

THE NEW STATESMAN

Spotlight

Thought leadership and policy

Energy and Climate Change: Cop26 and beyond

Caroline Lucas MP

Wera Hobhouse MP

Michael Mann



OGUK



The Future of Climate Finance

23 November 2021

10:30-17:30 | Online event

Join the *New Statesman* and Capital Monitor on Tuesday 23 November 2021 for an exclusive virtual event that will address the escalating mobilisation of finance in favour of sustainable global development.

In the aftermath of Cop26, high-level representatives from the global finance and investment industry, along with senior business leaders, policymakers, regulators and energy companies, will distil the most innovative initiatives aimed at accelerating the financing of climate action.

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The climate conundrum

It has been nearly five years since the leaders of 196 nations came together to sign the most significant climate agreement in history. Adopted on 12 December 2015, the Paris Agreement seeks to “limit global warming to well below 2°C, preferably to 1.5°C, compared to pre-industrial levels”. But as world leaders gather at Cop26 in the coming days, scientists are warning that we are still failing to make necessary progress on tackling the climate emergency.

The latest report by the Intergovernmental Panel on Climate Change (IPCC) sets out in stark terms the cost of inaction. We are set to surpass the 1.5°C warming target in the next 20 years, the report warns, precipitating irreversible environmental breakdown and frequent extreme weather events, from tropical cyclones to prolonged droughts.

However, it is not too late for world leaders to act. Writing on page ten, IPCC co-chair Valérie Masson-Delmotte notes that “higher levels of warming – and their severe consequences – can be avoided if deep reductions in carbon dioxide and other greenhouse gases occur as soon as possible and continue over the coming decades”.

But despite the scale of the threat posed by the climate crisis, many nations are continuing to fail to quantify the effects of their energy policies. A recent United Nations report revealed that “governments still plan to produce more than double the amount of fossil fuels in 2030 than what would be consistent with limiting global warming to 1.5°C”.

As the host nation of this year’s Cop summit, the UK is seeking to burnish its climate leadership credentials. The government’s new climate strategy outlines how it plans to reach net-zero emissions by 2050. The strategy includes several welcome developments, including investments in the electrification of vehicles and funding for the decarbonisation of Britain’s buildings. But the government has attracted criticism for failing to identify the carbon savings that each pledge will afford. Without doing so, ministers cannot honestly say they know the strategy will succeed. ●

Contents

4 / News

The latest stories from the energy and climate change sectors

6 / Caroline Lucas

Covid has demonstrated the need for a reset of our broken economic model, says the Green Party MP

10 / The science behind global warming

The IPCC explains why our future depends on today’s decisions

16 / Wera Hobhouse

How the Lib Dem MP went from Tory councillor to green protest advocate

20 / Climate migration

Is it being used as an excuse to implement hostile border policies?

24 / Michael Mann

Why it’s easier to act early than wait for catastrophe

28 / Developing countries

How renewable energy is tackling poverty and saving livelihoods

Spotlight

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UK net-zero strategy published amid criticism

The government has published its strategy for net zero, promising 440,000 jobs and £90bn in private sector investment. This comes as it responded to criticism from its own advisory body, the Climate Change Committee, that action on climate was being “marred by uncertainty and delay”.

The strategy includes funding for decarbonising buildings, electric vehicle infrastructure, sustainable aviation fuel, carbon capture, and hydrogen technologies. Prime Minister Boris Johnson said: “The UK’s path to ending our contribution to climate change will be paved with well-paid jobs, billions in investment and thriving green industries – powering our green industrial revolution across the country.”

Critics have pointed out that the funding for the strategy is still unclear. There is also concern that the plans do not go far enough. “On home heating and efficiency this strategy is a big disappointment. The level of financial support is too small, and too many important elements have been ignored,” said Gavin Killip, a researcher from the Environmental Change Institute at the University of Oxford. The Treasury published its own assessment, warning that tax revenues such as Fuel Duty will be hit as people move to electric vehicles.

Chris Stark, chief executive of the Climate Change Committee, described the strategy as a “substantial step forward”, but warned that “the critical next step is turning words into deeds”. ●

Landmark Cop26 summit to begin this weekend in Glasgow

Beginning Sunday 31 October, Glasgow will host the Cop26 summit, the 26th Conference of Parties to the UN’s Framework Convention on Climate Change (UNFCCC), and the third meeting of signatories to the 2016 Paris Climate Accords.

Originally due to take place in 2020, the conference was postponed as a result of the pandemic, while the venue, Glasgow’s SEC Centre, was converted into a temporary Nightingale hospital.

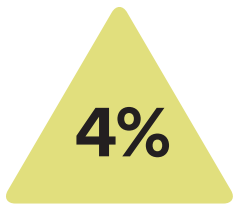
This year, countries will be expected to put forward ambitious emission-reduction targets for 2030 that will put them on the path to reaching net zero by 2050. The agenda will prioritise discussions on renewable energy, the phasing out of coal, green transport, and deforestation. Many believe the conference to be “the world’s last chance” to get climate change under control, according to officials.

The 2009 promise of \$100bn per year for climate finance, which richer nations said would be mobilised by 2020, will also be under review. Despite the pledge, the latest OECD data shows that in 2019 only around \$79.6bn was deployed, in the form of commercial loans rather than grants to poorer nations. Alok Sharma, the Cop26 president and Cabinet Office Minister, said there was “no excuse” for a lack of progress on green finance.

Hopes for a successful conference and a far-reaching international agreement on climate change were dampened by news that Xi Jinping, the Chinese president, and Vladimir Putin, the Russian president, will not be in attendance. Russia is the world’s fourth-largest polluter and a huge exporter of energy to Western Europe. US President Joe Biden will attend, along with India’s President Narendra Modi, heads of the world’s second and third most-polluting nations, respectively. ●



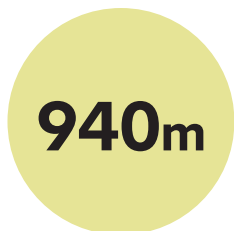
women and children die each year from indoor pollution



annual increase in emissions produced by the 20 richest nations



decrease in the cost of solar panels since 2010



people do not have access to electricity

Read more on renewables and poverty on pages 28-29

LINTAO ZHANG / GETTY IMAGES

UK firms to disclose environmental impact

The Treasury has set out new rules that mean companies will have to go public with their environmental record, including investment products and pension schemes. The rules also aim to combat “greenwashing” by saying companies will have to justify their claims about sustainability and set out their path to net zero.

Democrats fight over climate provisions in \$3.5trn bill

The Biden administration’s legislative agenda is coming under intense scrutiny from conservative Democrats in the Senate. Joe Manchin, the senator for West Virginia, has been an outspoken critic of the \$3.5trn bill, which he says spends too much taxpayer money and will potentially cause harm to his state’s coal mining industry.

The bill would increase taxes on corporations and wealthy Americans to pay for investment in green energy resources, childcare, paid leave, healthcare and education. It has been compared in scope and scale to Franklin Roosevelt’s New Deal and Lyndon Johnson’s Great Society programmes. The US’s projected budget deficit for 2021 already far outweighs the deficit spending in presidents Roosevelt and Johnson’s first years in office.

Left-wing Democrats in the House of Representatives have delayed the passage of a \$1.2trn bipartisan infrastructure bill, already agreed by both Democrats and Republicans in the Senate, as a way of leveraging for the approval of the larger – and more controversial – budget package of social and environmental programmes. ●



Emissions from richest countries soar

Emissions levels for 2021 are set to go up by 4 per cent for the 20 richest nations, having fallen by 6 per cent 2020 during the pandemic. China and India, two of the biggest polluters, as well as Argentina, are all set to exceed their pre-pandemic 2019 emissions levels.

With only days to go before the Cop26 conference begins, the figures, from the *Climate Transparency Report*, suggest the world is well on course to exceed the 1.5°C temperature rise limit that scientists say is necessary to avert climate catastrophe. ●

Caroline Lucas MP

Government needs to catch up with the public on climate change

While ministers have floundered, the people have been demanding better



When the evidence of an accelerating climate crisis is all around us, it is no surprise that concern about climate change is growing.

