



The House of Commons Science and Technology Committee Inquiry

Call for evidence:

'The role of technology, research and innovation in the COVID-19 recovery'

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From:

AIRTO - The Association of Innovation, Research and Technology Organisations

Introduction

AIRTO, the Association of Innovation, Research and Technology Organisations, on behalf of its members, has prepared the following response to the request for written input to the House of Commons Science and Technology Committee inquiry into “The role of technology, research and innovation in the COVID-19 recovery”.

AIRTO represents the UK’s extensive Innovation, Research and Technology (IRT) sector, which employs 57,000 highly skilled people, has a combined annual turnover of £6.9Bn and contributes £34Bn to UK GDP. The sector works with industry, government and academia to promote and implement innovation, and provide technical solutions to challenges and crises. AIRTO members have demonstrated their capabilities in the national response to the COVID-19 crisis (playing both technical and co-ordinating roles), and are ready to play a full, critical role in rebuilding the UK economy.

Rebuilding of the UK’s economic activity as rapidly as possible is vital for the national recovery from the COVID-19 crisis. This rebuilding presents an unprecedented opportunity to make significant changes in the operation and output of UK industry that will address the challenges and problems that existed before the crisis, such as the productivity gap between the UK and competitor nations, and tackling climate change and net-zero carbon targets.

Immediately pre-pandemic, the government stated its ambition for the UK to be a ‘Science Superpower’ on the world-stage. AIRTO contends that this ambition does not go far enough – the UK should be striving to become a ‘Science *and Innovation* Superpower’. AIRTO urges the government to adopt an innovation-led strategy for rebuilding the economy post-pandemic. This strategy will build on delivering the Industrial Strategy, a commitment recently re-stated by government which AIRTO has welcomed, and the new [R&D Roadmap published by the Department of Business, Energy and Industrial Strategy \(BEIS\) – which AIRTO has also welcomed](#). In particular, AIRTO has highlighted the need to balance the current policy of skewing R&D resources in support of the UK’s world-leading early stage research by increasing support for innovation, market-led R&D, and direct technical support for industry. The need was presented by AIRTO at the beginning of the COVID-19 crisis in the position statement on ‘[More D!](#)’, and has now become more important and urgent as the economic consequences of the crisis have unfolded.

The continuing support for fundamental research in the UK is important for the long-term strength of UK science, but it is immediate support for innovation and applied R&D that is vital for the short- and medium-term recovery economic and societal from COVID-19.

The IRT sector is a key vehicle for delivering this vital support to industry.

AIRTO advocates an innovation-led strategy for COVID-19 recovery, that will ‘build, back, better’, involving government actions to:

- **Retain the levels of research** activity in our publicly funded institutions.
- Support **more development** activities.
- Invest in **increased innovation**.

Response to specific questions in the call for evidence

1. *What role can technology, research and innovation play in supporting the UK's economic recovery from COVID-19 and how can it be best supported in this?*

Technology, research and innovation can play a vital role in supporting the UK's economic recovery from COVID-19. This role will be to ensure that the economic recovery is built on improved, 'greener', processes, products and services, rather than just the resumption of activities that are the same as undertaken before the crisis hit the UK.

Some of the improvement will come from innovation in working practices and methods that results from the changes that had to be introduced to ensure work continued during the lockdown. However, there is a significant opportunity to introduce technical innovation in companies as they resume and continue full activities. In many cases, this will need external support to provide companies with the knowledge they require for adopting technical innovations with confidence and for mitigating the risks. The IRT sector is key to providing this knowledge to industry – knowledge that must be appropriate and immediately applicable. It is a role the sector already undertakes, but the economic recovery creates substantially increased need, demand and opportunities for providing innovation support for companies from the smallest SMEs to the largest multinationals. It is support that needs to be immediately provided and immediately applied if the opportunities from the recovery are to be realised.

