

GREED AND ITS OFFSETS

SIMON FAIRLIE examines how public goods provide private benefit.

Bill Gates's recently published book on climate change tells us little that anyone who is averagely well read on the subject didn't know anyway.¹ As one might expect, he advocates technological fixes, most of which have been on the drawing board for a decade or two. The book has few references and often fails to examine all sides of a contentious issue. On certain matters it is plain wrong: for example when Gates states that the methane which cattle "burp and fart out every year has the same warming effect as 2 billion tonnes of carbon dioxide". If he had done his homework he would know that the equation between methane and CO₂ doesn't work like that.

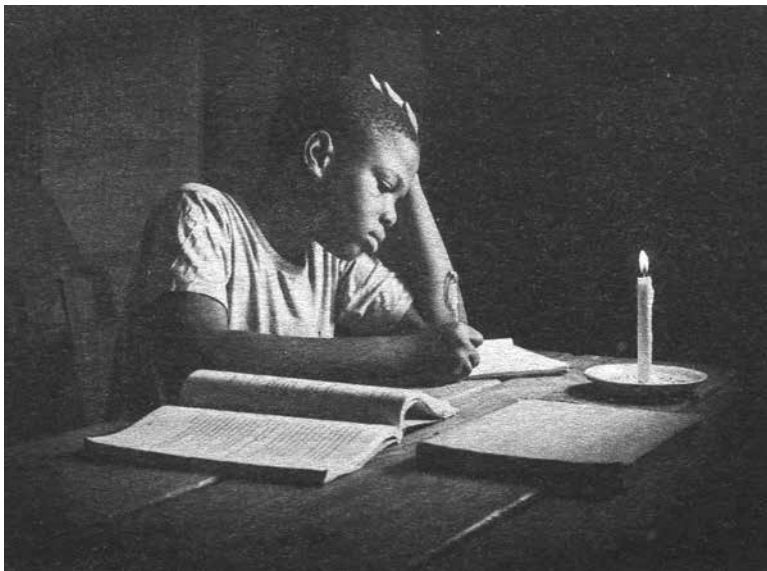
In fact the book is not really about global warming at all, it is about Bill Gates. Penguin would never have published it, and Radio 4 would not have serialised it, if it hadn't been by him. It is written throughout in the first person, and begins with this *mea culpa*:

"I'm aware that I'm an imperfect messenger on climate change. I own big houses and fly in private planes – in fact I took one to Paris for the climate conference – so who am I to lecture anyone on the environment?"

At first sight this is a confession to forestall criticism, the equivalent of an ordinary mortal coyly admitting that they fly to Spain once a year or eat more than their planetary share of chocolate. But on the next page he writes:

"In 2020 I started buying sustainable jet fuel [sic: see box on next page] and will fully offset my family's emissions in 2021. For our non-aviation emissions, I'm buying offsets through a company that runs a facility that removes carbon dioxide from the atmosphere."

This is the real subject matter of Gates' book – showing how the elite can offset the emissions generated through their opulent lifestyles by funding technofixes. They have a lot of offsetting to do. According to the United Nations "the emissions of the richest one percent of the global population account for more than twice the combined share of the poorest 50 percent."²



The Eye of the Needle

It is not just Gates's book but his entire life that revolves around offsetting greed. He maintains a lifestyle whose opulence is on a par with royalty. He owns four private jets, a collection of Porsches and one of Leonardo da Vinci's notebooks.

According to a Swedish study, in a single year he took 59 private jet flights, averaging over 3000 miles per flight, and clocking up about 1600 tonnes of CO₂ emissions – compared to a global average of five tonnes per person.³

His main home near Seattle is of a size and extravagance to rival Ceaucescu's palace: an acre and a half in floor area, with 24 bathrooms, six kitchens, a swimming pool with an underwater music system, and a smart heating and lighting system that automatically adjusts rooms to an individual's comfort level as they move around the house.⁴ His appetite for real estate knows no bounds – he is now the largest owner of farmland in the USA (see box overleaf).

