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Tell people something they know already and they will thank you for it.
Tell them something new and they will hate you for it.

If Nothing Else, Save Farming

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It's probably too late to prepare for peak oil, but we can at least try to salvage food production.

By George Monbiot. Published in the Guardian 16th November 2009

I don't know when global oil supplies will start to decline. I do know that another resource has already peaked and gone into freefall: the credibility of the body that's meant to assess them. Last week two whistleblowers from the International Energy Agency alleged that it has deliberately upgraded its estimate of the world's oil supplies in order not to frighten the markets(1). Three days later, a paper published by researchers at Uppsala University in Sweden showed that the IEA's forecasts must be wrong, because it assumes a rate of extraction that appears to be impossible(2). The agency's assessment of the state of global oil supplies is beginning to look as reliable as Mr Greenspan's blandishments about the health of the financial markets.

If the whistleblowers are right, we should be stockpiling ammunition. If we are taken by surprise; if we have failed to replace oil before the supply peaks then crashes, the global economy is stuffed. But nothing the whistleblowers said has scared me as much as the conversation I had last week with a Pembrokeshire farmer.

Wyn Evans, who runs a mixed farm of 170 acres, has been trying to reduce his dependency on fossil fuels since 1977. He has installed an anaerobic digester, a wind turbine, solar panels and a ground-sourced heat pump. He has sought wherever possible to replace diesel with his own electricity. Instead of using his tractor to spread slurry, he pumps it from the digester onto nearby fields. He's replaced his tractor-driven irrigation system with an electric one, and set up a new system for drying hay indoors, which means he has to turn it in the field only once. Whatever else he does is likely to produce smaller savings. But these innovations have reduced his use of diesel by only around 25%.

According to farm scientists at Cornell University, cultivating one hectare of maize in the United States requires 40 litres of petrol and 75 litres of diesel(3). The amazing productivity of modern farm labour has been purchased at the cost of a dependency on oil. Unless farmers can change the way it's grown, a permanent oil shock would price food out of the mouths of many of the world's people. Any responsible government would be asking urgent questions about how long we have got.

Instead, most of them delegate this job to the International Energy Agency. I've been bellyaching about the British government's refusal to make contingency plans for the possibility that oil might peak by 2020 for the past two years(4,5), and I'm beginning to feel like a madman with a sandwich board. Perhaps I am, but how lucky do you feel? The new World Energy Outlook published by the IEA last week expects the global demand for oil to rise from 85m barrels a day in 2008 to 105m in 2030(6). Oil production will rise to 103m barrels, it says, and biofuels will make up the shortfall(7). If we want the oil, it will materialise.

The agency does caution that conventional oil is likely to "approach a plateau" towards the end of this period(8), but there's no hint of the graver warning that the IEA's chief economist issued when I interviewed him last year: "we still expect that it will come around 2020 to a plateau … I think time is not on our side here."(9) Almost every year the agency has been forced to downgrade its forecast for the daily supply of oil in 2030: from 123m barrels in 2004, to 120m in 2005, 116m in 2007, 106m in 2008 and 103m this year. But according to one of the whistleblowers, "even today's number is much higher than can be justified and the IEA knows this."(10)

The Uppsala report, published in the journal Energy Policy, anticipates that maximum global production of all kinds of oil in 2030 will be 76m barrels per day. Analysing the IEA's figures, it finds that to meet its forecasts for supply, the world's new and undiscovered oil fields would have to be developed at a rate "never before seen in history."(11) As many of them are in politically or physically difficult places, and as capital is short, this looks impossible. Assessing existing fields, the likely rate of discovery and the use of new techniques for extraction, the researchers find that "the peak of world oil production is probably occurring now."

Are they right? Who knows? Last month the UK Energy Research Centre published a massive review of all the available evidence on global oil supplies(12). It found that the date of peak oil will be determined not by the total size of the global resource but by the rate at which it can be exploited. New discoveries would have to be implausibly large to make a significant difference: even if a field the size of all the oil reserves ever struck in the USA were miraculously discovered, it would delay the date of peaking by only four years(13). As global discoveries peaked in the 1960s(14), a find like this doesn't seem very likely.