In order to supply this support, the IRT sector needs better capitalisation with the resources to increase the scale of its operations. This involves both facilities and programmes. These programmes may involve the development and application of new knowledge, but will often involve supporting companies to introduce existing, appropriate innovations to their processes and products. Well planned programmes of support, including generic development and demonstration, will provide support, knowledge sharing and increased confidence for industrial sectors and groups of companies within such sectors and groupings, benefiting also individual organisations, thus operating more efficiently and effectively whilst also reaching the maximum number of beneficiaries.

Such programmes will require collaboration and support from government to share risks and costs, particularly to enable enrolment of SMEs and financially viable delivery on the part of knowledge providers. AIRTO members have demonstrated they can deliver hugely successful programmes of support for SMEs through initiatives such as the NPL led "Analysis for Innovators (A4I)" and TWI's 'Joining Forces' which have increased productivity, turnover and employment in SMEs through targeted interventions. A larger, nationwide programme involving the full range of AIRTO members will have a significant effect on industry in the short and medium term.

There is also a role for the IRT sector in supporting the societal recovery. If the UK is going to be a 'Science and Innovation Superpower', it needs a society with the skills to match. Ensuring people have the right skills is fundamental to supporting employment and job creation. Rebuilding UK industry and stimulating investor confidence to drive Foreign Direct Investment (FDI) depends on having the ability to build a strong workforce with the right skills, especially in key sectors such as high value manufacturing and/or R&D intensive sectors such as aerospace, pharmaceuticals, automotive. These skills are becoming more advanced, and provision for retraining people in these skills will be an important part of the national recovery plan. The IRT sector is a "breeding ground" for people skilled both in technology and in the needs and operation of industry. These skilled staff may continue to work in the IRT sector, supporting UK industry and attracting international business to the UK. They are also a key source of talent for high tech and innovative industries. Support for training by and within the IRT sector will provide upskilling of UK plc for the future. The government

should make better use of the IRT sector as a training ground. Those graduating from secondary and higher education in 2020 are facing a generational challenge of securing employment and initiating careers. The UK has large numbers of science, technology, engineering and mathematics (STEM) graduates entering the job market. Existing training schemes from apprenticeships, future leader fellowships, and graduate level programmes are going to be swamped with applicants. There is an opportunity to expand existing schemes to get more young people with STEM qualifications upskilled for the UK's workforce ensuring they are 'innovation ready', whilst levelling up access to opportunities for careers in research and innovation for young people from BAME communities and disadvantaged backgrounds. The government should join forces with industry, universities and the IRT sector to create a package of measures for building an innovation-ready workforce for the future.

2. *Does the current or post-COVID situation lead to any particular opportunities or challenges for economic growth driven by technology, research and innovation?*

The key challenge for economic growth driven by technology, research and innovation is having a 'fit for purpose' infrastructure that can support industry with the knowledge, skills, resources and demonstrations that are necessary for rapid and continuing recovery. With notable exceptions, this is not the role for the UK's academic base, but is the role currently undertaken (with intermittent public support) by the IRT sector. Supporting this sector must be a vital part of the recovery plan.

The organisations that comprise this sector are already world-class, but are currently restricted in the level of support they can afford to give to UK industry on their own account, particularly where that industry does not currently have the finances to fund that support. Government intervention is necessary.

The opportunity presented by the economic recovery is to combine recovery targets for innovation with the needs, challenges and targets the UK was facing pre-crisis – thereby 'building back better'.

Utilising and expanding the UK's IRT sector will play an essential part in addressing the government's target of growing research and development (R&D) to 2.4% of GDP, and more importantly the realising benefits of this increased activity, as well as addressing the short- and medium-term economic recovery. The crisis has revealed national short comings such the need for anticipatory R&D focused on tackling specific/emerging diseases with the potential to lead to pandemics to limit their spread and impact, as well exposing deficiencies in the resilience of supply chains and business ecosystems. Longer-term objectives such as a attaining a net zero carbon economy and increased uptake of digitalisation should be combined with the plans for economic recovery to provide the UK with the increase in productivity that has long been a target but has yet to be achieved. However, we note that some distributed working procedures desirable for COVID-19 secure environments run counter to clustering and high-density business centres which are regarded as helpful to innovation and productivity enhancement. There is clearly scope for continued innovation in communication and collaboration practices driven by technological advances and upgrades to broadband performance and data infrastructures.

