



# European energy – global choices

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Ladies and Gentlemen,

My warm thanks to the German Marshall Fund for hosting this evening and to Angela Stent for making the time to join the discussion.

I was privileged to take part over the weekend in the GMF Brussels Forum. It has established itself as one of the top international policy events in Europe and lived up again this year to its tradition of lively debate. My congratulations to all the organisers and participants.

It sometimes happens that change is so dramatic that not only the appearance but the substance of life is factually and fundamentally altered. Such a moment occurred in 1989 with the fall of the Berlin Wall. Such a moment seems to be happening again now in North Africa and the Middle East.

Such a moment tragically has occurred for Japan and events like these can overtake industries and companies as well as countries. Fukushima could well change the near-term outlook for the nuclear industry, just as the Gulf of Mexico tragedy asked fundamental questions of my industry about safe guards for deepwater drilling.

For individuals, companies and countries, change can require more than its recognition. It can demand more than gradual adaptation. It can force choices on us. It can make us decide between one direction and another, between one course to the future and another.

As always today's choices will shape tomorrow's reality. What has been described as the "awful obligation of decisions" confronts us all from time to time and such a time is now.

The economist John Maynard Keynes was caught up in the Great Recession of the interwar period of the 1920s and 1930s. He believed particular choices were possible and desirable. Challenged about his proposals he retorted "When the facts change, I change my mind. What do you do sir?".

My subject this evening is the choices facing Europe in the field of energy.

Let me start with some of the facts and the challenges they pose.

For sixty years now BP has published our Statistical Review of World Energy – the authoritative facts and figures of the global energy scene.

This year is the first time that we have also published our forward projections rooted in this data.

The Energy Outlook 2030 is not a 'business as usual' extrapolation. Instead, it is our best judgement of the likely path of global energy markets to 2030, taking into account anticipated policy, technological and economic changes. It is in many ways a 'reality check', a best view of the future energy world weighed on a balance of probabilities. As BP Chief Executive Officer Bob Dudley says in



the introduction, 'it is a wake up call, and not necessarily something any of us would like to see happening'.

Let me pick out some key themes.

Energy demand is driven by population and GDP growth. By 2030 global population is projected to rise by around 20% but global income is projected to double. Energy consumption will continue to grow as a result.

However, the upward pressure will be eased by a systematic reduction in energy intensity – the energy needed to produce one unit of GDP.

This chart shows the development of energy intensity for a range of countries from 1820 to the present day.

The analysis shows that energy intensity peaks at the high point of heavy industrial development. Thereafter we see a general convergence in all economies towards a consistent and much lower intensity of energy use.

This next chart sets out our assessment of global energy consumption and energy mix from 1990 through to 2030, taking into account this convergence in energy intensity.

We still project growth of 39% in global energy consumption by 2030 – a huge absolute increase - but much lower than the expected doubling or more of global GDP.

Two major messages emerge.

The first is the changing balance of the energy world. In 2010 non-OECD and OECD total energy consumptions are similar. By 2030 we expect the non-OECD to move ahead by 68%, while the OECD will remain nearly static.

This rebalancing has significant implications for the geopolitics of global energy and I will return to these later.

The second major message is on global energy mix, which will change gradually. Energy evolution has never been quick due to the large "installed base" and the evolution of technology. However, there are some big messages in our projections. You can see that oil grows slowly, gas takes share from coal and oil, and renewables grow but from a relatively small base.

This chart shows the same data but as a percentage of world primary energy.

Although continuing to grow gradually in absolute terms, it can be seen that oil is declining as a proportion of total world primary energy, while coal maintains its share, growing significantly in absolute terms.

We project that by far the fastest growing source of energy to 2030 will be renewables. These include biofuels, produced and traded as a global commodity, which by 2030 could meet about 9% of transport fuel demand. However, by 2030, renewables including biofuels will still account for only some 6% of global primary energy consumption.



We expect that hydro and nuclear will account for another 7% each and the balance of the remaining 80% will be split almost equally between oil, coal and natural gas.

Of these, natural gas will increasingly be the fuel of choice for power generation. It is a plentiful resource, flexible and economic and burns with half the CO<sub>2</sub> emissions of coal, and half the levelised capital cost.

It is also ideal for matching with intermittent renewable supplies.

As a result, we expect natural gas to be the 'big winner' amongst the hydrocarbon fuels, gaining market share from both coal and oil.

I said at the beginning that not all the news would be welcome.

