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

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

June 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

Finland pledges to become carbon neutral by 2035

The new Finnish Government's policy programme includes a pledge to make the country carbon neutral by 2035. The existing 2050 target in the Finland Climate Change Act will be updated to reflect this, with sections on the land use sector and a target for strengthening carbon sinks also being added. The 'Inclusive and Competent Finland' programme document states that emissions reductions will be carried out in a way that is fair from a social and regional perspective and that involves all sectors of society. The paper also includes a commitment to establish a ministerial working group on climate and energy issues, which will be in charge of preparing climate policy as a whole, stating "assessing climate impacts will become a part of the normal process of drafting legislation."

Ireland's plan to become carbon neutral by 2050

In its new Climate Action Plan, the Irish Government confirms it will support the ambition emerging within the European Union to achieve a net zero target by 2050, and commits to evaluate the changes required to adopt such a goal in Ireland. The plan also seeks a pathway to 2030 which would be consistent with a net zero target by 2050. The model for delivering the policies needed will include: a five year Carbon Budget and sectoral targets with a detailed plan of actions to deliver them; a Climate Action Delivery Board overseen by the Department of the Taoiseach (Prime Minister) to ensure delivery; an independent Climate Action Council to recommend the Carbon Budget and evaluate policy' strong accountability to an Oireachtas (Parliament) Climate Action Committee; and Carbon proofing all Government decisions and major investments

UK Climate and Energy Research and Policy

UK passes net zero emissions law

The UK has passed laws to end its contribution to global warming by 2050. The net zero target, which is one of the most ambitious in the world, was recommended by the Committee on Climate Change.

The 2050 goal replaces a previous target to cut emissions by 80% (against 1990 levels) by the same deadline, and has been added as an amendment to the 2008 Climate Change Act.

To date, the UK has already cut emissions by 43.5%, due in large part to a shift away from coal and other fossil-fuel based electricity to renewable energy sources such as solar and offshore wind. However the UK is currently not on track to meet its 4th and 5th carbon budgets which set reduction targets for the period 2023 to 2032.

The Scottish Government has proposed legally binding net zero targets by 2045 for Scotland.

Citizens' assembly on climate change

Six select committees of the House of Commons have announced plans to hold a Citizens' Assembly on combatting climate change and achieving the pathway to net zero carbon emissions. It will explore views on the fair sharing of potential costs of different policy choices and is intended to provide input to future select committee activity and will inform political debate and Government policy making.

Matthew Lockwood, UKERC Project Leader, has written that the move has been inspired by the upsurge of activism on climate change – school strikes, protests by Extinction Rebellion, declarations of Climate Emergency etc. – and that a Citizens' Assembly will help build cross-party support for net zero and a consensus around the step change in effort required to meet such ambitious targets.

The role of BECCS in achieving a net zero Britain

The Renewable Energy Association (REA) has launched a paper calling for action to be taken to ensure Bioenergy with Carbon Capture and Storage (BECCS) fulfils its potential in achieving a net zero Britain by 2050. The paper explores a range of possible policy options that would advance BECCS and its wider benefits, including increasing the UK total carbon price to £50t/CO_2 from 2020 to promote rapid emission reductions; supporting BECCS in the Contracts for Difference auctions; and establishing demonstration projects at several scales that use the lowest carbon feedstocks.

UK bids for COP26 presidency in partnership with Italy

The UK and Italy have agreed to present a proposal for the UK to assume the Presidency of the 26th Conference of the Parties (COP) to the UNFCCC, in partnership with Italy. Building on previous proposals, the UK has offered to host the COP and Italy the pre-COP event.

Grantham Institute lecturer Dr Joeri Rogelj, member of the United Nations' Climate Science Advisory Group, has written that hosting COP26 would provide an unrivalled opportunity for the UK to capitalise on its reputation in science, innovation and climate leadership, and for the UK to reassert its position as a global climate leader.

Disrupting the UK energy system: causes, impacts and policy implications

ClimateXChange researchers have contributed to a major UKERC research project on disruption in energy systems. The report shines a light on the level of disruption that could be required by some sectors to meet net zero targets. The analysis focuses on four key areas of the economy – heat, transport, electricity and construction – highlighting how they may need to change to remain competitive and meet future carbon targets.

The report also identifies how policy makers plan for disruptions to existing systems. With the right tools and with a flexible and adaptive approach to policy implementation, decision makers can better respond to unexpected consequences and ensure delivery of key policy objectives.

