The retreat from net zero

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The first whiff of gunpowder, the alarm sounds, and the retreat begins. It takes a lot to turn retreat into a rout, but when it comes to net zero, that is all too possible. Russia's brutal invasion of Ukraine has delivered the gunpowder, gas rationing is already a distinct possibility, and the broader post-Covid inflation has triggered a cost of living crisis. Russia's blockade has limited food exports from Ukraine, and there is now a food crisis.

All of a sudden, biofuels do not look so smart, raising the cost of fuel and crowding out food production on the land. The clampdown on fossil-fuel production has given way to licensing new oil and gas fields in the North Sea, onshore oil drilling and perhaps fracking too. Then there is the discussion of a new coal mine in Cumbria, and the subsidising of old coal power stations to keep the lights on.

There is probably more to come. Fast-track phasing out of gas boilers already looked questionable on cost grounds and the concept of green new deals, funded by lots and lots of government borrowing and quantitative easing (QE), looks a lot more difficult as interest rates rise and the squeeze on public expenditure bites as recession looms, leaving little room for more green subsidies.

Like the gunpowder, you can smell the retreat, and it is getting stronger. Long gone are the sunny uplands of the Glasgow COP26 jamboree and all those pious words from politicians, rehashed from every previous COP that was also going to "save the world", "turn the corner", and "meet the challenge". There is scant evidence that Russia and China are going to follow the UK's "leadership", as boasted by Boris Johnson.

Financial markets have caught on. The heady days of ESG and the idea that investors were rushing for the moral high ground, convinced that it was paved with gold, have been dashed. ESG is now all about "engaging with the Boards", a return to what owners should have always been doing anyway. The easy world of "good" companies and "bad" companies has turned out to be a complex morass. Arms manufacturers supplying

Ukraine and gas companies getting around the Russian stranglehold on Europe raise a direct challenge to the ethical purity of the activists. ESG turns out to be even more slippery as a concept than "sustainability" and "corporate social responsibility". It has created lots and lots of consultancy fees, and provided an almost infinite number of platforms to grandstand on, but the facts are facts: ESG does not necessarily outperform conventional portfolios and "sin" stocks like oil and gas turn out to be quite profitable. That is not surprising: 80% of the world's energy comes from fossil fuels, the same number as in 1970. And buying carbon credits and planting trees is not the easy get-out-of-jail card that many companies naively assume.

A long time coming

It is easy to see all this as sparked by a temporary crisis, a squall that will quickly blow itself out. It isn't and it won't. This has been a long time coming, and getting back on track to tackle climate change requires more than a few more tweaks and a bit more subsidy. It requires a fundamental rethink.

A number of salient facts have to be taken seriously. These are: that *no progress has been made on denting the increase in carbon concentration in the atmosphere since 1990*; that *net zero territorial carbon production targets will not stop climate change,* and in some circumstances will make it worse; that *climate change will not be stopped without full participation from China, Russia, India and Sub-Saharan African countries*; that *decline in natural sequestration is a big part of the problem*, and the destruction of natural capital is rapid and, in places, accelerating; that *disaggregated, low-density, intermittent renewables will not fill all the energy gap in place of the 80% fossil fuels* we currently rely upon; and that *biofuels, biomass and the burning of wood pellets are a very limited option,* and quite often perverse.

It is a long list, and one that is at best nodded at, whilst the COP process ploughs on without addressing much of it. To halt the retreat from net zero requires each and every one of the above to be addressed. They all can be. The problem is that it is impossible to do so without facing up to the fundamental reality: climate change (and biodiversity loss) is a result of all of us living beyond our sustainable means. We are not paying for the pollution we are causing. Addressing climate change means recognising that our consumption levels are unsustainable, and the coming of climate change will result in

these standards of living not being sustained. The choice is: act now, face up to the full costs of mitigating climate change; or wait for disaster to strike, and have our living standards reduced whether we like it or not. The inconvenient difference between the two is that if we act now, the current generation and current voters will have to take a hit and pay; if we fail to act, the next generation inherits a terrible environmental mess, with all the consequences that will follow from global warming moving above 3˚C.

Understanding the problem

Summarising each one in turn, the key point is that climate change is caused by increases in the concentration of carbon and other greenhouse gases in the atmosphere. That concentration is a *stock*, to which there are additions (emissions, natural and human-caused) and subtractions (natural sequestration, human-caused carbon capture and storage (CCS) and related industrial sequestration). That stock has been going up at around 2ppm every single year since 1990, including in the COVID lockdown years. Progress would require reducing this increase every year in ppm, and so far there has been none. Recognising this fact should induce the thought: one more heave on current policies and the COP processes is not going to be enough.

