

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

May 2016

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](#)¹ 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 Policy

G7 committed to ending fossil fuel subsidies by 2025

G7 leaders agreed to take all necessary steps to secure rapid ratification of the Paris Agreement at a meeting in Japan. The countries committed in [a statement](#) to ensuring: 'swift and successful implementation of the Paris Agreement including the long-term aims on mitigation, adaptation, and finance'. The statement committed to the elimination of 'inefficient' fossil fuel subsidies and encouraging all countries to do so by 2025. An excerpt from the statement can be found [here](#).

France to set carbon price floor

The French Environment Minister, Ségolène Royal, announced that France will set a carbon price floor of around €30 in its next finance bill, which is expected to be adopted in November this year. The French Government hopes that the move will drive forward the Paris Agreement, encouraging other European countries to take stronger action to reduce emissions. Carbon prices under the European Emissions Trading System have fallen to around €6 a tonne, down from about €30 in 2008 due to an oversupply of permits. The EU committed in Paris last December to cut greenhouse gas emissions [by at least 40 percent by 2030](#). [Recent analysis](#) revealed that EU emissions rose by 0.7% in 2015.

Southern hemisphere passes 400ppm carbon dioxide milestone

Weather stations in Australia and Antarctica recorded background atmospheric carbon dioxide levels of [400 parts per million](#) (ppm), showing that the concentration of CO₂ is above 400ppm throughout the southern hemisphere. It is unlikely to drop below this level for decades or centuries to come. Concentrations of CO₂ are higher in the northern hemisphere and reached 400ppm in 2014/15. This time-lag between the two hemisphere is occurs because most CO₂ emissions occur in the North, while the southern hemisphere is host to more carbon 'sinks', such as oceans. The 400ppm

¹ [ClimateXChange](#) is Scotland's Centre of Expertise on Climate Change, supporting the Scottish Government's policy development on climate change mitigation, adaptation and the transition to a low carbon economy. The centre delivers objective, independent, integrated and authoritative evidence in response to clearly specified policy questions.

milestone was reached faster than anticipated by scientists, most likely driven by increased emissions from fossil fuels, as well as the impact of the recent El Nino weather pattern. CO₂ concentration levels are currently rising by around 3ppm per year. At the current rate, the concentration level expected to cause a global average temperature increase of over 2°C is likely to be reached in just two decades.

Can the agricultural sector make emissions cuts necessary to achieve 2°C target?

A [study published in Global Change Biology](#) assessed the feasibility of achieving emissions reductions required from the agricultural sector in order to meet the ambitions of the Paris Agreement. The study identified a preliminary target to reduce global emissions from agriculture by around 1 gigatonne of CO₂ equivalent per year by 2030 in order to limit warming in 2100 to 2°C. However, it found that plausible agricultural development pathways under current policy and technical conditions could only achieve 21-40% of this target. It identified a need for transformative technical and policy options, such as methane inhibitors and finance for new practices. A separate study found that treating cows with antibiotics can [double the methane emissions from cattle](#).

American presidential election

There has been extensive coverage of [claims](#) by Donald Trump, Republican presidential nominee, that he would pull the US out of the Paris Agreement. Comments include those from Christiana Figueres in The Scientific American. The [New York Times](#) explores the broader context of the US domestic energy market. Hillary Clinton and Bernie Sanders (Democratic contenders) are both proponents of action on climate change, and [the Washington Post](#) has suggested this election may bring the issue to the fore for voters.

UN approves new climate chief

Patricia Espinosa was confirmed as the Executive Secretary of the UN Framework Convention on Climate Change, following nomination by Secretary General, Ban Ki-moon. The Mexican diplomat will take over the role in July when the current Chief, Christiana Figueres steps down. Ms Espinosa called for swift, decisive and sustained action on climate change, stating "I stand ready to work with all governments – as well with all other stakeholders – to realise the inspiring aims and ambitions of the new UN climate agreement adopted in Paris last December". Norwegian diplomat, Erik Solheim will become [UN Environment Programme's](#) new chief in August.

Reference Data

Carbon Brief has updated their [Data Dashboard](#) of key indicators on the climate, atmosphere, oceans and cryosphere.

International Energy Policy

Carbon Capture and Storage

London Imperial's Sustainable Gas Institute has published a [report](#) arguing that carbon capture and storage could enable continued extraction of fossil fuel reserves while meeting the targets set out in the Paris Agreement. Note that this research deals with the question of how to enable rather than restrict further extraction.

