The 'Right to Food' Revisited: *The Cost of Living Crisis & the Coming Crash*

The media is exercised by the 'cost of living' crisis; but they're ignoring the greater structural economic trends that are driving it – and thus the difficult questions that these trends raise for our future.

Paul Mobbs, *The 'Meta-Blog'*, issue no.21, 17th May 2022

It's been such a great party! What a time! **Humanity (well, a small part of it in 'The West') has had a few centuries of growing material affluence. Driven by fossil fuels, powering new technologies, society (and the global climate) has been completely changed. But like all celebrations, that process is arguably coming to an end; and like all the best parties, those who have had a really good time don't want it to stop!**

Of course, you won't hear the demands to turn down the music repeated in the media – who must always end on a positive note, stressing some scheme or political project that will keep 'the party' going. The reality is, though, this party has already ended for the bottom 10% in society – two decades ago; and since then that economic malaise[1] has slowly climbed the wealth spectrum, to the point where it is now starting to engulf the 'middle income' groups – *and they really don't like it!*

This slow decline of the economy has cut-away the social support systems that, since the pernicious 'Poor Law' system[2], were meant to relieve poverty. But unlike previous crises, driven by short-term fluctuations, this one is far bigger: It represents the unravelling of the systemic complexity[3] that created the modern 'economic party'; and with that, the 'emergent' power[4] certain states took from it.

Last year I wrote a blog on the 'right to food'[5]. It examined how Britain failed to implement this human right; and how Covid has exposed Britain's failure to deal with poverty, and especially poor diet. In this blog post I'll extend that idea, and you might find it useful to read that previous post first.

I want to look at the economic crisis that is likely to explode over the course of 2022. In particular, whether recent disruptions are exposing a longer-term, structural shift in the human system; to ask the metaphorical question, *"Is 'The Party Over'?"*

What do the 'Limits to Growth' look like?

As in my other recent posts, this 'data blog' updates work I first undertook twenty years ago for my book, *'Energy Beyond Oil'* [6]. Twenty years on, what I find confirms the trends that were forecast then.

Fifty years ago, the *'Limits to Growth'*[7] study projected the human system would peak over the 2020s and 2030s and then decline. Recent reviews confirm[8] it's still on-track. But whenever this issue is raised, pundits always argue the reasons why that's not possible, and why growth will continue.

Let's invert that pro-growth argument:
In the context of food prices and food supply, if the *'Limits to Growth'* were happening, right now, **what would that look like** in terms of food production and food prices?

As has been known for some time[9], *modern food is fossil fuelled energy*: From the tractors burning diesel at a rate of a few miles per gallon, to the natural gas used to make fertiliser, to the electricity that's essential to food processing and the supply chain. By various accounts[10], the intensively-produced Western diet takes ten calories of energy to consume one calorie of food. As a result, there is a strong correlation between energy and food prices.

The recent oil, and especially natural gas price spike won't feed through into food prices until next year – until the next harvest has been gathered. And even now, growers are considering which crops may not be planted or raised later this year, which will feed-through into supply disruptions next year. So this cycle of supply disruptions and rising prices won't end for at least another two years.

Just like the pandemic *(the previous excuse)*, the Ukraine crisis has exposed these trends more starkly than they would otherwise appear. It disrupts 'the human system' because, running at its physical limits, it cannot absorb a large systemic shock. It is the lack of spare capacity that demonstrates the

system is operating at its limit; and it is that lack of spare capacity that disrupts supply and drives-up prices – with commodity speculators and futures traders creating further instability by ‘betting’ on the available capacity in the future.

The state of the ‘modern’ human food system – which primarily serves urbanised populations – is an inversion of the situation of a century or two ago. Back then, except for a few large cities (such as London or Manchester), food was essentially local, low energy, and more nutritious. The modern food system has economically destroyed that – and with it, the global environment too.

“The War in Ukraine has caused prices to…”

How often have you heard that line recently? While the Ukrainian conflict has caused prices to spike – off the back of futures speculation[11] not an immediate lack of supply – there is no evidence to show this is the only reason for price rises. It’s a convenient excuse to avoid looking at the data that describes current trends (shown on the right) that emerged well over a decade before 2022.

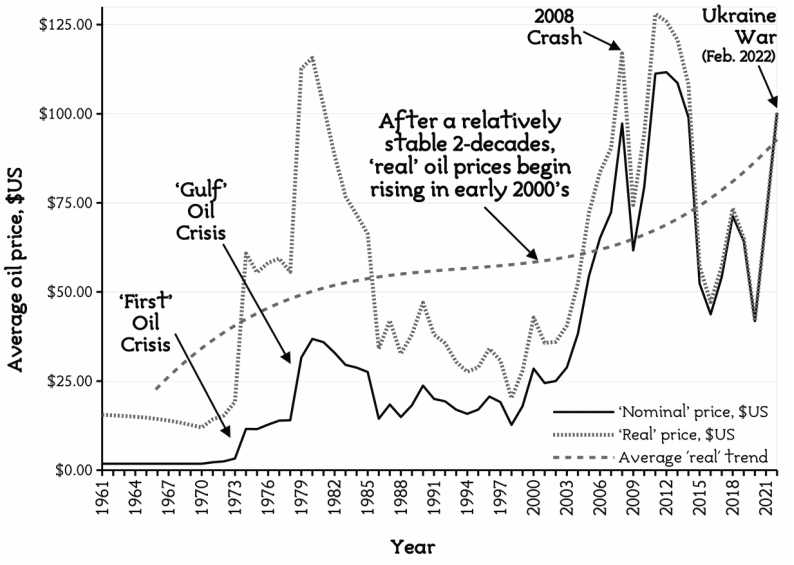
Contrary again to the Western media line, the 12% of global oil production from Russia is not completely ‘lost’ due to sanctions. Both India, China, and a number of other countries are more than happy to buy this oil at a cheaper rate because it helps their economies. Instead, the greater issue that existed well before the pandemic, or the Ukraine crisis, has been the long-term lack of spare capacity in the oil industry globally.

