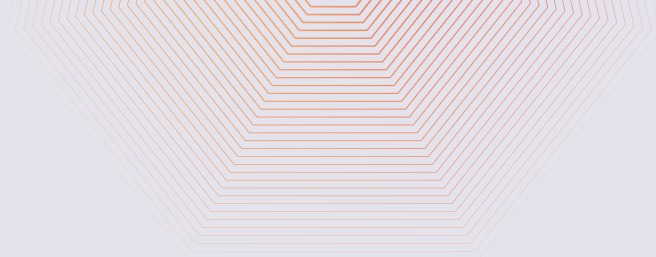




Royal Academy of Engineering | Policy Fellowships

Programme Annual Report 2023

# Engineering better policy



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# Foreword

by **Dr David Cleevly CBE FREng**

Chair of Policy Fellowships Working Group



**I am delighted to present the Policy Fellowship Programme's 2023 Annual Report, celebrating its 5th year anniversary and marking a year of unprecedented achievements in bridging the gap between policymakers and the technical community.**

Our Policy Fellows, hailing from diverse backgrounds within the public sector, have not only embraced engineering thinking but have applied it innovatively to tackle some of society's most pressing challenges. We are immensely proud of the impact they are making.

In 2023, 16 Policy Fellows met 158 engineers across all disciplines in academia and industry and covered an extraordinary range of topics. These have included cross-government approach to chemical and biological defence in the UK; establishing a net zero trajectory for transport infrastructure; ensuring responsible and unbiased use of large language models; and addressing systemic issues in child criminal exploitation among youth involved in the criminal justice system in England and Wales.

Activities to support our Policy Fellows are growing. In addition to our annual alumni dinner, we held our first showcase event with Policy Fellows presenting their findings, and we launched our publication *Managing complexity: how systems approaches can deliver better policy*.

Over the past five years we have shown that engineering thinking can be applied to many different systems and opens the door to fresh approaches, building on the strategy set out in our first *Engineering Better Policy* report in 2021.

Together with our Policy Fellows, current and alumni, we are building connections between policymakers and the engineering community, developing the role of engineering and systems thinking in government, and helping to shape better policy.

# Growing a diverse community that champions engineering in public policy

The Policy Fellowships community has grown steadily since its creation in 2019 and spans a diversity of public institutions. Our 71 Policy Fellows can be found in central, devolved and local government, as well as in arm's length and public bodies and other organisations such as the NHS or social change foundations.

They demonstrate the value of engineering and systems thinking in policy at all levels of government and wherever public policy is developed.

