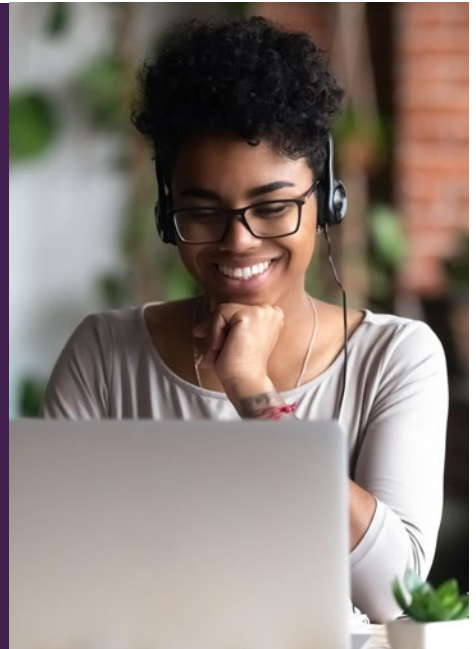


4.2 Integrating the lessons of the pandemic into a more dynamic research and innovation system

The COVID-19 pandemic presented unprecedented challenges. The rapid proliferation of a previously unknown virus required policymakers, businesses and universities to work together to develop critical solutions at breakneck speed. This process has identified a series of important lessons around how to make collaborations work smoothly and deliver solutions quickly. In this chapter, we invite Tomas Coates Ulrichsen and Dr Leonard Kelleher from the University of Cambridge to offer their reflections on this. They identify a series of insights, in particular the essential roles that networks and partnerships between universities,

research and technology organisations, businesses, investors and public sector bodies must play in responding to other urgent and emerging crises facing the UK and the world.

The chapter also includes insights from Professor Muthu De Silva, Dr Caroline Paunov and Nikolas Schmidt, who explore how international co-created initiatives – between industry and researchers – were able to address the socio-economic costs imposed by COVID-19. These initiatives were mobilised at speed, drawing on existing collaborative relationships and building on them to connect new partners beyond the ‘traditional’ innovators.



Going for growth: the importance of a ‘both/and’ mindset for investing in the commercialisation of research



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Tackling the current set of urgent crises buffeting the UK – from the climate crisis to unsustainable increases in the cost-of-living to stagnant productivity growth – will require a significant step-change in our nation’s innovation effort. It will require investments to drive not just breakthrough technologies to seed new industries and markets, but also to deliver and diffuse innovations that improve productivity, develop new and sustainable production methods, and create new business models to create new sources of value and capture more of the value here in the UK.

Delivering this will require focused investment not just in research, but also in the partnerships that form

between universities, research and technology organisations, private enterprise and investors, and the public sector. All of these are crucial to accelerating the commercialisation of research and its deployment at scale.

