HM Government

UK Research and Development Roadmap

Survey results summary

January 2021

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Foreword

In July, we published our ambitious R&D Roadmap to ensure the UK is the best place in the world for scientists, researchers and entrepreneurs to live and work, while helping to power up the UK's economic and social recovery and level up the UK.

The Roadmap looks at our whole system of science, research and innovation to release its potential, to unlock and embrace talent, diversity, resilience and adaptability, and to tackle the biggest challenges of today and tomorrow. The COVID-19 pandemic has demonstrated the vital importance of scientists and innovators from across the world working together to tackle global challenges, from making workplaces COVID-secure to being at the forefront of global efforts to find a vaccine.

We are making good progress on commitments across the Roadmap. We have substantially reduced bureaucracy in the higher education and research system and announced plans to reform the Research Excellence Framework to support a culture which motivates people to do diverse, creative and risk-taking work. We have launched the Innovation Expert Group to provide advice on how to drive up the UK's productivity through innovation, and the R&D Place Advisory Group to help inform the development of our ambitious new places strategy for R&D. We look forward to continuing to work with partners to support, sustain and strengthen the R&D system.

In November, the Spending Review set out the government's plan to cement the UK's status as a global leader in science and innovation by investing £14.6bn in R&D in 2021/22. The settlement supports the Roadmap commitments and helps consolidate our position as a science superpower, as we build towards spending 2.4% of GDP on R&D by 2027.

Alongside the Roadmap, we published a survey asking key questions about the UK's R&D system. We received responses from a wide range of organisations and this document reflects the messages we heard from across the sector. Responses have provided valuable input into the next steps on the Roadmap and we will continue to build on this engagement as we develop the proposals set out in the Roadmap.

Since the Roadmap's publication, I have been fascinated to hear from a range of people across the UK about how we can work to ensure our R&D system is fit for purpose, both now and in the future. Researchers and innovators have told us what their priorities are, and how they think we can bring the Roadmap to life. I have engaged with diverse groups of people on topics throughout the Roadmap including how the R&D places strategy can support the levelling up agenda, what we can do to improve diversity and inclusion in research, and how we can better attract and capture the benefits of business R&D investment.

R&D will continue to be critical to the economic and social recovery from the impacts of COVID-19, enabling us to build back better for a greener, healthier and more resilient UK. We are working with universities, businesses, the third sector and across government on delivering the R&D Roadmap.

Amanda Solloway MP

Minister for Science, Research and Innovation

Executive Summary

The Roadmap sets out the government's vision and ambition for science, research, and innovation. To translate this into action, we are working with a wide range of partners across the R&D landscape. The Roadmap asked a series of questions, and we undertook this public survey to provide an opportunity for interested parties to respond to these questions. This was part of a series of activities to understand and discuss views on the Roadmap as well as contribute to the next steps.

We received nearly 400 responses from individuals and organisations across the UK and internationally. Responses were overwhelmingly supportive of the ambitions set out in the Roadmap and welcomed the opportunity to contribute. This document summarises the main themes.

We identified several cross-cutting themes which were raised in response to multiple survey questions. These were:

- **Long-term and sustainable funding,** with a diverse range of funding approaches to reach a wide range of organisations across the UK.
- **Greater support for collaboration and knowledge exchange across the R&D landscape** - academia, industry, the public sector, the public, and across sectors, nationally and internationally.
- **A strategic and long-term approach** to set a clear direction for the UK, attract international talent, and coalesce businesses around common goals and global challenges.
- **An improved research and innovation culture**, proactively supporting and developing diversity at all levels across the sector.
- **Continued support for education, training, and skills,** with the ability to acquire new skills across all regions of the UK and ensure the demands of the future workforce are met.

We welcome the valuable input from organisations and individuals across the UK in the survey, and we are continuing to build on this engagement as we develop the proposals set out in the R&D Roadmap.

R&D Survey Results

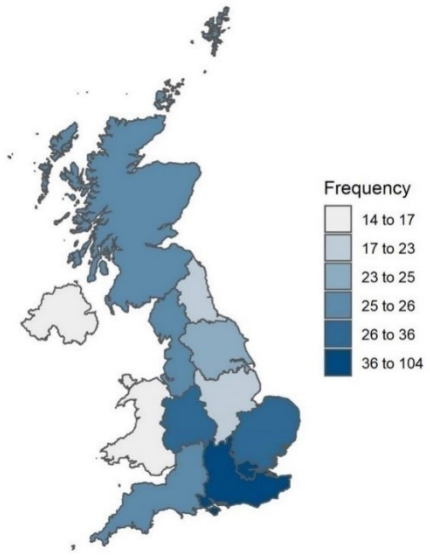

Figure 1 – Breakdown of UK respondents by region.

