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climate change research and policy

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

April 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

Global assessment report on biodiversity and ecosystem services

A [report](#) from the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) warns that nature is declining globally at rates unprecedented in human history. The rate of species extinctions is accelerating, with around 1 million animal and plant species now threatened with extinction, many within decades. The report authors have ranked five direct drivers of change in nature with the largest relative global impacts so far – (1) changes in land and sea use; (2) direct exploitation of organisms; (3) climate change; (4) pollution and (5) invasive alien species. The report notes that climate change is already impacting nature from the level of ecosystems to that of genetics, and that these impacts are expected to increase over the coming decades, in some cases surpassing the impact of land and sea use change and other drivers.

Heat across Earth's surface and oceans mark early 2019

Carbon Brief's [state of the climate report](#) shows global surface temperatures in 2019 are on track to be either the second or third warmest since records began, with temperatures being buoyed by a moderate El Niño event that is likely to persist through the rest of this year. Ocean heat content (OHC) set a new record in early 2019, with more warmth in the oceans than any time since OHC records began. Latest data also showed that the level of the world's oceans continued to rise in 2019, with sea levels around 8.5cm higher than in the early 1990s.

Why children must emit eight times less CO₂ than their grandparents

[Analysis](#) by Carbon Brief shows that if Paris Agreement goals of limiting global warming to well below 2°C and ideally below 1.5°C are to be met, young people will have to live the greater part of their lives without contributing significantly to global emissions, i.e. this generation will have a smaller carbon budget for their lifetime, compared with older generations. Historical data and projections on future emissions and population level were analysed, and Carbon Brief concluded that the average person born today can emit only an eighth of the lifetime emissions of someone born in 1950, if warming is to be limited to 1.5°C.

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Tackling climate change in the financial sector

In its [first comprehensive report](#), the [Network for Greening the Financial System](#) (NGFS)¹ provides six recommendations for central banks, supervisors, policymakers and financial institutions to enhance their role in the greening of the financial system and the managing of environment and climate-related risks. Some of the recommendations call for integrating monitoring of climate-related financial risks into day-to-day supervisory work, encouraging central banks to integrate sustainability into their own portfolio management, and building in-house capacity and sharing knowledge on management of climate-related financial risks.

UK Climate and Energy Research and Policy

Net Zero – The UK’s contribution to stopping global warming

Responding to a request from the Governments of the UK, Wales and Scotland, the Committee on Climate Change has reassessed the UK’s long-term emission targets. The new emission scenarios draw on ten new research projects, three expert advisory groups and the reviews of the work on the IPCC and others. The [report](#)’s key findings are that:

- The CCC recommends a new emissions target for the UK: net-zero greenhouse gases by 2050.
- In Scotland, the CCC recommend a net-zero date of 2045, reflecting Scotland’s greater relative capacity to remove emissions than the UK as a whole.
- In Wales, a 95% reduction in greenhouse gases by 2050 has been recommended.

The report states that the expected economic cost is within the same envelope (1-2% GDP each year) of that which was accepted by the UK Parliament when it legislated for the existing 2050 target for an 80% reduction from 1990.

The CCC warn that current policy is insufficient for meeting existing targets, and that stable and well-designed policies to reduce emissions further need to be introduced across the economy without delay. The report states that the Governments of Scotland, Wales and Northern Ireland must make full use of the policy levers available to them, and work with the UK government to ensure delivery in those areas that are not devolved. Their advice is that Scotland cannot deliver net-zero by 2045 through devolved policy alone, and that the proposed targets are contingent on the UK adopting the recommended 2050 net-zero GHG target.

Reacting to the CCC report, Scotland’s Cabinet Secretary for Environment, Climate Change and Land Reform lodged amendments to the Climate Change (Emissions Reduction Targets) (Scotland) Bill so that Scotland’s new emissions target will reflect the advice of the report. Scotland’s Cabinet Secretary

¹ The NGFS is a group of Central Banks and Supervisors willing, on a voluntary basis, to exchange experiences, share best practices, contribute to the development of environment and climate risk management in the financial sector, and to mobilize mainstream finance to support the transition toward a sustainable economy

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for Environment, Climate Change and Land Reform has also [written](#) to the UK Minister of State for Energy and Clean Growth requesting a meeting to discuss progressing UK legislation for a net-zero GHG target for 2050, and a specific list of reserved policies, e.g. deployment of CCS, which will be needed to ensure the CCC's recommended targets can be met.

UK emissions projections

The UK Government's [updated energy and emissions projections for 2018](#) states that the UK's emissions are currently projected to be greater than the cap set by the fourth (2023-2027) and fifth (2028-2032) carbon budgets. The projections also show that the third carbon budget (2018-2022) is very likely to be achieved. The report states that many policies which will affect the 2020s and beyond have not yet been developed to the point at which they can be included in these projections.

Disruption and continuity in the UK energy transition: what do the experts think?

UKERC and ClimateXChange have published [analysis](#) of disruption and continuity in the UK energy system, which included a survey of experts and stakeholders about disruption and continuity-led change in the UK energy transition. The results show that experts and stakeholders are agreed about the need to prioritise decarbonisation and the development of a green economy as the UK's foremost energy policy driver. There were also high expectations about some technologies and innovations in driving the UK energy transition over the next two decades e.g. large-scale renewables and electric vehicles. The survey also revealed some disagreement, such as the likely role of behaviour change and modal shift in the transport sector.

Climate Science, Impacts and Adaptation

Renewables are a better investment than carbon capture for tackling climate change

New [research](#) published by Nature Energy states that solar panels and wind turbines coupled with energy storage offer a better hope for tackling climate change, than trying to capture carbon from fossil fuel power stations. Researchers compared the energy output from carbon capture technologies across a range of fossil fuel power stations, and renewable energy systems combined with energy storage. The researchers calculate that this is, in part, due to net energy losses from implementing carbon capture, including from the embodied energy attributable to the equipment needed.