But the emissions generated by his personal lifestyle pale into insignificance beside those of his business interests. As he has distanced himself from Microsoft, Gates has become a one-man asset management company with investments in a range of high-emitting corporations including Berkeley Hathaway (Warren Buffet's company which owns stock in everything from Duracell batteries to private jet company Netjets), John Deere tractors, Bunzi who make plastic packaging, car dealers Autonation and Vroom, Terra Power who design nuclear reactors, Caterpillar earth-moving equipment, and Waste Management whose business involves disposing of the plastic waste which companies like Bunzi manufacture.⁵

Gates is currently in league with the Blackstone group to purchase the world's largest private jet operator, Signature Aviation.

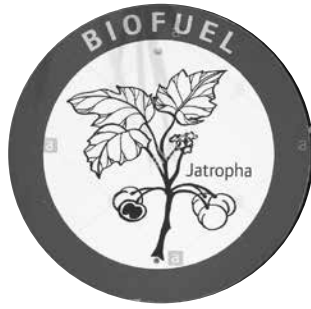
The caption for this photo on the third page of Bill Gates' book reads "Melinda and I often meet children like nine-year-old Ovolube Chinachi who lives in Lagos, Nigeria, and does his homework by candlelight."

A few pages later he writes: "I kept thinking about what I had witnessed in my travels. I didn't think it was fair for anyone to tell Indians that their children couldn't have lights to study by. The only solution I could imagine was to make clean energy so cheap that every country would choose it over fossil fuels."

But cheap energy is no solution for inequitable distribution. The world has had cheap energy for over 100 years, yet Ovolube still has to make do with a single candle. Meanwhile, how many billions of candlepower is Gates's mansion?

'Sustainable Jet Fuel'

is commonly made from *Jatropha* oil grown in plantations in tropical countries. Yields vary, but a high yield of 1800 litres of *Jatropha* biofuel per hectare would carry one jet passenger 30,000 miles. At this rate, to run all United States passenger airlines on biofuel would require 25 million hectares of *jatropha* plantation, an area the size of the United Kingdom.



To expiate his extravagance and environmental impact Gates and his wife Melinda put a substantial proportion of their profits into their philanthropic foundation, and Warren Buffet has pitched in with a further \$31 billion. The foundation focuses on issues such as health and sanitation, gender equality, agricultural development and education. Since 2007 it has been a funding partner of the United Nations World Health Organisation (WHO). Some of this work no doubt brings benefits to impoverished people. Other projects are more controversial – for example the proposal to use vaccination programmes to introduce biometric identification (see *The Land* 28) or his wide-ranging investment in synthetic biology. Gates has money in Galvmed's project to re-engineer dairy cows, in Oxitec's scheme to release millions of genetically modified mosquitoes, and in Ginkgo Bioworks who ominously claim that "we can program cells (DNA) like we program computers (code)."⁶

Gates likes to dip his fingers in a vast array of pies. The man is a megalomaniac, a Napoleon of the 21st century who aspires to conquer every corner of the global economy. The best thing would be to pack him off in a private jet to St Helena, with no return ticket, and allow him a turn on Desert Island Discs.

Gates Versus Peasants

One initiative currently attracting criticism is the Gates Foundation's project to "improve African agriculture, and to do so as rapidly as possible." In 2006, Gates founded the Alliance for a Green Revolution in Africa (AGRA), with the aim of increasing the yields of African farmers through the technologies that had been used to trigger the original green revolution in Asia – hybrid seeds, fertilisers and mechanisation. AGRA has since received financial support from the Rockefeller Foundation, the UK government and corporations such as Monsanto (now Bayer) and Nestlé.

AGRA has been widely criticised for promoting industrial monocultures that are inappropriate for African farmers, and failing to take into account the damage inflicted upon peasant communities by the green revolution – manifest in India in the high level of farmer suicides and the recurrent farmers' protests.⁷

In spite of these concerns AGRA's current President, Agnes Kalibata, has been chosen as Special Envoy for the forthcoming UN Food Systems Summit to be held in New York in September 2021. Her appointment by Secretary-

Elite Landowners

"Most men will choose to employ their capitals rather in the improvement and cultivation of land, than in either manufactures or foreign trade. The capital of the landlord . . . seems to be as well secured as the nature of human affairs can admit of."