EV charging sites outnumber petrol stations for the first time

New figures from Zap-Map shows that as of 22 May 2019 there are 8,471 charging locations across the UK, hosting a total of 13,613 charging devices. In contrast, as of the end of April 2019, there are currently only 8,400 petrol stations in the UK. These figures are reflecting huge growth in the UK public EV charge point network in the past 12 months, with the number of locations increasing 57% in that time.

Climate Science, Impacts and Adaptation

Update to ocean-heat record could shrink 1.5°C carbon budget

The UK Met Office has recently released an update to its widely used sea surface temperature (SST) record. The new version suggests that the world's oceans have warmed by around 0.1°C more than previously thought. Carbon Brief has estimated that these revisions would reduce the global carbon budget remaining to limit warning to 1.5°C by between 24% and 33%, depending on how the budget is calculated. At the current rate of emissions, this would mean

the 1.5°C budget would be used up in 6-10 years, rather than 9-13, making the target potentially harder to achieve.

Energy for mobility: exploring systemic change in a net zero world

As part of the UKERC programme, the Transport Energy Air pollution Model (TEAM) has been designed to address concerns around emissions from transport and how they are influenced by technical efficiency, mode choices, lifestyle choices etc. As well as uncertainties in exploring pertinent questions on the transition to a zero carbon and clean air transportation future.

UKERC has published a TEAM guide, which serves as an update to the 2010 UK Transport Carbon Model Reference Guide. The TEAM framework can be adapted to a range of geographical and administrative scales, from city to region, country and global scales. To date, two versions have been developed and used in policy analysis: a UK version, TEAM-UK; and a Scottish version, STEAM.

Livestock breeds and GHG emissions

ClimateXChange has published research which assesses the current state of confident knowledge on how GHG emissions may vary between cattle breeds. The key findings are:

- No clear difference was found between breeds
- Cattle have not been bred on the basis of their emissions - any differences are based on feed intake or production system
- Those bred for high productivity may have lower methane emissions per kilogram of beef produced because they consume a smaller amount of feed
- An animal that can digest its food more quickly will generate fewer emissions as there is less time for processing in the stomach
- Breeds selected for higher production will have reduced greenhouse gas emissions, particularly when expressed relative to production

However, the evidence shows that selective breeding can be linked with problems of ill health, increased death rates and reduced fertility, and so overall reductions in greenhouse gas emissions will depend on minimising these risks – for example by having an appropriate breed for the environment or management system.

Practical abatement potential in Scottish agriculture

A new report from ClimateXChange summarises how different changes to agricultural practice in Scotland are (or could be) recognised in the smart inventory[1]. It provides information for policy makers on what changes can be captured in the UK GHG inventory, and what further steps could be taken to reflect Scottish agricultural practices more accurately. Key findings include:

- The smart inventory reflects the mitigation activities for which we currently have robust data and analysis
- Annual Scotland-specific data are used in many activities (e.g. crop areas, fertilisation rates livestock numbers, milk yield, slaughter weight), but more specific activity data either are either not updated annually or not systematically collected for Scotland.
- Inventory development is a continuous process and future data collection should be planned with the Inventory team in order to maximise the use of the data in the inventory.
- There are four main data categories that would enhance data collection initially:
  a) Nitrogen fertilisation of minor crops and novel legumes
  b) Area and fertilisation information on intercropping
  c) Ruminant diets
  d) Manure management and storage information

Payment for carbon sequestration in soils

Research by ClimateXChange has explored how the level of carbon storage in soil can be measured over time, and how this could help improve land management practices through a payment system. Key points from the research include:

Agricultural soils (across pasture and arable) account for more than 10% of Scotland's estimated soil carbon. Changes in land management practices affect the balance between soil carbon accumulation and loss, with conversion from grassland to cropland as the largest single change that releases soil carbon on Scottish agricultural land.

Evidence suggests there is large potential for increasing carbon storage in agricultural soils through changes in management practices. Any increase in carbon in the soil is likely to have a positive impact on soil quality, whilst the climate change mitigation benefit may be modest but positive in the longer term.

[1] The UK's inventory of greenhouse gas emissions measures progress towards reduction targets. The methodology for agriculture has recently changed to better reflect the current science on the GHG emissions from agriculture.

Mechanisms for support through payments exist, but they are largely focused on wider benefits such as preventing soil erosion and there are none that currently specifically enable soil carbon sequestration.