

Can the goals set out in the Paris Agreement on the response to climate change be delivered?

Date and Location:	16th January 2019 at The Royal Society
Chair:	The Earl of Selborne GBE FRS Vice President, The Foundation for Science and Technology
Speakers:	Nick Bridge The Foreign Secretary's Special Representative for Climate Change, Foreign and Commonwealth Office Professor Ye Qi ¹ Institute of Public Policy, Hong Kong University of Science and Technology Baroness Worthington Executive Director Europe, Environmental Defense Fund Europe
Respondents:	Emma Howard Boyd Chair, Environment Agency Professor Nick Robins Professor in Practice for Sustainable Finance, Grantham Research Institute on Climate Change and the Environment, London School of Economics
Sponsors:	Building Research Establishment, High Value Manufacturing Catapult Centre and Willis Towers Watson
Presentations and Audio:	www.foundation.org.uk
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¹ In China this would be written Professor Qi Ye

NICK BRIDGE welcomed the range of expertise participating in the meeting. He said that although the IPCC was strongly encouraging a trajectory to limit global warming to 1.5 degrees C, the world currently remained on a course for 3-4 degrees C. Given the extreme weather effects already being experienced around the world with current levels of global warming, the more severe impact of 3-4 degree C warming could not be fully predicted. To meet the IPCC recommended trajectory, global emissions needed to peak in two years, and there would need to be enormous investment in sustainability over the next 12 years, and thereafter. China was providing half the

growth in current emissions, but was also making large investments in renewables. The UK had succeeded in removing coal from its energy use, but overall its clean energy strategy was only 60% on track. The UK had one of the best climate change strategies, but currently a review of our long term target by 2050 was required. The UK was also being innovative with its clean green Industrial Strategy and with initiatives on clean vehicles.

Great progress had been made to secure the 2015 Paris Agreement, but the latest COP meeting had only just kept the main countries together. There would be a really challenging period up to COP 2020, alongside the review of the Sustainable Development Goals, given

changed stances in the US, Russia and Brazil. China and India had made fantastic commitments, including India's recently increased commitment to green power generation, but they were also both still investing in coal. Alignment of reality with commitments was also challenging in many other countries, including Japan, Korea, Canada, South Africa, elsewhere in Africa and Australia. One upside since 2015 was that it now appeared that the economics of many low carbon technologies had improved, although the scale of investment required remained enormous. This would involve an unprecedented shift in investment across the whole of society. It was coupled with climate change not being treated as a single issue, but coupled with health, air quality and clean water as necessary for our global future.

PROFESSOR YE QI said that, since the rise in global temperatures was quite unlikely to be limited to 2 degrees C, his presentation would focus on the realism of achieving that target, rather than the more ambitious 1.5 degrees C. For 2 degrees C to be achieved, global emissions would need to peak by 2020, decline by about a quarter by 2030 and reach net zero by around 2070. Although global carbon dioxide emissions had been level between 2014 and 2017, including those for China, atmospheric carbon dioxide was at a record high, was growing at an alarming rate, and showed no sign of slowing down. There remained a large gap between targets and reality. The conditional Nationally Determined Contributions (NDCs) would produce 3 degree C warming. Fossil emissions grew globally by 2.7% in 2018, with China up 4.7%, the US up 2.5%, and India up 6.3%. Most of the G20 countries were not yet on track to meet their Paris commitments, and these were relatively weak. David Victor's Nature paper in 2017¹ had said that no major industrialised country was on track.

The Trump Administration was threatening to withdraw the US from the Paris Agreement, and they had removed 78 environmental protection rules. The climate change debate there was becoming more polarised. China's performance had been pretty good, but there carbon pricing had been expected to have had a big impact, and the price was currently low. China thought it could meet its Paris commitments and loosen its air quality standards. The NDRC and Ministry of Finance had terminated any approvals for new subsidised utility scale PV power stations last year, and the NRDC had just said that wind and solar should be subsidy free by the end of 2020. The new Brazilian

government had withdrawn from hosting COP 25, and was threatening to withdraw from Paris.

Global economic growth had slowed down, and fiscal policy reforms to promote low carbon investments were facing political resistance. The flexibility of the approach to Paris faced unravelling, with it proving difficult to impose cost increases on well organised groups. With implementation of Paris facing multiple challenges, it was time to ask why the UN led climate change process was not working as well as had been hoped.