Adam Smith, *Wealth of Nations*

These words may be as true today as they were 250 years ago. Many of those who have acquired prodigious quantities of capital through the workings of the economic system that Smith championed have invested much of it in rural estates.

In the UK, James Dyson has 33,000 acres of farmland in Lincolnshire, Oxfordshire and Gloucestershire; Stefan Persson, the Swedish head of the fashion chain H&M owns the entire village of Linkenholt in Hampshire and another 21,000 acres; Anders Povelson, owner of various fashion chains including Topshop and Miss Selfridge, has bought so much land in Scotland that he now rivals the Duke of Westminster as the country's largest private landowner. Povelson is keen on rewilding, and gets away with it at this monstrous scale largely because, even if you are not keen on it, compared with deer-stalking it is the lesser of two evils. A similar scale rewilding scheme at Pumlumon in Wales, funded by Tetrapak heiress Lisbet Rausing (who also owns a Scottish estate), was roundly rejected by Welsh farmers.

In the United States, the spreads are even larger. Ted Turner, head of CNN news channel is the second largest landowner in the country with two million acres, an area bigger than the whole of Devon, mostly in New Mexico, Nebraska, South Dakota and Georgia. He too is a bit of a rewilder and owns the world's biggest herd of bison. Jeff Bezos, head of Amazon and arguably the richest person in the world, is some way behind with just 420,000 acres mostly in West Texas, where he is building his "spaceport". Bill Gates is a late arrival with at the last count 268,000 acres.



But size isn't everything. Whereas Turner and Bezos's estates are mostly rangeland, Gates has gone for something more upmarket. 25,000 acres are "transitional" land with potential for redevelopment or change of use. And 242,000 acres are agricultural farmland rather than rangeland, some of it very high quality — for example a 14,500 acre stretch that Gates recently bought in the fertile Columbia river basin for \$171 million. Moreover Gates' land stretches over 18 states from California and Washington to Florida and North Carolina. New England is the only region that remains Gates-free.

Meanwhile 14 out of the world's 20 largest landholdings are cattle businesses in Australia, including the Hughes family, pictured above, who with 6.6 million acres, an area bigger than Wales, clock in at number 18. These are the people whose imported meat will be undercutting British beef farmers once the government pushes through its antipodean trade deals.

SOURCES

The world's biggest private landowners www.lovemoney.com
Land Report 100 <https://landreport.com>



Bill Gates poses in front of a stockpile of artificial fertiliser in Tanzania owned by the Norwegian chemical company Yara. He used this photo in a 2018 article entitled “Why I Love Fertiliser” and again in his new book.

General António Guterres reflects the growing influence at Rome of the World Economic Forum (the bunch of financial oligarchs, including Gates needless to say, who hold their annual beano in Davos every January). Only a few months before the announcement of the Food Summit, the UN signed a “Strategic Partnership” with the WEF to “deepen institutional engagement” between the two organisations.

WEF’s involvement in the Food Summit and Kalibata’s appointment signal the latest round in a long-running power struggle over global food policy between the corporate advocates of industrial, export-orientated agriculture, and a global peasantry who have more to gain from agroecology and food sovereignty. The ideological debate has swung between the FAO’s assertion that food is a “human right”, and the World Bank’s redefinition of food security as “the ability to purchase food.”⁸ In March 2020, 550 NGOs and peasant unions wrote to the Secretary General objecting to the appointment of Agnes Kalibata “since AGRA is an alliance that promotes the interests of agribusiness” and calling for the UN/WEF partnership to be dissolved. Their letter claims:

“The Summit is not building on the legacy of past world food summits, which were clearly anchored in the Food and Agriculture Organisation (FAO) with the goal of realising the right to adequate food for all. The appointment of the President of AGRA as your Special Envoy contradicts the innovative spirit of the Summit.”⁹

