



The Science Council Climate Conference

The UK Pathway to Net-Zero

Thursday 29th September 2022

Summary

The UK is recognised as a world leader in reducing carbon emissions with significant investment in renewable electricity supply in recent years. However, there remains a long way to go to meet the net-zero targets the Government whether this be domestic energy usage, transport and infrastructure or agriculture.

The UK science and engineering community has an important role to play in developing new solutions and providing expert advice. This conference aims to bring together organisations from across this community, including many Science Council member bodies, to gain a greater understanding of our collective expertise and help identify opportunities for future collaboration.

Item	Timing	Details	Location
Registration	9:00 – 9:30		Lobby
Welcome	9:30 – 9:40	Tom Grinyer (IoP) Professor Carole Mundell (Science Council)	Main Theatre
Plenary Panel 1 - The UK's Net-Zero Challenge	9:40 – 10:50	Chair - Helen Gordon (Science Council) Professor Sir Peter Bruce (Royal Society) Chris Stark (Climate Change Committee) Rachel Skinner CBE (WSP)	Main Theatre
Break	10:50 – 11:10		Atrium
Breakout Session 1	11:10 – 12:30	The role of scientific and professional bodies in tackling climate change	Main Theatre
		Shaping policy on nature, climate and pollution	Seminar Room 1
		Next generation climate models for net-zero and climate adaptation	Seminar Room 2
Lunch	12:30 – 13:30		Atrium
Keynote Address	13:30 – 14:00	Sir Patrick Vallance (GCSA)	Main Theatre
Breakout Session 2	14:00 – 15:20	Climate challenges and opportunities within the food system	Main Theatre
		Meeting energy supply and demand	Seminar Room 1
		The road to net-zero steel: exploring reality and responsibility	Seminar Room 2
Break	15:20 – 15:35		Atrium
Plenary Panel 2 - The role of the UK science and engineering community	15:35 – 16:50	Chair - Adam Donnan (Science Council/IES) Professor Liz Bentley (RMetS) Dr Nicola Eckersley-Waites (CBI) Dr Sarah Honour (BEIS) Professor Sir Duncan Wingham (NERC)	Main Theatre
Closing Remarks	16:50 – 16:55	Professor Carole Mundell (Science Council)	Main Theatre

Full Programme

Registration (9:00 – 9.30)

Welcome (9:30 – 9.40)

Opening Remarks from Carole Mundell and Tom Grinyer.

Professor Carole Mundell – President, Science Council



Professor Carole Mundell is a world-leading astrophysicist, science diplomat and vocal advocate for diversity in science and has been Science Council President since 2021.

She is the founding Head of Astrophysics at the University of Bath where she holds the Hiroko Sherwin Chair in Extragalactic Astronomy and is a Fellow of the Institute of Physics. She previously served as Head of Physics in Bath, during which time she was also UK chair of the Heads of Physics Forum at the Institute of Physics.

In 2018, Carole was seconded to government and became the first women Chief Scientific Adviser at the Foreign and Commonwealth Office and in 2021 served as Chief International Science Envoy at the Foreign, Commonwealth and Development Office.

Tom Grinyer – Group Chief Executive Officer, Institute of Physics



Tom joined Institute of Physics (IOP) in June 2022 as Group Chief Executive Officer.

Tom joined the IOP from the British Medical Association (BMA), where he was Group Chief Executive; during that time, he led the organisation through the Covid-19 pandemic and restructured the BMA with a particular emphasis on membership engagement and experience.

Prior to moving to the BMA, Tom led the Royal College of Anaesthetists, which grew substantially under his leadership, and before this was Executive Director of Strategy, Communications and Policy at the Royal College of Physicians, England's oldest medical royal college, where he was also interim Chief Executive and introduced the organisation's first ever strategy in its 500-year history.

Plenary 1 - The UK's net-zero challenge (9.40 – 10.50)

In this session a panel of experts will explore the challenges the UK faces over the coming decade in further reducing emissions across and sets the scene for the discussions through the rest of the conference.

Helen Gordon (Chair) – Chief Executive, Science Council



Helen Gordon has been the Chief Executive of the Science Council since 2019.

