



Scotland's centre of expertise connecting  
climate change research and policy

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

November 2019

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

#### **COP25**

Despite running two days over schedule, COP25 in Madrid has concluded without coming to an agreement on several issues on the agenda. The UN general secretary António Guterres saying that "the international community lost an important opportunity to show increased ambition on mitigation, adaptation and finance to tackle the climate crisis."

It was expected that this COP would focus on finalising the Paris Rulebook, i.e. agreeing rules for carbon markets and other forms of international cooperation which remained, after the rest of the rulebook was agreed in 2018. Parties failed to agree however and this will now be dealt with at an intersessional in June, and COP26 In Glasgow (November 2020).

In response to the need to close the emissions gap, countries agreed to make new emissions reduction pledges before Glasgow next year. But there was no progress made on loss and damage (irreparable damage or irreversible losses from the impacts of climate change) and long-term climate finance to help poorer countries.

A full report and analysis of the key outcomes from COP25 has been published by [Carbon Brief](#).

#### **Emissions gap report**

The 2019 [Emissions Gap report](#) by the UN Environment Programme (UNEP) warns that unless global greenhouse gas emissions fall by 7.6% each year between 2020 and 2030, the world will miss the opportunity to get on track towards the 1.5°C temperature goal of the Paris Agreement. The report states that even if all current unconditional commitments under the Paris Agreement are implemented, temperature are expected to rise by 3.2°C, bringing even wider-ranging and more destructive climate impacts. Collective action must

increase more than fivefold over current levels to deliver the cuts needed over the next decade for the 1.5°C goal.

### **Greenhouse gas concentrations reach another high**

The [World Meteorological Organisation](#) (WMO) Greenhouse Gas Bulletin has shown that globally averaged concentrations of CO<sub>2</sub> reached 407.8 ppm in 2018, up from 405.5 ppm in 2017. The increase in CO<sub>2</sub> from 2017 to 2018 was very close to that observed from 2016 to 2017 and just above the average over the last decade. Since 1990, there has been a 43% increase in total radiative forcing – the warming effect on the climate - by long-lived greenhouse gases. CO<sub>2</sub> accounts for about 80% of this.

### **IEA world energy outlook**

According to the latest [WEO](#)'s Current Policies Scenario (which provides a baseline picture of how global energy systems would evolve if governments make no change to their existing policies) energy demand will rise by 1.3% a year to 2040, resulting in strains across all aspects of energy markets and a continued strong upward march in energy-related emissions.

The Stated Policies Scenario (which incorporates today's policy intentions and targets in addition to existing measures) shows a future which is still well off track from the aim of a secure and sustainable energy future. It describes a world in 2040 where hundreds of millions of people still go without access to electricity, where pollution-related premature deaths remain around current levels, and where CO<sub>2</sub> emissions would lock in severe impacts from climate change.

### **Coal set for record fall in 2019**

Analysis published by [Carbon Brief](#) shows global electricity production from coal is on track to fall by around 3% in 2019, the largest drop on record. The projected record is due to: record falls in developed countries which are not being matched by increases elsewhere. The largest reduction is taking place in the US as several coal-fired power plants close; a sharp turnaround in India where coal power output is on track to fall for the first time in three decades and; a flattening of generation growth in China.

### **New Zealand passes zero carbon bill**

New climate legislation has passed in the New Zealand parliament with historic cross-party support. The [Climate Change Response \(Zero Carbon\) Amendment Act 2019](#) sets a new target for New Zealand to reach net zero (except biogenic methane) by 2050 and; reduce emissions of biogenic methane to 24-47% below 2017 levels by 2050. Under the Act a system of emissions budgets will be established, the Government will be required to

develop and implement policies for climate change adaptation and mitigation and, an independent Climate Change Commission will be set up.

### **Offshore wind to become a \$1 trillion industry**

In its [Offshore Wind Outlook 2019 report](#), the IEA finds that global offshore wind capacity may increase 15-fold and attract around \$1 trillion of cumulative investments by 2040. This is driven by falling costs, supportive government policies and technical progress such as larger turbines and floating foundations.

