

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

### August and September 2017

**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

#### 1.5°C warming limit not yet an impossibility

In a paper published in [Nature Geoscience](#), researchers estimated the remaining carbon budget for 1.5°C as equivalent to around 20 years at current emissions rates (for a 2- in 3 chance of restricting end-of-century warming to below 1.5°C). This suggests some 'breathing space' to achieve the 1.5° limit, although it remains a very difficult policy challenge.

Some media outlets misrepresented the paper's findings, stating climate models had overestimated temperature, and that 'alarmist scientists' were admitting they were wrong. The authors published a response in a [guest post](#) on Carbon Brief.

#### IEA underreports role of wind and solar in energy mix

According to Erik Sauar in the [Energy Post](#), the International Energy Agency's (IEA) statistics underreport the role of wind and solar in the world's energy mix by a factor of three, compared to fossil fuels. In practice the primary supply of solar and wind energy is underreported with factors 3-4 both today and in all the scenarios for the future.

#### EU to aim for 100% emission cuts

According to [EURACTIV](#), the European Commission is preparing an update of its low-carbon economy roadmap for 2050, acknowledging that the bloc's current target of cutting greenhouse gas emissions by at least 80% by mid-century is insufficient.

#### EU electric car quota

Media sources claim that the European Commission is considering implementing an [electric car quota](#) to be achieved by carmakers by 2030. France, the Netherlands and Britain plan diesel/petrol bans by 2040. Commission officials have publicly denied the claims.

#### Battery technology

Dr Billy Wu, Imperial College London, has [spoken to the BBC](#) about the future of battery technology, as countries race to be at the forefront of this technology with rising uptake of electric vehicles.

The UK Business Secretary has [announced](#) plans for pioneering research into the next generation of battery technology. The flagship Faraday Battery Institute will bring together the best minds from

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seven partner universities and industry to make the UK a global leader in battery research and technology.

### **Solar-thermal for low-carbon heating**

Well-established solar heat technologies could be playing a key role in creating a sustainable future energy system and meeting an increasing global demand for energy, [according to the Grantham Institute](#). The “Solar-thermal and hybrid photovoltaic-thermal systems for renewable heating” briefing paper looks at the continuing potential of this technology and what stands in the way.

### **Solar panel capacity to overtake nuclear energy**

Solar panel capacity is set to overtake nuclear worldwide for the first time within the next few months. The total capacity of nuclear power is currently about 391.5 gigawatts but the total capacity of photovoltaic cells is expected to hit 390 gigawatts by the end of this year with demand growing at up to eight per cent per year, [according to GTM Research](#).

### **Sri Lanka on path to 100% renewable energy**

Sri Lanka can meet its current and future electricity demand by judicious use of renewable energy by 2050, according to a joint study by the UN Development Programme (UNDP) and Asian Development Bank (ADB).

The report, [titled Assessment of Sri Lanka’s Power Sector—100 percent Electricity Generation through Renewable Energy by 2050](#), notes that by 2050, the country’s installed electricity generation capacity needs will increase from the current 3,700 megawatts (MW) to about 34,000 MW. Of this, 15,000 MW will be wind energy and about 16,000 MW will be solar energy.

### **Catalonia climate law**

The parliament of Catalonia has just [passed](#) the ‘Climate Change Bill’, to strengthen the region’s efforts in tackling climate change. The law aims to create a tax for large vessels and business activities that generate emissions. Catalonia has an ambitious plan to reduce its emissions by 40% by 2030, based on 2005 levels. The new law aims to reduce emissions by 65% by 2040, and 100% by 2050.

### **America and Syria now the only countries outside the Paris Agreement**

Nicaragua has [announced](#) that it will sign the Paris Agreement which leaves the US and Syria the only countries not participating in the global accord.

