



Department for the  
**Economy**  
[www.economy-ni.gov.uk](http://www.economy-ni.gov.uk)

# CONSULTATION ON APPROACH TO 10X TECHNOLOGIES AND CLUSTERS



SEPTEMBER 2023

## Foreword

The Department for Economy's 10X Economic Vision is unashamedly ambitious, aiming to support the development of a more innovative, sustainable and inclusive economy. Advancement of this vision comes at a time of significant economic challenge, acting as a focal point for Departmental activity as we work to realise the potential of the NI economy.



The consultation I am launching today sets out in more detail the 10X ambitions around focus and scale, providing greater detail on our plans for priority sectors of the economy as part of our Technologies and Clusters work. We hope to support activity within priority sectors by focusing our efforts on promising technologies and Unique Selling Points within each, and using this focus to drive benefits at scale for the wider economy. Through this, we seek to target activity to stimulate innovative, sustainable and inclusive economic growth, providing benefits for all of society.

To do this we require a partnership approach involving Government, business and academia, as well as wider civic society. As such, I am grateful for the level of input we have received to date for all our 10X activities. I welcome this collaborative spirit and I am keen to see this develop as we move forwards with our 10X agenda.

Finally, I am grateful to all respondents for their time and input into this current consultation, which will be used to develop and further refine our approach to Technologies and Clusters focused work. I look forward to hearing your views over the coming weeks.

A handwritten signature in black ink, appearing to read 'Mike Brennan', written in a cursive style.

**MIKE BRENNAN**  
**Permanent Secretary**  
**14th September 2023**

## Introduction

The 10X Economy Vision published in May 2021 highlighted the Department’s goal to focus on technologies and Unique Selling Points (USPs) within priority / high potential sectors. These are areas where Northern Ireland (NI) has established strengths, in research and/or industrial capability, and the potential to be globally competitive; if not already. This activity will reinforce our ongoing commitments to focusing on NI’s specialisms through the major investments of the City and Growth Deals (CGD) programme.

Technologies and USPs (including their application within and adoption across these sectors), the potential for scale impacts across the wider NI economy, and the development of clusters are all key components of the virtuous cycle of activity that we aim to build in NI. We see this focus being instrumental to drive forward progress towards a more innovative, inclusive and sustainable NI economy.

As such, the Department for the Economy (DfE) has established a 10X Technologies and Clusters workstream, with seven priority sectors identified within this:

- Agri-Tech
- Life and Health Sciences
- Advanced Manufacturing, Materials and Engineering
- Fintech / Financial Services
- Software
- Screen Industries
- Low Carbon (including Green Hydrogen)

