# New times, new challenges

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Good afternoon everyone.

Thank you Michael, and thank you to the team for inviting me to be here.

Offshore Europe is always a great event to get together and discuss our industry – and what a fascinating time to do this given the challenges we are currently working through.

It is also great to be back in Aberdeen – where like many of us – I started my career. And to see the industry in good spirits, despite the headlines.

There is no doubt these are tough times – none of us would deny that. People are losing their jobs and many are worried about the future. And we could spend our time talking about just how hard it is. It would be understandable to do that – some might even call it therapeutic! But I think we would all agree – it is probably not going to move the ball.

So I would like to spend the time today discussing some of the reasons to be optimistic – it is after all only 9 months until the next Aberdeen summer - we did just have one in case you didn't notice!

And maybe also share some of the things we are doing in BP to help make a difference.

So let's start with some of those bright spots.

First and foremost – we are in a growth industry and that is not going to change any time soon. All the forecasts suggest demand for energy will continue to rise. At BP – we believe demand will be a full one third higher by 2035. Much of this is driven by population growth - an additional 1.6 billion people will need energy in this time period – as well as increasing prosperity – especially in emerging economies.

Second – despite the environment, the industry here in the North Sea continues to invest billions of dollars to bring new barrels to the market.

Third, we have a highly skilled, highly experienced, and highly engaged workforce right here on our doorstep – the envy of many an oil capital throughout the world.

Fourth, the North Sea has extensive infrastructure in place, not to mention resources. Some 15 to 20 billion barrels – potentially – are waiting to be discovered, recovered, developed and produced. That is not insignificant.
And while we do need to drill more Exploration wells and push recovery factors above the mid-forties - this is a region that can still reward. Last autumn we announced the Vorlich discovery – and earlier this year GDF Suez announced the Dalziel discovery.

Fifth and finally, we have a clear licence to operate.
We have support from the vast majority in society and strong and progressive relationships between industry, government and regulator.

Put in any context - those are five powerful reasons to be optimistic.

But at the same time we also need to be realistic. There are of course some real challenges.
This is a mature basin with declining production. There are reliability and production efficiency challenges, not to mention high costs.
And of course, we have the backdrop of a 50% drop in the oil price.

So given all that - is the North Sea worth fighting for?

The answer is unequivocal – "absolutely - it is". That is after all why we are all here.

We have come through periods of low oil price before – $40 oil, $20 oil, even $10 oil for a brief moment.

Each low in the cycle has come with a unique set of circumstances. But the challenge has always been fundamentally the same – and our industry has always found a way.

It's a particularly tough assignment here - maximising economic recovery from a mature basin with oil prices halved – but we can do it. It's not "mission impossible".

We need to have a good plan and we need to stick to it. Here at least are our thoughts on what that plan looks like - it has three parts:

First - Learning from each other
Second - Investing in the future, and
Third - Innovation.

I'll say a little about each of those parts or steps, and then finish with a few thoughts about the future.

First then, what do I mean by 'learning from each other?'

Well – we all do things we are proud of - that we can share.

For example - at BP we've been devoting a lot of time and energy to fixing the basics – making our equipment more reliable, eliminating defects and improving production efficiency. And in doing so – improving our safety performance. It is starting to pay off.

In 2011 our plant reliability worldwide was 85%. 4 years later - it has increased to 94%. And with that improvement – we are finally beginning to see a major turnaround in our North Sea operating efficiency. Long overdue.

We're engaging the front line – they really know where we can improve – we just have to listen. Just to give you a flavour, one of the team in Egypt realised that by slowing down supply boats travelling to rigs – running them at 90% of the full speed – we would only burn 70% of the fuel. And if we kept the boat outside the 500m zone where possible (on a comfort Dynamic Positioning mode) – we would consume 80% less fuel. Small things but they all add up.

But if we really want to learn - it has to start with an admission that sometimes others do things better. Not easy in an industry with the pride that we have - but a vital first step. We have to be open to learning from our competitors and the service sector.

Let me give you an example which is particularly relevant for mature basins or assets.

We recently sold a set of assets to a small independent. They do some things very differently to us and they do them very well. One operation that cost us close to $1m - costs them closer to $0.5m. The question for our team was 'why'. So we started a formal learning exercise with them and it has been fantastic – we're learning a huge amount and applying it to our operations – and they're picking up some things from us as well – helping to make both our businesses better.

