The oil / food price shock

Presentation to Association for the Study of Peak Oil 9th annual conference, 2011 Albert Hall, Brussels

Alex Evans

I want to cover four things in this presentation.

- How much of a factor biofuels were in the food price spike of 2007-08, and indeed the one that we're in now;
- What the prospects are for a rethink on biofuels, especially corn-based ethanol in the US;
- How the convergence of the world's oil and food economies fits in to the larger context of resource scarcity; and
- What we need to be doing about all this in the policy context.

So let's start with **how much of a factor biofuels were in the 2008 food spike** – where the headline is that they were a pretty big deal.

It's true that many other elements were involved – as the UK's chief scientific adviser likes to put it, this was a perfect storm. On the demand side, we have a rising population and an expanding global middle class shifting to more resource-intensive western diets.

On the supply side, meanwhile, we had the effect of high oil prices on inputs like fertiliser and pesticide, on on-farm energy use, on processing and transport; a context of declining yield growth, with the 'Green Revolution' increasingly running out of steam; a spate of extreme weather events, seen by many as early impacts of climate change; and a legacy of long-term under-investment in agriculture.

On top of all this, we had amplifying factors like historically low stock levels for food; the effect of currency movements, especially the weaker dollar; perhaps also the role of financial speculation, though this is controversial; and above all, the multiplying effect of kneejerk government actions, whether importers engaging in panic-buying, or producers imposing export bans.

So there was a lot going on. But how much of a factor were biofuels? This is an argument that's still not settled, and as a non-economist I don't pretend to have done the quant analysis myself. But three analyses that I take particular note of are those of:

- The IMF, which argued that even though biofuels only represented 1.5% of global liquid fuels supply in 2006-07, they accounted for nearly *half* the increase in major food crop consumption, primarily because of corn-based ethanol in the US;

- Goldman Sachs's commodities research team, which argued at the time that biofuels were *the* principal driver of rising food prices; and

- The World Bank, whose data show that while demand growth for food crops was running at about 2% a year, the rate was only 1.3% between once you strip out biofuel demand, below the historical trend. In other words, blame biofuels more than China's new middle class for the sharp uptick in demand growth over the last decade.

So while biofuels were by no means the only driver of the spike, they were a pretty major one.

And it's really important that we pause to reflect on the human impacts of all this. Everyone felt the food spike, through high inflation rates, especially in less developed countries where food and fuel account for higher proportions of household spending.

But it was the world's poorest who were really at the sharp end. UN and World Bank figures showed the number of undernourished people rising from about 850m before the spike, to over a billion at its height.

More tangibly, think about the generation of kids whose prospects have been damaged for life by the food spike. When children under five are malnourished, they become physically stunted, and cognitive development is permanently impaired. These effects don't clear up when food prices fall: the damage is done, for life. We are not dealing with academic issues here.

So if corn-based ethanol is stupid on the basis of its energy returned on energy invested ratio, or its greenhouse gas emissions, it's even more so when you consider its impact on food prices and what that means for hundreds of millions of poor people around the world.

So that was the 2008 food spike. After it, prices fell sharply as the financial crisis kicked in; the global hunger total fell, too, though it stayed higher than before the spike.

But now, we're in *another* food spike – and the UN Food Price Index is even higher than its previous record in 2008.

This spike began with meat, edible oils, sugar and – importantly – corn. You can see biofuels' fingerprint again here: the US is the world's biggest producer of corn, but this year it will divert 40% of its crop to ethanol.

- Then wheat started rising sharply last summer, after the Russian drought and then its export ban.

- Then oil prices started rising steadily, for reasons you're all familiar with.

- Then futures markets started to take fright over drought in China's grain-producing regions.

- Then North Africa's import-dependent countries started panic buying as the wave of unrest there gathered pace, in part because of high food prices.

- Then oil prices went even higher as markets priced in a political risk premium.

- And now the big question is whether we slide into another spate of export bans, like the one in 2008 when over 30 exporting countries had restrictions in place. If that happens, we're *really* in trouble.

So what do we need to be doing to tackle all this – and how much is happening already?

Let's start with **prospects for a rethink on biofuels**, especially corn-based ethanol which has had the largest impact on food prices.

In the US, there's an active and reasonably powerful attack on ethanol tax subsidies: current subsidies expire at end of year, so there's an action-forcing deadline.

Pressure to reduce the budget deficit is obviously a big political factor, and there's an emerging coalition opposed to ethanol composed of oil state politicians (who see ethanol as a competitor), corn users (especially the meat industry), and environment and development campaigners.

But at the same time, there's still strong political commitment to ethanol in *some* form, including from the White House. Remember that even if subsidies are scaled down, there's still the regulatory mandate on blending ethanol with gasoline, recently increased –which is separate from the subsidies.

Around the world, there's also little evidence so far of a major rethink on biofuels. The EU still has its 10% biofuel target for 2020, although political pressure is building. And of course many middle income countries are also getting in to biofuels in a big way.

And it's not hard to see *why* biofuels are enjoying so much attention and political support – given fears over OPEC's growing share of global oil production. Even though biofuels were only 1.5% of global liquid fuels in 2008, they represented nearly 75% of the net global increase in non-OPEC liquid fuels. Just a week ago, the International Energy Agency put out a report suggesting that 27% of liquid fuels could come from biofuel by 2050.