There were 397 responses to the R&D Survey in total, including responses from individuals and organisations across the UK and internationally, and from a wide range of sectors. Over two fifths (41%) of respondents across individuals and organisations were based in London and the South East, however this could reflect headquarter location of national organisations rather than actual geographical spread. A full breakdown is available in the Annex.

The responses were broken down into nine organisational categories: Business; Charity or Non-profit organisation; Learned Society, National Academy or Professional Body; Public Sector organisation; Research Institute; Trade Association, Membership organisation or Representative body; University; other, which included alliances, associations and networks; and status unknown. The number of responses in each of the categories is set out in the table below.

Respondent category	Number of responses	Percentage of total
University	132	33%
Business	86	22%
Public Sector Organisation	45	11%
Research Institute	30	8%
Trade Association, Membership Organisation or Representative Body	23	6%
Charity or Non-profit Organisation	22	6%
Learned Society, National Academy or Professional Body	15	4%
Other – including Alliances, Associations and Networks	17	4%
Status Unknown	27	7%

Table 1 – Breakdown of respondent by organisational category.

The Roadmap set out a series of questions to seek views on different aspects across the R&D system. The eight questions in the survey addressed the key themes of the Roadmap:

- How can we best increase knowledge and understanding through research, including by achieving bigger breakthroughs?
- How can we maximise the economic, environmental and societal impact of research through effective application of new knowledge?
- How can we encourage innovation and ensure it is used to greatest effect, not just in our cutting-edge industries, but right across the economy and throughout our public services?
- How can we attract, retain and develop talented and diverse people to R&D roles? How can we make R&D for everyone?
- How should we ensure that R&D plays its fullest role in levelling up all over the UK?
- How should we strengthen our research infrastructure and institutions in support of our vision?
- How should we most effectively and safely collaborate with partners and networks around the globe?
- How can we harness excitement about this vision, listen to a wider range of voices to ensure R&D is delivering for society, and inspire a whole new generation of scientists, researchers, technicians, engineers, and innovators?

We have provided a high-level summary of responses for each of the questions of the survey. The themes outlined below reflect the views of survey respondents and are not official government policy.

Question Responses Summary

Question 1: How can we best increase knowledge and understanding through research, including by achieving bigger breakthroughs?

The key points raised in response to this question were:

- Supporting a balanced portfolio of research activity with a diverse range of funding approaches. This included support for higher risk, blue-skies research, and increased autonomy for researchers. The government's commitment to establishing a new independent UK ARPA body was welcomed.
- The sustainability of funding both for fundamental and challenge-led research. A number of options were suggested to address concerns, including a review of quality-related funding and full economic costing of projects.

- The role of national and international collaboration in tackling complex societal challenges and the need to draw on expertise from all relevant sectors. Responses highlighted that the COVID-19 pandemic has demonstrated the importance of collaboration. Clusters, open competition, R&D tax incentives and mission-driven programmes were highlighted as valuable mechanisms for encouraging and incentivising collaboration.
- An end-to-end and cross-government strategic approach with a larger focus on development, commercialisation, and adoption. Setting long-term research challenges and investing in priority cross-cutting technologies, for example through missions or moonshots, were highlighted. Responses suggested that focussing on commercial and private sector partners and providing support at every stage of the innovation pathway could be beneficial.
- Promoting R&D as a more attractive career. Sustainable career pathways with increased mobility between sectors, and internationally, were thought to be important as well as improved access to training with routes and mechanisms for the inclusion of everyone.
- Improving training opportunities across the R&D landscape. Ensuring the pipeline of research talent - from inspiring the younger generation to investing in mid-career researchers - was considered important.
- Supporting diverse people and teams. Responses suggested that research must be informed by, and partnered with, a wide range of relevant stakeholders and carried out by researchers from diverse backgrounds at all levels within the sector.
- Additional themes identified included: increasing the diversity of organisations carrying out R&D; reducing bureaucracy by adopting new practices in the allocation of research funding and reforming the Research Excellence Framework; and levelling-up all over the UK to maximise the local impacts of research breakthroughs.

Question 2: How can we maximise the economic, environmental and societal impact of research through effective application of new knowledge?

