



Towards the energy future – a pragmatic vision

Speaker: Iain Conn

Title: chief executive, Refining & Marketing

Speech date: 28 June 2010

Venue: World Forum on Enterprise and the Environment

Introduction

It's good to be here in Oxford this morning. My warm thanks to the World Forum on Enterprise and the Environment for the kind invitation. I would like to touch on three things. The first must be the tragic accident of the Deepwater Horizon drilling rig in the Gulf of Mexico and its consequences.

The second is to offer some thoughts on how exploration for oil and gas is linked to the necessary journey from the energy realities of today to the energy world of tomorrow.

And finally I would like to suggest some conclusions about pragmatic energy policy in Europe and the United States and the opportunities for alignment and partnership.

Deepwater Horizon

As we have said many times, the explosion on the Deepwater Horizon was a tragic accident and should not have happened. We deeply regret the loss of 11 lives on the rig and the subsequent damage to the environment and livelihoods of the people of the US Gulf. On behalf of BP, I want to say how truly sorry I am. As one of the responsible parties, and operator, our focus since the accident has been on preventing the flow of oil, cleaning up the spill and meeting all legitimate claims for losses. We are only one of many parties to this catastrophic incident. However, as a company we have without hesitation stepped up to the plate and accepted our responsibilities. At this moment over 39,000 people are involved in the response, including many BP staff and contractors, and 110 planes and almost 5,000 vessels are engaged on this task. The cost to date is put at over \$2.6bn. Through a huge collaborative effort with our industry colleagues and the US authorities, we are using all the resources at our disposal to address this challenge. We are making good progress in collecting greater quantities of oil from the leaking well and in drilling two relief wells intended to seal the leak around 18,000 feet below the surface. The completion of these relief wells is currently scheduled for August but as reported they are making good progress. The oil from the leaking well has sadly resulted in significant environmental damage and in serious disruption to the economy and personal livelihoods of the citizens of the US Gulf Coast. On 16th June BP announced an agreement with the US Administration, to establish a \$20 billion fund to meet all legitimate claims from those who have suffered directly as a result of the spill.

For the citizens of the Gulf, this provides assurance that the financial resources will be available to meet legitimate claims without undue complication or delays. For BP, the fund represents a phased and manageable cash obligation.

This is a massive commitment of resources by a private business. It is only possible because BP is a strong and viable company and it is in everyone's interests that it remains a strong company able to meet its commitments. Importantly this was recognised and confirmed by the President of the United States after our White House meeting and again this last weekend at the G8/G20 meetings. It is also fully understood and recognised by senior government leaders in the UK and Europe.



This was a complex accident involving, as already published by BP, the failure of at least seven layers of protection. A number of investigations are in progress by the relevant US authorities and within the company. It will take time to establish a clear understanding of the events that took place and the lessons to be learned.

For our part we are committed to making sure that this process is open and transparent and the lessons are made fully available and widely disseminated in the industry and amongst the appropriate regulatory authorities.

We should also recognise that the Deepwater Horizon accident raises wider questions about energy policy and energy security.

Turning now to energy supply and demand

The reality is that the world needs oil and gas. Global primary energy demand is forecast to increase by 40% or more by 2030 compared to 2009. The majority of this increase will be in the non-OECD markets as shown on the left. Although renewables will grow quickly, this is from a relatively low base and oil and gas will remain indispensable to energy supply over this period – while energy not supplied from these sources will be very largely provided by coal. This is indicated on the right hand chart with the growth in gas and coal clearly indicated.

The world also needs oil and gas production to be safe and secure. Nearly 5000 deep water wells have been drilled globally in over 1000 feet of water since 1990 without catastrophic incident. The Deepwater Horizon demonstrates that there are risks hitherto seen as manageable and these need to be properly understood, assessed and new solutions developed.

However, it is also important to understand why the Deepwater Horizon well was being drilled. The Gulf of Mexico currently supplies around 30% of all US oil production and the deep waters account for an important part of future US oil reserves. The geographic proximity of these resources to the US market diversifies and mitigates the geopolitical risks of overall US energy supply.

The development of other deep water resources globally adds to this diversity and risk mitigation – whether offshore Brazil, Angola, other parts of West Africa, Mexico, Egypt, Libya, or the Russian Arctic. In reality all of our energy supply has been made safer and more secure by these developments.

