



Royal Academy  
of Engineering

# STRATEGY 2020–2025

Engineering for a sustainable society  
and inclusive economy





# → Foreword

Engineering matters. It underpins our daily lives, drives economic growth, plays a critical role in addressing major global challenges and helps ensure our readiness for the future, from providing a sustainable supply of food, water and clean energy, to advancing healthcare, supporting our mobility, connecting us digitally and keeping us safe and secure.



As the UK's National Academy for engineering and technology, the Royal Academy of Engineering brings together the most talented and successful engineers – our Fellows – to advance and promote excellence in engineering for the benefit of society.

This strategy marks the start of an important new chapter for us and will culminate just ahead of our 50th anniversary in 2026. Much has changed in the last five years, both in the external environment and within the Academy. In the UK we have seen three general elections, left the European Union and committed to achieve net zero greenhouse gas emissions by 2050. Notable global trends have included rapid digitalisation; a growing public appetite to tackle our unsustainable use of natural resources and lack of equality and diversity across many organisations and parts of society; and the emergence of new threats to stability and security. As we write, the world is tackling the biggest public health crisis of our time, a pandemic that has called for rapid innovation to protect lives and livelihoods across the globe. There has never been a more urgent need for engineering expertise to inform public debate and provide workable solutions to our shared challenges.

Over the same five year period, the Academy has steadily grown in confidence, capability, effectiveness and ambition and has laid the foundations to enable

us to make a step change in our impact and reach over the next five years. The strategy laid out here will require that because we are setting ourselves a crucial but challenging goal: to harness the power of engineering to build a sustainable global society and an inclusive UK economy. To ensure that we can deliver this, we are making important changes to how we operate. This will include streamlining our activities so that we can focus on where we will make most impact, and broadening our engagement so that we put partnership working at the heart of our approach and reach a wider range of beneficiaries.

As the National Academy we have a responsibility to provide leadership for engineering and technology, and technical leadership for wider society. As President and CEO, we commit to working with our staff, Fellows and partners to deliver this leadership with authenticity, inclusivity and empathy, so that the Academy can serve as a progressive force that keeps humanity at the heart of engineering and delivers tangible, meaningful benefits to society.

**Professor Sir Jim McDonald**  
**FREng FRSE**

President  
Royal Academy of Engineering

**Dr Hayaatun Sillem CBE**  
**CEO**

Royal Academy of Engineering



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# → Who are we?

## **A charity**

We deliver public benefit from engineering excellence and technology innovation.

## **A National Academy**

We provide progressive leadership for engineering and technology, and independent expert advice to government, in the UK and beyond.

## **A Fellowship**

We bring together an unrivalled community of leading business people, entrepreneurs, innovators and academics from every part of engineering and technology.

Our **vision** is engineering in the service of society.

Our charitable **mission** is to deliver public benefit through engineering excellence and technology innovation.

We have outstanding convening power nationally and internationally. We understand how to make systems and innovations make a positive difference to society.

We are trusted for our independence and professional excellence.

# → Values

In everything we do, we are guided by our five values:

- **Progressive leadership** – embodying the courage, commitment and ambition to drive positive change for engineering and society
- **Diversity and inclusion** – creating cultures in which everyone can thrive and diverse perspectives enrich our collective performance
- **Excellence everywhere** – bringing evidence, expertise, integrity and a passion for continuous improvement to everything we do
- **Collaboration first** – prioritising collaboration and building partnerships to improve outcomes
- **Creativity and innovation** – solving problems and generating opportunities through creative thinking and innovation.

# → Goals

Our overarching goal for 2025 is:

**To harness the power of engineering to build a sustainable society and an inclusive economy that works for everyone.**

A **sustainable society** is one in which development meets the needs of the present without compromising the ability of future generations to meet their own needs. Engineers have a vital role to play in creating systems and solutions to address the climate crisis and support more sustainable use and management of natural resources.

