

IP Week 2016

Wednesday 10 February 2016

Keynote speech (20mins): *How should the industry respond to climate change challenges?*

Mr Chairman, Igor Ivanovich, ladies and gentlemen.

Good morning everyone.

I'd like to thank the Energy Institute for their kind invitation to speak on behalf of BP.
IP Week is always an important occasion in the industry calendar.

There are two big topics I get asked a lot about right now.

One is the oil price. The other is climate change.

And climate change is so important for the long term that it rightly deserves our attention today.

We actually have quite a history in BP on climate change. We're widely seen as the first oil company publicly to recognise the risk and the need for action.

We have a track record for developing low carbon energies and lower carbon fuels; for improving efficiency; and for finding ways to limit operational emissions. We also have a long history of funding research into environmental solutions.

More recently I would say two things have happened – two prominent developments.

One is that policy makers are stepping up their responses to the growing base of climate science. That was very clear last year in to the agreement reached at the UN climate summit in Paris.

The other is that the business world is increasingly active in its response – both the policy developments and the reality of climate change itself.

As well as meeting the world's growing need for energy – our own industry also needs to think about how we deliver more energy sustainably. And indeed we have been doing that in BP for many years.

It's a challenge that won't get any easier.

Global energy demand is still rising – and it will go on doing so.

Developing nations will continue to industrialise and the global population will continue to increase – up by another one-and-a-half billion over the next two decades.¹

By 2035, on the most likely path, we can expect energy consumption to be up about a third on today² – that's like adding two more USA's to current consumption.³

Over the past year or two I would say there has been a further change – and that is a growing understanding of the scale of the challenge.

This is welcome. To be effective, we need to be realistic.

We need to be realistic about the scale of the ~~problem~~ challenge, and about the shape of the solution.

1. Realism about the ~~problem~~ challenge

Let's start with the scale of the ~~challenge~~ problem.

The Paris summit confirmed a collective ~~aim~~ ambition – from countries, companies and consumers – to ~~limit~~ hold the global average temperature rise to well below 2°C.

This is not an easy target. And as IEA has said, it does requires urgent action.⁴

Let me share the latest view on the challenge.

Commented [JPH1]: I think many stakeholders would argue that climate change itself is the problem. What we are describing here is the challenge of solving the problem. That may be a problem for us, but not for everyone. I strongly advise changing problem to challenge.

Commented [JPH2]: The Agreement itself was made only between countries. You could argue that the summit as a whole involved other actors.

Commented [JPH3]: Is there any reason not to use the precise language of the Agreement. It aims to hold temperature rise....

¹ BP Energy Outlook 2035 (2016 edition): 7.3bn in 2015 vs 8.8bn in 2035

² BP Energy Outlook 2035 (2016 Edition): 2015 consumption = 13.1btoe; 2035 consumption = 17.3btoe; ie 4.2btoe increase = 32%.

³ BP Stats Review (2015): 2 x US primary energy consumption (2.3btoe) = 4.6btoe.

⁴ <http://www.worldenergyoutlook.org/pressmedia/quotes/quotes/>

This afternoon we're launching BP's latest Energy Outlook 2035 – that's our annual forecast of energy demand over the next two decades.

It's not what we want to see, it's what we think is most likely, based on the latest data – that's an important distinction.

Our economics team puts the Outlook together each year, led by Spencer Dale, our Chief Economist.

Our most likely case in the Outlook expects carbon emissions growth to come down by more than half relative to the past 20 years.

That reflects significant progress on energy efficiency and on decarbonising the fuel mix. But it is still a rise in emissions of around 1% a year when the path to 2° and below requires emissions to fall.

Even if you make some stronger assumptions about policy over the next 20 years – measures that go beyond the pledges made anything agreed in Paris – emissions do come down further and faster, but still not enough.

Commented [JPH4]: The only thing agreed in Paris was the well below 2 degree goal, which by definition is enough. It was the INDCs that don't go far enough, but they were voluntarily pledged, not agreed.

Like many other companies BP is committed to being part of the solution. But we need governments to be the architects of progress, providing the blueprints for businesses to follow – not just energy businesses, but in other sectors as well, agriculture, manufacturing, transport and so on.

2. Realism about the solution

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⁵ <http://www.carbonpricingleadership.org/who/>

3. Industry's contributions

So far I've been describing BP's view on the big strategic path we need for the future.

Let me turn now to the practical actions that I see the industry as a whole already ~~taking~~doing.

One example is the Oil and Gas Climate Initiative – the OGCI – which has seen 11 national and international oil companies coming together to share best practice and engage with governments.