This year there have been extreme temperatures in southern Europe and North America, deadly flooding in China and Europe, and dangerous wildfires on every continent except Antarctica.

In the weeks running up to Cop26, parts of London have been occupied by Extinction Rebellion and the M25 motorway disrupted by Insulate Britain. The Fridays for Future climate strikes by schoolchildren are back on our streets.

Behind those taking action are the millions who feel worried, angry or deeply frustrated at the lack of any sense of urgency in the government's response. People's worries about climate change actually rose last year, even though we were in the middle of a global pandemic.

People also know what needs to be done and they have ideas about how it should be done. Yet they are ignored.

In 2020, the first-ever UK-wide citizens' assembly on climate spent eight months learning more about climate science before coming up with recommendations about how government should respond. They did not only suggest ideas about how we should transition to a net-zero economy, like a change in diet to reduce meat and dairy consumption and a frequent flyer levy, they placed a strong emphasis on fairness and the protection of nature. Most of all, they wanted strong and clear leadership from government.

That desire for leadership was echoed in the findings of a project called Reset – commissioned by the All-Party Parliamentary Group on the Green New Deal, which I co-chair – that considered how we might reset our economy in the wake of Covid. We commissioned surveys and an opinion poll, held evidence sessions with experts, and conducted in-depth interviews with members of the public, engaging with the views of more than 55,000 people overall.

There was overwhelming agreement that we had a unique opportunity to rethink the way our society is run. People wanted the government to use the disruption of Covid to reset the economy in a way that makes life fairer and greener, by making homes more energy-efficient, investing in greener

energy, upgrading transport, improving land and giving people vital access to green space for their physical and mental health.

In other words, to focus on well-being, not a return to business as usual with the deep inequalities and environmental destruction that came with it. We need to find a way to provide for everyone's needs while respecting the Earth's planetary limits. It is not enough to tinker with the current system: the whole economy needs to be focused on reducing emissions, creating good, green jobs and improving people's quality of life while providing them with a healthy environment.

That is what a well-being economy is designed to do, with a focus on well-being and the health of people and the environment rather than the pursuit of endless GDP growth.

The public desire for fundamental change is there. But we have government responses that consistently fall short in terms of actual policymaking and investment.

Yes, we have targets – there have been plenty of those. There is net zero by 2050 and more ambitious interim targets of a 68 per cent reduction in carbon emissions by 2030, and 78 per cent by 2035 compared to 1990 levels.

We now have the Net Zero Strategy and the Heat and Buildings Strategy, both of which point us in the right direction but do nothing like enough to get us to where we need to be.

On net zero, we are promised more tree planting, protection of peatland and more street charging for electric vehicles. But there's no commitment to end oil and gas exploration, and by putting its faith in nuclear the government is backing a white elephant.

People want ministers to use the disruption of Covid to reset the economy

The Heat and Buildings Strategy is massively under-funded and will almost certainly under-deliver. It is also missing a key component: the need to insulate homes that are going to have heat pumps. Without this, homes will not be kept warm. The Green Homes Grant scheme was botched then dumped, joining the list of other Tory failures to make the UK's notoriously leaky homes more energy-efficient.

Meanwhile, so many actions the government is taking lead in the wrong direction. Its own advisers, the Climate Change Committee, have said that it continues to "blunder into high-carbon choices". Sometimes it is not even blundering. The refusal to rule out the Cambo oilfield off Shetland flies in the face of the warning from the International Energy Agency that there must be no new oil and gas development if the world is to have a chance to reaching net-zero emissions by 2050 – the UK's legally binding target.

Then there is the £27bn road-building programme, the continued expansion of airports and the disassembling over the funding for some of the actual policies that have been put forward: the ten-point plan for a "green industrial revolution" last year came with a £12bn funding tag – but it turned out only £4bn of that was new money.

Compare that with what our European neighbours are investing in a future green economy: €40bn in Germany and €30bn in France.

We have to address the climate and nature crises while we have the chance because soon it will be too late. That requires not just shiny new targets – it requires specific, coherent plans backed by the necessary investment to deliver them.

Above all it requires climate leadership. That is what people want. But instead ministers drag their feet in the hope that something will turn up. That strategy did not work for Mr Micawber, and it will not prevent climate breakdown either.

We face a climate emergency and it is time the government started acting like it. ●

Caroline Lucas is the MP for Brighton Pavilion and co-chair of the All-Party Parliamentary Group on the Green New Deal

How can Cop26 elevate calls to cut methane emissions?

We frequently hear about the need to cut CO₂ but other greenhouse gases are often neglected

In association with



At Cop26 an international coalition of climate-focused non-profit organisations are collaborating on a Methane Pavilion inside the Cop26 Blue Zone. Together, they are elevating the issue of methane pollution and pushing countries to commit to concrete action to reduce methane emissions by 2030.

Below, we hear from some of the organisers about how Cop26 can push the methane agenda forwards.

Mark Brownstein, senior vice president at Environmental Defense Fund

Every fraction of a degree matters to our overheating planet. And tackling methane emissions quickly is our best chance to make the biggest difference on warming now.

Efforts to reduce CO₂ alone aren't enough. The Intergovernmental Panel on Climate Change (IPCC) makes clear we must also reduce methane to achieve climate safety.

Methane from fossil fuels, livestock and other human activity drives more than 25 per cent of today's warming. Cutting these emissions is the fastest way to slow the pace of global warming, even as we decarbonise the energy system.

The quickest, most cost-effective methane reductions are in the oil and gas sector. The International Energy Agency says emissions can be reduced by 70 per cent using existing technology – and more than half of those savings can be had for zero net cost.

Fortunately, countries are now taking action. The Global Methane Pledge, signed by over 30 countries and counting, is a sure sign of the increased ambition we're all looking for from Cop26.

What's needed now is more countries joining this essential effort, and for them to move rapidly from commitment to action.

Sarah Smith, program director, super pollutants at Clean Air Task Force

Little time is left before we start passing irreversible climate tipping points. Decarbonising our energy system is critical for slowing long-term warming, but reducing potent methane pollution is the single most effective way to curb global warming in the next 20

years and should be at the top of the agenda in Glasgow.

We applaud the US, European Union, UK and other countries stepping up to join the Global Methane Pledge at Cop26: this is a crucial start. We've spent the past decade working with governments developing policies to rein in these emissions, and it's time for more countries to act quickly and at scale. Methane pollution is a global problem that demands action by countries around the world. This year alone we found preventable methane pollution plumes in all 12 countries we visited with our special infrared camera.

For the UK, Cop26 is an opportunity to showcase international climate leadership at the most important climate conference in years. Formally announcing the Global Methane Pledge with many partner countries will be an excellent first step – the Clean Air Task Force is ready to work with the UK and other early leaders to turn ambition into action through implementation of smart policy that rapidly reins in methane pollution over the next few years.

Martina Otto, acting head of the secretariat at Climate and Clean Air Coalition

At Cop26 we must take concrete steps to increase global action to reduce human-caused methane emissions. Methane emissions are increasing rapidly and are responsible for nearly half of all warming from human activities to date.

The recently announced Global Methane Pledge is a major step in the right direction and recognises the vital role methane can play to rapidly reduce the rate of warming and keep temperature rises to 1.5°C. The pledge's goal, to reduce methane emissions by at least 30 per cent below 2020 levels by 2030, defines the minimum that needs to happen now and allows for increased ambition going forward. The pledge represents an important new front in the fight against climate change and the Climate and Clean Air Coalition (CCAC) encourages all countries to join it.

Achieving the pledge will require action in all three major methane-emitting sectors: fossil fuels, agriculture and waste. The good news is that there

are ready-to-go, cost-effective solutions. Countries must agree to implement available measures where they can and collaborate on innovations in sectors where new solutions are needed.

The oil and gas sector is the most promising for large and rapid reductions at low to no cost today. We must halt the construction and financing of new fossil fuel infrastructure, prevent leaks in existing infrastructure, end routine flaring and venting in the fossil fuel and waste sectors and instead capture and use that gas.