## The Policy Fellowships community across UK public institutions

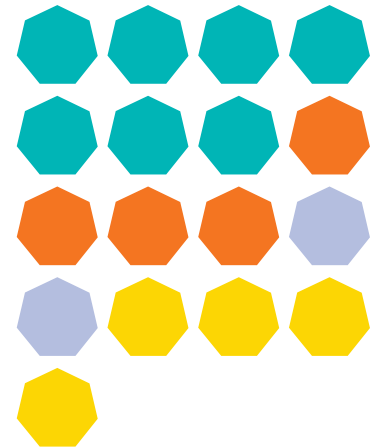
2019 cohort



2020 cohort



2021 cohort



Central government



Devolved government



Local government

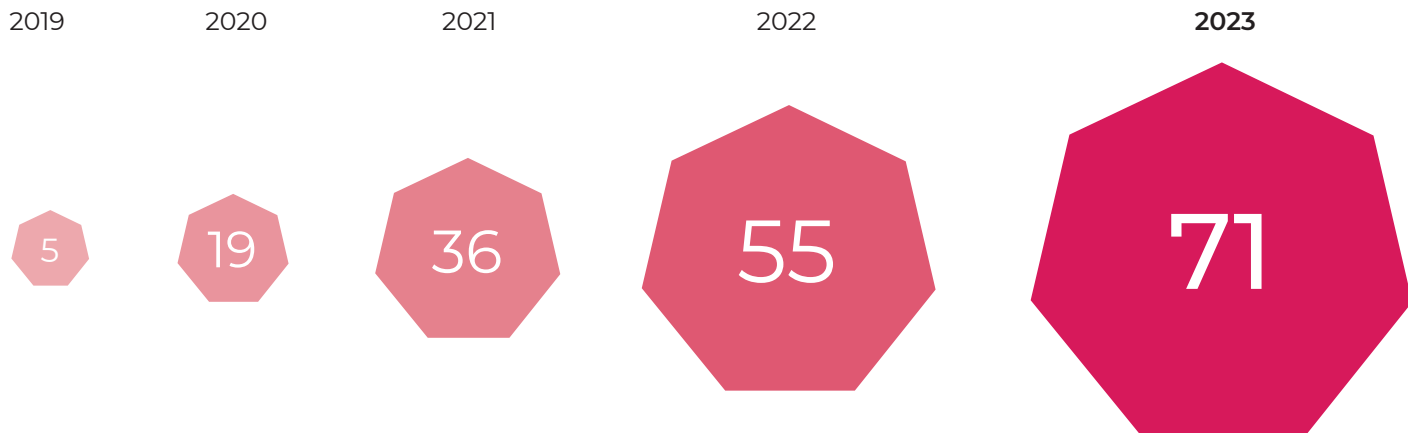


Arms length and public bodies

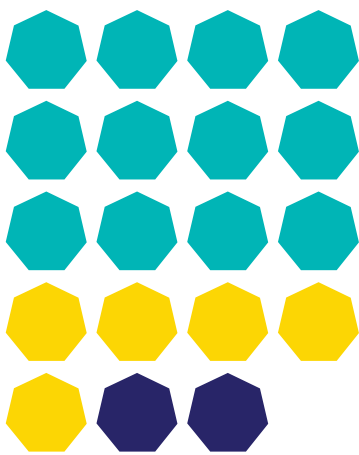


Other organisations

The Policy Fellowships community in 2023



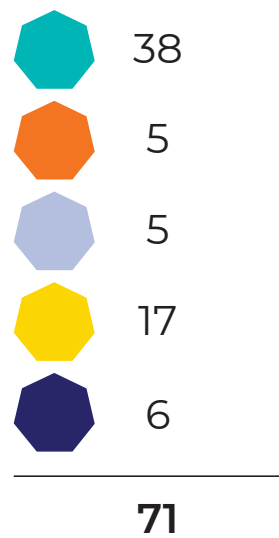
2022 cohort



2023 cohort



Total



- Central government
- Devolved government
- Local government
- Arms length and public bodies
- Other organisations

# Working across boundaries and professions to solve public policy challenges

## Tamara Finkelstein CB

Permanent Secretary for the Department for Environment, Food and Rural Affairs (DEFRA) and Head of the government's Policy Profession

**In this interview, Tamara offers her perspectives on the role of continuous learning, collaboration and innovative thinking for policy professionals in an ever-evolving policy landscape. She has also discussed how the Royal Academy of Engineering's Policy Fellowships can help policy leaders adopt multidisciplinary and cross-government approaches.**

What do you foresee as the most critical challenges in policymaking in the next few years?

We know that emerging and future public policy challenges are complex and do not fit easily into domain or disciplinary boundaries. Policy professionals will need to be agile, resilient, and able to work in multidisciplinary and interdisciplinary ways. This means bringing together different professions to solve problems and working across several boundaries: geography and levels of government; policy domains; public, private and third sectors; and research fields.

They will also need to work in partnership to build their evidence base, drawing on rapidly emerging sources of data and information. It will also be essential to co-design policy approaches to reflect complex changing environments, including working with those who are impacted by policies and those whose voices may previously have not been heard.

What specific skills, knowledge, or behaviours do policymakers need to effectively navigate and proactively address these challenges?

There are a lot of transferable skills that all policymakers need. They should be proactive, energetic and comfortable in a fast-paced, dynamic environment. They need to be able to develop strong working relationships with a variety of stakeholders by being a confident communicator, and they should work well independently as well as part of a team.

To address the challenges of the future, policymakers will need to be curious to learn more. They must be confident working with different types of evidence or being willing to develop skills relevant to data analysis for their policy area. The Policy Profession is prioritising working with the government Science and Engineering Profession and the government Analysis Function to support policymakers to build their competence in this area, such as communicating science advice.



At the leadership level in particular, a priority is supporting policy leaders to adopt multidisciplinary and cross-government approaches, which will be crucial for addressing the policy challenges of the future.

The Policy Profession Standards (which span all departments) are a useful tool to consider this further, as they set out the skills and knowledge requirements for policymakers across all levels.

### **In what ways will programmes like Policy Fellowships shape policymakers, preparing them for the evolving landscape?**

Commissioning, using and understanding expert advice in policy development is a core element of the Policy Profession Standards. This includes recognising the role and value of professional and academic expertise outside government.

Policy Fellowships provide important routes for policymakers to work alongside experts outside government to develop innovative and evidence-based solutions. They can also help build

**“At the leadership level in particular, a priority is supporting policy leaders to adopt multidisciplinary and cross-government approaches, which will be crucial for addressing the policy challenges of the future.”**

networks and longer-term relationships between policymakers, researchers and professional communities. Policy Fellowships also add value to the academic community by focusing their research on issues central to the formation of public policy and communicating their findings in accessible ways.

In particular, the Royal Academy of Engineering's Policy Fellowships programme focuses on helping policymakers understand the wider systems in which they are working, and apply systems approaches in addressing policy challenges.

The relevance of these Policy Fellowships is underscored by the programme of Systems Thinking Knowledge Series, delivered by the Policy Profession and Policy Fellows, in partnership with the Royal Academy of Engineering. We've run 11 of these sessions to date with over 1,600 attendees and continue to introduce further sessions, as more policy professionals complete their fellowships.

For more information about the Policy Profession, please visit [www.policyprofession.civilservice.gov.uk](http://www.policyprofession.civilservice.gov.uk)

# Jo Reilly

Criminal Justice Evidence and  
Change Lead  
Youth Endowment Fund



## **How can Youth Endowment Fund research and address systemic challenges, focusing on child criminal exploitation, considering regional variation, capacity constraints, and ownership ambiguity in criminal business models?**

Criminal business models and markets are best understood as living ecosystems. They respond and adapt to changes in the environment. The ripple effects of environmental changes are not always predictable or immediately obvious. This poses significant challenges for those of us tasked with protecting vulnerable people from harm and/or preventing and disrupting criminality. How can we be confident that our interventions will have a net positive impact, and won't inadvertently displace risk to more hidden, harmful places? How can we get better at predicting the ways in which criminal business models might respond not only to our interventions, but also to factors such as new technologies or changing geopolitics?

