



Exploration and production strategies to achieve success in a low oil prices scenario

Bernard Looney
Chief executive, Upstream

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Introduction

Thank you, Solange, and good afternoon everyone.

It is a pleasure to be here in Rio and to take part in this fantastic conference.

I appreciate this city runs the world's greatest Carnival – so it is no surprise that you put on a good show.

For me, it is also good to be back and to connect with our business in Brazil.

In fact, it is not 'a' business - but five businesses.

- We have our Castrol lubricants business;
- We distribute fuel for airplanes through AirBP;
- We provide fuel for ships through BP Marine;
- We have three sugarcane ethanol production plants;
- And of course, we have our Upstream business with interests in 19 offshore blocks, around half of them in partnership with Petrobras.

It is an honour to partner with a company that is globally renowned for its deep-water capability.

That takes me to today's topic - as introduced by Solange – about success in a low-price world and how we can collaborate for competitiveness.

My message is simply this - unprecedented change requires unprecedented leadership. And I will cover two things:

- First, changes - the forces at work in our sector;
- Second, choices – what we do by way of response.

Changes

Starting then with what is changing, I believe there are six big forces at work in our world, combining to create a 'perfect storm' of change.

First, growth – of the world's population and economy. I am always amazed to think that in my own lifetime

- the world's population has doubled
- the world's economy has grown by a factor of 25
- and our industry has more than kept pace with the growing demand for energy.

In fact, this is the second big force – the abundance of energy. We have half a century's worth of oil and gas in proved reserves alone.

The third force at work is the climate challenge and the action being taken to address it. The growth of carbon emissions is slowing. But to meet the targets agreed by governments, they need to fall, and that will mean policies to promote lower-carbon options.

The fourth – and related - force is the rise of renewable energy. We expect it to grow at over 7% per year over the next two decades as opposed to rates of a little over 0.5% for oil and 1.5% for gas.

Brazil is advantaged in having a renewable option, in the form of sugarcane ethanol, that is more cost-effective than traditional alternatives at scale, as well as a large base of power generated through hydroelectricity.

Fifth, and linked to the previous two points, governments are quite rightly developing policies to constrain carbon emissions and promote alternative forms of energy.

The sixth and final force is what some have termed the 'fourth industrial revolution'. The other three were centred on steam, electricity and automation. The fourth is the integration of the digital and material worlds, with software used to monitor and orchestrate physical objects.

This last force is on balance a very positive one because it can help us transform the way we work. At the same time, it will increase energy efficiency and moderate the growth in demand.

Choices

So, how do we respond to these forces of change? What choices do we make as leaders?

We all agree that it all starts with safety. That will always be our top priority and part of good business.

Safety, reliability and profitability all come from the same foundation of systematic, disciplined operations.

That is the bedrock of our industry. But building on that, we have chosen three major themes as we move to modernise and transform BP.

1. Agility.

2. Mindset change.
3. And digital transformation.

And these priorities are of course relevant at industry level too.

Agility largely depends on simplifying things, unravelling the complexity that has characterized our industry in the past.

Part of the problem has been everyone doing things differently: in procurement, for example, having thousands of different specifications across the industry for the same kit.

If we are going to compete for investment with emerging lower cost alternatives, the industry can no longer afford this.

And there has been some good progress. In BP, for example, we have been leading the project run by the International Association of Oil and Gas Producers that has drawn up new standardized equipment procurement specifications.

Last week, Solange joined a session that BP convened in London, with representation from many of the companies here on stage, to discuss how we can go further to release the billions of savings that standardization can deliver.

In the offshore world this goes beyond procurement to using common infrastructure, co-ordinating operations to share rigs, supply vessels and so on.

But like all changes, it requires us to change our mindset. As the British playwright George Bernard Shaw said: "Those who cannot change their minds cannot change anything."

In BP we have broadened our horizons by engaging with many other sectors, from car-makers to manufacturers.

Perhaps nothing challenges you more than spending time in Silicon Valley. There you find the culture of a 21st century digital industry - the culture of Facebook, Twitter and YouTube – which inevitably contrasts so much with the culture of our industry with its roots in the 20th century.

And yet I believe that our future lies in bringing these disparate cultures together. It is not impossible. We have already embraced digitization in seismic surveying and processing – particularly Petrobras and BP.

But now it is time to release the power of the fourth industrial revolution across all activities: seismic, sub-sea, wells, facilities, production.

In BP we call this vision The Connected Upstream. That means people and assets working together as one team, facilitated by digital technology.



We are working towards that vision in several ways. The first is intelligent monitoring. For example, we now have more than 2,000 kilometres of fibre optic systems feeding streams of data from offshore operations to onshore monitoring centres.

Second is system optimisation. Our tool called Apex simulates and optimises production 24/7 by modelling physical constraints and adjusting flows.

The third area is predictive analytics, where we are using a cloud-hosted wells data platform called Argus with data on 2,500 wells to review performance and share experience.

All of this is underpinned by a growing digital foundation, including a data lake of over a petabyte into which a billion data records from our operations are pumped every day. That is roughly double the daily tweets on Twitter.

In deep-water specifically, we believe there is great scope to become more competitive by applying digital and other technologies.

And this programme – the digital and the human aspects together – has seen some success. Over the last few years we have seen safety improve. Cash and capital costs have come down \$9bn in 3 years. And we are growing, with seven new projects this year and plans to bring onstream 800 thousand barrels a day of new production over the five years to 2020.

By the way, six of our seven new projects this year will produce gas, a lower carbon alternative to coal in power generation, and testimony to the fact that we intend to be a participant in the transition to a low carbon economy, not an observer.

That is also why we have our biofuels business here and a wind portfolio in the US. It is why we provide energy-saving fuels and invest in low-carbon start-ups.

Conclusion

Let me conclude with this thought. The Brazilian novelist Paulo Coelho wrote that the world's greatest lie is to believe that, at a certain point in our lives, we lose control of what is happening to us, and our lives become controlled by fate.

That is easy to believe when the world is changing so fast. Yet he is correct.

We do still have control of many important things that can shape our futures. We are responsible for our actions as people and our choices as leaders. We have great people in this industry and powerful tools at our disposal. Our job as leaders is to bring them together and build a new future.



If we develop agility, if we change our mindset and if we embrace the fourth industrial revolution, then we can succeed in a low oil price world.

As Nelson Mandela said, it always seems impossible ... until it's done. Thank you.