



Cost of energy imports to UK trade balance

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Over the years I have drawn attention to concerns about the impact that peak oil (1999) and gas (2000) in the UK North Sea would have on UK trade balance. In the space of a decade, the UK has gone from oil and gas exporter to importer. In articles such as [UK Energy Security](#) (July 2007) and [A State of Emergency](#) (June 2008) I speculated about the financial cost and in today's article I put real numbers on the cost of UK energy imports.

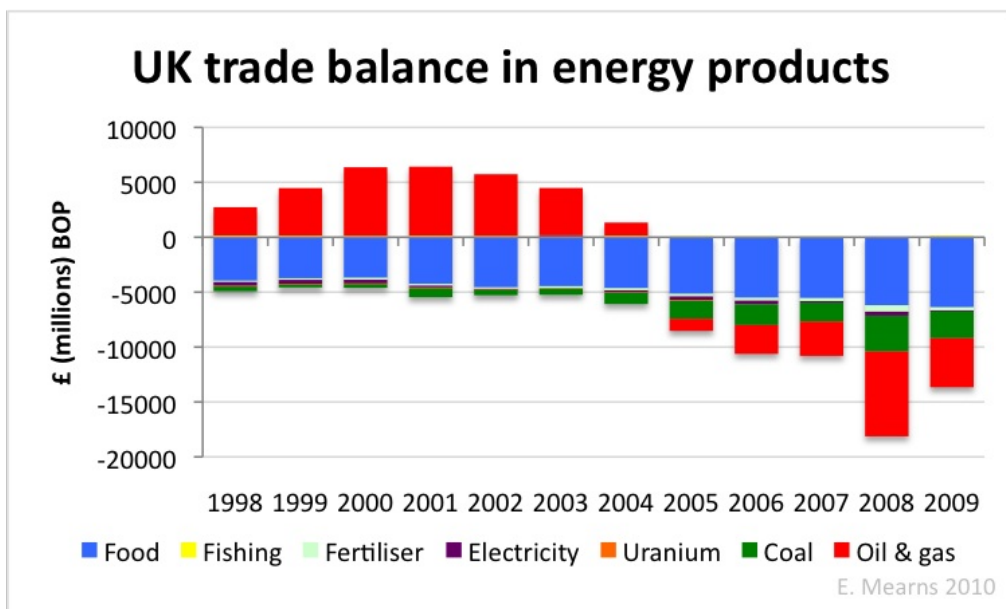


Figure 1 Data compiled from tables published by the UK [Office for National Statistics](#).

The cause of the UK's energy woes is summed up in Figure 2 that shows the history of UK primary energy production (excluding whales) since 1830. In 1981 the UK became a net primary energy exporter and more or less remained so until 2004. During that period (of low energy prices) the UK exported oil and gas (not every year) to the benefit of the trade balance and the financial well being of the nation. Since 2004 the bounty from North Sea oil and gas exports has been replaced by the burden of imports and the main purpose of this article is to draw attention to the magnitude of this burden and to consider the most appropriate policy responses.

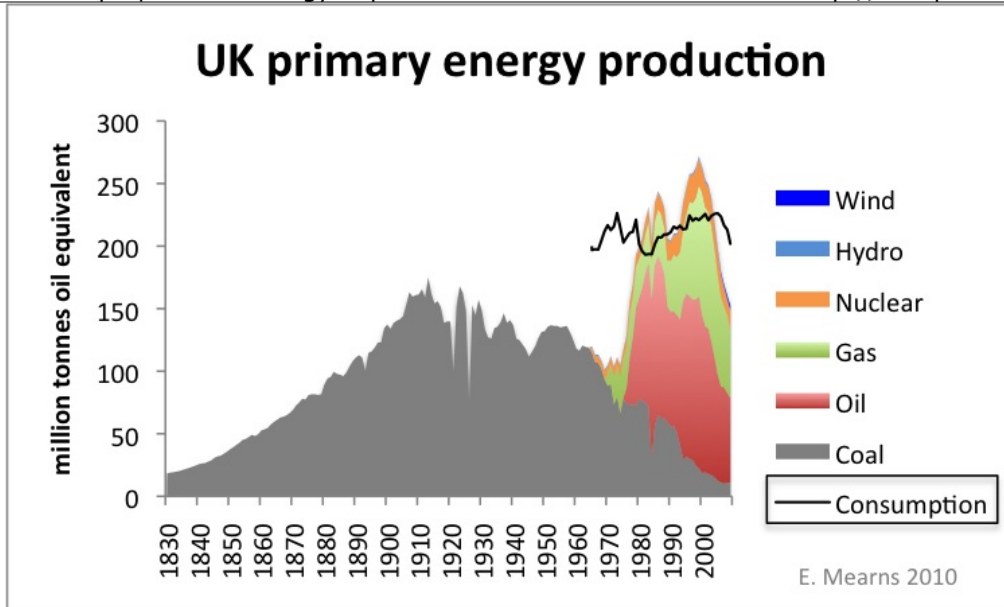


Figure 2 UK primary energy production from 1830. Coal data from [Dave Rutledge](#) (and references therein), rest from the [2010 BP statistical review of world energy](#).

