

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

### December 2017 and January 2018

**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

#### 2017 hottest year on record without an El Niño

According to Nasa data, 2017 was the [second-hottest year on record](#), and was the hottest year without the short-term warming influence of an El Niño event. 2017 was in fact the hottest year without an El Niño by a wide margin – 0.17°C hotter than 2014, which previously held this record.

#### New York to divest from fossil fuels and sue oil companies

New York city officials have set a goal of divesting New York's \$189bn pension funds from fossil fuels companies within five years. Currently these pension funds have about \$5bn in fossil fuel investments. New York mayor Bill de Blasio has also [said](#) that the city is taking five fossil fuel firms to federal court due to their contribution to climate change.

#### One Planet Summit Paris

In December 2017, the [One Planet Summit](#) brought together local, regional and national leaders as well as those working in public and private finance to discuss how to accelerate efforts to fight climate change. Twelve commitments were made at the conference, and the One Planet Coalition was created to ensure these commitments are met. Progress against these commitments will be assessed at the second One Planet Summit in 2018.

At the summit, the World Bank [pledged](#) to no longer finance upstream oil and gas after 2019.

#### France to shut all coal-fired power stations by 2021

The French President Emmanuel Macron, [announced](#) at Davos that France will shut down all coal-fired power stations by 2021. President Macron said he wanted to “make France a model in the fight against climate change”, as one of five pillars in his plans to reform the economy.

#### Renewable power generation costs in 2017

A cost [report](#) from the International Renewable Energy Agency (IRENA) has highlighted the latest trends for each of the main renewable power technologies, based on the latest cost and auction price data from projects around the world. Some key findings from the study include: renewable power generation costs continue to fall and are already very competitive to meet needs for new capacity; competitive procurement – including auctions – accounts for a small fraction of global renewable energy deployment; global competition is helping to spread the best project

December 2017 and January 2018

development practices, reducing technology and project risk and making renewables more cost-competitive than ever before; and in developed countries, solar power has become cheaper than new nuclear power.

### **IEA forecasts increase in world coal demand**

In its [Coal 2017](#) report, the International Energy Agency (IEA) forecasts a small increase in global coal demand from 2016 to 2022, with growth in India and southeast Asian countries outweighing declines in rich nations and China. [Carbon Brief](#) reports that the IEA has consistently forecast rising coal demand, even as it has repeatedly adjusted its figures downwards in lights of lower-than-expected growth. Some analysts believe the agency remains behind the curve in its outlook for coal.

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

### **UK's ambitious Clean Growth Strategy must be translated urgently into action**

A new report from the Committee on Climate Change (CCC) - '[An independent assessment of the UK's Clean Growth Strategy: From ambition to action](#)' – recommends that the Government: urgently firm up policies and proposals in the Clean Growth Strategy; develop and implement new policies to close the remaining 'emissions gap' and; address the risks of under-delivery. The CCC Chairman, Lord Deben, said "As it stands, the Strategy does not deliver enough action to meet the UK's target in the 2020s and 2030s."

### **UK Government's new 25-year environment plan**

'[A Green Future: Our 25 Year Plan to Improve the Environment](#)' sets out what the UK Government will do to improve the environment, within a generation. By adopting this Plan the Government plans to achieve: clean air; clean and plentiful water; thriving plants and wildlife; a reduced risk of harm from environmental hazards such as flooding and drought; using resources from nature more sustainably and efficiently and; enhanced beauty, heritage and engagement with the natural environment. In addition, there are plans to manage pressures on the environment by: mitigating and adapting to climate change; minimising waste; managing exposure to chemicals and; enhancing biosecurity.

[Responding](#) to the publication of the plan, Bob Ward (ESRC Centre for Climate Change Economics and Policy and the Grantham Research Institute on Climate Change and the Environment) said "the Government deserves credit for recognizing the need to consider the environment in the long term. However, this 25-year Plan offers little more than good intentions on the critical issue of making the UK resilient to the current and future impacts of climate change."