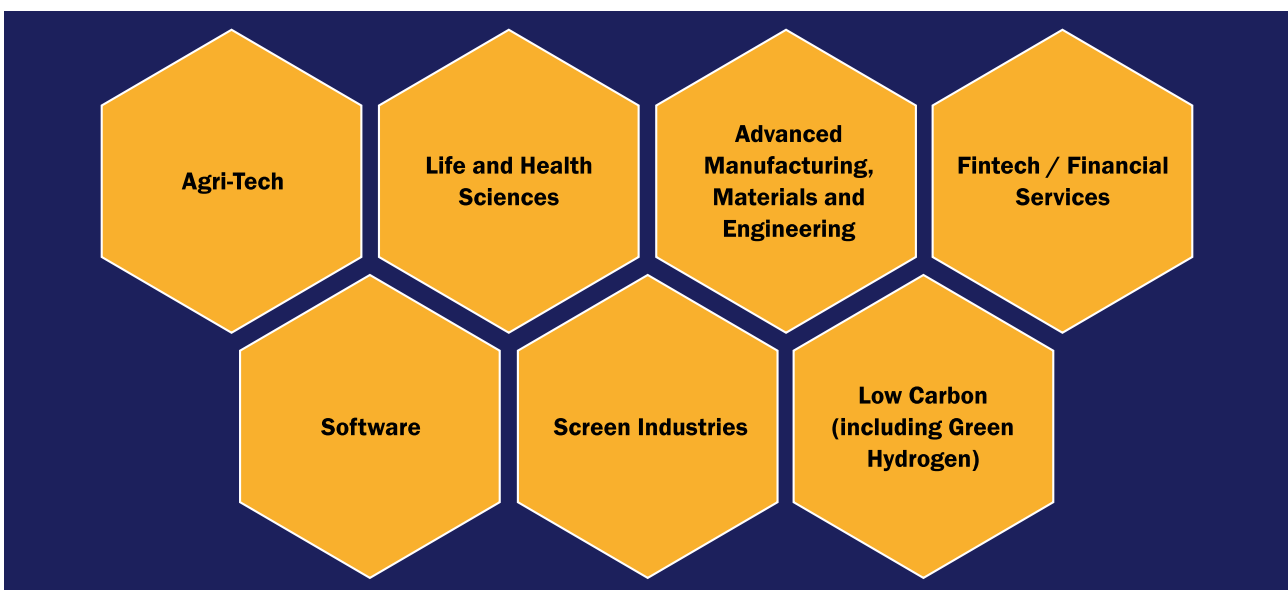


Figure 1: The seven identified priority sectors

Priority Sector	Description
<b>Agri-Tech</b>	The application of innovation and technologies to build competitive advantage and transition to Net Zero across the Agri-Food supply chain, including the farming and food processing sectors. Agri-Tech companies provide solutions (products and services) across sub-sectors including advanced materials and supply chain; agri-engineering; food processing; information and communications technology (ICT); life sciences; nutrition and animal feeds; and innovation in food and drink processing.
<b>Life and Health Sciences</b>	Life and Health Sciences covers a range of specialisms relating to the study of biological life, processes and the treatment of illness and disease. It has applicability to healthcare solutions, healthy living and the environment, including elements such as bio-technology, pharmaceuticals, precision medicine, medical technology, connected and digital health and healthcare solutions.
<b>Advanced Manufacturing, Materials and Engineering</b>	Advanced Manufacturing (as defined by the Matrix Panel) is “a family of activities that a) depend on the use and coordination of information, automation, computation, software, sensing, and networking, and/or b) make use of cutting-edge materials and emerging capabilities enabled by the physical and biological sciences, for example nanotechnology, chemistry, and biology. This involves both new ways to manufacture existing products, and especially the manufacture of new products emerging from new advanced technologies.”
<b>Fintech / Financial Services</b>	Services and technological solutions to the international financial services industry including banks, insurance companies, and asset management companies.
<b>Software</b>	The NI software sector includes software-intensive businesses, which are primarily developing software functionality, products and services for use by external or internal customers; with the wider NI ecosystem also including the people in software-related occupations in other industries.
<b>Screen Industries</b>	The NI Screen Industry consists of 3 primary sectors, Film, Television and Interactive. These can be further divided into 6 sub-sectors, Large-scale Production, Animation, Television Drama, Factual/Entertainment Television and Gaming. These sectors are supported by continued innovation in new screen technology and skills development that provide wider opportunities to the labour market.
<b>Low Carbon (including Green Hydrogen)</b>	The NI Energy Strategy sets out the pathway to Net Zero carbon and affordable energy by 2050. This includes a substantial opportunity to reduce carbon emissions and grow the green economy through hydrogen production, carbon capture, blending of the gas network, and world leading research and development.

Table 1: Brief description of each priority sector

In October 2022, the 10X Performance Management Framework consultation<sup>1</sup> provided some detail on how the concept of technologies and priority sectors / clusters links to wider 10X objectives, and asked a number of questions around the suitability of proposed outcome metrics.

Following this, the Technologies and Clusters workstream has focused on qualifying and quantifying the specific strengths of each priority sector, identifying key technologies and USPs for focused activity and the potential policy levers the Department could utilise to grow and scale these areas.