On the positive side, 195 countries had made commitments in Paris, and technological innovation and deployment had progressed. There was, pretty much, a consensus on the science of climate change. Chinese energy intensity had decreased at 5% per annum for 40 years, and there had been exponential growth in low carbon electricity. What had worked less well was that targets were not being met, finance was not available on the scale needed, and the carbon market had not met expectations. It had taken a long time, through Kyoto and Copenhagen, to reach agreement in Paris. Rethinking was now needed. Businesses needed to lead more than Governments, the UN process had become too detailed and the UN should play a lesser role. The process of 200 parties seeking to solve the technicalities top down was not appropriate. The models of the IPCC needed retuning, with more realism. Only a reduction in consumerism and a future based on eco civilisation would be sufficient.

BARONESS WORTHINGTON said that she had campaigned to secure the passage of the UK Climate Change Act 2008, and was now the Executive Director Europe for the US charity Environmental Defense Fund. She thought the multilateral achievement in Paris in 2015 would endure. It had been helpful that President Trump had only made his announcement about a US intention to withdraw the day after he would have been able to secure that withdrawal before the next US Presidential election. This negative development had galvanised other countries to proceed more positively. Although the UN process did at times get too drawn into detail, it had had the positive benefit of changing sentiment, not least amongst power companies.

Although she was positive about Paris continuing, she was gloomier about whether it would deliver on its objectives. It would be necessary to balance sources and to enhance sinks. Progress was needed on a wider front than renewables. The UN needed to embrace plurality. The bottom up approach of Paris was always tricky to

¹ Nature 548, 25–27 (03 August 2017)

achieve sufficient progress overall. Increased ambition was needed across the EU, as she acknowledged that the process was currently heading towards a 3 degree C increase. Future world negotiations needed to include Finance, Energy and Transport Ministers more than Environmental Ministers. They also needed to cover the key sectors currently outside Paris, aviation and shipping. It was interesting that in 2018 the shipping sector had agreed to halve its emissions between 2008 and 2050, but what would it take to produce a zero emissions vessel by 2030? The aviation sector had started to produce common metrics on emissions, but more voluntary commitments were needed, and more effective action than offsetting emissions. Technology provided some grounds for optimism, especially the launch of a satellite to monitor global methane emissions. Overall, we all needed to be more active citizens.

EMMA HOWARD BOYD said that the latest World Economic Forum report, published that day, had suggested that three of the top five global risks related to climate. From her perspective chairing the Environment Agency, efforts on adaptation needed to be reinforced. Great investments were needed to secure a prosperous future, but there would be no point in making investments in energy efficiency if they would be washed away in a flood. New investments needed to be coherent. She was the UK's representation on the Global Commission on Adaptation. There was a massive task in framing climate action investment plans. The capital plans of the Environment Agency, totalling some £15 billion, were on a different scale to the trillions of pounds under investment management. The LSE Grantham Institute had been doing useful work on the latter. Many of the tools for economies to transition to low carbon were now in place, but substantial action was still needed.

PROFESSOR NICK ROBINS discussed how financial flows could be consistent with the other objectives of the Paris Agreement. Currently there were some £32 trillion of investor assets. The citizen savers of the world could require their savings to be aligned with Paris. There would have to be a just transition for citizens, including yellow vest protestors, involving a tightening of current targets. The financial crisis of 2008 had almost killed carbon markets. The current financial uncertainties threatened more protectionism, just at a time when global emissions needed to peak, and a second phase green stimulus was required.

DISCUSSION

The subsequent discussion started with attention being drawn to the role which cities could contribute to tackling climate change, particularly if they were given freedom to take action. The UK100 was a fantastic initiative from local government leaders to promote an effective transition to clean energy.

Although the meeting had heard many statistics about the impact of global warming, there was a human cost too, which was extremely significant. The citizens' voice needed to be heard louder to overcome this human suffering. Progress was frustratingly slow for reasons linked with politics, including that the time horizons of many politicians were too short, and large incumbent companies had a hundred year legacy of profiting from fossil fuels. £200 billion a year need to be spent on climate related investment to achieve the necessary change.

In the UK, although the Government had put climate change at the heart of its Industrial Strategy, and some Government departments were highly supportive, others departments took it less seriously. The current UK statutory framework would not be met without more detailed policies on home warming, housing, land use and transport. The latest air quality strategy had been somewhat watered down. Although these shortcomings existed, the UK had a stronger legislative base to promote effective action on climate change than most countries, and the Prime Minister had launched a 25 year Environment Plan, and had gone to the UN to speak about leading climate action after Hurricane Irma.

