

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

July 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](#) 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

#### International agreement on hydrofluorocarbons expected in October

The 196 Parties of the Montreal Protocol met in Vienna to negotiate the phase-out of climate-warming hydrofluorocarbons (HFCs). The [European Commission claimed the meeting a success](#), clearing the way for an agreement in October this year. Negotiations have been underway for seven years to amend the 1989 Montreal Protocol, which banned ozone-depleting coolants called chlorofluorocarbons (CFCs). The proposed amendment would eventually ban the use HFCs, which have been used as a replacement for CFCs as coolants in air-conditions and refrigerators. While HFCs do not damage the ozone layer, they are potent greenhouse gases. Limiting the use of HFCs is seen as an important step towards implementing the Paris Agreement and could prevent 0.5°C of global warming by 2100. If agreed, the EU and other major economies would start phasing-down their use of HFCs in 2019, while a coalition of some 120 developing countries would start freezing their use of HFCs in 2021.

#### Countries' mitigation targets insufficient to meet 1.5°C aspiration

*Nature* [published a study](#) finding that the near-term mitigation targets set by countries are insufficient to achieve the 1.5°C aspiration set by the Paris Agreement. Such a breach would expose the world to significantly increased risk from climate change, even if temperature increases are limited to 2°C. Most low emissions pathways will lead to at least a temporary overshoot of 1.5°C global mean temperature increase. The authors called for further research into the impacts that may be expected under both 1.5°C and 2°C scenarios. This should include assessment of the 'safety' and 'reversibility' of 1.5°C of warming. A peak in emissions by around 2020 and rapid decline towards zero emissions thereafter are critical for achieving the Paris goal. Presently 'uncertain' technologies such as bio-energy and carbon capture and storage will be needed to achieve negative emissions in the second half of this century, according to the study's authors. A [separate study](#), published in the same [special addition](#), found that global temperatures over land are almost certain to surpass 1.5°C, even if current atmospheric greenhouse gas concentrations were to be maintained.

## European Commission plan for emissions reductions

The European Commission [released its plan for](#) how each of the European Union's member states will contribute to meeting the bloc's emissions targets. EU leaders agreed in 2014 to reduce greenhouse gas emissions by at least 40% by 2030 compared to 1990 levels across all sectors of the economy. The proposal is intended to implement this target, as well as commitments made under the Paris Agreement. It presents proposed binding greenhouse gas emission targets for Member States from 2021-2030 across all sectors that are not already covered by the Emissions Trading System. The European Parliament and each EU country will negotiate the so-called [Effort Sharing Regulation](#) before it becomes binding law. This process is expected to take years. Large, wealthy countries are expected to make the biggest contributions. Sweden and Luxembourg would make cuts of 40% on 2005 levels. Bulgaria would be allowed to increase its emissions by 1.5%. [Poland's Environment Ministry claimed](#) that the country cannot afford to achieve its expected cut of 7%. The United Kingdom would be required to reduce its emissions by 35% if it were to remain in the Union. Concerns were raised about the additional burden that other Member states will face once the United Kingdom leaves the Union. [Carbon Brief provided analysis](#) of this issue.

## International Energy Policy

### Current policies will miss European emissions targets: European Commission

The European Commission released its latest outlook – the [EU Reference Scenario 2016](#) - which projects energy, transport and greenhouse gas emissions trends in the EU to 2050. The modelling takes account of global and EU market trends and the energy and climate policies already adopted by the EU and its Member States. It projects that EU climate objectives will be missed, despite progress in decarbonising energy systems. Total emissions reductions of 35% by 2030 will fall short of the 40% target. Power generation mix will change considerably in favour of renewables while the overall use of fossil fuels will decrease. Gas will meet a slightly larger proportion of supply than it did in 2015, while nuclear production will remain stable. These factors combined with energy efficiency improvements will decrease demand for fuel imports. Energy-related investment expenditures will increase substantially until 2020, driven by renewable energy and energy efficiency developments. Overall energy system costs are projected to increase from 11.2% of GDP in 2015 to about 12.3% of EU GDP by 2020, partly driven by rising fossil fuel prices.

### Offshore wind attracted €14bn investment in the past 6 months

The trade body [WindEurope](#) reported that €14bn of investment was raised by offshore wind projects throughout Europe in the first half of 2016. Combined, the seven developments will add 3.7GW of offshore wind to European supply. The UK took the largest share of this investment, attracting €10.4bn. Despite investment in new plant, the volume of new grid-connected installations in the first half of 2016 was 511 MW, 78% down on the same period in 2015. This is expected to pick up next year and toward 2020.