Regional oil supplies have peaked when about one third of the total resource has been extracted(15): this is because the rate of production falls as the remaining oil becomes harder to shift. So the assumption in the IEA's new report, that oil production will hold steady when the global resource has fallen "to around one-half by 2030″(16) looks unsafe. The UKERC review finds that just to keep oil supply at present levels, "more than two thirds of current crude oil production capacity may need to be replaced by 2030 … At best, this is likely to prove extremely challenging."(17) There is, it says "a significant risk of a peak in conventional oil production before 2020."(18) Unconventional oil won't save us: even a crash programme to develop the Canadian tar sands could deliver only 5m barrels a day by 2030.(19)

As a report commissioned by the US Department of Energy shows, an emergency programme to replace current energy supplies or equipment to anticipate peak oil would need about 20 years to take effect(20). It seems unlikely that we have it. The world economy is probably knackered, whatever we might do now. But at least we could save farming. There are two possible options: either the mass replacement of farm machinery or the development of new farming systems, which don't need much labour or energy. There are no obvious barriers to the mass production of electric tractors and combine harvesters: the weight of the batteries and an electric vehicle's low-end torque are both advantages for tractors. A switch to forest gardening and other forms of permaculture is trickier, especially for producing grain; but such is the scale of the creeping emergency that we can't afford to rule anything out.

The challenge of feeding 7 or 8 billion people while oil supplies are falling is stupefying. It'll be even greater if governments keep pretending that it isn't going to happen.

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References:

1. http://www.guardian.co.uk/environment/2009/nov/09/peak-oil-international-energy-agency

2. Kjell Aleklett et al, 2009. The Peak of the Oil Age - analyzing the world oil production Reference Scenario in World Energy Outlook 2008. Energy Policy. http://www.tsl.uu.se/uhdsg/Publications/PeakOilAge.pdf

3. David Pimentel, Marcia Pimentel and Marianne Karpenstein-Machan, 1999. Energy Use In Agriculture: An Overview. Agricultural Engineering International: The CIGR EJournal., Volume I. http://www.cigrjournal.org/index.php/Ejounral/article/viewFile/1044/1037

4. I first began pestering the government about this in May 2007, as you can see here: http://www.monbiot.com/archives/2007/05/29/what-if-the-oil-runs-out/

After that, I lodged an FoI request, and returned to the theme in these articles:

5. http://www.monbiot.com/archives/2008/02/12/the-last-straw/

http://www.monbiot.com/archives/2008/05/27/majesty-we-have-gone-mad/

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http://www.monbiot.com/archives/2009/04/14/cross-your-fingers-and-carry-on/

6. International Energy Agency, 2009. World Energy Outlook 2009. Page 73.

7. Figure 1.5, page 82.

8. p87

9. http://www.guardian.co.uk/environment/video/2008/dec/15/fatih-birol-george-monbiot

10. http://www.guardian.co.uk/environment/2009/nov/09/peak-oil-international-energy-agency

11. Kjell Aleklett et al, 2009. The Peak of the Oil Age - analyzing the world oil production Reference Scenario in World Energy Outlook 2008. Energy Policy. http://www.tsl.uu.se/uhdsg/Publications/PeakOilAge.pdf

12. Steve Sorrell et al, 2009. Global Oil Depletion: An assessment of the evidence for a near-term peak in global oil production. UK Energy Research Centre. http://www.ukerc.ac.uk/support/Global%20Oil%20Depletion

13. p134

14. See Figure 2.8. page 24

15. p7

16. International Energy Agency, 2009, ibid, p80.

17. Steve Sorrell et al, 2009, p169.

18. p164.

19. p18.

20. Robert L. Hirsch, Roger Bezdek and Robert Wendling, February 2005. Peaking Of World Oil Production: Impacts, Mitigation, & Risk Management. US Department of Energy. Available at http://www.hubbertpeak.com/us/NETL/OilPeaking.pdf

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