The question was asked how, if the UK left the EU, it would be able to act effectively on climate change when so much of its effort had been bound up in European initiatives. It was felt that climate would remain a defining issue across Europe. Internationally, the International Maritime Organisation had started to take action on shipping.

In some countries nuclear power would play a major role in reducing emissions. For Japan a 20% reduction should be possible from nuclear power, once many of its nuclear reactors had been restarted. This was an intense period of collaboration between the UK and Japan on nuclear power. The UK now did not generate electricity from coal, although 40% of Germany's came from coal. For the UK investments in other renewable sources now appeared more economic. It was important that the market chose successful renewable technologies which were economic; technology choices in this area should not be made by civil servants

or politicians. Countries like Japan used nuclear power as contributing to their energy security. They were also investing to protect their nuclear power stations from future tsunamis by constructing high sea walls.

The decision of the Japanese Prime Minister to put climate change at the centre of their G20 Presidency in June was welcome. The G20 covered 80% of the world's GDP. It was easier to invest in climate change in periods of economic growth, and establishing a positive cycle for economic growth and environmental protection would be challenging at the G20.

The energy of young people to promote climate relate investment needed to be capitalised on. The action of 15 year old Greta Thunberg in Sweden had made a big impact. The Environment Agency was promoting flood awareness amongst 18-24 year olds partly for that reason, and also because more of this group lived in flood risk areas. Although a fire disaster had led to improved building regulation standards, parallel regulatory action on flood prevention seemed to be missing.

Some young people were making choices about foods they ate based on their carbon footprint, and even in primary schools there was awareness of carbon miles in lunch boxes. Others were refusing to learn how to drive a car. Whilst some favoured vegan products, others pointed out that vegan foods such as soya and palm oil could be transported long distances. Likewise, although many favoured planting more trees, there were differing views about which species had the most beneficial carbon impact overall, and the proper management of soil and forests was also important. Perhaps those who used trees should pay for the carbon impact this created.

Climate resilience was extremely important. If 2 degrees C was missed some tropical areas would become unbearably hot in summer. The UK would be playing a leading role on resilience in the UN climate summit. Carbon capture could contribute to decarbonisation. Spending on transport infrastructure was substantial, so this infrastructure needed to be clean and resilient. Most insurance did not cover climate impacts, and large sections of California were becoming uninsurable for fire risk.

How could people in the UK and elsewhere change minds in the US about the importance of climate change? Behavioural changes at individual level

could be significant in their impact, even through backing campaigns such as the green heart. Media programmes such as by David Attenborough could stimulate substantial interest from individuals in this agenda; opportunities to build on this should be seized.

The Royal Academy of Engineering had developed a sustainability rating system for infrastructure. It was important to be more holistic than using carbon reduction calculations in isolation.

The UK car production was making important advances, with its Catapult trying to facilitate 50% of car production being all electric by 2030. The Faraday battery challenge was being passed down supply chains.

One substantial bank had stopped participating in any financing of coal fired power stations in 2018. There had also been much financing of photovoltaic technology, although there did not seem to be a level playing field in this between China and the US. It was asked whether the time had come to give up the promotion of carbon markets, given their limited impact to date. Others suggested that they did have a useful contribution to make, although it was not sufficient on its own. The financial sector was moving forward on funding resilience, and this was on the international political agenda, with development banks needing to do much more. Another suggestion was that banks could provide more leadership by requiring those taking up mortgages to upgrade the energy efficiency of the properties they were buying.

Some were surprised that the UN aviation initiative involving offsets had been mentioned positively. There were still high growth projections for that sector. On the other hand this initiative did seem better than nothing. This was one of only two industrial sectors with a specific global voluntary deal.

This had been a very well informed discussion of whether the Paris Agreement could be delivered. Overall there was significant concern about progress, and technological advance rather than Governmental action was likely to be the most decisive factor.

In conclusion, tribute was paid to Dougal Goodman, as this was his 290th and final meeting as Chief Executive of the Foundation.