Prior to starting my fellowship, I knew that a systems approach was needed, but I wasn't sure what this meant in practice. Through my fellowship I have structured my thinking and learnt about new tools and methodologies.

Meeting with a wide range of experts who, across many different fields, have been responsible for managing significant and complex risks has offered invaluable insights.

Ultimately, my fellowship has significantly increased my confidence in embracing complexity. The stakes are high – when things go wrong vulnerable people can experience significant harm. We need to tolerate levels of uncertainty about causal relationships when evaluating complex system interventions and system change.

We need to tolerate levels of risk – it's likely that vulnerable children will always be at some risk of exploitation. But we cannot tolerate complacency or fatalism in the design of our system responses to child criminal exploitation. The work is undoubtedly challenging, but systemic improvements can and must be made, and there is significant cross-disciplinary expertise available for us to draw on. I feel very energised by my Policy Fellowship and am very grateful for it.



**“My Fellowship has significantly increased my confidence in embracing complexity.”**



# Elle Butterworth

Energy Policy Advisor  
Energy Systems Catapult



## How can we ensure the accurate monitoring of industrial emissions does not hinder opportunities for growth in UK industry?

Previous research with industry stakeholders indicated that directly monitoring emissions from energy-intensive industries risked contributing to reduced investment and limited opportunities for UK-based industries to support wider decarbonisation efforts across the economy. A narrow boundary for emissions monitoring cannot quantify wider emissions reductions resulting from the domestic production of net zero critical materials.

However, without directly measuring emissions how can we be sure that decarbonising activities and associated policies are having a material effect on emissions reduction? I explored this tension through my interviews with Academy Fellows, using steel as a case study.

My conversations with experts were broad and varied, helping to expand my horizons and see my policy challenge from alternative lenses. For example, I was encouraged to first identify priorities for domestic industrial activity to support decarbonisation and then review measures and targets to drive the required response from industry.

I was encouraged to recognise a completely accurate picture of emissions might not be possible, so minimum thresholds needed to be established for different use cases. Cautionary tales were also highlighted, such as conflating measurements with targets and the risk of perverse incentives.

The Policy Fellowship enabled connections, both with relevant industry experts and other policy professionals interested in exploring challenges through a systems-thinking lens. Exploring my policy challenge through the structure of the Policy Fellowship also enabled me to protect the time needed to understand such a complex subject area.

“Exploring my policy challenge through the structure of the Policy Fellowship also enabled me to protect the time needed to understand such a complex subject area.”

# Andrew Borland

Chief Innovation Officer,  
Virtual Engineering Centre,  
University of Liverpool



**The UK is home to some of the world's leading research universities but has struggled to achieve its full potential in research commercialisation or industrialisation. How can we make research-intensive universities work harder for regional and national economic growth and regeneration?**

The system-thinking approach has been instrumental in guiding my practical policy analysis, underlining the significance of evidence-driven policy changes to enhance performance. By emphasising a systems approach and recognising unintended consequences of incentives, it has helped address concerns about the potential loss of essential skills and knowledge due to the retirement of senior leaders.

Throughout the programme, my interactions with a diverse group of leaders have facilitated valuable collaboration and insights, revealing unexpected resonance and garnering generous support for my research beyond the programme.

As a result, I identified a set of recommendations aimed at enhancing the regional economic impact of university R&D, concurrently improving international rankings and standing. I worked on developing a blueprint that outlined policy and practice changes to enhance the integration and efficiency of the existing research and innovation supply chain and service delivery model.

Additionally, I explored opportunities for change within the framework of political devolution to the regions.

The fellowship gave me a great introduction to developing my knowledge of systems thinking. It allowed me to employ my consulting skills in a project where a client brief did not constrain me, and I was free to explore ideas more creatively. It has also given me my first insights into the political context and policy process and an extraordinary context to meet and learn from leaders and peers from various backgrounds.



**“The system-thinking approach has been instrumental in guiding my practical policy analysis.”**

# 2023 Policy Fellows



## Dr Alexander Hough

Deputy Head of Science and Technology Policy, Ministry of Defence

How does the Ministry of Defence ensure the UK takes a strategic, cross-government approach to chemical and biological defence, proportionate to the increasing threat and risks from emerging technologies?



## Elle Butterworth

Energy Policy Advisor, Energy Systems Catapult

How can we encourage growth in UK industry while ensuring industrial decarbonisation policy mechanisms have a material effect on emissions reduction through accurate carbon accounting?



## Henry Dieudonne-Demaria

Head of Strategy and Europe (Emission Trading), Department for Energy Security and Net Zero

How could the UK's £10 billion cap-and-trade Emissions Trading Scheme's role be optimised to drive UK decarbonisation, and to ensure a thriving net zero economy beyond 2050?



## Ioannis Mavvidis

Infrastructure Carbon Specialist, Department for Transport

How can the Department for Transport achieve net zero for transport infrastructure, considering material costs, supply chain readiness, adoption barriers, policy roles, infrastructure choices, and integration with procurement?