Engineers are also drivers of economic opportunity, leveraging advances in research to develop and deliver new products, services and enterprises that generate jobs and value to society. In an **inclusive economy**, the fruits of prosperity are shared across all regions and groups in society, with engineering serving as an enabler of improvements to

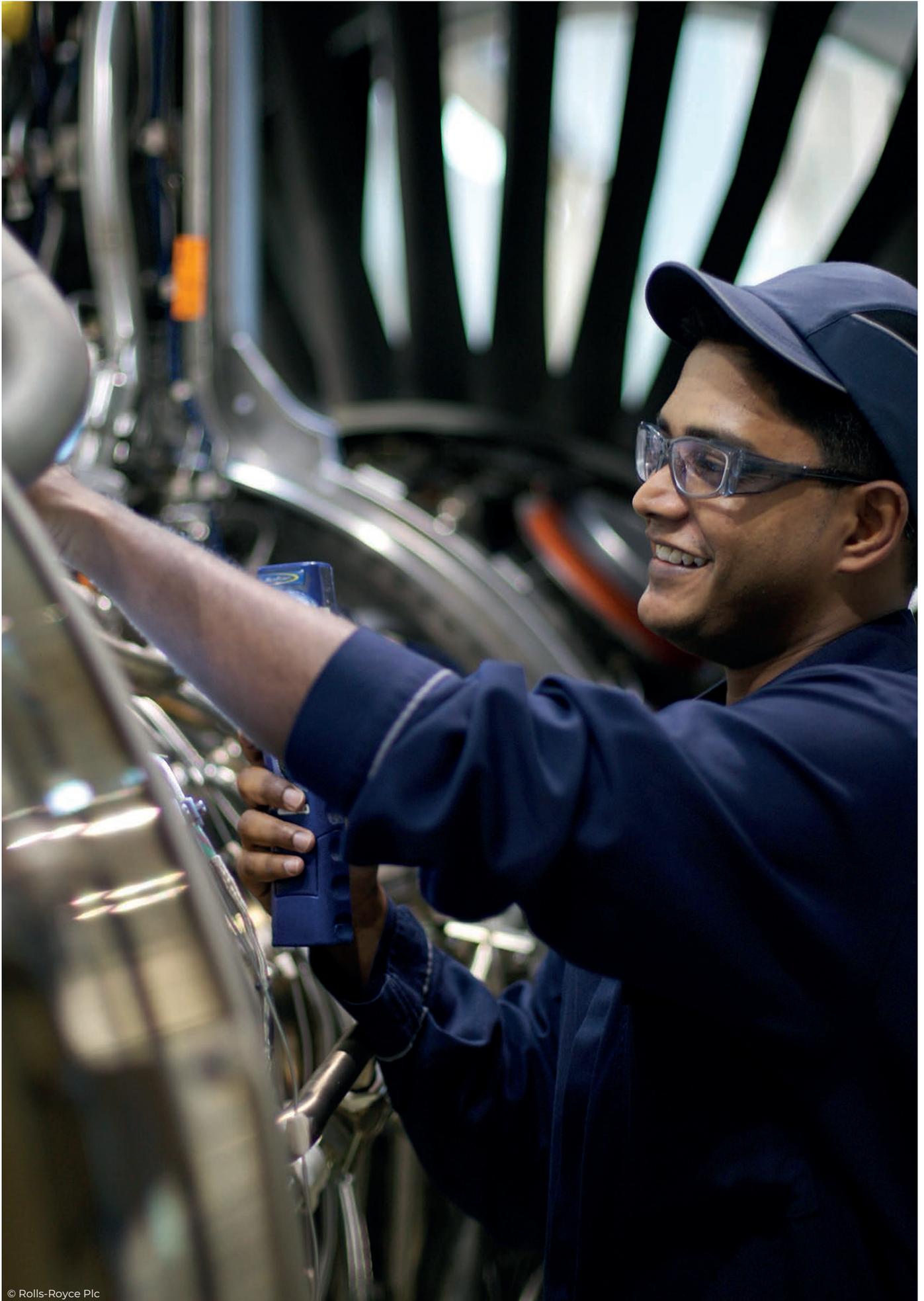
people's lives. An inclusive economy is also internationally competitive and resilient to technological changes and threats to public health, security, safety and stability.

Accelerating progress towards a **sustainable society** needs to be considered in a **global** context to be meaningful. The primary focus of our aspiration to stimulate an **inclusive economy** will be on improving opportunity within the **UK**. Both aims will be supported by our international partnerships and activities, which provide valuable routes to gaining insights and intelligence, promoting UK engineering excellence, exchanging best practice and developing collaborations that address shared priorities.

## **BUILDING A LONGER-TERM VIEW**

It is clear that these goals will not be fully achieved within a five-year timeframe so during the course of the first two years of the strategy a **longer-term framework will be developed** to articulate priorities that extend further into the future. This process, which will involve consultation with our Fellows, beneficiaries, partners and other key stakeholders, will also allow for iteration of the *Strategy for 2020–25* to reflect changes made and consolidate the learning gained in the first years of this period.