The first graph on the right (a) shows global oil prices, based on BP’s dataset[12]. There are two lines shown[13]: The *‘nominal’* price, which is the value that in that year; and the *‘real’* price, which is adjusted for inflation, so a value years ago can be directly compared to today’s value.

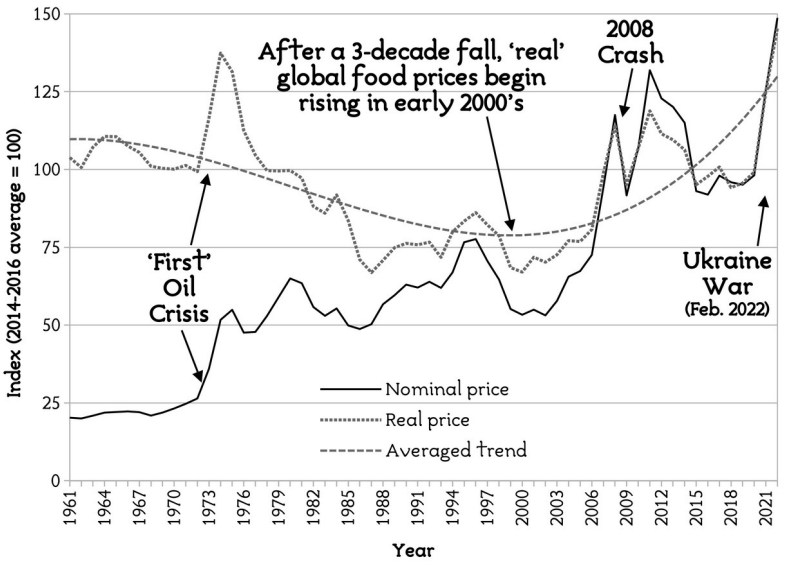
Comparing the ‘real’ price, the levels today are similar to the late 1970s. This is

Three graphs to describe this phenomena:

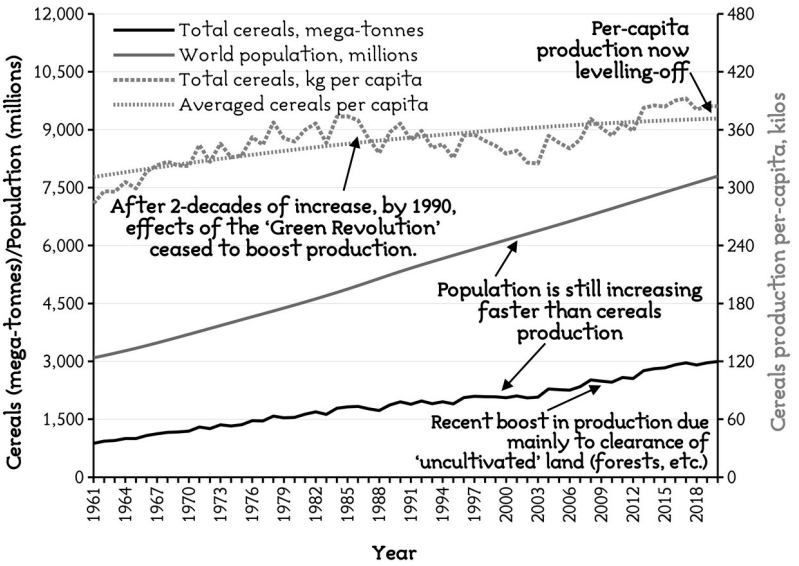
(a) Global oil prices



(b) FAO global food prices index



(c) Per-capita cereals production



why commentators say that current prices are *"the worst for forty years"*[14].

Why then doesn't the media point out that this trend was growing well before the pandemic; arguably since the 2000s? It raises difficult and complex questions:

- *Why are oil prices rising?* Because there is no spare capacity.
- *Why is there no spare capacity?* Because 'conventional' oil production has hit a plateau[15], representing the peak of global production[16] after 160 years of production growth.

What has kept the oil market 'fluid' is 'unconventional' production – from fracking[17] and oil sands[18] – which apart from being more expensive to produce, are worse for the climate.

Today, the 'easy to produce' sources of oil are nearly used-up; and the 'harder to produce' sources are progressively more expensive to develop. For example, fracking companies in the US were going bankrupt[19] up until recently, and it's only with the recent price spike that they returned to profitability[20].

