

Advanced Research and Invention Agency (ARIA) Bill

The creation of a new high-risk, high reward research agency for the UK is a real statement of intent about the future direction of our economy. Getting ARIA right would help unlock technological innovations that will drive post-pandemic recovery and help tackle global challenges like reaching net zero.

ARIA's focus on high risk, high-reward projects has the potential to deliver significant returns for the UK. The creation of a new agency, broadly modelled on the USA's DARPA, will help drive the pull-through of disruptive innovations to address complex societal challenges and fill a gap in the UK research system.

The Russell Group supports the legislation before Parliament and would encourage Government to move forward with establishing the new agency as quickly as possible.

The current research funding system is a UK success story that has helped deliver research which leads the world in terms of quality and impact. With just 4% of the world's researchers the UK generates 14% of the most highly cited papers used most frequently by other researchers worldwide.

ARIA will not be a replacement for current funding structures: it represents a unique opportunity to strengthen this system further and complement existing funding streams which support high risk, high-reward basic research, such as Quality Related "QR" funding and its equivalent in the devolved nations.

The Bill before Parliament reflects, to a significant extent, input from Russell Group universities and others on how government can help ensure the new agency is a success.

Particular issues parliamentarians may wish to engage on as the legislation progresses include:

ARIA STRUCTURES AND OPERATIONAL FREEDOM

Evidence from the Russell Group and others to the House of Commons Science and Technology Committee's inquiry on a new research funding agency¹ stressed the importance of operational freedom to ARIA's success. Lessons must also be learned from successful examples of high-risk, high reward agencies in other parts of the world.

- Moves to replicate the mission-based approach taken by DARPA in the USA are welcome and will help ensure ARIA is filling a genuine gap in the current system. This would complement existing funding streams such as the Industrial Strategy Challenge Fund (ISCF) and enable ARIA to invest appropriately to tackle a limited number of major challenges.
- The emphasis within the Bill on operational independence, and statements from ministers making clear ARIA's leadership will dictate priorities, is also positive. When research priorities are identified, ARIA should focus on building emerging technology communities within its fields of focus, play an important role in creating new markets and ensure plans to support the sustainable scale up of technological advances are in place.

¹ https://russellgroup.ac.uk/media/5893/russell-group_a-new-uk-research-funding-agency_written-evidence.pdf

- ARPA-E, the US energy innovation agency modelled on DARPA, requires award winners to not only have a technology development approach, but also a technology scale plan that is supported by a dedicated technological transition team. This is designed to overcome challenges in securing sufficient venture capital funding for energy projects in the absence of a single, dominant customer like the US Department of Defence (DoD). This is an approach which could be explored by the UK agency.
- The organisational structure of the new agency should create a dynamic, entrepreneurial research culture. One of the key factors in the success of the DARPA has been its high degree of independence and the extent to which it has been able to operate autonomously. Similarly, a flat organisational structure involving highly qualified, driven programme managers empowered to pursue research teams and drive projects forward over a number of years has helped deliver significant success. The emphasis in the Bill and supporting documents on replicating this element of organisational freedom in the delivery of projects and programmes is welcome.

FINANCIAL FLEXIBILITY

The flexibility around ARIA funding processes which has been signalled by the Secretary of State is also helpful. Universities have significant experience of different funding methodologies and will be well placed to support ARIA as the new agency develops its internal processes.

- At present, structural funding cycles can act as a barrier to the development of long-term research programmes. The creation of ARIA gives the UK the opportunity to experiment with an award process which can back promising research programmes over a longer period of time, by providing sustained funding from initial concept through to translation and beyond while allowing for regular progress checks that could result in support being withdrawn. Moving towards longer-term grants would also help reduce bureaucracy and red tape associated with short-term grant awards.
- The £800m funding envelope set out in Budget 2020 appears competitive in international terms and would enable the new UK agency to make grant awards commensurate with the scale of the specific problems or missions. As a proportion of overall research investment, it appears broadly consistent with the level of spending in the US and other countries which have created their own ARIA equivalents.
- Ensuring financial support is available on a sustained basis at these levels will be important in maintaining consistent support for projects, and regular reviews of agency funding would be sensible to identify whether and to what extent existing resources continue to be appropriate. Provision within the bill to guarantee ARIA's existence for 10 years is welcome. Ongoing assessment of overall funding commitments and increases to support additional projects throughout this initial operational period will be important to the success of the new agency and the research it supports.

DRIVING ECONOMIC GROWTH THROUGH STRONG RELATIONSHIPS WITH RESEARCH CUSTOMERS

Building a diverse, highly engaged customer base will be fundamental to ARIA's success and significant thought will have to be given to how the new agency will partner with public and private sector organisations that will be the primary customer for research outputs.

Research universities, which have expertise in delivering large-scale projects in partnership with local stakeholders and extensive understanding of regional supply chains, would be well placed to lead regional clusters of ARIA activity.

- On the public sector side, new frameworks governing engagement between ARIA, research teams and bodies such as the NHS may be required. A key question which needs to be answered is how ARIA will engage with public sector procurement teams to secure commercial pull-through at scale.

- Given the potential for public procurement to help drive economic renewal as we work to address the impact of the Covid-19 pandemic, this is something that should be looked at as a matter of urgency through amendments to this legislation or forthcoming wider public procurement reforms.
- There is also clear scope for ARIA to interact with local authorities, regional mayors and the devolved administrations to support the levelling up agenda. This could be through the location of major research activities linked to ARIA programmes, but also through opportunities for large-scale demonstration projects that could help to de-risk adoption of new technologies and approaches across the country. Ensuring local stakeholders are able to feed in and help drive projects as customers will help ensure solutions are targeted effectively and fulfil specific needs.

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