

The R&D Roadmap - Levelling Up Across the UK

Date and Format: 7 October 2020 FST online meeting

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

Speakers: Amanda Solloway MP
Minister for Science, Research and Innovation, UK Government

Professor Richard Jones FRS
Chair of Materials Physics and Innovation Policy, The University of Manchester

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Minister for Economy, Transport and North Wales, Welsh Government

Audio/Video Files: www.foundation.org.uk/Events

Hash tag: #fstroadmap . Twitter Handle: @FoundSciTech .

AMANDA SOLLOWAY MP began by emphasising how important science and research had always been to her, and her lifelong fascination with engineering, inspired by the Industrial Revolution. Science and innovation are crucial to the UK's future, and she had seen first-hand some amazing examples in recent months. Science, research and innovation will help us build a better world for the future - more sustainable, safer and fairer. But for many people research and development is seen as a sector that enriches London and the South East but leaves little for the rest of the country.

Scientists need to better understand the range of challenges and opportunities across the entire country, and the lives led by a diverse range of people. We need to renew the social contract for science, which means doing two things. Firstly, we need to make it as easy and attractive as possible for science and research to be translated into better jobs, better products, better services, and a better quality of life for more people, all over the UK. We need to build our understanding of place into decision-making at all levels. We also need training and skills to allow more people to benefit from and participate in the knowledge economy. Secondly, we need to deepen the interaction

between science and society – inspiring people about science and engaging them, and building mutual trust between those doing research and those affected by it.

For those involved in science, there is a real value in wanting to be the best, and we must strengthen rather than undermine that. But narrow indicators of success risk a funding and assessment system disconnected from the diverse needs of the nation, and they risk neglecting the contributions that so many people already make to the R&D sector all around the country.

We need to include different sorts of people from all sorts of places in our discussions, collaborating across boundaries and borders, and building better interfaces between government, funders, institutions and local leaders. We need a change of mindset, and be more willing to listen, and work together.

The Place Advisory Group has been set up to develop Place Strategy for R&D. But 'levelling up' is about much more than economics. It's about how science, research and innovation can help us to become more inclusive and less divided, with equality of opportunity so that more people and places can benefit from the UK's status as a science superpower.

PROFESSOR RICHARD JONES presented data and analysis drawn primarily from the May 2020 NESTA report *The Missing £4 Billion*¹, which he had co-authored. A map of economic performance across Europe showed that whilst London, East Anglia the South East had similar economic performance as successful northern European economies, other areas of the UK were more similar to Eastern Germany, Southern Italy or Portugal. The basis of levelling up was to improve the economic performance of regions that don't do as well as they could do, but not by lowering the performance in the strongest regions.

R&D in the UK is extremely concentrated. The three sub regions containing London, Oxford and Cambridge account for 46% of all R&D expenditure for the UK. There is a correlation between R&D and economic performance, and whilst London, the South East and Eastern England enjoy around £220 per person per year of public expenditure on R&D, for many other areas of the UK it is less than half of that. To bring the whole country to the same expenditure of £220 per person would cost £4.2 Billion, and could imply £1.6B to Northern England, £1.4B to the Midlands, £570M to the South West of England and £660M to Wales and Northern Ireland. Scotland already has a high level of public R&D, but suffers from a lower level of business R&D.

Whilst £4.2B is large compared with the current UKRI budget of £7B, it is realistic in the context of the public R&D budget increasing to £22B by 2025, as has been announced by the Government. An earlier attempt by a previous government saw £323M spent in English Regional Development Agencies between 2005 and 2008; this was clearly too small an investment to achieve a levelling up.

Considering both public and private sector R&D investment into different parts of the UK, regions and nations fall into different quadrants. East Anglia, with both high public and high private R&D, are areas to emulate. We should not take away from Oxford and Cambridge, but we want more places like them. London and Scotland have high public sector R&D, but low private sector investment. In these regions, there should be a focus on increased private R&D, perhaps with a focus on translational research. This contrasts with the Midlands and South West England, who have high private sector R&D, but less public investment. There is a case for public sector investment to follow. In areas where both public and private sector investment is low, such as Wales and North East England, there is a need to build capacity.

Professor Jones concluded with three recommendations. Firstly, there was a need to devolve

funding for public R&D investment to nations, cities and regions of the UK – perhaps accompanied by an increase in analytical and institutional capacity in English cities and regions. Secondly, there should be new R&D institutions outside of London and the South East, with a focus on translational research, and perhaps innovation districts and manufacturing innovation parks. Thirdly, a culture change at UKRI was needed, with formal representation for the nations and regions of the UK, and place-based funding instruments.

KEN SKATES MS began by welcoming initiatives by the UK government to level up, noting that the UK was the most regionally unbalanced economy in western Europe according to the OCED. Previous UK governments have made initiatives but regional inequality has actually increased, and is back to the levels it was in 1900. So any attempt to level up must be meaningful and at sufficient magnitude.

A strategic approach is needed to promote growth in all areas of the UK. This means deconcentration as well as decentralisation. It is not just about equality of access and the ability to bid for funds, it is about outcomes, and narrowing the gap. A degree of positive discrimination is needed, and any approach must meaningfully involve the Devolved Governments in both design and implementation.

Regional inequalities prevent the UK as a whole from realising its economic potential, and blights the life chances of many people, especially those in de-industrialised areas. It could risk destabilising the union of the United Kingdom.