# 2023 Policy Fellows



## Manu Ravishankar

Innovation Lead, Ofgem Strategic Innovation Fund, UKRI

How can the UK accelerate its net zero transition by aligning energy innovation with policy changes, addressing evidence gaps, optimising programme strategy, and positioning innovation projects as crucial sources of evidence?



## Matthew Paul Barker

Fares, Passenger Rights and Benefits Manager, Department for Transport

The future of revenue protection, reducing fare evasion and fraud on the railways.



## Thomas McGoey

Regulatory Change and Compliance Manager, UKRI

How can policymakers provide a policy and regulatory environment that encourages and supports rapid and responsible innovation in Great Britain's gas and electricity networks?



## Jo Reilly

Criminal Justice Evidence and Change Lead, Youth Endowment Fund

How best can the Youth Endowment Fund use its resources to advance the evidence base for tackling child criminal exploitation across England and Wales?



**Andrew Borland**

Chief Innovation Officer, Virtual Engineering Centre, University of Liverpool  
Institute of Digital Engineering and Autonomous Systems

How can universities' R&D lever the digital transformation via generative AI and deep tech to unlock their full potential as localised economic drivers of industry?



**Dr Jose Reis**

Principal Policy Officer, Economic Strategy, Greater London Authority (GLA)

What policy and delivery framework should the GLA develop to maximise London's levers to attract investment and support the low carbon sector in London?



**Rachel Lee**

Head of Heat Infrastructure Transformation – Clean Heat Directorate,  
Department for Energy Security and Net Zero

What policies are necessary to deliver heating flexibility in line with the UK's net zero commitments?



**Raghuv Bhasin**

Chief Operating Officer, Buckinghamshire Healthcare NHS Trust

How can a whole-system design improve the efficiency of emergency patient flow pathways as opposed to individualised components that are subsequently linked?

# Programme spotlights

## Policy Fellowships Showcase 2023

The first Policy Fellowships Showcase took place on 20 October 2023, centering around the use of systems approaches in policy development, the event showcased the work of three Policy Fellows:

**How UK government can bolster the attractiveness of the UK's maritime offer to encourage more vessels to sail under the UK flag**

**Cambyse Jafari-Pak**

Deputy Director, Retained EU Law and Better Regulation, Department for Transport

**Learning from those we engage to improve our effectiveness**

**Sarah Brown**

Head of Policy, Office for Nuclear Regulation.

**Operationalising systems thinking to deliver the UK's hydrogen ambitions**

**Dr Simone Cooper-Searle**

Head of Hydrogen Heating, Strategy and Communications, Department for Energy Security and Net Zero.

The event also featured a keynote by Tamara Finkelstein CB, DEFRA Permanent Secretary and Head of the government's Policy Profession, as well as a panel discussion with Dame Judith Hackitt DBE FREng, Professor John Clarkson FREng, and Adam Mackenzie-Jones.

### Showcase Panel

Simone Cooper-Searle showcasing her policy challenge

(Image Credits  
Amanda Summons Creative)





## Showcase Panel

(from left to right)

Adam Mackenzie-Jones,  
Professor John Clarkson FREng,  
Dame Judith Hackitt DBE FREng,  
Tamara Finkelstein CB,  
Dr Hayaatun Sillem CBE

(Image Credits  
Amanda Summons Creative)



**Dame Judith Hackitt DBE FREng**  
Chair of the Office for Nuclear Regulation



**“This event was a great opportunity to draw links between different strands of important work taking place within the Academy. It was great to be able to talk about the work we are doing in Engineering X on Safer Complex Systems and how this ties in with the Policy Fellowships. It is a pleasure and a privilege for me to be involved with both programmes.”**



## Showcase Panel

(from left to right)

Cambyse Jafari-Pak and  
Sarah Brown

(Image Credits  
Amanda Summons Creative)

## Adam Mackenzie-Jones

Net Zero Systems lead, Net Zero Strategy  
Directorate, Department for Energy  
Security and Net Zero

“I found the event to be exceptionally engaging, with a notable presence of expertise and knowledge. What stood out was the unique balance it struck, making the content both substantial and accessible. I couldn't help but wish for an extended session, particularly using the extra time for networking opportunities, as it presented a great chance to connect with professionals in the field.”

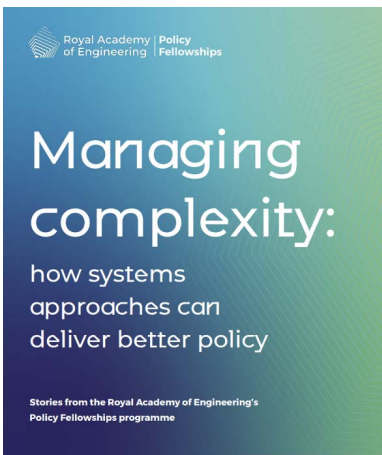




## New publication on managing complexity

The second programme publication *Managing complexity: how systems approaches can deliver better policy* was launched at the Policy Fellowships Showcase. It is an invitation to learn from the experiences of 27 Policy Fellows, hear their take on the benefits and challenges of using systems approaches in policy, and take away their practical tips on where to start.