This is not to say that the risks of working at these extraordinary technological frontiers should be underestimated. But it does imply that the understanding, assessment and management of these risks is a matter of strategic importance and not only a local operational issue.

Following this event, each region will face the same challenges of risk assessment, contingency planning, failsafe system design and redundancy, regulatory oversight, oil spill response, sub-sea intervention capabilities, insurance mechanisms and the treatment of irreducible risk.

This in turn suggests to me that there are significant grounds for a shared international interest in the mechanisms through which the relevant technologies, operational procedures, risk assessment processes and incident response capabilities can be most widely shared and assimilated.

BP is well known for oil and gas exploration & production and manufacturing & marketing of products derived from fossil hydrocarbon sources. We are also, however, dedicated to making a material contribution to a lower carbon economy.



BP's \$8bn 10-year commitment to Alternative Energy was laid out in November 2005 and we are on track having invested \$4bn to date.

BP has also done a lot of thinking on how we move from where we are today to a lower carbon future. I would now like to turn to this topic focusing both on transport and power generation.

Practical energy pathways

The objective for us all is to have access to affordable, efficient, safe, secure and progressively lower carbon energy at a scale to meet demand.

Copenhagen signalled the end of the beginning - the end of a period of global debate with a focus on 2050 and the 22nd century stabilisation criteria.

It also signalled the start of a phase dominated by the need to make practical, material and deliverable choices about the pathways to the energy future – and to make them now.

Transport pathways

Let's look first at vehicle transport. The chart shows declining CO₂ per km driven versus the purchase cost of vehicles with new technology relative to conventional gasoline cars today. The key is to distinguish between near-term and longer-term options. In the longer-term, battery electric vehicles and hydrogen fuel cells will play a part in vehicle transport but will need much higher availability of decarbonised grid electricity to deliver full CO₂ reduction potential. The current average emissions for battery electric vehicles in Europe remains above that which can be achieved with hybrids. In the shorter term, by far the most effective pathway to lower carbon transport is to make existing vehicle engines more efficient. There are major gains to be obtained from advanced gasoline engine technology in particular. Combined with step by step hybridisation, we can see the potential for nearly halving CO₂ emissions per km at a much lower cost than for a battery electric vehicle.

When such a vehicle pathway is combined with the use of sustainable biofuels, it becomes even more effective in reducing CO₂ from transport. For this reason, BP is already investing heavily in the global supply of sustainable and CO₂ efficient sugar cane and ligno-cellulosic based gasoline components. A key point is that these technologies are either already available or experiencing valuable breakthroughs and build on existing deep industrial strengths and capabilities. We can be confident that such an approach can deliver progressive, achievable and material efficiency gains and CO₂ reductions in the transport sector. And we should not forget that transport accounts for about 20% of global GHG emissions. The pathway for transport is clear and can be pursued today, making a material impact.

Power pathways

Let's turn now to pathways for lower carbon electrical power generation.

Economic growth in the developing economies will demand huge additions of global electrical power capacity by 2030. The types of capacity installed will impact energy security and CO₂ emissions to 2050 and beyond. If we make the wrong decisions now, we are locked in to the consequences for a long time to come. There are only a small number of really material things which can be done.

The first and most important, again, is energy efficiency, in power generation, consumption and grid transmission and balancing.



Then comes the use of more natural gas, together with nuclear in some jurisdictions and the potential use of carbon capture and storage for some coal applications. Renewable sources will also play a growing role and must be supported strongly, but we need to be realistic. Even at very fast growth rates, renewable energies cannot provide the scale of capacity additions needed on a global basis with the required level of certainty until 2030 and beyond.

Why are we so clear in putting natural gas at the top of the list of supply options? The answer is that natural gas in power generation is four times as cost efficient compared with coal, producing around half the CO₂ emissions of coal at less than half of the capital cost. This chart shows how a Combined Cycle Gas Turbine (in blue) produces under 400 kg CO₂/MWh, at a capital cost of around \$1000/kW, compared to nearly 800 kg CO₂/MWh from a Super-Critical coal plant at a capital cost of around \$2500/kW.

And, in addition, the flexibility of gas fired plant can be very effective in complementing the natural intermittency of wind and solar power operations. On this basis we firmly believe that natural gas should be seen both as a preferred transition fuel to a lower carbon economy and as a fundamentally advantaged energy supply option in its own right.

Power pathways

Is there sufficient supply of natural gas? Let's start with Europe.

