Future Priorities for UKRI

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Chair: The Rt Hon. the Lord Willetts FRS
                Chair, The Foundation for Science and Technology

Speakers: Professor Dame Ottoline Leyser DBE FRS
                Chief Executive, UKRI

                Professor David Paterson
                Head of the Department of Physiology, Anatomy and Genetics,
                University of Oxford

                Priya Guha
                Venture Partner, Merian Ventures

                Audio/Video Files: www.foundation.org.uk/Events
                Hash tag: #fstUKRI .   Twitter Handle: @FoundSciTech .

PROFESSOR DAME OTTOLINE LEYSER began by stating how UKRI is a strength to the UK and an exciting organisation as under one umbrella there is the full range of disciplines, and organisations that are involved in research and innovation. Bringing all this knowledge and expertise together provides extraordinary opportunities to capture synergies and make the most out of the research and innovation system. UKRI is accountable to government and key to their success is the partnerships with academics, business and the public sector. Using these partnerships, it aims to build a holistic system that delivers for the whole of the UK.

The vision of UKRI is to create a world-leading, creative, dynamic research and innovation system for the UK in which everyone can participate, and which everyone benefits. To achieve this inclusivity there is a continued need to build strong relationships across key stakeholders. UKRI, because of its size and position, has a unique opportunity to act as a steward to the UK's research and innovation system to help it achieve its full potential. There are a variety of levers to do this; investing in people, ideas, infrastructures, and building a portfolio of investments that benefit the whole system. Other tools include the ability to convene and catalyse people together in different groups. UKRI will also incentivise the development of a research and innovation system that conducts high-quality research at their own research institutes, setting an example for the quality and integrity that is expected across the whole system.

One of the key problems is that we tend to think of research and innovation as a linear process from discovery to product. This dictates how we invest in research, and measure product outcome/ success. We must start think about it in a different way. The linear research and innovation system is just the tip of the iceberg. An effective system requires us to think more holistically about who is in the system and what we need to make it work effectively. This is where UKRI needs to focus – not only on discovery and products, but on crucial connectivity. People are key to this holistic approach. We need to think about the education system people come from, where they go to conduct research, and what support systems people need to work.

From the Public Sector Research Establishments to small companies, there is a whole ecosystem of institutions that are delivering research, that must be connected up. People and ideas must be able to move freely

through this system. The system must incentivise flexible career paths that provide much more cross over between academia and industry, providing alternative routes into and through the structure.

These ideas are encapsulated in the R&D Roadmap. Dame Ottoline concluded by explaining how the Roadmap sets out this system idea with high ambition, bringing in a wide range of people, and connecting them to a wide research base. Through this we will drive levelling up across the UK. This requires world-leading infrastructure and institutions, bringing the UK to the forefront of global collaboration. This will ensure a healthy and sustainable R&D system, which is both vibrant and inclusive.

PROFESSOR DAVID PATERSON started by noting that the R&D Roadmap shows a clear strategy to addressing some of the grand challenges of today. The commitment to doubling of public R&D spending to £22 billion by 2025 provides a great opportunity to do this. A mature science country is one which can respond, re-purpose, re-align and be agile during a crisis such as Covid-19. The UK has done very well in doing this. We must create a funding framework where we can focus not only the reductive aspects of science, but science and its research mechanisms as a whole.

Challenges that face UKRI include the impact of Covid-19 on Higher Education Institutions, and Brexit disrupting access to ERC Discovery funding, which could lead to tensions between discovery and mission. Professor Paterson was pleased to see that the Haldane principle which underpins the UK funding system is upheld in the UKRI's vision. He also commented on the importance in understanding that mission science and discovery science are not mutually exclusive; one drives the other - e.g. the NASA moon shot which advanced material science and communication systems. He also posed the question of whether REF was fit for purpose.

Professor Paterson concluded by asking what research success looks like. What is the timeframe and what are the evaluation mechanisms? With research projects outliving governments, the government should define what research success looks like to them.

