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climate change research and policy

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

May 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

#### **New dates for COP26**

Glasgow's postponed [COP26 UN climate conference](#) will now take place between 1 and 12 November 2021. The UK said the new date would allow it and co-organiser Italy to use their upcoming presidencies of the G7 and G20 respectively to drive climate ambition.

#### **Emissions fall 17% due to pandemic**

Daily global CO<sub>2</sub> emissions decreased by 17% by early April 2020 compared with mean 2019 levels, just under half from changes in surface transport, according to the first peer-reviewed [study](#) of the impact of the Covid-19 pandemic on emissions. At their peak, emissions in individual countries decreased by 26% on average, according to the study, published in *Nature*. The impact on 2020 annual emissions depends on the duration of the confinement, with estimates of the fall ranging from 4% to 7%.

#### **EU unveils €750bn Covid-19 stimulus package**

The EU has put climate neutrality at the centre of its proposed €750bn Covid-19 [recovery plan](#), the world's biggest. The plan includes €40bn for a just transition away from fossil fuels. It plans to tender 15GW of renewable energy capacity in the next two years.

#### **IMF warning on climate change**

The projected increase in the frequency and severity of disasters due to climate change is a potential threat to financial stability, the International Monetary Fund has warned. In its latest [Global Financial Stability report](#), the fund says climate change physical risk does not appear to be reflected in global equity valuations and that stress testing and climate risk disclosure are essential to assess it better.

### IEA: World Energy Investment 2020

Ongoing investment in renewable power projects is expected to fall by around 10% in 2020 due to the Covid-19 pandemic, according to the International Energy Agency's [annual review](#) of energy investment. Investment levels remain far short of what would be required to put the world on a more sustainable pathway, the agency warns.

### Hydrogen developments

There have been several developments in advancing hydrogen to combat climate change:

- The German state of Lower Saxony is set to roll out a further 12 hydrogen-powered trains after an 18-month trial for the first two was successful. Alstom, the manufacturer of the passenger trains, the first of their kind in the world, [said](#) the reliability of the fuel cell technology had been 'impressive'.
- Southern California is set to host the world's biggest green hydrogen production facility after an [agreement](#) between energy company SGH2 and the City of Lancaster. The city will supply mixed paper recycling to fuel the waste-to-energy plant which expects to produce hydrogen with two to three times fewer carbon emissions than green hydrogen from electrolysis and renewable energy, and up to seven times more cheaply.
- A [study](#) published in Nature reports a breakthrough in catalyst design that might accelerate the development of cost-efficient, large-scale processes for making hydrogen from water using sunlight.
- Six of Denmark's biggest companies are planning one of the [world's largest green hydrogen projects](#), aimed at cutting emissions from transport in the Copenhagen area. The project has the potential to displace 5% of fossil fuels at Copenhagen Airport by 2027 and 30% by 2030, the airport's chief executive said.
- A world-first programme using green hydrogen to heat homes could be built in Scotland by SGN if approved. [H100 Fife](#) has passed the initial screening submission process for Ofgem's annual Network Innovation Competition. In the first phase, around 300 homes would be heated by clean gas produced by an electrolysis plant, powered by offshore wind.
- Hydrogen Europe, the trade body, has published a [report](#) outlining how the EU can achieve its ambitious post-pandemic goals for the sector.

### Four-yearly report on Germany's environment

Germany must become carbon neutral by 2038 to avoid overshooting its carbon budget, according to its independent Advisory Council on the Environment's (SRU) four-yearly [report](#) on the country's environment. It says there is a lack of transparency within the carbon budget, that the country's national targets to combat climate change are not ambitious enough and that it is behind on their implementation.

### **Strategies for decarbonising heating**

There are considerable deficiencies in Germany and the UK's strategies to decarbonise heating in buildings, according to a [study](#) published in *Energy Research & Social Science*. The study points to a lack of policies for phasing out fossil fuels and insufficient low-carbon building standards.

### **EU Biodiversity Strategy 2030**

At least 30% of the land and 30% of the sea should be protected in the EU, a third of which should be strictly protected, according to the bloc's new [biodiversity strategy](#). It also aims to increase organic farming, restore at least 25,000 km of EU rivers to a free-flowing state, plant 30bn trees by 2020 and unlock €20bn in funding a year for biodiversity.

## **UK Climate and Energy Research and Policy**

### **CCC advice for resilient recovery**

The Covid-19 pandemic has disproportionately affected the same lower-income groups and younger people who face the largest long-term impacts of climate change, according to the Committee on Climate Change. In letters to the [UK](#) and [Scottish](#) Governments, the CCC sets out six principles for a resilient recovery, including embedding fairness.

### **SCCAP2 progress report**

The Scottish Government has published the [first annual progress report](#) on its Climate Change Adaptation Programme 2019-2024 (SCCAP2). It says that good early progress has been made but that new, accelerated and reactive policies might also be needed, given the extent to which Covid-19 is changing the wider landscape.