Peasant organisations complain that the summit’s agenda does not properly address matters of importance to small farmers, such as food sovereignty, indigenous knowledge, and landlessness. It mentions nothing about the threat from corporate landgrabbers — which is not altogether surprising since some of the most notorious landgrabbers, notably agribusiness giant Cargill, are listed as supporting the WEF’s “New Vision for Agriculture”.¹⁰

The United Nations has not responded to the letter with any shift in their position, so now most peasant organisations are planning to boycott the event. If the boycott goes ahead then

the main achievement of the summit will be to widen the gulf between two opposing visions of the future of farming — one promoting robots and “precision agriculture,” and the other favouring people power and agroecology (a schism already reflected in the UK in the rivalry between the Oxford Farming Conference, and the Oxford Real Farming Conference).

Let’s Farm Carbon

The one almost pardonable feature of the chapter in Gates’ book about farming is his scepticism about capturing carbon through tree planting. He correctly cites several of the limitations of this approach — though his main reason is that it would take

“fifty acres of trees planted in tropical areas, to absorb the emissions produced by an average American in her lifetime. Multiply that by the population of the United States and you get 16 billion acres, roughly half of the world’s landmass.”

In other words it could never offset his billionaire lifestyle which he apparently hopes everyone could enjoy once we have “cheap clean energy”. He seems to be unaware that the same is true for his “sustainable jet fuel”. As for soil carbon sequestration, he doesn’t even mention it. Gates is into technofixes, not nature fixes.

Not so Microsoft, who have contracted to buy 100,000 tonnes of carbon credits from Truterra, a subsidiary of the Minnesota-based dairy-farming co-operative Land O’Lakes. Farmers in the scheme who claim to have captured carbon through actions such as reducing tillage, planting cover crops or converting to pasture receive \$20 per tonne from Microsoft. Whether they have to pay the money back if the carbon is released back into the atmosphere through tillage or some other reason is not clear. Microsoft can then claim that a proportion of their business activities are “net zero carbon emitters”. Microsoft have also bought \$500,000 worth of soil carbon credits from Wilmot Cattle Company who own an 11,000 acre farm in New South Wales.¹¹

Meanwhile a bill, dated April 21 2021, is before Congress to promote the development of such carbon markets. The Growing Climate Solutions Act will require the US Department of Agriculture to help farmers, ranchers and private forest landowners access carbon markets, and to certify third party verifiers such as Truterra.

Fortunately the US environmental movement has not been taken in by this. Over 200 groups have signed a letter to the members of Congress entitled “Oppose Carbon Offset Scams Like the Growing Climate Solutions Act”. The letter states:

“These carbon offset schemes allow utilities, fossil fuel companies and other polluters to continue releasing greenhouse gases, instead of actually reducing and eliminating their emissions . . . The majority of the Earth’s carbon is stored in geological formations in the form of fossil fuels. Carbon locked in these ‘slow exchange’ reservoirs takes tens of thousands to millions of years to cycle back into the atmosphere — unless interrupted by volcanic eruptions or fossil fuel extraction and combustion. ‘Fast exchange’ reservoirs like soil and biomass have limited storage capacity and may re-release carbon in a matter of decades – or sooner from land conversion, unmitigated erosion due to flood episodes, or wildfires.”¹²

The letter goes on to cite instances where credit schemes have miscalculated the amount of carbon stored, or failed to reduce carbon emissions in the region in which they operated. The signatories demand that farming systems that promote soil health should be supported anyway, “without the use of counter-productive carbon pricing systems . . . Ecologically regenerative farming should be incentivised in addition to, and not instead of, carbon reductions in the energy and transportation sectors.”