PRIYA GUHA began by introducing the Silicon Valley system as an ecosystem. Made up of many different factors including academic institutions, an investment base and a strong government presence, topped off with talent. This talent is constantly upskilling and reapplying those skills to new and innovative ideas and businesses. She took this model of what an ecosystem looks like and translated it to the UK.

The UK has a very strong ecosystem for the commercialisation of companies. However, Covid-19 has hit this very starkly. This is why government interventions during the pandemic were crucial, including the £1.25 billion Covid-19 support package to small businesses, and the Innovate UK grants awarded for start-ups and new technologies. Although Covid-19 has been a struggle for the innovation ecosystem, it has also acted as a catalyst for technological adoption; providing the opportunity post-pandemic to build back with innovation at the front and centre.

Priya Guha stated the importance of equality, diversity and inclusion in tech, and the opportunity to build them into its design. Inclusion is a vital part in thinking about where we invest, and we must think about how to track that data related to investment. She noted that government investment can be used as a spur to change behaviours where historically we have seen underrepresentation of certain groups.

Scale ups are a key part of the innovation landscape; where start-ups become economically viable and begin to reach international audiences. The UK is good at scale ups, but what we need to think about is what the barriers are to additional UK scale ups. A key part of this is funding, as without it, the scale ups will be vulnerable to takeovers. How we support this later stage of commercialisation is a priority for UKRI as it brings economic value to both the British and global economy.

In conclusion, Priya Guha stated that this is an opportunity to build back better, with inclusivity at the core, with a system that benefits the UK as a whole.

IN THE Q&A SESSION, the panel were asked how the UK's system compares to other countries. The panel stated that since the UK is starting on a very low baseline of investment, we have a lot we can learn from our overseas partners. The question of where we put the new funding is important and should help rebalance some of the elements in the system, including investment in institutions outside of the university system. The importance for industry and private equity investors was also noted, as well as the need to attract top class global talent. The panel also noted the diversity in research and innovation across the globe, and the difficulty in importing elements of other systems from other countries.

There was a question on the nature of the interdisciplinarity of the research councils within UKRI. The panel remarked that not only are disciplines less isolated than they used to be, but with UKRI, there is a new opportunity for cross council collaboration. This brings together disconnected parts that otherwise would not have met. It was stated that we must have a meeting

of bottom up and top down to capture the extraordinary vibrancy of bottom up, especially in the innovation context, with a top down capturing function that enables those ideas. One panel member commented that bringing Innovate UK under the umbrella of UKRI allows a more structured approach, and that this continuum works in both directions; with a constant cycle of talent going through the system between business and academia.

One question asked was how can UKRI support the movement of individuals across academia, research, technology organisations and business. The panel responded that we must have a system that values a wide range of careers and is inclusive to all research types. We need to think about the way we assess research and innovation in order to capture value and difference, and support portfolio careers. One panellist also commented that the UK's rules around non-compete do constrain the ability of people to move between business, and that we should be able to share talent among top businesses. We must also get comfortable about an academic person having business interests, and a businessperson having academic interests, and make it the norm that these two can work in parallel.

One audience member asked how we can more widely promote systems engineers. The panel responded by stating that systems engineers are crucial, and that systems thinking comes from a wide variety of places, and the different ways of thinking about those systems is also very important.

The final question posed to the panel was the main priorities for UKRI moving forward. In the short term, joined up thinking in the R&D spending review across government – which is crucial in making an R&D build back better system. In the long term, a shift in the way we think about research and innovation – everyone who is working in the system can rightly feel proud of their contributions. This is how you can build a much more inclusive view of a knowledge economy. The panel's closing remarks were that we need to share the excitement, enthusiasm and positivity that there is fundamentally in our ability to solve the problems we are facing.

Alana Cullen

Further Reading

The Government's R&D Roadmap
https://www.gov.uk/government/publications/uk-research-and-development-roadmap