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## UK Climate and Energy Research and Policy

### Extreme weather to cost UK billions

A new [report](#), produced for WWF by Aecom Infrastructure and Environment and Cambridge Econometrics warned the cost of extreme weather events will soar if the UK Government fails to plan ahead. Floods in 2013/14 were estimated to have caused £1.3bn worth of damage. But the report states a similar flood in 2050 would be much worse, costing some £2.2bn, if the population keeps growing, climate continues to change, and not enough is done to adapt to the new weather conditions.

### What's required from the Clean Growth Plan

In their [autumn newsletter](#), the UK Committee on Climate Change (CCC) reissued their advice that the Clean Growth Plan should: address the current gap between existing policies and the UK's agreed emission reduction targets; deliver additional low-carbon electricity generation through the 2020s; include actions to accelerate the uptake of electric vehicles; provide a path for improving energy efficiency and uptake of low-carbon heating in UK buildings; and set out a strategy for deploying carbon capture and storage (CCS) technology.

Jim Elliott has [written](#) in the Green Alliance blog that, although at first glance it looks like UK action on climate change is going well, more ambition is needed to: avoid a policy gap which could cause the UK to miss its 2025 carbon target; boost the growth of electric vehicles; improve progress with energy efficiency; boost investment in renewables; seize the opportunities in an ambitious Clean Growth Plan; and get good policy that works.

### Independent review on the cost of energy

An [independent review](#) into the cost of energy led by Professor Dieter Helm CBE will recommend ways to keep energy prices as low as possible as part of the Industrial Strategy. Helm will look specifically at how the energy industry, government and regulators can keep the cost of electricity as low as possible, while ensuring the UK meets its domestic and international climate targets. The report is due at the end of October 2017.

### Unlocking Britain's first fuel: the potential for energy savings in UK housing

Energy efficiency in homes can play a key role in delivering energy affordability, sustainability and security according to a new [UKERC report](#). It states that significant investment from both the public and private sector is required to realise the benefits of improved energy efficiency, but needs policy support.

### Britain's switch to low-carbon energy could boost economy by £21 billion

An article in [The Conversation](#) discusses analysis on [how new markets are created and destroyed within UK energy system scenarios](#). The research shows that in new markets electricity utilities could

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access up to £21 billion per year of new value by 2050; worth up to 30% of the total energy market that year.

### **Supergen bioenergy hub consultation**

RCUK plans to invest £5M in a multi-disciplinary Supergen Bioenergy Hub to act as a focal point for UK bioenergy research. The Hub will connect academia with industrial and policy stakeholders to focus on sustainable bioenergy development. Prof. Patricia Thornley from The University of Manchester has been appointed to lead the Hub and is currently carrying out a [consultation](#) to establish the research priorities that the new hub will address from 2018-2023 and to identify appropriate research partners and stakeholders.

### **Electric vehicles: developing the market and infrastructure inquiry**

The Business, Energy and Industrial Strategy (BEIS) Committee will be [calling witnesses](#) to provide oral evidence based on the written submission received by the former BEIS Committee for its curtailed inquiry, [Electric Vehicles: Developing the Market](#). The Committee is also inviting additional submissions on how increased uptake of electric vehicles will affect the grid, charging infrastructure requirements for different vehicle types, and how new infrastructure and grid reinforcements could be sustainably funded.

### **Plans announced for new 'observatory for the underground'**

The British Geological Survey (BGS) has [announced](#) the location for a new 'observatory for the underground' that will provide important research evidence on natural resources for heat and energy. A site at the Ince Marshes area of North Cheshire will become the Cheshire Energy Research Field site, part of a £31M science investment. The UK Geoenery Observatory will gather information from this site, and a second site in Glasgow, to underpin the development of energy technologies, and how the underground environment is understood.

### **Summer 2017 greenest ever for energy**

National Grid has [announced](#) that the electricity powering the UK's home and businesses this summer was the greenest ever. The record came as the first subsidy-free large scale solar power project opened in the UK. Analysis by National Grid showed that a combination of solar, wind and nuclear – and an absence of coal – pushed carbon emissions to their lowest level yet over the season.