This chart shows the projected trend of global CO<sub>2</sub> emissions in line with these expectations. Even with reducing energy intensity, changing energy mix and tightening national, regional and international climate change policies, we forecast global CO<sub>2</sub> emissions to rise by 27% by 2030.

Under much more aggressive climate policies, we project that we will still not get near to the UNFCCC and EU stabilisation target of 450 parts per million of atmospheric CO<sub>2</sub>.

Ultimate stabilisation levels will not be known until well into the next century. However, our action and choices in the next 20 years, particularly in power generation, will set the likely path.

It is a sobering reflection.

The purpose here is not to step back from the challenge but to caution a sense of realism into the European energy policy debate. It may be asserted that the promotion of renewables will create employment and substitute for oil and gas imports.

However, we will still be hugely dependent on fossil fuels in 2030. If the remainder of the world is using a more cost-competitive and carbon intensive energy mix, there will be economic and competitive consequences.

The responsibilities of choice in energy are huge and deserve to be considered with the greatest care and objectivity. What is clear is that Europe cannot solve the equation for itself alone. We need to establish our own policies and choices and engage with other major blocs.

The UNFCCC process is necessary, but "G194" will not reach agreement quickly. It requires alignment between major blocs to accelerate progress.

For the rest of my talk I will briefly address Europe's own energy policy choices before spending most of the time looking at Europe's energy relationships and choices with Russia, China and the United States.

Let me start with Europe.

A couple of weeks ago, the European Commission published its Roadmap to a Low Carbon Economy for 2050. We see it as a landmark event.



It is the first time that the Commission has taken such a long-term view of energy and climate policy. Further Roadmaps will focus on transport and energy out to 2050. But the essentials are already clear.

The Commission has confirmed the objective of reducing greenhouse gas emissions to 80-95% below 1990 levels by 2050, in line with the objective of keeping the eventual global temperature rise from climate change below 2°C. The document sets out milestones for 2020, 2030 and 2040 based on an analysis of cost effective pathways to the eventual destination.

In previous speeches I have talked about policy choices inside the European Union to meet the triple energy objectives of security, competitiveness and climate change – including choices in technology, energy mix, carbon pricing and effective markets.

As I travel to various countries, the same eight areas of public policy which are central to resolving this dilemma are evident. Four are easier to achieve, such as encouraging competition and promoting research and development. Four are much harder – such as long-term and economy-wide price signals for CO<sub>2</sub>. The EU is a leader in many of these areas, but most governments find even the easier ones very challenging.

Last year I built on this and proposed clear, pragmatic pathways to a lower carbon future for both transport and power generation.

By far the most efficient way forward in transport is greater efficiency of existing internal combustion engines, followed by progressive hybridisation and combined with use of the correct biofuels. This can significantly reduce emissions from transport, which is already only 23.3% of global GHG emissions. For power generation by far the most productive pathway is energy efficiency programs, greater use of natural gas in combined cycle gas turbine plant, growth in nuclear and ultimately renewables. As I mentioned earlier, on a cost per kilogram of CO<sub>2</sub> avoided per unit of power generated, natural gas is around four times more efficient than coal.

These internal policy choices rightly remain a major preoccupation and we need to get on with them, but in reality we understand the basic objectives and direction of travel. My contention is that the really big choices we now have to make as Europeans are about our external energy relationships. Without getting these right, the world will not ensure sufficient progress and our policy implementation would become dislocated, potentially damaging Europe.

As the next chart reminds, Europe is undoubtedly a global energy power but in the company of many other powerful interests.

And these interests are changing.

In 2010 China became the largest global energy consumer, accounting for 20% of global energy consumption. India and Indonesia are following and Brazil is emerging as both a major producer and consumer.

All of these shifts are real and substantive and cannot be wished away. So where does Europe stand in the global energy world and what are the risks and opportunities of energy policy thinking out to 2030 and beyond?

I want today to focus on three key relationships and the choices that Europe can make that will shape our energy future and make a major contribution globally. The first is our relationship with Russia. The second is our relationship with China. And finally I want to come to the transatlantic relationship – one that still has great importance, and in the matter of energy policy, significantly so.



Let me turn first to Russia.

Geography and history ensure that Europe and Russia are bound together in the same political and economic space.

We may ask a theoretical question about the need for a Europe/Russia relationship. In reality I believe we have no choice – we are obliged to live and work together and the only choices we have are about how well or otherwise we go about this task.