Originally training as a nurse at St Bartholomew's Hospital in London, she progressed through a number of clinical and managerial positions in hospitals in the National Health Service, before leading The Hillingdon Hospital and then Queen Mary's Sidcup NHS Trust in South East London. She then moved to national roles to support the development of health professionals. Between 2005 and 2018, Helen led the Royal College of Obstetricians and Gynaecologists, the Royal Pharmaceutical Society and the Royal Society of Medicine.

Helen is also President of the Council of the University of Reading and chair of the Alumni and Development Board at Henley Business School.

Professor Sir Peter Bruce FRS – Vice President and Physical Secretary, The Royal Society



Peter Bruce is Wolfson Professor of Materials at the University of Oxford. His research interests embrace materials chemistry and electrochemistry, with a particular emphasis on energy storage, especially lithium and sodium batteries.

As well as directing the UK Energy Storage Hub (SuperStore) and a consortium on lithium batteries, Peter is a founder and Chief Scientist of the Faraday Institution, the UK centre of research on electrochemical energy storage. In 2018 he was appointed as Physical Secretary to the Royal Society, where he has oversight of the Society's Net Zero work.

Rachel Skinner CBE FREng - Executive Director, WSP



Rachel Skinner CBE is an Executive Director at WSP, where she now leads on ESG and government relations, having previously led its transport business. In 2020-21, she served as the 156th President of the Institution of Civil Engineers and she is a Patron of Women in Transport (a not-for-profit), having been one of its founding board members since 2005.

She is a Fellow of the Royal Academy of Engineering, a chartered engineer and a chartered transport planner. Rachel chairs the

Carbon stream of the Infrastructure Client Group (ICG) and served two years as an Infrastructure Commissioner for Scotland from late 2018.

In 2016, Rachel was listed as one of The Telegraph's inaugural UK Top 50 Influential Women in Engineering; in 2017 she was named the Most Distinguished Winner and Best Woman Civil Engineer at the Women in Civil Engineering Awards, and in 2019 she was confirmed by the Financial Times as one of the UK's Top 100 Women in Engineering.

Chris Stark – Chief Executive, The Climate Change Committee



Chris Stark is Chief Executive of the Climate Change Committee, the UK's statutory climate advisers. Chris led the Committee's work to recommend a 'Net Zero' target for the UK, the world's first legislated Net Zero target. He has since directed the development of detailed pathways for the UK to reach carbon neutrality by 2050. In 2021, he presented the UK's third climate change risk assessment, with detailed analysis and advice on the extensive risks facing the UK from climate change.

Chris has held a number of senior roles in central government, including in HM Treasury and as Director for Energy and Climate Change in the Scottish Government. He is a regular commentator in national and international media and featured in David Attenborough's documentary, 'Climate change – the facts'. Chris regularly speaks publicly on the urgent need to confront climate change and the economic benefits of rapid cuts in greenhouse gas emissions.

Break (10:50 – 11:10)

Breakout Session 1 (11:10 – 12:30)

The breakout sessions have been organised by collaborating organisations including Science Council members and other partners from the across the science and engineering community. The Science Council has not determined the content of these sessions, as they instead present an opportunity to showcase the range of expertise across our membership and wider community.

Room	Session	Collaborating Organisations	Description
Main Theatre	The role of scientific and professional bodies in tackling climate change	British Association of Sport and Exercise Sciences Chartered Institution of Building Services Engineers Royal Society of Chemistry Society for Natural Sciences	Scientific institutions and professional bodies are working to address climate change at the international and national level. This session will look at three case studies of how these organisations are supporting the policy development and creating strategic approaches and implementation on the ground to climate change in their sectors and consider what lessons can be learned from these efforts.
Seminar Room 1	Shaping policy on nature, climate and pollution	Institution of Environmental Sciences The Physiological Society Royal Society of Biology	This panel discussion will explore integrated approaches to tackling linked global challenges. The expert panel of speakers will focus on biodiversity loss and climate change, discussing the challenges and possible solutions facing scientific and professional bodies in providing evidence and advice to policymakers, alongside those facing policy advisors and policymakers in synthesising and integrating evidence and expertise into policymaking processes.
Seminar Room 2	Next generation climate models for net-zero and climate adaptation	Royal Meteorological Society The Royal Society	This session explores how a step change increase in the capability of climate models can bring forward research capacity and understanding of important climate processes to further UK and global efforts to reach net-zero and adapt to the consequences of climate change. The session will be chaired by Professor Liz Bentley, Royal Meteorological Society, with contributions from climate and impacts researchers.