So the political calculus in oil consumer countries continues to favour biofuels – despite the food impacts, and despite what we know to be the often dubious rates of energy returned on energy invested.

So that's a quick snapshot of where biofuels fit into the issue of high and volatile food prices, and where we are on the policy agenda.

But let's take a step back now, and look at **how these issues fit into the larger context of resource scarcity** as a whole, which is what the program I run at NYU's Center on International Cooperation is focused on.

We're interested not just in food and oil, but also in the links between them and three other scarce resources: land, water, and 'atmospheric space' for greenhouse gas emissions.

Our core argument is that policymakers need to see – and treat – these issues *as a set*, for five reasons.

- First, because the same basic drivers are at play in each case: exponentially rising demand, plus hard questions about whether supply growth can keep pace.

- Second, because they're linked together by complex feedback loops. High oil prices don't just mean high food prices – they also mean higher water prices, because of the energy intensity of water pumps, desalination plants and purification system; and they mean more competition for land, because biofuels become more attractive. There are many, many more links like this.

- The third reason we see them as a set is because unless policymakers look at the whole picture, there's great risk of just displacing problems from one aspect of scarcity to another. Biofuels – an energy security measure that undermined food security – are a case in point. Or look at how the agricultural Green Revolution often increased food security at the expense of water security. And so on.

- The fourth reason is because on each aspect of scarcity, poor people and poor countries are most vulnerable – so there are crucial issues here about poverty, state fragility and conflict prevention.

- And the fifth is because perceptions of scarcity change behaviour. Scarcity is fertile ground for panic. Think about what causes a run on a bank. Think about why so many countries imposed food export bans in 2008. When people believe there isn't enough to go round, there's the risk of zero sum games – raising the question of how to instil sufficient confidence and trust to get actors to cooperate in positive sum games instead.

So that's why we want policymakers to understand scarcity issues as a set. And I'd like to finish with a few thoughts on **what a policy agenda for managing a world with limits would look like**.

This is clearly a sprawling agenda, which we could discuss for a week. But I think that's part of the problem: we need to make it seem more manageable, and break it down into a small number of task-lists.

I'd argue that at root, there are basically three.

The first one is about the *supply side*: what we can do to increase access to food, energy, land and water.

You all know the kinds of issues we're talking about in the energy context: facing up to the peaking of oil production (and ultimately gas and coal too); shifting to renewables, as much as we can; not kidding ourselves that unconventional oil, or corn-based ethanol, or other approaches that merely push the peak out a little, represent some kind of magic bullet.

In the food context, projections suggest we have to produce 50% more food by 2030. That might actually be possible – but we need to get moving very, very fast to scale up investment and yields per hectare, shift to a model that's less fossil fuel and water intensive, make agriculture more resilient to climate change, and get it to work for the world's poor – three quarters of whom are rural.

Second, we need to get serious about the *demand side*. We can get a long way through reducing waste. There is huge scope for improving energy efficiency (rebound effects notwithstanding), for reducing post-harvest food losses in poor countries, and cutting food waste in the rich world. Technologies like drip irrigation can help us use water far more efficiently than we do.

But achieving these gains will take hard political decisions – in areas like water pricing, eliminating subsidies on food or fuel, overcoming the hassle factor on energy efficiency, and so on.

And the demand side will also unavoidably bring some absolutely *charged* equity issues into play – questions about 'fair shares' in a world of limits.

We're already seeing intensifying competition for energy, land, water and other resources, both within countries and globally – look at the scramble for oil taking place, or the newer trend of 'landgrabs'.

In the food context, questions about whether it's OK for the US to divert 40% of its corn to biofuels, or for consumers to eat as much red meat as they want despite its resource intensity, are already becoming global issues.

Most controversially of all, the issue of 'carbon space' – how to share out a global 'emissions budget' – is so contentious in the climate context that countries have spent over a decade refusing to discuss it.

But we have to face up to issues like this, not sweep them under the carpet. And that will involve reforming our governance institutions so they can cope with equity issues this acute.

Third and finally, we need to *invest in resilience* to cope with the shocks and stresses that a world of scarcity will bring.

Within developing countries and fragile states, that means paying more attention to areas like natural resource governance, social protection, climate adaptation, disaster risk reduction and

conflict prevention – and population growth, too, which although declining globally remains high in some of the world's most fragile countries. None of these areas got enough attention in the Millennium Development Goals, the aid industry's key priorities.

And internationally, we need to make the trade system more resilient to resource stresses and the risk of security of supply panics.

We need a global system of food reserves, comparable to the role of the IEA in the oil context. We need tougher rules against export bans. And we need better political crisis management systems for dealing with resource spikes, and a lot more 'stress-testing' of existing international institutions, such as trans-boundary water sharing treaties.

To wrap up:

This is a broad, demanding and ambitious agenda - all the more so given that we don't currently have the political space, the leadership, the multilateral 'bandwidth' or in many cases even the ideas that we need to deliver it.

But for all that, I have huge faith in our long term prospects. As a species, we have a long history of cooperating, innovating and moving extraordinarily quickly when we're most up against it.

I think that's exactly what we're going to do this time round as well.

And that's why, although I don't disagree with the relevance of themes like 'powerdown', 'descent', 'long emergency' and so on, I prefer to see the outlook from here as one of 'renewal', 'renaissance' and 'our finest hour'.

Thanks again for having me.