

## 2.4% R&D target: what do entrepreneurs, innovators and investors need to meet it?

### Introduction

Central to the UK Government's Industrial Strategy White Paper, published in 2017, is the target to increase the UK's spend on research and development (R&D) to 2.4% of GDP by 2027. UK Research and Innovation (UKRI) has organised a series of workshops with our stakeholders, to explore the biggest questions for UKRI and the UK research and innovation landscape more broadly over the coming years. Workshop outputs are being used to develop our evidence base and inform our policy and analysis work.

On 4 December 2018, Sir John Kingman and Professor Richard Brook co-chaired a workshop, hosted for UKRI by the Royal Academy of Engineering and the Academy of Medical Sciences. This gathered expert business stakeholders to explore a series of questions about how to enhance the UK business environment for R&D, with a focus on entrepreneurs, innovators and Investors. Annex A contains a full delegate list. The discussion was wide-ranging, covering topics as diverse as finance, regulation and the talent pipeline.

### Background

To meet the 2.4% target will require increases in both public and private spend. Overall, UK and overseas businesses fund more than 70% of R&D investment within the UK, but only 4% of this investment is by SMEs. Whilst growth in R&D performed by SMEs has been much stronger than for large companies in recent years, there are still constraints on innovation. Access to external finance is an important challenge for firms, especially SMEs, and whilst there are signs that the supply of finance is improving, encouraging investment in high-risk, innovative businesses and their R&D will be key to maximise the potential of business R&D towards achieving the 2.4% target.

### Summary of the discussion

#### **Finance**

Delegates highlighted as globally competitive a number of mechanisms designed to encourage business-led R&D investment, including R&D tax credits, tax treatment of shares schemes, and Innovate UK's grant support, whilst noting that recent extra tests on the entrepreneurs' relief scheme made this particular scheme less attractive. Delegates also discussed challenges surrounding state aid, noting this was restricting which businesses were eligible for Innovate UK support.

It was agreed that the UK's venture capital market was progressing, especially in relation to its vibrant early-stage ecosystem and ambition, but that financial continuity needed to be constantly examined; the landscape is fast-moving and differs by stage and sector, as well as within sectors. A current gap was identified as capital for mid-stage businesses, with delegates noting that capital could be raised more quickly in the US, allowing longer for it to be deployed. It was observed that the lack of pace and crossover capital in the UK could force businesses to turn to the US to raise finance, ultimately pulling HQs out of the UK. The Government's commitment to spend £2.5bn on patient capital through the British Business Bank was noted, but delegates were uncertain whether it would have the intended impact due to the scale of the identified gap. Delegates also discussed the potential for pension funds to be incentivised to invest in fast growing businesses or venture capital funds.

The role of attracting corporate venture to the UK was discussed, with delegates suggesting that the UK should be proactive about targeting inwards investment (including where from) and ensuring that there is support, both in providing information (e.g. businesses currently have low visibility of UK

national assets such as the National Physical Laboratory) and resources and ensuring a favourable environment for long-term investment and activity. The relative merits, challenges and suitability of the AIM market for growing, high-tech, innovative firms to access growth capital was explored. Delegates suggested that for some businesses it would be preferable to access equivalent growth capital privately and then float directly on the London Stock Exchange or Nasdaq.

It was recognised that alongside capital needs, young startup teams often require commercial advice and mentorship, which is frequently sought through board involvement of experienced individuals; how can these non-executive directors be incentivised and rewarded for helping early-stage businesses?

Delegates also discussed technology transfer offices (TTOs), noting inconsistency in approaches across TTOs, that the equity stakes awarded in university spinouts often made it very challenging to get VC investment, and that spinouts themselves were risky. A delegate noted that licensing can offer an additional route to market.

### **Regulation**

Delegates highlighted that SMEs can find it challenging to navigate complex regulatory landscapes, particularly in the case of tech startups moving into other domains and sectors, advocating for regulatory information to be accessible and understandable. The Medical and Healthcare products Regulatory Agency (MHRA) was highlighted as one of Europe's leading regulators for innovators, particularly in the fields of gene therapy and advance therapeutics. Potential benefits in sharing best practice across sectors on how to regulate risky areas to support emerging technologies were noted and the Strategic Priorities Fund was identified as creating opportunities for UKRI to work with government departments on regulatory aspects, such as around artificial intelligence.

Access to data was also discussed, with it noted that SMEs find it particularly difficult to access the data they require for R&D. Delegates proposed that preferential access to data repositories for small businesses (e.g. those with less than 50 FTEs) could help to address this.

The need to ensure regulation does not hinder as-yet unforeseen businesses and sectors was also recognised. Delegates suggested that there could be a role for UKRI to look across the landscape for emerging areas and ensure they are not adversely impacted by regulation, for example through working with the Regulators' Pioneer Fund.