This alumni project follows on from the 2021 programme publication *Engineering better policy* which explored the vision for the Policy Fellowships to harness engineering expertise for policy, create communities and inspire a change in culture in government.



## Annual alumni dinner and reception

On 27 March 2023, 43 Policy Fellows and guests met for our annual dinner and discussed the ambitions for the programme's impact and future.

They identified four interconnected routes to increase the value of the programme for its members, the wider policymaking community and for those impacted by policy.



# Matthew Barker

Fares, Passenger Rights and Benefits Manager  
Department for Transport



## How can the rail transport industry tackle revenue protection challenges, including fare evasion and fraud?

Having worked in the commercial side of transport most of my working life, I know that operators today face new challenges related to technological developments and the impacts of changing customer behaviour.

My policy challenge was to address an important and growing issue within all areas of government and in rail specifically, which is improving revenue protection, reducing fare evasion and fraud.

The Policy Fellowship provided me with access to a knowledgeable network of professionals who had new and innovative ideas. The programme also helped me to think through the problem from the perspective of other Policy Fellows. This expanded the scope of the issue to look more broadly at the customer rather than just the rail journey being undertaken.

During the fellowship I explored different themes with experts and with other members of the cohort, which helped me to understand similar issues relating to fraud and revenue loss in other areas. It also highlighted the very latest innovative thinking in terms of technology that would help to mitigate these issues.

These diverse views helped to assess the challenge from a different perspective. The fellowship brought in aspects of systems thinking and helped me to understand the interaction between the different customer 'touch points' when taking a journey by rail. This led to discussing the balance between enforcement and the social values of improving the customers knowledge of ticketing and fares.

The programme has allowed me to look at the 'big picture' and try some alternative approaches to reducing ticketless travel and fraud on the railway.



**“The fellowship brought in aspects of systems thinking and helped me to understand the interaction between the different customer ‘touch points’ when taking a journey by rail.”**

# Raghuv Bhasin

Chief Operating Officer  
Buckinghamshire Healthcare NHS Trust



## How can engineering process change insights guide pathway improvement in the NHS?

I am the Chief Operating Officer of Buckinghamshire Healthcare NHS Trust having moved to the NHS for a more operational role after a decade of working in Whitehall in the Department of Health and Social Care.

My policy challenge was to see if we could take learning from engineering process change to guide pathway improvement in the NHS. Engineering processes and patient pathways are complex systems that involve multiple different components and a highly skilled group of colleagues delivering the service in safety and time critical areas.

The fellowship provided the opportunity to engage with multiple engineering experts, from a wide range of industries such as healthcare, design automotive, defence, software, or logistics, to understand their experience of delivering change in their industries and explore the parallels with NHS pathway improvement. This was a unique and privileged opportunity that helped me to shape and crystallise my thinking in this area.

There were commonalities from all of the engineering examples explored that can be translated to the NHS, from which I created a simplified six-step model for pathway improvement in the NHS. Importantly underpinning the model are some core capabilities (tools) that were vital to the success of engineering change – such as modelling and user-centred design – and need to be developed in NHS organisations to support pathway improvements.

I will be using this model to guide future pathway improvement programmes – particularly related to emergency care in the first instance - and capability development in my Trust as well as engaging with colleagues across the NHS to seek to support their wider development.

“There were commonalities from all of the engineering examples explored that can be translated to the NHS, from which I created a simplified six-step model for pathway improvement in the NHS.”

# Engineers and experts involved in 2023

We thank all engineers and experts who generously contributed to the success of the programme this year by engaging with and supporting our Policy Fellows.

**Professor Alan Penn**

Professor, Architectural and Urban Computing,  
The Bartlett School of Architecture,  
University College London

**Connected with:** Jose Reis

**Dr Alireza Abbassi Monjezi**

Managing Director, Waterwhelm

**Connected with:** Thomas McGoey

**Andy Mitchell CBE FREng**

Chief Executive Officer, Tideway

**Connected with:** Ioannis Mavvidis

**Professor Ashutosh Tiwari**

Airbus/RAEng Research Chair in Digitisation for  
Manufacturing, Department of Automatic Control  
and Systems Engineering, University of Sheffield

**Connected with:** Andrew Borland

**Emeritus Professor Brian S Collins CB FREng**

Professor of Engineering Policy,  
University College London

**Connected with:** Ioannis Mavvidis, Matthew Barker,  
Andrew Borland

**Brittany Harris**

CEO and Co-Founder, Qflow

**Connected with:** Jose Reis

**Professor Bryn C Hughes FREng**

Head of Profession (Science and Engineering),  
Defence Science and Technology Laboratory,  
Ministry of Defence

**Connected with:** Raghuv Bhasin

**Professor Cameron Pleydell-Pearce**

Professor of Materials Science and Engineering,  
Swansea University

**Connected with:** Elle Butterworth

**Dr Caroline Hargrove CBE FREng**

Chief Technology Officer, Ceres

**Connected with:** Thomas McGoey

**Catriona Schmolke CBE FREng**

CEO, CharlieFive Ltd, and Vice President, Royal  
Academy of Engineering

**Connected with:** Manu Ravishankar

## Policy Fellowships

Programme Annual Report 2023

### Dr Charlotte Stamper MCIWM

Energy Infrastructure Lead, EMR

**Connected with:** Jose Reis

### Chris Hamlin FREng

Co-Founder and Lead Advisor, HancockHamlin Ltd

**Connected with:** Elle Butterworth

### Chris McDonald FREng

Strategy Consultant, Materials Processing Institute

**Connected with:** Elle Butterworth

### Professor Dave Delpy CBE FREng FRS FMedSci

Emeritus Professor of Medical Photonics,  
Department of Medical Physics and Biomedical  
Engineering, University College London

