



Earth's physical resources: fossil fuels

Declining Oil and Gas Reserves

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The 20th century was perhaps the golden age for fossil fuels, but globally there are still huge reserves of coal, oil and natural gas.

Mark Moody-Stuart, former Chairman, Shell Oil:

You look specifically at hydrocarbons; the world has produced something like a bit less than a trillion barrels of oil equivalent. That's a million million, as it were. There is another trillion barrels of oil equivalent which can be produced probably at eight dollars a barrel, under ten dollars a barrel. There's another two trillion which can be produced at under 20 dollars a barrel and then the tail goes up and it gets more expensive. Those prices, costs have been driven down by, by technology, but clearly oil is a finite resource and so is gas although we've hardly started on, on the gas.

Colin Campbell, petro-geologist:

We're not about to run out of oil. What we are, what is going to happen is that we are close to peak. It might have happened all ready. If not, it's within the next ten years. You can't put an exact date on it, depending on different scenarios and assumptions whatever our detective tells us about the actual size of what's there. So somewhere over the next ten years, you could say with really great confidence that we're at peak and then it starts to decline. And it'll, it'll last, I don't know, a hundred years maybe until it... the tail end drags on for ever and a day. So the important point, and I think the important point is the perception of this. It's not so much that... we still have a bit more oil than we've ever used left. There's a lot of oil left, but it is the perception between something that is growing and something that's declining.

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And it's not just oil production that's in decline.

Jim Watson, Research Fellow, SPRU:

Most predictions show that, for the foreseeable future, most of our electricity's going to come from gas. Any new expansion, new build is going to be gas because it is simply the cheapest thing to do. The thing on the horizon is obviously the more gas we use, the less there is available in the North Sea.

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And gas fields have a different depletion pattern to coal mines and oil fields.

Colin Campbell, petro-geologist:

If you opened a gas well fully open, you would deplete it simply because it is a gas, puff it away very quickly. So in practice, gas production is capped by the simple mechanism of the pressure in the pipeline in many cases. And so instead of having a peak and a decline, you have a long steady plateau that lasts and lasts and lasts. And the cost of producing this gas gets less and less because the original costs are long written off and the price of gas generally falls. That in turn encourages people to move to gas; also has environmental benefits. And so everything sails along very happily using this cheap gas, but then as they discovered in California last year, eventually the end of the plateau comes and it comes with no market signal because the last cubic feet costs less than the first.

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So before North Sea gas runs out, we have to start importing gas from countries which still have untapped reserves. By 2020, we may have to import as much as 90% of our gas and under different political conditions.

Colin Campbell, petro-geologist:

In a world picture, I think gas production will rise until about 2015 and then there'll be a long plateau to, oh, say, 2040 or something like that, before this precipitate end comes. But that's for the world as a whole and I suppose Europe whose decline is coming much sooner, in the next few years, it will get very dependent on this, particularly Russian gas. And remember that this pipeline from Siberia has to cross many transit countries. I don't suppose the people give it away and once the oil goes into decline, more value attracts to gas and the people who control the gas become the new OPEC, you could say.