Of course the long years of the Cold War had the inevitable effect of freezing attitudes and perceptions on both sides of the divide. In some ways, there was a degree of comfort in knowing exactly where everyone stood on this immovable and sometimes hostile stage.

However, the end of the Cold War in turn revealed inter-dependency and opened up future opportunity as well as threat. It has inevitably been a bumpy road and it should surprise no-one if the path of Europe/Russia relations does not always run smoothly.

However, there is also much credit to be taken.

The political restructuring of almost an entire continent has been accomplished without descent into general war. Europe and Russia have put in place institutional links that ensure dialogue and provide mechanisms for problem solving.

At the same time, closer business links have done much to underpin the substance of the relationship.

My own company can trace its presence in Russia back to 1989, our first major investment to 1997 and the formation of the 50/50 TNK-BP joint venture, one of Russia's largest oil companies, to 2003. BP is absolutely committed to remain the leading foreign energy partner with, and in, Russia and all of our relationships with the Government and Rosneft are very important to us.

Our announced joint venture with Rosneft for Arctic exploration, and an exchange of company shareholdings, was only our latest step along this important road. You will have seen we have some issues with our TNK partners over this. We are committed to resolving these so that we can deepen our pre-existing partnership with Rosneft.

Again it is not surprising that the process is not easy and reconciling different interests can be testing. However, we remain convinced that there is much to gain on all sides from successful partnership.

Resources, technologies, operational know how, financial capability and project management capabilities, can all be successfully combined to produce something that is definitely greater than the sum of the parts.

The interdependence between Europe and Russia is not only an idea but a substantial reality – and nowhere more clearly than in energy.

This chart shows the extraordinary network of natural gas pipelines that join our continent from the depths of Siberia to the core European markets. Here the existing gas pipeline network is shown in red and proposed new gas pipelines in blue.

The pattern for oil pipelines is basically similar.



As you can see from the table, Russia accounts for over 30% of European oil supplies and around 23% of natural gas, and in total supplies about one quarter of European energy requirements. The percentage of imports originating from Russia is even higher.

The infrastructure that makes this possible should be seen not as a liability but a valuable asset. It joins producers and customers and allows both to find competitive advantage in a global market.

Importantly for Europe, it also provides a competitive basis for energy to continue to flow west, even as demand continues to grow in the east. It is also reliable. Russia has kept energy supplies flowing to Europe even throughout the Cold War.

Of course this infrastructure is not and cannot be exclusive in terms of access within the EU market. Europe will also inevitably encourage other gas infrastructure systems such as the Southern Corridor, North Africa pipelines and LNG re-gasification.

This chart gives a view of the diversity of natural gas options open to Europe through to 2020 and beyond. To this we can add the potential for unconventional gas within Europe's own boundaries.

There are many choices but a stable and mutually beneficial relationship with Russia will also strengthen the security of supplies from the Caspian, Central Asia and the Middle East. Except in the unlikely circumstance that Europe becomes self-sufficient in gas due to unconventional gas availability, such as shale gas, Russia will in all circumstances remain an indispensable partner in Europe's energy mix.

So if Europe and Russia have no choice except to live and work together, what choices can Europe make about the relationship?

My strong conviction is that we must continue to embrace and engage. We have everything to gain from working together and much to lose from standing apart. We gain energy security, co-investment opportunities, key sources of competitiveness for our economy and stability on a long border in an increasingly uncertain world.

It is true that to be effective in this relationship, Europe needs to find a shared vision, meaningful coordination and a consistent approach. It is not at all unreasonable for Russia to ask us for the same thing.

But in doing so we should be clear that the objective is not to divide but to ensure a strong platform for engagement in support of our long term common interests. We must learn to trust each other in pursuit of this objective.

It is an objective that should inform all of our actions with Russia.

Now let's move onto another critical energy relationship - that with China.

I've recently returned from another visit to Beijing and a review of our Chinese businesses. BP is also the largest foreign investor in the energy sector in China. As always I was struck by the pace of change and also the seriousness with which the Chinese authorities recognise the challenge of sustainability.

Over the last 10 years, Chinese GDP has almost tripled and energy consumption has more than doubled. This growth came with high local environmental cost and has made China the leading global emitter of energy-related CO<sub>2</sub> according to the IEA.



The Chinese leadership recognises that this energy intensive pattern of growth is not sustainable. In the last Five Year Plan ending 2010, they set a target to reduce energy intensity of GDP by 20% and their records show they achieved an outcome of 19.1%.