**Connected with:** Thomas McGoey

### Professor David Bogle FREng

Pro-Vice-Provost, Doctoral School and Early Career  
Researchers, University College London

**Connected with:** Rachel Lee

### Professor David Byrne

Emeritus Professor of Social Sciences,  
University of Durham

**Connected with:** Jo Reilly

### Professor David Cebon FREng

Professor of Mechanical Engineering,  
University of Cambridge

**Connected with:** Rachel Lee

### Professor David Greenwood FREng

Director for Industrial Engagement, and CEO,  
High Value Manufacturing Catapult, WMG

**Connected with:** Ioannis Mavvidis, Andrew Borland



### Professor Joan Cordiner FREng FRSE

Professor of Process Engineering, University of Sheffield

“It’s an enormous privilege to support our policy fellows where my 30+ year chemical industry experience as a technology and risk manager coupled with my more recent academics and Royal Academy Engineering committee and policy work.”

Professor Joan Cordiner moved from industry to academia in 2020. Known for her contributions in R&D and process safety, she led the 2021 Royal Academy of Engineering report on national security risks. Her research now focuses on modelling for pharmaceuticals and energy.

### Professor David Newbery CBE

Director, Cambridge Energy Policy Research Group

**Connected with:** Rachel Lee

### David Short MBE FREng

Technology and Advanced Programmes Director,  
BAE Systems Plc

**Connected with:** Raghuv Bhasin

### Dervilla Mitchell CBE FREng

Deputy Chair, Arup Group

**Connected with:** Jose Reis

## Policy Fellowships

Programme Annual Report 2023

### Professor Dragan Savic FREng

Chief Executive Officer, KWR Water Research Institute

**Connected with:** Thomas McGoey, Andrew Borland

### Professor Duncan Kemp

Senior Fellow for Systems Engineering, Defence Equipment and Support, Ministry of Defence

**Connected with:** Dr Alexander Hough

### Professor Elizabeth Shove

Professor of Sociology, Lancaster University

**Connected with:** Rachel Lee

### Dr Enass Abo Hamed MBE

CEO, H2GO Power

**Connected with:** Manu Ravishankar

### Dr Evi Petavratzi

Principal Mineral Commodity Specialist, British Geological Survey

**Connected with:** Ioannis Mavvidis

### Dr Fiona Rayment OBE FREng

Nuclear Advisor and Non-Executive Director, National Nuclear Laboratory

**Connected with:** Dr Alexander Hough

### Professor Geoff Kirk RDI FREng

Honorary Professor, Faculty of Engineering, University of Nottingham

**Connected with:** Raghuv Bhasin

### Professor Graham Currie

Professor of Public Transport, Monash University

**Connected with:** Matthew Barker

### Dr Graham Honeyman FREng

Chief Executive, Sheffield Forgemasters International Ltd

**Connected with:** Elle Butterworth

### Graham Hughes FREng

Head of Product Assurance, Atomic Weapons Establishment

**Connected with:** Dr Alexander Hough



### Professor Ana Basiri

Professor of Geospatial Data Science, University of Glasgow

“I am delighted I could support our policy fellows with my experience and knowledge in AI and in particular missing data to deliver inclusive AI, but also having the privilege to meet expert in government and have an extremely interesting conversation that helped me with my understanding of what is being done outside my network.”

Ana Basiri works on developing theoretical and applied solutions to the challenges of 'new forms of data' such as missingness and biases. She directs the Centre for Data Science and AI, is a UKRI Future Leaders Fellow and EngineeringX Champion.

## Policy Fellowships

Programme Annual Report 2023

### **Dr Graham Oakes**

Owner, Graham Oakes Ltd

**Connected with:** Rachel Lee

### **Professor Graham Wren OBE FREng FRSE**

Senior Executive and Special Adviser to Principal and Vice-Chancellor, University of Strathclyde

**Connected with:** Andrew Borland

### **Professor Jane Grimson FREng**

Fellow Emerita and Pro-Chancellor, Trinity College Dublin

**Connected with:** Raghuv Bhasin

### **Dr Jen Baxter**

Deputy Chair, National Infrastructure Commission Wales

**Connected with:** Thomas McGoey, Rachel Lee

### **Jeremy Watson CBE FREng**

Professor of Engineering Systems, Science, Technology, Engineering and Public Policy, University College London

