

# Market environment

The policies and frameworks influencing and producing opportunity or challenge for companies conducting late-stage R&D and commercialising innovation, including regulation, trade policy, intellectual property, and government strategies



R&D investment decisions are highly complex and sensitive to the individual nature of the company. The market environment is key in that it influences the time it takes to develop a new product as well as the appetite of investors and customers to buy the new product, process or service.

The market environment also impacts the wider environment experienced by businesses. Businesses must consider a broad range of factors including performance of the firm and profit margins, tax environment, market trends, intellectual property rights, trade and export policies, and opportunities posed by government strategies and roadmaps.

## Systems approach by a joined-up government

Policy levers that influence businesses ability to undertake successful R&D and innovation are spread across the whole of the government, from immigration policy in the Home Office, to export policies in Department for International Trade, from R&D tax

reliefs in HM Treasury and HMRC, to 'innovation policy' in BEIS. The policy levers that impact businesses' wider ability to trade and grow are similarly spread. Therefore, a whole government systems approach should be taken to the UK's R&D and innovation ambitions. This will ensure that the different elements of the strategy work together as a coherent whole and will enable risks to be mitigated more effectively.

From concept to market, engineering businesses engage with a broad range of government departments and agencies. Each of these interactions has the potential to facilitate or inhibit businesses in delivering their strategy, with knock-on effects for innovation and R&D investment. Engineering companies find strategic engagement across UK government organisations frustrating, fragmented, and not joined-up<sup>64</sup>. The problem exists across government organisations, although the challenge presents differently across businesses and sectors. This makes the UK less attractive for businesses to invest in R&D.

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### Attracting R&D investment in a globally competitive market

Businesses compete in global markets, and they also choose the location of their R&D activities in a global market. The UK offer for attracting businesses to locate their R&D activities here must be competitive across the board, enable businesses to conduct R&D and facilitate the management of the corresponding risk to the business.

The UK is outlining a bold, global vision for the UK as an outward-looking leading trading nation and a first-choice destination for inward investment and international talent. The UK's offer of support for late-stage R&D must be sold as part of that vision, both nationally and globally.



### Where can the UK government play a role?

The ecosystem in which businesses conduct R&D is broad and complex. Government sets the tone and direction with strategies and policies that provide certainty to business and create greater opportunity for commercialisation.

To create a supportive environment for engineering business R&D and innovation, all government organisations must share a clearly defined vision of success and be well coordinated. This will provide a long-term stable backdrop for business decisions and investment.

**BEIS and UKRI should clearly signpost the UK's offer for late-stage R&D and innovation through an accessible online interface to facilitate navigation for the business user, and work with Department for International Trade (DIT) to market it globally as part of a joined-up UK innovation pitch to international investors.**

### COVID-19: STIMULATING BUSINESS R&D INVESTMENT DURING AN ECONOMIC CRISIS

The pandemic has rapidly altered the business environment in which innovative startups and engineering R&D-intensive businesses operate. Reducing or outright halting R&D activities is one of the first cost-saving measures that businesses take during falling demand and cash flow difficulties. The Bank of England DMP survey found that R&D spend was expected to reduce by 9.4% to 16.7% in 2020 in light of the COVID-19 crisis<sup>67</sup>. However, R&D is also recognised by businesses as part of the solution for economic recovery<sup>68</sup>.

For some industries, recovery will not mean returning to pre-pandemic business as usual. Instead they will require innovation to survive and adapt to the 'new normal' with different ways of working and dramatically changed supply and consumer demand.

To build back better and sustainably, we will have to help businesses continue R&D and ensure that businesses who have halted R&D activities in the initial crisis response have capacity and capability to progress R&D activities in the UK and reposition themselves in a reformed global market.

“Only 47% of people believe that innovation has had a positive impact on people like themselves<sup>65</sup>”

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### CASE STUDY

#### BAE SYSTEMS: COMMERCIALISING A DISRUPTIVE INNOVATIVE PRODUCT WITH OPPORTUNITIES ACROSS DIFFERENT MARKETS

BAE Systems operates in a highly competitive sector: defence. As such they drive forward R&D, for example an optical technology that enables a viewer to see an image projected into their eyes whilst still being able to see the actual backdrop meaning a pilot can see critical information while flying, a driver can be shown data while driving or a soldier can see vital stats on the battlefield.

In 2005, BAE Systems licenced on an early-stage technology from a University of Cambridge University spin-out before developing its own technology in this field. It then took 10 years to develop the technology to a prototype stage where it could be

shown to customers to bring them on board. The first commercial product, for the defence market, was a head-up display, 50% lighter, brighter and more capable of handling information than existing technology. It was then developed further into augmented reality glasses to be used across a range of military and commercial markets and generate new demand back into the defence sector. As a result of BAE Systems continuous incremental investment of over £15 million over 15 years there is now significant potential for the technology in multiple markets. However, the late-stage investment to adapt and tailor the core technology to each new market can be significant. This naturally restricts BAE Systems' ability to maximise the full market potential when balancing overlapping investment requirements against shareholder expectations of business returns in the near term.



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### MARKET PULL VS TECHNOLOGY PUSH<sup>66</sup>

Market pull is generated when the market has identified a problem and engineers develop a solution to that problem. Here, the risk of conducting late-stage R&D is reduced for businesses with a ready-waiting customer. This contrasts with technology push, where engineers have identified a new product that the market is not (yet) asking for. In the

latter case, market interest in the new product needs to be generated during late-stage development to ensure commercial success, and although it can be challenging there are many examples of success. Partnerships with customers is one way that businesses approach generating market pull.

