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Net Zero Emissions 2050 – and not a hair shirt in sight? COP26 Part 2



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In two respects COP 26 differed significantly from COP 21 in Paris in 2015: the scientific consensus around anthropogenic climate change was much firmer – indeed climate scepticism is now very much a fringe opinion; but there was also a much clearer view that a warming of 1.5 degrees C is the very most that can safely be aimed for. Recent dramatic weather phenomena seem to have convinced scientists that 2.0 degrees will be just too dangerous. So six years on, the target has become more, not less demanding.

The process set up by the UN Framework Convention on Climate Change engages governments in setting targets and monitoring each other's results. But there are other actors on the stage. State (or province) and city governments have already taken a leading role: take for example the emissions standards and electronic vehicle (EV) targets set by California, which are well ahead of the rest of the USA; or the vehicle emission restrictions and pro-bicycle policies put in place in London and Paris. NGOs and public opinion more broadly are also more pro-active than ten years ago. These influence both government attitudes on one hand, and business priorities on the other - either as customers or as shareholders.

An International Energy Agency model suggests that restricting warming to 1.5 degrees will require the world's economy to achieve 'Net Zero Emissions' by 2050. The agency has explored what NZE2050 would look like. Coal consumption will have more than halved: about 100 GW of coal-fired power will have to be taken out of commission every year. Oil demand will be down to 25 million barrels a day – a fall of 75% from today's level. Gas demand will be much reduced, but may still be necessary along with nuclear power to balance electricity generation from wind and solar. Remaining CO2 emissions will need to be met by 'carbon offsets' (like planting trees) or by new techniques like Carbon Air Capture which uses fans and filters to remove CO2 from the air.

NZE2025 will represent a dramatic transformation of the power and industry sectors. More than 600,000 jobs will be lost in oil and gas. There will be 3 bn EVs on the roads. (Annual spending on the EV sector as a whole could reach \$850bn.) Electricity will dominate the energy sector. In addition to government investment in the power grid, much of the investment and technological development will need to come from business.

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If governments set the rules, business can play the game. A good example is the UK government's decision to ban the sale of both petrol and diesel engine cars from 2030. This has already had business looking at developing not only electric cars but electric vans – and at ways of rolling out battery chargers round the country.

This is happening world-wide. Tesla is now not the only EV pioneer: Rivian, which makes electric-powered vans and SUVs, launched on the NYSE in the course of COP 26 and its market value doubled from \$75 bn to \$150 bn in the first week. Shell and BP are investing in worldwide joint ventures to install EV charging points. BP is joining with Daimler Benz in developing hydrogen-powered HGVs.

Widespread use of EVs will require massive expansion of electricity capacity. Rolls Royce has announced plans to spend £200m, with matching government funding, on development of 'Small Modular Reactors'. SMRs are based on the nuclear propulsion units in submarines. They are about a quarter of the size of a modern nuclear power station. Rolls Royce hope to sell 16-20 in the UK in the next ten years.

But not all technologies are mature. Governments are keen to fund R and D. The International Energy Agency has established what they call the 'Breakthrough Agenda', bringing together 42 countries to work on four areas of low-carbon technology: power generation, EVs, steel and hydrogen. Making steel and making cement are both very carbon intensive, and better processes are not immediately available. Hydrogen can be used in fuel cells for EVs, and can be added to gas as a heating fuel. But 'green' hydrogen made through electrolysis using renewable energy is expensive, and there are significant challenges in handling and transporting it (it is both corrosive and explosive). Even so, the UAE is reported to be planning to produce hydrogen and export it to Japan in the form of ammonia.

If coal and gas are to be used at all in a 'net zero' economy, some form of carbon capture and storage (CCS) will have to be developed. All remaining coal-fired power plants will have to be 'abated' with a CCS system. So far, economical ways of doing this have proved elusive. That said, Saudi Aramco claims to be developing HGVs which can capture some of their CO₂ emissions as they run; and to be developing a system for storing carbon by 'curing' concrete using CO₂ instead of water.

It is by no means certain that business investment and technology will allow us to reach net zero in a painless fashion. Some technical 'fixes' in the last decades have caused more problems than they solved. Switching cars from petrol to diesel in Europe resulted in catastrophic rises in urban air pollution. Adding ethanol to gasoline to reduce its 'fossil fuel' component caused the deforestation of large areas of Malaysia and Indonesia to grow the palm oil from which to distil the ethanol. Converting the coal-fired Drax power station to burn wood chips from the USA earned a renewable energy subsidy from the UK government; but the replacement trees will take 30 years to mature. The lithium, cobalt and nickel required to make EV batteries will need massive investment in new mining capacity with challenging environmental consequences.

Recent opinion polls suggest 70% of the British public want the government to take firm action on climate change. This has been reinforced by prominent events such as COP 26. Since 2014,

funds characterised as ESG (Environment, Social, Governance) have attracted at least \$30 trn in investment. At the same time, many prominent institutions have begun to divest from oil and gas companies – institutions ranging from Harvard University to Dutch pension funds to 70 faith institutions and six city governments in the UK.

But there are risks. Some activist investors are now pressing corporations like Shell and BP to spin off their clean energy divisions. But that could starve oil and gas of investment in the short term when our economies still need hydrocarbons; and selling off upstream assets in coal, oil or gas risks handing bargains to less scrupulous investors. In any case, a swift move away from hydrocarbons is likely to bring down their international price and tempt poorer countries back into fossil fuels – unless pressure from their UN colleagues, and some international aid, can keep them honest.

Some energy sectors do not yet have an obvious technological fix. Although there are experimental electric (and also solar-powered) aircraft, it is hard to see a ‘green’ alternative to aviation fuel for long range passenger aircraft. Aviation represents 2.4% of global CO2 emissions. It is often recommended to use an international agreement to tax jet fuel. But this would hit the travel industry hard, and if it achieved its purpose in reducing air travel it would represent a major change in social behaviour. Nevertheless, downward pressure on such sectors is already coming from a public more aware of the impact of their own individual ‘carbon footprints’.

A general carbon tax (e.g., set at \$50 per ton of CO2 emitted) could act as a very effective market signal for business. But it would hit consumers hard, and like most consumer taxes would be ‘regressive’, hitting the poor hardest. France has already discovered through the ‘gilets jaunes’ movement that not everyone is happy with fuel surcharges.

Ahead, the next decade is likely to be decisive in showing whether the world will be able to transition effectively towards a low carbon economy using government targets, business investment and technological ingenuity. However successfully we cut back on GHG emissions in the short term, global temperatures will continue to rise and extreme weather events are likely to prove ever more dramatic. There may then be public pressure to take more draconian measures even if they impact our social activities and personal behaviour. (More radical economists argue that it is the whole consumerist-productivist economic model that is proving unsustainable.) Given, too, uncertainty about how easy it will prove to keep all parties to the UNFCCC marching in step, the next decade looks like a bumpy ride in both domestic politics and international relations.

Read COP26 Part 1 here ‘Green is Good: Keeping 1.5 Alive’ [AP Insight 134 - 2021](https://www.ambassadorllp.com)
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