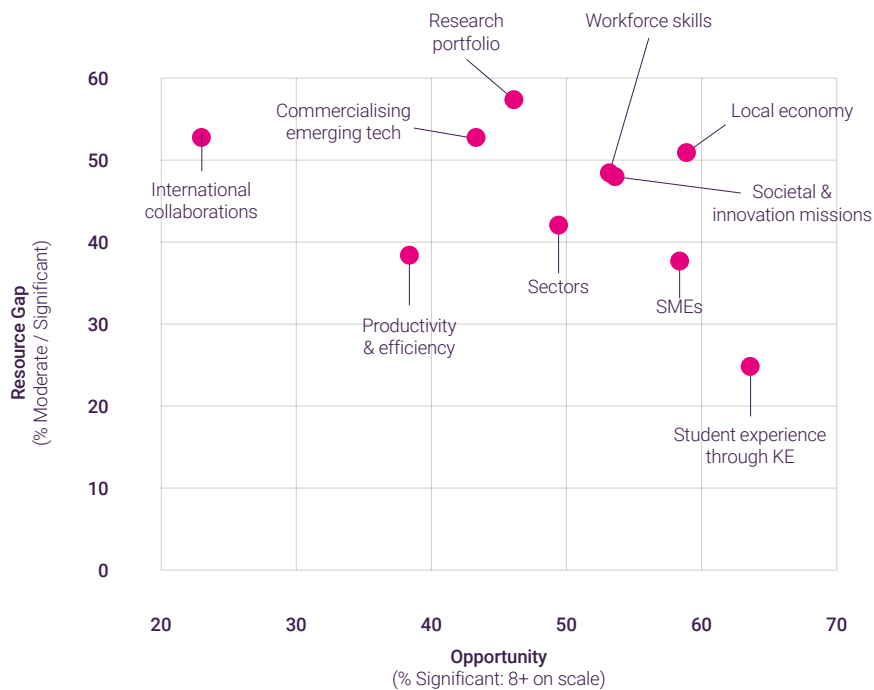
The response to the pandemic demonstrated what is possible when these types of organisations come together to work closely to find solutions to very specific health and socio-economic challenges. Examples abound in areas of vaccine and therapeutics development, diagnostics, and hospital resilience. Through their combined efforts they managed to develop workable innovations at significant pace and deployed them rapidly in the real world at scale.

Our recent research on the effects of the COVID-19 pandemic on universities and their ability to contribute to innovation⁶⁰ demonstrated the many and varied activities university leadership were prioritising to enable and support innovation in their partners (in industry, the public sector, charities etc.). As we move through the crisis, greater emphasis was being placed on:

- Challenge-led programmes that integrate research with its translation and commercialisation as well as use-inspired basic research and applied research
- Delivering services to partners to support their own R&D and innovation activities, including taking new technologies and ideas to market, adopting new technologies to improve productivity, and helping them to solve specific technical challenges
- Building networks to better connect innovators to facilitate innovation
- A wide range of activities aimed at strengthening the conditions that underpin the innovation system's ability to develop, diffuse and deploy innovations. This includes providing intelligence and insight to inform the strategic development of the place, sector or technology system, developing workforce skills, working with local partners to attract inward investment, investing in the infrastructure within the local area to drive innovation and entrepreneurship, and efforts to improve the local quality of life and innovation culture

We also showed that the ability of universities to make significant contributions to the pandemic response depended heavily not just on the research and knowledge available within their institutions, but crucially on their ability to work with companies, investors, hospitals, regulators etc. to rapidly translate it into practical solutions that were deployable at scale. Their network of relationships, and the professional support for

Figure 11. Percent of universities identifying area as a strategic and viable opportunity for contributing to an innovation-led economic recovery and the percent of universities identifying a moderate or significant resource gap to pursue the opportunity



Source: Author's analysis of UCI/NCUB 2022 survey of universities on the effects of the pandemic on the ability of universities to contribute to innovation through the crisis

knowledge exchange and research commercialisation, built up over many years and enabled by dedicated public investment from funds like the Higher Education Innovation Funding (HEIF) were seen as critically important enablers. In a separate report⁶¹, we highlight how the urgency of the pandemic creating strongly aligned motivations to rapidly find solutions, meant that universities, companies and governments alike became more flexible and less bureaucratic in how they approached partnering and the terms upon which they would engage.

In looking to the future, our research explored whether universities saw strategic and viable opportunities for their institutions in contributing to an innovation-led economic recovery in areas aligned with key government

priorities. We also asked them to identify whether they have sufficient resources (financial or other) to pursue the opportunity.

The results are shown in Figure 11. It shows that many universities saw significant strategic and viable opportunities around supporting their local economy and the needs of SMEs. A large majority of research-intensive universities also identified the commercialisation of emerging technologies and contributing to specific societal missions and innovation challenges as key priorities moving forward. By contrast, less research-intensive universities were more likely to identify strategic opportunities around skills needs and (to a lesser extent) working to raise the productivity of companies.