Carbon UK PLC

In the UK, a soil carbon market is yet to develop, but carbon credits for planting trees in the UK have become common over the last ten years or so. Companies such as AllStar, the UK’s largest fuelcard company, expiate their customers’ climate guilt by funding reforestation projects – which in Allstar’s case range from a flat field outside Malvern to 53 hectares of “non-intervention habitat creation” on the Isle of Skye.¹³ The Forestry Commission provides a list of 70 agents providing (in the words of one of them) “Bespoke Carbon Offsetting Solutions” – the list includes estate agents such as Savills and Strutt and Parker, forestry corporations including Tilhill and Fountain Forestry, and voluntary organisations, notably the Woodland Trust. The Forestry Commission also buys carbon credits, offering guaranteed returns until 2055, in order to maintain the price of credits and reduce risk for landowners.¹⁴

There is nothing new about funding tree-planting, nor anything intrinsically wrong with it. It is when the planting is in the wrong place or is a scam that are there grounds for concern. That is indeed what happened in the tree-planting surge of the 1960s when companies such as Tilhill and Fountain Forestry planted huge areas of monoculture spruce as a tax dodge for landowners and high earners.¹⁵ Today it is hard to find anything in the way of guidance, conditions or legislation to prevent trees being planted on high grade

agricultural land; the exemption that woodland owners enjoy from income tax, capital gains tax and VAT remains in place; and the potential for companies deeply mired in the fossil fuel industry to cast themselves as “net zero-carbon” is nothing if not a scam. It is also worth noting that if it is quick returns you are after, a Sitka spruce plantation captures carbon 2.6 times as fast as broadleaf woodland.¹⁶

But a UK soil carbon market is in many people’s sights, not least of the landowners who stand to benefit. Estate Agents such as Savills and Strutt and Parker produce briefings for their clients, explaining the potential benefits of carbon credits. These firms already broker other “ecosystem services”, such as “biodiversity net gain” and “nutrient offsetting”, where developers pay landowners to compensate for whatever pollution or harm to wildlife habitat their developments may cause.

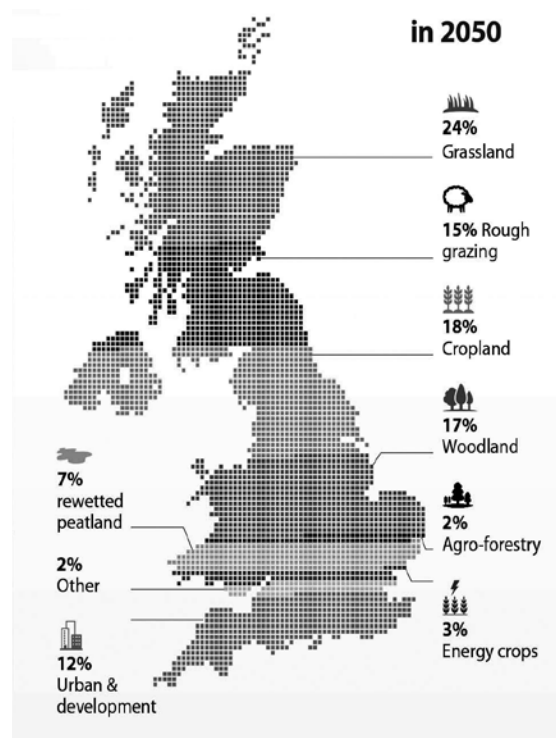
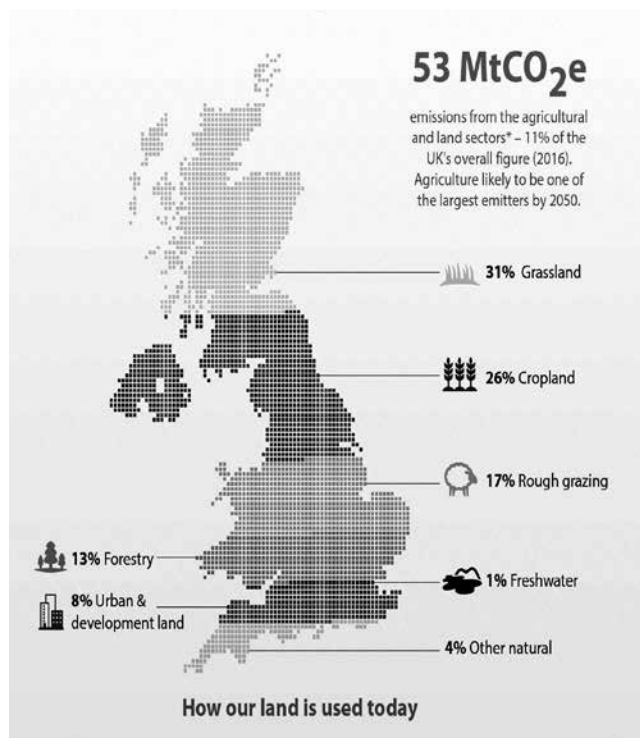
The National Union of Farmers estimates that five million tonnes (Mt) of soil carbon can be captured every year plus another 3 Mt through peatland and wetland restoration. The Royal Society is more optimistic, aiming for 10 Mt per year through soil carbon capture. To put this into context, the UK’s current carbon emissions total 350 Mt, so the Royal Society estimate would put a dent of less than three percent in the nation’s total emissions. To achieve this they calculate changes will be required in the management of 4.5 million hectares, three quarters of existing cropland. They also acknowledge that “after a decade or two soils would approach a new, higher, equilibrium carbon concentration and reach saturation and would require maintenance”.¹⁷

