

Monthly Report on Policy Developments - Energy and Climate Change August 2015

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 ClimateXChange¹ Secretariat and is intended to keep Scottish Policymakers informed of issues relevant to the Scottish Government's Energy and Climate Change policy portfolio.

Climate Policy

UN climate summit pledges are not sufficient to avoid dangerous climate change: study

[Analysis](#) by the London School of Economics concluded that the emissions reductions pledges made to date by countries ahead of the Paris UN Climate Summit are not ambitious enough to avoid dangerous global warming of more than 2°C. LSE concludes that the pledges made to June 20th would lead to annual global emissions in 2030 of 56.9 to 59.1 billion tonnes of carbon dioxide equivalent (tCO₂e). While this is a significant improvement on the 'business as usual' scenario, it is much higher than the 36 billion tCO₂e that the United Nations Environment Programme indicated would be consistent with a 50-66% chance of avoiding a global temperature rise of more than 2 °C .

President Obama releases US carbon plan

US President Barack Obama finalised a plan to reduce US greenhouse gas emissions. The [Clean Power Plan](#) introduces regulations aimed at achieving a 32% reduction in carbon dioxide emissions from electricity generation by 2030, compared to 2005 levels. The regulations apply to power plant emissions with reduction targets set for each state. States are required to submit plans for achieving these targets to the Environmental Protection Agency by 2016. The regulations allow for interstate emissions trading as a means for states to achieve the required targets. It is anticipated that the plan will provide an incentive for [older coal power generators to be replaced with gas](#) and renewables. The Plan is also expected to provide stability for the United States [solar and wind industries](#), offering incentives in the form of credits to states that [boost renewable power generation](#).

Russian industrial emissions increased under UN carbon credits scheme

A study undertaken by the Stockholm Environment Institute concluded that carbon offsets created under the UN's 1997 carbon credits scheme have '[significantly undermined](#)' efforts to tackle climate change. The study analysed a random sample of 60 projects and found that 73% of the offsets generated did not meet the key criterion of "additionality". This means that these projects would have happened anyway without any carbon credit finance. The authors estimate these may have

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.

undermined EU emissions reduction targets by 400 million tonnes of CO₂, worth over €1.8bn at current market prices. Part of the study, published in [Nature Communications](#), finds that rather than reducing emissions, 'perverse incentives' in the Kyoto Protocol's Joint Implementation mechanism have resulted in Russian factories producing unprecedented levels of industrial waste gases with high global warming potential.

Japan restarts first nuclear reactor under new safety rules

Japan has [restarted a nuclear reactor](#) at the Sendai power plant. This is the first reactor to be restarted under new safety rules introduced in the wake of the 2011 Fukushima disaster. Japan has increasingly relied on coal, oil and natural gas to fill the significant 'energy gap' left by the closure of nuclear power plants following the Fukushima disaster. However, last year, Prime Minister Shinzo Abe [released plans](#) to restart as many reactors as possible with the intention of reducing carbon emissions and energy import costs. In July, the government submitted a pledge to the United Nations to reduce its emissions by 18% from 1990 levels. The pledge included a goal for nuclear energy to fulfil at least 20% of Japan's electricity needs by 2030. Renewable sources are to contribute a minimum of 22%. However, despite the planned up-scaling of low carbon technologies, Japan's target remains one of the least ambitious among developed nations and is rated as inadequate by [Climate Action Tracker](#).

Energy Policy

DECC Attitudes Tracker finds support for nuclear and shale gas at new low

Wave 14 of the Department of Energy and Climate Change's [Public Attitude Survey](#) found that public attitudes towards fracking and nuclear energy are at their lowest levels since the survey began in March 2012. The survey finds that 28% of those with an opinion on fracking are opposed to the extraction of shale gas in the UK, while 21% support it. This is a reversal of the findings of Wave 8 of the survey, in which 27% supported and 21% opposed shale gas. Support for the use of nuclear energy has dropped to 33%, while 24% of respondents oppose it. Support for renewables (including wind power, solar energy and biomass) remains consistent with previous 'waves', with 75% of respondents expressing support for the sector.

Zero carbon 'firm capacity' essential to achieving secure power under 2030 power decarbonisation targets

The [Energy Research Partnership UK](#) has undertaken modelling to assess the flexibility and stability of the GB energy grid under the carbon targets set by the Committee on Climate Change. The study finds that a zero- or very low- carbon system with weather dependent renewables needs companion low carbon technologies to ensure stability, even if very significant storage, demand side measures or interconnection are in support. It suggests that support (known as 'firm capacity') is required to secure energy supply during dark, windless periods, without relying heavily on unabated fossil fuels.

This firm capacity could be supplied by a number of technologies including nuclear, biomass or fossil fuel carbon capture and storage. The authors of the study recommend the introduction of measures to create 'market pull' for such services.