There is an immediate need for a capital fund to enable not-for-profit organisations in the IRT sector (without strong balance sheets or access to direct government funding) to grow. To meet the 2.4% ambition for growth in R&D, the sector needs to double in size by 2027. Many not for profit organisations do not have the means to do this, and they need help, which we have quantified as in the region of £50m - £100m per annum.

3. What lessons can be learnt from the role of technology, research and innovation from previous economic downturns, and how relevant are these to the current situation?

Many AIRTO members were founded by government initiatives to counter previous economic downturns. These include post-war R&D organisations and associations in the 1920s, the formation of industry focused Research and Technology Organisations (RTOs) in the later 1940s, and the more recent Catapult Centres over the last decade. Much of this infrastructure still exists, and together with other public sector research establishments forms the basis of much of the IRT sector that we have today. The majority of organisations in this sector are members of AIRTO.

IRT sector organisations based in the UK cover a wide range of industrial sectors, work closely with UK government, industry and academia, but are also world-leading organisations with multinational clients and operations.

These organisations were hugely successful in undertaking the support of the UK economy following their foundation (many after the two world wars), but declining public support for their activities since the 1970s (with the government's strategy of focusing the majority of its funding on academic research), has limited the support that can be provided to UK industry. The current exception to this funding situation is the public support for the Catapult Centres (which results in "two tiers" population existing in the IRT sector), although their public funding remains uncertain when the current five-year settlement expires.

The UK's economic recovery from COVID-19 needs the full involvement of the whole IRT sector, and there is now the opportunity to provide targeted strategic public support across the sector that will greatly enhance the economic recovery, and also give the UK the technology and innovation support structure it needs for long-term prosperity. The sector has shown what it can do in a crisis through those that [the Ventilator Challenges and other COVID related challenges](#) presented to it. Bolstering this sector is essential if the UK government is to succeed in attracting more businesses to invest in R&D activities in the UK by utilising the services on offer from IRT organisations. This key change in government strategy for supporting R&D is discussed in the recent AIRTO position paper, '[More D!](#)', which was developed in the lead up to the current crisis. The changes it proposes are now even more vital for the economic recovery.

4. How have research and innovation in UK universities, businesses and other setting been affected by the COVID-19 pandemic, and how might they be affected by any lasting changes post COVID?

AIRTO members have risen to the challenges of the pandemic by both continuing their normal activities by rapidly adapting with appropriate operational changes, and addressing immediate national needs arising from the pandemic. This includes examples such as convening the [Ventilator ChallengeUK consortium](#), developing COVID-19 testing, and the manufacture and supply of personnel protection equipment (PPE). AIRTO members not only played key technical roles, but also co-ordinated activities in their local regions.

A recent survey of our members undertaken by AIRTO has indicated that some organisations have used the furlough scheme extensively, and some redundancies have taken place, with potentially more to come as the scheme ends in the autumn.

The key concern for AIRTO members post COVID will be whether their clients will have the financial resources to fully fund the R&D that they would normally undertake to support their operations, and

their futures alongside the extraordinary allocation of resources they need for the duration of the economic recovery and also where applicable, the need to repay loans taken on during the pandemic. This extraordinary demand on their resources will have two impacts. Firstly, damage to the operations of industry clients and secondly a threat to the viability of the IRT sector organisations. For both these reasons, a strategic plan for the future of the whole of the IRT sector and the corresponding public support is crucial to ensure the vital support for UK industry continues in the recovery from COVID-19, and beyond. AIRTO is well positioned to help government in developing such a strategic plan.