This consultation sets out the approach for three key areas:

- Identification and prioritisation of technologies and USPs where NI can be globally competitive, the growth of which can drive benefits at scale across the economy;
- An indication of the policy actions DfE and partners may use to drive the growth, uptake and scaling of these technologies and USPs; and
- How these technologies and USPs could be integrated into a future Sub-Regional Economic Plan.

We are seeking your views on the above areas to help inform and develop our current work.

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<sup>1</sup> [10X Performance Management Framework | Department for the Economy \(economy-ni.gov.uk\)](#)

## Priority NI Technologies and Unique Selling Points

Our approach to Technologies and Clusters focused work is based on the assertion that competitiveness starts with focus. Focusing on technologies and USPs where NI has a globally competitive edge and high growth potential, or the ability to secure this, will enable us to capitalise on opportunities presented by local and global trends; positioning NI at the forefront of development in these areas.

It is hoped that, when aligned with wider economic development policies, encouraging focused technological adoption and scaling up activity in these areas will diffuse success across the economy, thus widening societal benefit. The Sub-Regional Economic Plan (to be published in spring 2024) will set out targets for DfE and Invest NI to connect businesses at all levels to new ideas and technologies, while the City and Growth Deals will establish and enhance the necessary infrastructure with over £600m being invested in innovation and digital projects. The Place10X workstream will harness the USPs of Technologies and Clusters to establish sustainable, inclusive, and innovative local economic ecosystems.

Within each of the seven priority sectors, teams have undertaken work to identify and shortlist the key technologies and USPs that have the potential to meet 10X objectives. These are areas in which NI has, or has the potential to develop, research excellence, industry capability or the potential for widespread technology adoption.

The below table details the current shortlisted technologies and USPs for each priority sector. It should be noted that we will also be progressing activity to prioritise technologies which are enabling and crosscutting (i.e. have applicability within and across different priority sectors), including:

- Artificial intelligence
- Data capture / analytics
- Software applications
- Robotics/automation

Furthermore, it is also important to note that the wider 10X Vision places an emphasis on developing areas of future competitive advantage. As such, the technologies and USPs listed are not definitive and may be subject to future amendment to reflect the rapidly changing technological landscape in NI. The subsequent development of sector action plans will clearly articulate which technologies and USPs represent research excellence, industry capability or areas for potential adoption, and how activities will be targeted to that effect.

Priority Sector	Technology/USP
<b>Agri-Tech</b>	<ul style="list-style-type: none"> <li>• Food safety, quality control, data and traceability</li> <li>• Food nutrition, product development and processing</li> <li>• Animal, crop and feedstock science / technology / genetic solutions</li> <li>• Environmental/sustainability</li> <li>• Innovative farm machinery</li> </ul>
<b>Life and Health Sciences</b>	<ul style="list-style-type: none"> <li>• Diagnostics including biomarkers</li> <li>• Precision medicine, genomics and bioinformatics</li> <li>• Med-tech, digital and connected health with supporting software</li> <li>• Clinical trials and associated activity</li> <li>• Pharmaceuticals manufacturing and drug discovery/development</li> </ul>
<b>Advanced Manufacturing, Materials and Engineering</b>	<ul style="list-style-type: none"> <li>• Nano technology and photonics</li> <li>• Aerospace</li> <li>• Materials processing and handling</li> <li>• Precision engineering</li> <li>• Off-site construction</li> </ul>
<b>Fintech / Financial Services</b> <b>Software</b>	<ul style="list-style-type: none"> <li>• Cybersecurity</li> <li>• Artificial intelligence</li> <li>• Data science and engineering</li> <li>• Cloud</li> </ul>
<b>Screen Industries</b>	<ul style="list-style-type: none"> <li>• Crew skillset</li> <li>• Studio facilities (Belfast Harbour and Titanic)</li> <li>• Studio Ulster</li> <li>• Virtual production</li> <li>• Game development facilities</li> <li>• Editing suites</li> <li>• Animation studios</li> </ul>
<b>Low Carbon (including Green Hydrogen)</b>	<ul style="list-style-type: none"> <li>• Green hydrogen economy including funding, production and storage</li> <li>• Carbon capture and usage</li> <li>• Sustainable aviation fuels</li> <li>• Advanced efuels</li> <li>• Research and development in alternative methods of hydrogen production, cryogenics, storage specialisms and green supply chains</li> <li>• Hydrogen blending</li> </ul>