Contrary to many perceptions, Europe benefits from access to a range of diverse energy sources and in particular for natural gas.

Many Europeans worry about gas supply dependence on Russia. Russia is indeed an important supplier but complemented by many other sources including indigenous gas, Norway, North Africa, the Caspian basin and growing volumes of liquefied natural gas (LNG). Russian gas supplies to Europe have in fact been decreasing – not increasing – as a proportion of gas consumption. In the future, Russian suppliers will need to compete vigorously against many other options in order to maintain market share.

It should also be added that an effective internal energy market and adequate infrastructure availability, forms the other half of the European energy security equation. Good progress has been made but much still needs to be done. The European Commission will continue to play a critical role in promoting a competitive and effective European energy market.

Energy policy

Europe needs the right policies to promote progressive and effective transport and power generation pathways across the whole economy. As BP we strongly supported the December 2008 European Union Energy and Climate Change package and the key instruments it put in place, including emissions trading, renewables mandates, biofuels sustainability criteria and fuel efficiency standards.

We believe that this package has provided a strong basis for the long journey towards a more efficient and lower carbon energy economy and the pursuit of the pathways I outlined earlier.

Looking briefly at the United States, it is striking how much is shared with Europe in terms of energy policy fundamentals.



As with Europe, the United States benefits from a wide range of diverse energy sources including natural gas. Furthermore, technological advances and economies of scale have brought a huge new energy resource to market in the form of unconventional gas.

The development of tight gas, coal bed methane and shale gas has doubled indigenous gas reserves and the US has once again overtaken Russia as the largest natural gas producer in the world.

There is another important impact. Large volumes of liquefied natural gas (LNG) capacity are being developed around the world to supply the US market. With the growth of US indigenous reserves, much of this production is being displaced from the US towards Europe, where it is adding both to supply and price competition in the European markets.

In this sense what is valuable for the US is definitely also valuable for Europe. And the same transport and power pathways apply also to the US.

Copenhagen demonstrated the difficulties of reaching agreement between 192 countries.

In my view there is a real opportunity to look again at the benefits of a serious partnership between Europe and the US.

Europe and the US account for 34% of primary energy use. The trans-Atlantic relationship still accounts for the largest part of global trade and investment flows and of scientific and technological capital. Our commerce and industry are structured in similar ways and have huge areas of overlapping investment, trade, technology and ownership. Within these industries, we have similar advantages of accumulated capital, expertise and infrastructure and comparable challenges of modernisation, renewal and global competitiveness.

Policy and regulatory choices are of course a matter for our respective administrations and legislatures. But given the scale of global challenges, it must surely make sense to look for alignment and common interest across the Atlantic in the way we approach these issues - not as a formal agreement, but in the form of a shared and committed intent.

This does not mean that we necessarily need the same instruments of policy. In terms of setting an economy-wide price for carbon, the emissions trading system is well established in Europe but other approaches may be taken in the United States. The issue is not the regulatory instrument but the direction and pace of policy implementation.

In energy policy there is a huge opportunity to move at a broadly similar pace on both sides of the Atlantic, including pricing of carbon into the economy, and in a similar direction in a way that strengthens our shared economic interests and does not produce major economic dislocations.

If Europe and the US can move together at a broadly similar pace in terms of the timing and magnitude of key signals into the marketplace, we can only strengthen both the US and European economies and the competitiveness of the trans-Atlantic economy in the global picture.

As in many other historical examples, if Europe and the US align, then other parts of the world simply cannot ignore the intent, and will almost certainly follow. I believe this is true of other major powers and particularly China. In short while the UNFCCC process must continue, I am a believer in such a G3 alignment in accelerating energy policy development.

It seems to be a good moment to take up this challenge.



So finally, let me say a few words in conclusion. My company is in a crisis and there is no doubting the scale of the challenge ahead of us. However, every crisis provides the incentive and opportunity for rethinking and this one is no different.

We deeply regret the incident in the Gulf of Mexico and we will stick with our commitments to make good the damage. But we also see real opportunities to reassess the way we all look at energy supply risk and diversity and the way we think about the pathways to a safe, secure and more efficient energy future.

The practical material action necessary for both transport and power generation are clear today. Business, government and civil society need to stop "polishing the 2050 diamond" and get into action.

And between jurisdictions there is much we can achieve together and not least through our common interests cross the Atlantic.

Thank you for listening.