Therein lies the contradiction: Even if we ignore climate change, the energy and financial resources required to undertake more marginal, and more 'extreme' forms of oil and gas production, are not economic at a price the global economy can afford. That's what has eroded spare capacity, and caused, on average, prices to gradually move upwards for the last twenty years.

This represents a real barrier to future growth because the prices at which new production are profitable cause a crash in other parts of the economy. It doesn't require 'running out' of oil to cause a price spike; there just has to be a small shortfall in capacity to create a sudden spike. Is there any better illustration that the fossil fuel industry is operating at its practical limits?

The cereals problem

Cereals are not all food, but they are a good indicator of the 'food system'. When we look at the future trends for global food supply and hunger, cereal production reflects the adequacy of that system as a whole, rather like oil reflects the energy sector.

The second graph (b) on the previous page illustrates the UN Food and Agriculture Organisation's (FAO) 'Food Prices Index'[21]. This is a weighted basket of foods[22] from around the world that produces a snapshot of food prices at any one time. Just like the oil price, it also gives 'nominal' and 'real' values to compare over time.

Compare the cereals graph (b) to the oil price graph (a) above it. They are almost a sketch copy of one another. As food is so infused with fossil fuels, so its price is largely determined by the value of fossil fuels, not simply the costs of land or labour.

It was 'The Green Revolution'[23] which created this iron-link between fossil fuels and food production, due to the far higher use of mechanisation and chemical inputs. That didn't matter in the 1960s, when in 2020's value, a barrel of oil cost $14.50. Now that price has risen four to six times, it creates a new problem: There may be food, but many, especially in the Global South, can't afford to buy it.

The final graph (c) shows cereals production and population – and then calculates the global share of cereals 'per person'. The effects of the Green Revolution petered out in the late 1980s[24], in part because of the oil price rise. That then caused food prices to rise in the 1990s as production fell.

From the late 1990s, as prices rose, corporate finance poured into the global commodity farming sector. That expanded the land under intensive production, boosting supply per-person into the 2000s. At the same time, though, it increased the clearance of forests[25] and uncultivated land – damaging global biodiversity[26], contributing to soil loss[27], climate change, and agricultural pollution[28].

Since the early 2000s, to keep profits flowing, agriculture around the globe began to consolidate – creating the very few[29] agribusiness corporations who dominate the trade in food commodities today. These corporations make profits[30] by shifting the financial risk[31] onto farmers and producers; which has led to falling farm incomes around the globe, even though retail prices have been rising.

Today, producing bulk agricultural commodities is structured around very large, often global companies. Agricultural consolidation, rather than taking the economic risk directly, has out-sourced operations to companies managing land under contract. Landowners are now 'asset managers'[32], not 'farmers'. More importantly, when government's talk about increasing technology or 'precision farming'[33], that is a model of farming which only works via the large outsourcing companies who own those technologies, not traditional farmers.

Look at graph (c) again: Notice that population is rising faster than cereals production?

Within the next decade or so[34] there is a big question as to whether cereals production can be maintained[35]. Some have projected the entire cereals system will have to change, including changing the type of crops grown[36], to maintain production. Even without rising population, climate change makes it difficult to maintain the amount of cereals per capita – once again driving prices.

If that sounds like the capacity problems in the oil industry, then it's because both industries are based on the same extreme models of economic financialisation, out-sourcing, and short-term profit seeking.

Whether people like to talk about it or not, rising human populations are a factor too – but that's not as significant as feeding intensively produced crops to animals in industrialised meat production systems, to satisfy the demand for meat eating that arises with greater affluence. Just like the lack of spare capacity in the oil market, these factors are driving this system towards its breaking point.

It's not just a question of that iron-link to fossil fuel prices. Farming a large amount of single commodities represents a 'diminishing return'[37] – and soon that trend of 'progress' is likely to halt due to either climate change, oil depletion, or because the nature of this system is destroying the fertility[76] of the land farming relies upon. Put simply, *reliance on cereal production is another 'limit to growth'.*

'Rewilding' versus 'rewilding humans'

In a system operating at its physical limits, shortages of capacity, and how those shortages are organised or deliberately manipulated, translate into volatile global markets. New enter 'rewilding'[38] – groups who want to take 30% of global farmland out of production, and see no drawbacks to this.

How the food debate is framed is increasing disconnected from the 'deep ecology'[39] of the human biosphere[40]; instead only considering economic and technological mechanisms – those very same mechanisms that have created the biodiversity crisis since the adoption of The Green Revolution.

Neoliberal economics dictate that changing agricultural practises must not change the underlying economic, and especially property rights systems that underpin modern agriculture. No one in government or policy circles is arguing for 'radical change', only for the 'reform' of these existing practices.