In Figure 1 the trends are dominated by oil & gas, food and coal. I have included food (fish and fertilizer) since they are fuel, primary energy products, and it is most relevant to consider the trend in food given the UK and EUs commitment to promoting and subsidising the production of bio fuel. Fish, fertilizer, electricity and uranium are all small bit players in the big picture, but all are worthy of inclusion nonetheless.

The monetary trends are controlled by volume and price. Price is very important, and, for example, 1998 just preceded the peaks in UK oil (1999) and gas (2000) production, but exports yielded low value owing to extreme weak oil prices that were temporarily below \$10 that year (Figure 1). The swing from exports to imports from 2004 to 2005 is clearly seen in financial terms. And for every year that passes this problem is set to get progressively worse as UK oil and gas production continues to fall (Figure 2) although future price is difficult to predict.

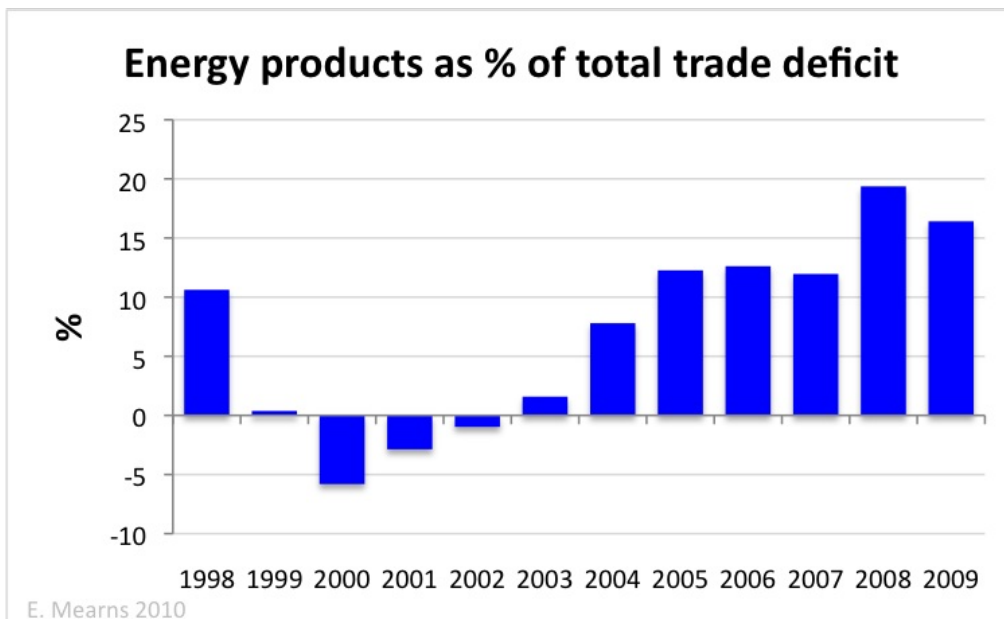


Figure 3 The swing from UK energy surplus (negative numbers) to energy deficit (positive numbers).

The scale of the problem is best seen in Figure 3 showing that in the year 2000 energy products contributed net 6% to trade surplus but by 2008 (the year of the spike) that had swollen to a 19% deficit, a swing of 25% in 8 years. Peering into the future is far from straight forward. It is relatively straight forward to envisage the plunge in North Sea oil and gas production continuing for the foreseeable future, but much more difficult to understand how demand and price will evolve. The main conclusion I can draw here is that the UK cannot afford to pay for rising energy imports and higher prices simultaneously and so something will have to give, either locally or globally. Given that a large number of energy importing OECD nations face similar problems, it seems likely that the solution will be a global one and that energy prices must fall to make them more affordable and the mechanism most likely to bring this about is a global reduction in demand for energy.

The average oil price during 2008 was \$97 compared with \$62 in 2009. The average price so far this year is well above \$62. The oil & gas deficit for Q1+Q2 of 2009 was £1.79 billion and this has grown to £2.55 billion for the first two quarters of 2010, a deterioration of 42%. With food and coal prices both rising the trade deficit for 2010 is set to become a whole lot worse, despite lingering recession.

Policy response

Figures 1 and 2 provides some insight to what government should be doing to resolve these structural problems in the UK economy. I do not intend to get over involved in a policy debate in this short article, but it is worth making a few observations comparing what I believe should be government priority compared with what government is actually doing.

Oil and gas

It should be pretty obvious that the nation's best interests are served by maximising output and recovery from North Sea oil and gas fields. One remaining technology that could be deployed, if financially viable, is CO₂ enhanced oil recovery (EOR). Government policy is to promote carbon capture and storage (CCS, see end note) but fails to support CCS EOR that is largely carbon neutral but potentially of enormous benefit to UK energy security and trade balance.

Coal

One way of reducing coal consumption is to improve the energy efficiency of power stations. UK power stations currently have thermal efficiency of the order 36%. Modern supercritical coal plant has efficiency of the order 45% and offers a significant energy saving. China is in process of upgrading the energy efficiency of coal generation. The UK plan is to hobble the energy efficiency of coal with CCS, approximately 20% energy penalty. It is difficult to comprehend that the government is willing to subsidise CCS to the tune of £1 billion (see end note) and this will lead to higher coal imports and further deterioration of trade balance and the value of Sterling!