Manfredi Caltagirone, acting head of International Methane Emissions Observatory at United Nations Environment Programme

Cop26 represents a crucial opportunity to scale up global action on methane emissions. The United Nations Environment Programme (UNEP) welcomes the leadership of the US and EU on the Global Methane Pledge, which will be formally announced at Cop26. With a target of reducing global methane emissions by at least 30 per cent from 2020 levels by 2030, the pledge represents an important step towards addressing emissions of a powerful greenhouse gas. It is particularly important for oil and gas-producing and -consuming countries, which have the quickest and lowest-cost opportunities to reduce their climate impact in the near term.

Achieving the Global Methane Pledge and other key methane commitments will require comprehensive and reliable data to guide actions and track progress. This is the objective of UNEP's International Methane



Emissions Observatory (IMEO), a key initiative mentioned in the pledge. The IMEO will take near real-time data (measurement studies, satellites, company reporting and national inventories) and integrate it to create a public data set of empirically verified methane emissions.

We know enough about methane to act today, but better data is needed to achieve the deep reductions in methane necessary to limit warming to 1.5°C. While UNEP calls for the swift phase-out of fossil fuels, we cannot achieve our temperature goals without targeted methane action in the fossil fuel sector. Better data enables stakeholders to pursue the mitigation opportunities with the biggest impact in the near term. With its revolutionary data approach, the IMEO will provide the necessary data to further support and scale-up ambition on methane and catalyse reductions around the world.

David Waskow, director at International Climate Initiative – World Resources Institute

Countries signing on to the Global Methane Pledge at Cop26 will help drive collective action to curb methane emissions across the energy, agriculture and waste sectors – and help ensure a safer and more prosperous future for all.

Agriculture and food systems have a key role to play. In fact, more than 40 per cent of human-caused emissions come from the agriculture sector and food systems, according to the recent Global Methane Assessment (by the UNEP and CCAC). A World Resources Institute study found that improved agricultural practices can enhance crop and livestock yields and benefit farmers while also significantly cutting emissions.

Reducing food loss can also lower emissions while improving food security, especially in developing countries, while cutting food waste and minimising the amount of waste sent to landfills by separating organic matter can generate significant opportunities to reduce methane emissions, create jobs and support a circular economy.

We have the tools and solutions at hand to drive the shifts we need in all these sectors, so let's use them. ●

Find out more at methanemoment.org

Our future climate depends on our decisions now

The sooner we reduce our greenhouse gas emissions, the sooner we will see fewer natural disasters and a drop in global warming

By Valérie Masson-Delmotte



The latest report from the Intergovernmental Panel on Climate Change (IPCC) – *Climate Change 2021: The Physical Science Basis* – reaffirms and builds upon decades of climate science, bringing together major advances in physics over the past decade. Published in August, written by a team of 234 scientists and based on evidence from 14,000 research studies, the report presents the clearest picture yet of how the Earth's climate functions and human activities affect it.

Today, we know better than ever how the climate changed in the past, how it is changing now, and how it may change in the future. The report looks at the potential futures from the different pathways of greenhouse gas emissions.

Where are we today?

The report shows that recent changes in the climate are widespread, rapid and intensifying. And it shows that it is now an established fact that human activities are causing climate change.

On average, the Earth's surface was 1.1°C warmer over the past decade compared to the late 19th century. Our



A wildfire blazes through Sequoia National Forest in California on 21 September 2021

best estimate is that all of this observed warming was caused by emissions from human activities, such as the burning of fossil fuels, deforestation and agriculture. In fact, the warming due to greenhouse gases, which is dominated by carbon dioxide (CO₂) and methane (CH₄), has been partly masked by cooling from pollution particles.

This 1.1°C of human-induced climate change is already affecting every region on Earth, strengthening the frequency and intensity of extreme events such as heatwaves, heavy precipitation (such as rain or snow), droughts and fire.

With further global warming, every region of the Earth is projected to experience increasing physical changes. These changes will be more widespread and pronounced with every additional fraction of global warming, and you can explore them using the report's online interactive atlas at interactive-atlas.ipcc.ch. Some changes are unavoidable, and our improved knowledge on what to expect should inform risk management and adaptation strategies.

The physical climate changes include increases to regional trends in

temperature, changes in the frequency and intensity of hot extremes, marine heatwaves, heavy precipitation, droughts, the proportion of the world's population experiencing intense tropical cyclones, and reduced snow cover, permafrost and Arctic sea ice.

A warmer climate will intensify the water cycle and lead to increases in both very wet and very dry weather, climate events and seasons, with implications for flooding and drought.

While these aspects change in direct relationship with the level of global warming, and so can stop changing when global surface temperature stops increasing, changes involving the slow components of the climate system, such as the deep ocean, ice sheets and the resulting rise in sea levels, are irreversible for centuries to millennia.

It is certain that sea levels, which have seen accelerated rises in recent decades, will continue to rise over thousands of years, but the rate and magnitude of rise could be limited if global greenhouse gas emissions decrease sharply, thus giving more time for adaptation on coastlines worldwide.

Reduced ocean mixing, increased ocean acidification and the loss of dissolved oxygen will continue in the 21st century, but at slower rates if greenhouse gas emissions decrease. This is very important for protecting marine life and the people who depend on it.

There are still large uncertainties regarding low-likelihood outcomes, such as ice sheet collapse, abrupt ocean circulation changes, or compound extreme events (when two or more climate events occur, such as a tropical cyclone followed by a heatwave). Such events cannot be ruled out. The probability of such outcomes increases with higher global warming levels.

How to limit future climate change

The very clear finding from this report reiterates what we have known for many years: every tonne of CO₂ emissions adds to global warming.

The report shows that global warming is expected to reach 1.5°C in the next 20 years. If emissions stagnate close to today's level over a few decades, warming would exceed 1.5°C in the next 20 years, 2°C by 2050, and 3°C in the next century. However, these higher levels of warming – and their severe consequences – can be avoided if deep reductions in CO₂ and other greenhouse gases occur as soon as possible and continue over the coming decades.

Limiting human-induced global warming therefore requires limiting cumulative CO₂ emissions, reaching at least net-zero CO₂ emissions, along with strong reductions in other greenhouse gas emissions. Strong, rapid and sustained reductions in CH₄ would also limit the warming effect that is resulting from declining aerosol pollution and would improve air quality.

The good news is that we would see the impacts of reduced global greenhouse gas emissions very quickly. In just a few years, reductions in emissions would lead to discernible effects on greenhouse gas and aerosol concentrations, and air quality. The effects on global surface temperature would be seen within around 20 years. Our future climate depends on our decisions now. ●

Valérie Masson-Delmotte is co-chair of the IPCC Working Group I, which assesses the physical science of climate change.

What Cop26 needs to deliver for a sustainable future

From rigorous policymaking to diversity of thought, the summit must lay out tangible actions to tackle the climate crisis

By Nikki Flanders

In association with



The anticipation is palpable as Cop26 grows closer: high hopes would be an understatement. But high hopes are needed. This is the most important summit the UK has ever hosted and the most significant climate event since 2015's Cop21 in Paris, which saw the signing of the Paris Agreement.

Paris marked a tangible shift towards net zero, bringing about behavioural changes across investors, policymakers and regulators. Cop26 must build significantly on this and affords the UK an opportunity to showcase our leadership on energy sector decarbonisation and to demonstrate how renewable power can be deployed at both scale and pace. In fact, the UK power sector was already on a decarbonisation journey pre-Paris with a 60 per cent reduction in CO₂ emissions over the past decade.

While this is great progress there's still an awful lot we need to do if a net-zero energy system is to be achieved. This means having appropriate policies that encourage private investment in renewables and new technologies. Strategic investment in network infrastructure is also required. Our existing infrastructure was not intended for the scale of renewables needed to decarbonise our electricity system, let alone for the future decarbonisation of transport and heating. My first wish for Cop26, therefore, is that it will set the conditions needed to drive the policies and frameworks that practically enable the accelerated delivery of infrastructure.

It's not just the central energy system that is at play here. We're also talking about how businesses operate and how homes run. If net zero is to be achieved, all aspects of how we live will need to be redesigned. Positively, the UK government has just published its long-awaited Heat and Building Strategy, which sets out plans to stimulate decarbonisation in this sector. This includes improving the energy performance of buildings, increased penetration of heat pumps and new building standards.

