

# CBI POSITION PAPER: THE ESTABLISHMENT OF A BRITISH ADVANCED RESEARCH PROJECTS AGENCY

**The creation of a British Advanced Research Projects Agency (BARPA) is an exciting opportunity to make the UK the envy of the world in research, if done right.**

As we enter a new decade and the UK seeks to establish itself as an innovation and science powerhouse, proposals to create a new research agency modelled on the US ARPA should be seized. It is an opportunity to increase long-term, high-risk R&D across the UK and to solve intractable social and technical challenges. BARPA must represent a bold new brand for UK innovation which can attract the brightest and best talent, serve as an international lynchpin for business investment and ultimately deliver new products which make a difference.

Existing proposals are right to highlight big data and AI as the two areas of priority for the new agency and its research. This compliments findings from the CBI's latest Tech Tracker survey which suggested AI to be one of the key technologies' businesses will invest in over the next five years.<sup>1</sup>

To achieve the goals set out above, the CBI recommends that government consider three priorities when establishing the new agency: an ambitious long-term funding model, creating a new culture for developing high-risk innovation and strong engagement between government and business.

## **1) The new agency cannot be a flash in the pan so long-term funding is non-negotiable for success.**

### **High-risk research requires high levels of long-term funding**

Despite its potential benefits, high-risk research is costly, and the lack of funding can serve as a deterrent to businesses wanting to undertake this research through fear of the unknown.

The £800 million proposed over five years by the government to fund the new agency represents a good starting point. As any new institution will likely need to be piloted, this sum would be enough to test an early prototype and gather operational insights. If successful, this funding would need to be reviewed, and put on a sustained footing. Former Universities Minister David Willetts recently suggested that funding would need to be around £200 million a year to be proportionate to DAPRA, a slight increase on the initial funding suggested.<sup>2</sup>

### **Funding the new agency outside of London could serve as a catalyst for regional growth**

Establishing the new institution in one of the growing regional hubs for research should be factored into initial government investment plans. Not only would this support the levelling up of regions it could also help to unlock a wider pool of talent.

It is estimated that a greater focus on accelerating R&D investment in the worst performing regions could provide a £7.3 billion boost to UK R&D spend, yet R&D investment is concentrated in South East, East of England and London.<sup>3</sup>

## **2) Creating a new culture for developing high-risk innovation should be prioritised.**

### **BARPA needs to operate within a strong innovation environment**

The US ARPA model is independent and operates outside of the traditional oversight structures of departments such as defence and energy. This independence should be mirrored by BARPA as it allows the agency to own the delivery of high-risk innovation without institutional restraints.

This independence would mean that BARPA would have to sit away from the existing innovation structure of UKRI and Innovate UK. A close relationship will still be vital. UKRI and Innovate UK will essentially be responsible for creating the wider research environment. The whole UK innovation ecosystem will need to work in collaboration to meet the broader goal and pull towards the 2.4% R&D target.

<sup>1</sup> CBI 'Tech Tracker' (<https://www.cbi.org.uk/policy-focus/innovation-and-digital/articles/tech-tracker-2019-the-must-know-technology-and-innovation-trends/>, 2019)

<sup>2</sup> David Willetts, The Road to 2.4%: Transforming Britain's R&D performance (The Policy Institute, 2019)

<sup>3</sup> CBI analysis based on ONS (2019) Gross domestic expenditure on research and development, UK: 2017 – see appendix Exhibit 4

## **Developing products with a clear focus on the customer**

By having a clear customer and market in mind BARPA will be better equipped to translate cutting edge research into new innovations with a purpose. Much of the success of the ARPA programs in the US can be attributed to the implementation of an “extended pipeline” model, where government departments, acting as customers, support innovation through every stage of development, helping to bridge the “valley of death” between research and commercially viable technologies.<sup>4</sup>

The Department of Health seems especially well suited to act as the key driver for the new agency and serve as a buyer for future commercialisation. As one of the highest sources of government expenditure as a percentage of GDP in the UK, public health is undoubtedly an area that would benefit from greater innovation. The NHS has significant buying power and a potentially rich data pool through NHS X that would make significant developments incredibly marketable. Grand challenge issues such as the aging society also provide a clear focus for investment.

Energy is another area that could benefit from high-risk, high reward innovation, particularly given Government’s Net Zero commitments. Using the agency to develop new carbon capture and carbon storage technologies could support the UK’s aim to be a world leader in addressing climate challenges.

## **3) Business and government engagement must lie at the heart of BARPA’s strategy.**

Whilst government will be driving the creation of BARPA, industry expertise and funding will be an important factor in its long-term ability to bridge the gap between blue sky research and marketable products. Government and business should work closely together to create and develop the new agency.

### **Establishing an exciting new global brand which serves as a magnet for talent**

The agency’s brand will need to be bold if it is to make an impact both nationally and internationally. A strong brand is especially important when it comes to competing with academia to attract the brightest and best scientists, researchers and programme managers.

To do this government must be ambitious with its marketing of BARPA, starting with identifying a new name and mission statement which inspires and encompasses its purpose and vision in a meaningful way, drawing upon the support of industry to do so.

### **Proportionate IP legislations are needed to foster collaboration**

Businesses have highlighted that encouraging private sector investment and collaboration will require significant levels of contractual flexibility within the agency. This is especially important when it comes to issues surrounding ownership of intellectual property (IP) that often arise from innovation projects and can weaken relationships.

### **Regular opportunities to invest in products developed by BARPA**

As new technologies are being created and developed by BARPA businesses should be offered the chance to invest in them. This investment could take the form of financial, technical or marketing support. For projects early in the development phase this can help de-risk investment. Investments in projects further down the line can enable products to reach wider audiences and markets as they are then sold by business.

Establishing a dedicated commercialisation team within BARPA comprising of industry leads could support with this.

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<sup>4</sup> [William B. Bonvillian, DARPA and its ARPA-E and IARPA clones: a unique innovation organization model \(Departments of Political Science and Science Technology and Society, Massachusetts Institute of Technology, 2018\)](#)

**Recommendations**

- Government must develop a bold brand for BARPA starting with a new name and mission statement which helps to form part of the UK's international offer for innovation.
- A market and customer should be identified for all research that is carried out by BARPA.
- A clear long-term funding structure should be provided by government, with the option to increase the £800 million initial investment after a successful pilot.
- A commercialisation unit should be set up sitting within BARPA to drive strategic business engagement.