

# UK Research and Development Roadmap: A response from the British Academy

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## Summary

The British Academy welcomes the opportunity to contribute to the big conversation on what actions need to be taken and how to achieve the ambitions set out in the Government's UK Research and Development Roadmap. The key points of our response are:

- Achieving the Roadmap's core objective to further the health, prosperity and national security of the UK will require insights from across the research base, including from the SHAPE disciplines (Social Sciences, Humanities and Arts for People and the Economy). Consistent investment across the whole spectrum of intellectual disciplines is mutually reinforcing, as is a diversity of funding approaches, including responsive mode grants for discovery research, such as those awarded by the national academies.
- We appreciate the need for a system-wide approach, but emphasise that this must take account of the wider higher education landscape, as research and universities are both part of a complex interrelated ecosystem. Universities are key institutions for research and innovation, as sources of skilled individuals and as anchors in their geographic communities.
- Maximising the economic, environmental and societal impact of research is contingent upon a 'whole pathway' approach, with research users in all sectors of the economy, including the service sector, public services and charities, as well as in policy making, requiring the insights from SHAPE research. We encourage a similarly broad definition of innovation, which recognises that innovation is not a single process but happens as part of a wider system of knowledge production and integration.
- We welcome the focus on people in the Roadmap and note the key role of the national academies in developing excellent individuals through key stages of their career. To deliver the Government's ambitions on research and innovation we need to consider what is needed to enable the whole ecosystem to thrive, across the whole pipeline.
- Future approaches to investment based on place should seek to maximise opportunities through existing structures, and not simply focus on big, new investments. The research base needs to be able to respond where challenges arise, and this is limited when investment is tied up in single centres which find it difficult to be agile and change direction.
- We support the findings of the recent UKRI Review of Research Infrastructure and would urge Government to use this as a guide for its strategy in this area. Priorities should include investment in new data infrastructures as well as growing existing infrastructures to improve data access, and building on the economic delivery of the creative industries and immersive technologies working from the arts to the automotive sectors.
- The cost, complexity and perception of the UK's immigration system are important factors that do not help to attract researchers and staff. If the UK wishes to boost its international collaborations and networks, then our immigration system must stop closing down such opportunities and raising burdens and barriers incommensurate and inappropriate for what is required.
- To harness excitement about the Roadmap's vision, we need to redouble efforts to build a compelling narrative about how research and innovation transforms lives and provides solutions to our most urgent concerns. UK researchers and innovators from all disciplines have been essential in developing the new knowledge and approaches that have fuelled our country's progress and prosperity. We should celebrate these achievements and alert the public to the potential breakthroughs UK-based researchers could make with the right investment.

## **How can we best increase knowledge and understanding through research, including by achieving bigger breakthroughs?**

We welcome the Government's commitment to ambitious research and innovation objectives, and the opportunity which this consultation offers for a conversation about how the promised increased investment can be coordinated in an effective and joined up way. Research and innovation deliver many diverse benefits: in addition to significant economic returns and the private investment which is crowded-in based on publicly funded research, there are benefits across health, culture, public engagement and environment. These benefits, which often rely on insights from SHAPE disciplines (Social Sciences, Humanities and Arts for People and the Economy),<sup>1</sup> are not as straightforward to capture or measure, but are vital for the wellbeing, prosperity and cohesion of society, and the implementation of the Roadmap must recognise and support the delivery of this value.

We support the Roadmap's core objective to further the health, prosperity and national security of the UK, an aim which will require insights from across the research base. Consistent investment across the spectrum of intellectual disciplines is mutually reinforcing. The research ecosystem is too connected for a weakening of one discipline to not have a negative effect on the others, particularly when it comes to research focused on solving major global challenges which require interdisciplinary solutions. For issues such as net zero, obesity and mental health, or maximising the use of AI and big data to improve productivity, scientific and technological answers will only be part of the solution; we also have to consider what needs to happen to enable their adoption and integration, and SHAPE disciplines are key to this. Psychology and economics, and linguistic, historical and cultural knowledge of societies worldwide are needed to facilitate the global, and local, roll-out of new technologies, environmental programmes, or vaccines.

We welcome the upfront emphasis in the Roadmap on discovery research. However, discovery research is not only about ground-breaking experiments but about the space to explore new avenues where the possible benefits are as yet unknown, and does not have to be done at scale to be illuminating: small steps for knowledge development are also important. We believe that one of the great strengths of the UK research ecosystem is the diversity of funding approaches, which creates opportunities for different types of research and enables rather than stifles creativity. The national academies are a vital part of this thriving ecosystem, and the funding we provide offers high quality complementarity to UKRI and other funders, through responsive grants which enable researchers to explore the most promising avenues of investigation, which can lead onto a ladder of bigger grants.