Table 2: Current shortlisted technologies and USPs for each priority sector

## Key policy levers to drive growth, adoption and diffusion of priority areas

This section highlights the key themes of activity and policy levers which, based on our research and continued engagement with stakeholders, have been identified as important in supporting the development, adoption and scaling up of key technologies and USPs within and across all priority sectors.

In addition to considering activity to support the environment for the development, uptake and scale of technologies in a general sense, we recognise that each sector has its own characteristics and may require bespoke action. Therefore, DfE will use the information gathered through this consultation to develop specific action plans for the seven priority sectors in 2024. These will, in setting out outcome goals, seek to demonstrate how specific actions can drive technology and sector outcomes in support of the 10X aims of delivering a more innovative, inclusive and sustainable NI economy.

Note the purpose of this section and the table below is not to present detailed actions, but to give a sense of the actions DfE will consider to achieve our aims around technology and USPs in the priority sectors, which we will refine based on the response to this consultation and further stakeholder engagement.

It is important to note when reviewing the table below that DfE, within its remit, does not hold all of the potential policy levers needed to drive a step change in the environment for technology in NI. Partnership, including with industry, academia, civil society, across NI Departments, with local councils, UK Government and international partners, will be vital to drive the outcomes we are seeking, and we are already investing considerable effort in improving collaboration between key players in this area.



Policy Lever / Theme of Activity	Potential Focus of Work
<b>Skills</b>	<ul style="list-style-type: none"> <li>• Undergraduates, postgraduate, PhD and apprenticeships in STEM fields: work with industry and higher/further education institutes to ensure that opportunities are focused on current deficits and technology growth areas.</li> <li>• Wraparound skills: ensure educational offerings available that focus on business, leadership/management/ productivity, innovation and entrepreneurship skills.</li> <li>• Inclusivity: work in partnership with existing schemes to address imbalances in employment numbers related to areas of deprivation, gender and disability.</li> <li>• Upskilling: work with industry and third level education institutes to ensure skills gaps are addressed in the existing workforce, where possible.</li> <li>• Alignment between skills requirements for Technologies and Clusters with City Deal priorities – ensuring these also support and deliver on skills needs for companies.</li> </ul>
<b>Innovation Supports</b>	<ul style="list-style-type: none"> <li>• Work to ensure a clear commercialisation pathway through engagement across the sectors, offering information, advice and other necessary supports to startups and to innovation and R&amp;D active businesses.</li> <li>• Investigate the potential for developing sectoral incubators/ accelerators for startups and spinouts.</li> <li>• Work to improve uptake of competitive funding streams.</li> <li>• Encouraging adoption and development of technologies within industry and along supply chains to increase productivity.</li> </ul>
<b>Regulatory Environment</b>	<ul style="list-style-type: none"> <li>• Establish working groups to engage with UK government departments, highlighting regulatory issues impacting NI businesses, particularly with respect to the Windsor Framework.</li> <li>• Work to provide greater regulatory certainty and clarity for businesses.</li> <li>• Identify strategic regulatory opportunities for technology development in NI.</li> </ul>