A similarly impressive example is the independents who have revolutionised the US onshore sector….and have continued to do so in the face of falling oil prices. One company stated this summer that they estimate for every dollar they spend on their Bakken wells in 2015, they are getting approximately 80% more reserves than they did in 2014.
That is a pretty phenomenal result. And the question we should all be asking is what can the North Sea learn from it.

And finally in terms of learning – and this is an area where I for one have to hold my hand up – it's about learning from our suppliers.

Previously when times became tough, it was normal to turn on the contractor. After the 2008-2009 crash, in reality we didn't approach the 'fit at 40' campaign in the right way.

Today we again need to be ‘fit at 40’ – but this time we need to do it more cohesively as a wider industry – collaborating along the supply chain – driving out waste – improving efficiency – and ultimately making changes that will sustain regardless of the oil price.

I would echo what Deirdre Michie of Oil & Gas UK said – that “by learning from our mistakes, we know that our focus cannot merely be on ‘cutting costs’, but must more fundamentally address the efficiency of the basin.”

And for the avoidance of doubt - rate cuts are necessary, very necessary - but we need more than just that. Ultimately we will win by driving out waste and driving efficiencies. And that starts with us – the operators.

This is where the learning comes in. We can learn a huge amount from our suppliers about how we run our businesses – holding up a mirror to us.

This year in BP we’ve sat down with many of our key contractors.
To pick two, we have had in depth sessions with Wood Group and Cape. At our request – they provided us with lists of areas where we could save money if we changed how we work.
These ideas range from decommissioning plans to scaffolding management, from streamlining contracting norms to reviewing man-marking ratios.
These are suggestions that are generating savings worth millions and millions of dollars.

It’s also about the industry working with its regulators and all parts of government effectively and efficiently.
The regulatory and fiscal reforms that have taken place over the past 9 months in the UK have been a major step forward.

That included the establishment of the new Oil and Gas Authority (OGA) – where we are already seeing the benefit of working with them on some tough issues - and also the current Energy Bill.
All those involved should be congratulated for their efforts and foresight.

I’m not sure we give ourselves enough credit for how good our track record of working together is in the UK.
“Step Change in Safety” is a great example of collaboration and sharing.
As is the work of OSPRAG and the Helicopter Task Force.

And what we have achieved with Oil & Gas UK is remarkable.
That degree of cross-industry collaboration is rare in other regions.

Here in the North Sea it should be a source of strength and of confidence.
So far I've talked a lot about Step 1 – learning from each other.

The next step is looking at how we invest for the future?

In BP for some time now – prior to the price fall – we have been focussing down our asset portfolio and getting really clear on how we prioritise our investment.
Brown field versus greenfield investment.
Deepwater versus shallow water.
Offshore versus Onshore.
And new basins versus strong incumbent positions in mature regions like the North Sea.

Ultimately of course, it's about understanding and playing to your strengths.
In the UK, you've seen BP divesting some less strategic assets. This allows us to concentrate capital and effort in the Central North Sea and West of Shetland.

Just last week, the government gave approval to the Culzean field development. As a partner alongside Maersk and JX Nippon, that represents three-quarters of a billion dollars ($0.75 billion) of investment for BP alone.

And that follows the $1 billion investment in ETAP we announced last month.
This will increase recovery from the ETAP network of fields and extend the life out beyond 2030.

We're looking to achieve exceptional results.
By that I mean results like the five-fold increase in production we're seeing from one of our wells in the Mungo field, in ETAP.
That came about through an innovative horizontal completion of a new reservoir section.

And across the field network we're investing in well stimulation and intervention work, retrofitting new gas-lift capability, a huge 2-year subsea pipeline upgrade project as well as drilling new wells.

That brings me to the third part of the plan – which is all about embracing Innovation.

The North Sea led the way in offshore technology, particularly in pioneering subsea and deepwater infrastructure.
But we are now in a new age – that of big data and digitisation.
It started with IT and Telecoms. Then it spread through other sectors.
Big data hit pharmaceuticals 20 years ago.

The aviation industry has been in this space for 30 years.
It's time for oil and gas to catch up and I think we're making a real start.

In BP we have a tool called Well Advisor.
It's a remote digital monitoring system that we use to monitor BOPs, casing running, and other equipment and activities.
It gives us real time data via a user friendly interface.
The casing running system uses sensors on the drill string to detect friction as the well is constructed, and alerts the drilling team before it becomes a problem.
It has been used in more than 400 runs of well casing, without a single casing getting stuck and that has saved an estimated $200 million capital expenditure in reduced non-productive time.

