

## Energy Security -responding to the challenge

Ladies and Gentlemen, it is a great pleasure to be here and to have the chance to come and speak at Brookings.

This Institution has been at the heart of the debate on so many issues over the last 90 years, and I can't think of a better place to come and speak at what we believe is a decisive moment in the debate on energy security.

The last two years have brought energy back to the top of the agenda in this country, and around the world.

There are at least four reasons why that is so.

First global demand for energy is growing day by day. Demand now is nearly 50 per cent higher than it was only 20 years ago.

Demand is driven by the twin forces of population growth, and the spread of prosperity.

The world's population has risen by almost 10,000 in the last hour- so far this year by around 80 million.

More and more of those new citizens have the resources to buy the energy they need. They want the heat, light and mobility which we take for granted.

As economic prosperity spreads and poverty recedes more people can afford that energy. On some estimates there are perhaps 200 million new customers for commercial energy every year.

Growing demand has shaped the energy market over the last five years. Total demand for energy worldwide has risen by 15 per cent during the five years of the current century.

That demand has been concentrated on hydrocarbons and in particular on oil, gas and coal. World oil demand has grown by 8% over the same period; gas demand by 15%; and coal demand by 32%.

The demand has come from Asia, as China and India have grown rapidly. But it has also come from the more developed parts of the world.

Last year the world economy grew by more than 4 per cent - the fastest rate in three decades. And growth is fuelled by energy.

The growth in demand has outpaced the growth in supply. At times over the last 18 months the margin of spare capacity in the oil market has fallen from the historic norm of 3 million barrels per day to around 1 million. And, of course, 1 million barrels per day is less than the production which comes from some of the less secure producing regions- from Iraq, from Venezuela and from Nigeria.

That is why prices have risen.

But growth in demand is not the whole story.

We have also seen the impact of war and uncertainty in the Middle East, and the impact of extreme weather conditions here in the US and elsewhere.

The storms and hurricanes of the summer destroyed life and property in a terrible way. They also disrupted the supply systems - the production platforms in the Gulf of Mexico, the pipelines, and the refining systems - which bring energy resources to those who need them.

The market system has responded remarkably to all those disruptions. Very few consumers were denied resources for any significant period of time. Supply and demand were balanced.

But prices have risen and that has raised the level of concern. Prices are lower now than at their peak a couple of months ago, but they are still more than twice the level of only three years ago.

That is one fundamental cause of concern.

Another is the geography of the energy market, and in particular the way in which the pattern of oil supply is moving.

Today the world will use 85 million barrels of oil. Over half will be supplied through international trade. Looking ahead that trade is growing as a proportion of

the total, and is concentrating to a significant degree. The US will require more imported supplies and so will Europe, Japan and China.

Almost 80 per cent of that trade will come from just three areas- Russia, West Africa and, most important of all the Persian Gulf.

By 2020, 25 million barrels a day - one barrel in every three - will on these forecasts come from Saudi Arabia, Iraq and Iran. And that is assuming that everyone else is producing at, or very close to, full capacity.

That is the second cause of concern.

And then there is the environmental impact of increased hydrocarbon consumption, particularly in terms of the impact on the global climate.

It is eight years this autumn since the Kyoto protocol was agreed.

The objective of Kyoto was to reduce emissions by 5.2 per cent from their 1990 level. In reality by 2003, emissions had increased by more than 9 per cent above the 1990 level, and by 2010 the projected increase is expected to be almost 20 per cent.

The science of climate change is unproven in absolute terms. There are things we still don't know. But as the eight scientific academies of the G8 countries declared in their statement before the summit meeting in July, there is sufficient evidence that human activity could

affect the earth's climate in a serious way to justify precautionary action.

The fact that precautionary action is not being taken, and that the concentration of carbon in the atmosphere is growing towards the level at which fundamental changes could occur, is also a cause of worry and concern.

And of course this concern, and what might be done after 2012, will be discussed by the first meeting of the parties under the Kyoto Protocol in Montreal next week.

So for a mixture of different reasons the energy outlook is uncomfortable.

There is a worry that oil supplies are limited. A sense of growing dependence, and concern that those who rely on trade and imports, may be vulnerable to ransom.