The net zero targets are unilateral voluntary undertakings by sovereign countries, and in the case of the EU groups of countries. These targets are for territorial carbon production. The quickest way to get these territorial emissions down is to close down the carbon- and energy-intensive industries – cement, petrochemicals, aluminium, steel and fertilisers – and import the stuff instead. In that way, territorial carbon emissions go down at home, but at the expense of emissions rising somewhere else, and the balance is probably worse than would have been the case had this production stayed at home. The rise of China as a coal- and energy-intensive, export-orientated economy has led to its becoming the largest polluter, and flattered the numbers in the UK (especially), the EU and even the US. To be sure that a unilateral target is actually going to result in no longer causing climate change requires a *carbon consumption target*, and that means in practice a *carbon border adjustment mechanism* (CBAM), treating imported carbon on the same basis as domestic production. Getting to net zero on a carbon consumption basis would cost a lot, and involve much more radical implications for lifestyles and

standards of living in the UK, EU and the US. No major leader has been brave enough to spell this out.

The future for emissions growth and the destruction of natural capital lies significantly in the hands of the developing countries like India and Sub-Saharan Africa. It includes China because of its aspirations towards a developed world average income and its fossil-fuel basis. It involves Russia too, given its dominance in the gas, oil, coal and minerals contexts. Right now, Russia is more concerned with destroying Ukraine, China is focused on capturing Taiwan, India is focused on economic development and aspires to continue to increase emissions for the next half-century to 2070, whilst Africa faces a population explosion, and agricultural intensification and huge growth in energy demand. By 2050, Nigeria alone will have doubled its population to a number greater than the current total population of the EU and of the US.

It is patently obvious that the COP process has not bound in these countries and regions. China has reiterated its focus on shorter-term economic growth and maintained its coal burn, Coal India is rapidly increasing its production, Africa is applying chemicals to its low-productivity agriculture, and Russia is bent on continuing its overwhelming dependence on exporting fossil fuels. Any unilateral net zero target can only influence these countries if their exports (the developed countries' imports) have to pay the same price of carbon. In other words, unilateralism is all about trade and CBAMs.

Natural capital has been at best a sideshow in net zero debates so far. There is a paltry $14 billion pledged to stop the destruction of the rainforests *in a decade's time*, the same total budget as it has been for the last decade. The destruction of the Amazon is now so great that it is now a net emitter of carbon. The rainforests are coming down, palm oil is replacing some of them in the name of "biofuels", and huge dams are destroying the ecosystems of the Amazon, Congo and Mekong. Whilst a number of large companies are trying to meet their own net zero (narrowly defined scope one emissions) targets by planting trees and doing carbon offsets, there is a lot less to this than claimed, a lot of it is greenwash, and it could not possibly outweigh the impact of the destruction going on. Soils hold around four times the carbon of the atmosphere, and the intensification of agriculture is emitting rather than sequestrating as this core natural capital continues to be degraded.

Industrial CCS sequestration is notable by its absence, not by a scale necessary to offset the 80% fossil fuels-associated emissions.

Faced with these facts, many climate activists and several politicians see the salvation in "renewables", by which they mean wind and solar. These technologies clearly have a big role to play, but it is simply naive to think that wind turbines and solar panels could add up to the energy demand to replace the 80% fossil fuels. They are necessary but a very long way from being sufficient. By their nature they are low-density sources of energy. It takes lots and lots of wind turbines to replace a single gas power station, and given that they are intermittent, it takes a lot of fossil-fuel capacity on standby to make sure the lights stay on. This may change, but not for quite a long time. Batteries and other non-fossil-fuel energy sources as back-up require their own minerals, and hence mines and infrastructures, none of which is being built quickly or at the scale that might be used. None is without its own significant carbon emissions and other environmental damage.

Finally, there is the sorry and often illusional story of biofuels and biomass. At the very local level, biomass has a role to play – though not the 50% of the EU's 2020 target for example. Local forestry waste, local farm waste and related small-scale products can help address local energy demands. But the mass transfer of rainforests to palm oil, the switch of agricultural food production to biocrops, and, worst of all, the global production, shipping and burning of wood pellets make little sense in tackling global warming. To claim that wood pellet burning is less bad than burning coal says it all. The fact that emissions from burning the wood pellets in the UK do not count against the UK's territorial emissions is absurd.