John Neilson

Useful Reading:

The Paris Agreement on climate change

https://unfoundation.org/blog/post/paris-climate-agreement-101-no-jargon-just-facts/?gclid=EAIaIQobChMInZyQ2K-l3wIV7ZztCh2YSwpiEAAYASAAEgJES_D_BwE

The Special Report on the impacts from a 1.5 degree centigrade increase in temperature above pre-industrial levels

www.ipcc.ch/sr15

COP24 Conference in Katowice, Poland

www.cop24.katowice.eu

World Economic Forum

<https://toplink.weforum.org/knowledge/insight/a1Gb000000LHVfEAO/explore/summary>

The Climate Change Committee independent assessment of the UK clean growth strategy

www.theccc.org.uk/publication/independent-assessment-uks-clean-growth-strategy-ambition-action/

UKRI

UK Research and Innovation

www.ukri.org

Arts and Humanities Research Council, UKRI

www.ahrc.ukri.org

Biotechnology and Biological Sciences Research Council, UKRI

www.bbsrc.ukri.org

Economic and Social Research Council, UKRI

www.esrc.ukri.org

Engineering and Physical Sciences Research Council, UKRI

www.epsrc.ukri.org

Innovate UK, UKRI

www.gov.uk/government/organisations/innovate-uk

Medical Research Council, UKRI

www.mrc.ukri.org

Natural Environment Research Council, UKRI

www.nerc.ukri.org

Research England, UKRI

www.re.ukri.org

Science and Technology Facilities Council, UKRI

www.stfc.ukri.org

Companies, Research Organisations and Academies:

Airbus

www.airbus.com

Association of Innovation, Research and Technology Organisations (AIRTO)

www.airto.co.uk

Association of the British Pharmaceutical Industry

www.abpi.org.uk

AstraZeneca

www.astrazeneca.co.uk

BAE Systems

www.baesystems.com

British Academy
www.britac.ac.uk

BRE Group
www.bre.co.uk

Business, Energy and Industrial Strategy Select Committee
<https://www.parliament.uk/business/committees/committees-a-z/commons-select/business-energy-industrial-strategy/>

Carbon Trust
www.carbontrust.co.uk

Catapult Programme
www.catapult.org.uk

Committee on Climate Change
www.theccc.org.uk

Department for Business, Energy and Industrial Strategy
www.gov.uk/government/organisations/department-for-business-energy-and-industrial-strategy

Department for Business, Energy and Industrial Strategy
www.gov.uk/government/organisations/department-for-business-energy-and-industrial-strategy Department for Education
www.gov.uk/government/organisations/department-for-education

Department for Transport
<https://www.gov.uk/government/organisations/department-for-transport>

Environmental Defense Fund Europe
www.edf.org/offices/europe

Government Office for Science
www.gov.uk/government/organisations/government-office-for-science

Grantham Research Institute on Climate Change and the Environment, LSE
www.lse.ac.uk/GranthamInstitute/

Grantham Institute on Climate Change and the Environment, Imperial College London
www.imperial.ac.uk/grantham/

Hong Kong University of Science and Technology
www.ust.hk

The Institution of Engineering and Technology IET
www.theiet.org

Knowledge Transfer Network
www.ktn-uk.co.uk

Learned Society of Wales
www.learnedsociety.wales

Lloyd's of London
www.lloyds.com

Lloyd's Register Foundation
www.lrfoundation.org.uk

Ministry of Housing, Communities and Local Government
www.gov.uk/government/organisations/ministry-of-housing-communities-and-local-government

NESTA
www.nesta.org.uk

Office for National Statistics
www.ons.gov.uk

Rolls-Royce
www.rolls-royce.com

Royal Academy of Engineering
www.raeng.org.uk

The Royal Society
www.royalsociety.org

The Royal Society of Biology
www.rsb.org.uk

The Royal Society of Chemistry
www.rsc.org

The Royal Society of Edinburgh
www.rse.org.uk

Society of Maritime Industries
www.maritimeindustries.org

The Alan Turing Institute
www.turing.ac.uk

UK Statistics Authority
www.statisticsauthority.gov.uk

Wellcome Trust
www.wellcome.ac.uk

Willis Towers Watson
www.willistowerswatson.com

Universities:

University of Cambridge
www.cam.ac.uk

University of Edinburgh
www.ed.ac.uk

University of Glasgow
www.gla.ac.uk

Imperial College London
www.imperial.ac.uk

University of Oxford
www.ox.ac.uk

University College London
www.ucl.ac.uk

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www.universitiesuk.ac.uk