Energy Giants respond to Paris Agreement

In response to the Paris Agreement, French oil giant **Total** has announced that it is reducing its exposure to tar sands and avoiding the [Arctic](#) as part of its longer term investment strategy. However, it will continue to invest in [North Sea](#) oil and gas. **Shell** have set out their vision for how to achieve the ambitions of the Paris Agreement in a [supplement](#) to their New Lens scenarios published in 2013. It is drafted in the context of managing exposure to risks associated with investment in fossil fuels with potentially diminishing returns. The report argues that some emissions will be impossible to eliminate, and that carbon capture and storage and negative emission technologies will be required. Carbon Brief has provided [analysis](#). Despite this move, the Dutch pension fund [criticised](#) the company's climate change policy ahead of the annual meeting. In response, Shell's CEO warned of the [risks of a swift transition](#).

Proposals to increase environmental accountability for **Exxon Mobil** and **Chevron** were defeated at their respective recent [shareholder meetings](#). However, campaigners were encouraged by the support received in the vote. Reuters published [analysis](#) of the significance of the discussions prior to the meeting.

UK Climate Policy

Climate change policies have not damaged the UK economy: LSE

A [study by the London School of Economics](#) compared the ambition of UK climate policy with the UK's major international competitors and explored the impact it could have on economic competitiveness. It found that the UK's climate policy regime has not damaged the competitiveness of UK based businesses nor led to relocation. Rather, it found, climate change policies can boost economic growth, increasing the competitiveness of the UK in the long term by encouraging greater innovation and efficiency. Differences in energy costs between countries were found to be considered in firms' decisions on where to locate their business, however, carbon-related energy costs were less important than other production costs. The study found that competitiveness concerns are valid for a small number of sectors representing approximately 2% of the economy, including petro-chemicals, cement, iron and steel. However, policies to support these sectors are already in place and are sufficient to prevent their re-location abroad.

Cost of UK energy subsidies predicted to increase 124% in 5 years

A review of existing UK policies by consultancy [Cornwall Energy](#) found that energy subsidies are likely to increase by 124% by 2020-21 due to the cost of the capacity market, renewable obligations, contracts for difference and feed-in tariff schemes. The study forecasts that the UK government is likely to exceed its Levy Control Framework budget in every year from 2016-17, and by as much as £600mn in 2017-18 as a result of increasing subsidy costs.

UK Energy Policy

Statoil have been granted a seabed lease to develop the [world's largest floating windfarm](#) 15 miles off the coast of Peterhead. It is expected to be operational by the end of 2017.

Ofwat believe that the UK should generate more [energy from sewage](#) to cut water bills and reduce GHG emissions. The [announcement](#) was part of several reforms designed to boost resilience and improve performance for customers, the environment and society.

National Grid and RES have [announced](#) they are working on the first battery energy storage systems to provide a dynamic frequency response service in sub-second timescales in Great Britain. This is a new service which will aid National Grid in performing its system balancing role, which increasingly requires innovation and the use of new technologies.

The RSPB has published its [2050 Energy Vision](#) to show how the UK could transform its energy system using renewable technologies. The in-house research used pioneering mapping techniques to take account of a range of planning constraints, including important wildlife sites.

Climate Impacts and Adaptation

La Nina

2016 is likely to be the hottest on record, despite the passing of the recent El Nino event and the strong likelihood that it will be succeeded by its cooler counterpart La Nina. The latter is unlikely to reach peak until the winter and normally has a smaller influence on global temperature. [Bloomberg](#) reported that electricity prices in Britain may rise as a result, due to cooler temperatures and weaker air currents reducing wind energy output. This is based on forecast analysis by National Grid and the Met Office.

Climate Adaptation Gap Grows Wider

A [new report](#) by the UN Environment Programme estimates a significant rise in the cost of climate change adaptation for developing countries. This research builds on 2010 figures and examines national and sector studies. "The adaptation finance gap is large, and likely to grow substantially over the coming decades, unless significant progress is made to secure new, additional and innovative financing for adaptation."

A [new report](#) by The Joseph Rowntree Foundation has concluded that there are likely to be relatively modest impacts from climate change on the costs of living in the UK up to the middle of the century, but these will have differentiated effects. Their study examined household expenditure on food, water, energy (both heating and cooling) and housing. The study emphasises the importance of considering direct, indirect and economic welfare costs beyond their focus on household costs.

[New research](#) reported in the New Scientist (25 May 2016) suggests that the effect of CO₂ on global temperatures has been underestimated. Current estimates are based on work carried out towards the end of a period of little warming. The New Scientist asked the same researchers what would happen if the latest global temperature data was plugged into their models, and reports that “instead of a 1.3 °C rise for a doubling of CO₂ in the atmosphere we may be looking at 1.8 °C or more”.