The key points raised in response to this question were:

- Funding and support for all Technology Readiness Levels. Responses suggested a diverse range of approaches including increased support for start-ups and scale-ups, agile funding to test new concepts, access to follow-on funding, and collaborative funding mechanisms. Streamlined processes for the allocation of funding, appropriate incentives for private investment and support across different disciplines, as well as multi-disciplinary research, were highlighted.
- The involvement of end users at every stage of the research cycle. Responses suggested that identifying the customer for the research and ensuring there was customer pull-through was important.
- Building capacity in applied research, including employing specialists to work alongside researchers to consider the technical and commercial barriers early on in a project.
- Increased interaction and mobility between industry and academia. Responses suggested a number of ways to support this including interdisciplinary institutes, building

on existing collaborative programmes, increased funding for two-way secondments and the use of existing networks for wider engagement. Effective intellectual property management was highlighted as an important factor in building partnerships.

- Open access policies including open access journals and easily accessible and reusable data sharing to increase the dissemination of new knowledge to wider audiences. Responses identified that translating research so it is understandable to a broad range of audiences could increase the effective application of new knowledge, and that this could be carried out in a more coordinated manner amongst networks.
- Additional themes identified included: the processes of identifying and assessing impact; incentivising the onward development and commercialisation of research; the importance of identifying issues and challenges to be addressed in the short, medium and long-term; levelling-up; and people and skills.

Question 3: How can we encourage innovation and ensure it is used to greatest effect, not just in our cutting-edge industries, but right across the economy and throughout our public services?

The key points raised in response to this question were:

- Appropriate funding and incentives including a wide range of funding mechanisms. Increased access to funding via simplified routes and improved signposting was highlighted, as well as reducing bureaucratic processes involved in accessing and reporting on funding.
- A place-based focus towards innovation funding, involving local stakeholders and more geographically balanced decision-making. Responses suggested this could help to embed research and innovation activity within local innovation ecosystems and generate long-term growth.
- Stimulating business investment in R&D including reviewing and enhancing financial incentives such as R&D tax credits to help achieve this.
- Effective use of public procurement, regulation, and intellectual property to lend greater support for innovation which could lead to improved outcomes.
- Changing the culture around risk-taking including funding for higher-risk projects and taking actions to de-risk innovation for businesses. Responses suggested that recognising and rewarding innovative behaviour from a diverse range of people and discipline areas was important.
- A whole systems approach to help bridge the gap between research, innovation and adoption of new technologies. Responses suggested that incentivising collaboration and engagement between all aspects of the R&D landscape, including public and patient involvement in research, could help to increase the understanding of innovations in society.
- A broader understanding of innovation including having a broader definition of innovation and understanding how innovation differs across different sectors and regions of the UK.

- More effective assessment of the wider impacts of innovation and improvement of the indicators through which we measure success.
- Additional themes identified included: appropriate training in research translation, commercialisation, and entrepreneurship skills; and more effective communication of the value of innovation to society.

Question 4: How can we attract, retain and develop talented and diverse people to R&D roles? How can we make R&D for everyone?

The key points raised in response to this question were:

- The importance of increasing awareness, flexibility, and accessibility of research career paths. Responses suggested that improving the attractiveness of research careers with internationally competitive packages, enhancing job security, and support for researchers after career breaks could lead to improved retention of talented and diverse people. Promotion of the different routes to R&D careers including apprenticeships, online learning, collaborative training opportunities and on-the-job training were highlighted.
- Broadening development opportunities for researchers, including facilitating easier transition between academic and commercial careers, improving careers advice, and ensuring that there are clear progression opportunities available. Skills training for researchers including training in entrepreneurship, business development, management, and technology commercialisation were highlighted.
- Promoting greater diversity in the R&D community. A commitment to diversity and inclusion embedded across the UK's research sector and at all levels was suggested. This could be supported by targeted programmes, positive action, and promotion of role models from diverse backgrounds. Responses indicated that a greater understanding of the barriers to diversity, for example the lack of job flexibility that can be a barrier to retaining women in STEM, could be helpful, and greater resources to tackle these issues would be welcomed.
- Improving research culture - responses highlighted aspects of research culture which can lead to unhealthy competition, bullying, harassment, and mental health issues. Responses supported interventions to address these issues, citing Wellcome's recent report[1] on research culture as an evidence base which could be used to develop future work.
- Continued support for STEM education and a national strategic skills plan to ensure that the education and training available can meet the demands of the future workforce. The potential value of reviewing the curriculum requirements in schools and universities across the UK was highlighted.
- Ensuring a positive narrative around the UK's openness to international researchers including addressing any barriers to international mobility. There was interest in the role of the Office for Talent, and responses indicated that providing more certainty for EU nationals post EU-exit and expanding and simplifying the Global Talent Visa could be beneficial. Ensuring that visa costs are internationally competitive, and that funding is

[1] https://wellcome.org/reports/what-researchers-think-about-research-culture

available to attract research excellence to the UK, were highlighted. Responses emphasised the importance of continuing to attract overseas students to the UK's world-leading universities as well as ensuring that there are opportunities available for students to remain in the UK post-study.