My second wish for Cop26 is that we will see an increased focus on the policies and financial investment needed to get our homes and business premises to net-zero status. Smart meters are a great enabler, providing the data on how and when energy is consumed. However, businesses and homeowners also need help to use this data to retrofit their buildings. As an example, works



A corporate PPA helps businesses reduce their carbon footprint while shielding from volatile costs

completed by SSE under the Irish government's national retrofit programme have reduced energy costs by as much as 70 per cent. More policy commitments like this will help drive focused action towards net zero.

My third wish for Cop26 is that we have plain-speaking, practical explanations of what needs to be done and how support will be given and accessed. If the UK is going to achieve net zero, we need organisations of all sizes to adopt renewable energy. In the age of the environmentally aware consumer, it is critical for companies to demonstrate to their customers, shareholders and employees that they are making a genuine commitment. A simple place to start is to ensure that the energy they use is from traceable renewable sources; the energy sector needs to be held to account and make it unequivocally clear where the energy comes from.

One of the ways a business can prove that it is reducing its carbon footprint, while also protecting itself from price fluctuations, is a corporate power purchase agreement (CPPA). This helps

shield the business from volatile costs and provides full traceability to a renewable asset.

Interest in CPPAs is high but many companies are put off by the complexity involved in most agreements. This means that CPPAs have remained the domain of large companies. At SSE Energy Solutions we are determined to fix this, with a firm focus on making agreements both understandable and accessible to all. Our customers can now set an energy strategy for up to five years, buying their energy from a specific wind farm on simple terms. We also provide Renewable Energy Guarantees of Origin (REGOs), so that each kilowatt can be verified as sourced from their chosen wind farm. At SSE, we know that businesses will be at different stages of their net-zero journey, so we are continuously innovating to meet their needs.

My fourth wish for Cop26 relates to diversity of thinking. Addressing climate change is complex and requires new ways of doing things. It's fantastic to see a whole day of the summit dedicated to exploring how diversity is critical to decarbonisation. We need diversity of

thought and creativity to tackle this complex myriad of challenges as we pursue a just transition to net zero. My wish is that we inspire talent from diverse backgrounds to come together and solve these problems. Everyone needs to be motivated to take individual and collective responsibility, with our leaders and ourselves held accountable.

The backdrop to all this is science. The Intergovernmental Panel on Climate Change (IPCC) has said that the world must act. We can still limit the worst impacts of climate change – but only with immediate, rapid and large-scale reductions in greenhouse gas emissions.

The need for urgency is why SSE became a principal partner of Cop26. The global summit brings together experts to ensure action. Meaningful, urgent action must be our reality. ●

Nikki Flanders is managing director of Energy Customer Solutions at SSE. Help lead the transition to net-zero carbon emissions with 100 per cent renewable energy direct from an SSE UK wind farm. For more information, visit sseenergysolutions.co.uk/cppa

In the future we will buy better and buy less

Consumers and businesses are starting to embrace the circular economy – and governments should too

By Iain Gulland



In association with

When we talk about moving to net zero and averting dangerous climate change, there is a vital piece missing from that conversation: how much we consume.

Decarbonising our energy system and other parts of our economy is crucial. But each new solar panel, wind turbine or lithium battery relies on non-renewable raw materials, such as steel and rare metals. These materials are usually mined, manufactured, used and then thrown away. They often cost the communities from which they are extracted, rather than provide secure and decent jobs and livelihoods. By leaving consumption out of the conversation we are ignoring some of the key challenges to countering climate change.

Zero Waste Scotland's research shows that four-fifths of our carbon footprint comes from raw material use. Each person in Scotland consumes around 18 tonnes (t) of raw materials each year, when the sustainable amount is closer to 8t. Much of the materials and goods we consume have to be imported, adding yet more embedded carbon to the process.

The damage also goes beyond climate change. The extraction of raw materials is responsible for an estimated 80 per cent of biodiversity loss – the other great environmental crisis of our time – and 85 per cent of water stress (when demand exceeds supply). Then there are all the social and human rights challenges created by the process of extraction – for example, the number of workers who are exposed to dangerous conditions, often for poor pay, or communities displaced from their land.

The circular economy is about consuming better and smarter, rather than buying less. It is a regenerative and restorative process that should provide good jobs. This is why it can strengthen the economy, by designing for reuse and using recycled materials, cast-offs and by-products to make other products and reduce the burden on resources. It also produces more resilient supply chains that are less vulnerable to disruption.

Businesses and consumers are already leading the way. For example, you can lease a pair of jeans, paying a fixed amount for a year and then returning them when you want them to be repurposed or recycled. Some 2t of clothing is bought in the UK every minute, the highest amount per person in Europe. The World Bank estimates that



Embracing the circular economy isn't about consuming less, it's about consuming better and more wisely

fashion accounts for 10 per cent of global carbon emissions, more than shipping and aviation combined. By contrast, a company in the circular economy has an interest in promoting the durability of its products, and in maintaining a positive ongoing relationship with the consumer. It is a model that ditches cheap and disposable fashion in favour of a cycle of renewal and reinvention.

Beauty Kitchen was one of the first businesses in Scotland to achieve B Corp status for high standards of social and environmental performance, public transparency and legal accountability. It operates a “return, refill, repeat” service for its products, with containers designed to be reused, enabling customers to return them for refilling. This means they stay in use longer, reducing the demand for packaging, and have an impact on the behaviour of customers and retailers. Other, more local, circular economy projects and schemes, such as tool libraries and car clubs, allow individuals to rent items that are seldom used or borrow them for free.

These principles are also being applied to the food system, one of the biggest contributors to climate change. In 2016, the EU published a report highlighting the potential to grow and supply protein by feeding

food waste to particular types of insects. This approach both reuses food waste and reduces the need for imported soya-based proteins for animal feed that are linked to deforestation in the Amazon Rainforest.

The Fairtrade movement has shown us what is possible in terms of making consumers more aware of where their products come from, and the people and communities behind them. We would like to see a similar shift to a “fair waste” movement, where businesses are transparent and accountable, and people understand the resource cost of their goods and services. It also means they can see and understand the benefits of supporting sustainable alternatives within the circular economy.

What is needed is leadership at the highest levels. Government can and should play a role. It can incentivise the sharing, reuse, repurposing and recycling of materials, helping scale up those businesses that are innovating in the circular economy. There is also a role in discouraging and divesting from the linear economy, where short-life products and goods are specifically designed to need replacing by new ones after a period of time.

As with the market for renewables and other “green” goods and services,

government intervention and subsidies can shape and grow the market for the circular economy. Government can also set resource consumption targets in the way that it has set ambitious science-based targets for reducing emissions. These steps would help create a level playing field where circular goods have the opportunity to become established and hopefully the default option.

Procurement is another area where local and national government can use their own spending power to make choices about how they consume or use products and services. Many councils already use spending to promote local social and economic well-being. This would be another application of that principle and some local authorities are already looking at how to embed the circular economy across their services.

How we consume is the missing piece in our climate puzzle. Without it, we risk ignoring the opportunities from the circular economy, and building up another set of problems for the future. We can live different and better, but we must start those conversations and take real action now. ●

Iain Gulland is chief executive of Zero Waste Scotland

Wera Hobhouse: we need protests

The MP and
campaigner on
Incubate Britain, her
hopes for Cop26 and
the government's
climate record

By Oscar Williams

In August 2004, shortly after her election as a Conservative councillor, Wera Hobhouse travelled into Rochdale for her first council meeting. The dramatic events that followed would shape the German's early British political career, triggering her defection to the Liberal Democrats and the start of her journey to becoming one of the UK's most vocal champions of climate action.

Hobhouse had become involved in politics as a student in the late 1970s and then as a Greenpeace activist in her twenties. But as the council meeting started, she could scarcely have imagined that her time as an environmental campaigner in 1980s West Germany would serve her so well as the new Tory representative for the northern village of Norden.

Shortly after proceedings began, a group of gas mask-clad activists stormed the room. The previous Conservative council, the campaigners revealed, had approved the development of 650 homes on a site in Spodden Valley that had been home to Turner Brothers Asbestos, the original and largest asbestos factory in Britain.