5. *How effective have measures adopted by the Government to support research and innovation, such as the support packages for innovative firms and university researchers, and the “Ministerial University Research and Knowledge Exchange Sustainability Taskforce”, been?*

Government plans to date for supporting research and innovation during the COVID-19 crisis have by necessity been quickly developed, ad hoc and reactive. These have been partly to address the needs and challenges that have occurred because of the crisis, and also to support organisations that are facing financial challenges. Now is the time to develop a strategic plan of support that will address the current short- and medium-term technology and innovation needs for economic recovery, and to build a UK research and innovation infrastructure that will be fit for the long-term.

An analysis of the effects of the support provided for innovative firms during the crisis will provide valuable lessons for both plans for continuing support in this period of recovery, and help identify what actions should be taken in any future national crisis.

Support that has been provided for the UK’s academic base should be viewed as a measure to keep the universities continuing their research. In the majority of cases, this research will not be of major immediate benefit in supporting the short- and medium-term economic recovery. In the longer-term, the academic base will continue to feed into the UK’s reservoir of knowledge that can then be exploited by industry and innovation organisations in market-led applied R&D.

Support measures for innovative firms have in many instances been successful in keeping them solvent thus far during the pandemic, but those taking loans will be hard pressed to both grow into the recovery phase and at the same time repay these loans. The Future Fund has been rapidly oversubscribed leaving many companies still searching for equity support and the terms of the Future Fund’s support has placed many recipients at the mercy of others where the future redemption and/or transfer of their convertible loans is concerned. The requirement for completion of a prior investment round has also precluded many early stage innovative start-ups from applying. Nevertheless, the support that has been available has been welcome.

6. *In the context-of the Government’s ‘R&D Roadmap’, what shorter-term measures can best support UK research and innovation in recovering from the disruption of the COVID-19 pandemic and adapting to the post-COVID environment?*

As discussed in the answers to the previous questions, a key measure/intervention for the government will be to develop a strategic plan of support for the IRT sector, and hence for industry, that will provide for the short and medium term economic recovery, and set in place a strong long-term infrastructure for applied research, development and innovation. This includes capitalisation for not for profit RTOs, generic research programmes, and a nationwide technology transferring

programme targeting SMEs with the appropriate support that they need in the short and medium term. AIRTO has discussed this in detail in its [response to the BEIS survey](#) that was published at the same time as the 'R&D Roadmap', an initiative by the government which we vociferously welcomed

These measures will greatly enhance the economic recovery from COVID-19, and address the needs, challenges and targets that the UK already faced priority to the crisis.

Summary

The UK is facing an unprecedented challenge in recovering from the COVID-19 recovery and economic growth. However, there is also an unprecedented opportunity to improve the operation and output of UK industry so that it not only recovers from the crisis, but also addresses the challenges and opportunities that existed before the crisis. These challenges include the need for the adoption of digital technology, greener and more sustainable processes and products, and improved productivity. This opportunity to “build back better” will be highly dependent on innovation and technical support for industry. The extensive capabilities of the IRT sector will be a vital resource in this innovation-led recovery, particularly providing short- and medium-term technical support to industry from the smallest SMEs to the largest multinationals. However, there is the need for government support to ensure the IRT sector continues to have the equipment, resources and specific programmes to provide the support necessary for the UK economy to make a rapid, improved recovery.

AIRTO is ready to work more closely with government, and specifically BEIS, to ensure the resources of the IRT sector are both appropriate for the current and future needs of industry, and are fully exploited in the rebuilding of the UK economy.

About AIRTO

AIRTO is the Association of Innovation, Research and Technology Organisations. It's membership comprises approximately sixty of the principal organisations operating in the UK's Innovation, Research and Technology (IRT) sector. The IRT sector has a combined turnover of £6.9Bn per annum, employing over 57,000 scientific and technical staff (equivalent to the academic staffing of the Russell Group of universities) and, for comparison, it is significantly larger than the network of Fraunhofer Institutes in Germany both in size and its scope of activities. The sector contributes £34Bn to UK GDP annually. AIRTO's members work at the interface between academia and industry, for both private and public sector clients.

Members include independent Research and Technology Organisations, Catapult Centres, Public Sector Research Establishments, National Laboratories and some privately held innovation companies.

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