### **Reducing emissions in Scotland – 2017 progress report**

The Committee on Climate Change has released its [sixth report](#) on Scotland's progress towards meeting emission reduction targets. The report also assesses the Scottish Government's draft Climate Change Plan, and its proposal to move to a 90% emissions reduction target by 2050. The key findings of the report are: Scotland met its emissions target in 2015; more effort is needed to reduce

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emissions from sectors of the economy beyond electricity generation; the balance of effort in the draft Climate Change Plan between transport and buildings is unrealistic; and, the draft Climate Change Plan contains limited new policy.

### **Scotland's 2017/18 Programme for Government**

The 2017/18 Programme for Government (PfG) has been welcomed by some NGOs as the greenest ever. It includes a commitment to phase out the need for new petrol and diesel cars by 2032, creating a Low Emission Zone (LEZ) by the end of 2018, one in each of Scotland's four biggest cities by 2020, and to All Quality Management Areas by 2023. Funding for the CCS ACORN project feasibility study, new energy efficiency standards for the private rented sector, and a deposit return scheme were also announced. In addition there was a commitment to double funding for active travel, and to accelerate work on Scotland's Energy Efficiency Programme (SEEP). Environmental leaders, including head of UN Environment Erik Solheim welcomed the 'great leadership and commitment' shown by the announcements.

The PfG also stated that the Government's view on unconventional oil and gas extraction would be released in coming weeks. Some media outlets have begun predicting that the Government will replace the current moratorium on fracking with a permanent ban.

### **Windfarm could boost Scottish economy by £827 million**

A [report](#) by Fraser of Allander Institute at the University of Strathclyde states the £2 billion Neart na Gaoithe windfarm on the Fife coast will create 2,000 jobs over its four-year construction period, and could be Scotland's next major infrastructure project after the Queensferry Crossing.

### **Wales to set new renewables target**

The Welsh Government has [said](#) that Wales should generate 70% of its electricity from renewable sources by 2030. The Environment Secretary Lesley Griffiths called the new target 'stretching but realistic'. The current figure for electricity from renewables is 32%.

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

### **Climate change is a triple risk for Europe**

Researchers have issued [three separate climate warnings](#) to the citizens of Europe on the same day, in three different journals. One group warns that [heatwave temperatures could reach an intolerable 55°C](#) in many parts of the globe, if emissions continue unabated. A second study warns that by 2100 weather-related disasters – floods, heatwaves, droughts, wildfires and windstorms – could claim a 50-fold increase in fatalities, and [expose 350 million Europeans to harmful climate extremes every year](#). A third study points out that [climate change is already at work](#): the spring floods in Western Europe now arrive up to 15 days earlier than they did in 1960.

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### **World on course for one of the warmest years on record**

The world is on course for one of the [warmest years on record even without a natural El Nino boost](#). When an iceberg separated from the Larsen C ice shelf in July, the month was a statistical tie with July 2016 for the warmest July on record in 137 years, according to NASA.

### **World's soils have lost 133bn tonnes of carbon**

[New research](#) is showing that the world's soils have lost a total of 133bn tonnes of carbon since humans first started farming the land around 12,000 years ago. And the rate of carbon loss has increased dramatically since the start of the industrial revolution. The study, which maps where soil carbon has been lost and gained since 10,000 BC, shows that crop production and cattle grazing have contributed almost equally to global losses.

### **Scotland dynamic coast webmap**

[Dynamic Coast](#) is an interactive webmap showing the position of the shoreline in Scotland in the 1890s, 1970s and the current state. It is designed to be used to inform statutory advice on planning, flood risk and heritage management, and supports the Scottish Climate Change Adaptation Programme. It also aims to increase public awareness and encourage those living and working in coastal areas to find out more about coastal management and adaptation to change.