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Monthly Report on Research and Policy Developments - Energy and Climate Change

March 2022

Purpose: This document provides a summary of recent key developments in policy and research relating to energy and climate change. It has been prepared by the [ClimateXChange](#) Secretariat and is intended to keep policymakers informed of issues relevant to the Scottish Government's Energy and Climate Change policy portfolio.

International Climate and Energy Research and Policy

IPCC Sixth Assessment Report

Greenhouse gas emissions must peak by 2025 and be nearly halved this decade to give the world a chance of limiting heating to 1.5°C, the IPCC warns in the [third part of the Sixth Assessment Report](#): Climate Change 2022: Mitigation of Climate Change. The BBC published [analysis](#) of the key points; The Conversation published a [commentary on the overall findings](#) as well as another on the [implications of the war in Ukraine](#) on the report; Carbon Brief published [analysis](#), an [in-depth Q&A](#) and a guest post on the IPCC's [use of emissions scenarios](#); and the Science Media Centre collated [expert reaction](#). Separately, a [paper](#) published in the journal *Climate Policy*, assesses capacity building within the United Nation's Convention on Climate Change (UNFCCC). It finds that the UNFCCC's aim to engage "a diverse range of actors including Indigenous Peoples, gender-specific constituencies and communities" is disparate and under-resourced.

Ukraine war impacts

The war in Ukraine risks pushing global climate targets out of reach, UN secretary general António Guterres warned in his first major speech since COP26, the [BBC reported](#). Urging countries to phase out coal by 2040, Mr Guterres said short-term measures might create long-term fossil fuel dependence and close the window to 1.5°C, which he described as a "madness" leading to "mutually assured destruction". His comments came as countries around the world scrambled to replace Russian oil and gas; several European countries indicated they might burn more coal, [Climate Home News reported](#). The US agreed to release 1m barrels a day of oil from its emergency stockpile and threatened to punish US oil companies that fail to drill on their leases, the [Financial Times reported](#) (paywall). Separately, the IEA published 10-point plans on [reducing EU reliance on Russian gas](#) and on [cutting oil use](#). Among other things, the agency suggests delaying the planned closure of several nuclear power stations and speeding up the replacement of gas boilers with heat

pumps. UKERC discusses the gas plan in a [blog](#). The Conversation, meanwhile, ran a [piece](#) describing how the war could cut global supplies of essential elements of green technologies, such as metals palladium, platinum and lithium. However, the war did not prevent Ukraine from synchronising its electricity grid with Europe in March after five years of preparation, helping reduce its energy dependence on Russia, [Energy Live News reported](#). Looking ahead, Climate Home News ran a [commentary](#) on what the war means for international climate diplomacy.

IRENA net-zero pathway

Investment in electric vehicle charging infrastructure may need to reach \$131bn by 2050, the International Renewables Agency (IRENA) warns in its second [World Energy Transitions Outlook](#). The report provides in-depth analysis of two areas particularly relevant for the decarbonisation of end-use sectors - electrification and bioenergy – and outlines priority areas and actions, based on available technologies, which must be realised by 2030 to achieve net zero by mid-century. Its net-zero pathway identifies electrification and energy efficiency as primary drivers, enabled by renewables, green hydrogen and sustainable modern bioenergy.

Solar and wind power surge

Solar and wind power are on track to grow sufficiently to limit global warming to 1.5°C, if their 10-year average compound growth rate of 20% can be maintained to 2030, according to a report from think tank Ember, [Reuters reported](#). In its [Global Annual Electricity Review](#), Ember said solar generation rose 23% globally in 2021, while wind supply gained 14%; together they accounted for more than 10% of total global electricity generation, up one percentage point from 2020. More than 50 countries now get more than a tenth of their power from wind and solar, the [BBC noted](#). However, demand for electricity also grew at a record pace last year, leading to the fastest surge in coal power usage since 1985, a trend that could continue as countries turn to coal amid high gas prices and the war in Ukraine.

Heat pump deployment

Sales of heat pumps experienced double-digit growth in countries ranging from Austria to China last year, pointing to an upturn in their deployment, according to a [guest post](#) published in Carbon Brief. Although widely seen as a key solution for tackling the emissions associated with keeping buildings warm, until now heat pump sales have remained low in many countries, it notes. While rapid growth in the market seems assured, heat pumps might still fall short of the levels required for a global pathway to net zero by 2050, without further government action, the guest post concludes.