Offshore [wind farm developers in Scotland](#) were set back this month by a judicial review of Scottish Court of Session, which ruled in favour of the Royal Society for the Protection of Birds (RSPB) to prevent four offshore wind developments off the Fife coast.

## **China has entered an era of post-coal growth: Lord Stern**

Leading economists, including Lord Nicholas Stern from the London School of Economics, [released a report](#) finding that recent downturn in China's coal consumption represents a permanent trend. China is the world's largest consumer of coal, accounting for 50% of global demand. Its consumption of coal increased at an annual average of 12% between 2000 and 2013 as its economy boomed, largely on the back of heavy industry and manufacturing. However, recent statistics suggest that its use of coal has peaked and is now in permanent decline. The analysis used the most recent data from the Chinese government, which was revised on the basis of more accurate accounting. It shows that coal use dropped by 2.9% in 2014 and by another 3.6% in 2015. The authors attributed this trend to a number of factors, including the transition of the economy to hi-tech and service sectors. The Chinese Government has also made energy efficiency and renewable energy key priorities in its attempts to minimise air pollution and reduce the country's dependence on imported fuels. China's clean energy capacity has increased rapidly, with solar power up 28% in the first half of 2016, nuclear up 25% and wind and hydropower both up 13%. Declining economic growth also contributed to reduced coal consumption; the economy is now growing by around 6% per annum compared to 9-10% in the previous decade. The study found, however, that continued economic growth (albeit reduced) during this period represents a decoupling of economic growth and coal usage. Lord Stern described this trend as a 'turning point' in the history of the climate and the economy of the world.

## **UK Climate and Energy Policy**

### **Scottish Affairs Committee report on Scotland's renewable energy sector**

The Scottish Affairs Committee published a [report on the renewable energy sector in Scotland](#), following its inquiry into the impacts of recent policy changes. The inquiry found that a supportive policy framework led to significant growth of the sector in Scotland. An estimated 21,000 people are currently employed in the sector, which produces almost 30% of the UK's renewable electricity. However, recent changes in UK Government policy have created uncertainty that could threaten the industry's prospects for further growth. The Committee criticised the implementation of policy changes aimed at avoiding overspend of the Levy Control Framework as '*ad hoc*' and lacking in transparency, leading to investment uncertainty. It found the removal of subsidies for onshore wind to be in conflict with the Government's expressed desire to reduce the costs of renewable energy, given that wind is currently the cheapest form of renewable energy in the UK. It recommended that the government review this decision and clarify whether onshore wind will be eligible for funding in future rounds of Contracts for Difference or other 'market stabilisation' mechanisms.

The Committee called on the Government to respond to the [Fifth Carbon Budget](#) by setting out a long-term strategy for the future of Great Britain's electricity supply. This should clarify support for renewables as well as the roles of CCS, energy storage and demand side management. It noted in particular that changes in policy risk impeding Scotland's efforts to produce the equivalent of 100% of its demand from renewables by 2020. It recommended that the Government establish a clear process for consulting with the Scottish Government on the design of energy policy.

### **Economic Affairs Committee and economics of UK energy policy**

The Economic Affairs Committee launched an investigation into the [economics of UK energy policy](#). The inquiry seeks to investigate whether current policy is delivering the best deal for energy users and whether it is striking the correct balance between private and public sector involvement. Submissions to the enquiry will close on 30 September 2016.

### **UK to miss renewable energy targets, despite record generation in 2015**

The UK Government's annual [Digest of UK Energy Statistics](#) was released, revealing a record of 46% of electricity generated by renewables in 2015. Installed solar and wind capacity grew between 2014-2015, however high wind speeds and increased rainfall also allowed for greater generation from renewables. Nuclear power's contribution rose slightly from 19% in 2014 to 21%. Coal supplied just 22% of power in 2015, down from 30% in 2014. Gas continued to provide around 30% of supply.

Despite this recent progress, National Grid's [Future Energy Scenarios](#) report predicted that the UK will not achieve its target of 15% of total energy demand from renewables until at least 2022, even under the most ambitious 'Gone Green' scenario. The electricity sector is expected to be able to make its required contribution to the 2020 target, but progress required in the heat and transport sector is beyond what can be achieved on time. A spokesman for National Grid told [BBC News](#) that the 2050 target is still achievable, but requires a change of trajectory.

### **UK solar industry reports 32% job cuts**

A [study by PWC for the UK Solar Trade Association](#) reported that a third of jobs have been lost in the sector in the past year, with more expected in the next 12 months. The STA pointed to a lack of government industrial strategy as a cause for downturn in the sector. It called for tax breaks to secure a greater stake in 'booming' international solar markets.