Lunch (12:30 – 13:30)

Keynote Address (13.30 – 14.00)

The keynote for the conference will be provided by Sir Patrick Vallance, the Government Chief Scientific Adviser, on the roles of academia, industry and government in achieving net-zero.

Sir Patrick Vallance FRS FMedSci FRCP – Government Chief Scientific Adviser (GCSA)



Sir Patrick Vallance is the UK Government Chief Scientific Adviser and National Technology Adviser. He is also Head of the Government Science and Engineering Profession. He is a Fellow of the Royal Society and of the Academy of Medical Sciences.

For many years Patrick was Professor of Medicine and led the Division of Medicine at UCL. He has extensive experience of basic and clinical research including in clinical pharmacology. His personal research was in the area of diseases of blood vessels and endothelial biology.

From 2006 to 2017 Patrick worked at GlaxoSmithKline where he became Global President of R&D and oversaw the discovery and development of multiple new medicines including the world's first approved cell and gene therapy product.

Breakout Session 2 (14:00 – 15:20)

The Breakout sessions have been organised by collaborating organisations including Science Council members and other partners from the across the science and engineering community. The Science Council has not determined the content of these sessions, as they instead present an opportunity to showcase the range of expertise across our membership and wider community.

Room	Session	Collaborating Organisations	Description
Main Theatre	Climate challenges and opportunities within the food system	British Society of Soil Science Institute of Food Science and Technology Institution of Environmental Sciences Royal Society of Biology	Climate mitigation and adaptation are fundamentally linked to the ways we consume and produce food. This session will explore some of the solutions and opportunities which arise as we look at food systems from interdisciplinary scientific perspectives, bringing expertise and insights on soil and agriculture; food production; food processing and manufacturing, including the potential for novel or technological solutions; and whole life cycle considerations, such as food waste and the circular economy.
Seminar Room 1	Meeting energy supply and demand	Institution of Chemical Engineers Institute of Physics The Nuclear Institute Royal Academy of Engineering	Meeting the UK's energy needs, balancing the supply and demand, is perhaps the most important single challenge in achieving net-zero. This session will have a series of experts talking about the scientific and engineering challenges and explore some of the emerging technologies which could make a difference.
Seminar Room 2	The road to net-zero steel: exploring reality and responsibility	The Geological Society Royal Society of Chemistry Institute of Materials, Minerals and Mining	Steel is fundamental to the functioning of society and is key in our journey to net-zero. However, with UK demand for steel growing rapidly we need to address its significant environmental footprint. This session will explore the steel lifecycle from raw material extraction and manufacturing to waste management and recovery.

Break (15:20 – 15:40)

Plenary 2 – The role of the UK science and engineering community (15:40 – 16:50)

The panel will explore the role that the UK science and engineering community can play in enabling the UK to meet its net-zero targets. The session will reflect on the discussions throughout the day, while also considering how professional bodies and institutions can work contribute and collaborate.

Adam Donnan (Chair) – Chair of Science Council / Chief Executive, Institution of Environmental Sciences (IES)



Adam has worked for the IES in various roles since 2006. In 2013 he was made the organisation's first CEO. Adam is the Chair of the Science Council. He also Chairs the Technical Pathways Programme Board, which oversees a project to engage the science community with technical education. Past roles include a secondment as Interim CEO of the Society for the Environment (2014-15), Vice President of the European Network of Environmental Professionals (ENEP) (2013-16), director of SiLC, and a non-Executive Director of Change Agents UK (2011-16). He was the 2014 Young Leader of the Year at the Association Awards UK.

Professor Liz Bentley – Chief Executive, Royal Meteorological Society



Liz is Chief Executive of the Royal Meteorological Society and a Professor of Meteorology at the University of Reading.

She began her career at the Met Office ultimately before becoming chief instructor at the Met Office college. In 2002 she became chief of the BBC Weather centre. She led the facility until 2006, when she joined the Ministry of Defence (MoD) where she oversaw environmental research. She imaged complex systems, including the ocean floor and outer space.

