



Europe's energy crisis: pathways to a resolution

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As an oilman I am inclined to think that energy should be a part of every debate.

When it comes to the future of Europe I think it goes to the very heart of the debate.

So I welcome the opportunity to make this contribution today.

My thanks to Sir Nigel and to Kings College for this invitation, and welcome everyone.

Energy challenges are usually framed in one of four ways.

In terms of energy sufficiency, it has become clear that the world has more than enough energy for all, for many years to come – peak oil is a concept on the retreat.

Energy security is a different matter. European energy security is a concern brought into sharp focus by the ongoing situation between Russia and Ukraine.

Energy sustainability is the third big issue – with projections of growth in energy consumption outstripping any realistic potential to service demand from low carbon resources.

And more recently the cost of energy, as the price of hydrocarbons at a time of recent recession in both Europe and the US puts the cost of gas, electricity and transport fuel at the heart of many debates.

The past month has been a remarkable one for activity with a bearing on these issues.

First, Russia and China signed one of the biggest-ever gas supply deals.

Then the US announced its intention to regulate emissions in the power sector to below 2005 levels.

Then an official in China expressed a view – since described as a 'personal view' – about China limiting its emissions.

This points to two of the big energy-consuming blocs looking to resolve issues of security and sustainability from their unique starting positions.

My view is that Europe has for too long addressed its energy challenges in silos. As such it has, to some extent, been held back.

This debate, Europe in Crisis, allows us to focus the energy challenges through a unifying lens – and I hope, as a result, make greater headway.

That unifying lens is competition, because the crisis is ultimately one of confidence and competitiveness – confidence in Europe's ability to lead in an increasingly competitive world.



Looking back, energy from coal enabled Europe to outperform the rest of the world. But in the age of oil and gas, we now find ourselves more and more uncompetitive – except in terms of efficiency and historical emissions reduction.

Globally, we are entering a new age with, for the first time, no single dominant fuel. By 2035, we estimate that coal, oil and gas will have equal shares, each meeting 27% of global primary energy demand, with nuclear, hydro and other renewables delivering the rest.

How Europe adapts against the backdrop of this new mix will determine its ability to compete.

In my remarks then, I will start by establishing the role of energy in Europe's global competitiveness.

From there I will review Europe's energy challenges.

And I will conclude by setting out the pathways I believe can lead to energy solutions. These charts together illustrate where the EU sits in comparison with its key competitors in terms of recent growth.

The OECD curve, which includes the EU, has been consistently below the non-OECD growth curve for over a decade.

In the EU we have a recovery underway, with fiscal deficits being reduced and growth beginning to build, but recovery is slow and remains vulnerable to shocks such as deflation or sanctions-related supply disruptions to EU energy supplies and trade.

But there are three comparisons of note. The first is the weak growth of the OECD relative to the rest of the World.

Secondly, the huge disparity between the EU and China.

The other within the OECD is the differential between the EU and the US – in favour of the US. So growth, although modest, is returning to the EU. But on what is it dependent?

Europe is the world's preeminent trading block, with more coming in and more going out than anywhere else. More in either direction than the US, more than China – as the chart shows.

It also has the greatest inflows of foreign direct investment.

Crucially, Europe's industry remains important. Europe does have great service industries, but it is a myth that they have become the backbone of its economy, especially in terms of exports.

The EU exports around €1.7 trillion worth of goods – almost three times the €600 billion it earns for the export of services.

We need to dispel the myth of recent decades that economic growth in Europe is driven not by production but by consumption.

As the big emerging and developing countries continue to demonstrate, solid growth is driven by production.

Sustainable consumption can then follow – rather than, as we have seen to our cost, consumption fuelled by unsustainable debt.

For the avoidance of doubt, I see Europe's economic prosperity resting heavily on the ability of its producers to compete globally.



What then are the challenges?

Principally the challenges to growing industrial production reside in Europe being squeezed between high unit energy costs that are uncompetitive with the US and high labour costs that are uncompetitive with Asia.

As we all know, industrial production has been in decline for over a decade and falling off sharply in the credit crunch of 2009.

There has been some recovery since, but an uncertain one. I applaud the Commission for its ambition in setting a target to return the contribution made by manufacturing to 20% of GDP by 2020.

As the chart indicates, that is no small challenge given where we are now.

It will require all of the major EU economies to reverse the decline they have all experienced over the last ten years.

So let us now take a look at the cost of labour.