With the increased use of sensors and real time data acquisition over the past two decades, there has been an exponential growth in volume, variety, and velocity of the data we are gathering from our operations.
There's a much-quoted factoid that says 90% of the world's data was created in the last two years.

This presents us with a big challenge – how do we keep pace with this growth in data?

In our operations in Azerbaijan, for example, we receive several terabytes of sand management data every day. That's several thousand gigabytes (that clarification is supposed to be helpful). This enormous amount of data used to take – literally - several weeks to bring to shore on hard drives, load up and analyse.

And now, by investing in our digital technology, we are able to process and analyse this data, as well as integrate it with other production data, in real time - doing in seconds what used to take months. This frees up our technical staff to be able to use their time more efficiently, to make decisions using the latest data and to implement planned activity.

So how do we digitise our businesses to keep up with other sectors that are already doing this type of thing - and beyond?
I recently took my leadership team to Silicon Valley to look for some of the answers.
I think we need to think differently, and they certainly do that there.
According to the CEO of one of the companies we're partnered with there – these guys don't just think different, they smell different!
I think he meant it in a good way.

The key thing I took away from the visit was the sheer size of the opportunity that 'big data' offers us.
It can revolutionise how we drill wells.
How we optimise production.
How we improve the operational integrity of our assets and vastly improve our base management.

Take for example, a typical hydrocarbon processing facility.
There can be up to 50,000 different possible routes that hydrocarbons could take through that facility.
If you can map all those routes and work out the optimum paths, then you can optimise production.
We've currently got technology to do that in place on around 50% of our assets and we are working with Silicon Valley experts to extend the capability across to our more complex facilities.
The value once fully deployed is expected to be significant – adding up to 4% to production throughput.
Even at $50 oil I'm sure you can calculate that represents significant additional revenue.
And critically, it is low capex. We're talking about investing several million dollars in technology vs several billions in infrastructure upgrades.

One more example, if I may?
This is a trial currently underway in the North Sea.
We are using big data analytics technology to screen huge geoscience datasets.
The project took a well log dataset from over 5,000 wells and 250,000-square kilometres of 3D seismic data.

The data was screened to identify possible analogies to thin hydrocarbon-bearing sand in the Vorlich discovery well that was originally overlooked.
A 100 well dataset would normally take a geologist a month to analyse.
Using big data analytics, 5,000 wells were analysed in just a few seconds.
The possibilities of leveraging such big data management capability are obvious.

## Conclusion

This is an important point for me to finish on.

The generation of youngsters coming thorough school and university now are fully-fledged digital natives.

Digital for them isn't just second nature, it is everything, everywhere.
We need to change mindsets in this industry if we are going to persuade the next generation that oil and gas is the attractive proposition that we know it to be.

Yesterday I had the opportunity to meet with a group of BP trainee technicians and OPITO apprentices starting their careers in the industry
These were bright, motivated young people. They understood what was happening around us, and were driven to make a difference. I felt good about our future.

So what should be the pitch to young people like these?

The first point to make is this is not a sunset industry – far from it.
If you're interested in new technology, new ways of working and challenging yourself, then this is the place to be.

Second, this is an exciting industry.
This basin remains a challenging but exhilarating place to work. And the industry still offers the opportunity to take your skills around the world.
I hear Scottish accents everywhere I go – with a few Irish ones too – and long may it remain that way.

Third, we should be proud to work in this industry. We operate a vital and a truly worthwhile business.
It provides energy for development and growth, helping to lift millions out of poverty and raising living standards.
It helps people lead better lives.
And it is not incompatible with tackling climate change. Oil and gas have a big role to play in a more sustainable energy mix for many years to come.
Gas in particular will play a key part in a lower carbon future as a cleaner alternative to coal. And oil is being used increasingly efficiently in vehicles that are getting lighter and smarter all the time.

And finally - we need to tell our stories. We were the next generation back then - and I will never forget the sense of excitement as I drove from the West of Ireland to Aberdeen. I continue to be amazed at the life and the career this industry has offered me.

So for all these reasons, oil and gas have powerful and positive parts to play in the working lifetime of today's young people.
Indeed, so does the North Sea as a basin.

The investments we are making today will last until today's students are older than many of us are now.

Of course we want to see more – more exploration, more development, more production. And that's challenging.

But by learning from each other, investing in the future, and embracing innovation, I believe we can once again lead the way, compete on a global scale and truly inspire the next generation.

Ladies and Gentlemen. Thank you very much for listening.