**Connected with:** Manu Ravishankar

### **Professor Jim Hall FREng**

Professor of Climate and Environmental Risks, University of Oxford

**Connected with:** Henry Dieudonne-Demaria

### **Professor Joan Cordiner FREng FRSE**

Professor of Process Engineering and External Engagement

**Connected with:** Dr Alexander Hough, Andrew Borland

### **Joan Heery**

Membership Director, The Permanent Way Institution

**Connected with:** Ioannis Mavvidis

### **Dr Joanne Wade OBE**

Chief Strategic Advisor, The Association for Decentralised Energy

**Connected with:** Rachel Lee

### **Sir John Alexander Armitt CBE FREng**

Chair of the National Infrastructure Commission

**Connected with:** Matthew Barker, Jose Reis

### **Dr John Beckford**

Partner, Beckford Consulting

**Connected with:** Jose Reis

### **Professor John Loughhead CB OBE FREng**

Industrial Professor of Clean Energy, University of Birmingham,

**Connected with:** Henry Dieudonne-Demaria

### **Dr Jonathan Grant**

Director, Different Angles Ltd

**Connected with:** Andrew Borland

### **Dame Judith Hackitt DBE FREng**

Chair of the Office, Nuclear Regulation

**Connected with:** Jo Reilly

### **Professor Julian Allwood FREng**

Professor of Engineering and the Environment, University of Cambridge

**Connected with:** Henry Dieudonne-Demaria

### **Kevin Wellman**

Chief Executive Officer, Chartered Institute of Plumbing and Heating Engineering,

**Connected with:** Rachel Lee

**Mark Apsey MBE**

Senior Vice President, Ameresco Limited

**Connected with:** Rachel Lee

**Mark Enzer OBE FREng**

Visiting Professor, University of Cambridge and Imperial College London, and Strategic Advisor, Mott MacDonald

**Connected with:** Ioannis Mavvidis, Matthew Barker, Henry Dieudonne-Demaria

**Professor Mark Jolly**

Head of Sustainable Manufacturing Systems, Cranfield University

**Connected with:** Ioannis Mavvidis, Elle Butterworth, Andrew Borland

**Dr Mark Selby FREng**

Chief Growth Officer, Ceres Power

**Connected with:** Manu Ravishankar

**Professor Mark Symes**

Professor of Electrochemistry and Electrochemical Technology, University of Glasgow

**Connected with:** Manu Ravishankar

**Matthew Sinclair**

Partner and Vice President, Engineering, BCG X

**Connected with:** Thomas McGoey

**Mike Carr OBE FREng**

Non-Executive Director, Ploughshare Innovations Ltd

**Connected with:** Thomas McGoey

**Dr Mike Cook FREng**

Senior Lecturer of Computer Science, King's College London

**Connected with:** Jose Reis

**Professor Nigel Gilbert CBE FREng**

Professor of Sociology, University of Surrey, and Director, ESRC funded Centre for the Evaluation of Complexity Across the Nexus (CECAN)

**Connected with:** Henry Dieudonne-Demaria, Jo Reily

**Professor Nigel K H Slater**

Emeritus Professor of Chemical Engineering and Biotechnology, University of Cambridge,

**Connected with:** Dr Alexander Hough

**Nigel Perry MBE FREng**

Chief Executive Officer, Centre for Process Innovation

**Connected with:** Andrew Borland

**Dr Nici Zimmermann**

Professor of System Dynamics, University College London

**Connected with:** Matthew Barker, Jose Reis

**Professor Nick Tyler CBE FREng**

Chadwick Professor of Civil Engineering, University College London

**Connected with:** Jose Reis

**Professor Nilay Shah OBE FREng**

Professor of Process Systems Engineering, Imperial College London

**Connected with:** Manu Ravishankar, Rachel Lee

**Professor Patricia Thornley FREng**

Director, Energy and Bioproducts Research Institute, Aston University

**Connected with:** Elle Butterworth



## Policy Fellowships

Programme Annual Report 2023

### Paul Christopher Clarke CBE FREng

Independent Advisor and Non-Executive Director,  
Co-Chair, Robotics Growth Partnership

**Connected with:** Raghuv Bhasin

### Professor Paul Ekins OBE

Professor of Resources and Environment Policy,  
University College London

**Connected with:** Jose Reis

### Paul Stein CBE FREng

Former Chair, Rolls-Royce Small Modular Reactor  
consortium

**Connected with:** Manu Ravishankar

### Paul Taylor CBE FREng

Director, Morgan Stanley International PLC

**Connected with:** Dr Alexander Hough

**Pawel Kisielewski**, Chief Executive Officer,  
CCm Technologies Ltd,

**Connected with:** Manu Ravishankar

### Peter Bingham

Chief Engineer, Ofgem

**Connected with:** Rachel Lee

### Professor Peter Guthrie OBE FREng

Director of Research in Sustainable Development,  
University of Cambridge

**Connected with:** Dr Alexander Hough

### Dr Peter Thompson FREng

Chief Executive Officer, National Physical Laboratory

**Connected with:** Manu Ravishankar,  
Andrew Borland

### Professor Phil Blythe CBE FREng

Professor of Intelligent Transport Systems,  
Newcastle University

**Connected with:** Jo Reilly



### Mandy Chessell CBE FREng

Computer scientist and Founder, Pragmatic Data  
Research UK

“Being a part of the policy fellowship programme has been an opportunity to share my experience helping organisations make better use of their data with top experts who are tackling complex policy challenge. Apart from being extremely interesting and enjoyable, my conversations with the policy fellows has broaden my perspectives on many aspects of engineering and its impact on society.”

Mandy Chessell is a leader in digital operations and open-source governance renowned for her work as Distinguished Engineer at IBM. She holds over 50 patents and is the first woman to earn a Royal Academy of Engineering Silver Medal.