While there is considerable variation in labour costs across Europe, the major EU economies – shown in blue - all cluster around the top end of the international league table.

That, no doubt, reflects European living standards and the European model of welfare and industrial relations – the inflexibility of which are contributors to the sense of crisis.

If the European model of work and welfare is to be preserved, then something has to give elsewhere because we cannot command higher prices for what we produce in most sectors.

And that isolates energy as one of the most important remaining competition-defining variables. In terms of energy, this image says it all.

EU countries sit on only 0.4% of global proved oil reserves and less than 1% of proved gas reserves.

Some people believe there may be as much shale gas beneath Europe as there is under the US, but it not likely to materially shift the balance any time soon.

Our short-term energy competitiveness then is heavily dependent upon imported energy – and on the policies and conditions associated with that energy. Importing our energy adds to its cost, so policies must be particularly focused on efficiency in its use and competition in its market.

As this analysis by the International Energy Agency shows, combining oil, gas, coal and electricity, manufacturers in the EU pay half as much again for their energy as their competitors in China – and about twice as much as the competition in the US.

Looking at energy sources individually, the wholesale natural gas price in the EU [\$9.4/mmBtu; 1 March 2014] is roughly double that in the US [\$4.87/mmBtu, 1 March 2014], while EU industrial customers of electricity pay almost three times what their US competitors pay, at \$197/MWH [Eurostat, 2013] compared to \$69/MWH [US Energy Information Administration, March 2014]. Let me make a distinction here between energy costs and the cost of energy to the economy – as it goes to the nub of why Europe is as competitive as it is at present, despite its disadvantages.

The relevant metric is that of energy intensity.

Very roughly on average in the world, it takes about 1.3 barrels of oil equivalent of energy to generate 1000\$ of GDP.

In the US, a barrel of oil generates \$1,000 of GDP.

China is some way behind at 2.5 barrels.



The EU is out in front at requiring only three-quarters of a barrel – less than one third of the intensity of China.

This lead in terms of energy intensity is one that Europe must aim to sustain as a fundamental pillar of its competitiveness.

And there is huge potential for further advantage when you consider that, according to recent research, only around 12% of all primary energy that is produced becomes useful heat, light, power or motion, with the rest wasted as low grade heat.

However, Europe's competitive edge will come under severe challenge – particularly from the US and China. Both are setting aggressive energy efficiency targets and driving R&D to deliver them - and Europe is likely soon to lag behind both in terms of R&D intensity, with China set to overtake us shortly.

A second area of European energy leadership is in emissions.

As illustrated on the chart, emissions from the non-OECD world are projected to continue growing over the next two decades as OECD emissions fall – with the EU's share of those OECD emissions also falling.

The European Union's emissions are the lowest of any major economic bloc and down to pre-1970s levels.

This is clearly related in part to the actions taken by the Commission and member states to incentivise energy efficiency, promote renewables and price carbon.

But let's pause for a moment to consider two points.

The first is a forward-looking one.

On current forecasts, EU emissions will continue to fall as global emissions rise over the next two decades.

By 2035 the EU's carbon emissions will be one fifteenth of the world total.

Less than a quarter of China's contribution.

Or about half that of the US.

The EU needs to be careful not to over-emphasize leadership on emissions when it is such a small part of the picture going forward.

Which brings me to my second point, looking back.

Like the EU, US emissions have also fallen substantially and are now down below 1995 levels.

And like the EU, that has been achieved partly through improved efficiency and reducing the volume of coal burned. But then the paths diverge.

In the US, technology and the market have enabled a more substantial switch from coal to gas in power generation – gas emitting half the carbon of coal when burnt for power. The US now gets 30% of all its energy from gas compared to 24% in the EU.



By contrast, the regulatory focus on renewables in Europe has resulted in a 6% share for renewables in the EU compared with just 2% in the US.

However well intentioned, this has pushed up cost, and the focus on renewables combined with the low CO₂ price in the ETS has acted against the most powerful emissions-lowering lever currently available in the short to mid-term. That lever being the substitution of gas for coal in power generation.

Our BP economists calculate that a 1% switch from coal to gas in the generation of power would reduce emissions by as much as an 11% increase in renewables.

Europe must therefore embrace natural gas, switch from coal, as the US has done but be very careful about the cost of additional emissions reductions given its competitive position and what it has achieved already.

So, before describing the way forward, let me indeed first take stock of how far we have travelled.

This chart shows the three phases of what I call 'post-climate-awareness energy policy'.