Nearly a century earlier, a worker at the site had become the first recorded person to have died as a result of asbestos exposure. But with toxic asbestos dust lying dormant, the campaigners warned that the development's approval had set in motion what could become an ever larger public health crisis.

"Coming from Germany, which has a pretty strong environmental political record, I was immediately surprised that something like this was even being considered," Hobhouse tells *Spotlight* via Zoom from her constituency office in Bath. "Why was there no consideration of public health issues? It just staggered me."

The source of the problem, Hobhouse soon discovered, was a woefully inadequate approvals process for new developments. While the principle of the "polluter pays" had been adopted by the Organisation for Economic Co-operation and Development (OECD) more than 30 years earlier, the council had taken at face value the developer's claim that the site was safe to build on, allowing them to carry out the work without paying for the toxic waste to be safely removed. "I had visions," Hobhouse recalls, "of television programmes years later saying, 'why did the council ever allow this to happen?'"

She struck up a close partnership with the campaigners and eventually "became one of them", crossing the political divide and joining the Lib Dems so that she could take on the Tory councillors that had approved the development. The campaign lasted six years, culminating in an investigation that forced the development off the table, says Hobhouse. The site is still derelict today. "But it's better than if we had created a massive public health issue further down the line. Asbestosis is a terrible, terrible illness, which would only have come to light 20 or 30 years later."

A former radio journalist, artist and language teacher, Hobhouse became the Liberal Democrat lead for Rochdale council and then, more than two



Hobhouse speaks at the Liberal Democrat party conference in Bournemouth on 14 September 2019

decades later, the party's parliamentary candidate for Bath. She won the seat in 2017 and retained it two years later. One of just 12 Liberal Democrats MPs to have been elected in 2019, Hobhouse was appointed the party's spokesperson for climate change in the same year. Although her portfolio changed in autumn 2020, she remains a prominent voice in the environmental movement, issuing calls for a ban on fracking and airport expansions.

Speaking to *Spotlight* in the weeks leading up to Cop26, Hobhouse says that some recent UN climate conferences have been wasted. However, she is not entirely unsympathetic to the negotiators' predicament: "If it's difficult to come to some sort of understanding in a local council, imagine how difficult that is nationally, and how much more difficult that is internationally."

But Hobhouse is not pessimistic about efforts to tackle climate change. She credits "particularly young people in Extinction Rebellion, and all these groups that are currently causing mischief and causing politicians to say 'how can they?'" for raising the profile of environmental issues.

When *Spotlight* presses Hobhouse on her opinion of Insulate Britain, the campaign group that has blocked roads and motorways in recent months, she says: "Of course, the safety of our police officers is absolutely paramount – I do believe it is important. And, of course, [by] causing disruption the protesters have to think about whether that actually costs lives. And, where ambulances have been disrupted to a point that somebody didn't get to

hospital on time, of course that's hugely irresponsible and shouldn't happen.

"But the whole point of protesting and being heard is disruption. That's the point." And though Hobhouse reiterates her sympathy for the police, she adds: "But I think we need protests, and the fact that the government is clamping down on the right to protest is very disturbing."

Hobhouse's greatest fear ahead of Cop26 is that there will be a lack of leadership from the US and China. "They are the ones who can make the real difference. The worst thing that happens is, of course, that one blames the other for inaction when really this is a global human issue. It's a UN issue; it's a UN climate summit." She is furious that the government is funding its \$2.6bn pledge to a climate finance pot for developing nations through cuts to the aid budget. "It's robbing Peter to give to Paul. Now, that is not leadership. That is cynicism."

Hobhouse has called on Boris Johnson to provide an end date for fossil fuel extraction, but is still waiting for an answer and accuses the government of "dithering".

"I'm not saying everything that the government does is rubbish and I recognise it's a challenge," says Hobhouse. As her time as a councillor in Rochdale proves, politicians at all levels can deliver for voters if they serve as a critical friend to industry. "There has to be the idea that the government is important, and not to say 'we will leave it all to private business.'" ●

“The worst thing that can happen is that China and the US blame each other for inaction”

Tackling climate change from home

How to turn good intentions into positive actions

By Fflur Lawton

In association with



If we are to achieve our climate change target of reaching net-zero carbon emissions by 2050 we all need to make changes to our behaviours and the way we live our lives.

Generally, public awareness of net zero is high, as seven in ten people have a good or fair understanding of what it means. Twenty-six per cent of people have already made at least one behaviour change to help tackle climate change. While these statistics are encouraging, motivation on its own is not enough to drive sustained behaviour change.

There is a lack of awareness among the public of what their role is and what actions they could take. In fact, new research has revealed that over three-quarters (76 per cent) of people in Britain think it is the responsibility of government and businesses to get the country to net zero, with nearly half being unsure of what individual actions they can personally take to help tackle climate change.

If this failure to engage consumers is not resolved urgently, efforts to reach the 2050 target could be at risk.

A recently published research report, *Tackling Climate Change from Home: How to Turn Good Intentions into Positive Actions*, written by The Behavioural Architects and commissioned by Smart Energy GB, explores how behavioural science can help engage consumers in climate-friendly behaviours around the home, and investigates the barriers to undertaking those behaviours.

It is clear from the report that, so far, not enough attention has been given to supporting, encouraging and communicating with households across the country to take action.

The report identifies five key motivators for adopting energy efficiency behaviours, with the strongest found to be cost saving. This is followed by a desire to protect the planet for future generations, and then by an inherent motivation to waste less. Only a minority are primarily motivated to adopt new behaviours by the desire to feel tech-savvy or “green”.

The research also challenges some commonly accepted assumptions about barriers to taking action. It found that for those identified as being in a vulnerable group, including people aged 75 and older, and those living with a disability or health issue, their

condition is not generally a barrier to their ability or motivation to carry out energy efficiency behaviours. However, providing more information on ease of action, such as the amount of time required to install energy-efficient technology, will be helpful in reassuring these groups and will in turn enable them to undertake more environmentally friendly steps.

In addition, those on lower incomes are often already doing several climate-friendly behaviours in order to save money – such as washing clothes at 30°C or under. Cost-saving messaging and information is particularly successful for this group, especially so if broken down into monthly savings and worth more than £10 per month.

In contrast, higher earners are much less likely to be motivated by cost savings and instead respond more positively to messaging that makes them feel tech-savvy or ahead of the curve.

The research also highlighted that a different approach is needed depending on property type, with renting emerging as a significant obstacle to uptake of energy efficiency behaviours. It is much harder to persuade people to get anything that requires installation, such as a smart thermostat or smart meter, because of the perceived – or actual – barrier of getting landlord permission.

In addition, one-off actions like draughtproofing are perceived as not worth the effort given that renters will not enjoy the benefit long term. To counteract this, communications to those in shared accommodation should focus on behaviours as social norms, not as personal preferences. For it to be most effective, however, it needs to be done in tandem alongside other government measures to reduce barriers and increase incentives – in particular for those in the private rented sector.

Age was also found to be an influencing factor, with parents and grandparents more concerned about the future their children and grandchildren will experience, and those with younger relatives found to be especially likely to worry about the future. For this group, referencing children or future generations in communications will help motivate behaviour change.

Taking these findings into account, the report sets out a series of



Saving money is the strongest motivator for adopting climate-friendly behaviours

recommendations for individuals or organisations involved in talking to the public about climate change, or encouraging them to take action at home:

1. Make sure that any communications reflect language already used by the public.
2. Avoid using the government's net-zero target as a motivator.
3. Ensure that communications are not negative in tone.
4. Use emotional, rather than rational, framing.
5. Promote energy efficiency advice alongside climate change articles in the media.
6. Wherever possible, communicate multiple benefits to carrying out a behaviour – number one on this list being cost savings.