(Image Credit: First Women UK)

### Professor Phil Purnell

Professor of Materials and Structures,  
University of Leeds

**Connected with:** Ioannis Mavvidis

### Pieter Lindeque FREng

Chief Engineer, Nationwide Building Society

**Connected with:** Raghuv Bhasin

**Professor Rebecca Lunn MBE FREng FRSE**

Professor and BAM Nuttall/RAEng Research Chair in Biomineral Technologies for Ground Engineering, Civil and Environmental Engineering, University of Strathclyde

**Connected with:** Henry Dieudonne-Demaria

**Richard Goodwin FREng**

Director, Goodwin International Ltd

**Connected with:** Elle Butterworth

**Professor Richard Prager FREng**

Professor of Information Engineering, University of Cambridge

**Connected with:** Jose Reis

**Robert Savidge FREng**

Engineering and Technology Director, Coolbrook Technologies UK Ltd

**Connected with:** Raghuv Bhasin

**Dr Robin Pharoah**

Founder, Encounter Consulting

**Connected with:** Raghuv Bhasin

**Professor Roland Clift CBE FREng**

Emeritus Professor of Environmental Technology, University of Surrey, and Adjunct Professor of Chemical

**Connected with:** Elle Butterworth

**Dr Scott Steedman CBE FREng**

Director-General, Standards and Executive Director, BSI Group,

**Connected with:** Thomas McGoey



**Peter Bingham**

Chief Engineer, Ofgem

“I am delighted to support the excellent work of the academy and the growth of our policy fellows, drawing on my considerable experience as an engineer and current involvement in the energy sector’s decarbonisation efforts. My experience in advancing sustainable energy solutions and technology aligns with the programme’s mission to inspire policymakers to think differently in this area, equipping them with the necessary knowledge and skills for impactful policy development.”

Peter Bingham joined Ofgem after over 25 years of leadership roles mainly with National Grid. His expertise covers energy policy, strategy, operations, and customer services in both gas and electricity sectors.

## Policy Fellowships

Programme Annual Report 2023

### **Dr Simon Harrison FREng**

Group Head of Strategy, Mott MacDonald  
**Connected with:** Elle Butterworth, Rachel Lee

### **Professor Simon Pollard OBE FREng**

Pro-Vice-Chancellor, Cranfield University  
**Connected with:** Dr Alexander Hough

### **Soheil Asgarpour Ph.D**

President and CEO, Petroleum Technology Alliance  
Canada, President, CAE  
**Connected with:** Thomas McGoey

### **Dr Stephen Lorimer**

Smart London Strategy and Delivery Officer,  
Greater London Authority  
**Connected with:** Rachel Lee

### **Dr Steve Denton FREng**

Head of Discipline for Civil & Bridge Engineering,  
WSP UK  
**Connected with:** Jo Reilly

### **Steve Holliday FREng**

Chair, Cityfibre, Chair, Zenobe  
**Connected with:** Jo Reilly

### **Dr Stuart Coles**

Associate Professor, University of Warwick,  
**Connected with:** Ioannis Mavvidis

### **Professor Susan E Owens OBE FBA**

Emeritus Professor of Environment and Policy,  
University of Cambridge  
**Connected with:** Elle Butterworth

### **Professor Tim Broyd FREng**

Professor of Built Environment Foresight,  
University College London  
**Connected with:** Matthew Barker

### **Tim Chapman FREng**

Partner and Director, BCG  
**Connected with:** Matthew Barker, Jose Reis

### **Professor Tiziana Rossetto FREng**

Professor in Earthquake Engineering in the  
Civil, Environmental and Geomatic Engineering,  
University College London  
**Connected with:** Dr Alexander Hough

### **Professor Tom Stephenson FREng**

Emeritus Professor of Water Sciences at  
Cranfield University  
**Connected with:** Thomas McGoey

### **Professor Yvonne Rydin**

Chair of Planning Environment and Public Policy,  
University College London  
**Connected with:** Jose Reis

# Acknowledgements

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## Policy Fellowships Working Group

Dr David Cleevely CBE FREng (Chair)  
Dr Steve Denton FREng  
Dame Judith Hackitt DBE FREng  
Paul Kett  
Paul Taylor CBE FREng  
Susan Acland-Hood

## Programme team

Marine Shah  
Head of Policy Programmes and Partnerships  
Ajo Kacmar  
Programme Manager, Policy Fellowships  
Mai Al Shamlan  
Programme Officer, Policy Fellowships  
Shayma Basharahil  
Programme Assistant, Policy Fellowships

The Policy Fellowships team would like to express their great appreciation to Academy colleagues for their advice and support, which have made the programme possible.

# Apply

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## Key dates

### APPLICATIONS OPEN

1 March  
1 September

### APPLICATIONS CLOSE

20 May 2024  
18 November 2024

### PROGRAMME STARTS

September 2024  
March 2025

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For more information, please visit: <https://raeng.org.uk/policyfellowships>  
or contact the programme team at [policyfellowships@raeng.org.uk](mailto:policyfellowships@raeng.org.uk).

The Royal Academy of Engineering is harnessing the power of engineering to build a sustainable society and an inclusive economy that works for everyone.

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