We can take the first phase – running from about 1995 to 2005 – as one of vision and alignment.

The dawning recognition of unchecked global warming.

A strong global response to the predicted consequences.

And a movement towards a common vision of more desirable future, but without clarity over how to create it.

The second phase – covering the past decade – has been one of experimentation and understanding.

Policies, technologies and constructs have been developed and tested. Some have failed and others have been more successful - Notably the Emissions Trading System and measures designed to meet targets for renewable energy and energy efficiency.

We are now on the cusp of the third phase. One of pragmatic action, building on what we now know.

Policy is already being shaped for it – as we see in the 2030 framework for climate and energy policies, which was published by the Commission earlier this year.

Progress is being made and there are positive steps. But before the European Council sign-off of the 2030 framework, possibly later this year, I think there is further thinking to be done.

I suggest there are four areas of priority for the EU.

The first priority is to ensure that we learn from experience – and there are indications that that is beginning to happen.

Competitiveness is increasingly on the lips of MEP's and there is also greater recognition, from both the Commission and the Council, of the centrality of competitiveness to energy policy. I still see a tendency to prioritise climate change in the energy debate, but these two must be driven to line-up together, not apart.

Just to be absolutely clear, I think it reflects well on us as Europeans that we have shown the way on climate change action – that the EU has sought to take the lead. It has been beneficial to the world to have done so.



However, in doing so, there have been unintended but serious consequences on our competitiveness. We have also created perverse and inadvertent outcomes. We have lacked coherence in policymaking. And that has led to burdens that have significantly menaced the competitiveness of our industries.

BP supports a clear objective on greenhouse gas emissions – but cautions being too ambitious on a 2030 reduction target, while stressing two related questions:

- Does the proposed target recognise that the EU's overall contribution to global emissions is falling, and
- Is it realistic and comparable with our competitors' efforts, given the imperative of improving the EU's competitiveness?

And on emissions, Europe already has a powerful economy-wide tool to help deliver a single market with local flexibility.

I would advocate making the European Emissions Trading System the primary mechanism for making CO2 pricing more effective, subject to reforms as proposed in the 2030 framework and with simpler policies and targets.

The 2030 framework continues the practice of having too many targets for renewables, for efficiency and for GHGs.

Renewables and efficiency gains are a means to an end, not ends in themselves.

Let's simplify and focus, and build a more robust and reliable ETS to incentivise the pace at which we get there.

Having argued for greater competitiveness, what does that look like in practice? What are the pragmatic steps that shift the outcomes of energy policy towards the conditions for a more competitive Europe?

First, we need to maintain European leadership on energy efficiency.

As we've seen, Europe leads the world in the amount of energy used per unit of GDP – even though it lags the world in terms of what it pays for that energy.

While Europe is good at innovation, it is not the best.

In terms of proportion of GDP spent on R&D, Korea and Japan are out in front, followed closely by the US, Singapore and Australia.

An absolute commitment of only 2% GDP on R&D puts Europe below the world average, with China hot on our heels, as previously mentioned.

A better balance is needed to maintain leadership and a relentless focus on energy intensity of GDP.

Second, in terms of rebalancing, is the European market in energy.

Last month the President of the Council said there must be a determined push towards an energy union.

The President of the Commission has said "the completion of a fully-functioning, interconnected and integrated internal market is central to Europe's competitiveness and must not be fragmented."

A former president of the European Parliament has said about a single energy market, it "constitutes the most direct path towards a fully competitive Europe."



And yet the market at present does not work anywhere near efficiently enough.

The single energy market needs to become a reality, with higher levels of electricity interconnection and gas-in-gas competition.

That brings me to a very powerful weapon in our armoury – as has been demonstrated in the US with the shale gas boom.

Natural gas offers us a pragmatic pathway to a lower carbon future.

It is not carbon-free, but it is the cleanest fossil fuel and by many projections, about the 80% or more of the world's energy mix is going to remain dependent on fossil fuels for several decades.

The climate situation is urgent, but we do no service to future generations by attempting an unwinnable sprint, rather than using natural gas more pragmatically to pace ourselves towards a lower carbon future.

So we must rebalance our focus, and in this order:

- First, maintaining leadership in energy intensity of GDP,
- Second, market shaping and reform to reduce the cost of that energy; and
- Third, reducing its carbon content.

My third priority is the shaping of specific pragmatic pathways for two of the big applications of energy – power and transport.

