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

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

International Climate and Energy Research and Policy

Japan and South Korea climate pledges

Japan and South Korea have pledged to achieve net-zero emissions by 2050. The moves follow China's surprise announcement in September that it would become carbon-neutral by 2060. Japan's new prime minister, Yoshihide Suga, made the announcement in his first policy speech to parliament. South Korea's President Moon Jae-in followed two days later, pledging to accelerate replacement of coal power with renewable energy, [Nikkei reported](#).

US leaves Paris Agreement

The US formally left the Paris Agreement on November 4. Of the nearly 200 nations that signed the agreement, the U.S. is the only one to walk away from its promises to reduce greenhouse gas emissions, [NPR](#) reported. President Trump announced his intention to withdraw in 2017, formally notifying the United Nations in 2019. This triggered a mandatory year-long waiting period. Democrat challenger Joe Biden has said the US will re-join if he wins the presidency.

World Energy Outlook 2020

The best solar power schemes now offer the cheapest electricity in history, the International Energy Agency says in its annual [World Energy Outlook](#). The IEA has significantly upgraded its forecast for renewables: in its main scenario it predicts 43% more solar output by 2040 than it expected in 2018, partly due to new analysis showing solar power is 20-50% cheaper than previously thought. It also includes, for the first time, detailed modelling of a 1.5°C pathway that reaches net-zero CO₂ emissions by 2050. It says individual behaviour change, such as working from home three days a week, would play an essential role. Carbon Brief has summarised [the key findings](#).

BNEF energy outlook

Emissions from fuel combustion peaked in 2019, according to BloombergNEF's projections for the next 30 years. Down approximately 8% in 2020 due to Covid-19, energy emissions rise again with economic recovery, but never regain 2019 levels, its [New Energy Outlook](#) predicts. From 2027, emissions fall at a rate of 0.7% per year to 2050, due to a 'huge build-out' of wind and solar power, electric vehicle uptake and improved energy efficiency. Together, wind and solar account for 56% of global electricity generation by mid-century. Despite the progress, BNEF sees energy sector emissions putting the world on course for a 3.3°C increase by 2100.

World-first offsetting agreement

Switzerland and Peru have signed a carbon offsetting agreement which they say is the first of its kind under Article 6 of the Paris Agreement, [Climate Home News](#) reported. The deal will see sustainable development projects in Peru being funded, but with Switzerland counting the resulting emissions cuts against its national targets, it said. [Carbon Brief](#) has published an in-depth explanation of Article 6 and governing carbon markets.

EU methane strategy

The European Commission has released an [strategy](#) to reduce emissions of methane, the second biggest contributor to climate change, after CO₂. It targets emissions cuts in all sectors especially agriculture, energy and waste, and seeks to create opportunities for rural areas to produce biogas from waste. The energy sector is where methane emissions could be cut the quickest with the least cost.

European Parliament backs steep emissions cuts

The European Parliament has narrowly backed cutting EU greenhouse gas emissions to 60% below 1990 levels by 2030, a deeper shift than the European Commission had proposed, [Climate Home News](#) reported. At present the EU's goal is 40%, a target the EC said in September should be lifted to 55%. The parliament must agree the final target with member state governments and the commission.

Global peatland policies needed

Without dedicated peatland policy, the land system would remain a net source of CO₂ throughout this century, according to new [research](#) published in *Environmental Research Letters*. However, the research indicates the land system would turn into a global net carbon sink by 2100, as projected by current mitigation pathways, if about 60% of present-day degraded peatlands were rewetted in the coming decades, and intact peatland protected. The study represents the first quantitative model-based projections of future peatland dynamics and associated GHG emissions in the context of a 2°C mitigation pathway, the researchers say.

Electric car uptake

Electric cars will cost the same to manufacture as conventional cars by 2024, and an acceleration in their uptake may be imminent, according to new UBS research [reported](#) by the Guardian. The investment bank said electric cars' global market share would reach 17% by 2025, rising to 40% of global sales by 2040.

Key climate technologies for Europe

Cap Gemini, the consultancy, has identified 55 high impact climate technologies that it says are the most likely to deliver transformational results, at speed and scale, in Europe. Its [report](#) groups the technologies across five core economic domains - energy, building & construction, transportation, food & land use – and aims to provide a practical action plan for policymakers and investors.