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# → Key actions to address the goals

The Academy works in three ways to address the goals: fostering **talent and diversity**, promoting **innovation**, influencing **policy** and **public perceptions**. The goals and priority actions we will address during the strategy period are set out below. In keeping with our values, many – if not all – of these goals will be delivered through **active collaboration with key partners** around the world, across and beyond engineering.

## GOALS FOR A SUSTAINABLE SOCIETY



### Talent and diversity

*Engineers are influential agents of change in the drive for a more sustainable society, providing leadership both within and beyond the UK.*

#### We will work with partners to:

- Raise awareness of the key role of engineers in enabling sustainable development to encourage many more, and more diverse, people to join the profession
- Embed sustainability and global responsibility as a core element of our support for engineering education, training and professionalism
- Mobilise the global engineering community and create strong international alliances to support sustainability
- Ensure all relevant Academy activities and operations reflect our commitment to sustainability
- Continue to support capacity building in engineering as a priority in international development programmes



### Innovation

*More and better engineering and technology solutions are being developed and deployed to support faster decarbonisation and more sustainable use of resources.*

#### We will work with partners to:

- Expand and improve our support for excellent researchers and entrepreneurs developing innovations targeted at sustainability challenges
- Enable more promising cleantech and sustainability-focused innovations to be brought to market and companies to grow to scale
- Stimulate more effective international research and innovation collaborations to accelerate development and deployment of tools to advance sustainability



### Policy and engagement

*Engineering expertise and systems approaches are embedded in policy and wider societal responses to sustainability challenges, improving the rate of progress.*

#### We will work with partners to:

- Enhance the capacity of engineers to engage effectively with policymakers and media on the UK's commitment to net zero greenhouse gas emissions by 2050 ('Net Zero') and other sustainability challenges
- Build demand from government, other policymakers and media for engineering input and commentary on plans for NetZero and other sustainability challenges
- Embed a systems approach in UK and global policymakers' responses to sustainability challenges
- Enhance public awareness of the critical role that engineering plays in advancing global sustainability



## GOALS FOR AN **INCLUSIVE ECONOMY**



### **Talent and diversity**

*The UK has a world-leading and truly inclusive engineering workforce that sets the highest standard for technical excellence, ethics and professionalism.*

#### **We will work with partners to:**

- Boost the numbers and diversity of those entering engineering careers
- Promote and expand the use of innovative approaches and best practice in engineering education and training
- Catalyse a step change in the diversity of the workforce at all levels and prevalence of inclusive cultures across engineering industry
- Continue to diversify the Academy's Fellowship and awardees and embed diversity and inclusion across all our activities
- Stimulate modernisation of the UK approach to professional development and lifelong learning for engineers and technicians
- Ensure that ethical best practice is fully embedded in UK engineering education, training and professional development



### **Innovation**

*Engineering innovation and enterprise are improving productivity, competitiveness, public health, safety and security while delivering economic and social value for people from all parts of the UK.*

#### **We will work with partners to:**

- Ensure that Academy grants made within the UK reflect and support excellence and societal benefit across all parts of the country
- Establish a national network of Enterprise Hub regional centres and grow our regional support offer
- Support more excellent researchers and entrepreneurs developing innovations that promote UK security, safety, public health and resilience
- Celebrate and enable business-university collaboration across all parts of UK
- Embed integrity and ethics into our support for engineering innovation



### **Policy and engagement**

*Policymakers and the public have embraced engineering as a key driver of prosperity and policies are in place that support a secure, resilient and balanced UK economy.*

#### **We will work with partners to:**

- Enhance the capacity of engineers to engage with impact on policy relating to innovation, R&D, entrepreneurship, business-university collaboration and technological and digital disruption
- Build demand from policymakers for engineering input to policies on topics relating to inclusive economic development, resulting in more effective policies
- Embed engineering expertise across government, including local, regional and devolved (through the appointment of Chief Engineers for example)
- Understand and inform societal views about the impact of technology and digitalisation, through public and media engagement
- Develop strategic alliances of UK and international partners to inform and engage policymakers

# → Enablers

The Academy will need to work differently to deliver this new strategy. The following critical enablers will build on changes already in train.