And concern that continued growth in emissions will lead to an environmental challenge, which in the end, could only be answered by a dramatic slowdown in economic activity.

Some believe that these problems will escalate to the point of crisis, and in particular that prices will rise and rise.

You could call that the "peakist view".

We believe that is a mistaken view because it ignores a fundamental characteristic of human behaviour, which is to respond to perceived risk by finding an alternative way forward.

All the evidence suggests that people do not walk blindly towards risk. They take precautionary action. And we believe that is what is happening now.

The primary agent of the response is the oil and gas industry. As an industry we exist to respond to need. That is our fundamental purpose, the need for energy - in all its forms at a price that people can afford. And now in these circumstances the need to restore energy security.

That is the challenge. So what are we doing?

First we are investing in the next generation of oil and gas resources around the world. Winston Churchill once said that security in oil came from a diversity of supply. That was right in 1915, and it is right now.

So we have been investing in the development of oil in the Caspian, in Russia, in Angola and of course here in the United States - in the development of new oil from the Deep water of the Gulf of Mexico.

We are also investing in new gas developments - in Trinidad, Indonesia and again here in the US.

After a period of very low prices through the 1990s which squeezed revenues and limited investment, the

increase in oil prices since the turn of the century has produced a general increase in investment.

In total the industry has invested nearly \$200bn in new oil and gas developments since 2000. And we are beginning to see the fruits of that investment.

Oil from the Caspian, which will be on-stream through the Baku-Tblisi-Ceyhan pipeline by early next year, will supply an additional 1 million barrels of oil every day.

New oil continues to come on-stream in Angola, Russia, and here in the US from the deep water of the Gulf of Mexico.

And those are just the increases that BP is responsible for.

Across the industry investment which has gone in over a period of years is leading to new production.

And beyond those projects which are already underway there is more to come - not least here in the US the development of gas in the Rockies where we announced a \$ 2 billion investment plan a few weeks ago, and the major long term development of the 35 trillion cubic feet of natural gas in Alaska, which will add a whole new source of supply to the US market.

That's why despite continued growth in world demand we see the prospect of prices stabilising and perhaps even falling back to a lower level.

Of course, other things could happen. But the increase in output from diverse sources of supply begins to restore the cushion of capacity.

Historically, supply capacity worldwide has exceeded demand by around 3 million barrels per day. At times in the last couple of years, that fell back to little more than 1 million barrels per day. Now we can see the margin of security beginning to increase once again.

That is the immediate, necessary, and appropriate response to energy insecurity.

But there's something more to be done. We have to think and plan ahead. To look at the needs of the world market, not just this year and next year, but over the next 30 or 40 years.

That's the timescale on which the industry has to think, and to invest.

40 years ago we began to develop Prudhoe Bay, and the resources in Alaska. Similarly 40 years ago, we began to develop the North Sea. Those developments have provided the resources to keep energy supplies flowing on both sides of the Atlantic.

Now, we have to look ahead again, and to invest to meet the needs of tomorrow- the needs of a rapidly changing, growing global energy market and the needs

of a world where climate change will be a constant preoccupation.

We want to give people choices - including the choice of new alternative energies which are available at a reasonable cost, which don't lead to even further dependence on a small number of sources of supply, and which are positive for the environment - producing less carbon, and therefore reducing the risk of global warming.

And that is what we plan to do - by launching a new business. BP alternative energy.

That business will bring together and build upon the work we've been doing already on alternatives and renewables.

BP alternative energy will include work on solar power, where we have built a business over the last thirty years which is now one of the leaders in the industry, and which I am delighted to say ran at a profit last year for the first time ever.

Eight years ago we said "We want to transfer our distinctive technologies into production, to increase manufacturing capacity and to position the business to reach \$1bn in sales over the next decade." We are on track to do that.

The new business will also include work on wind power, where we have begun with a series of wind farms on our own land.

It will include work on combined cycle gas turbines, and cogeneration technology.

And work on the new and rapidly evolving technology of sequestration - taking carbon out of hydrocarbons, and using the hydrogen to develop a carbon free source of electric power.