- Additional themes identified included: introducing changes to research grants to reduce bureaucracy in the system; enhancing collaboration between industry and academia; and increasing public awareness of research through more effective engagement and communications.

Question 5: How should we ensure that R&D plays its fullest role in levelling up all over the UK?

The key points raised in response to this question were:

- The importance of directing investments towards local expertise and existing strengths. There was a desire for greater clarity on the UK's regional strengths and responses suggested that previous work including Science and Innovation Audits[2] had contributed, but that such reviews could be carried out on a regular basis and in partnership with businesses, universities, local authorities and local enterprise partnerships to identify new and developing areas of scientific excellence.

- The different R&D levelling up approaches that are required in different places and therefore the need for flexibility within place-based interventions. Responses noted the imbalance of R&D spending across the UK and suggested a number of approaches to address this.

- The importance of local collaboration and partnerships including knowledge exchange and the development of clusters, hubs and networks as a way to improve talent supply and encourage businesses to locate in a region. Responses suggested that a more collaborative approach and better connectivity of clusters could help support levelling up across the UK.

- Consideration of geographical location including for decision-making, the location of assets, and funding. Responses suggested that a focus on investments outside of the "golden triangle" could be helpful, for example in the consideration of new research infrastructure and organisations. Virtual clusters and networks were highlighted as ways to reduce the importance of geographical location.

- Improving the accessibility to developing new skills was a theme from responses, indicating that flexible and inclusive opportunities to retrain and upskill could be provided in all regions of the UK. Responses emphasised that career opportunities could be better distributed throughout the UK to enable progression in all regions.

- Additional themes identified included: the role of local decision-making across the R&D system to address regional priorities; the importance of coherence between local and national strategies; and the key role of universities and national institutes as anchor institutions and integral parts of local economies and societies.

[2] https://www.gov.uk/government/collections/science-and-innovation-audits

Question 6: How should we strengthen our research infrastructure and institutions in support of our vision?

The key points raised in response to this question were:

- Long-term and sustainable funding, emphasising the importance of funding for recurring infrastructure maintenance and running costs. Responses suggested that 100% full economic costing could help to maintain facilities, and financial incentives such as R&D tax credits could be reviewed and improved for research infrastructure and institutions to attract inward investment.

- The importance of regional, UK-based, and international collaborations. Strengthening the interfaces between research and innovation infrastructures, private and publicly funded infrastructure and nurturing existing networks were suggested. Responses highlighted that opportunities to share resources and ensuring access to facilities from diverse fields could incentivise multi-disciplinary collaborations and enable smaller labs and SMEs access to wider expertise.

- The role of existing infrastructure in delivering the Roadmap's ambitions including universities, UKRI and public sector research establishments. Responses highlighted the importance of supporting and maintaining existing infrastructure, as well as strengthening the UK's translation infrastructure. It was suggested that the government could review and build upon existing assets, such as the Catapult Network and other research and technology organisations, and these could be better promoted internationally to incentivise inward investment. Various sectors were identified as potential areas for infrastructure investment, including digital and clinical infrastructure.

- A long-term, end-to-end strategic approach could coalesce stakeholders around common goals and help business investors understand the UK's ambitions. Responses suggested that UKRI's previous infrastructure mapping exercise could be built upon, as well as participating in strategy formation with international research investors. A transparent review process leading to targeted investment, renewal, and strategic decommissioning was suggested.

- Additional themes identified included: appropriate training for people working in research facilities; increased visibility of career pathways, for example technicians who support research infrastructure and institutions; a reduction in bureaucratic processes and simplified funding mechanisms; and the importance of investing in infrastructure in all regions of the UK which can act as an anchor for regional growth, as well as anchoring R&D activities, capabilities and skills in the UK.

Question 7: How should we most effectively and safely collaborate with partners and networks around the globe?

The key points raised in response to this question were:

- Partnerships between the UK and Europe as an important element of global collaboration. Responses suggested that shared funding schemes with the EU have helped to foster collaborations, and the UK was encouraged to maintain these relationships and funding options where possible. Concerns were raised regarding the consequences of EU-exit on the recruitment and retention of international researchers, along with potential gaps in funding between the end of EU funding schemes and the

start of any replacement funding schemes. The ability to influence EU programmes, as well as participate, was suggested to be beneficial.