## STREAMLINE OUR ACTIVITIES

By clustering all our activities under the **three strands of Talent and diversity, Innovation and Policy and engagement** while converging on **six key programmes**, we will be able to achieve greater focus, coherence and impact. All six programmes will contribute to the overarching goal of building a sustainable society and inclusive economy. While there is some overlap, the programmes broadly map onto the priority strands as follows:

 <b>Talent and diversity</b>	 <b>Innovation</b>	 <b>Policy and engagement</b>
<b>UK Talent Engine</b> Cultivating outstanding and diverse engineering researchers, innovators and industry leaders through support, training, mentorship and funding	<b>Innovation Catalyst</b> Supporting the most promising engineering entrepreneurs through the Enterprise Hub and other strategic innovation investments and partnerships in the UK and internationally	<b>National Engineering Policy Centre</b> Connecting policymakers with engineering expertise on issues of national and international importance and amplifying the impact of the profession on key societal challenges
<b>Future Skills Taskforce</b> Shaping the future of engineering skills, encompassing sustainability, diversity and inclusion, social mobility, ethics and lifelong learning	<b>Global Challenge Engineering</b> Convening international partners to develop solutions and systems that will help address the most pressing global challenges	<b><i>This is Engineering</i></b> Changing perceptions of engineering among young people and the wider public



## ADOPT A GOAL-FOCUSED APPROACH

To date the Academy's support for Talent and Diversity, Innovation and Policy and Engagement has been predominantly responsive with no systematic prioritisation of themes or technologies. Over the period of this strategy we will adopt a goal-focused approach whereby **the majority of our funding and activity will directly support our goal** to build a sustainable society and inclusive economy. We will:

- Significantly increase the proportion of grants that directly address our strategic goals. For some schemes, 100% of grants will be targeted directly at the goals.
- Develop new best-in-class training and support packages for awardees to enhance their ability to contribute towards the goals.
- Support the development of communities and networks involving awardees that enhance progress towards the goals.
- Identify barriers to the goals and proactively encourage proposals and, where appropriate, new schemes to address them.
- Promote role models and learning from our schemes to inspire and inform others.
- Review all our existing portfolios to consider the contribution each activity makes to the goals. Those that do not contribute will be modified to strengthen their impact on the goals or discontinued if more appropriate.
- All proposals for new activities will be assessed against their anticipated contribution to the goals.

## BROADEN OUR ENGAGEMENT

In this strategy period we will deepen our engagement with Fellows and awardees and broaden our engagement with other stakeholders. Fellows already contribute over 20,000 hours of expert support to the Academy's activities each year on a *pro bono* basis and there is scope to strengthen this crucial contribution. Embedding engagement with earlier career engineers alongside established leaders, working in partnership with other disciplines and, in particular, **strengthening engagement across all parts of the UK** – at the professional, community and governmental level – will all enhance our ability to make a difference. We will:

- **Strengthen our approach to Fellowship engagement** to improve opportunities for Fellows to self-convene, meet regionally and connect virtually, including to share technical knowledge.
- **Build an awardee and alumni community** to allow grant holders and award winners to strengthen their relationships with the Academy, our Fellows and each other.
- Explore how we can enhance the **involvement of earlier career engineers** in the Academy as part of our Governance Review in 2020.
- Further invest in our already strong **partnerships with the professional engineering community and other academies** (both UK and international).
- **Cultivate more effective strategic alliances** with other key partners, including business and industry, educators, UKRI and international agencies.
- **Expand our relationships with media and influencers** who can help increase our reach to critical audiences.

## STRENGTHEN OUR FUNDING BASE AND FINANCIAL RESILIENCE

Delivery of this strategy requires a larger and more flexible funding base than the Academy currently has access to. We will continue the work already in train to improve our financial resilience, including through a new **Financial Strategy** to be developed in 2020. In addition, we will launch a major **Development Campaign** to grow our philanthropic income and funding capability ahead of our 50th anniversary in 2026.

## INVEST IN OUR CAPABILITY TO DELIVER THE STRATEGY

Over the past few years the Academy has been working intensively to improve its operational capability and capacity to attract, retain and engage excellent staff. During the next five years we will:

- Develop and implement a new **People Strategy**.
- Complete the CRM and website redevelopment projects underway and embed **digital capability** in the Academy's operations, communications and culture.
- Introduce new approaches to facilitate more **agile working**, both in terms of how we use our physical space and how we run our activities.