Policy Lever / Theme of Activity	Potential Focus of Work
<b>Foreign Direct Investment (FDI)</b>	<ul style="list-style-type: none"> <li>• Better utilise FDI as a strategic tool to build and enhance NI’s capability and capacity in our priority 10X sectors/clusters, through spill-over benefits.</li> <li>• Develop and promote strategic FDI propositions, aligned with strategies for priority sectors, to highlight the benefits to international investors of conducting business in NI.</li> </ul>
<b>Export Promotion</b>	<ul style="list-style-type: none"> <li>• Support the further internationalisation of our priority sectors / clusters through targeted export promotion activity, exposing our indigenous firms in these sectors to new ideas and a larger customer base.</li> <li>• Identify target international export markets for each of our priority sectors.</li> <li>• Identify market access barriers experienced by businesses in our priority sectors, and work with UK Government to address them through Free Trade Agreements and other means.</li> </ul>
<b>Sector Ecosystem / Connectivity</b>	<ul style="list-style-type: none"> <li>• Encourage and support collaboration between industry, academia, government and the public sector.</li> <li>• Align policies and interventions to support key technologies and USPs, and signpost businesses to existing support mechanisms within each priority sector.</li> <li>• Work to increase applications and number of successful bids to alternative funding schemes (e.g. wider UK government initiatives).</li> <li>• Support digitalisation by businesses.</li> </ul>

Table 3: Likely policy levers and associated activity that may be used to support adoption and diffusion of priority areas

## Sub-Regional Unique Selling Points

A further potential building block around the work on priority sectors is to consider the benefits in having a sub-regional dimension, aligning key 10X activities of the Department with the 10X related USPs and assets of a particular geographical area.

Taking the Mid Ulster region as an example, advanced manufacturing and Agri-Tech has a dominant presence. There may therefore be benefit in aligning key 10X activities to enhance and support the assets of this geographical region.

It should be noted that such an approach would not be exclusionary, nor necessarily based on pre-existing geographical areas such as local councils, but instead aims to encourage alignment and coherence with the wider 10X strategy of focusing on developing areas of existing strength across NI.

This may help avoid duplication of effort across sub-regions, or a situation where activity is focused in only a few key geographical areas when it has the capability to operate wider. This would also align with other elements of sub-regional policy, including City Deal investments.

A Sub-Regional Economic Plan is currently being developed to consider what this approach will look like. This work stream will be co-produced by DfE and Invest NI, building on research gathered in the Place10X Call for Evidence that closed in July 2023.

Consideration will be given as to what these sub-regions should look like, including cross-border dimensions, with a place-based lens used to ensure that local strengths are harnessed. Alignment of local and central government objectives with business, academia and third sector expertise will be vital. However, it is also important that areas are challenged as well as supported, to ensure that global impact is not diluted and instead maximised.

## Responding to the Consultation

We would ask that you respond to the consultation using the online survey which can be accessed at the [Consultation on Approach to 10X Technologies and Clusters page on the nidirect website](#).

If you are unable to respond using the online consultation facility, you can email your response using the response template provided at the [DfE consultation page](#) to the following email address: [dfc-10Xt&c-consultation@economy-ni.gov.uk](mailto:dfc-10Xt&c-consultation@economy-ni.gov.uk)

Before you submit a response, please read the Privacy Notice published alongside the consultation documents on the [DfE consultation page](#), which shows how we will use personal information as part of the processing of responses.

If you require documents to be provided in an alternative format, please contact the 10X Technologies and Clusters Consultation team by email: [dfc-10Xt&c-consultation@economy-ni.gov.uk](mailto:dfc-10Xt&c-consultation@economy-ni.gov.uk)

Responses to this consultation are invited until 11.59pm on **Friday 24th November 2023**.

## Next Steps

We will analyse the responses to this consultation and a summary Departmental response will be drafted and published.

Responses will help to develop and refine our current approach to 10X Technologies and Clusters related work, along with continued engagement with internal and external stakeholders.

Our next major milestone is the publication of finalised sector action plans in 2024, followed by delivery of these plans across 2024 and 2025.