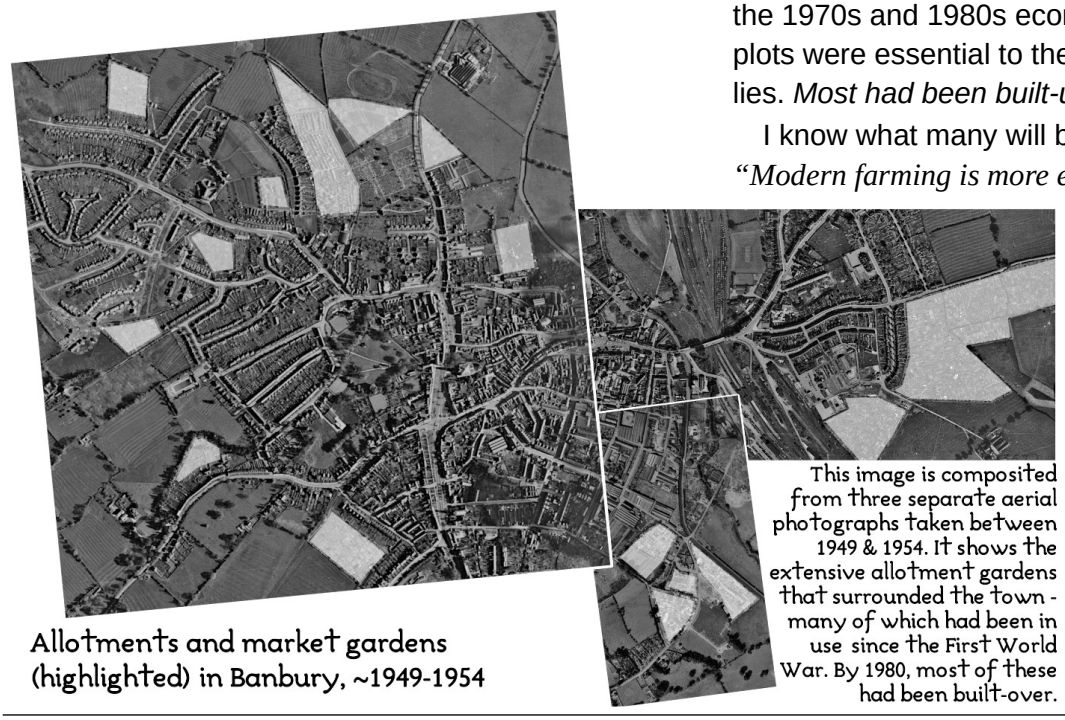
If we could have a completely open choice – without beholding the elite landowners and economic interests – *what could we do?*; and are those ideas any more realistic than 'rewilding'?

The picture below shows my home town, Banbury, around 1950: ~19,000 people, and hundreds of allotments spread all around the edge of town. Those gardens – some of them operated commercially by people who lived in the town (such as my Great-Grandad) – supplied vegetables, meat, and dairy products to homes and local shops.

This was not 'recreation'. From the 1930s, up to the 1970s and 1980s economic downturns, these plots were essential to the well-being of local families. *Most had been built-upon by the late 1980s.*

I know what many will be thinking at this point: *"Modern farming is more efficient"*.

This is not accurate: Modern farming is more 'economically efficient', in terms of the revenue generated; in terms of the calories of food produced per unit of land, it's worse; and the embodied energy[41] and embedded emissions[42] that intensive farming generates are far worse.



Allotments and market gardens (highlighted) in Banbury, ~1949-1954

This image is composited from three separate aerial photographs taken between 1949 & 1954. It shows the extensive allotment gardens that surrounded the town - many of which had been in use since the First World War. By 1980, most of these had been built-over.

As the main measure of progress, the 'consensus' debate on agriculture is skewed toward the 'economic values'[43] of the food produced; which is why 'technological' farming solutions always dominate the narrative on future options. If we look at the food yield per unit area of land, or the 'net' ecological impacts[44] of food production, the results are starkly different; yet these metrics are rarely raised.

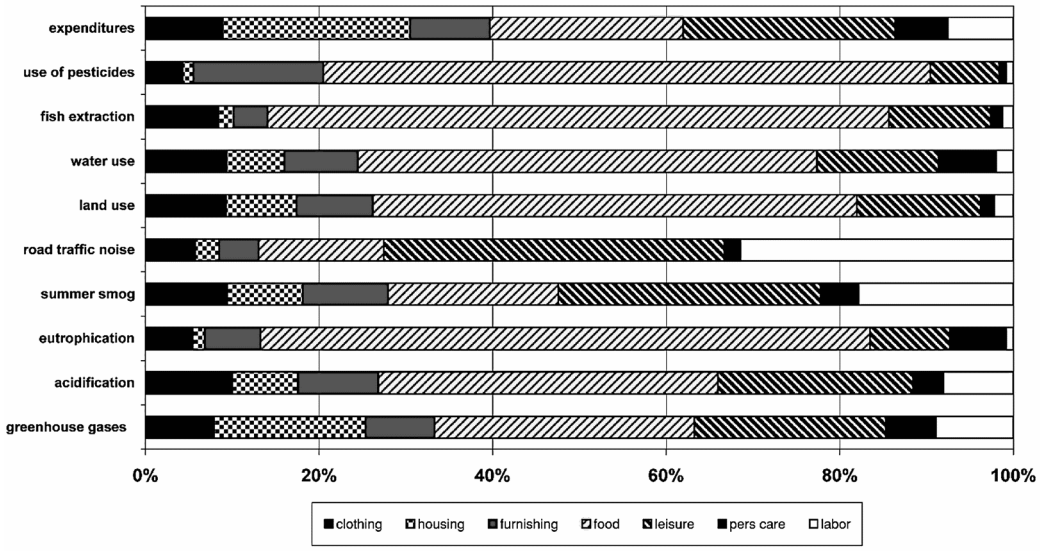


Figure 2 Share of the consumption domains in the environmental load (direct and indirect, all regions).
Nijdam et al., Environmental Load from Dutch Private Consumption