- International mobility was regularly cited as an important facilitator for global collaboration. The new Global Talent Visa was welcomed, and further action was encouraged to ensure that visa and immigration processes were simplified, and the eligibility criteria expanded to include industry and all career stages. Responses highlighted that funding for long-term secondments could be a mechanism to promote interdisciplinary and international collaboration and stated that universities play a key role in attracting and retaining international talent. Supporting global networks to bring people together both virtually and physically was considered important.

- A more coherent and strategic approach to encourage global collaboration, including identifying key strategic R&D partner nations and building strong government-supported relationships with these nations. This was in addition to the UK taking a clear lead in research addressing global challenges and demonstrating a commitment to joint global programmes.

- Joint funding mechanisms between the UK and other countries. Responses suggested that flexible bi-lateral and multi-lateral schemes that include sufficient time to build collaborations were important. A range of funding options were proposed, from seed funding that can be used to develop new collaborations to large scale funding for big international projects. Responses indicated that this funding could build on existing programmes, but new funding mechanisms that further encourage collaboration between academia, industry and research and technology organisations could be beneficial.

- Additional themes identified included: the consideration of how standards, regulation and intellectual property impact global collaboration; the importance of fostering an R&D environment and culture that is appealing to global collaborators; the variety of practical mechanisms available for collaboration; and how overseas investment and trade agreements can help to bolster the UK's R&D sector.

Question 8: How can we harness excitement about this vision, listen to a wider range of voices to ensure R&D is delivering for society, and inspire a whole new generation of scientists, researchers, technicians, engineers, and innovators?

The key points raised in response to this question were:

- Supporting a broad and balanced curriculum throughout every stage of the education system, delivered through high-quality teaching and with appropriate resources. Responses emphasised that continued education is important but that a focus on early years could be crucial to inspiring a whole new generation. Careers advice in schools was highlighted, suggesting that knowledge of available career paths could be increased including the different routes to R&D careers.

- STEM outreach in schools with young people and local communities, as well as local business outreach. A focus on social mobility and women in STEM were highlighted as ways to help to inspire a whole new generation.

- Public engagement, citizen science and science communication including patient and public involvement in all aspects of research, and public engagement in everyday

spaces to reach a wide audience. It was recognised that public engagement has received increased prominence over recent years and embedding good practice across the R&D system would be beneficial to ensure investments are in line with public priorities at both a national and local level. Responses suggested that scientists and researchers could be further supported to carry out science communication and public engagement activities and receive appropriate recognition for doing so.

- The role of scientists as STEM ambassadors was highlighted as well as the role of effective communication and promotion of scientific achievements. Responses suggested that the COVID-19 pandemic has provided an opportunity to change the national culture and demonstrate the societal benefits of science and research.
- Increased funding for both research and innovation activities and public engagement. Responses suggested that public engagement was often carried out at the expense of research due to competing resources and that more funding for public engagement could be incorporated into grants. Long-term and sustainable investment could inspire and support the next generation and allow businesses to allocate resources to long-term programmes.
- The government's role in setting direction and a compelling narrative for R&D and innovation so that multiple stakeholders can buy into and act upon it, whilst making it easier to communicate its societal significance. Responses highlighted that horizon scanning could be used to identify areas of potential comparative advantage. It was suggested that although there have been successful campaigns to attract people into STEM careers, more coordinated campaigns could increase overall impact. Wider engagement with a diverse range of voices to build a better understanding of the strengths, opportunities and needs of different areas could be beneficial, and using a whole-of-government system approach to address these.
- Additional themes identified included: the role of the media in portraying achievements and successes, as well as expanding the range of media used to reach younger people and different stakeholder and societal groups.

Conclusion

We welcome the valuable input from organisations and individuals across the UK in the survey, and we are continuing to build on this engagement as we develop the proposals set out in the R&D Roadmap.

We have identified several cross-cutting themes which were raised across multiple survey questions. These were:

- **Long-term and sustainable funding, with a diverse range of funding approaches to reach a wide range of organisations across the UK.**

  Responses emphasised that the sustainability of funding was an important factor in achieving bigger research breakthroughs and for strengthening our research infrastructure and institutions. Supporting a balanced portfolio of research and innovation activities, with a diverse range of funding mechanisms to support all Technology Readiness Levels, was considered important to increase the effective application of new knowledge and encourage innovation. Responses suggested that place-based funding could build upon local expertise and existing strengths using both new and existing mechanisms. Increased funding for both research and innovation activities, as well as for public engagement activities, was viewed as important to inspire and support the next generation.