We appreciate the need for a system-wide approach, but emphasise that this must take account of the wider higher education landscape, as research and universities are both part of a complex interrelated ecosystem. All universities help to support the system, by providing a steady supply of skilled researchers, whose contributions as students may help stimulate new directions for research, as well as graduates with other skills needed for business and innovation in all sectors of the economy.

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<sup>1</sup> <https://thisisshape.org.uk/>

## **How can we maximise the economic, environmental and societal impact of research through effective application of new knowledge?**

We welcome the acknowledgement in the Roadmap that the impact of research is far wider than economic. The Academy believes that impact is often achieved through a web of influence rather than a linear progression, particularly in SHAPE disciplines which do not always follow conventional ‘IP to commercialisation’ pathways. Instead, the application of new knowledge is more likely to be relationship based and so is harder to track, measure and assess.<sup>2</sup> Research that generates and critiques ideas can be long term and diffuse, and not conducive to demonstrating that an outcome happened because of a particular piece of research.<sup>3</sup> We therefore need to ensure that we are using measures of impact which take this into account.

Maximising the economic, environmental and societal impact of research is therefore contingent upon a ‘whole pathway’ approach: identifying who research users are within the ecosystem, how users access research, understanding what research is needed and what obstacles must be removed or incentives applied to increase this.

It is crucial that we deconstruct the myth that research users are predominantly large corporates and their supply chains operating in the life sciences. Not only are other industrial sectors significant producers and consumers of research – the UK’s majority service sector based economy, along with the prominent sectors of agriculture, production and construction – but the public and charitable sectors also conduct and consume research across a range of research disciplines, both in and outside of the UK. Where they operate as research users, much of this work is done in collaboration with universities, whose role as producers of research is critical in a knowledge-based economy.

The research role of higher education is especially pertinent when applied to impact on policy, which becomes more effective, relevant and represents better value for public spending when informed by robust evidence. The Academy therefore welcomes the recent Research England initiative to create Capabilities in Academic Policy Engagement (CAPE) to better understand how to facilitate the use and impact of research in public policy. CAPE will support effective and sustained engagement between academics and policy professionals across the higher education sector, building on other initiatives, such as the POST Knowledge Exchange Unit.

Increasing impact, particularly outside of economic impact, relies greatly on individual organisations, and their policies, procedures, and staff. It also requires research to be relevant to the users at whom it is aimed, whether individuals, industries or societies. For this reason, investing in the question as well as the solution – from challenge-based research and business-led innovation, to moonshots and discovery research – allows for balance between societal, environmental and economic need without sacrificing a research system which celebrates the value of research in itself.<sup>4</sup>

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<sup>2</sup> Budtz Pedersen, D. Følsgaard Grønvald, J. & Hvidtfeldt, R. Methods for mapping the impact of social sciences and humanities—A literature review, *Research Evaluation*, Volume 29, Issue 1, January 2020, pp. 4-21. <https://doi.org/10.1093/reseval/rvz033>

<sup>3</sup> Weiss, C. H. The Many Meanings of Research Utilization, *Public Administration Review*, vol. 39, no. 5, 1979, pp. 426–431. <https://www.jstor.org/stable/3109916>

<sup>4</sup> Gutrie, S. et al. Evidence synthesis on measuring the distribution of benefits of research and innovation, 2018. <https://www.thebritishacademy.ac.uk/publications/research-innovation-evidence-synthesis-measuring-distribution-benefits-research-innovation/>

## **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 UK has recognised the role that innovation can play in building an advanced knowledge economy, driving a world-leading research system, and unlocking growth. We would encourage a broad definition of innovation, across sectors and different parts of the research base and welcome the proposals to look at innovative ideas within the public sector.

The British Academy is working with Nesta to understand more about how innovation takes place within the business sectors most closely linked to SHAPE disciplines, which are generally part of the service sector making up 80% of the UK economy. Current interpretations of 'R&D' focus on models appropriate for science, manufacturing and technology, and we risk failing to capture much of the innovation happening and to develop appropriate policies to support it without a more inclusive definition. We believe these insights will be of value to the emergent Innovation Expert Group.