Climate justice and fossil fuels

Rich countries must end all oil and gas production in the next 12 years, while the poorest nations should be given much longer to provide a fair transition away from fossil fuels, according to a [study](#) from the Tyndall Centre at Manchester University, the [Guardian](#)
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[reported](#). The research, commissioned by the International Institute for Sustainable Development, says wealthy countries such as the UK, US and Australia had until 2034 to stop all oil and gas production to give the world a 50% chance of preventing devastating climate breakdown; poorest nations, which are also heavily reliant on fossil fuels, should be given until 2050. It was essential the rapid shift away from fossil fuels was fair and equitable, it finds, noting the huge differences in the ability of countries to end oil and gas production while maintaining their economies.

UN on corporate net-zero pledges

The UN has set up an expert group to scrutinise corporate pledges to achieve net-zero emissions, an initiative first announced at COP26, [Climate Home News reported](#). Within twelve months, the 16-member group is to publish recommendations on how to judge net-zero commitments and translate them into national and international regulations. Based at the UN's New York headquarters, the High-Level Expert Group on the Net-Zero Emissions Commitments of Non-State Entities (HLEG) will be chaired by Catherine McKenna, a former Canadian environment minister.

UK Climate and Energy Research and Policy

UK energy strategy

The UK Government published its long-awaited, delayed [energy strategy](#), unveiling ambitious new targets for nuclear power and offshore wind, with a goal of reaching 95% low-carbon electricity by 2030. However, it drew criticism for the lack of initiatives to support energy efficiency and onshore wind. The strategy also commits to holding a new licensing round for North Sea oil and gas. In its initial assessment, the [Climate Change Committee said](#) the proposals, if enacted, would bring the UK closer to meeting net zero but said it was “disappointed” not to see more on energy efficiency. The FT (paywall) [said](#) the “insipid and disappointing” strategy had “flunked the key tests” and also ran a [commentary](#) from UCL's Prof Michael Grubb who said it was “incoherent”. The Science Media Centre collated [expert comment](#); Carbon Brief published an [in-depth Q&A](#); UKERC released [detailed reaction](#); the BBC ran a [piece on the implications for Scotland](#); and The Conversation published a piece on [nuclear energy's potential contribution](#).

NIC warns on progress

The UK Government is at risk of failing to deliver its National Infrastructure Strategy unless it picks up the pace with detailed policy design and implementation, the National Infrastructure Commission has warned in its [annual progress report](#). The official independent infrastructure adviser said clear, long-term goals were in place and gave credit for increased investment - a £100bn commitment over the next three years and an indication of increased spending in the long term. However, it said slow progress in other areas threatened key objectives in the strategy, the [Independent reported](#). The report

identifies 10 key priorities for the year ahead – including an urgent need for energy efficiency measures and accelerating the roll out of electric vehicle-charging points.

UK emissions in 2021

The UK's greenhouse gas emissions rebounded last year as lockdowns were lifted and people started to travel to work again, [Bloomberg reported](#). According to preliminary data published by BEIS, emissions of carbon dioxide equivalent were 4.7% higher than in 2020, although they remained 5.2% lower than the pre-pandemic level in 2019.

Direct Air Capture

Storegga, the operator of the Acorn CCS and Hydrogen project, has advanced plans for what would be the UK's first large-scale direct air capture (DAC) facility, to be based in north-east Scotland, [Energy Voice reported](#). The [company said](#) it had signed a memorandum of understanding (MOU) with Mitsui, the Japanese trading and investment group, to develop jointly the project. The proposed facility would have the potential to extract 1m tonnes of CO₂ from the atmosphere annually. The UK Government hopes at least 5 M/T per year of engineered carbon removals will be deployed in the UK by 2030. Storegga said it hoped the project would provide a model for deploying DAC elsewhere. The captured CO₂ would be transported to Acorn for permanent geological storage in the North Sea. Early customers of the facility will include airline Virgin Atlantic, [Business Insider reported](#). Separately, the [Energy Transitions Commission released a report](#) on the role of Carbon Dioxide Removal (CDR) in achieving net zero, in which it says DAC is essential as part of a portfolio of CDR actions. It also says carbon offset markets will need to be managed properly, as offsets will form a critical route to limiting global heating.