We intend to develop each of those elements, and in addition, we aim to be the leading trader in clean power and CO2 credits, building on all our trading experience.

All those elements are focused on the power sector, and that is deliberate.

Over 40 per cent of all emissions of carbon come from the power sector, compared to less than a quarter from transportation. So, while we will continue our extensive work toward cleaner transport fuels, we believe now is the time to take action in the area where we can make the greatest difference - in electricity generation.

Electricity demand is growing rapidly. Between now and 2020 more than 40 per cent of all the power generation capacity in the world will be replaced or built for the

first time, as old stations come to the end of their lives, and as new capacity is built to meet growing needs. So this is a moment of great opportunity.

We expect the installed generation capacity of renewable and alternative power to grow threefold by 2020.

Worldwide, we anticipate a market to build around 230 GW of new alternative generation. We also expect the installed capacity of gas-fired stations to nearly double in that same time.

The best estimate is that this market could be worth \$ 600 billion worldwide.

So we see a business opportunity, and we are making plans to seize that opportunity.

Over the next ten years we aim to invest at least \$8 billion in those different technologies, on a step by step basis. The detail of that investment and the mix will depend on the market, on the way in which technology develops, and of course on our success.

But this is not a business built on the assumption that public policy will change. All our plans are built on the basis of existing policy. Our only policy goal is a fair and transparent system, which allows all forms of alternative energy to compete on equal terms.

We have detailed plans for the next three years which more than double our current level of spending in this area.

An investment of \$ 1.8 billion which will establish a business, balanced roughly equally between the four elements I mentioned a moment ago.

Over those three years we will take these products to the market - giving states, local utility commissions, and businesses a greater choice on how carbon intensive their electricity generation will be.

We will also make it easier for households to utilize solar energy through innovative offers such as Solar Home Solutions with The Home Depot, and our new BP Solar Energy Tile for residential roofing.

Our aim is to become the leading player in alternative energy in the power sector on a global basis.

Within 10 years, on the basis of the \$8 billion investment I referred to, we aim to grow the business 5 or 10 fold, and to establish the new business as a significant contributor to the restoration of energy security here in the US and across the world.

For BP, this is a further step in the journey we began eight years ago, when we were the first major oil company publicly to acknowledge the challenge of climate change.

We accepted the need for precautionary action on the basis of the growing weight of scientific evidence about global warming.

We set a target to reduce emissions from our own operations by 10 per cent below 1990 levels and we met that target, well ahead of schedule. We have an established commitment to stabilise emissions while growing the business.

All those were important steps.

But this is different, because we are responding to the new business opportunity of climate change by creating a new business unit to satisfy the new demand for lower carbon power.

Our aim is not to make a statement or to add further to the policy debate. Our aim as a business is to make money, and by giving our customers new choice to make a difference.

We believe that a business in this area can make a difference.

Going back to the figures I have just quoted, if just half of the new power generation capacity required by 2020 were to come from alternative and renewable energies that would reduce carbon emissions by perhaps 12 per cent from the level they would otherwise reach.

That doesn't solve the problem - but it is certainly a start. It would take us a long way towards the long

term goal of stabilising the amount of carbon in the atmosphere at around 550 parts per million.

All this is a long term process of course.

For the foreseeable future, the world will need hydrocarbons, and we will continue to invest in order to produce and sell oil and gas in the cleanest, most efficient way possible. We will invest across a range of areas in order to maximise the diversity of supplies which are available.

But this is not business as usual. Things have changed.

Technology is making it possible now to supply alternative energy at highly competitive prices.

At the same time, some of our customers want energy supplied in ways which reduce the risks of dependence on a very narrow range of suppliers.

And some of our customers want their energy supplied in a way which reduces the risk of emissions altering the sensitive balance of the world's climate. People want to use energy in a way which is sustainable.

Put these changes together and you have the business case for alternative energy.

We aim to use modern technology, to create a new business which makes money, by responding to the wishes of our customers for secure and clean energy.

BP alternative energy is not an instant, magical solution. But it is a very realistic, practical step in a new direction. A step beyond our traditional business, beyond petroleum, to meet the energy needs of the world over the next half century.

Thank you very much.