China also has one of the world's largest programs to develop non-fossil fuels. The intention is for non-fossil fuels to account for 15% of total energy consumption by 2020.

The next Five Year Plan, discussed in the annual Parliamentary session concluded last month in Beijing, focuses on these issues of energy mix and sustainability.

The Chinese Five Year Plan has the intention to:

- Increase the share of non-fossil fuels in total primary energy consumption from 8.3% now to 11.4% by 2015
- Increase the share of natural gas in the total energy mix from 4% now to 8%
- Reduce energy GDP intensity by 16%
- Reduce CO2 GDP intensity by 17%

However, despite all these efforts, we need to recognise that China is still a developing country, with GDP per capita on a Purchasing Power Parity basis of around \$6,000 compared to \$30,000 for the EU27 and \$45,000 for the US.

Further growth will continue to drive up global energy demand. We expect Chinese total energy demand to increase by 80% over the next twenty years, accounting for over 40% of the global energy demand increase in this period.

This chart shows the impact on Chinese oil and natural gas consumption and imports. The darker green shows combined domestic oil and natural gas production. The lighter green shows total oil and gas consumption and this illustrates the import 'gap'.

Chinese oil demand is expected to more than double by 2030, accounting for 65% of global oil demand growth from today. By 2030, as shown on this chart in red, oil import dependency is projected to be at levels similar to Europe. However, gas import dependency, shown in yellow, may level off or reduce after 2020 as a result of the development of indigenous unconventional gas.

My conviction is that Chinese energy consumption should not be seen as a cause for global alarm nor a threat to good energy policy. But again we need to be clear on the choices facing us.

The reality is that China's success is increasingly at the heart of a prosperous globalised world. This is just as true for energy. China's success in energy diversification, efficiency and adoption of lower carbon technology is a major economic opportunity as well as critical for global energy policy success.

China's ability to deal effectively with its environmental challenges will largely determine the global outcome. The global financial system has also been largely stabilised by Chinese finance. Chinese imports underpin European export demand and Chinese exports satisfy our consumer needs and support our own competitiveness.

So in fact there is no choice - in our own self-interest - except to engage with China at every stage of its journey. China's success is our success.



As business we may worry – with some reason – about security of intellectual property and access to investment opportunity. We must of course seek the appropriate means to protect these and other interests. But equally we should be clear that non-engagement is no choice at all.

How we engage is a choice. Do we align around our common interests or fragment in the traditional but ultimately futile search for narrow commercial or national advantage.

So I would like to see engagement with China projected to the very front of the European agenda and in energy to do so more powerfully at the EU level. We need coherence at European level on analysis, assessment, representation and strategy.

Dare I say we need the new External Action Service to seize the moment and the Energy and Trade Commissioners to give close support.

China is not only changing within its borders, it is also changing the world. This change will be an important part of our future energy policy.

We need to understand and make sure we are also part of this change. The EU can promote alignment on a coherent approach to energy policy, encourage partnership with European energy companies, both in Europe and in China, and co-develop and deploy key research and technologies.

Finally I would like to turn to the transatlantic relationship. The EU and US remain the most powerful, productive and interconnected centres of economic activity in the world. Trade between us is vast, so is the flow of investment both ways.

Our industry and commerce is largely at comparable stages of development, with similar capital stocks, significant cross ownership and a broadly common management approach.

In energy, much of the global capability in terms of technology, capital and project management, originates still from major transatlantic companies. We also face the same challenges in terms of energy policy at a time of economic recovery.

There are also differences of course. In Europe we will in the future import most of our oil and an increasing proportion of natural gas.

The US will continue to import much of its oil but, in contrast to Europe, will also remain a major oil producer and will certainly be a major producer of natural gas, where unconventional sources give it a good chance of complete supply independence for the next hundred years or more. Given this reality, it is amazing that the coal lobby is as successful in resisting the promotion of natural gas.

These differences should not obscure our wider interests. On both sides of the Atlantic we are looking at the same far-reaching changes in global energy and the same range of fundamental policy choices.

In a multi-polar world we share a common interest in aligning our key global relationships for the future – whether with Russia, China or the other major emerging economies. We should seek to do so as friends as well as competitors.

For BP recent events have indeed tested that friendship. What happened in the Gulf of Mexico last year was a tragedy that should never have occurred. We have had to demonstrate our good faith not only to the US Administration but also to the American people.