Notwithstanding all the problems with biocrops, the aviation industry pins its own net zero targets on "sustainable aviation fuel". Not only are there simply not enough biofuels to meet the current let alone growing future demand from aviation, but most of these biofuels are in fact unsustainable. Similarly using added biofuels for conventional internal combustion engines is questionable, and in the case of the EU and palm oil, probably worse than simply burning oil.

The net zero crisis is with us now

All of the above would have produced a crisis for the net zero strategy anyway. The new realities of energy security and food security have brought it to a head. It is a massive wake-up call, and it requires that energy and climate policy is rewritten to ensure the joint achievement of energy security and decarbonisation. That in turn requires that we take seriously the role of the fossil fuels in the transition, and in particular the role of gas in addressing the intermittency of renewables. This is the first net zero energy price crisis[1] because the decarbonisation policies have not taken account of the consequence of not only the intermittency of wind, but also the consequences of that intermittency rendering everything else intermittent too. It requires much more capacity to meet any given demand to ensure that when the wind does not blow there is something else to take up the strain. It also makes that "something else" much more expensive because the back-up power stations cannot rely on running at baseload to recover their costs and the contracts for gas supply are more costly to deliver because the timing and volume of demand are dependent on when the wind blows too.

The security of supply problems are more serious now than they have been in the past, for two reasons: first that the economy is digitalising and computation and IT services and all the machines and financial systems that it drives are electric and require *continuous* operations; and because the energy markets have few long-term contracts, but rather are overwhelmingly exposed to spot markets and their inherent volatility. A power cut now, or even the possibility of a power cut, has much greater economy-wide costs now than it did back in the 1970s. The economy literally stops. A quick glance at what happened when Storm Arwen cut power supplies in the north east of the UK shows just how much more devastating the impacts are. Even the phones stopped working.

Putin knows this, and that is why this coming winter could be especially painful. Hoping that there will not be cold, grey, high-pressure, still weather systems in northern Europe this winter is hardly a sound basis for energy policy. Praying is however one of

[1] See my paper "The first net zero energy crisis – someone has to pay", 7th January 2022.

the few options now on the table. Ministers have to get lucky, and luck is not a basis for energy policy.[2]

The UK is peculiarly exposed, because it has fast-tracked renewables, because it has fast-tracked the closure of coal, because its nuclear is in sharp decline, even if one more nuclear power station is being constructed, because it has closed all its gas storage, and because there are no long-term gas contracts. The self-proclaimed world leader on climate change is in the embarrassing position of subsidising the continued operation of coal power stations, licensing more oil, and contemplating opening a new coal mine. It has ceased to pretend that the price of energy should be determined by its costs, and instead determined the price by politicians through subsidies. It has retreated from extending the carbon price to agriculture and, as the Climate Change Committee has made clear, policy implementations are on the backslide.

None of this should be surprising. Ignoring the recommendations of the *Cost of Energy Review* (2017)[3] has not made the problems magically go away, and now the failure to take storage seriously, the failure to reform the energy market and move away from purely spot wholesale pricing, and the failure to take seriously the intermittency implications of moving from less than 20% renewables (which existing systems can absorb) to one with a dominance of intermittent wind generation have caused the current embarrassing retreats.

The painful politics of climate change

Whether ministers, aroused from their slumbers, do what now needs to be done remains uncertain. The painful political bit is to recognise that the transition to net zero has to be on a consumption basis if the UK is unilaterally to stop causing climate change, and that security of supply has to be addressed simultaneously with decarbonisation. All of this has big costs. It is not a free lunch. The cause of those relentless increases in carbon concentrations in the atmosphere is our consumption. We are living beyond our environmental means. We need to pay for our carbon consumption, whilst at the same

[2] See my paper "Luck is not an energy policy – the cost of energy, the price cap and what to do about it", 6th December 2021.
[3] Helm, D. (2017), "Cost of Energy Review", Independent Review for the Department of Business, Energy and Industrial Strategy, October.

time recognising that security of supply is more important now than it has ever been. But that requires that our leaders tell us some difficult truths, something which unsurprisingly they are reluctant to do, because in turn we probably don't what to hear them. Until this happens, expect the retreat from net zero to continue, covered only with the fig leaf of speeches about "turning the corner" "saving the world" and all the other stuff trotted out at COP26 – and 2 ppm continuing to be added year on year to the concentration of carbon in the atmosphere.

Next time you hear all those speeches at a COP, think on the above. Imagine what they could say. Think how much political courage it would take to do so.

Net Zero: How we stop causing climate change

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