# → Measuring success

Over the strategy period, the Academy will further invest in its capacity for monitoring and evaluation and data analysis. All six major programmes will be subject to ongoing evaluation, both quantitative and qualitative, to support continuous improvement and maximise impact.

The table below summarises the key metrics that will be adopted to assess progress towards the goals during the strategy period. Progress will be reported each year in the *Annual Review*, with the strategy refresh process referred to above resulting in a more substantive mid-point report.



## TALENT AND DIVERSITY

*Engineers are influential agents of change in the drive for a more sustainable society, providing leadership both within and beyond the UK*

### KEY METRICS

- Amount of funding deployed on embedding sustainability in engineering education and careers
- Impact of funding deployed: number of people (educators, students, engineers) reached, career progression of beneficiaries, resources provided
- Case studies and qualitative assessments
- Delivery of Academy corporate sustainability action plan



## INNOVATION

*More and better engineering and technology solutions are being developed and deployed to support faster decarbonisation and more sustainable use of resources*

### KEY METRICS

- Amount of funding deployed to support cleantech/sustainability research and innovation
- Impact of funding deployed: third party funding, patents, publications, business-university collaborations, new companies formed, success of companies (funding attracted, jobs created, turnover, valuation, new products and services addressing sustainability, new markets entered)
- Case studies and qualitative assessments



## POLICY AND ENGAGEMENT

*Engineering expertise and systems approaches are embedded in policy and wider societal responses to sustainability challenges, improving the rate of progress*

### KEY METRICS

- Numbers of engineers and policymakers/influencers engaged in policy dialogue on sustainability (in UK and internationally)
- Number and impact of publications, events and other policy outputs on issues relating to sustainability, including recommendations adopted, PR and comms reach and evidence of demand for National Engineering Policy Centre (NEPC) advice and media commentary
- Uptake of and feedback from Policy Fellowships
- Case studies and qualitative assessments
- Public awareness of role of engineers in improving sustainability



### TALENT AND DIVERSITY

*The UK has a world-leading and truly inclusive engineering workforce that sets the gold standard for technical excellence, ethics and professionalism*

#### KEY METRICS

- Amount of funding deployed to support development of a world leading and truly inclusive workforce
- Impact of funding deployed: number and diversity of entrants to engineering education/careers, diversity of engineering workforce, evidence of inclusive culture (surveys etc), career progression of beneficiaries
- Implementation of Academy D&I action plan
- Successful ethical audit and follow up implemented



### INNOVATION

*Engineering innovation and enterprise are improving productivity, competitiveness, public health, safety and security and delivering economic and social value for people from all parts of the UK*

#### KEY METRICS

- Amount and distribution of funding deployed to support R&D, innovation and enterprise across the UK
- Amount of funding deployed to support innovations that promote UK security, safety and resilience
- Impact of funding deployed: third party funding, patents, publications, business-university collaborations, new companies formed, success of companies (funding attracted, jobs created, turnover, valuation, new products and services, new markets entered)
- Number of Hub regional centres established and evidence of their impact: utilisation, stakeholder feedback, regional activities held, numbers engaged
- Case studies and qualitative assessments



### POLICY AND ENGAGEMENT

*Policymakers and the public have embraced engineering as a key driver of prosperity and policies are in place that support a secure, resilient and balanced UK economy*

#### KEY METRICS

- Numbers of engineers and policymakers/influencers engaged in policy dialogue on engineering and economy/technology and society (in UK and internationally)
- Number and impact of publications, events and other policy outputs on issues relating to inclusive economy, including recommendations adopted, PR and comms reach and evidence of demand for NEPC advice and media commentary
- Appointment of Chief Engineers or equivalent to local/regional/devolved governments
- Evidence of improved understanding of public attitudes re technology
- Evidence of changing public perceptions of engineering. This is Engineering Day established as major national awareness day
- Case studies and qualitative assessments

#### KEY METRICS

- KPIs for fundraising, finance, IT, communications, staff, facilities, Fellowship engagement and partnerships

→ By 2025 we will have **helped to build a sustainable society and inclusive economy** by...

- **Investing at least £180 million** in talent and diversity, innovation and policy work to support the goals, leveraging more than **£500 million in follow-on investment** from others
- Supporting the founding and growth of at least **500 companies** that will deliver benefits for a sustainable society and inclusive economy
- Enhancing the leadership capabilities of at least **7,500 engineers**
- Inspiring at least **1 million young people** to consider engineering careers, at least half of whom come from under-represented groups
- Engaging **500 engineering businesses and organisations** to embed inclusive working cultures across the engineering profession
- Delivering at least **80 influential policy outputs** and supporting over **1,000 policymakers** in the UK and overseas to deploy engineering expertise to address the goals
- Supporting **alliances** using engineering and technology to address global challenges in more than **40 countries across six continents**.