One of the most detailed studies[45] has shown that a third of the world's food supply is grown by 'small farmers' (on plots less of than 2-hectares), using only a quarter of the farmed land area. In other words, small farmers are producing a third more food per unit area of land than larger, more intensive operations. The research also shows that waste in the supply chain is greater for large farms, serving the commodities market, than small farms serving the local area.

The leading edge of agro-ecological research[46] focusses on how to eliminate external inputs in food production. Globally, small farmers do not use commodity-oriented, mechanised 'monoculture'[47] practices. They use various, often locally evolved 'integrated polyculture'[48] techniques, that maximise food production by growing multiple crops in the same space. The 'cost' of that is using higher levels of human labour rather than machines.

For example, a recent study[49] found that Cuban farmers using these techniques were able to maintain yields with 70% less inputs; while in comparable South American states, large farmers were still increasing inputs just to maintain production levels. Recent European research[50] on agroforestry systems[51] showed production levels 36% to 100% higher than equivalent monoculture operations.

"OK", you might think, *"but allotments still don't solve the biodiversity crisis"*. Think again.

Recent work[52] by the University of Sussex shows that small-scale low impact cultivation on urban allotments can easily match the productivity of large-scale intensive monoculture. And in a more recent follow-up to that[53], they found the biodiversity of urban allotments was higher than intensively managed monoculture. Research from Australia[54] shows that urban agriculture can be more productive than intensive systems, with the potential to require far lower resource inputs.

The graph above is taken from a classic 2005 study[55], widely cited across the literature in this area. It identifies the ecological footprint of the average Dutch consumer (broadly similar to England): 'Food' is the single largest part of the individual's lifestyle – more than housing. The fact is, by taking ten calories to get a calorie of food in your mouth, on average, per person per day, this puts more energy our mouths than into the average house.

A study published in April found that those in the affluent states need to cut their resource use by 70%[56] in order to achieve an ecologically sustainable world. This is beyond any measure of technological or systemic efficiency to achieve.

Since 1950, energy use in agriculture has increased 100-fold[57]; yet per-capita food production has started to decline recently despite continued increases in inputs – because the the damage[58] created is causing those declines in yield. In terms of carbon emissions, food represent a third[59] of global direct and land-use emissions.

In many different ways, as shown in research from projects in Spain[60], the kind of 'local' food we had in Banbury, before the rise of consumerism, has the potential[61] to make large cuts in resource use and emissions. *Why then does the ecological debate not discuss 'rewilding the humans' instead?*

The return of hunger in 'a land of plenty'

Why spend so much time and effort looking at the economics of oil and food? It demonstrates the link between industrialised agriculture, and the way people are forced to live in urbanised societies. *But the greater issue here is how we break that link.*

There's a quote from Emma Goldman[62] that sums up the current predicament of 'the poor':

> *"If they do not give you work, ask for bread. If they do not give you work or bread, then take bread."*

'Hunger' never really went away in England. As I write this: The news is reporting that 250,000 households are facing destitution[63] by the Autumn; that the poorest can expect to die[64] almost two decades before the richest in society; and that a large amount of ill-health in Britain today has a direct link to the modern diet[65].

Poverty, and being forced to live in that condition, is directly related to access to the land and food. These are not recent developments: People were driven from the land over the course of four-hundred years of land inclosure[66]; corralled into the growing urban areas of industrial Britain where they were subject to[67] the humiliations of 'the poor house'[68]; and this historic trend of top-down prejudicial control continues under Universal Credit[69].

The mainstream political and economic debate assumes that everyone eats intensively produced, highly processed food from supermarkets. What happens when a group in society – 'the precariat'[70] – cannot participate in that lifestyle?; even when in full-time employment. This is the issue at the heart of the 'cost of living crisis' today; but for the poorest in Britain, this has been day-to-day reality not the last few months, but for the last decade or two[71].

In the Global South, countering pressure[72] from developed states grabbing land[73] for commodity agriculture, 'food sovereignty', and access to the means of producing food, has become a rallying point for community organisation. In the Global North – where the importance of food was ignored in the shift from 'humans being' to 'humans consuming' – land rights, access to land, and producing food, has been eliminated from political debate.

Irrespective of how powerful a policy change it would be – to reduce carbon emissions, consumption, and improving diet – allowing people to move 'back to the land'[74] in England, or creating extensive plots around urban areas, is never going to happen by any 'reasonable' means; because a 1,000 years of English history mean 0.04% of the population[75] still own 50% of the land area.