Future prosperity of the UK depends on all parts being able to contribute, so it can't be right that more than half of the money spent on R&D is spent in London and the South East, nor that Wales receives 2% of R&D funding despite having 5% of the population. This has been historically justified on the basis of excellence and competition, but prosperous regions have been favoured by geographical bias for decades. 20 years ago, it was decided to locate the Diamond Light Source in Oxfordshire, despite strong bids from Aberystwyth, Sheffield and Daresbury – for any one of those three, that investment would have made a massive difference to economic growth and been an attractor for further investment. This is not the approach taken in other countries, who regularly take decisions to locate facilities as part of boosting the economy of specific regions.

Wales has a higher than expected share of highly cited research, is more efficient in turning investment in scientific publications than most small nations, and does well in the commercial application of research. The UK

¹ <https://www.nesta.org.uk/report/the-missing-4-billion/>

Innovation Survey showed Welsh companies are more innovation active than their counterparts in Scotland and Northern Ireland. But it needs scale – its research base does not have the size or scope to deliver its full potential.

EU Structural Funds have been hugely important in Wales, and these come to an end as the UK leaves the EU. These must be replaced in full by the UK Government.

It is important to devolve decisions on how and where to spend additional levelling up resources. A top down approach would be inflexible and impractical, and prevent making links between R&D and areas of devolved responsibility such as economic development, transport, skills or health.

In conclusion, Minister Skates noted the support of the Welsh Government to a greater focus on place and a more equitable balance, to enable Wales to make its full contribution to the UK's wealth and prosperity.

IN THE Q&A SESSION, the panel was asked whether the priority in new R&D spend for levelling up should focus on the D of Development rather than the R of Research. The panel noted the importance of delivering across the whole spectrum of R&D, and the R&D RoadMap is very ambitious for both R and D. However, it was noted that international comparisons showed that the UK was weaker in D than in R. Perhaps in the past we have not paid enough attention to innovation. The Innovation Expert Group is now meeting regularly with the UK Science Minister. In the context of a rising budget, more translation research made sense, as evidenced by the Advanced Manufacturing Research Centre and the Compound Semiconductor in Wales, both of which have been successful and attracted significant commercial investment.

Asked where Catapults could be used as an instrument for levelling up, the panel agreed, noting that Catapults allow us to embrace excellence in research and industry throughout the UK. The network should be expanded, with greater connectivity between Catapults and between Catapults and the research base. More spokes of Catapults to reach more remote areas of excellence would be beneficial.

One questioner noted that 4 out of 5 peer-reviewed research proposals were unfunded at the moment, and previous governments had secured flat cash settlements for science during the last recession. The panel noted the commitment to increasing the budget for R&D to £22B by 2025. They also noted that as well as research funding and structural funds, levelling up needed to take place in other areas such as transport infrastructure. The review of the Government's Green Book was welcome.

When asked about what contribution the upcoming Shared Prosperity Fund (to be operated by the Ministry for Housing, Communities and Local Government, MHCLG) could make to R&D, it was noted the importance the EU structural funds had made to building R&D capacity in weaker economic regions. It was crucial that this was also seen as important in the SPF, and discussions were ongoing between BEIS and MHCLG. It was noted that the SPF could go against the devolution settlement unless devolved administrations were given both the same level of funding and the same control of decisions on how to spend it as with EU Structural Funds.

There was a question on whether UKRI's model of funding excellence worked against capacity building and levelling up, and whether it needed to change. The panel noted that funding excellence on a place-blind basis has a self-reinforcing mechanism. Whilst that has built real areas of strength, and money should not be taken away from those areas additional resources should be targeted to build capacity in regions and nations who are behind. One issue was how we define "excellence", which should go beyond pure academic excellence to outcomes.

The panel were asked whether cities should appoint Chief Scientific Advisers, and agreed that cities and some regions did need more powerful structures to help identify priorities and also link in with UK national decision-making. Chief Scientific Advisers could be one mechanism which would help. They were also asked about how to avoid duplication between regions in funding that were devolved. They noted that some duplication and competition was healthy, but that the key was to have partnerships across governments and strong communications, where all participants were treated as equals. UKRI could have a key role in supporting communication and dialogue between regions and nations on R&D.

Gavin Costigan

Further Reading

The Missing £4 Billion – NESTA, May 2020

<https://www.nesta.org.uk/report/the-missing-4-billion/>

UK Research and Development Roadmap – UK Government, July 2020

<https://www.gov.uk/government/publications/uk-research-and-development-roadmap>

Prosperity for all: economic action plan – Welsh Government, March 2019

<https://gov.wales/sites/default/files/publications/2019-02/prosperity-for-all-economic-action-plan.pdf>

R&D Place Advisory Group – UK Government

<https://www.gov.uk/government/groups/rd-place-advisory-gr>

The Power of Place – Campaign for Science and Engineering, May 2020

<https://www.sciencecampaign.org.uk/resource/placereport.html>

More D! – A more development-focussed strategy for paving the way to impact – AIRTO, March 2020

<http://www.airto.co.uk/wp-content/uploads/2020/03/AIRTO-More-D-Position-Statement-31-MARCH-2020-web.pdf>

Speed to Scale Region programme – West Midlands

<https://www.ssr-wm.org.uk>