Innovation is not a single process but happens as part of a wider system of knowledge production and integration.<sup>5</sup> Innovation in the economy cannot be assessed by looking at those who apply for R&D tax credits, since any firm which operates on billable hours cannot have a budget line for innovation. Nor can it focus on where whole organisation arms or departments exist for R&D, when innovation can exist in the daily interactions and actions of individuals. Some innovations are turned into new products, but some become services or jobs, while others are marked in the changes they cause to industry or government. All impact wider society, yet current innovation policies risk missing this effect and the opportunity to encourage it.

We need to consider a systems approach to nurture the pipeline from idea to innovation, and close the circle between research and commercialisation to allow the system to feed itself, while taking account of regional innovation dependencies, ecosystems and talent capacity and capability.

There is a potential role for UK Advanced Research and Innovation Agency here: the success of DARPA in the US is how it gives excellent people freedom to seek out the research with the best potential, supported by funding which allows this to be realised. Rather than a sector or challenge, the new UK equivalent could focus on identifying and developing individuals who can be facilitators and knowledge brokers in maximising the potential for innovation, hence adding value to the existing ecosystem.

The current barriers to innovation are not a reluctance or inability to commercialise research, but the inconsistency with which support is offered. Current investment options are narrow, and often targeted at a small range of sectors dominated by large organisations, while much innovation happens in SMEs. One of the biggest issues in the UK is the lack of investment in young, agile companies outside of R&D intensive sectors.<sup>6</sup> To solve this we must diversify the funding sources, as this creates a shallow pool which makes the landscape vulnerable with its lack of agility. Greater private investment - from a diverse range of sources - is needed to secure this.

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<sup>5</sup> D'Angelo, C. et al. Evidence synthesis on the conditions needed to translate research and drive innovation. 2018 <https://www.thebritishacademy.ac.uk/publications/research-innovation-evidence-synthesis-conditions-translate-research-drive-innovation/>

<sup>6</sup> See for example the Brighton Fuse project. <http://www.brightonfuse.com/wp-content/uploads/2013/10/The-Brighton-Fuse-Final-Report.pdf>

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

We welcome the focus on people in the Roadmap and note the key role of the national academies in developing excellent individuals through key stages of their career. We offer schemes which can be easily scaled up with no extra bureaucracy to support more researchers to move into and through the research ecosystem, supporting both sectoral and geographic mobility. The academies' schemes are targeted at career transition points, especially early career and the link from early to mid-career. By investing in people through Fellowships, we support job security efficiently and effectively. We look forward to supporting the development of the R&D People and Culture Strategy.

The impact of Covid-19 is disrupting this pipeline of talent and immediate support for the next generation of researchers is required to ensure the UK remains today an attractive environment to build a career for those who will become tomorrow's research leaders. To deliver the Government's ambitions on research and innovation we need to consider what is needed to enable the whole ecosystem to thrive, across the whole pipeline including postgraduate researchers. As research projects become more complex, we need to empower researchers with the skills to lead teams to deliver advances in knowledge, often drawing on interdisciplinary approaches, but also to support individuals to develop and to create a positive research culture.<sup>7</sup> Meanwhile, many fractional or temporary positions within universities are disappearing, roles which previously enabled early career researchers to remain within the system and develop the skills and experience they need to progress.

The new Strategy must recognise the importance of a diverse research community and enable participation in the research effort from all kinds of talent, from within the UK and internationally. We know that there is pent-up demand in the system within SHAPE disciplines. In our Postdoctoral Fellowship scheme, our success rate is around 9%, but many more are deemed to be of the highest quality by award panels. This year we could fund four times the number of high-quality researchers than is currently possible from our baseline budget. Universities and other research organisations are already taking steps to improve the environment in which research is done and to support and inspire researchers, through commitments to concordats such as those for researcher development and research integrity; we must build on this encouraging direction.<sup>8</sup> To attract researchers to the UK, the immigration system needs to be significantly reduced in cost to be internationally competitive, and must be open and supportive to both researchers and their dependants.

We would welcome opportunity to explore further what the Office for Talent is intended to deliver. If it is meant to work as a brokerage service, helping to match excellent individuals with opportunities within the UK, and in doing so reduce some of the bureaucracy of recruiting and deploying talent, this could be highly beneficial. However, we would caution against an approach which would take away from the research community the power to make decisions about where the best talent is to be found.