Crown Estate, BGS launch free database for potential carbon storage sites

The Crown Estate and British Geological Survey have launched free access to a database of potential CO₂ storage resources. The database, known as [CO₂ Stored](#), contains geological data, storage estimates and risk assessments of nearly 600 potential CO₂ storage units of depleted oil and gas reservoirs and saline aquifers around the UK. The Crown Estate manages the CO₂ geological storage rights on the UK continental shelf and has committed to advancing the assessment and management of the offshore storage resource. It is intended that the database will inform decisions about the roll out of Carbon Capture and Storage (CCS) infrastructure in the UK and reduce the early stage cost of offshore storage site selection. The data provided by the service was developed by the UK Storage Appraisal Project, commissioned and funded by the [Energy Technologies Institute \(ETI\)](#).

Climate Change Adaptation

Urgent action needed to prevent global food shortages due to climate change

Extreme weather events linked to climate change pose significant risks to global agriculture and food production warns a [new report](#) by the UK-US Taskforce on Extreme Weather and Global Food System Resilience. Increased frequency and severity of droughts, heatwaves, flooding and other extreme weather events is likely to cause food price hikes and disruption to global food supplies, the report argues. Strains on the global food system will be compounded by a rising population. Recommendations to meet these risks include improving the functioning of international markets and adapting agriculture for a changing climate.

UK butterflies could suffer 'widespread extinction' by 2050

The UK's populations of drought-sensitive butterflies would face 'widespread extinction' by 2050 under a 'business as usual' emissions scenario, [according to a recent study](#). The study modelled the interaction between drought and landscape characteristics (such as habitat area and fragmentation) under the IPCC's various [Representative Concentration Pathways](#), to predict the impact on the UK's butterfly populations. It finds that the impact of drought on butterfly populations may be mitigated most effectively by restoring semi-natural landscapes to reduce fragmentation, rather than simply focusing on increasing habitat area. However, this will only be successful in combination with substantial emission reductions.

Climate Science and Impacts

'Negative emissions' measures required to meet 2°C target

A study published in [Nature Communications](#) finds that 'negative emissions' measures (such as direct removal of carbon dioxide from the atmosphere, or engineered enhancement of natural carbon sinks) are required in addition to reducing the production of greenhouse gases, if the 2°C emissions pathway is to be met.

Climate study narrows gap between modelled and observed global temperatures

A study published in [Geophysical Research Letters](#) this month provides insight into apparent discrepancies between modelled and observed global temperatures. While greenhouse gases in the atmosphere have continued to rise, recent measurements of surface temperatures have suggested that the world is warming more slowly than projected by climate models. The study's authors attribute this discrepancy partially to the fact that modelled and observed global temperatures are measured in different ways. While climate model simulations typically use only air temperature measurements, observational records use a blend of measurements taken from above land and from the surface of the ocean. The research team were able to reduce this discrepancy by 38% over the period 1975-2014 by adjusting models to make them consistent with the observational temperature methodology.

Study finds geoengineering technique not capable of restoring oceans to pre-industrial condition

[Nature Climate Change](#) has published a study concluding that the geoengineering practice known as Carbon Dioxide Removal is an insufficient measure for mitigating global warming and ocean acidification. [Geoengineering](#) is the deliberate large-scale intervention into the Earth's climate system to try and limit human-caused climate change. The two basic categories of geoengineering are Carbon Dioxide Removal CDR techniques (which remove CO₂ from the atmosphere) and Solar Radiation Management techniques (which reflect a small percentage of the sun's light and heat back into space). The study finds that CDR is not sufficient to restore pre-industrial conditions in the world's oceans. It also concludes that high CO₂ emissions rates followed by CDR cannot achieve long-term oceanic consequences that are similar to those of low emissions rates. Focusing on pH, temperature and dissolved oxygen, the study finds that even after several centuries of CDR deployment, past CO₂ emissions would leave a substantial legacy in the marine environment. The study did not assess the potential impacts of Solar Radiation Management.

Glacier sheds a chunk of ice big enough to cover Manhattan Island

[Satellite images](#) show that the fastest moving glacier in the world shed a chunk of ice measuring around 12.5 km² this month in one of the most significant 'calving' events on record. It is estimated that the Jakobshavn Glacier in Greenland shed 17.5 cubic kilometres of ice; enough cover the whole of Manhattan Island in a 300m layer of ice.

An international team of scientists has developed the first comprehensive, high-resolution model which depicts [how rapidly the West Antarctic Ice Sheet \(WAIS\) could melt](#) if greenhouse gas

emissions are not brought under control. The study projects that under a high-emissions scenario, the WAIS could lose 80,000 cubic kilometres of ice by 2100, increasing sea levels by 8 inches.

Global sea levels have already risen by 8cm on average since 1992, according to a panel of [NASA scientists](#). The scientists attribute one-third of this rise in sea levels to the expansion of warmer ocean water, one-third to ice loss from the polar ice sheets and the remaining third to melting mountain glaciers. Global sea level rise can be seen via [satellite observations](#) released by NASA this month.