At the RMetS she established a public group known as The Weather Club, which looked to enhance public appreciation of weather-related phenomena. She created a regular magazine called The Weather to promote appreciation and understanding of the weather to people from all walks of life.

Dr Nicola Eckersley-Waites – Head of Innovation, CBI



Nicola is Head of Innovation at the CBI where, as part of the Innovation and Digital Directorate, she leads the CBI's programmes that aim to make the UK a great place to innovate. This includes leading government facing campaigns, as well as business activation projects, which support businesses to innovate, developing new or adopting existing solutions to business and societal challenges.

Prior to this she worked in international partnerships, science and innovation policy at the Royal Academy of Engineering and Association of the British Pharmaceutical Industry. She has a background in neuroscience research, completing her doctorate at the University of Oxford.

Dr Sarah Honour - Head of Climate Science, BEIS



Sarah has worked for the UK government for over 15 years on a range of science issues from air quality and ecosystem services through to using research and international partnerships to tackle global development challenges. She has represented the UK in a range of international science fora including the G7, Intergovernmental Panel on Climate Change (IPCC) and the UN Framework Convention on Climate Change (UNFCCC).

In her current role she is Head of Climate Science for the Department for Business, Energy and Industrial Strategy where she is responsible for leading a programme of advice and climate research to support the government's domestic and international climate goals and for delivery of the UK's world class Greenhouse Gas Emissions Inventory, tracking progress to Net Zero.

Professor Sir Duncan Wingham – Executive Chair, NERC



Duncan received a B.Sc. from the University of Leeds in 1979, and a Ph.D. from the University of Bath in 1984, both in physics. He joined University College London in 1986, where he held lecturing posts at the Mullard Space Science Laboratory and the Department of Electronic and Electrical Engineering.

He was appointed as a Chair in the Department of Space and Climate Physics in 1996 and was Head of the Department of Earth Sciences at UCL from 2005 to 2010.

He was founder and Director of the NERC Centre for Polar Observation and Modelling (CPOM) from 2000 to 2005 which, among other things, discovered the widespread mass loss from the West Antarctic Ice Sheet and its origin in accelerated ocean melting.

He was Chairman of the Science and Innovation Board of NERC and, since 2000, the Lead Investigator of the ESA CryoSat and CryoSat-2 satellite missions.

Duncan became Chief Executive of the Natural Environment Research Council on 1st January 2012 and then Executive Chair on 1st April 2018, when the Natural Environment Research Council became part of UK Research and Innovation. Duncan was knighted in the New Year Honours 2020.

Close (16:50 – 16.55)

Closing remarks and thank yous by Professor Carole Mundell.

Future Events

The Science Council will be holding more policy events in future. If you would like more information or would be interested in collaborating with or funding more of this kind activity, contact our Policy Officer Ryan Mercer (r.mercer@sciencecouncil.org).

Celebration of Science - Biennial Gareth Roberts Lecture and CPD Awards

Monday 21st November - Evening

This event will combine the Science Council's Gareth Roberts Policy Lecture which will be given this year by UKRI Chief Executive, **Professor Dame Ottoline Leyser**, alongside our annual prizegiving for our CPD Award winners.

<https://www.eventbrite.co.uk/e/celebration-of-science-tickets-362911095857>



Thank You

The Science Council would first of all like to thank the Institute of Physics for its generosity in kindly hosting the conference in its wonderful venue.

We would also like to thank our member organisations which have contributed to the content of the conference:

British Association of Sport and Exercise Sciences
British Society of Soil Science
The Geological Society
Institute of Food Science and Technology
Institute of Materials, Minerals and Mining
Institute of Physics
Institution of Chemical Engineers
Institution of Environmental Sciences
The Nuclear Institute
Royal Meteorological Society
Royal Society of Biology
Royal Society of Chemistry
Society for Natural Sciences

Finally, a thank you to the other organisation which have contributed to the agenda or provided speakers for the conference:

Chartered Institution of Building Services Engineers
The Climate Change Committee
Confederation of British Industry
Department for Business, Energy & Industrial Strategy
Natural Environment Research Council
The Physiological Society
Royal Academy of Engineering
The Royal Society