### **CCS cuts to cost UK £30bn**

The National Audit Office (NAO) found that the Government's decision to cancel the £1bn Carbon Capture and Storage (CCS) Commercialisation Competition will add £30bn to the cost of meeting the UK's climate targets. Projects in Yorkshire and Aberdeenshire were awarded multi-billion pound contracts in the first phase of the competition to develop CCS projects for commercialisation. However funding for the competition was withdrawn in November 2015. The NAO briefing [Sustainability in the Spending Review](#), assessed how the government arrived at the decision as well as the impacts the decision may have on the UK's decarbonisation targets. It found that the decision will delay development of CCS in the UK by a decade, adding to the cost of decarbonising the economy. In June the [Committee on Climate Change warned](#) that current policies are not sufficient to meet the requirements of the UK's fifth carbon budget. It cited support for CCS as a key element of strengthened climate policies necessary to achieve the UK's climate commitments. The NAO is currently reviewing DECC's management of the CCS Commercialisation Competition prior to its cancellation. Findings will be released in Autumn 2016.

Scotland's North Sea area hosts the largest and best understood CO<sub>2</sub> capacity in Europe, with over 50bn tonnes of capacity. [Analysis published by Scottish Carbon Capture & Storage](#) (SCCS) showed how re-using existing natural gas pipelines, which pass close to centres of industrial activity, could

reduce the cost of transporting captured carbon dioxide (CO<sub>2</sub>) to geological storage sites already identified offshore.

### **No fossil fuels or nuclear required in Scotland beyond 2030: WWF**

Conservation group WWF published a [study into Scotland's low carbon energy policy](#). The study, undertaken by energy consultancy DNV GL, sought to assess whether the Scottish Government's currently policies are 'fit for purpose' in decarbonising Scotland's power sector by 2030. It also examined whether a future power system based almost exclusively on proven renewable technologies is possible. It found that Scotland's current policies, as stated in the Electricity Policy Generation Policy Statement (EGPS) 2013, are high-risk, depending on the assumption that CCS will be operating at scale within the next decade. WWF argued that a secure, decarbonised power sector can be achieved by 2030 with only renewables and minimal CCS-fitted gas power. The current investment pipeline, it claimed, is more than adequate to meet decarbonisation target and allow for significant exports to the rest of Great Britain. This transition would require moderate efforts to reduce demand for electricity and ongoing efforts to reinforce the power grid. The group argued that Scotland does not need any fossil fuel power stations by 2030 and should therefore not consent new plants as 'CCS ready'. It also found that Scottish Government does not need to grant life extensions to power plants into the 2030s and called on the UK Government to end incentives for coal. Scottish Government is currently developing an overarching [energy strategy for Scotland](#), which will set out an integrated approach to decarbonisation of the energy system by 2050.

## **Climate Impacts and Adaptation**

### **UK Climate Change Risk Assessment**

The Committee on Climate Change (CCC) issued its second [Climate Change Risk Assessment Evidence Report](#). The report provides a scientific assessment of climate change risks and opportunities for the UK. It will inform the Government's second Climate Change Risk Assessment, which is due to be presented to Parliament in January 2017. The Committee's review assessed nearly 60 individual risks and opportunities. Addressing the top risks, it found, will require urgent additional, co-ordinated steps to be taken within the next five years if we are to adapt our society and our economy. Failing to take this action will substantially increase the cost of dealing with the impacts when they arise. The report provides a specific [summary for Scotland](#). ClimateXChange [published a summary](#) of the Evidence Report with a focus on findings relevant to Scotland.

### **Scottish Government flood protection strategy**

Scottish Government [announced a plan](#) to provide £42 million a year to protect homes in Scotland's most flood-prone communities. The funding will be used to deliver 40 new flood protection projects and support local flood risk management plans. More than 130 flood protection studies will be carried out to help find potential solutions for another 26,000 residential properties currently at risk. The plan is the result of grant funding totaling £420 million following an agreement reached between the Scottish Government and COSLA. It will be delivered over ten years.

The Local Government Information Unit (LGIU) [published online case studies](#) that explore the impacts of the December 2015 floods in England. The case studies highlight what worked and what needs improvement in England, with lessons relevant to Scotland.

**Globally average temperature 1.3°C higher than pre-industrial times in first half of 2016**

June was the [14<sup>th</sup> straight month of record heat globally](#), according to the World Meteorological Organisation. [Data from NASA](#) revealed that the first six months of 2016 were around 1.3°C warmer than pre-industrial times. Warming was particularly strong in the Arctic, leading to the lowest extent of Arctic sea ice for any half year since records began in 1979. High temperatures over the past six months were attributed partly to the El Niño phenomenon, which was diminishing in July. This is expected to lead to lower temperatures in 2017. However, the Director of NASA's Goddard Institute stressed that the underlying trends of climate change were the cause of the record temperatures.