### **Talent pipeline**

Delegates agreed that reaching the 2.4% R&D target is as much about people as investment, with individuals involved often international or internationally mobile; if R&D-intensive firms cannot access a highly qualified workforce in the UK then they will move to a location where they can.

Whilst some delegates present had broadly positive experiences with UK visa systems, it was agreed that they were unwieldy and slow, and could be particularly burdensome for SMEs. Similarly, the occupational shortage list was identified as lacking the agility needed to keep pace with rapidly changing shortages in global talent markets. EU exit was noted as having some impact on the ability of SMEs to attract and retain EU researchers and innovators, with delegates sharing anecdotal evidence of lengthening negotiations to convince EU nationals to accept UK-based offers, and decisions to leave being made more abruptly.

The strong competition SMEs face from larger companies for R&D-active individuals was highlighted, with SMEs unable to offer the most competitive packages to retain individuals holding skills attractive to larger businesses. Shortages of individuals with the necessary commercial,

entrepreneurial and technical skills were noted, with delegates attributing this partly to the UK's disciplinary-focused university system, although there was positive discussion around the experience of delegates with higher level apprenticeships.

Delegates emphasised that a large proportion of individuals within the R&D ecosystem have no experience of SMEs which can lead to a lack of understanding of the realities of small businesses with R&D. For example, it is challenging for SMEs to sit on boards where the commitment required is inflexible.

Delegates highlighted that increasing the diversity of the UK's researchers and innovators will be crucial to grow the talent pipeline to the scale required to achieve the 2.4% target. It was also highlighted that to rapidly increase the UK's R&D intensity would require the capital gaps to be addressed, with the best entrepreneurs attracted by the biggest opportunities. Furthermore, delegates emphasised that growing businesses from first principles is difficult; entrepreneurs need to be able to see and emulate success.

### **What do entrepreneurs, innovators and investors need to reach the 2.4% target?**

Entrepreneurs, innovators and investors and their investment in research and innovation will be critical if the UK is to meet its 2.4% R&D target. A thriving investment market, supportive regulatory system and access to a vibrant and diverse STEAM talent pool are all crucial to increase business investment in R&D from businesses of all sizes. Delegates proposed a number of ideas that could help us to achieve this:

- for Innovate UK to increase its understanding of the venture capital ecosystem within different sectors and subsectors, acting as an advocate for, and promoter of, venture capital for R&D-intensive businesses;
- explore the possibility of UKRI and the Department for International Trade working together to strategically attract corporate venture to the UK, and consider potential fiscal incentives such as a 'super patent box';
- consider investing in further research to evaluate the success of interventions designed to promote translation of research;
- optimise support available to innovators and entrepreneurs through Innovate UK, including considering continued simplicity of application processes and sector specific funding streams to signpost to potential investors that public support is available in their area of interest;
- understand how to increase pace and crossover capital in the UK VC market;
- examine how to incentivise non-executive directors (especially from key international companies in high growth sectors) to help early-stage businesses;
- explore the possibility of UKRI working with the MHRA and the Regulators' Pioneer Fund around high innovation to make the UK the leading location for this work;
- investigate how to ensure innovation in emerging areas and sectors is not hindered by the regulatory environment;
- explore mechanisms the UK could use to support diffusion and adoption of innovations in SMEs and the public sector;
- understand what optimal immigration policies, and implementation of these, would look like to attract and retain internationally mobile R&D talent in the UK, particularly taking account of differences between sectors and ensuring the system is fit for use by startups and SMEs;
- consider how SMEs, in competition with large businesses, can be supported to retain highly qualified individuals;

- increase the diversity of the UK's researchers and innovators so the R&D landscape is attractive to individuals from all backgrounds, particularly those from underrepresented groups;
- understand how unused technologies and innovations held at universities could be exploited for the UK's benefit; and
- explore how TTO processes across the UK could be supported and incentivised by UKRI to best enable spinout businesses to attract additional capital during the commercialisation process.

In summary, Sir John Kingman emphasised that the workshop conversation was just a starting point. UKRI has a responsibility to rise to the opportunity, and challenge, of the target to increase the UK's investment in R&D to 2.4% of GDP by 2027, and 3% in the longer term, improving productivity and economic growth across the UK.

**Annex A – delegate list**

<b>Name</b>	<b>Organisation</b>
John Kingman (Co-chair)	UK Research and Innovation
Richard Brook (Co-chair)	AIRTO
Steve Bates	BIA
Christine Boyle	Senergy
Mark Bryant	BGF Growth Fund
Andrew Clark	Royal Academy of Engineering
Maria Dramalioti-Taylor	Beacon Capital
Eliot Forster	F-Star
Jackie Hunter	BenevolentBio Ltd
Graham Jack	Double Negative (DNEG)
Martin Murphy	Syncona Limited
Andy Richards	Biotechnology entrepreneur
Robert Sansom	Cambridge Angels
Alexander Sleigh	Newable