- **Greater support for collaboration and knowledge exchange across the R&D landscape - academia, industry, the public sector, the public, and across sectors, nationally and internationally.**

  Responses highlighted that the COVID-19 pandemic has demonstrated the importance of national and international collaboration in tackling complex societal challenges, and that encouraging a culture of collaboration rather than competition could be beneficial. Responses suggested that there are existing collaborative programmes that could be built upon, as well as boosting collaboration through clusters, hubs, and networks to facilitate knowledge exchange. Increasing interaction and mobility between industry and academia via interdisciplinary institutions was considered vital to support the effective application of new knowledge and strengthen our research infrastructure and institutions.

- **A strategic and long-term approach to set a clear direction for the UK, attract international talent, and coalesce businesses around common goals and global challenges.**

  Responses indicated that a strategic approach across government and with a long-term outlook was vital to achieving bigger research breakthroughs, strengthening our research infrastructure and institutions, and collaborating safely and effectively across the globe. Responses suggested that investing in priority cross-cutting technologies and taking a clear lead in addressing global challenges via missions or moonshots could coalesce stakeholders around common goals and help business investors understand the UK’s ambitions. An outward facing strategy with sustainable and targeted investment and greater promotion of UK R&D strengths was considered important in attracting international interest.

- **An improved research and innovation culture, proactively supporting and developing diversity at all levels across the sector.**

  Responses indicated that improving research and innovation culture through promoting greater diversity in the R&D community, making R&D a more attractive career, and reducing bureaucratic processes were vital factors in achieving bigger research breakthroughs, encouraging innovation, and attracting, retaining and developing diverse people and teams. Responses suggested that research must be informed by, and partnered with, a wide range of relevant stakeholders to achieve real-world impact.

- **Continued support for education, training, and skills, with the ability to acquire new skills across all regions of the UK and ensure the demands of the future workforce are met.**

  Responses emphasised that continued support for STEM education delivered through a broad and balanced curriculum at every stage of the system and across the UK was important to attracting, developing and retaining talented and diverse people, levelling-up, and inspiring the next generation. The importance of continued education was also highlighted, and responses suggested that a national strategic skills plan to ensure that the education and training available can meet the demands of the future workforce was important. Better promotion of the different routes to R&D careers was highlighted including apprenticeships, online learning, and on-the-job training.

The R&D survey responses continue to inform policy development and since publication of the Roadmap in July we have made good progress on addressing some of the themes identified. In addition to the Spending Review which set out the government's plan to cement the UK's status as a global leader in science and innovation by **investing £14.6bn in R&D in 2021/22**, progress includes:

Raising our Research Ambitions

- The pioneering **'Good Research Resources Hub'** went live on the new UKRI website[3]. This underlines the breadth of activity that is central to high quality research, groups together key policies, and provides a hub of user-friendly, up-to-date advice and guidance to support researchers and innovators.

Inspiring and Enabling Talented People and Teams

- **Establishing the Forum for Tackling Bullying and Harassment in research and innovation**,[4] bringing together funders, sector representatives, regulators, and policymakers to share practice and coordinate interventions to achieve sector-level culture change.

- Launching an action plan[5] setting out how we will **raise the bar on professional development and employment conditions of researchers** as a signatory for the Concordat to Support the Career Development of Researchers.

- Launching an **Early Career Researchers' Forum**[6] to understand this group's perspective and engage on issues that matter to them. A pilot for the forum will seek to

[3] https://www.ukri.org/about-us/policies-standards-and-data/
[4] https://www.ukri.org/news/new-forum-for-tackling-bullying-and-harassment/
[5] https://www.ukri.org/wp-content/uploads/2020/10/UKRI-071020-ConcordatToSupportTheCareerDevelopmentOfResearchersFunderActionPlan.pdf
[6] https://www.ukri.org/news/ukri-to-pilot-early-career-researcher-forum/

recruit 400 early career researchers, with engagement activities commencing in early 2021.

- Awarding 101 **Future Leaders Fellowships** investing a further £109m.[7] Future Leaders Fellowships has made 305 awards over the first four rounds since its launch in 2018.
- Launching a competition to **improve access to and participation in postgraduate research study** for Black, Asian and minority ethnic students.[8]
- Launching the first **space census** to build a comprehensive picture of the space sector's diversity. The UK space sector aims to create 30,000 new jobs in next decade and is reliant on a diverse workforce.[9]
- Publishing both general and COVID-19 specific guidance to help **make health research more inclusive**,[10] supported by the NIHR Clinical Research Network (CRN), the NIHR INCLUDE Steering Group.
- Announcing **50 paid space internships** and creating the first **Space Engineering Technician apprenticeship**, helping people to gain the skills and experience they need for a career in space.[11]
- Launching three rounds of the **Innovation Scholars pilot**, supporting the development of research skills in the biomedical sector. The pilot has two strands:

1. Funding secondments between sectors, including business, academia, and the NHS,[12]
2. Funding the delivery of data science training in health and bioscience for researchers.[13]

Driving up Innovation and Productivity

- Launching the **Measurement for Recovery (M4R) programme**[14] to support companies to innovate and address the many challenges they face due to COVID-19. M4R matches businesses with world-leading measurement scientists, techniques, and technologies only available at the National Physical Laboratory and partner laboratories.
- Establishing the **Innovation Expert Group**[15], chaired by Hayaatun Sillem, CEO of the Royal Academy of Engineering. The Group has been set up to provide advice on how to drive up the UK's productivity through innovation and comprises of people with deep knowledge and experience.
- During London Tech Week, announcing **£147m for the Manufacturing Made Smarter challenge**,[16] which will support businesses to implement digital technologies to boost their manufacturing productivity. We also announced **£65m in funding for future**

[7] https://www.ukri.org/news/ukri-invests-109-million-in-future-leaders/
[8] https://www.ukri.org/news/new-fund-to-improve-postgraduate-research-participation-and-access/
[9] https://www.gov.uk/government/news/first-space-census-launches-today
[10] https://mrc.ukri.org/news/blog/nihr-include-improving-inclusion-of-under-served-groups-in-health-research/
[11] https://www.gov.uk/government/news/space-sector-to-back-50-sp-internships-this-summer
[12] https://www.ukri.org/news/new-round-of-innovation-scholars-secondments-biomedical-sciences/
[13] https://www.ukri.org/opportunity/innovation-scholars-data-science-training-in-health-bioscience/
[14] https://www.npl.co.uk/measurement-for-recovery
[15] https://www.gov.uk/government/groups/innovation-expert-group
[16] https://www.gov.uk/government/news/300-million-to-boost-uk-manufacturing-productivity-by-30

technologies[17] such as high-performance performance batteries for electric vehicles, advanced medical treatments, and robotics.

Levelling up R&D across the UK

- Awarding **Strength in Places funding** to 17 projects across the UK,[18] with up to £50k to develop full funding proposals for an award of between £10-£50m of longer-term investment early next year. Projects covered sectors including healthcare, cyber security, construction, and clean energy.
- Establishing the **R&D Place Advisory Group**[19] to propose, challenge and test policy options aiming to make the most of R&D potential and support local economic impact in areas across the UK.
- Opening the **UK Atomic Energy Authority's (UKAEA) new building based in the Advanced Manufacturing Park in Rotherham**.[20] The new facility is UKAEA's first new building outside of Oxfordshire in a decade and will benefit from local skills and expertise in the area.
- Developing **new 'space hubs' across England**, as well as funding space projects in Wales, Scotland and Northern Ireland. The work will see local government, experts and business leaders come together to find out how their area can take advantage of the opportunities space offers.[21]

Being at the Forefront of Global Collaboration

- Announcing that from the start of the 2021/22 academic year, **international students will be eligible for all UKRI's doctoral training programmes.**
- As part of the new UK/EU deal, **we have agreed to participate in Horizon Europe, Euratom Research and Training, and Copernicus** which represent valuable collaboration on science and research to tackle global challenges, and in fields that will benefit the British people.

Developing world leading infrastructure and institutions

- UKRI establishing their **Infrastructure Advisory Committee** making recommendations to UKRI's decision-making boards on the pipeline of infrastructure investment priorities and prioritisation of investments through the Infrastructure Fund (previously called Grand Challenges Funding).[22]
- Launching five new **National Patient Recruitment Centres** (NPRCs) to enable more late phase commercial clinical research to be delivered within the NHS.[23] Located at

[17] https://www.gov.uk/government/news/government-investment-to-help-build-robots-for-nuclear-plants-and-batteries-for-electric-aeroplanes
[18] https://www.gov.uk/government/news/projects-to-heat-homes-through-disused-mines-and-faster-offshore-wind-farm-construction-win-government-backing
[19] https://www.gov.uk/government/groups/rd-place-advisory-group
[20] https://www.namrc.co.uk/centre/ukaea-rotherham/
[21] https://www.gov.uk/government/news/new-support-for-uk-space-hubs-unveiled
[22] https://www.ukri.org/our-work/creating-world-class-research-and-innovation-infrastructure/
[23] https://www.nihr.ac.uk/news/nihr-launches-new-national-patient-recruitment-centres-for-late-phase-commercial-clinical-research/26154

NHS hospital sites across England, they are the first NIHR-funded research infrastructure wholly dedicated to delivering commercial research.