Climate risk and investment

Asset managers are not providing enough information about climate risks at the companies they invest in to enable clients to make informed choices, a regulatory task force has warned. In its annual status [report](#), the Financial Stability Board's Task Force on Climate-Related Financial Disclosures said reporting to fund clients was likely "insufficient".

Asset management climate benchmark

No major fossil fuel energy company has aligned its emissions pathway with limiting climate change to 2°C, according to the [Transition Pathway Initiative](#), an asset management industry climate benchmark. However, the electricity sector is making progress: of 66 utilities, 39 (59%) are aligned with the Paris Agreement pledges, while 22 (33%) are aligned with the most ambitious below 2°C benchmark, it finds.

Nitrous oxide emissions

Growing demand for food and animal feed may further increase emissions of nitrous oxide, mainly caused by fertiliser use, according to the most comprehensive global evaluation of the greenhouse gas's sources and sinks to date, published in [Nature](#). Nitrous oxide concentration in the atmosphere is already about 20% higher than the pre-industrial value and the increase has accelerated since the 1980s, particularly in China, India and Brazil, it [finds](#). In Europe, anthropogenic N₂O emissions have decreased, both in agriculture and chemical industry. [Carbon Brief](#) has published a detailed summary of the findings.

Asian afforestation success

North-east Asia is reaping significant climate benefits from its reforestation efforts, two new research studies show. The first, published in [Global Change Biology](#), finds that carbon storage has increased by up to 40% in China, North and South Korea over the past three decades, with up to 76% attributable to massive reforestation. China has planted nearly 570,000 square kilometres of new forests, an area larger than Spain, over the past two

decades, achieving one of the highest afforestation rates in the world, it [says](#). The other report, published in [Nature](#), identified two areas in China where the scale of CO₂ absorption by new forests has been underestimated. These areas together account for just over 35% of China's entire land carbon sink, it [finds](#).

Climate health risks and gender

A Carbon Brief [analysis](#) of 130 peer-reviewed studies finds that women and girls often face disproportionately high health risks from the impacts of climate change, compared to men and boys. It shows, for example, women and girls are more likely to die in heatwaves in France, China and India. In many regions, women are more likely than men to suffer poor mental health, partner violence and food insecurity following extreme weather events.

UK Climate and Energy Research and Policy

CCC Scotland progress report

The Scottish economy has decarbonised more quickly than the rest of the UK, and faster than any G20 economy since 2008, the Committee on Climate Change says in its [Annual Progress Report](#) to the Scottish Parliament. Among other steps, it recommends the Scottish Government: develop a UK Emissions Trading Systems in partnership with the UK's other governments; set out a vision for low-carbon heating; develop a new rural support scheme; make it easy for people to walk, cycle, use public transport, and work from home; facilitate electric vehicle charging infrastructure; and accelerate investment in low-carbon and climate adaptation infrastructure to stimulate the economy and improve climate resilience.

CCC briefings

The Committee on Climate Change has published [eight new briefings](#) detailing the approaches and lessons learned in its 12 years. It said the move was part of efforts to expand its international engagement activities to support the UK presidency of COP26. The briefing subjects range from the Climate Change Act and the UK's net-zero target to carbon budgets, measuring progress and climate risk assessment.

UK CCUS alliance

BP has formed a significant [new partnership](#) to develop offshore CO₂ transport and storage infrastructure in a move that could enable decarbonisation of nearly half of the UK's industrial emissions. The oil giant has formed the Northern Endurance Partnership with Eni, Equinor, National Grid, Shell and Total to serve the UK's two east coast industrial cluster projects, Net Zero Teesside (NZE) and Zero Carbon Humber (ZCH). Both aim to be commissioned by 2026 with pathways to achieve net zero as early as 2030. The partnership involves BP and Equinor joining National Grid in the licence for Endurance, the UK's largest and most well-understood saline aquifer for carbon storage.