UK ETS consultation

The UK Government has launched a [consultation](#) on changes to its emissions trading system (ETS) including bringing shipping into the scheme and tightening its cap in line with the country's net-zero target, [Reuters reported](#). It says the consultation also leaves open the possibility of linking the UK ETS internationally; many participants have called for the UK market to be linked to the European scheme, which the UK left following Brexit.

EV-charging points

The UK government has set out plans for 300,000 electric vehicle-charging points by 2030, up from 30,000 at present, the [BBC reported](#). The targeted level would be almost five times the number of fuel pumps on UK roads at present. Under the plans, operators will have to ensure drivers can compare prices and pay by contactless card. The funding was previously announced as part of the £1.6bn Electric Vehicle Infrastructure Strategy, but the government has now given details about how the money will be spent.

Renewable energy map of Scotland

The Scottish Parliament Information Centre has produced an [interactive map](#) showing the www.climatexchange.org.uk

location of, and other key information about, Scotland's renewable energy projects, based on BEIS data. It has published a short blog explaining how to use the tool.

Peat in compost

More than a third of all compost sold in the UK in 2021 was sourced from carbon-rich peatlands, the [Guardian reported](#). The Horticultural Trades Association (HTA) provided the figures in its response to a government consultation on a proposal to ban peat compost sales for gardeners by 2024. Almost 5m cubic metres of compost was sold in 2021, with three-quarters bought by gardeners. But while only 30% of their purchases were peat, more than half the compost bought by horticulture businesses was peat. Ministers have said they aim to end sales to professional growers by 2028. An earlier voluntary goal of ending retail sales by 2020 failed.

Climate Science, Impacts and Adaptation

Conger ice shelf collapses

An ice shelf about the size of Rome has completely collapsed in East Antarctica, within days of record high temperatures, according to satellite data, the [Guardian reported](#). The Conger ice shelf, which had an approximate surface area of 1,200 sq km, collapsed in mid-March after the Concordia station recorded temperatures more than 40°C warmer than seasonal norms. The record temperatures were the result of an atmospheric river that trapped heat over the continent, according to an earlier [Guardian explainer piece](#), and coincided with unusually warm temperatures in the Arctic, covered in another [Guardian article](#). The Conversation published [expert commentary](#) on the implications.

Impact of burning biomass

A [paper](#), published in the journal *One Earth*, warns that brown carbon – an aerosol derived from biomass and fossil fuel burning – is likely to play an increasing role in Arctic warming in future. The study finds that around 60% of brown carbon in the Arctic comes from biomass burning in the mid-to-high latitudes of the northern hemisphere; around 30% comes from fossil fuel consumption and 10% from biogenic secondary organic aerosols.

Fire-prone conditions to increase

Climate change could cause the area of land with “frequent fire-prone conditions” to expand by 29% by the end of this century, according to a [paper](#) published in *Nature Communications*. The authors define four climate zones – boreal, temperate, tropical and arid. They find the increase is most notable in boreal and temperate zones, where there may also be a significant lengthening of the potential fire season.

Public acceptance of climate change policies

Perceived fairness and effectiveness are the two most important factors in public acceptance of climate change policies, according to a new [study](#) published in *Nature Climate Change*. The researchers examined the role of public opinion about climate change taxes and laws by analysing nearly 90 datasets covering 33 countries with a total sample of almost 120,000 participants. In a separate [briefing](#) discussing the findings, the authors said other determinants that might have been expected to play a vital role, such as people's knowledge about climate change and their self-enhancement values, were only weakly related to acceptance, suggesting these factors are less important barriers to acceptance than might be expected.

NatureScot on nature restoration

NatureScot has published a [study](#) exploring barriers and opportunities to large-scale nature restoration projects (LSNR) and rewilding through case studies. The research includes analysis of how LSNR/rewilding works and also seeks to identify the potential socio-economic impacts of projects. Among other things, it finds that, although projects have wide-ranging aims and benefits, most are driven by a focus on restoring natural processes or habitats that are being lost. Several projects studied focus on aspects of climate mitigation including peatland restoration or woodland creation and regeneration; others aim to increase the diversity and resilience of ecosystems to climate and other changes. Barriers to effective implementation include translating a vision into a functional delivery framework, underpinned by sufficient staff and funding.