60 Ulrichsen, T., & Kelleher. (2022). *Through Crisis to recovery. The ongoing effects of the COVID-19 pandemic on universities and their ability to drive innovation.* University of Cambridge. UCI Policy. NCUB.

61 Ulrichsen, T.C. (forthcoming). *Rising to the Challenge: Mobilising university-industry-government partnerships to lead an innovation-led recovery.* Oxford Summit 2021 Insights Report. Oxford, UK: University of Oxford.

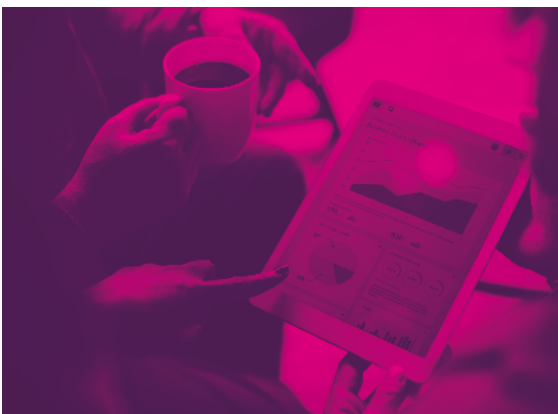
The results also show that many universities identified moderate or significant gaps between the level of resource (financial or other) available and what was needed to pursue the opportunity.

The results also show that few universities – research-intensive or otherwise – saw strategic and viable opportunities in building international collaborations to drive innovation. This is incredibly concerning given the historically global outlook of universities and the importance of global collaborations for national success post-Brexit. We must urgently understand the barriers (non-financial and financial) and disincentives that are making it difficult for universities to pursue such collaborations.

Drawing on their experiences from the pandemic, our research also highlighted areas where the government could do more to further enable universities to play an active and strategic role in driving an innovation-led recovery. These are captured in Box 1.



The results also show that few universities – research-intensive or otherwise – saw strategic and viable opportunities in building international collaborations to drive innovation.



Box 1. University calls for actions government should take to strengthen their ability to help drive an innovation-led recovery



Greater flexible funding for research, translation, and knowledge exchange to enable greater responsiveness to long-term opportunities. Additional funding to tackle major societal problems, translate and develop research into innovative applications, and contribute to local and regional development.



Improved coordination and coherence of funding across the technology development and innovation lifecycle; levels and areas of policy; and between policy intent and implementation.



Greater involvement of a range of actors in the self-governance of innovation systems, and strategic intelligence to aid decision-making.



Greater support to build collaboration and innovation capacities within the innovation system, both within universities, and in the economy (in particular in SMEs and in regions of low innovation maturity).



Support to build and strengthen innovation networks and platforms to drive collaborations, including pre-competitive R&D consortia, regional technology clusters, and international research and innovation platforms.

At the policy level, we need to move beyond the dualisms – basic and applied research, public and private R&D, short-term and long-term focus – that dominated the post-war linear innovation policy approach and the either/or mindset approach to decision-making. Rather, modern technology and innovation policies, such as the recently passed US Chips and Science Act⁶² that focuses primarily on driving national competitiveness, focus on investing in both basic and applied research around strategic technology areas, and in the translation, demonstration, and commercialisation of the research to unlock economic opportunities. And in driving the research-to-innovation journey, they recognise a need to create significant funding structures

and policies that act to directly incentivise and reinforce the bringing together of universities, research and technology organisations, private enterprise and investors, and the public sector to work in partnership to unlock and advance innovation opportunities for long-term, sustainable and equitable growth.

To ‘go for growth’ in the UK, we must adopt a similar systems-thinking approach and both/and mindset to ensure we target our efforts to the portfolios of activities and partnerships, and the enabling and supporting infrastructure, that are required to accelerate the successful translation and commercialisation of university-based knowledge and research into new opportunities for economic wealth.

62 US Congress. (2022), United States Chips and Science Act of 2022. 117th Congress (2021-2022).