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<sup>7</sup> See for example the ESRC's Fit for the Future – Leadership and Social Sciences. <https://esrc.ukri.org/research/future-of-social-science-insights-opportunities-and-expectations/fit-for-the-future-leadership-and-social-sciences/>

<sup>8</sup> <https://www.thebritishacademy.ac.uk/news/british-academy-announces-support-researcher-development-concordat/>

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

Future approaches to investment based on place should seek to maximise opportunities through existing structures, and not simply focus on big, new investments. The research base needs to be able to respond where challenges arise, and this is limited when investment is tied up in single centres which find it difficult to be agile and change direction. On any challenge, a variety of research approaches are needed, which may not be best achieved within a homogenous unit. Existing mechanisms like Local Enterprise Partnerships, the Science and Innovation Audits and Local Industrial Strategies all have a role to play, while how to deliver the benefits previously derived from EU Structural Funds also needs to be considered.<sup>9</sup> The insights of SHAPE disciplines will be crucial here, and the British Academy would welcome opportunity to feed into the work of the R&D Place Advisory Group.

Place-based research and innovation policies have tended to focus on (advanced) manufacturing from an innovation district/cluster point of view where knowledge transfer is direct and codifiable. The main issue facing post-industrial regions which gives rise to spatial inequalities is functional and cognitive lock-in to a relatively capital and labour intensive but mostly low skilled economy. More focus could be placed on identifying and valuing drivers of knowledge intensive services sector growth, leading to higher skilled, better paid jobs in the 80% of the UK economy which is based in the service sector, but where knowledge exchange is less tangible.<sup>10</sup>

Universities are key institutions for research and innovation, as sources of skilled individuals and as anchors in their geographic communities. Research and teaching are inextricably linked in universities, and knowledge exchange should not be viewed solely through a research angle, but also through the lens of graduates and upskilling of the existing workforce. The development of graduates supports employers in knowledge intensive economic activities and is an important medium of localised knowledge exchange.<sup>11</sup>

There are indications that for UK universities in general the share of knowledge exchange which is localised is relatively low in comparison internationally.<sup>12</sup> While this might partially be explained by the stronger global impact of UK research, it also hints at a potential missed opportunity for the sector's contribution in narrowing spatial inequalities. The British Academy already funds research across the UK, and we are keen to explore the role we can play in supporting the Government's priority to 'level up' the benefits resulting from research and innovation.

While the challenge of low productivity is shared among many regions in the UK, the specific economic histories differ, as do existing resources (economic base, research strengths, governance capacity and local networks) to address those challenges. Devolving governance for research and innovation funding decisions in England could help to encourage increased and sustained collaboration between actors, but work is needed to develop the systems that will allow this to happen. Existing local research and innovation leadership needs to be strengthened, adding both competence and capacity, to allow priorities to be based on local strengths, capabilities and needs.

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<sup>9</sup> The British Academy. The European Structural and Investment Funds – Contribution to UK research and innovation. 2020. <https://www.thebritishacademy.ac.uk/publications/europe-futures-european-structural-investment-funds-contribution-uk-research-innovation/>

<sup>10</sup> McCann, P. UK Research and Innovation: A Place-Based Shift? 2019. [https://www.ifm.eng.cam.ac.uk/uploads/Research/CSTI/UKRI\\_Place/McCann\\_-\\_UK\\_Research\\_and\\_Innovation\\_-\\_A\\_Place-Based\\_Shift\\_vFinal.pdf](https://www.ifm.eng.cam.ac.uk/uploads/Research/CSTI/UKRI_Place/McCann_-_UK_Research_and_Innovation_-_A_Place-Based_Shift_vFinal.pdf)

<sup>11</sup> Marzocchi, E. Uyarra, E. & Flanagan, K. Greater Manchester Independent Prosperity Review: Understanding Innovation and Innovation Ecosystems. 2019. [https://www.greatermanchester-ca.gov.uk/media/1907/gmipr\\_tr\\_understandinginnovationandinnovationecosystems.pdf](https://www.greatermanchester-ca.gov.uk/media/1907/gmipr_tr_understandinginnovationandinnovationecosystems.pdf)

<sup>12</sup> Tijssen, R. van de Klippe, W & Yegros, A. Globalisation, localisation and glocalisation of university-business research cooperation: general patterns and trends in the UK university system. 2019 <https://www.researchcghe.org/perch/resources/publications/to-publishwp-50.pdf>

## **How should we strengthen our research infrastructure and institutions in support of our vision?**

We support the findings of the recent UKRI Review of Research Infrastructure and would urge Government to use this as a guide for its strategy in this area. The Review made very clear that there are a range of infrastructures that support research across the discipline range, and therefore have potential to offer maximum return on investment through widespread use.