We need to earn back the trust of state and federal leaders and the trust of Gulf Coast residents and customers, as well as that of our own industry. We are determined we will once again restore that trust and I realise this requires action not words.

So what are our real choices in the transatlantic energy relationship?

Firstly we must stop taking each other for granted and stop any hint of moral superiority or disdain. It also helps tremendously if Europe can signal that it is prepared to take its own full measure of responsibility in this.

From this perspective, we should give great credit to German Chancellor Merkel and former Foreign Minister Steinmeier for re-energising the transatlantic economic dialogue back in 2009. The Transatlantic Energy Council - supported by Secretary of State Clinton and Ambassador Morningstar for the US and High Representative Ashton and Energy Commissioner Oettinger for the EU – has already shown itself to be a genuinely valuable part of that process.

More broadly, the leadership of UK Prime Minister Cameron and French President Sarkozy in recent weeks, has reminded us that as Europeans we can also 'step up to the plate' when it is our place to do so.

Second, while we can and should continue as healthy competitors across the Atlantic, we must also recognise our wider shared interests.

In energy policy there is much to gain from an aligned transatlantic approach – whether on energy markets, financial regulation, carbon pricing, new energy technologies or key international relationships.

And it makes no sense at all to divide our own market place down the middle by ill-matched policy and regulation, still less by fragmented international action.

Even in commercial competition, we may do well to increasingly recognise the transatlantic economy as a single energy market in the face of intense global competition.

When I last spoke in Brussels, I discussed the importance of the US and Europe being aligned on energy policy. We don't need a treaty, but broad alignment on pace and the intensity of stimuli is key if we are to avoid unintended dislocations which would damage industry and progress.

In the matter of energy markets one key issue is tariffs on biofuels. If both sides of the Atlantic are not aligned, then it could create barriers or stimuli that will result in biofuels going preferentially to either the US or Europe, and unintended arbitrage taking place. It could also prevent the evolution of the Atlantic basin fuel pool to a commoditized source of cheap bio-components.

Perhaps the biggest issue and opportunity is in CO2 pricing. Europe is pursuing cap and trade for CO2. The US is debating whether to have a cap and trade system or a carbon tax. Which mechanism is used is not important. What matters is the timing and intensity of application of such policy measures. If they are not coherent, they result in dislocations in the markets between different regions. If we were coherent, it would crystallise huge alignment on global CO2 pricing and accelerate the process. No one could ignore an aligned EU and US.

Therefore, the most important reason for US and European alignment is that it will result in much faster international action. If US and Europe are in agreement, it will act as an accelerant to the necessary but slow UNFCCC process.



It would probably also encourage alignment with China, and if we could achieve this “G3” coherence on energy policy I believe we could have laid the foundation for energy policy in the 21st century. So we have a great choice – to stop ignoring and to strengthen the Transatlantic relationship.

From everything I have heard in Brussels this weekend I am sure we can, and will, rise to the challenge.

I have spoken this evening about some of the challenges and choices facing us in the world of energy as we look ahead to 2030 and beyond.

I have argued that the direction of our internal energy policy is basically clear but to make this truly effective, the really big choices we now have to make are about our external energy relationships.

In conclusion, I would suggest that in reality our external choices are also limited and driven by a clear sense of our own interests.

In summary they are:

- To embrace and engage with Russia, because we are inextricably co-dependent
- To have one voice when speaking with China, because partnering with China is key to our own success
- And, above all, to align with the US as we face similar challenges, and if the US and the EU are aligned, it is almost impossible for others not to follow

Together I believe Europe and the US can precipitate more rational action in energy than if we are separated either politically or by our attitudes.

And finally, what is BP's interest in this whole debate?

We are a global company, in a global energy industry embracing exploration, production, refining, marketing, petrochemicals, lubricants and alternative energies.

We are only one voice. But we bring considerable skills and commitment to all our undertakings. And we have the obligation to think and act on behalf of all our stakeholders – our investors, our employees, our customers and the societies in which we operate – but also on behalf of partners who are increasingly the major economic and energy powers of the world.

As a commercial operator we also carry the obligation to plan ahead, deciding today for tomorrow and to do so creatively and responsibly. Our aspirations have to be rooted in global realities.

Above all we intend to be an experienced and responsible energy partner for the major energy regions of the world. If we see clear choices, I believe we have an obligation to recommend them.

Thank you for listening.