As Buckminster-Fuller said, *"You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete."*

That's why we need a truly radical project to addresses access to food, and low-cost low-impact lifestyles. The only way we're going to change the current system is not through 'reform', but by rendering its economic rules and priorities obsolete.

The current global food crisis – created by the Green Revolution, and driven to extremes by the agricultural specialisation, consolidation, and outsourcing – is reason enough to change. That system simply doesn't work. At the same time, the ecological crisis is a function of that globalised system, and it will not be solved until we reverse that trend.

The fact is, the benefits of low impact and integrated polyculture cannot happen unless a de-intensification of farming takes place. That inevitably means shrinking farm sizes, which requires more people in the landscape growing food. That's not going to happen overnight, and so the half-way point of urban populations having access to land to grow food is an essential first step in that process.

Imminently, as the oil & gas price spike moves through the economic cycle in the next year or so, fuel and food price rises will create a global recession. More disruptive, though, are changes to what or where food is grown – due to the rising price of inputs – that might affect food availability for perhaps two or three years ahead, compounding price rises. That will provoke riots in the Global South; and as people fall into destitution, perhaps here too.

There IS an alternative, but that cannot work within the current ideology of economics and property rights. We need to move beyond those arbitrary historic restrictions: To re-value food, the land, and access to the land, to create the transformation of society demanded by the ecological crisis, and the worsening crisis[77] of the 'limits to growth'.