While progress has been made to reduce our carbon emissions and upgrade our energy system for net zero, a lot of work to date has been done behind the scenes through regulation and other industry initiatives. For the

next phase of the transition, consumer engagement and action will be critical. There is therefore a need for the government and other organisations to focus on this challenge, remove barriers to the uptake of low-carbon technologies, and communicate clearly to the public on what they can do to make a difference. ●

Fflur Lawton is head of public affairs at Smart Energy GB. Smart Energy GB is the consumer engagement campaign for the roll-out of smart meters in Great Britain, and the organisation is currently overseeing one of the biggest carbon-saving consumer engagement campaigns of our generation. With over 25 million smart meters now installed, our experience is that clear and consistent messaging, informed by in-depth behavioural science, can help turn individuals' good environmental intentions into tangible actions. For more information, contact Liz.Harper@smartenergyGB.org.

How fears about climate migration are being used to build up borders

Governments, companies and even well-intentioned NGOs are part of the problem

By Samir Jeraj

Back in 2008, an EU report declared “Europe must expect substantially increased migratory pressure” as a result of climate change. The author warned that member states could expect “millions” of people by 2020. It is a prediction that has not come to pass.

Why people migrate, where and with what impact has never been straightforward. Separating out environmental causes from political, social and economic factors is extremely difficult. Even where there are obvious environmental reasons for people to be displaced, the story is different to the prevailing one.

“What we’re seeing is sudden displacement caused by extreme flooding, tropical storms, cyclones, hurricanes,” explains Alex Randall, project lead at the Climate and Migration Coalition. These events, he continues, tend to create “short-term displacements” where people move the shortest distance possible to get to safety with the aim of returning home. This pattern holds even with slower processes such as drought and desertification, where people usually try to find alternative work locally before moving to a nearby city and reinforcing the global trend of urbanisation.

However, the spectre of millions of migrants and refugees exerts a powerful influence over politicians in the US and Europe, which have been on a long-term anti-immigration trajectory. An imagined future of conflict and displacement driven by climate change and competition for resources has been used by non-governmental organisations (NGOs) to try and draw attention to the existential threat posed by climate change. But this narrative also opens opportunities for governments to adopt anti-migration policies and for companies to sell solutions to help build up their borders, push people back or keep them elsewhere.

“The world doesn’t need to address climate change because people might migrate,” says Randall. “The world needs to address climate change because climate change itself is a problem.”

Richard Black, visiting professor of geography at Sussex University, led a study commissioned and published by the UK government in 2011 on migration and climate change. Part of the reason was that the Home Office was concerned it “ought to be prepared” in the medium



Borders have become increasingly militarised around the world

term for an “increase in migration associated with climate change”, he explains. The “broad thrust” of the findings was that there was no clear signal climate change would result in more people coming to the UK.

However, security is still driving many states and international organisations when it comes to climate change, and particularly its link to migration. The US Department for Homeland Security published its *Climate Action Plan* in September, with the head of the department stating in his opening that “we are already experiencing the adverse impacts [of climate change], from [a] sea-level rise, extreme heat, flooding, and drought, to changes in migration patterns and harmful effects on workforce health”. Nato’s 2021 Climate Change and Security Action Plan says climate change could potentially “lead to displacement, migration and human mobility, creating conditions that can be exploited by state and non-state actors that threaten or challenge the alliance”.

NGOs and campaigners are concerned that climate change and migration will be just the latest reason for states to raise their borders and adopt punitive anti-immigrant policies. A report by research organisation the

Transnational Institute (TNI) found 23 companies that it says are profiting from the “border industrial complex”. These include providing border and smart border technologies, deportation and detention. In the UK, the government privatised deportation, handing the process over to facilities management business Mitie, together with the support of some airlines, while detention centres and asylum seeker housing are contracted out to a set of private companies including Clearsprings.

Behind the providers, TNI found, are large financial investors, such as the Vanguard Group, which provide the capital for these companies to set up border infrastructure and meet the high upfront costs of putting it in place. One of the striking findings is the extent to

Severe climate events are causing sudden displacement

which investors that have disproportionately contributed to climate change through investment in fossil fuels are the same as those seeking to profit from climate securitisation and borders. The Vanguard Group has an investment worth £300bn in fossil fuels and £7.2trn in assets under management.

Another trend is the involvement of tech companies in an industry traditionally dominated by arms and defence companies. These companies are in effect building “smart borders” to complement physical ones. Palantir Technologies, for example, provides profiling and database software to the US Immigration and Customs Enforcement (ICE) agency. The company also has a presence in the UK overseeing post-Brexit border and customs data. In 2018, the EU funded and piloted an automated border control system called iBorderCtrl, which used AI as part of a lie-detector system for people wanting to cross borders.

According to Emre Korkmaz, a researcher at Oxford University, deploying these new border technologies against refugees and migrants is also a way to test and perfect products, such as border drones, with a view to profitable wider use – in particular by the military.

There are, however, meaningful migration policies that promote human rights and can be put in place in response, according to Randall. He believes that climate adaptation finance should be made available to “facilitate migration” where countries are experiencing both sudden internal displacement and accelerated patterns of internal migration as a result of climate change. This could help make that migration of people a more planned and responsive process, he explains. Adaptation could be about ensuring decent housing and urban environments for people moving into cities from rural areas. It could also be about welfare and education systems that support people whose livelihoods have changed.

Climate change and migration are two different issues that do interact with each other, but in a complicated way. However, in a world where politicians see migration as a security issue, and there is money to be made in selling border solutions to it, the door is open for climate change to be used to restrict human rights rather than ensure them. ●

The road to net zero

How the oil and gas industry is managing the green transition

By Jenny Stanning

In association with



OGUK

This month we mark a milestone as the UK welcomes world leaders to Glasgow for Cop26. This is a once-in-a-generation opportunity for us to showcase the positive contribution the oil and gas industry can make to the energy transition. We are fully behind the UK government's hosting of Cop26 and we see this as an opportunity to present our work to all governments and international partners in this important year of action.

Under the UK's presidency, Cop26 brings together the largest international conference ever hosted by the UK government and comes at a pivotal moment for coordinated action on climate change as the world begins to recover from the pandemic.

Amid growing awareness of the climate emergency and on the journey to net zero, the offshore oil and gas industry is changing.

The sector recently agreed the North Sea Transition Deal with the UK government, setting out the blueprint for a just transition that ensures that high-skilled oil and gas workers – as well as workers across the supply chain – will not be left behind on the road to carbon neutrality. As well as setting out a 50 per cent reduction in offshore production emissions by 2030, the deal will also stimulate investment of up to £16bn in essential new technologies, such as carbon capture and the use of hydrogen at scale. These will both play a critical role in helping other energy-intensive industries – such as those that manufacture glass, cement and steel – to reduce their emissions drastically.

Carbon capture technology – which sees CO₂ emissions separated from other gases produced during industrial processes and injected into rock formations deep underground for permanent storage – is another key area of work for our sector, with projects already under way.

Despite some false starts in the past, the energy sector is now committed to new technologies, with Aberdeen, once referred to as the “oil capital of Europe”, set to be at the centre of that new reality. Indeed, the Aberdeen Energy Transition Zone (ETZ) is currently being developed at the city's South Harbour and is expected to directly support 2,500 green jobs by 2030, alongside a further 10,000 transition-related jobs. Earlier this year, the Scottish

Climate action doesn't mean greater sacrifice

Failing to combat climate change will make life harder, not easier, in the years ahead

By Michael Mann

To borrow from the iconic film *The Usual Suspects*, the greatest trick the fossil fuel industry ever pulled was convincing the world that climate action would require sacrifice – for just the opposite is true.

It is climate inaction that will lead to people living more difficult, less prosperous lives. Action on climate means more jobs, quieter transport, cleaner air, better access to affordable energy and a more equitable society.

World leaders, particularly those from high carbon-emitting countries like the US, UK and China, know this. When these countries gather in Glasgow for climate negotiations next month they have a choice: end investment in fossil fuels or stay on the current course to disaster.

There are reasons to be concerned. In the past year we've seen climate change-fuelled extreme weather to rival Revelations. Heat domes and drought in the western US, catastrophic flooding and wildfires in Europe, and dangerous hurricanes have hurt millions of people and cost billions of dollars. The latest UN report detailing countries' climate plans and progress makes for grim reading, suggesting greenhouse gas emissions will rise by 16 per cent by 2030 under current policies. To have a chance of avoiding the harsher impacts of a 1.5°C warmer world, carbon emissions must fall by roughly 50 per cent by the end of the decade. While we're making some progress, we're still a long way off track.