Business Better than Usual

Other things (notably food production) being equal, increasing the carbon content of soils is a good thing and should be encouraged. But since it is largely replacing carbon that has been lost through agricultural production it should be seen for what it is, namely a reduction in the burden of past emissions, and not as a way of offsetting future emissions of fossil fuel carbon.¹⁸

However the British Government is unlikely to see matters in this way. Its Committee on Climate Change (CCC) has pioneered the view that a proportion of the UK’s carbon emissions are inevitable and will have to be offset through tree-planting and restoration of peatland (for the time being it remains hesitant about soil carbon capture on agricultural land).

So what are these intractable emissions that the CCC wishes to offset? One of the main culprits is flying. The Committee, in its Sixth Carbon Budget envisage, not a reduction in this most extravagant of travel choices, but an increase of 25 percent. By 2050 they estimate the UK aviation industry, despite energy efficiency measures, will still be emitting 23Mt of CO₂eq – down from the peak of 39Mt in 2019, but more than the 16Mt emitted in the pandemic year of 2020 when they weren’t even trying to reduce emissions.¹⁹ Since in 2018 only 11 percent of the world’s population took an aeroplane, and one percent were responsible for half of all aviation emissions, a substantial chunk of the carbon sequestration



Changes in UK land use between now and 2050, as envisaged by the parliamentary Committee on Climate Change. Large areas of farmland, both arable and pasture, are to be replaced by rewetted peatland, woodland and urban development. The areas of woodland and of developed land increase by the same amount, 2.4 million acres – the one serving to offset the other. Taken from two CCC reports: 'Land Use: Reducing Emissions and Preparing for Climate Change', 2018 and 'Land Use: Policies for a Net Zero UK', 2020.

envisaged by the CCC serves to maintain the mobility of a global elite, epitomised by Bill Gates and his private jets.²⁰

Another area where the CCC envisage residual carbon emissions in 2050 is in construction and manufacturing – notably, cement, steel, chemicals and, bizarrely, in a category of its own, “off-road mobile machinery”.²¹ Here the CCC apparently wants to see, not just business as usual, but a proportional increase in activity. Its land-use maps for the UK forecast a fifty percent increase in developed land to accommodate an estimated twenty percent increase in population: more roads, housing estates, and high-rise buildings, not to mention industrial scale polytunnels and vertical farms, presumably all necessary to maintain the rate of economic growth essential to the survival of capitalism. At this pace of development, landowners are going to be raking in cash through developers' biodiversity and nutrient offset schemes, as well as carbon credits.

In short, as the maps indicate, radical land use changes in Britain are envisaged that will allow an elite of businessmen and developers to maintain their extravagant lifestyle and pay landowners for the privilege. And of course if they invest in farmland, then they can pay the credit to themselves.

Offsetting the Offsets

If all these offset schemes become common currency, what will be the future for UK farming? The easiest way to achieve gains in biodiversity, nutrient mitigation and carbon capture is often to farm less intensively, and, in the case of carbon, increase tree cover rather than grow food.²² This means that if the price of carbon, and the value of biodiversity, nutrient

offsets and other so-called “public goods” exceeds the profit to be gained by producing food, we are likely to see farms reducing their food output.

