



# Challenges and opportunities for the next 30 years – innovation and leadership

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## **Introduction**

Your Excellencies, distinguished guests, ladies and gentlemen

It is a great pleasure to be back in Abu Dhabi – and back at ADIPEC once again. This is indeed one of the world's truly great oil and gas conferences.

The year in between has gone by really fast.

I put this down to being so busy.

Busy for the industry as whole, not just BP. And particularly busy in the Middle East.

This region has long been an engine room of the industry. And it will always be a special place for BP – it is where we began.

But right now the Middle East is not just an engine room, it is also a flight deck.

It is where new ideas, new technologies and new partnerships are really taking off.

That is really important because we are an industry that faces a number of formidable challenges.

Actually, we always have done – right from when the first wells were drilled 150 years ago. But we have usually turned them into opportunities.

In fact, I think challenges and opportunities go together – they are two sides of the same coin. And that is what I see when I am here to meet colleagues and friends in Abu Dhabi and Oman, and in Iraq and Kuwait and elsewhere.

I want to talk a bit about those opportunities in a minute, but first, let's take a closer look at the challenges.

## **Challenges**

First, of these is the world's growing population. Anyone here today who is over 50 has seen the world's population triple. And if you're over 50, you will have seen the population of the Middle East grow four-fold.

Global growth is slowing, but is still set to go from 7 billion today to 9 billion by 2035.



Second, the global economy is growing. While there is a lot of short term noise, the long term trend is for the global economy to keep on growing at an average of about 3.5% a year out to 2035.

And third, energy consumption is growing. In the last two decades energy demand grew by about 50% and in the next two decades we expect about 40% growth.

Technically that's a slowdown, but it won't feel like one because 40% is the equivalent of adding another US and another China to world energy consumption.

Put those three growth statistics together and you have one big challenge in terms of the demand for energy.

And to that big challenge you can add global concerns about carbon as well as the conflicts and tensions affecting many of the oil and gas producing areas of the world.

Hardly surprising then to see some volatility is back in the oil price after a long period of stability.

Against that uncertainty we do know there is more than enough oil and gas in the ground to comfortably meet global demand through to 2050 – some 45 trillion barrel of oil equivalent in-place by our BP analysis.

And we have an impressive track record of meeting demand. Since 1980 the world has consumed 200 billion more barrels of oil than we had actually discovered back then – and we have found about a trillion more

When faced with a challenge, in our industry we put our heads together and we come up with the solutions.

### **Opportunities – discovery technology in Oman**

One of those solutions is to keep getting better at discovering new oil and gas resources, and the last few years have seen phenomenal advances in seismic imaging, in the computing power to analyse seismic data, and in the well drilling techniques and technology to access the resources discovered by advanced seismic.

We just know so much more today about the rocks beneath our feet – which ones contain oil and gas, and which ones are the best prospects for releasing that oil and gas.



There is a great example just a few hundred kilometres south-east of here, out in the desert.

The Khazzan field in Oman is one of the Middle East's largest tight gas accumulations. There is enough gas in the ground to be a major source of energy, jobs, growth and business for the country for at least the next 30 years, possibly much longer.

Having discovered the field back in 2001, it has provided an incentive to develop and deploy technology capable of overcoming a significant challenge.

Khazzan's reservoirs are a long way down and located in some of the oldest and hardest sandstone rocks in the world – as hard as the hardest granites.

A few years ago, no one could do anything about that.

Today we can call on advanced seismic data that enables us to determine how many wells are needed and where to drill them to get the best results.

We can deploy drilling technologies that can turn a hard rock drill bit on its axis and cut horizontally along a reservoir 5km below ground.

And we can install instrumentation that continuously monitors the wellbore so it can be steered along the most productive path through the reservoir.

It's a great example of the industry evolving its technology as we take what has been learned in the shale fields in the US and adapt it to the sandstone of Oman.

And it's also a great example of transferring skills to a new workforce, over 70% on the Khazzan project being Omani nationals. And we're proud to support them with a range of training and development opportunities.