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

### **Review of energy policy in 2019**

The UKERC [Review of Energy Policy](#) focuses on seven themes that form the backbone of UKERC's research programme for the next five years. The review sets out some of the challenges the next Westminster government will face – and makes specific recommendations about future policy priorities. Some of the recommendations made are:

- The transition to net-zero will affect the whole economy. Investment and policy decisions by all government departments need to be compatible with this transition.
- Local energy systems could play a significant role in achieving net-zero, particularly in the integration of electricity, heat and transport. More resources and greater powers for Local Authorities will help to ensure the potential for local action is realised.
- A clear plan is required for upgrading the UK housing stock. A heat and energy efficiency White Paper must include policies for widespread deployment of low carbon heat (including demonstrating hydrogen at scale) and for prioritising low income households.
- Whilst the decarbonisation of industry is receiving more attention, policy initiatives are not joined up. Funding for specific projects and industrial clusters should be complemented by market creation policies, including for carbon capture and storage.
- Analysis shows that achieving net-zero requires the phase out of fossil-fuelled vehicles to be brought forward to 2030. Immediate action is also required to counter the rapid increase in sales of larger cars (including SUVs).

### **New Woodland Carbon Guarantee scheme**

The UK Government has [launched](#) a £50 million scheme to boost tree-planting rates, and help tackle climate change. The Woodland Carbon Guarantee will encourage farmers and landowners in England to plant more trees and create new woodland in return for payments as those trees grow.

### **Financing low carbon infrastructure**

New [research published by Imperial College Business School](#), which analyses investment in green infrastructure (i.e. infrastructure that will further the achievement of net zero carbon emissions targets), seeks to explain the wider economic and policy context and barriers to investments. Some of the key points covered in the research report include:

- Barriers to low-carbon infrastructure investment include those that apply to infrastructure investment generally (such as regulatory risk, currency risk, and the challenges of 'free-riding'), as well as those specific to green infrastructure. The latter include a relative lack of distinctiveness of projects and unpriced negative externalities
- To mobilise private finance for low-carbon infrastructure investment, policies need to be designed that match expected returns with acceptable levels of risk. This will include establishing robust, long-term policy frameworks to give certainty to investors, and improving access to finance for green investment through risk mitigation instruments and blended finance.

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

### **Snow cover and climate change in the Cairngorms National Park**

A [new report](#) from ClimateXChange states that there has been an overall decline in observed snow cover in the Cairngorms National Park (1969-2005) which conforms to those seen across other mountain areas and the Arctic, and is in keeping with the observed trend in global warming. A warming trend has been observed at meteorological stations in the CNP, and there is a clear observed decrease in the number of days of snow cover at all elevations over the 35 winters between 1969/70 and 2004/05.

### **Access to peatland for restoration – physical limitations**

Restoration of peatland can be limited by a number of factors, including physical accessibility, e.g. when a site is covered by snow there may be access issues. A short [project](#) by ClimateXChange has provided estimates for the proportion of time in an average year when restoration would not be possible, by combining snow cover surrogate data from the Net Office and calculations of the degree of difficulty for access.

### **Attributing long-term sea-level rise to Paris Agreement emission pledges**

New [research, published by the Proceedings of the National Academy of Sciences of the United States of America](#), states that focusing on 21<sup>st</sup> century climate change impacts fails to provide a complete picture of the consequences of anthropogenic greenhouse gas emissions on future sea-level rise and its long-term impacts. Looking to 2300, the research results indicate that greenhouse gas emissions over the 280 year period result in about 1m of committed global mean sea-level rise by 2300, with pledged Nationally Determined Contributions (NDCs) under the Paris Agreement from 2016 – 2030 corresponding to around

20cm or 1/5 of that commitments. The findings demonstrate that global and individual country emissions over the first decades of the 21<sup>st</sup> century alone will cause substantial long-term sea level rise.