A key priority should be investment in new data infrastructures as well as growing existing infrastructures to improve data access by improving linkage and integration of datasets and collections, and improving machine learning to analyse datasets. We support the creation of a national-level demonstrator for developing AI and data-sharing techniques for SHAPE research, and of centres of excellence for new technologies and methodologies for the digital humanities. The expansion of support for longitudinal datasets, including a new birth cohort study, new waves of Understanding Society, linking the British Election Study to global election studies, and more qualitative longitudinal datasets will all be vital if we are to be able to examine and learn from the impacts of Covid-19 across the UK population.

Given the economic delivery of the creative industries and immersive technologies working from the arts to the automotive sectors, further investment building on the Creative Industries Clusters programme has the potential to deliver significant return on investment. We would also support major investment in maintaining and preserving cultural heritage, such as new conservation and heritage science facilities to bring together practitioners, curators and scientists for interdisciplinary projects, and investing in infrastructure to maintain archived online digital content as well as national infrastructure for preserving and making accessible content and media in obsolete forms.

The British Academy believes that languages should be a particular area of priority, as the UK's current poor language capacity has resulted in the loss of economic, social, cultural, and research opportunities.<sup>13</sup> The economic cost of the UK's linguistic underperformance in terms of lost trade and investment alone has been estimated at 3.5% of GDP.<sup>14</sup> We therefore support investment in languages research and coordination, including a new policy and evidence centre for modern languages and the development of new technologies for text translation.

Quality-related (QR) funding is vital in supporting both the physical and human infrastructure of the entire research ecosystem. We welcome the ambition to achieve a healthy balance between QR and the more directed funding to projects and people but stress the importance of ensuring continued breadth of support across disciplines and all modes of funding delivery, while ensuring that bureaucracy is kept to a minimum.

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<sup>13</sup> The British Academy. Languages in the UK: A Call for Action. 2019.

<https://www.thebritishacademy.ac.uk/publications/languages-uk-academies-statement/>

<sup>14</sup> Foreman-Peck, J. & Wang, Y. The Costs to the UK Language Deficiencies as a Barrier to UK Engagement in Exporting: A Report to UK Trade and Investment. 2014. <https://www.gov.uk/government/publications/the-costs-to-the-uk-of-language-deficiencies-as-a-barrier-to-uk-engagement-in-exporting>



## **How should we most effectively and safely collaborate with partners and networks around the globe?**

Choosing where to live, study and/or work is a personal choice as well as a professional one. The cost, complexity and perception of the UK's immigration system are important factors that do not help to attract researchers and staff. If the UK wishes to boost its international collaborations and networks, then our immigration system must stop closing down such opportunities and raising burdens and barriers incommensurate and inappropriate for what is required. An immediate first step should be a radical reduction in cost of the current system for applicants and institutions.<sup>15</sup>

Of the top 15 disciplines with the highest amount of funding from 'EU Government Bodies' as a total proportion of those disciplines' funding 13 are in SHAPE disciplines.<sup>16</sup> The success of the humanities and social sciences is one of the most important demonstrations of UK-based international excellence. If the UK loses this shared European collaboration, there will be a significant loss that cannot be replaced by more international collaboration with other partners.<sup>17</sup> Moreover, there are important synergies between collaboration with European partners, and international collaborations with those in other parts of the world. Major global challenges that face societies from Covid-19 to migration are European-wide and need European collaboration to solve. There is thus a special need to make European collaboration easier.<sup>18</sup>

This is a critical decade for international collaboration. With only ten years until the deadline of the UN's Agenda 2030 it is clear much more needs to be done. Further funding is required for transformative research related to global challenges, such as urbanisation, advancing climate and environmental justice, reducing extreme inequities, creating more inclusive, democratic and accountable societies, epidemics and the social dimensions of infectious disease threats, digital technologies and their social and economic dimensions, and fostering healthy and fulfilling lives. These challenges are global, affecting many countries across the world and with drivers, causes and consequences reflecting interdependencies across borders.

In research, it is not self-evident that that progress is best made by setting out a claim to act as a leader. The pursuit of excellence is a more viable basis for global cooperation. The UK has especially strong traditions in the humanities and social sciences, which puts the UK, as a global hub of research, in a particularly strong place to understand the social forces moulding different communities internationally. Since all these issues are international and interconnected, the UK needs to forge links internationally and especially with countries most under stress from such forces.