References

1. YouTube: "Fuel Poverty, the Cost of Living Crisis, and Climate Change' – A Data Blog', 1st February 2022 – https://www.youtube.com/watch?v=TGprWXyHKiM
2. Wikipedia: 'English Poor Laws' – https://en.wikipedia.org/wiki/English_Poor_Laws
3. Wikipedia: 'Systems theory' – https://en.wikipedia.org/wiki/Systems_theory
4. Wikipedia: 'Emergence' – https://en.wikipedia.org/wiki/Emergence
5. Ramblinactivist's Blogs – 'The MetaBlog': 'Why is there no 'right to food', or to grow food in Britain?', 25th March 2021 – http://www.fraw.org.uk/blog/posts/013/index.shtml
6. Paul Mobbs/MEIR: 'Energy Beyond Oil – Could You Cut Your Energy Use by Sixty Percent?' – http://www.fraw.org.uk/meir/ebo_book.html
7. Wikipedia: 'The Limits to Growth' – https://en.wikipedia.org/wiki/The_Limits_to_Growth
8. A Book in Five Minutes, No.1: 'The Limits to Growth' (1972), 2nd September 2021 – https://www.youtube.com/watch?v=5SMrzzW9Zms
9. Abe Books: 'Eating Oil Energy Use In Food Production', 1978 – https://www.abebooks.co.uk/products/isbn/9780367167646
10. Abe Books: 'Eating Fossil Fuels: Oil, Food, and the Coming Crisis in Agriculture', 2006 – https://www.abebooks.co.uk/products/isbn/9780865715653/31058072491
11. Wikipedia: 'Futures contract' – https://en.wikipedia.org/wiki/Futures_contract
12. BP: 'Statistical Review of World Energy', 2021 – https://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html
13. Wikipedia: 'Real versus nominal value (economics)' – https://en.wikipedia.org/wiki/Real_versus_nominal_value_(economics)
14. Guardian On-line: 'US inflation climbed to 8.5% in March, highest rate since 1981', 12th April 2022 – https://www.theguardian.com/business/2022/apr/12/us-inflation-rate-march-2022
15. Paul Mobbs/MEIR: 'What, is peak oil dead? Then show me the body! (of statistical evidence)', May 2015 – http://www.fraw.org.uk/meir/work/ecolonomics/ecolonomics-016-peak_oil_dead-show_me_the_body.pdf
16. Wikipedia: 'Peak oil' – https://en.wikipedia.org/wiki/Peak_oil
17. Wikipedia: 'Hydraulic fracturing' – https://en.wikipedia.org/wiki/Hydraulic_fracturing
18. Wikipedia: 'Oil sands' – https://en.wikipedia.org/wiki/Oil_sands
19. CNBC: 'Shale industry will be rocked by $300 billion in losses and a wave of bankruptcies, Deloitte says', 22nd June 2020 – https://www.cnbc.com/2020/06/22/shale-industry-will-be-rocked-by-300-billion-in-losses-and-a-wave-of-bankruptcies-deloitte-says.html
20. Bloomberg: 'U.S. Shale's Cash Bonanza Will Wipe Out $300 Billion Loss', 5th May 2022 – https://www.bloomberg.com/news/articles/2022-05-05/u-s-shale-s-cash-bonanza-is-about-to-wipe-out-300-billion-loss
21. UNFAO: 'Food Prices index' – https://www.fao.org/worldfoodsituation/foodpricesindex/en/
22. Wikipedia: 'FAO Food Price Index' – https://en.wikipedia.org/wiki/FAO_Food_Price_Index
23. Wikipedia: 'Green Revolution' – https://en.wikipedia.org/wiki/Green_Revolution
24. Paul Mobbs/MEIR: "'Fracking' our food and farming system – 'Extreme agriculture' and the politics of denial', April 2014 – http://www.fraw.org.uk/meir/work/ecolonomics/ecolonomics-014-fracking_our_food_and_farming_system.pdf
25. National Geographic: 'Palm oil is destroying rainforests. But try going a day without it.', 13th December 2018 – https://www.nationalgeographic.com/environment/article/palm-oil-destroying-rainforests-household-items
26. Guardian On-line: 'Nearly all global farm subsidies harm people and planet – UN', 14th September 2021 – https://www.theguardian.com/environment/2021/sep/14/global-farm-subsidies-damage-people-planet-un-climate-crisis-nature-inequality
27. UNFAO: 'Soil erosion must be stopped 'to save our future', says UN agriculture agency', 5th December 2019 – https://news.un.org/en/story/2019/12/1052831
28. EcoWatch: 'Ocean's Largest Dead Zones Mapped by MIT Scientists', 26th January 2022 – https://www.ecowatch.com/ocean-dead-zones-map.html
29. PEW Trust: 'How Corporate Control Squeezes Out Small Farms', 18th July 2012 – https://www.pewtrusts.org/en/research-and-analysis/fact-sheets/2012/07/18/how-corporate-control-squeezes-out-small-farms
30. Food Print: 'The Economics of Food and Corporate Consolidation', 11th October 2018 – https://foodprint.org/issues/the-economics-of-food-and-corporate-consolidation/
31. YouTube: 'Under Contract – 10 Minute Promo', 12th April 2016 – https://www.youtube.com/watch?v=Nb00WsoZpkU
32. Journal of Peasant Studies: 'Food and finance: the financial transformation of agro-food supply chains', 20th January 2014 – https://www.tandfonline.com/doi/full/10.1080/03066150.2013.874340
33. DEFRA: 'Agricultural Transition Plan 2021 to 2024', 30th November 2020 – https://www.gov.uk/government/publications/agricultural-transition-plan-2021-to-2024
34. NASA: 'Global Climate Change Impact on Crops Expected Within 10 Years, NASA Study Finds', 2nd November 2021 – https://climate.nasa.gov/news/3124/global-climate-change-impact-on-crops-expected-within-10-years-nasa-study-finds/
35. EEA: 'Agriculture and climate change', 2015 – https://www.eea.europa.eu/signals/signals-2015/articles/agriculture-and-climate-change
36. Nature Food: 'Climate impacts on global agriculture emerge earlier in new generation of climate and crop models', vol.2 pp.873-885, November 2021 – http://pure.iiasa.ac.at/id/eprint/17614/1/2021-10-12-from-Jonas--PROOFS--43016_2021_400_Author%20%281%29.pdf
37. Wikipedia: 'Diminishing returns' – https://en.wikipedia.org/wiki/Diminishing_returns
38. Wikipedia: 'Rewilding (conservation)' – https://en.wikipedia.org/wiki/Rewilding_(conservation_biology)
39. Journal of Natural Resources: 'The Deep Ecology Movement', Spring 1980 – http://www.fraw.org.uk/data/ap/devall_1980.pdf
40. The Journal of Peasant Studies: 'Degrowth and critical agrarian studies', vol.47 no.3 pp.235-264, 2020 – https://www.tandfonline.com/doi/full/10.1080/03066150.2019.1695601
41. Wikipedia: 'Embodied energy' – https://en.wikipedia.org/wiki/Embodied_energy
42. Wikipedia: 'Embedded emissions' – https://en.wikipedia.org/wiki/Embedded_emissions
43. MIT Global Change Program: '2021 Global Change Outlook', March 2022 – https://globalchange.mit.edu/publications/signature/2021-global-change-outlook
44. Ecological Economics: 'Trophically balanced sustainable agriculture', vol.72 pp.88-96, December 2011 – http://www.fraw.org.uk/data/simplicity/schramski_2011.pdf
45. Global Food Security: 'How much of the world's food do smallholders produce?', vol.17 pp.64-72, June 2018 – https://www.sciencedirect.com/science/article/pii/S2211912417301293
46. Wikipedia: 'Agroecology' – https://en.wikipedia.org/wiki/Agroecology
47. Wikipedia: 'Monoculture' – https://en.wikipedia.org/wiki/Monoculture
48. Wikipedia: 'Polyculture' – https://en.wikipedia.org/wiki/Polyculture
49. Global Environmental Change: 'The effect of Cuban agroecology in mitigating the metabolic rift: A quantitative approach to Latin American food production', vol.63 art.102075, July 2020 – http://www.fraw.org.uk/data/simplicity/betancourt_2020.pdf
50. Sustainability: 'Productivity and Economic Evaluation of Agroforestry Systems for Sustainable Production of Food and Non-Food Products', vol.12 no.13 art.5429, 2020 – https://www.mdpi.com/2071-1050/12/13/5429
51. Wikipedia: 'Agroforestry' – https://en.wikipedia.org/wiki/Agroforestry