### **UK government launches £40m Clean Growth Fund**

The UK government has launched a £40m [Clean Growth Fund](#) to invest in early-stage green technology businesses, in partnership with CCLA, the charity investor. They will each invest £20m in the venture capital fund which will be open to other private investors and will target the power, transport, waste, and building energy efficiency sectors.

### **Gas networks plan £900m green investment**

Britain's five gas networks companies have outlined [plans](#) to spend more than £900m on zero-carbon energy infrastructure and hydrogen deployment across the UK, subject to government approval. Under the plan, £446m would be spent on new network infrastructure for the industrial use of hydrogen, including £391m on carbon capture, utilisation and storage projects in north-west England, Aberdeenshire and Kent.

### **BEIS approves UK's biggest planned solar farm**

The Department for Business, Energy and Industrial Strategy (BEIS) has approved the £450m [Cleve Hill solar farm](#) in Kent, set to be the UK's largest. The 350MW development, on almost 900 acres, has divided green groups: Friends of the Earth supports it while Greenpeace and the Campaign to Protect Rural England oppose it for "industrialising" the countryside.

### **Biomass and wind power records**

Biomass supplied more than a tenth of Britain's electricity over a day for the first time in March according to [first quarter power generation data](#) analysed by Imperial College and Renewables UK. February was the first month on record when wind produced more than gas-fired power stations; over the quarter, it supplied 30.5% of electricity, versus 30.6% from gas. Wind's contribution would have been higher if the new Western Link (which connects Scotland, Wales and England) had been functioning. Ofgem is investigating the performance of the cable, which aims to alleviate constraints that force Scottish wind farms to turn off when their output cannot be transported to the rest of the country.

## **Climate Science, Impacts and Adaptation**

### **Impact of fires on peatlands**

A new [study](#), published in [Global Change Biology](#), has found that low-severity fires can help protect carbon stored in peatlands and enhance their long-term storage of it. High-intensity fires can destroy peat bogs and cause them to emit large amounts of stored carbon into the atmosphere. However, flash heating of moist peat during less severe fires chemically alters clumped soil particles, creating a crust that shields the fire-affected peat from decay, the study found.

### **Floods to delay emergency responses**

Future increases in rainfall in England could significantly impact the ability of ambulances to reach emergencies, according to an international [study](#) published in *Nature Sustainability*. Future floods could see just 9% of some rural populations reached by an ambulance within the seven to 15-minute mandatory timeframe, it says. Even low-magnitude floods can lead to lower compliance with mandatory response times.

### **Culture and the low-carbon energy transition**

A new [study](#) published in *Nature* examines the influence of culture on four low-carbon technologies and behaviours: eco-driving, ridesharing, automated vehicles and whole-house retrofits. It includes recommendations for policymakers and others seeking to develop, demonstrate and deploy innovations for sustainable energy transitions.

### **CCS on track**

New [research](#) from Imperial College suggests the world has the capacity to capture and store enough CO<sub>2</sub> to meet IPCC climate targets. It says using 2,700 Gt of the more than 10,000 Gt CO<sub>2</sub> storage estimated available would be sufficient.

### **Climate change threatens cancer control**

Climate change threatens prospects for further progress in cancer prevention and control, according to a [commentary](#) by scientists from the American Cancer Society and Harvard University. It says the extreme weather events associated with climate change create conditions favourable to carcinogens. For example, Hurricane Harvey caused vast amounts of carcinogens to be released from chemical plants and oil refineries in the Houston area. Extreme weather can also impede access to and the provision of cancer care. The authors also propose ways to diminish the impact.

### **Coastal adaptation economically efficient**

Coastal adaptation measures in Europe can protect communities from flooding while also being economically efficient according to a [study](#) published in *Nature Communications*. Extreme sea levels in Europe could rise by as much as one metre or more by the end of this century due to climate change, posing significant challenges to coastal communities. At least 83% of flood damage in Europe could be avoided by elevating dykes, along up to a third of Europe's coastline.

### **Bigger swings in European summer temperatures**

Summers in Europe will feature more unusually cooler days as well as hotter ones in the future due to climate change, according to a new [study](#) published in *Nature Geoscience*. The study is the most comprehensive to date to explain future temperature variability in Europe and North America.

### **Climate change impact on Britain's vegetation**

Climate change could cause abrupt shifts in the amount of vegetation growing in parts of Britain, according to [new research](#), published in *Global Change Biology*. The researchers studied local impacts of climate change in high resolution at a 1.5 x 1.5km scale, finding that the trend to warmer, wetter weather would likely cause an overall increase in vegetation. The researchers also identified early warning signals before some of the abrupt shifts.

### **Invasive exotic plants accelerate carbon loss**

Exotic plant introductions can accelerate carbon loss from soils according to a new [study](#) published in *Science*. While exotic species tend to grow rapidly, incorporating carbon from the air, they also seem to set off a chain reaction that leads to faster turnover of carbon in the soil. Novel biological interactions with exotic species are a more important driver of ecosystem transformation than previously recognised, it finds.