The logical conclusion for some will be to stop farming altogether and rewild. Not only will it provide environmental benefits and public goods that the taxpayer will reward; it reduces the need for farm labour, with the result that farm buildings and workers cottages can be rented out for bijou homes and offices (see *The Land* 24, pp 40-42).

Thanks to the publicity given to the Knepp project, rewilding has become fashionable. Savills claims to have already obtained Countryside Stewardship funding for a number of rewilding projects across the country, ranging from 300 to 1400 acres. In other words the government is paying people to stop farming, and it may not be long before private developers are doing the same.²³

The question raised here is: if provision of public goods through agricultural downsizing or abandonment becomes widespread, what compensates for the loss of yield? Or put another way, what offsets the offset?

The Committee for Climate Change makes it clear that

“Delivering emissions reduction should not be at the expense of increasing food imports that risk ‘carbon leakage’. Our analysis assumes the same proportion of UK food demand is met by imports in 2050 as is the case currently; it is not designed to increase per capita imports.”²⁴

Instead the CCC propose two main mechanisms:

(i) “Sustainable productivity growth . . . more to be grown with less land,” presumably through high-tech precision agriculture,

genetic engineering and so on. Since yields of mainstream agricultural crops, after rapid growth in the 20th century, have now stabilised, this might turn out to be wishful thinking.

(ii) Their other option is to reduce meat consumption through a shift towards a more plant-based diet, or even lab-grown junk food, freeing up large swathes of the countryside for carbon sequestration. But the Government has shown little inclination to move in this direction. Taxing chicken and sausages is a policy that would find little support amongst “red wall” voters.

Instead the Government’s preferred option, insofar as it thinks about these matters at all, seems to be to make up for any shortfall in domestic food supply with imports from abroad, (including the famous chlorinated chicken). Thus, to widespread dismay, Tory MPs voted against inserting a clause into the Trade Bill preventing imports of agricultural products produced to lower environmental and welfare standards than

permitted in the UK. Now, as we go to press, the Government is forging ahead with a trade deal with Australia that will likely allow the largest landowners in the world to undercut UK beef farmers, some of whom may as a result be persuaded that their best option is to rewild.

In the face of these pressures there remains a dogged belief amongst many in the farming community that the purpose of agriculture is to produce food. A growing number of consumers are keen to buy high quality local food, produced through sound husbandry (as agroecology used to be called). But the price signals are now pointing in a different direction, the market price of land is far higher than can be redeemed by most forms of agriculture, and there is no shortage of *nouveaux-riches* keen to become landed gentry. Whether these new landowners will engage in productive farming, or simply cash in on the subsidies for public goods, remains to be seen.

The Changing Face of Farming: A Snapshot

Meerhay Farm is one of four dairy farms in Dorset belonging to the Denhay estate, owned by Viscount Henry Hood. Denhay Farms were famous for their mature cheddar cheese until 2013, when they suddenly ceased production, stating that they had been “unable to secure a commercially viable price” from any of the supermarkets, except Waitrose.

The estate continued producing milk, selling it to Müller-Wiseman, until March 2021 when they sold their entire herd of 1500 cows in three auctions. Rumours were flying around about the reason for the sale — the costs of trucking huge volumes of excess slurry away from one of the farms was one theory. But the company was keeping mum. The herd manager told *The Land* only that the decision was not “commercial,” but “political”, and when we suggested it sounded grim, he said “it’s shit”. However the company’s March 2020 accounts show a net loss of £281,000 and note that “the farming industry has suffered over the past year with low milk prices . . . the milk price has reduced year on year.”

While old money is struggling, new money is buying into the locality. A quarter of a mile up the road from Meerhay, a former dairy farm, Spence Farm, has just been sold to the Douwe Steyn family. These are the South African billionaires who, through a Guernsey-based holding company, own online insurance brokers comparethemarket.com (as advertised on TV by meerkats). They are not going to do dairy. They have employed a French vigneron to run the vineyard which the previous owner planted; they are hiring an upmarket landscaping firm to “design” some of their fields; they have engaged members of the Land Workers’ Alliance to manage the rest of the pasture; and they are planning to use the farm buildings for a “wellness centre”.