Food

As a UK citizen, It is quite worrying to see the growing deficit in food. You would think that a sensible policy might be to ensure that the UK was self sufficient in food production - what better energy security! Instead we have government subsidised policy to grow energy crops which in the UK is primarily rape seed used to make bio-diesel. UK diesel now contains up to 10% bio fuel and we are therefore obliged to adopt one of the **[least energy efficient means of propulsion ever invented](#)**.

Uranium

The UK has not imported any U since 2005 and prior to that imports were always <£100 million

per year. It is difficult to tell to what extent nuclear fuel has been made from stock piles. But for over a decade the external budget cost of nuclear to UK trade balance barely registers. In 2009 nuclear power provided 8% of total primary energy consumption in the UK. The UK government has for decades neglected the nations nuclear capacity which is set to decline throughout the coming decade as old stations are decommissioned (Figure 4). In an announcement made on 18th October, the UK Government nominated 8 sites in England that may be used for [new nuclear power stations](#). The process of rescuing our energy infrastructure continues at snails pace.

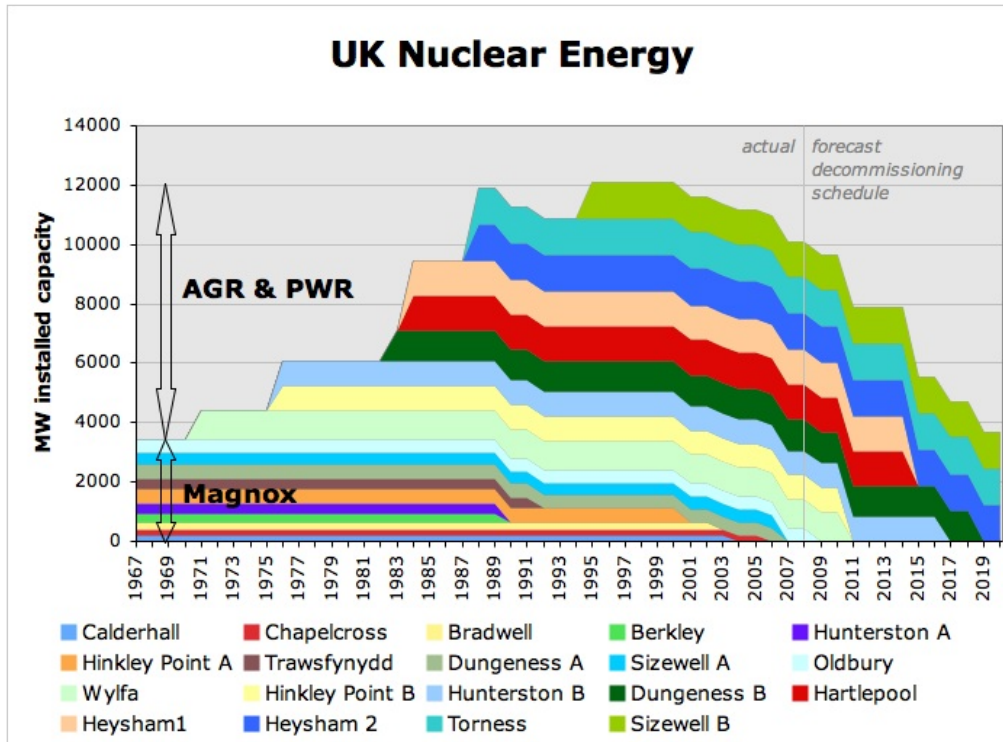


Figure 4 UK nuclear decommissioning schedule. The chart is about 1 year out of date but the general picture has not changed much. It is fully expected that many of the more modern power stations will get license extensions to bridge gap to new nuclear stations that are still on the drawing board. Source: [British Energy & Nuclear Decommissioning Agency](#)

So what is the remedy? The UK government must surely do all it can to promote *sensible* primary energy production whilst at the same time reducing energy consumption. Energy efficiency should be a guiding light and I'm afraid that means abandoning CCS and bio fuels in favor of energy efficient coal plant, combined heat and power (about 70% efficient) and food production. The strategic benefit of low import costs of nuclear fuel need to be factored into the nuclear debate.

To be fair, the UK government does have a range of sensible energy policies that includes progressive "taxation" of automobiles according to size and power and a program to upgrade insulation in older houses. But this good work is undone by pursuing simultaneously energy inefficient CCS and bio fuels. We need a big dose of common sense and some urgency to rescue a situation that is spiraling downwards out of control.

As part of the major [public spending review](#) announced on 20th October the government committed itself once again to spending £1 billion on a large scale demonstration CCS project. Energy Minister Chris Hune saying:

we remain on course to deliver on our promise to be the greenest government ever

Hune seems to be oblivious to the fact he is going to use government spending to create more foreign debt, and to spread energy poverty through the population. On the same day energy company E.ON **announced it was withdrawing** from the government's CCS competition.



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