Scotland's offshore wind capacity to double

The Scottish Government has [unveiled](#) ambitious new targets to increase offshore wind capacity to 11GW of energy installed by 2030, enough to power more than 8m homes. At present, Scotland has 5.6GW of consented offshore capacity, of which 1GW is operational. The Government also said it had adopted a plan identifying suitable areas for commercial-scale offshore wind projects. Separately, the UK Government announced [plans](#) to boost offshore wind capacity from 30GW to 40GW by 2030, enough to power every home. It pledged £160m to upgrade ports and supporting infrastructure.

UK heat decarbonisation

Current progress on heat decarbonisation in the UK, and policy ambition, are not commensurate with the rate of change required for net-zero emissions by 2050, according to a new [briefing](#) from UKERC. A combination of energy efficiency, heat pumps and district heating is the least-cost technology pathway for heat decarbonisation in the next 10 years, the research council says.

Scottish consumers and low-carbon heat

Broad concern about climate change is not driving widespread uptake of low-carbon heat in Scotland, according to new [research](#) published by ClimateXChange. Raising awareness of low-carbon systems may not be enough to drive uptake, with cost and uncertainty about performance the two main factors putting people off. Among other things, it recommends reducing the inconvenience of switching and simplifying the application process for financial support.

UK air conditioning

Adoption of domestic air conditioning in the UK could increase the summer peak load by up to 7GW by 2050, predominantly in the evening when it is not coincident with solar generation, according to a new EPSRC-funded [report](#). AC and electric vehicles could also compete for limited renewable electricity at the same time, it said.

National Grid and BECCS

The National Grid's future energy models are overly reliant on bioenergy with carbon capture and storage (BECCS), undermining their credibility, according to the think tank Ember in its [response](#) to the National Grid's latest annual [energy scenarios](#). Among other things, it says National Grid's models should take into account the complexity of BECCS and include scenarios with more ambitious plans for decarbonisation and alternative methods of generating negative emissions, such as additional large-scale afforestation.

Earthshot prize

Prince William and Sir David Attenborough have launched the £50m 'Earthshot' prize, the biggest environmental award ever, [the BBC reported](#). Inspired by JFK's Moonshot speech,

the pair hope the award will become the Nobel Prize for environmentalism. There will be five £1m prizes every year for 10 years, with five priorities: to protect and restore nature; clean our air; revive our oceans, build a waste-free world; and fix our climate.

Climate Science, Impacts and Adaptation

Re-wilding benefits

Restoring natural landscapes damaged by human exploitation can be among the most effective and cheapest ways to combat the climate crisis while also boosting wildlife populations, according to a new [study](#) in *Nature*. If a third of the planet's most degraded areas were restored, and protection extended to areas still in good condition, carbon equivalent to half of all human-caused greenhouse gas emissions since the industrial revolution would be stored, the research [finds](#).

War on plastic

The war on plastic is distracting from more urgent threats to the environment such as climate change and biodiversity loss, according to new [research](#) published in the journal *WIREs Water*. However, the authors say the unprecedented engagement with environmental issues, particularly plastic pollution, from the public is a once in a generation opportunity to promote other, potentially greater environmental issues. They urge government to highlight and address areas such as 'throw-away' culture in society and overhaul waste management.

Hydrogen from plastic

A new type of catalysis has been developed to convert plastic waste into hydrogen, according to research published in [Nature Catalysis](#). The method uses microwaves to activate catalyst particles to effectively 'strip' hydrogen from polymers. The one-step process significantly simplifies the usual processes of dealing with plastic waste and demonstrates that over 97% of hydrogen in plastic can be extracted in a very short time, in a low-cost method with no CO₂ burden, the University of Oxford [said](#).

Clouds and climate sensitivity

Recent climate models have suggested the climate might be more sensitive to increasing CO₂ than previously thought. A new study in [Nature Geoscience](#) suggests the changing makeup of clouds might be a key factor. In a [Carbon Brief](#) guest post, the researchers say that "mixed-phase" clouds, composed of water droplets and ice crystals, are expected to contain less ice as the climate warms. As liquid clouds reflect more sunlight back to space than ice clouds, this change has a cooling effect on the earth. However, once the ice in these clouds has become liquid, the cooling effect is exhausted and the climate system would enter a high-sensitivity state, making it even harder to slow global warming.