Climate change negotiations can seem arcane, but at their heart they're very simple: they're about how quickly we move away from fossil fuels towards a clean energy economy.

Fossil fuel energy is dirty energy. Fossil fuels are dangerous to dig up. They're unhealthy to burn. But most of all, they're terrible for the planet: burning coal, oil and fossil gas releases planet-warming, climate-changing carbon pollution. Climate-friendly alternatives like wind and solar energy aren't just better for the planet – they're cheaper and better for people's health.

The status quo – which props up fossil fuels with subsidies in the trillions of dollars per year – is simply indefensible. And yet it has plenty of defenders. Dirty energy has made plenty of people filthy rich, and they're not going to give up their grip on the power structure easily – particularly not in the



Mann says carbon emissions must fall by around 50 per cent by the end of the decade

US, where the industry's generous campaign donations have not only bought the loyalty of the Republican Party, but also of key Democrats. Senator Joe Manchin, a Democrat from West Virginia, makes a half-million dollars a year from a coal services company, and unfortunately his vote is also absolutely essential to enacting President Joe Biden's climate agenda and allowing him to meet his pledge to cut carbon emissions in half over the next ten years.

Elsewhere the story is similar. China has seen surging greenhouse gas emissions in recent years. Factions within the ruling party have pushed and benefitted from growth at all costs. While this has birthed a gigantic renewable energy industry, it has also meant more investment in fossil fuels, leading to smog-filled cities and mass protests. One might argue that four years of Donald Trump and his obstructionist stance on climate took the pressure off China – which had actually been decommissioning coal-fired power plants during the Obama years – to decarbonise its economy. Re-engagement and diplo-

matic outreach, under Biden, appears to be starting to pay some dividends.

In the UK – where old-fashioned internal combustion engine cars crowd petrol station forecourts and people suffer sky-high prices and fuel shortages – the downsides of relying on volatile fossil fuels are clear. So while Prime Minister Boris Johnson has made a bold pledge to reduce carbon emissions by 70 per cent (relative to 1990s levels) by 2030, he can't credibly claim to be a climate leader if the UK caves in to industry demands to build a new coal mine in Cumbria. And Nicola Sturgeon can't be green and plan for a future in which Scotland depends on North Sea oil. No less conservative an institution than the International Energy Agency, after all, has said there can be no new fossil fuel infrastructure if the world is to keep warming below the 1.5°C danger limit.

But there are signs that barriers to change erected by fossil-friendly politicians are beginning to break. In the US, Biden continues to push for a historic investment in climate-friendly infrastructure and clean energy in Congress, and he's likely to release new

climate plans in Glasgow. But, in the meantime, perhaps the most notable move he's made has garnered less attention than the machinations of Joe Manchin. Biden has directed Treasury Secretary Janet Yellen and other federal regulators to make investors and firms account for climate risks. In the EU, where a similar process has begun, banks are now backing away from financing fossil fuel projects. Turning off the flow of funds to dirty fuels would seriously speed the transition to clean energy.

Just over a year ago, China announced that it will be carbon-neutral by 2060. Given the size of the Chinese economy, this is the clearest signal yet that the fossil age is coming to an end. Last month, President Xi Jinping also said that the Belt and Road Initiative – China's vehicle for investment in infrastructure around the world – will no longer finance new coal plant construction. This will shift hundreds of billions of dollars out of coal and into clean energy. The UK is arguably going further, saying no not just to coal but to funding oil and fossil gas overseas too.

Prime ministers, presidents and premiers are waking up to the urgency of the clean energy transition. But they can and must go further. President Biden needs to use the full weight of his office to push the Build Back Better Bill through Congress with key climate provisions intact. President Xi should end coal plant construction in China as well as abroad. And Prime Minister Johnson should back off on Cumbrian coal at home and invest more in clean energy abroad, because you can't credibly transition off fossil fuels without having something to transition to.

At their worst, climate change negotiations are about apportioning suffering; at their best they're about creating a better world for us all. In Glasgow we have a chance to codify climate commitments and create a world where energy is cheaper, the air is cleaner, and our planetary environment remains hospitable. Let's hold our policymakers accountable and demand they take full advantage of this critical opportunity. ●

*Michael E. Mann is distinguished professor of atmospheric science and director of the Earth System Science Center at Penn State University. He is the author of *The New Climate War: The Fight to Take Back our Planet*.*

Tidal shifts

The ocean has life-giving power. Is systems thinking the key to protecting it?

By Deborah Greaves & John Spicer

In association with



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PLYMOUTH

Although the ocean, and its inhabitants, were feared by many ancient civilizations, it was also a source of wonder, a source of food – it was the “inexhaustible ocean”. However, it is only in recent years that we have come to appreciate the scale of its life-giving power. A resource of clean energy, a producer of much of our oxygen, a regulator of climate, home for millions of different interrelated types of life – from viruses and bacteria to the mighty whales – an incredible food resource, but no longer inexhaustible. We now appreciate how the scale of the ever-increasing human enterprise is threatening our ocean and with it all life on earth; pollution, overfishing, warming, acidification and reduced oxygen are all taking their toll on marine life.

Now more than ever it is crucial we learn how to value, protect, manage and use sustainably the natural capital that our ocean produces.

The care of our ocean, though, cannot be considered in isolation. The issue is global and so the solution must be global, bringing together industry, science, regulators and local communities to tackle the challenges we face on both local and international scales.

The United Nations Climate Change Conference (COP26) in Glasgow this year presents a unique opportunity to make a tangible difference, to show not just in words but in actions a commitment to the health of our ocean, the health of our planet, the state of our common home. It has the potential to bring together all the sectors of society needed to effect lasting and positive change. And it does so at a time when many are waking up to the reality of damage to our home.

In order to combat climate change, we need to reduce greenhouse gas emissions into the atmosphere. That means reducing our reliance on fossil fuels, which has built up over many centuries, and achieving the transition to clean energy. Renewable energy is the way forward in that regard and offshore renewables, including wind, wave energy and tidal stream offer great potential.

Over the past 30 years, wind energy has gone from being an alternative energy to mainstream. Offshore wind has seen significant growth around our shores and a greater than expected cost reduction in recent years. The UK government’s Ten-point Plan for a Green Industrial Revolution – designed to help us meet



The UK's offshore wind capacity is projected to quadruple in the next nine years

net-zero greenhouse gas targets by 2050 – recognises the key role of offshore wind, which is seen as forming the backbone of the UK's future energy mix.

The UK's offshore wind capacity is projected to quadruple in the next nine years, with a 40 gigawatt (GW) target by 2030. Offshore wind farms that have been deployed so far are in relatively shallow waters, with turbines fixed to the seabed on monopile or jacket structures. But that is a limited resource. To achieve net-zero targets we will have to go further offshore and into deeper water where fixed offshore wind may not be viable, and that means new floating technology needs to be developed. As a new technology, the cost is relatively high, but will reduce with further development, and the same can be said of both wave and tidal technologies.

However, more research is needed and offshore wind cannot be the whole answer. Floating offshore wind technology is still under development, cumulative impacts are not fully understood and, because renewable energy resources are by their nature variable, a diverse energy mix combining

wind, solar, wave and tidal is needed to ensure balance and resilience.

Achieving that growth is not just about mobilising research and innovation, supply chains and manufacturing. We need to make sure we have the correct consents in place. And we need projects to be developed safely and in harmony with the other users of marine space, natural and man-made.

As an engineer and an ecologist, we come from different scientific disciplines. In the recent past, some might have, wrongly, put those disciplines in opposition to one another in terms of how we use our ocean.

But any tension that did exist between the need to accelerate development and to protect the marine environment needs to dissipate fast. The scale and pace of offshore renewable energy needed to keep global warming to 1.5°C or below means that project development has to be accelerated. And so it is imperative that designs take into account the needs of ecosystem and ocean health and are informed by research.

This whole-system approach is one our university has been pioneering for

several years. It is only through such joined-up thinking that we can achieve results that are positive for the planet.