It's a body whose members represent over a fifth of the world's global oil and gas production and who believe oil and gas have an important part to play in the transition to a lower carbon economy.

From our work in the OGCI we have identified a number of key levers for bringing emissions down.

I'll run through four of these now, as briefly as I can.

3.1 Natural gas

The first lever is **natural gas**, and in particular, the promotion of the use of natural gas in the power sector. There is a really compelling case for doing this.

Gas emits about half the carbon of coal when burned to generate power.

The OGCI has pointed out that this means you could cut total energy-related greenhouse gas emissions by 10% tomorrow by switching all the existing coal-fired power stations to state-of-the-art gas-fired plants.⁶

Commented [LR5]: To publicly reference this to OGCI

Given the relatively small scale of renewables in power right now, it would take an increase of around 11% in today's global renewable capacity to save an equivalent amount of carbon for every 1% switch from coal to gas.⁷

Commented [LR6]: As calculation will change with changing capacity

⁶ OGCI report: catalysing practical action on climate change p12 (includes further references)

That makes natural gas the most significant supply-side lever we have to cut emissions quickly while maintaining economic growth.

Many oil and gas companies are supporting that potential by rebalancing portfolios towards gas.

In BP we are heading towards 60% gas by the end of this decade as a number of our big gas projects come online in Egypt, Oman and Azerbaijan and that proportion will continue to rise

After Iran, Russia has the second largest reserves of natural gas in the world – second largest by some distance⁸ – and we have plans in partnership with Rosneft to develop both existing resources and to explore new areas in the future.⁹

3.2 Methane emissions and flaring

The second of those levers I mentioned is to minimise flaring and reduce methane emissions.

This is an area where the industry has already made great progress in recent years. To give you some idea of that, the OGCI has reported that flaring by itsOGCI members is down by well over a third over the past decade¹⁰ and methane emissions are less than half what they were in 2008.¹¹

There is still a more to do, of course, and every percentage point improvement in these figures adds to the environmental benefits of switching to natural gas. That is particularly the case with methane which is a more potent greenhouse gas than CO₂.

⁷ BP Economics team [updating calculation for 2016 report]

⁸ BP Stats Review (2015): Natural gas proven reserves: Iran 34tcm; Russia 32.6tcm. (Next most = Qatar 24.5tcm).

⁹ June 2015 press release and confirmation email from BP Russia President

¹⁰ OGCI report: catalysing practical action on climate change p 16.

¹¹ OGCI report: catalysing practical action on climate change p.14.

With flaring it helps of course if the gas you don't burn off can be monetized to produce a financial return, and several companies are already signed up to the World Bank's zero routine flaring initiative.¹² It's simply good business.

The World Bank has a goal of zero routine flaring by 2030 and I think that is definitely achievable. I would add though that this is highly dependent on being able to work with governments and others to develop markets for the gas and the infrastructure to move the gas to market.

Saudi Arabia is a good example to point to here. Saudi Aramco has shifted from being one of the world's largest sources of flaring in the 1980s to one of the smallest today.¹³

Gas flaring at our own Tangguh LNG facility in Indonesia has been reduced by more than 70% over the past three years, and by about 40% in our Azerbaijan operations.

Reducing methane leakage emissions is an area where some real innovation is happening from the development and deployment of leak detection cameras to designing out potential sources of leaks emissions in new plants.

We have a great example of the latter in Oman, where we have a drilling programme for 300 wells at the giant Khazzan field out in the desert.

The project has been designed specifically to minimise or eliminate pieces of equipment where leaks emissions are most likely can to occur, should there be any, such as valve controls, pumps and pneumatic instruments.

Well-site processing can also lead to emissions, so that is also being minimised in Oman Khazzan, with the gas routed back to a central processing facility.

3.3 Efficiency

I'm on to a third lever now, which is efficiency – and there is an astonishing figure that we should all keep in mind here.

¹² OGCI report: catalysing practical action on climate change p 16.

¹³ OGCI report: catalysing practical action on climate change p 16.

Researchers at the University of Cambridge have calculated that for all the primary energy produced globally, only 12% is eventually transformed into useful heat, cooling, transport or light.¹⁴

The rest is lost in the various different stages from production to the eventual consumer.

When you look at it like that, it shows just how big the potential is for improving efficiency.

100% efficiency may be a little unrealistic, but imagine lighting a room like this with a fraction of the bulbs. Heating your house with a fraction of the power. Driving your car on a fraction of the gas. Greater efficiency is a priority.

The IEA estimates that almost half of the emissions savings needed to get back on track for its 2° scenario would have to come from energy efficiency measures.¹⁵

It's an area where we are already very active in oil and gas – in our operations, our businesses and in a range of our products.