The starting point for both is a complete and competitive Single Market – that favours the most efficient and innovative operations, supported by a well-functioning carbon trading market.

Research is also vital – with strong investment in both public and private R&D to maintain Europe's technological and commercial edge.

That is the platform.

In terms of the two pathways themselves, the lion's share of energy is used for power – which accounts for over 40% [43%] of EU energy consumption – and here an important means of being efficient and reducing emissions is within our reach.

The vision of a continent running on sunshine, wind and waves is an inspiring one – no less so for an oilman like me. And in the very long term, it may be an attainable one.

But trying to make that vision a reality prematurely has led to many unintended consequences while the proportion of renewables in the EU's energy mix still only stands at 6%.

The lesson from the US is that switching from coal to gas in power generation can have at least as big an impact on emissions as extensive programmes to promote renewables.

And Europe is surrounded by competitive natural gas supplies – including those from Norway, the Caspian Sea, North Africa, the Middle East and potentially the East Mediterranean – as well as Russia, of course.

The numbers you see there go some way to explaining the significance of Russia in any conversation about energy security.

Russia is the world's largest producer of oil and gas combined – so a powerful force, but a force that pulls in both directions. For decades Europe's energy supply and Russia's economy have provided a mechanism for engagement and security and we should never lose sight of trade in energy as a stabilising force.



Russia will continue to be an important source of both oil and gas for Europe in all future scenarios.

That said, the current situation underscores the value of increasing and diversifying the number of corridors to supply Europe – something that BP and others are already working on.

As many of you know, we are a leading partner in the project to open up the southern gas corridor from the giant Shah Deniz gas facility in the Caspian to Europe.

For heat and power, the right pathway should focus on energy efficiency, natural gas, nuclear power where it is supported, and over time steady growth in competitive renewables. And we must, as part of this, move away from unabated coal.

The other application I want to talk about is transport, which accounts for just over a fifth [22%] of Europe's energy consumption.

The pragmatic transport pathway is that of continued improvements in fuel economy through downsizing, boosting and hybridizing internal combustion engines – and by increasing the use of competitive biofuels.

Battery electric vehicles have serious potential in terms of aspects of performance, but, realistically, will only be deployed at scale when the power grid is decarbonised; and when there's a demonstrable saving in total energy use over a significant distance. This will also require some breakthroughs in battery technology, so extending their range.

That brings me to my fourth and final priority – which is for Europe to not only build supply relationships with other regions, but to use its capability in international relations to mutual advantage.

One substantial and specific contributor to this process should be the Transatlantic Trade and Investment Partnership – or TTIP – which is remains under negotiation.

The prize is estimated as a potential €119 billion annual benefit to the EU economy.

BP has suggested that energy should be an explicit theme within the TTIP, with the aims of improving the competitiveness of both parties and avoiding distortions.

This could include using shared standards, pooling best practice on energy efficiency, joint R&D programmes and perhaps most importantly finding a way to ensure the pace of carbon price intensification is monitored on both sides of the Atlantic to avoid unintended dislocations and loss of competitiveness.

Alignment between the US and EU could also materially accelerate the global dialogue and negotiations on climate change. If the EU and the US align, others may just follow.

The clock suggests I should now seek to sum all of this up.

Perhaps it is as simple as this: the biggest challenge for the new parliament that we have just voted in is to restore confidence in the EU itself.

Most commentators would agree I'm sure, that last month's elections implied concerns about Europe's future – which is tied closely to jobs and growth, and in turn to competitiveness.

The response then, I would argue, is an accelerated commitment to the adoption of a pragmatic approach to energy policy, which in turn should be targeted towards improving the overall competitiveness of Europe.



The challenge is on, globally, to get energy policy right, because energy is such a large part of the economy.

Europe is one of the most efficient global energy blocs, and one of the lowest carbon emitters. But it is one of the least competitive. It has the greatest need for the greatest improvement in its energy costs.

Travelling on a recent path, we now find ourselves in an unexpected place:

Europe has been leading, but on this path cannot win.

The US has not been leading, but may be winning and...

China has the greatest potential contribution, and if we engage with her, she may yet lead.

Europe must rebalance its energy policy towards competitiveness and the provision of secure, affordable energy, and not only lower carbon energy.

This means focussing on energy efficiency, natural gas, new technologies, opening up new corridors of supply and encouraging more gas-on-gas competition, greater diversification, and a fully functioning single market in energy.

These are, I believe, the priorities for the new Commission, and at least the next two after that.

Thank you.