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climate change research and policy

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

February 2020

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 Scottish policymakers informed of issues relevant to the Scottish Government's Energy and Climate Change policy portfolio.

International Climate and Energy Research and Policy

COP 26

Alok Sharma has been appointed President of [COP26](#), alongside his new position as Secretary of State for Business, Energy and Industrial Strategy. The onetime International Development secretary replaces Claire O'Neill, the former energy minister. COP26 will be the largest summit the UK has ever hosted, with over 30,000 delegates expected.

Countries slow to update climate actions plans

The Marshall Islands, Suriname and Norway have [submitted plans](#) for tougher action to tackle climate change before a five-year milestone of the Paris Agreement in 2020, with almost 200 nations ignoring an informal 9 February deadline. Under the 2015 Paris Agreement, countries are meant to resubmit their updated climate action plans (Nationally Determined Contributions) every five years and at least nine months before the next COP. The Glasgow COP will be held from 9-19 November. Separately, 107 governments representing 15% of emissions have promised to strengthen their NDC ambitions this year, according to the World Resources Institute [2020 NDC tracker](#). A further 36 have said they will update their NDC.

CO₂ emissions may have peaked

The head of the International Energy Agency (IEA) is 'hopeful' global carbon dioxide emissions have peaked after global output flatlined in 2019. [Total emissions from advanced economies' power sectors fell](#) to levels 'last seen in the late 1980s', said Faith Birol, chief executive of the global energy agency. Strong growth in wind and solar power, large scale transitions from coal to natural gas and higher use of nuclear power all contributed to the fall in CO₂ emissions. Global CO₂ emissions from energy use — which make up the largest portion of greenhouse gases by far — remained unchanged at 33 gigatonnes in 2019 on the year before, even as the world economy expanded by almost 3%.

Shipping could scale up decarbonisation goals

The global shipping industry could scale up its decarbonisation goals, after already achieving 75% of its 2030 target, according to a new [study](#). The International Council on Clean Transportation, an independent research group, found that the CO₂ intensity of international shipping fell 30% from 2008 levels in 2018. That year, the International Maritime Organisation set the sector a 40% reduction target by 2030.

China's CO₂ emissions down a quarter due to coronavirus

The coronavirus outbreak is estimated to have cut China's CO₂ emissions by at least a quarter in February, according to analysis published in [Carbon Brief](#). Over the four weeks to March 1 in 2020, China released around 800 million tonnes of CO₂ (MtCO₂) meaning the virus could have cut global emissions by 200MtCO₂. Electricity demand and industrial output remain far below their usual levels. In February, these included:

- Coal consumption at power plants was down 36%.
- Coal throughput at the largest coal port fell 29%.
- Satellite-based NO₂ levels were 37% lower.
- Utilisation of oil refining capacity was lowered by 34%.
- At their peak, flight cancellations reduced global passenger aviation volumes by 10%.

Central banks: climate change a major threat to financial stability

More than two thirds of central banks surveyed in a study on climate change and monetary policy consider the changing environment a major threat to financial stability. A new [report](#) published by the Official Monetary and Financial Institutions Forum, an independent think tank, found that 70% of the 33 central banks it surveyed considered climate change a major threat with just over half (55%) saying they were monitoring climate risks. More than a quarter (27%) were actively responding. Only 15% include climate-related considerations in their routine stress tests of financial institutions, but this is set to soar: nearly four-fifths (79%) say they intend to do so in the future.

Bezos launches \$10bn Earth Fund

Jeff Bezos, the world's richest individual, is to invest \$10bn in a [new fund](#) to combat climate change. The Amazon founder said the global initiative would fund scientists, NGOs and activists and would begin issuing grants this summer.

UK Climate and Energy Research and Policy

New centre to monitor public engagement with decarbonisation

The [UK's first national observatory](#) on public engagement with energy and low carbon transitions is to be established at the University of East Anglia. The initiative will be funded from the £22m allocated to the UK Energy Research Centre to undertake research on the www.climatexchange.org.uk

decarbonisation of key sectors such as industry, transport and heat, and to explore the role of local, national and global changes in energy systems. The observatory will monitor the many different ways that citizens are engaging with energy transitions, ranging from everyday consumption, citizens' assemblies and social media through to protests and community action.