### **Responses to the Cost of Energy Review**

Responding to the BEIS [Call for Evidence](#), the UK Energy Research Centre (UKERC) has made [three](#)

December 2017 and January 2018

[observations](#) on the review conducted by Prof Dieter Helm:

- Whilst the review title focuses on the cost of energy, this is misleading. The terms of reference and the Review report make it clear that the main focus is electricity rather than energy in general.
- There are important distinctions between prices, costs and bills. Whilst much of the debate focuses on prices, the costs of energy for consumers also depends on their energy consumption.
- Costs need to be considered for the electricity system as a whole.

The ESRC Centre for Climate Change Economics and Policy and the Grantham Research Institute on Climate Change and the Environment also [published](#) their response to the consultation on the Review. It covers areas of the review including the phase-out of coal from electricity generation, the costs of renewable electricity generation, the intermittency of renewable electricity generation, and carbon pricing.

The UK Business, Energy and Industrial Strategy Committee also [heard evidence](#) on the Review.

### **Low-carbon sources generated more UK electricity than fossil fuels in 2017**

[Analysis](#) by Carbon Brief shows that nuclear and renewables generated more electricity in 2017 than all fossil fuels combined. Within this total, wind alone generated more than twice as much electricity as coal, supplying more power in every month except January.

### **Scotland's historic sites at high risk from climate change**

A [report](#) by Historic Environment Scotland (HES) says dozens of Scotland's most famous historic sites are at very high risk of being badly damaged by climate change and need urgent protection. The agency has, for the first time, issued red warnings for nearly a fifth of its sites and put amber, high risk warnings against another 70%. The report outlines a new approach for assessing climate change risk that places current risk from natural hazards at the forefront of the analysis. The frequency of these hazards, such as flooding and coastal erosion, are closely linked to changes in the climate.

### **Scotland's Energy Strategy**

[Scotland's first Energy Strategy](#), published in December 2017, sets out the Scottish Government's vision for the future energy system in Scotland. It aims to strengthen the development of local energy, protect and empower consumers, and support Scotland's climate change ambitions while tackling poor energy provision.

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

### **Review of international assessments of the economic impacts of climate change**

December 2017 and January 2018

A [review](#) of key global assessment of the costs and benefits of climate change action, produced for ClimateXChange, finds that estimates of climate impacts are inherently uncertain, so that climate policy needs to be assessed in terms of risk management, rather than straight-forward cost-benefit analysis. The balance of evidence suggests that although the mid-point estimates of abatement cost may be higher than the mid-point damage estimates, it is reasonable to conclude that there is a considerable risk of much higher-than-expected damages which would justify the cost of ambitious abatement action. This is in line with the conclusion arising from climate risk literature suggesting that reducing the risk of exceeding tipping points is a key reason to aim for strong abatement targets globally.

### **Soil carbon and land use in Scotland**

A [report](#), produced for ClimateXChange, explores the types of soil in Scotland and their relative carbon content, how the soil carbon abatement potential is understood across the range of dominant land uses in Scotland. It also considers how the carbon impact of different land management practices is understood.

### **Will half a degree make a difference? Robust projections of indices of mean and extreme climate in Europe under 1.5°C, 2°C, and 3°C global warming.**

Based on high-resolution models, [researchers investigate](#) the change in climate extremes and impact-relevant indicators over Europe under different levels of global warming. They specifically assess the robustness of the changes and the benefits of limiting warming to 1.5°C instead of 2°C. Compared to 1.5°C world a further 0.5°C warming results in a robust change of minimum summer temperatures indices over more than 70% of Europe.

### **Biomass-based negative emissions difficult to reconcile with planetary boundaries**

Researchers have [explored](#) the feasibility of negative emissions via bioenergy with carbon capture and storage (BECCS) from dedicated plantations and potential trade-offs with planetary boundaries for multiple social economic pathways. They show that while large-scale BECCS is intended to lower the pressure on the planetary boundary for climate change, it would most likely steer the Earth system closer to the planetary boundary for freshwater use and lead to further transgression of the planetary boundaries for land-system change, biosphere integrity and biogeochemical flows.

### **Understanding future emissions from low-carbon power systems by integration of life-cycle assessment and integrated energy modelling**

Researchers have [found](#) that cumulative emissions attributable to upscaling low-carbon power other than hydropower are small compared with direct sector fossil fuel emissions and the total carbon budget. Fully considering life-cycle GHG emissions has only modest effects on the scale and structure of power production in cost-optimal mitigation scenarios.