



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

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

October 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

US withdrawal from the Paris Agreement

The US has submitted [formal notification](#) of its withdrawal from the Paris Agreement to the United Nations. Notice was served on the first day it was possible to do so - Article 28 of the [Paris Agreement](#) states: *At any time after three years from the date on which this Agreement has entered into force for a Party, that Party may withdraw from this Agreement by giving written notification to the Depositary.* The notification begins a year-long process which will conclude the day after the 2020 US Presidential election.

COP25 to take place in Madrid, Spain

The UNFCCC Executive Secretary, Patricia Espinosa has [confirmed](#) that COP25 will take place from 2-13 December 2019 in Madrid, Spain. The announcement came after the Chilean Government cancelled its hosting of the climate summit due to waves of protests in the country.

Low sea ice and near-record warmth define 2019

The latest 'state of the climate' report from [Carbon Brief](#) states that this year is shaping up to the second warmest on record for most surface temperature datasets, behind only the super-El Niño year of 2016. The summer of 2019 also saw a sea ice extent minimum in the Arctic that tied for the second lowest since satellite records began in the late 1970s.

IMF suggests a carbon tax to help limit climate change

A new report from the [IMF](#) says that limiting global warming to 2°C or less requires policy measures on an ambitious scale, such as an immediate global carbon tax that will rise rapidly to \$75 per tonne of CO₂ in 2030. Under such a scenario, electricity and gasoline prices would rise significantly, and the report suggests that the revenue from such a tax could be redistributed, for example, to assist low-income households.

Global solar PV market set for spectacular growth over next 5 years

The IEA's [Renewable 2019](#) market report forecasts that the world's total renewable-based power capacity will grow by 50% between 2019 and 2024. The increase is driven by cost reductions and concerted government policy efforts. Solar PV accounts for 60% of the rise. The report highlights the three main challenges that need to be overcome to speed up the deployment of renewables: policy and regulatory uncertainty, high investment risks and system integration of wind and solar PV.

UK Climate and Energy Research and Policy

Decoupling of economic growth from carbon emissions in the UK

The Office for National Statistics (ONS) has published [evidence](#) on how the UK's economy has developed over time and the efforts that have been made to reduce CO₂ emissions. The report states that while UK CO₂ emissions peaked in 1972, once imported emissions are considered, the peak shifts to 2007. The biggest source of these imported emissions (i.e. from products manufactured abroad) is China, followed by the EU. UK direct emissions have fallen due to a combination of environmental policies and a shift from a carbon-intensive manufacturing economy to less carbon-intensive service-based industries. However, service focused countries and regions create indirect emissions through outsourcing of products to countries with lower labour costs. This report shows that the UK is now one of the highest per head net importers of CO₂ emissions.

UK renewables generate more electricity than fossil fuels for the first time

Analysis by [Carbon Brief](#) shows that in the third quarter of 2019, the UK's windfarms, solar panels, biomass and hydro plants generated more electricity than the combined output from power stations fired by coal, oil and gas. During July – September, renewables generated an estimated total of 29.5 TWh, compared with 29.1 TWh from fossil fuels. This is the first quarter where renewables generated more electricity than fossil fuels.

Behaviour change, public engagement and Net Zero

To help inform its Net Zero report, the CCC commissioned [research](#) to help understand the potential for people to make choices that can contribute to reducing emissions, and what this means for policy. Some key findings from this independent report include:

- If the public are to become engaged with the climate challenge and contribute to achieving net zero emissions, then the wider policy context will also need to be more supportive.
- Policies must create a wider context which nurtures public engagement.

- Policies will need to work together and in sequence to deliver change in behaviours and markets, avoid negative outcomes and build public acceptance.

Brexit and renewables in Scotland

This [briefing paper](#) by UKERC examines how renewables in Scotland are shaped by decisions taken by the Scottish Government, the UK Government and the EU. The paper, which draws on interviews with industry and government representatives and a workshop with academics and stakeholders, identifies varying levels of concern among key stakeholders with regard to the impact that Brexit may have on renewables in Scotland. Many expect policy continuity; others are fearful of the uncertainty surrounding access to the EU internal market, access to project funding etc.

The impact of Brexit on the UK and devolved energy system

A new UKERC [briefing paper](#) uses the example of a changing UK / Scottish government relationship to look at how: Brexit may affect the formal division of policy making responsibilities and; politics and policy making is only one of many determinants of outcomes from complex systems. Key findings include:

- Brexit could have a major impact on UK energy policymaking, but its likely effect remains unclear.
- We can predict major changes to formal policymaking responsibilities. There is less certainty of the policies that may arise from EU, UK, and devolved governments.
- The law is only one aspect of policy, and policy is only one influence on energy system outcomes.
- ‘Systems thinking’ helps inform discussions of, for example, the impact of Brexit on the transition to a low carbon energy system.
- However, terms such as ‘energy systems’ will only be useful when researchers and practitioners clarify their meaning and identify the role of policy in their transition.

Edinburgh scientists receive funding for hydrogen storage research

The University of Edinburgh has been [awarded](#) £1.4 million from the Engineering and Physical Science Research Council (EPSRC) for research to investigate the storage of hydrogen in the subsurface. The project aims to increase understanding of the whole hydrogen storage system.

Climate Science, Impacts and Adaptation

Widespread drying of Europe’s peatlands

Reporting on two papers published in Nature Geosciences, [Carbon Brief](#) writes that European peatlands could turn from carbon sinks to sources as a quarter have reached levels of dryness unsurpassed in a record stretching back 2,000 years. The trend may also be www.climatexchange.org.uk

exacerbated by peatlands being used for agriculture and fuel. The papers indicated a need for efforts to conserve peatlands as sites of carbon storage at higher latitudes.

Comparative analysis of nitrogen accounting models with particular reference to agriculture

New [research by ClimateXChange](#) compares available nitrogen accounting tools to assess their potential application focusing on Scottish agriculture. With a focus on input-models, strengths and weaknesses of different models, their practical potential for application to Scottish farm businesses, and their potential to support policy decisions were evaluated. Key findings include:

- Generally, there are common knowledge gaps across many of the tools assessed.
- The tools available have been designed for specific (different) purposes that vary in spatial scale and which differ in complexity, both in how easy they are to use and in the details describing nitrogen pathways in agricultural systems.
- At the national and regional scale from the identified tools, the model by Vogt and the UK Smart Inventory shows the greatest potential to be developed into a national level policy monitoring tool.

Contribution of the land sector to a 1.5°C world

Drawing on a review of modelled pathways and literature on mitigation strategies, [new research](#) published in Nature Climate Change, has helped to develop a land-sector roadmap of priority measures and regions that can help to achieve the 1.5°C Paris Agreement temperature goal. The research states that transforming the land sector and deploying measures in agriculture, forestry, wetlands and bioenergy could feasibly and sustainably contribute about 30% of the global mitigation needed in 2050 to deliver on the 1.5°C target, but it will require substantially more effort than the 2°C target.