There are serious concerns about the UK's capacity for leadership in the context of expertise and understanding of modern languages. The decline in language teaching in UK schools and universities has been documented extensively, and the rationale for learning languages to enable scientific advances, economic opportunities, and support understanding of societies across the world is undeniable.

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<sup>15</sup> British Academy Statement on the UK's future immigration system for higher education and research February 2019 <https://www.thebritishacademy.ac.uk/documents/71/Immigration-statement-The-British-Academy.pdf>

<sup>16</sup> The British Academy. Brexit Means...? The British Academy's Priorities for the Humanities and Social Sciences in the Current Negotiations. 2017. <https://www.thebritishacademy.ac.uk/publications/europe-brexit-means/>

<sup>17</sup> British Academy Statement on Future European Research Collaboration June 2020 <https://www.thebritishacademy.ac.uk/documents/2588/Statement-Future-European-Research-Collaboration-June-2020.pdf>

<sup>18</sup> The British Academy. Europe on the Horizon: Examining the Value of European Research Collaboration. 2018. <https://www.thebritishacademy.ac.uk/publications/europe-futures-horizon-examining-value-research-collaboration/>

## **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?**

Polling conducted by Public First, on behalf of Wellcome and CaSE, found that “people are more likely to support R&D campaigns when the impacts feel tangible” and that “people support campaigns about issues that most directly affect them and their families”.<sup>19</sup> Therefore to harness excitement about the Roadmap’s vision, we need to redouble efforts to build a compelling narrative about how research and innovation transforms lives and provides solutions to our most urgent concerns. Polling confirms that the public consistently regards the economy, the environment, health and crime as the most important issues facing the country.<sup>20</sup> UK researchers and innovators from all disciplines have been essential in developing the new knowledge and approaches that have fuelled our country’s progress and prosperity. We should celebrate these achievements and alert the public to the potential breakthroughs UK-based researchers could make with the right investment.

Government should engage with higher education and research organisations, employers, and individuals across the whole of the UK, particularly in those areas where economic investment has traditionally lagged behind the rest of the country. We must cultivate and promote diverse role models from across the research and innovation community who can inspire parts of society that are difficult to reach. These voices would hail from all regions of the UK, from different socioeconomic backgrounds, from different ethnic and faith-based communities, and different disciplines. Again, universities have a big role to play as civic actors with links to local communities and a national audience simultaneously.

This will partly involve new methods of communication. *Public attitudes to science 2019* found that there is a shift in how people access science information from print to online.<sup>21</sup> The British Academy has also had real success engaging new audiences online – not least with its Virtual Summer Showcase held during lockdown this year – so we know there is scope for this.<sup>22</sup>

Research from many SHAPE disciplines helps us understand how people think and how to communicate in accessible ways. The success of the annual ‘Being Human’ festival - which takes place in towns and cities across the UK and regularly draws over 30,000 attendees - is proof of the effectiveness of public engagement from these disciplines and also demonstrates an appetite among the public for SHAPE research. *Public attitudes to science 2019* found that there is significant overlap between engagement in science and other cultural activities and noted the potential to build science capital among some harder to reach groups via their other interests. Promoting engagement with SHAPE disciplines alongside STEM activities can help galvanise the research ecosystem.

The Academy shares the Roadmap’s ambition to inspire the next generation. The researchers of the future will need to be able to apply knowledge from across the discipline range as the challenges they look to solve become increasingly complex. A broad and balanced curriculum throughout their school-level education will be vital in preparing them with the skills, from critical analysis, creative thinking and persuasion to statistical analysis and digital skills, they will need.<sup>23</sup>

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<sup>19</sup> Public First. Campaigns, Advocacy and R&D Opinion Research Report. 2020.

<https://www.sciencecampaign.org.uk/static/uploaded/307047b2-9d8e-4be2-940f0ae50974a5f7.pdf>

<sup>20</sup> <https://yougov.co.uk/topics/politics/trackers/the-most-important-issues-facing-the-country>

<sup>21</sup> BEIS. Public attitudes to science 2019.

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/901469/public-attitudes-to-science-2019.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/901469/public-attitudes-to-science-2019.pdf)

<sup>22</sup> <https://www.thebritishacademy.ac.uk/events/british-academy-virtual-summer-showcase/>

<sup>23</sup> The British Academy. The Right Skills: Celebrating Skills in the Arts, Humanities and Social Sciences. 2017.

<https://www.thebritishacademy.ac.uk/publications/flagship-skills-right-skills-arts-humanities-social-sciences/>