BP pledges to cut emissions

[BP](#) is to become net zero across its operations and net zero on carbon in oil and gas production by 2050 or sooner. It aims to halve the carbon intensity of the products it sells and the methane intensity of its operations over the same period. It also pledged to: increase the proportion of its investment in non-oil and gas businesses; to advocate more actively for government policies supporting net zero targets, including carbon pricing; and to set up a team to help countries, cities and large companies decarbonise.

Transport sector needs clarity on investment sources to achieve net zero

Urgent action is needed to ensure the Scottish transport sector can reach the nation's net zero targets, according to a [report](#) published by law firm Addleshaw Goddard. While transport organisations are very positive about decarbonising, they cite identifying the necessary investment sources as the biggest obstacle. Scotland's surface transport emissions have increased by 9% since 2012 and are still rising, making the sector the country's largest emitter with 37% of the total. The report also calls for a review of taxation, better cross-sector communication, more data sharing and better support for businesses to invest.

Heat pumps in Scotland's parks could heat 15% of homes

A [study](#) of 3,500 green spaces has suggested urban parks could be used to generate significant amounts of low-carbon energy by capturing the heat in the ground. This could then be fed out to heat neighbouring homes, reducing their carbon footprint.

The report, published by Greenspace Scotland, a charity working with the public sector, estimates ground heat in urban greenspace could supply at least 15% of Scottish households and 5% of total heat demand. Ground-source heat pumps would be buried more than one metre under sports pitches or recreational grass land. This involves laying horizontal coils which extract heat from the soil which is, in turn, heated by the sun, making it renewable.

Residential emissions, mostly from heating, accounted for 14.9% of Scotland's total greenhouse gas emissions in 2017. The Scottish government has a target to generate 11% of non-electrical heat from low carbon sources by 2020, a target Greenspace says it is unlikely to meet.

Alternatives to horticultural peat in Scotland

A [study](#) by ClimateXChange looks at the role of peat in Scottish horticulture and the potential for alternatives. The Scottish Government has a commitment to restore Scotland's peatlands, with phasing out the use of peat in horticulture an element of this. The Rapid Evidence Assessment found that Scotland accounts for some 60% of UK peat extraction, equivalent to 100ktCO₂ per year. Alternatives to peat are available but challenges remain around their availability, consistency and cost.

Scotland's Environment Strategy published

The Scottish Government has published a new [Environment Strategy](#), aimed at ensuring the country's nature is protected and restored with flourishing biodiversity. Implementation of the strategy would end Scotland's contribution to global warming, foster better use of resources, and promote a sustainable economy and fairer society. The government intends to embed EU environmental principles in its legislation and to set up an independent public body to oversee compliance with environmental regulations.

Climate Science, Impacts and Adaptation

The impact of increased day and night time heat

Extreme hot weather which lasts at least a day and a night is increasing across the northern hemisphere due to climate change, posing significant danger to human health according to [research](#) published in Nature. The number of people exposed to such weather events, known as 'compound hot extremes', could more than double if global temperatures rise by 2°C and could become eight times more frequent by the end of the century if they rise by more. Temperatures are considered 'hot' if they are in the top 10% of temperatures experienced by a region from 1960-2012. Climate change has a larger effect on night time temperatures than daytime temperatures.

Education can accelerate adaptation substantially

Education including through schools, simulations and on-the-job training have the potential to accelerate substantially adaptation to climate change, according to [new studies](#) by researchers at the University of Miami Rosenstiel School of Marine and Atmospheric Science. The researchers set out best practices to support adaptation. They say knowledge is often not as useful as it might be and that making knowledge actionable involves increasing interactions between researchers and stakeholders in different ways.

Biodiverse regions most at risk

The most biodiverse regions on earth are among the most vulnerable to climate change, according to a new study published in [Nature Climate Change](#). Human-driven climate change will quickly erode important mechanisms that are likely to have sustained

biodiversity across time, with future climate change set to affect disproportionately plants and animals in tropical regions and biodiversity hotspots, the regions with the highest concentrations of biodiversity, the study says. Historically these regions have been safe havens from climate change during glacial-interglacial cycles. The research says more than three quarters of these safe havens will be lost in the near future. Of particular concern are species in tropical oceans. The negative impacts will cause human hardship for communities that depend on these resources for food, employment and income.