### **Opportunities – recovery technology in Abu Dhabi**

There is another aspect of these technological advances that is highly relevant to the mature fields here in the Middle East.

As a result of the progress being made in enhanced oil recovery techniques, the typical oil field recovery rate of 35% is fast becoming as much a part of history as the theory of peak oil.



Actually, together with ADMA-OPCO, BP is looking to develop tailored EOR programmes to help push the recovery rate beyond 70% from the carbonate reservoirs in offshore Abu Dhabi.

And just today, here at ADIPEC, we are announcing a new technology that will help to speed the process of that development work, and other EOR development.

We call it the Core Flood Robot – which is an automated robotic system.

In effect, it gives us a 10-fold increase in our capacity to test out new EOR technologies on core samples of rock taken from reservoirs.

Given the timescales involved, that means a saving of years on development, not just months.

We have experts here today on the BP stand who can tell you more about it.

The big point to reflect on here is that we have probably reached a moment globally when the potential for enhanced recovery from known hydrocarbon resources exceeds the potential from new discoveries.

At our Prudhoe Bay field in Alaska we are now targeting a recovery rate of over 60% – which is about 5 billion barrels more than originally projected in 1969. Or the equivalent of discovering a whole new supergiant field.

Every reservoir is different, but that speaks of the future potential ahead for the world's great giants like Burgan, Kirkuk, Khazzan and Rumaila.

### **Opportunities – new partnerships in Iraq**

I was at the Rumaila field in southern Iraq just two months ago, as we marked the production of the two billionth barrel since the formation of the Rumaila Operating Organisation in 2009.

Rumaila's success today is the story of an opportunity to form a new kind of partnership – one between a government, an international oil company, a national oil company, and a national oil company operating internationally.

As the scale, cost and complexity of energy projects continues to rise, we will increasingly need new kinds of partnerships like this – ones where we share our distinctive capabilities and resources for mutual benefit.



At Rumaila it's a partnership that brings together the Government of Iraq, PetroChina, and BP.

Iraq's South Oil Company provides a motivated workforce of 6,500 Iraqi nationals, and years of wisdom on the field.

PetroChina provides drilling, manufacturing and engineering resources.

And BP provides leadership drawing on our experience of operating giant fields around the world.

The supply chain supporting Rumaila now provides work for over 20,000 people in Basra.

The skills of thousands of workers have been raised.

And production from the field has increased by around 40% – helping the Iraqi oil industry to get back towards peaks of production of the late 1970s.

### **New proposition**

So across the Middle East and around the world – new technologies, new partnerships and new ideas are turning challenges into opportunities.

There's one other thing that's new, one which is very important for leadership in our industry.

And this is a new proposition to investors.

As an industry we are not only under pressure to prove that we can deliver the energy the world needs.

We're also under pressure to do so more cost effectively than has been the case in recent years.

As an industry we face tough questions about cost overruns and late schedules.

And we face tough competition for capital from sectors like telecoms, IT and pharmaceuticals.

The investment community is rightly questioning our ability to generate a competitive rate of return.



This is where leadership comes in.

### **Leadership**

- to demonstrate capital discipline by making the right calls at the right time on investment;
- to demonstrate excellence in project execution – on time and on budget
- to demonstrate operational efficiency in the way we work our assets. .
- and of course to do all of that with safety remaining the top priority.

My own view is that the drivers of safety are in most cases the same as drivers of execution and efficiency – namely careful, disciplined, systematic operations. A safe business is a good business.

### **Conclusion**

That is what we are aiming for in BP, and I see it happening elsewhere with many companies. So I'm optimistic about where we are as an industry – even with that every-present back-cloth of uncertainty.

The challenges and uncertainties of today are new ones that are only likely to get bigger.

However, I believe we can meet them with a blend of new technologies, new partnerships, and new ideas. Underpinned by a new investor proposition.

I look forward to these new opportunities and to continuing to work with you in this great industry.

Thank you.