- Announcing **£213m for world class science facilities**[24] enabling researchers to respond to global challenges such as COVID-19 and climate change. This completes a £300m investment in infrastructure announced alongside the Roadmap.

Ensuring a healthy R&D system

- Announcing **reductions in bureaucracy in the higher education and research system** to streamline and simplify processes and build on the lessons learned during the rapid response to the coronavirus pandemic.[25]

- Announcing plans to **reform the Research Excellence Framework**, to build an evaluation system that achieves our research and innovation goals with more quality time spent on research and a positive culture which recognises all contributions to research.[26]

- Launching the **MOD Science & Technology Strategy 2020**[27] outlining a capability-driven approach to R&D. The strategy aims to refocus the budget towards higher-risk, high reward research that will support the generation-after-next of military capabilities, allowing us to seize opportunity and pre-empt future threats.

- Launching phase 1 of a **social media campaign to value non-publication outputs** and building on this with partner engagement in phase 2 of the campaign via their social media platforms.

- Publishing the report **Open Access: challenges and opportunities for Low- and Middle-Income Countries (LMIC) and the potential impact of UK policy**.[28] This is informing UK open access policy and is being considered by other research funders around the world to consider issues of equity in LMIC and help to achieve the benefits of open access.

- Announcing the UK's plan to endorse the **Bonn Declaration of Scientific Freedom**.[29] The Science Minister officially supported this on behalf of the UK. Integrity, reproducibility, and open research form a core in the declaration, in addition to international scientific collaboration.

[24] https://www.gov.uk/government/news/over-200-million-boost-to-upgrade-uk-labs-to-help-scientists-tackle-covid-19-and-cut-emissions
[25] https://www.gov.uk/government/publications/reducing-bureaucratic-burdens-higher-education/reducing-bureaucratic-burdens-on-research-innovation-and-higher-education
[26] https://www.gov.uk/government/speeches/science-minister-on-the-research-landscape
[27] https://www.gov.uk/government/publications/mod-science-and-technology-strategy-2020
[28] https://www.gov.uk/research-for-development-outputs/open-access-challenges-and-opportunities-for-low-and-middle-income-countries-and-the-potential-impact-of-uk-policy
[29] https://www.bmbf.de/files/10_2_2_Bonn_Declaration_en_final.pdf

Next Steps

Although we have made progress on implementing the Roadmap there is still more to do. Through delivering the Roadmap we aim to deliver economic and societal benefits across the UK for decades to come, and to achieve this, government, industry and the R&D sector need to work in partnership across the UK and internationally. The Government has committed to increasing UK investment in science, innovation, and technology to 2.4% of GDP by 2027; the Roadmap is an important step as we work towards delivering our long-term goals.

In the coming months, we have committed to publishing a new places strategy for R&D and we are working across government and with the devolved administrations to develop this. We are continuing to explore how we best create an environment where diverse and talented people from all over the world are enabled and encouraged to work to the best of their ability and fulfil their potential in their career of choice.

Annex – Respondent Demographics

Respondent type	Number of responses	Percentage of total
Individual	210	53%
Organisation	163	41%
Status Unknown	24	6%

N=397

Respondent category	Number of responses	Percentage of total
University	132	33%
Business	86	22%
Public Sector Organisation	45	11%
Research Institute	30	8%
Trade Association, Membership Organisation or Representative Body	23	6%
Charity or Non-profit Organisation	22	6%
Learned Society, National Academy or Professional Body	15	4%
Other – including Alliances, Associations and Networks	17	4%
Status Unknown	27	7%

N=397

Business Sector	Number of responses	Percentage of business category total
Life sciences	15	19%
Digital	12	14%
Aerospace / defence / security	10	12%
AI / robotics	6	7%
Energy	6	7%
Manufacturing	6	7%
Engineering	4	5%
Consumer goods	3	3%
Other*	18	21%
Undetermined	6	7%

*Examples in this category include agriculture, innovation and R&D, consultancy, and photonics. N=86

Region	Number of responses	Percentage of total
East Midlands	22	6%
East of England	32	8%
London	104	26%
North East	17	4%
Northern Ireland	14	4%
North West	25	6%
Scotland	25	6%
South East	59	15%
South West	25	6%
Wales	14	4%

West Midlands	27	7%
Yorkshire and the Humber	23	6%
Outside the UK	9	2%

N=396, one unknown

This publication is available from: www.gov.uk/government/publications/uk-research-and-development-roadmap

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