Essentially, we appreciate that the ocean is integral to the drive for net-zero emissions. However, we also understand that our innovations cannot be deployed unless their impact on the environment is reduced as far as possible, with net-zero harm being a useful target.

Before the Covid-19 pandemic there was, in some quarters, the sense that the scale of transformative change required to tackle our environmental crisis was not possible. But now, just over a year later, in our reaction to that pandemic, we have seen what we thought was not possible: transformative change in the face of an acute and seemingly overwhelming crisis. The question now is not “can we do it?” but “have we the will to do it?” ●

Deborah Greaves OBE is professor in ocean engineering at the University of Plymouth and one of the country's foremost experts in offshore renewable energy. John Spicer is professor of marine zoology and a world-renowned expert on the effects of climate change on the ocean.





Developing countries

The role of renewables in tackling poverty

How clean energy is protecting livelihoods while saving the planet

By Sarah Dawood

For Siprina Omwanda Ogalo, a 58-year-old mother of four living on Kiwa Island, Lake Victoria, Kenya, transitioning to solar power has not just been a step towards sustainability – it has been a lifeline.

Previously, the whole island would go dark at 7.30pm. Now, the residents have swapped their reliance on polluting, dangerous kerosene lamps for a solar-powered microgrid, which provides houses with a steady power source, enables businesses to stay open into the night and generate more income, and has improved farming yields through powering a water irrigation system. It has also sparked entrepreneurship, with locals setting up ventures such as battery charging points where fisherman can hire rechargeable lights.

Most importantly, people feel safer. “Women and children can now walk freely and without fear around the island as the shops, hotels and individual houses provide spill-over light into the foot path,” says Ogalo.

The climate change and poverty link

This project, facilitated by charity Renewable World, is just one example where introducing renewables has improved lives. Green energy initiatives in developing countries not only help to tackle climate change but boost income generation, improve health and increase access to education. According to Greenpeace, the use of combustible fuels such as wood and charcoal for cooking and heating kills 2.5 million women and children each year from indoor pollution.

Some developing countries have leapt ahead in sustainable energy investment, without charity intervention. Costa Rica has tapped into its wealth of natural resources to develop extensive hydro, wind and geothermal power plants. China, in response to its catastrophic air pollution, is now the world’s biggest producer of wind and solar energy, while India’s government is committing to ambitious renewable targets. Countries such as India and China have historically relied on fossil fuels to enable economic growth over recent decades but have successfully begun their transition to cleaner sources. “It is a false dilemma to say that we either tackle poverty or we save the planet,” states a paper from Greenpeace and the international development charity Practical Action. “Poverty can be tackled without costing

the Earth. Crucial to both is the rapid expansion of clean, sustainable and renewable energy.”

But it is often the poorest and most remote communities in low- and middle-income countries that get left behind – as in Lake Victoria, the challenge is not shifting from non-renewable to renewable grids but putting in a centralised power system where there wasn’t one to begin with. It is estimated that 940 million people – 13 per cent of the world – do not have access to electricity, the majority being in rural areas and sub-Saharan Africa.

Such communities are therefore barely contributing to climate change yet are expected to be hardest hit by its impacts. International development organisation the US Global Leadership Coalition says that climate change acts as a catalyst for political instability, people displacement, lack of access to food and water and the spread of deadly diseases such as malaria. Stanford University found that climate change has increased economic inequality between developed and developing countries by 25 per cent since 1960.

Cost of sustainability

Renewable World focuses a lot of its work in rural parts of Kenya and Nepal, and is looking to expand into sub-Saharan Africa, where there is a pressing need for energy provision.

While renewables were previously cost-prohibitive, prices have come down, particularly for solar, making it a desirable option for use in developing countries. The International Renewable Energy Agency (Irena) found that between 2010 and 2019, the cost of solar photovoltaics (PVs) – solar electricity panels – dropped globally by 82 per cent, while concentrated solar power (CSP) fell by 47 per cent, onshore wind by 39 per cent and offshore wind by 29 per cent.

“Communities should have ownership over the technologies that are installed”

Renewable World uses solar-powered microgrids across many of its projects in Nepal. “You used to have to import a lot of the technology,” says Lisa O’Doherty, global programmes director at the charity. “Now there are many more providers based in Kathmandu so we can liaise directly with them. There’s a better supply chain, making it easier to maintain the service and fix parts, so it’s much more reliable and accessible.”

Creating long-term change

Efforts to integrate renewable technology into remote communities need to be sustainable rather than tokenistic, says O’Doherty, with longevity in mind. To do this, they need to be affordable. Before starting a project, the charity undertakes feasibility studies and discusses cost with the community, as the idea is to install a system that they can self-sustain.

Once infrastructure is set up, the charity trains local people in skills such as operation and maintenance, and in the necessary profession-based skills – from agricultural to business – to enable them to generate a profit to keep the system running. A “community fund” is set up, with contributions from the charity, government, local bodies and citizens if appropriate.

One such project is taking place in the buffer zone of Bardiya National Park in Nepal and aims to improve lives through water access. Solar-powered water pumps – where solar energy is converted to electricity via a generator, which powers a motor to pump and lift the water – now distribute clean water to houses and businesses. The water also helps to grow crops and rear livestock; the produce is sold back to the community and this funds the cost of the solar power.

Other projects have a more indirect impact on income but still improve access to education or healthcare. Solar-powered water pumps were installed in 11 schools in Nepal’s Gulmi district, providing access to clean water and improving sanitation. “Girls in Nepal often miss school when they’re menstruating,” says O’Doherty. “Over the secondary school lifetime, they might miss the equivalent of a year. If you can help them get back into school by providing the right facilities, it helps their grades go up, allowing them to generate a higher level of income [in the long run].”



Rural regions of Nepal have benefited from the installation of solar power

Lata Shrestha, a trustee of Renewable World and programmes manager at non-profit organisation International Nepal Fellowship (INF), says that the impact of something as simple as a hydraulic ram (hydrum) pump – a water pump powered by hydropower – can completely transform lives in remote communities.

In a village within the Nepalese district Syangja, a hydrum was installed to provide irrigation water for household farming. One schoolgirl previously spent two hours every morning fetching water before walking an hour to school, leading her to be late and tired. Better water access has completely changed her life prospects. “She said that now she could ‘see her dreams come true’ of finishing school and moving to the city for further education,” says Shrestha. “Access to water is not only linked with day-to-day hardship but affects women’s hopes, desires and aspirations.”

Improvements on a global scale

Shrestha says that on-the-ground training is essential to enable communities to be self-sustaining, and

that this should be coming from local government rather than solely charities. “Supporting communities is key to achieving long-term sustainability, so they have ownership over the technologies that are installed,” she says. “This cannot be dependent on non-government organisations (NGOs) or external agencies. Agricultural departments, for example, need to provide farmers with training so they can transition to profitable crops.”

Better knowledge sharing between governments, says O’Doherty, would also help developing countries understand their options with renewables, and would allow countries to establish their own domestic supply chains. “One of the biggest [challenges] is actually gaining access to the technology,” she says. “It’s all well and good [for charities] to invest in this technology and offer it for free – but if it breaks, then what?”

To shift away from charitable work, there should be an onus on governments to rethink renewable energy policy and incentivise uptake, adds Shrestha. This could be done through mechanisms such as subsidies

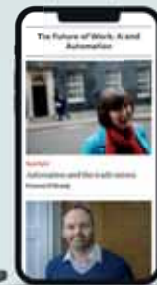
and micro-loans, which offer people a small sum of money at low interest to get a venture off the ground. On a global scale, it is not enough to settle with the technology currently available – governments and global organisations such as the United Nations should continue ongoing research to identify how renewables could be cheaper and more efficient, so they become more accessible for lower-income countries.

The link between green energy and improving livelihoods is clear: renewables not only help to tackle climate change but can improve health outcomes, boost business opportunities and future-proof income generation in a way that polluting finite resources cannot. The impacts of climate change will also be felt most deeply and imminently by developing countries, so transitioning is crucial. “We’re already seeing the effects [of climate change],” says O’Doherty. “In Nepal, monsoons are changing and water is coming in sudden floods. By introducing [green energy solutions such as] a water pump, it not only mitigates [the problem] – it helps communities adapt.” ●

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