A 36 foot meerkat, built out of hay. Best not ask why.

REFERENCES

1. W Gates *How to Avoid a Climate Disaster*, Allen Lane, 2021.
2. UNEP *Emissions Gap Report 2020*, United Nations Environment Program, 2020.
3. Gössling, Stefa, ‘Celebrities, air travel, and social norms’, *Annals of Tourism Research*, Elsevier, vol. 79(C), 2019.
4. *Bill Gates’ House: Inspiring Facts about Xanadu*. Archute, no date, www.archute.com/bill-gates-house/
5. J Edwards, ‘This is What Bill Gates’ Portfolio Looks Like’ *Investopedia*, 22 Dec 2020, www.investopedia.com
6. S Malkan, *Bill Gates has Radical Plans to Change our Food. What’s on the Menu?* by Stacy Malkan, US RTK, 26 May 2021, <https://usrtk.org>
7. T Wise *Failing Africa’s Farmers: An Impact Assessment of the Alliance for a Green Revolution in Africa: Global development and Environment Institute Working Paper 20-01*, July 2020, <https://sites.tufts.edu>
8. M Canfield et al, ‘UN Food Systems Summit 2021: Dismantling Democracy and Resetting Corporate Control of Food Systems’, *Front. Sustain. Food. Syst.* 13 April 2021, www.frontiersin.org

9. CSO’s *Letter on UN Food Systems Summit*, 7 Feb 2020, www.foodsovereignty.org
- 10 A Padilla, *Why is the UN Food Systems Summit Silent on Corporate Land Grabs?*, 30 March, 2021 <https://globalbar.se; New Vision for Agriculture, World Economic Forum, www.weforum.org/projects/new-vision-for-agriculture;>
11. J Ellis, *Microsoft to Purchase up to \$2m in Carbon Credits from Land O’Lakes*, AFN, 8 Feb 2020, <https://agfundemews.com>; R Martin, *How an Australian Cattle Rancher Sold Microsoft \$500,000 of Carbon Credits*, *Agiland*, 28 Feb 2021, <https://www.agiland.co.uk/>
- 12 *Oppose Carbon Offset Scams Like the Growing Climate Solutions Act*, 14 April 2021, <https://www.foodandwaterwatch.org>
13. *Allstar Business Solutions*, <https://woodlandcarboncode.org.uk/>
14. Woodland Guidance Guarantee, <https://www.gov.uk/guidance/woodland-carbon-guarantee#how-it-work>
15. Marion Shoard, *This Land Is Our Land*, Paladin, 1987.
- 16 J Beedell, *Q and A on Carbon Accounting for Farms and Estates*, Strutt and Parker. 2 Feb 2021, <https://rural.struttandparker.com>.

17. NFU, *Achieving Net: Zero, Farming’s 2040 Goal*, 2019, <https://www.nfuonline.com>; Royal Society and Royal Academy of Engineering, *Greenhouse Gas Removal*, 2018, <https://royalsociety.org>
18. J Sanderman et al, ‘Soil Carbon Debt of 12,000 Years of Human Land Use’, *PNAS* 2017, <https://www.pnas.org/content/114/36/9575>
19. Committee on Climate Change, *The Sixth Carbon Budget*, December 2020, p 177.
20. S Gössling and A Humped, ‘The Global Scale, Distribution and Growth of Aviation: Implications for Climate Change’, *Global Environmental Change*, Vol 65, Nov 2020.
21. CCC, op. cit. ref 19 above, p 130.
- 22 See eg analysis of different farming systems carried out by Savills: *Rural Land and Carbon*, Savills, June 2020, <https://www.savills.co.uk>
23. *Natural Capital*, Savills, no date, www.savills.co.uk/services/consultancy/natural-capital.aspx
24. *Land Use: Policies for a Net Zero UK*, 2020, www.theccc.org.uk