial fall in emissions is required to meet the ambition agreed at the UN conference in Paris of containing the global temperature rise to well below 2°C.

Nevertheless, last year's flattening is progress, and it is worth understanding how it has come about, so that we can learn and do more.

The sharp slowdown of the past 10 years - averaging just over 1.5% per year - comes in part from relatively weak global growth in 2015. But the majority of the slowdown can be attributed to the combination of more rapid gains in energy efficiency with a shift in the global fuel mix away from coal towards lower carbon fuels.

Looking ahead over the next 20 years, despite the growth rate of carbon emissions more than halving relative to the past 20 years, the most likely path is for 20% growth.

In an alternative scenario with a more aggressive set of policies - including much higher carbon pricing and tougher action on energy efficiency and vehicle standards - emissions would begin to fall - but not by as much as required to keep the temperature rise to 2°C.

As we have seen, the challenge of limiting emissions falls into two areas.

One is to use energy more efficiently, and the International Energy Agency expects half of the reductions in carbon emissions that are needed by 2030 will come from energy efficiency.

The second is to accelerate that shift to a lower carbon fuel mix.

There is already momentum to this transition.

We have the Paris Agreement.

We have China's pledge to see its emissions of CO<sub>2</sub> peak by around 2030 - plus a national carbon pricing system starting next year.

Regulations are being authorised for various sectors in the US under the Clean Air Act.

And just last week here in the UK we had ministers signalling an announcement that carbon emissions will be cut by 57% by 2032, from 1990 levels.

So we have some momentum in terms of policy - but the current projected path makes it clear there is more to be done.

Momentum has to translate into action.

#### **4.1 Material action in BP**

In BP we welcome such action and we are already moving towards a sustainable future in five distinct ways.

First and foremost we actively support governments putting a price on carbon emissions - one that treats all carbon equally, whether it comes out of a chimney or a car exhaust.

If well-designed, that will make energy efficiency more attractive and lower-carbon energy sources more competitive.

Second, we are the biggest operators of renewable energy businesses among our peers.

Our wind business in the US generates enough energy to power the homes in a city the size of San Francisco.

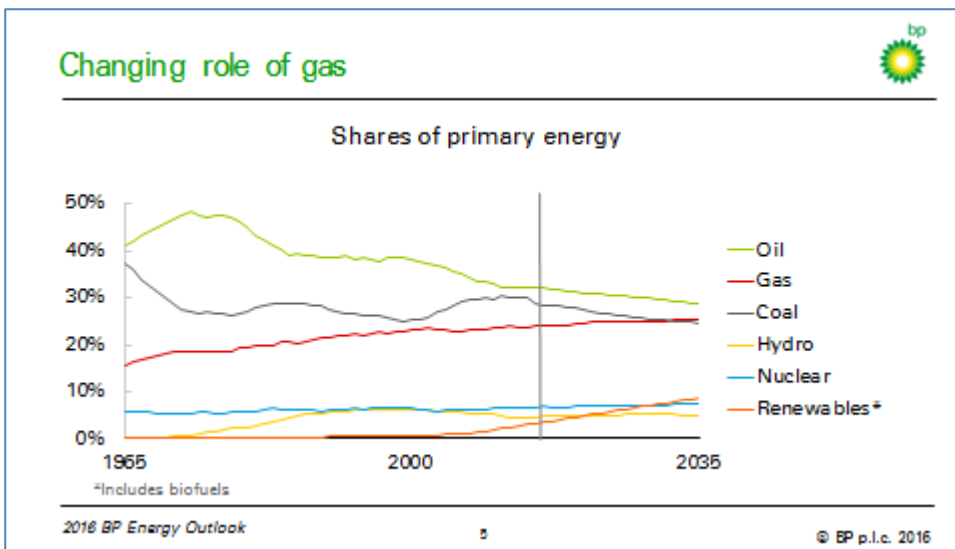
And our three large sugar cane mills in Brazil produced enough ethanol for biofuels in 2015 to avoid around 700,000 tonnes of CO<sub>2</sub> being emitted from vehicles.

That's equivalent to removing somewhere in the region of 300,000 cars from European roads for a year.

Third, we are pursuing energy efficiency on a range of fronts, from more efficient petrochemicals plants to providing consumers with new fuels and lubricants designed to give you more miles per litre.

Fourth, we support research into the understanding of climate science and invest in a variety of clean tech start-ups through our venturing business.

And fifth - and most directly - we are providing an increasing share of natural gas in our portfolio.



## 4.2 Natural gas

As I am sure we all recognize, natural gas has a unique and vital role to play here.

Renewable energies are growing fast.

But even growth at historically unprecedented levels could only supply 9% of global energy demand from renewables by 2035.

Hence the significance of the fact that natural gas releases only around half as much carbon as coal when burned to generate power - and it is readily available today.

From that fact it can be calculated that a switch of just one per cent of global power generation from coal to gas would reduce carbon dioxide emissions by as much as increasing renewables by around 10%.

The Oil and Gas Climate Initiative has estimated that if all existing coal-fired power stations globally were switched to state-of-the-art gas-fired plants tomorrow, we could avoid around 10% of total energy-related greenhouse gas emissions.

For those who may not be familiar, the OGCI comprises 10 national and international oil and gas companies that account for over a fifth of the world's global oil and gas production. Its aim is to catalyse practical action on climate change.

UK power generation has its challenges - but power is the sector where gas has the greatest opportunity to deliver the greatest benefit at the greatest speed. Global gas supplies are abundant and the UK has pre-existing domestic and gas import infrastructure.

In addition to our existing North Sea gas production, in BP we have a number of major gas projects that will come into production over the next few years.

In Egypt, in Oman and a mega-project that will create a new source of gas supply for Europe.

This is a \$45 billion investment that is developing a natural gas field beneath the Caspian which is the size of Manhattan - and building a pipeline network that will run for 3,500km from Azerbaijan, across Georgia, Turkey, Greece and Albania and then under the Adriatic and into southern Italy.

By 2020 an additional 16 billion cubic metres of new gas supply annually will be flowing into Georgia, Turkey and EU markets, creating a new, long-term secure source of supply.

**Conclusion: UK**

Having journeyed far and wide around the world, let me finish with a few thoughts about how BP is helping the UK to bridge the gap between its energy supply today and its energy needs in the future.

Very directly, we remain committed to the North Sea, where in the past few months we have passed two major milestones in a £10 billion investment programme.

In June, the Glen Lyon arrived in the waters to the west of Shetland - this is our brand new floating production, storage and offtake vessel which is able to process and export up to 130,000 barrels of oil a day and store up to 800,000 barrels.

It is part of a project that will extend the life of the Sheihallion and Loyal fields by up to 25 years.

In the same west of Shetland area we have just completed the installation of all the modules for our new Clair Ridge operations, in anticipation of new oil production starting up next year.

This is the second phase of development of the Clair field and it will keep oil production going out to the middle of the century.

For BP, we make a capital investment in the UK in the region of around \$2 billion a year and our activities here account for about half of one per cent of UK GDP and more than one in every 250 jobs.

We are deeply committed to helping meet the UK's energy needs,

This is our home - it is where we've been in business for over 100 years.

And we intend to be here for a very long time to come.

Thank you