There are many hundreds of great examples I could give you from right across the industry, but I hope you'll allow me to stay close to home with two from BP.

The low emissions approach I just mentioned for the Khazzan project also has the benefit of being energy efficient. The central processing facility is twice as efficient as a typical oil and gas field – thanks to the ability to use recycled waste heat from the gas turbines elsewhere at the facility. And this is a facility the size of []

Here's a great example from our Downstream.

In China we opened a new petrochemicals plant at Zhuhai in Guangdong province.

It's the first site to use our latest technology for producing PTA. The greenhouse gas emissions of the new plant are two-thirds lower than a conventional plant – and it also produces 75% less waste water.

¹⁴ Cullen, J.M. and Allwood, J.M. (2010) The efficient use of energy: tracing the global flow of energy from fuel to service, *Energy Policy*, 38 75-81

¹⁵ IEA - cited in OGCI report p17

Of course the operations side accounts for only between 10 to 20% of total GHG emissions from oil and gas. The rest comes from the use of our products by consumers in industry, power plants, buildings and transportation.¹⁶

That is of course the majority of hydrocarbon-related emissions, and where there is the greatest scope for efficiency gains.

3.4 Renewables

I have one last lever I want to mention now, which is renewables. These renewables are the fastest growing form of primary energy, but as I mentioned earlier, they are growing from a low base. So we do need to remain realistic about the potential size of their contribution in the near to medium term.

The ~~central path~~base case in the latest Energy Outlook sees renewables growing at nearly 7% per year – but even then that would only account for 9% of total primary energy by 2035.¹⁷

Commented [JPH7]: We don't have a central path, just a base case and faster transition.

Even under the faster energy transition ~~case~~ I outlined earlier, renewables are projected to account for no more than 15% of total energy by 2035.

That's a rate of gain for the share of renewables that would match the rapid growth of oil in the early 20th century – a period that included the Texas oil boom, the discovery of oil in the Middle East, the British Navy switching from coal to oil and the Model T Ford starting to roll off the production line.¹⁸

So it's important to be realistic about renewables. They will be increasingly important in the energy mix, but they are only part of any solution to limiting GHGs in the near term

The most important factor is that to expand the contribution from renewables significantly, the renewables you invest in have to be economically viable.

You can't operate a green business if you don't have a profitable business.

¹⁶ OGCI report p18

¹⁷ BP Energy Outlook 2035 (2016 edition)

¹⁸ BP Energy Outlook 2035 (2016 edition)

That's a lesson we have been learning in BP for over 20 years now and we have developed profitable interests focused on wind and biofuels that make us the largest operated renewables business among our oil and gas peers.

BP Wind Energy has interests in 16 wind farms across the US from Texas to Hawaii and is the operator of 14 of these.

Combined they have over 1,000 wind turbines generating enough renewable energy to power all the homes in a city the size of Dallas (Texas)¹⁹.

And in Brazil we operate three sugar cane mills that are now producing over three-quarters-of-a-billion litres of biofuel a year and exporting over 650 gigawatt hours of low carbon electricity to Brazil's national grid. That's enough power for more than quarter of a million Brazilian households²⁰. And we're growing the scale of this business – our production of ethanol grew by over 45% in 2015 relative to 2014.

Across the industry there is a wide range of renewable and alternative energy businesses probing possibilities to deliver clean energy at scale. And the majors are supporting many of them through venturing arms.

OGCI members as a whole are already investing in over 120 clean tech start-ups.

These range from developing graphene for use in solar cells and batteries to car and scooter-sharing schemes in Italy.

In BP our ventures team are supporting businesses that range from a way to capture the energy in waste steam from industrial processing to a new production method for cement that consumes CO₂ rather than generating it.

Finally a word on carbon capture and storage..

CCS has great potential as a technology to decarbonise fossil fuels. However, its development has been more challenging and slower than most people expected. It faces barriers that need to be overcome – such as high cost, commercial complexity, and an uncertain business and policy environment.

¹⁹ http://www.bp.com/en_us/bp-us/what-we-do/wind.html

²⁰ 667GWh produced. Avg consumption in Brazil 2462KWh/capita = 270,918 people

That brings me back to the need to work with governments on the development of strategies and market mechanisms that are able to support and accelerate development.

Conclusion

I hope that provides you with a good overview of how the industry is responding.

This is not a problem that is new to the industry and we are not starting from scratch.

There is more we can do. But we cannot do it alone.

we need rational, consistent, and realistic policies.

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Thank you.

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