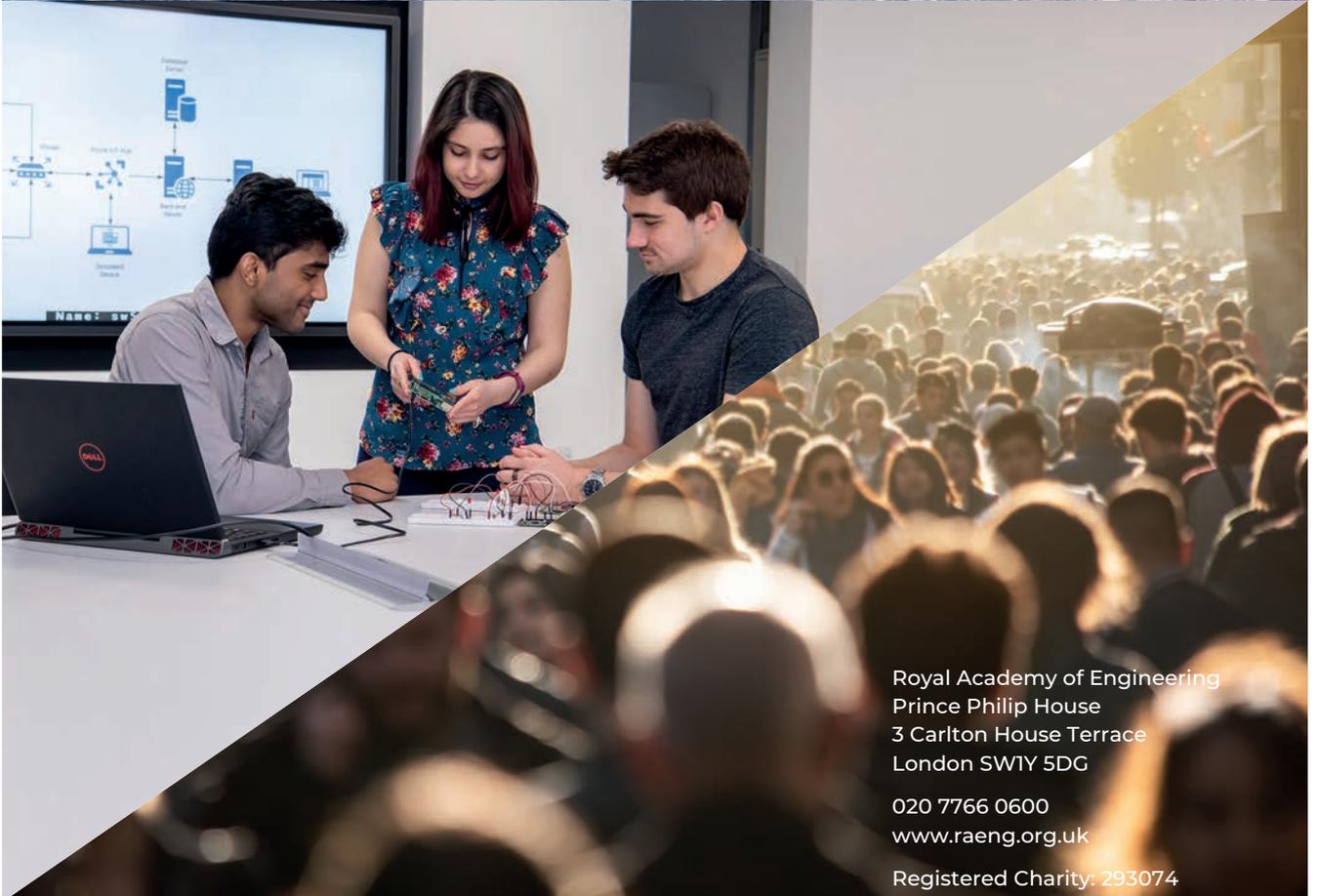
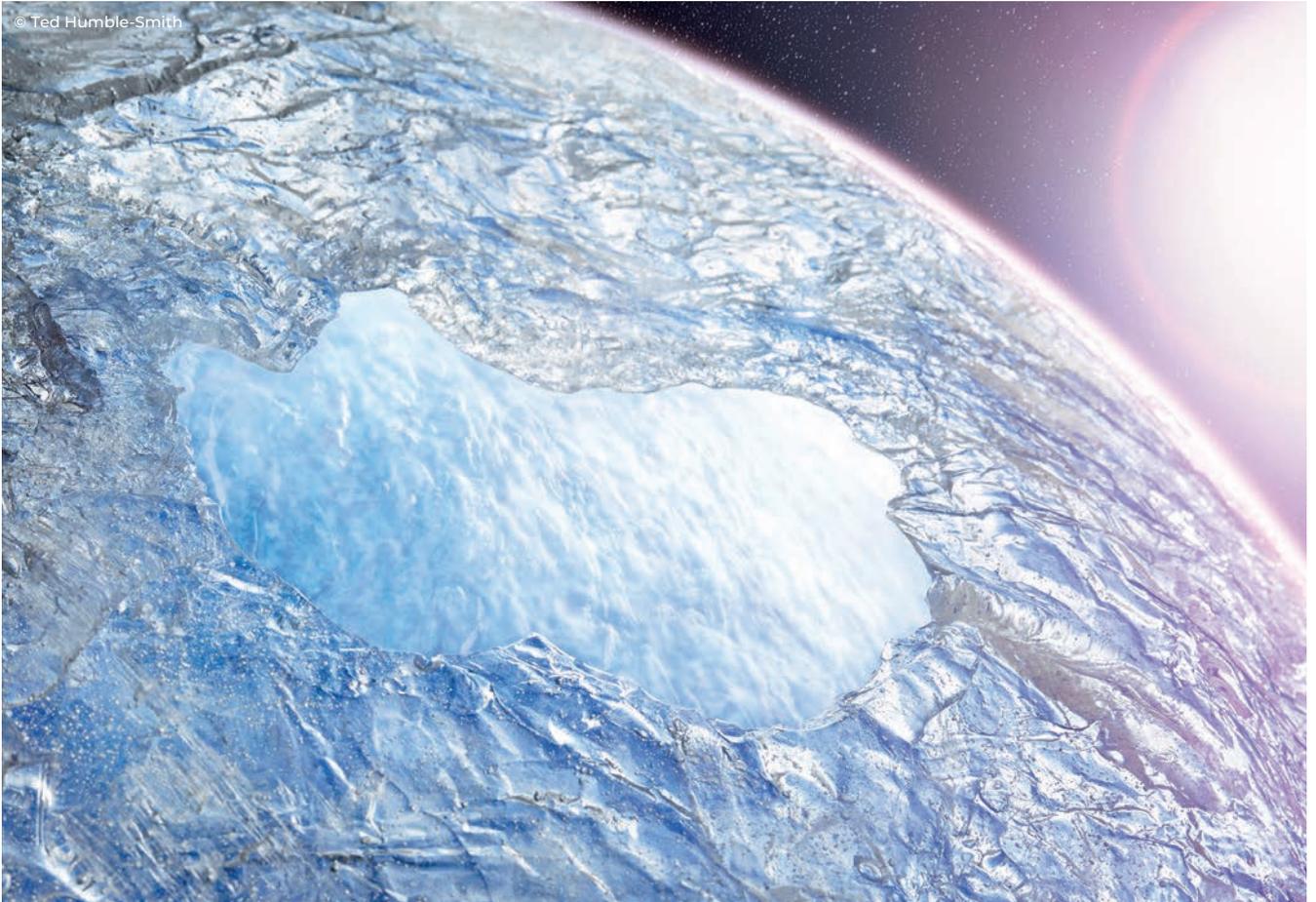
→ This will be enabled by...

- Leveraging at least 150,000 hours of *pro bono* expert support from Fellows, awardees and partners
- Expanding our regional footprint and engagement across the UK
- Significantly improving our impact, effectiveness, digital maturity and delivery capability
- Developing and delivering a robust financial strategy and successful 50th anniversary development campaign
- Expanding our relationships with media and influencers, and growing the media and public engagement skills of our Fellows and awardees
- Creating a long-term strategic framework for the Academy and refreshing our *Strategy 2020–25* along the way.





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Royal Academy of Engineering  
Prince Philip House  
3 Carlton House Terrace  
London SW1Y 5DG

020 7766 0600  
[www.raeng.org.uk](http://www.raeng.org.uk)

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