52. Sustainability Science: 'The contribution of small-scale food production in urban areas to the sustainable development goals: a review and case study', vol.15 pp.1585-1599, 2020 – https://link.springer.com/article/10.1007/s11625-020-00792-z
53. University of Sussex: 'City allotments match farming productivity per square metre', 17th December 2021 – https://www.sussex.ac.uk/broadcast/read/56961
54. PNAS: 'Small-scale urban agriculture results in high yields but requires judicious management of inputs to achieve sustainability', vol.116 no.1 pp.129-134, 2019 – https://www.pnas.org/content/pnas/116/1/129.full.pdf
55. Journal of Industrial Ecology: 'Environmental Load from Dutch Private Consumption: How Much Damage Takes Place Abroad?', vol.9 no.1/2 pp.147-168, January 2005 – https://onlinelibrary.wiley.com/doi/abs/10.1162/1088198054084725
56. Lancet Planetary Health: 'National responsibility for ecological breakdown: a fair-shares assessment of resource use, 1970-2017', vol.6 no.4 pp.342-e349, April 2022 – https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(22)00044-4/fulltext
57. Energies: 'Energy Inputs in Food Crop Production in Developing and Developed Nations ', vol.2 no.1 pp.1-24, 2009 – https://www.mdpi.com/1996-1073/2/1/1
58. Guardian On-line: 'UN says up to 40% of world's land now degraded', 27th April 2022 – https://www.theguardian.com/environment/2022/apr/27/united-nations-40-per-cent-planet-land-degraded
59. Nature Food: 'Food systems are responsible for a third of global anthropogenic GHG emissions', vol.2 pp.198-209, March 2021 – https://ecbpi.eu/wp-content/uploads/2021/03/Nature-food-systems-GHG-emissions-march-2021.pdf
60. Landscape and Urban Planning: 'Life-cycle energy assessment and carbon footprint of peri-urban horticulture. A comparative case study of local food systems in Spain', vol.172 pp.60-68, 2018 – http://www.fraw.org.uk/data/simplicity/perez-neira_2018.pdf
61. Journal of Cleaner Production: 'Agriculture and degrowth – State of the art and assessment of organic and biotech-based agriculture from a degrowth perspective', vol.197 no.2 pp.1823-1839, 1st October 2018 – http://www.fraw.org.uk/data/simplicity/gomiero_2017.pdf
62. Ramblinactivist's Blogs – 'An Anarchist's Cookbook': 'About the Blog – 'Food & Resilience'', January 2021 – http://www.fraw.org.uk/aac/about.shtml#resilience
63. Guardian On-line: 'Further 250,000 UK households face destitution in 2023, warns NIESR', 11th May 2022 – https://www.theguardian.com/business/2022/may/11/further-250000-uk-households-face-destitution-in-2023-warns-niesr
64. Guardian On-line: 'Growing gap in healthy life expectancy between poorest and richest in England', 25th April 2022 – https://www.theguardian.com/society/2022/apr/25/growing-gap-in-healthy-life-expectancy-between-poorest-and-richest-in-england
65. Guardian On-line: 'Global spread of autoimmune disease blamed on western diet', 9th January 2022 – https://www.theguardian.com/science/2022/jan/08/global-spread-of-autoimmune-disease-blamed-on-western-diet
66. Wikipedia: 'Enclosure' – https://en.wikipedia.org/wiki/Enclosure
67. Wikipedia: 'English Poor Laws' – https://en.wikipedia.org/wiki/English_Poor_Laws
68. Ramblinactivist's Blogs – 'Banburyshire Rambles': 'About the Blog – The Banbury Union Workhouse' – http://www.fraw.org.uk/rambles/banburyshire.shtml#workhouse
69. Guardian On-line: 'I, Daniel Blake is a realistic depiction of life on benefits. Isn't it?', 16th February 2017 – https://www.theguardian.com/commentisfree/2017/feb/16/daniel-blake-realistic-life-benefits
70. Wikipedia: 'Precariat' – https://en.wikipedia.org/wiki/Precariat
71. Office for National Statistics: 'Figure 3 – Household inflation and income inequality in the UK', 2nd November 2020 – https://www.ons.gov.uk/economy/nationalaccounts/uksectoraccounts/articles/householdinflationandincomeinequalityintheuk/2020-11-02#chart-f9204505
72. European Journal of International Relations: 'Peasant activism and the rise of food sovereignty: Decolonising and democratising norm diffusion? ', vol.23 no.1 pp.145-167, 2017 – http://www.fraw.org.uk/data/simplicity/dunsford_2015.pdf
73. The Journal of Peasant Studies: 'Resistance, acquiescence or incorporation? An introduction to land grabbing and political reactions 'from below'', vol.42 no.3/4 pp.467-488, 2015 – https://www.tandfonline.com/doi/full/10.1080/03066150.2015.1036746
74. The Land is Ours – https://tlio.org.uk/
75. Who Owns England? – https://whoownsengland.org/
76. Nature Communications: 'Global phosphorus shortage will be aggravated by soil erosion', vol.11 art.4546, 11th September 2020 – https://www.nature.com/articles/s41467-020-18326-7
77. Nature Scientific Reports: 'Deforestation and world population sustainability: a quantitative analysis', vol.10 art. 7631, 6th May 2022 – https://www.nature.com/articles/s41598-020-63657-6